



NGĀTI MUTUNGA  
E KORE E MIMITI TE PUNA KOROPUPŪ

Te Rūnanga o Ngāti Mutunga  
Mauri Compass Assessment of the  
Urenui River and the Mimitangiatua River



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Riaki Ruru, Marlene Benson, Marnie Reinfelds, Sam MacDonald, Anne-Maree McKay, Te Araroa McKay, Tiki Skipper-Reinfelds, Whakaturi McKay, Matthew McKay and Manawa Ruru.

“Mauri mahi, mauri ora.”

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Photo was taken by Paul Cummings, Pouwhakahaere.



Figure 1: Our first wānanga at Te Rūnanga a Ngāti Mutunga.

## Summary

Over the last ten years, we have become increasingly involved in the Resource Management Act process with the renewal and issuing of Resource Consents that have the potential to impact negatively on our freshwater fisheries. At times, we have been unable to participate effectively in this process because of a lack of useful data about taonga species and without a recognised tool to monitor the effect of the consents on the mauri of our awa.

With support from Te Wai Māori Trust, we engaged the services of Manawa, Riaki, and Ian Ruru to apply the Mauri Compass tool to assess the historical and current state of mauri of our Urenui and Mimitangiata awa. As predicted, the mauri of both awa had declined since European settlement, but we were struck by the steepness of decline for the indicators that we assessed.

Three of the twelve Mauri Compass indicators focus on the health and well being of our freshwater sentinel taonga, the Tuna. Species richness, tuna abundance, and tuna health had each fallen 80%, which is a talisman for the decline in Ngāti Mutunga connection, Tikanga, mahinga kai practices, and overall wairua of our tupuna awa. While a bit depressing, the assessment provided an excellent tangible, visual reminder of the work that we have to do immediately, before its too late.

The process involved Ngāti Mutunga whānau aged from two to seventy-plus and it will be easy to engage the wider Ngāti Mutunga whānau during any future mahi we do. This will increase everyone's skills in the collection of scientific data while recognising and affirming the cultural knowledge, expertise, and experience of Ngāti Mutunga whānau participating in this work. It also helps to reconnect us and strengthen our relationships as tangata whenua to our whenua, our awa and ngā mātua tupuna. We believe this to be important in enhancing and maintaining the mauri of the environment and the health and wellbeing of our people.

The Mauri Compass values and recognises the skills and knowledge that Ngāti Mutunga whānau have – ngā taonga tuku iho. We found that the tool used a good balance of mātauranga Māori and science data collection. This will make it easier to be recognised by Taranaki Regional Council and the New Plymouth District Council while still putting Ngāti Mutunga cultural values and concerns first.

## Introduction

*Ko te Titōhea ka meangiatia,  
he puna koropupū, ahakoa tukitukia e te poaka  
E kore e mimiti, ka koropupū, ka koropupū, ka koropupū*

Ngāti Mutunga descends from a number of ancestors who lived in the area occupied today by ngā uri o ngā tūpuna o Ngāti Mutunga. These ancestors include Tokauri, Tokatea, Mihirau, Heruika, Pūrakino, Rakaupounamu, Uenuku (son of Ruawahia), Hineweo, Hinenō, Te Hihiotū, Kahukura, and Mutunga. Ngāti Mutunga also descends from ancestors who arrived on the Tokomaru, Tahatuna and Ōkoki waka such as Taitaawaro, Manaia and Ngānganarūrū. Over generations, the descendants of these tūpuna intermarried and became generally known as Ngāti Mutunga.

The traditional rohe of Ngāti Mutunga is indelibly etched into both physical and historical landscapes. The Papatiki stream signals the interface with Ngāti Tama in the North. From here, the stream flows past Titoki pa and then outlines the extremities of tūpuna mana as far north as the Mangahia Stream from which an easterly direction is struck to Huanui, then northeast to Waitara-iti. The rohe then finds a natural eastern definition in the Waitara River as the river flows southward to the Pouiatoa precinct. From here, the border extends further south and then northwest along the Taramoukou stream to a point where the Waitara river connects with the Makara Stream. The confines of manawhenua are then traced in a northerly direction, skirting slightly west of the Poukekewa, Poutotara, and Pukemai streams. The Mangahewa Stream then provides an outline for the duration of the course to the coast. The old settlement in the district of Te Rau o te Huia was bounded by the Waiiau River, and its remains mark the area of the Ngāti Mutunga traditional southern boundary.

The area of the Ngāti Mutunga rohe described above is approximately 63,200 hectares (156,000 acres).

Prior to the arrival of tauiwi in Aotearoa, the Ngāti Mutunga iwi was an autonomous, independent and self-governing confederation of hapū. These hapū included Te Kekerewai, (also known as Ngāti Rangī, made up of the sub-groupings Ngāti Te Uruwhakawai, Ngāti Korokino, and Ngāti Tutewheuru), Ngāti Hinetuhi, Ngāti Aurutu, Ngāti Okiokingā, Ngāti Kura, Ngāti Uenuku Ngāti Tupawhenua and Kaitangata. Ngāti Mutunga exercised tino rangatiratangā over its traditional rohe. These historical hapū no longer form distinct communities within Ngāti Mutunga. In more recent times, Ngāti Mutunga has interacted as a single tribal grouping that is known today as Ngāti Mutunga.

The mission of Te Rūnanga o Ngāti Mutunga is –

Promoting an understanding of Ngāti Mutunga values & responsibilities in our rohe;

Protecting the environment for future generations; and

Demonstrating Ngāti Mutungatanga through our role as kaitiaki.



Figure 2: Mahinga kai.



## Our Iwi Environmental Management Plan

Our IEMP is a mandated set of policies that codifies Ngāti Mutunga values to support and educate iwi members working on environmental issues. The IEMP has a legal effect under the RMA and should influence external agencies to work more closely and effectively with Ngāti Mutunga in environmental management within our rohe.

In order to implement this plan and achieve our objectives, Ngāti Mutunga will;

- Continue to develop our capacity to engage in environmental issues
- Encourage our rangatahi to take and interest in and pursue studies in relevant environmental fields
- Look for opportunities to involve our people in environmental monitoring
- Work with other iwi groups on issues on mutual interest

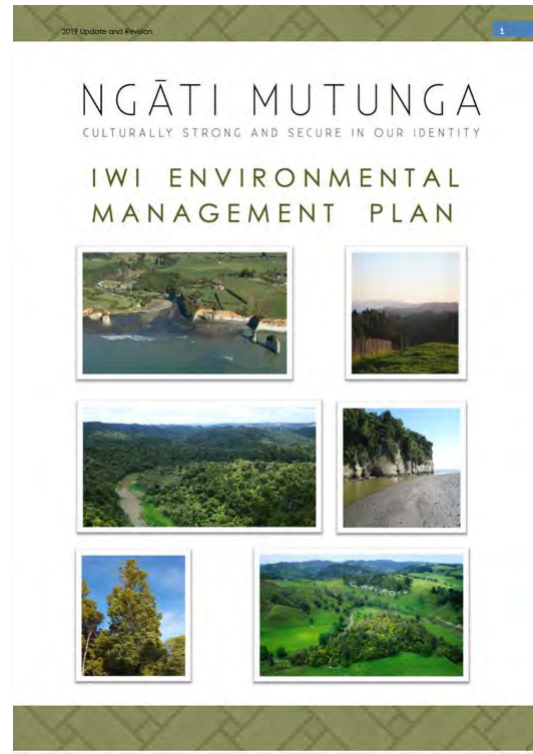


Figure 3: Our Iwi Environmental Management Plan.

This 'Mauri Compass Project,' supported through Te Wai Māori Trust, is one example of how we are implementing our IEMP. Excerpts from our IEMP are embedded within this document to anchor our mahi.

There are three high-level outcomes that we want to achieve through the implementation of our IEMP:

## Kaitiakitanga, Tino Rangatiratanga and Treaty of Waitangi

- Ngāti Mutunga is effectively involved in the management and protection of natural resources
- Agencies responsible for environmental management understand and respect the role, value, and responsibilities of Ngāti Mutunga

- Partnerships between Ngāti Mutunga and agencies responsible for environmental management are developed and enhanced
- Agencies foster the capacity of Ngāti Mutunga to engage in environmental management, particularly decision making processes and planning
- Ngāti Mutunga values become embedded in the planning documents and management practices of relevant agencies

### Environment

- Natural and physical resources are managed in a holistic and integrated way
- The state of the natural environment is restored to a state which supports the values and customs of Ngāti Mutunga
- The life-supporting capacity of the environment is protected and supported
- Ngāti Mutunga is actively involved in the day-to-day management of the environment
- Ngāti Mutunga capacity to engage on environmental issues and participate in activities such as environmental monitoring is enhanced

### Social, Economic, Health, and Well-being

- All plans, policies, strategies, regulations, laws and other methods of environmental regulation or planning identify and avoid negative effects on the health and wellbeing of the Ngāti Mutunga community
- Establish a sense of belonging and Kaitiakitanga amongst the whole community
- The Kaitiakitanga tradition of Ngāti Mutunga is continued through the generations.

## Te Puna Waiora

The traditions of Ngāti Mutunga describe the cultural, historical, and spiritual association of Ngāti Mutunga and the waterways in our rohe. For Ngāti Mutunga, these areas represent the links between our tūpuna and present and future generations. This history and relationship reinforce tribal identity, connections between generations, and confirms the importance of freshwater to Ngāti Mutunga.

## Cultural Values

Water is descended from Papatuanuku and Ranginui; it is the lifeblood of the people because it sustains the growth of plants, animals, and people. Our children play and bathe in the rivers in our rohe, and many sites of significance are located along waterways. Water has spiritual qualities of mauri and wairua. These qualities are related to the physical wellbeing of the water and are damaged by overexploitation, pollution, or misuse of water.

Water is often seen as a commodity, but we see water as a Taonga to be valued and respected. Our tūpuna had considerable knowledge of the ways in which to use the resources associated with water, and Tikanga for the proper and sustainable use of these resources. It is our responsibility, as Kaitiaki, to ensure that these values and Tikanga, as well as the water itself, endures and is passed on to future generations.

Awa (rivers) in the rohe were and still are central to the social, spiritual, and physical lifestyle of the Ngāti Mutunga people. Many pā are located along the rivers, testament to the occupation of the area by our tūpuna. The Onaero, Urenui, and Mimitangiatua have been occupied by the tūpuna of Ngāti Mutunga since before the arrival of the Tokomaru and Tahatuna waka.

Ngāti Mutunga utilised the entire length of each awa for food gathering. The river mouths provided a plentiful supply of pipi, pūpū (cat's eye), pātiki (flounder), kahawai, and other fish. Inanga (whitebait) were caught along the banks of the river. Tuna (eel) and piharau (lamprey eel) were found in the upper reaches of the river. Piharau were caught using whakaparu, which was a technique developed by placing rarauhe (bracken fern) in the rapids of the river in times of flood.

Our tūpuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of the

awa, the relationship of people with the river and their dependence on it, and Tikanga for the proper and sustainable utilisation of resources. All these values remain essential to the people of Ngāti Mutunga today.

There are specific areas of each awa that Ngāti Mutunga people would bathe in when they were sick. The awa were also used for baptising babies.

Each river in our rohe has its own mana and has significant historical and spiritual importance to our people. For the purpose of this 'Mauri Compass Project,' we focussed on the Urenui and Mimitangiatua rivers.

## The Urenui River



Figure 4: The Urenui River.

The name Urenui derives from Tu-Urenui, the son of Manaia, who commanded the Tahatuna waka. As an acknowledgement of his mana in the area, Manaia named the area after his son. Upon his arrival, the descendants of Pohokura and Pukearuhe were residing in the area. The river was also known as Te Wai o Kura. Kura was the ancestor of the Ngāti Kura hapū, who in prior times occupied this area. This name is depicted in the Ngāti Mutunga pepeha:

*Mai Te Wai o Mihirau (Mimi River) ki Te Wai o Kuranui (Urenui), koia tera ko te whakarangarunganui taniwha*

The Urenui River was referred to as “he wai here Taniwha” this figurative expression was used because of the large number of pā along the banks of the river, including Pihanga, Pohokura, Maruehi, Urenui, Kumarakaiamo, Ohaoko, Pā-oneone, Moeariki, Horopapa, Te Kawa, Pā-wawa, Otumoana, Orongowhiro, Okoki, Pukewhakamaru, and Tutu-manuka. The riverbanks thus became the repository of many kōiwi.

The Urenui River is a treasured taonga and resource of Ngāti Mutunga. Traditionally the Urenui River and, in times past, the associated wetland area have been a source of food as well as a transport waterway.

## The Mimitangiatua River



Figure 5: The Mimitangiatua River.

The full name of the Mimi River is Mimitangiatua. The river is also known as Te Wai o Mihirau. Mihirau was an ancestress of the Te Kekerewai hapū and was a prominent woman of her time. The name Te Wai o Mihirau is referred to in a Ngāti Mutunga pepeha:

*Mai Te Wai o Mihirau (Mimi River) ki Te Wai o Kuranui (Urenui), koia tera ko te  
whakararunganui taniwha*

There are many pā and kōinga located along the banks of the Mimi River. These include Mimi-Papahutiwai, Omihi, Arapawanui, Oropapa, Pukekohe, Toki-kinikini, and Tupari. There were also a number of taupā (cultivations) along the banks of the river.

Arapawanui was the pā of Mutunga's famous grandsons Tukutahi and Rehetaia. They were both celebrated warriors, especially Rehetaia, who took the stronghold of Kohangamouku belonging to our southern neighbours, Ngāti Rahiri. The Mimitangiatua River and associated huhi (swampy valleys), ngahere (large swamps), and repo (muddy swamps) were used by Ngāti Mutunga to preserve taonga. The practice of keeping wooden taonga in swamps was a general practice of the Ngāti Mutunga people for safekeeping in times of war.

To the people of Ngāti Mutunga, all the rivers and their respective valleys are of the utmost importance because of their physical, spiritual and social significance in the past, present, and future.

Ngāti Mutunga sees the welfare of the people and the welfare of the water as interlinked;

*“Without healthy water you won’t have a healthy rohe. And without a healthy rohe you can’t have healthy people” – Jamie Tuuta*

### Te Puna Waiora Objectives

To:

- help ourselves and others understand the significance and value of the water within our rohe;
- ensure that any use of water maintains the cultural and ecological values associated with water; and
- ensure waterways are healthy and support Ngāti Mutunga customary activities

### Ngā Take – Issues

- Lack of Crown recognition of iwi ownership of rivers, leading to an inability of iwi to develop, use and protect water resources
- Lack of Ngāti Mutunga participation in freshwater management
- Recognition of the special significance of particular waterways to Ngāti Mutunga
- Protection of the mauri and wairua of waterways
- Lack of monitoring of and information on the health of waterways in our rohe
- Restoration of the health and productivity of waterways
- Lack of knowledge about whether current and future uses of water are sustainable
- Protection of wāhi tapu and wāhi taonga associated with waterways

### Rivers and Streams

Our people have seen great changes in our rivers over the years. Our tūpuna were sustained by the rivers; they provided many resources, especially food. They were also key transport routes.

The changes to these rivers have degraded their mauri and wairua, and we now find that they cannot sustain us.

Many of our kai species have disappeared, and the physical appearance of the rivers has changed beyond recognition.

Therefore, our objectives are to:

- restore the physical and spiritual health of the rivers
- re-establish the relationship between the people and the rivers
- educate others in the community about the importance of the rivers in our rohe including their history, the meaning of their names and our relationship with them

This 'Mauri Compass Project,' funded through Te Wai Māori Trust, is one example of how we are working towards these objectives.

### Te Wai Māori Trust

We are grateful to Te Wai Māori Trust for supporting this Project. Te Wai Māori makes funding available to iwi and hapū through the Wai Ora Fund and the Tiaki Wai Fund to promote and advance Māori interests in freshwater fisheries through development, research, and education.

Specifically aiming at;

- Increasing iwi and hapū capacity and capability in freshwater fisheries and their ability to control their freshwater fisheries.
- Fostering indigenous fisheries expertise, knowledge, and understanding.
- Increasing the quality and range of information to iwi and hapū on freshwater fisheries and their interests thereof.
- Ensuring that the indigenous fisheries are well and can be enhanced.



## The Mauri Compass Project

Planning and logistics for this Project began in earnest in October 2019 with the mātauranga Māori and mahinga kai wānanga occurring over January and February 2020. Data analysis and report writing concluded in June 2020.

Ngāti Mutunga recognises that everything has a mauri or life force, and all elements of our environment are interconnected. In order for our people to be healthy and happy, everything around them needs to be healthy too.

Over the last ten years, we have become increasingly involved in the RMA process with the renewal and issuing of Resource Consents that have the potential to impact negatively on our freshwater fisheries.

At times we have been unable to participate effectively in this process because of a lack of good data about taonga species and without a recognised tool to monitor the effect of the consents on the mauri of our awa.

We are currently involved alongside the other hapū and iwi of Taranaki in the updating of Taranaki Regional Councils - Fresh Water and Land Management Plan. We are also part of the He Puna Wai group formed by the New Plymouth District Council – which is providing iwi input to the Councils Three Water Strategy and other major infrastructure projects.

We had been looking for a monitoring tool (Rainworth & Harmsworth 2019) that would assist us in fulfilling our kaitiaki responsibilities and so enabled us to play a proactive role in environmental management, particularly around the priority area of freshwater governance. The Mauri Compass was chosen because we felt it had a good balance of mātauranga Māori and science data collection. At times we have been unable to participate effectively in this process because of a lack of useful data about taonga species and without a recognised tool to monitor the effect of the consented activities on the mauri of the awa. This will make it easier to be recognised by Taranaki Regional Council and the New Plymouth District Council while still putting Ngāti Mutunga cultural values and concerns first.

Using Tuna as the dominant taonga species built on the knowledge that Ngāti Mutunga whānau have about the customary uses, gathering and protection of a taonga species for Ngāti Mutunga and one which many Ngāti Mutunga had a connection with and knowledge of.

The Mauri Compass values and recognises the skills and knowledge that Ngāti Mutunga whānau have – Ngā taonga tuku iho.

The process involved Ngāti Mutunga whānau aged from 2 to 70 plus and it will be easy to involve the whole Ngāti Mutunga whānau during any future surveying we do.

This will increase everyone's skills in the collection of scientific data while recognising and affirming the cultural knowledge, expertise, and experience of Ngāti Mutunga whānau participating in this work.

It also helps to reconnect us and/or strengthen our relationships as tangata whenua to our whenua, our awa and ngā mātua tupuna.

We believe this to be important in enhancing and maintaining the mauri of the environment and the health and wellbeing of our people.

Short term benefits will be increased involvement of Ngāti Mutunga in the kaitiakitanga of our awa and the recording of robust data and mātauranga Māori. This will assist our longterm goals of improving water quality and mahinga kai values and ultimately restoring the mauri of our tupuna awa. Engagement with our iwi and engagement with our regional council is also another measure of progress.



Figure 6: Uruti School.

## Project Aim

The purpose of this Project was to use the Mauri Compass tool to assess the mauri of the Urenui and Mimitangiatua rivers utilising mōtauranga Māori and the practice of mahinga kai at eight key sites. It also enabled our iwi members to upskill themselves in the longterm monitoring of our tupuna awa (see below).

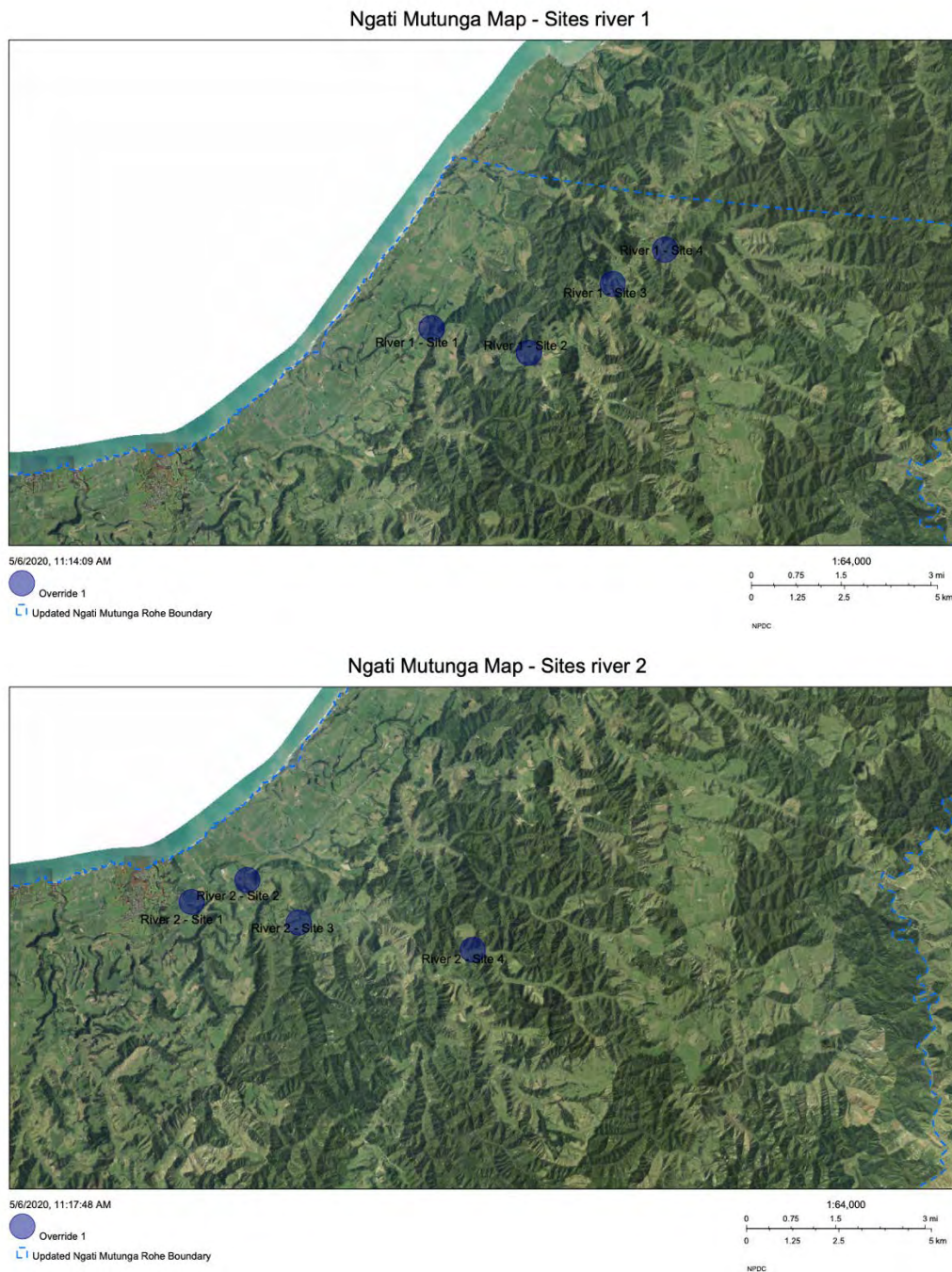


Figure 7: Maps of the key freshwater mahinga kai sites.

Mauri Compass Methodology

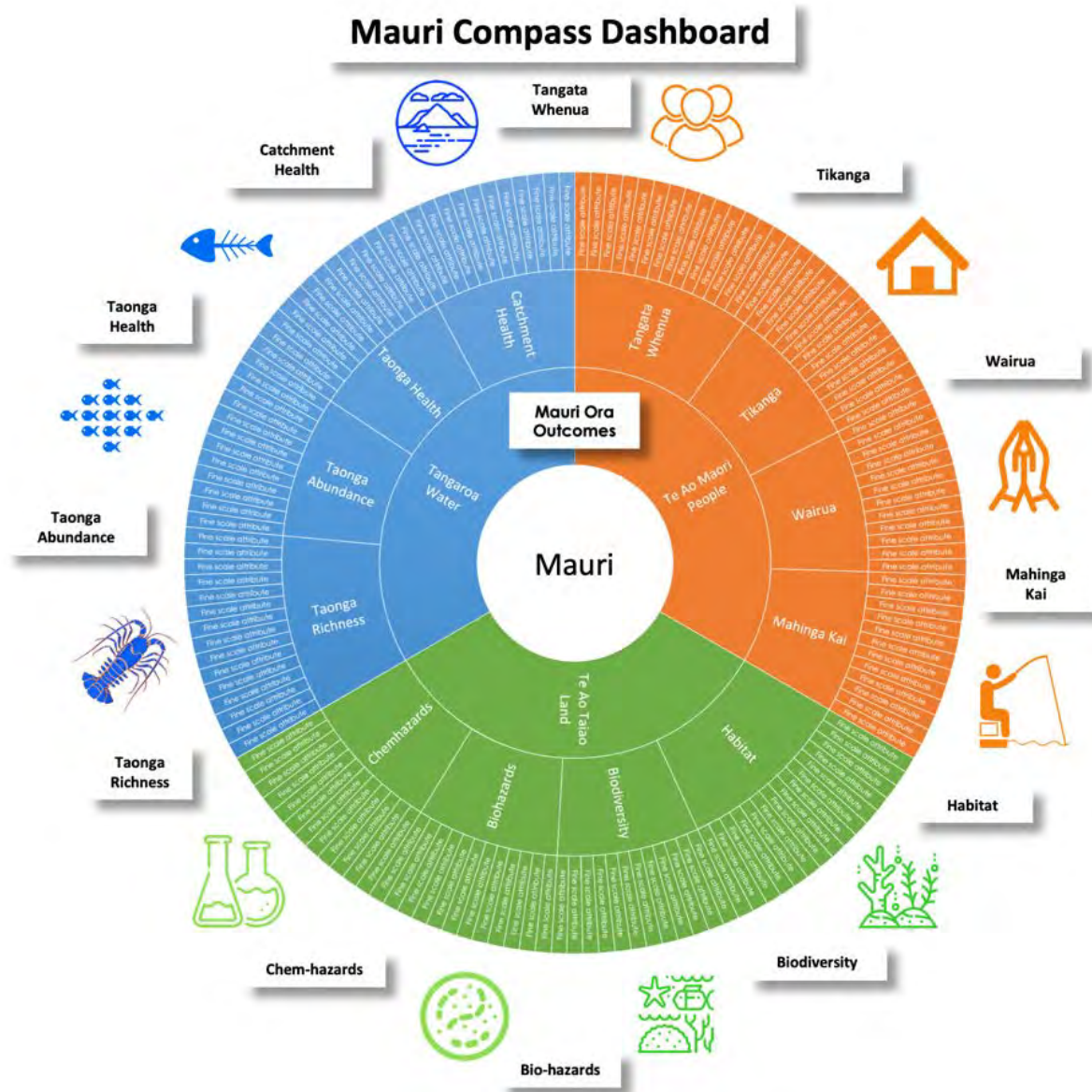
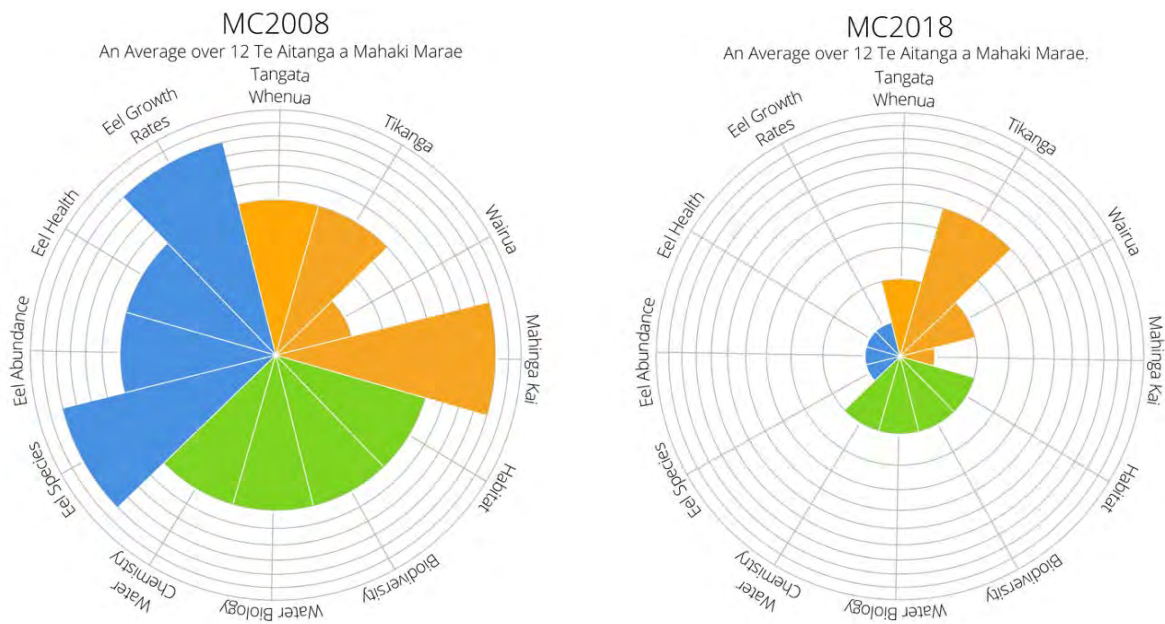


Figure 8: The twelve Mauri Compass indicators.

The Mauri Compass was developed by Te Runanga o Turanganui a Kiwa and the Gisborne District Council and is being used in a RMA context for wastewater and stormwater management in the Tairāwhiti region. It was also used by Te Aitanga a Mahaki to compare the mauri of the Waipaoa River Catchment in 2008 and 2018.

The Te Aitanga a Mahaki project, was also supported by Te Wai Māori Trust (Ruru, 2018).



Comparing Mauri Compass Dashboards between 2008 and 2018 for the Waipaoa River Catchment (Turanganui a Kiwa / Gisborne). The assessment revealed the stark decline and degradation of the mauri of the Waipaoa River between 2008 and 2018.

Te Aitanga a Mahaki, has used this tool to advocate for upgrading wastewater treatment plants, landfill remediation, and the removal of mortuary waste from the Gisborne city sewerage system (Ruru, 2019).

Ian Ruru and his sons Riaki and Manawa helped us to use the tool and to apply the assessments. We will also be trained up as accredited Mauri Compass assessors so that we can continue to monitor our mauri restoration projects (Ruru, 2019).



A three-year-old Riaki Ruru under the guidance of his grandfather Bill in 2003 (left) and with his brother Manawa and Anne-Maree McKay from our Ngāti Mutunga team in 2020 (right). Bill Ruru was a quiet but key proponent for developing the framework.

### Mātauranga Māori

Through wānanga, we began by answering a set of questions and calculating scores based on our knowledge of our tupuna awa. We calculated scores for the historic or pre-European state and for the current state for the Urenui and Mimitangiātua. There are up to one hundred questions to answer. Each set of questions feed into the twelve indicators that form the Mauri Compass. The twelve indicators are outlined next.

Table 1: The twelve Mauri Compass indicators.

Te Ao Māori
Tangata Whenua (how strong is the overall connection to the waterbody?)
Tikanga (how prevalent are the cultural practices with the waterbody?)
Wairua (how strong are the spiritual connections with the waterbody?)
Mahinga kai (is mahinga kai practiced?)

Nga Tini A Tangaroa
Kai species richness
Taonga/Sentinel kai species abundance
Taonga/Sentinel kai species Health (how healthy is the kai in the waterbody?)
Catchment Health (what is the ecosystem state upstream and downstream of the waterbody?)

Te Ao Taiao
How natural is the habitat in and adjacent to the waterbody?
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)
Biohazards (how germ-free is the waterbody?)
Chem-hazards (how free of chemical pollution is the water body?)

The raw scores from our wānanga were then entered into a Microsoft Excel spreadsheet with algorithms and used to generate bar charts and dashboards. The bar charts and dashboards provided excellent visual reminders of the mahi that we have to do to restore the mauri of our tupuna awa. We also cross-referenced and ground-truthed our scores with local reference material (Combined Appendices).

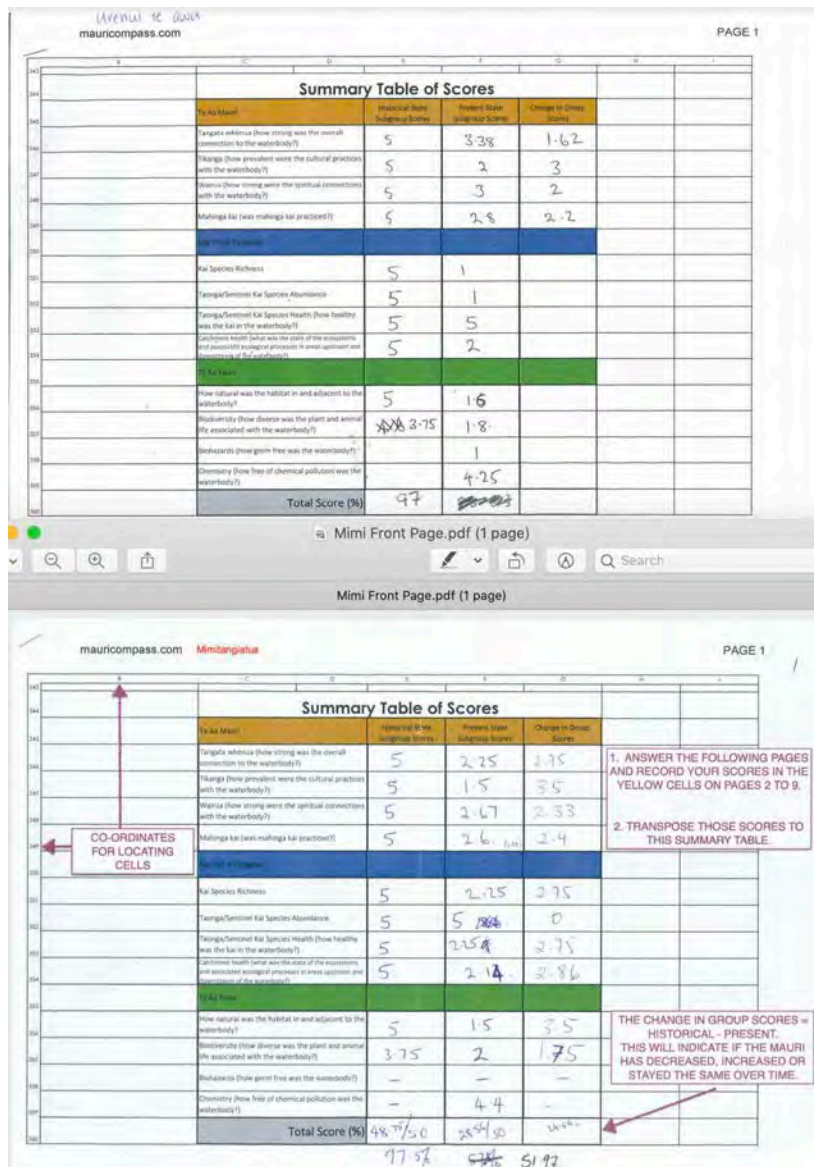


Figure 9: Summary Table of Scores.



## Mahinga Kai

Mahinga kai is about mahi ngā kai – the way we gather resources, where we get them from, how we process them, and what we produce. These places, processes, and skills are an essential element of Ngāti Mutungatanga. Our tūpuna were able to feed, clothe, and house themselves using the resources provided by Papatūānuku.



European settlement completely disrupted traditional mahinga kai cycles by destroying habitat (for example, by clearing forests and draining wetlands) and introducing species which eat or outcompete native species (for example, possums, cats, trout). The confiscation of land also separated Ngāti Mutunga from our traditional resources, leaving us unable to live from the land as our tūpuna did.

Waterways were once an important source of mahinga kai, but as the years pass we have seen a marked decrease in the availability of mahinga kai. Some of our customary food sources are not available at all, while other species, once plentiful, have become scarce.

Ngāti Mutunga understands the importance of protecting and preserving these species but should be able to harvest them where appropriate sustainably.

### Objectives

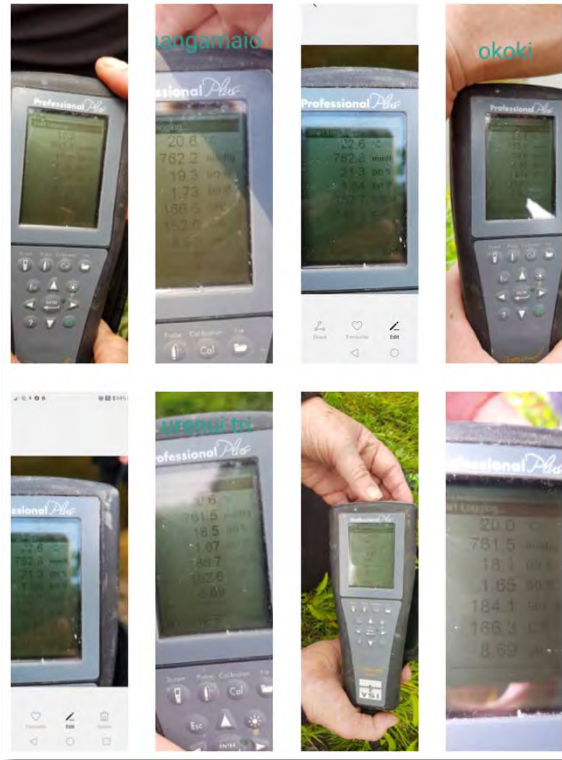
- To retain our traditions around mahinga kai, and pass those traditions on to future generations
- To improve the health of our waterways to a state where they can support mahinga kai, so that we can teach our mokopuna and their mokopuna to harvest and process food the way our tūpuna did.

To that end we;

- encourage collaborative research and monitoring projects between Ngāti Mutunga and scientists that address customary use issues using both Mātauranga Māori and mainstream science
- support the development and use of cultural indicators to assess water quality.
- encourage the restoration of water bodies to the highest quality possible in terms of traditional uses. This means that drinking water should be fit to drink, rivers should be capable of sustaining mahinga kai species and all water should be safe to swim and bathe in.
  
- visited eight mahinga kai sites,
  - four on the Urenui awa, and four in the Mimitangiatua awa
- shared the historical significance of each site
- recorded information on the water quality of our rivers
- learnt about our freshwater taonga species
- ensured the spiritual safety of our Team through karakia and
- ensured the physical safety of our Team through our health and safety procedures and protocols.

Rawiri McClutchie, Riaki Ruru, Anne-Maree McKay, Te Araroa McKay demonstrating text book net-setting techniques. All nets were unbaited, set perpendicular to the stream and retrieved the next morning.





Mahinga kai river data was recorded at each site.



Figure 10: Drone video of our Team in action.

A drone video has been produced to highlight our rohe and mahi, our Team in action and on location. We had a very enjoyable time.

## Mauri Compass Results

The Mauri Compass was used to compare the following states;

- Urenui River pre-European state
- Urenui River current state
  
- Mimitangiatua River pre-European
- Mimitangiatua River current state

The outcomes of the Mauri Compass work were used in conjunction with Ngāti Mutunga mātauranga Māori, mahinga kai, and anchored with reference material such as the Ngāti Mutunga Iwi Environmental Management Plan.

## Mauri Assessment

Table 2: How each of the twelve indicators changed.

Changes in Mauri Compass Indicators	Urenui River			Mimitangiatua River		
	Historic	2020	Decline	Historic	2020	Decline
Te Ao Māori						
Tangata Whenua (how strong is the overall connection to the waterbody?)	100%	68%	-32%	100%	45%	-55%
Tikanga (how prevalent are the cultural practices with the waterbody?)	100%	40%	-60%	100%	30%	-70%
Wairua (how strong are the spiritual connections with the waterbody?)	100%	60%	-40%	100%	53%	-47%
Mahinga kai (is mahinga kai practised?)	100%	56%	-44%	100%	52%	-48%

Change in Mauri Compass Indicators	Urenui River			Mimitangiatua River		
	Historic	2020	Decline	Historic	2020	Decline
Nga Tini A Tangaroa	100%	20%	-80%	100%	20%	-80%
Kai species richness	100%	20%	-80%	100%	20%	-80%
Taonga/Sentinel kai species abundance	100%	20%	-80%	100%	20%	-80%
Taonga/Sentinel kai species Health (how healthy is the kai in the waterbody?)	100%	20%	-80%	100%	20%	-80%
Catchment Health (ecosystem state upstream and downstream of the waterbody?)	100%	40%	-60%	100%	43%	-57%

Te Ao Taiao	Historic	2020	Decline	Historic	2020	Decline
How natural is the habitat in and adjacent to the waterbody?	100%	32%	-68%	100%	30%	-70%
Biodiversity (how diverse is the plant and animal life associated with the waterbody?)	75%	36%	-39%	75%	40%	-35%
Biohazards (how germ-free is the waterbody?)	100%	20%	-80%	n/a	n/a	n/a
Chem-hazards (how free of chemical pollution is the water body?)	n/a	n/a	n/a	n/a	n/a	n/a

Change in Mauri %			-60%
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		-62%
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Bar Charts

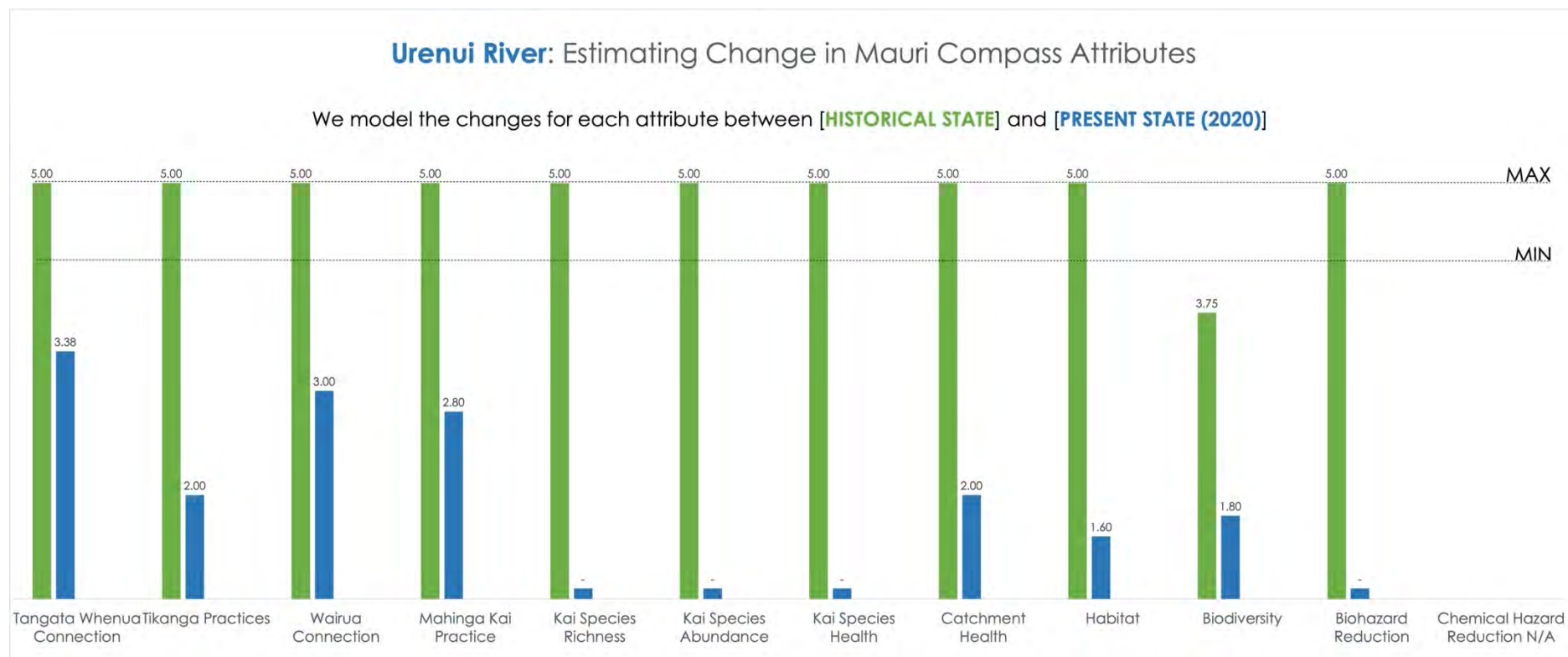


Figure 11: Urenui River Bar Chart.

Key messages from all Bar Charts include;

- Every attribute value has declined dramatically since pre-European settlement.
- The most significant declines related to Kai Species (Tuna) Richness, Tuna Abundance, and Tuna Health.
- The Biohazard attribute scored the absolute minimum value due to septic tank human sewage pollution.
- These are some of the causes of reduced Ngāti Mutunga connections with our awa.

Comments:

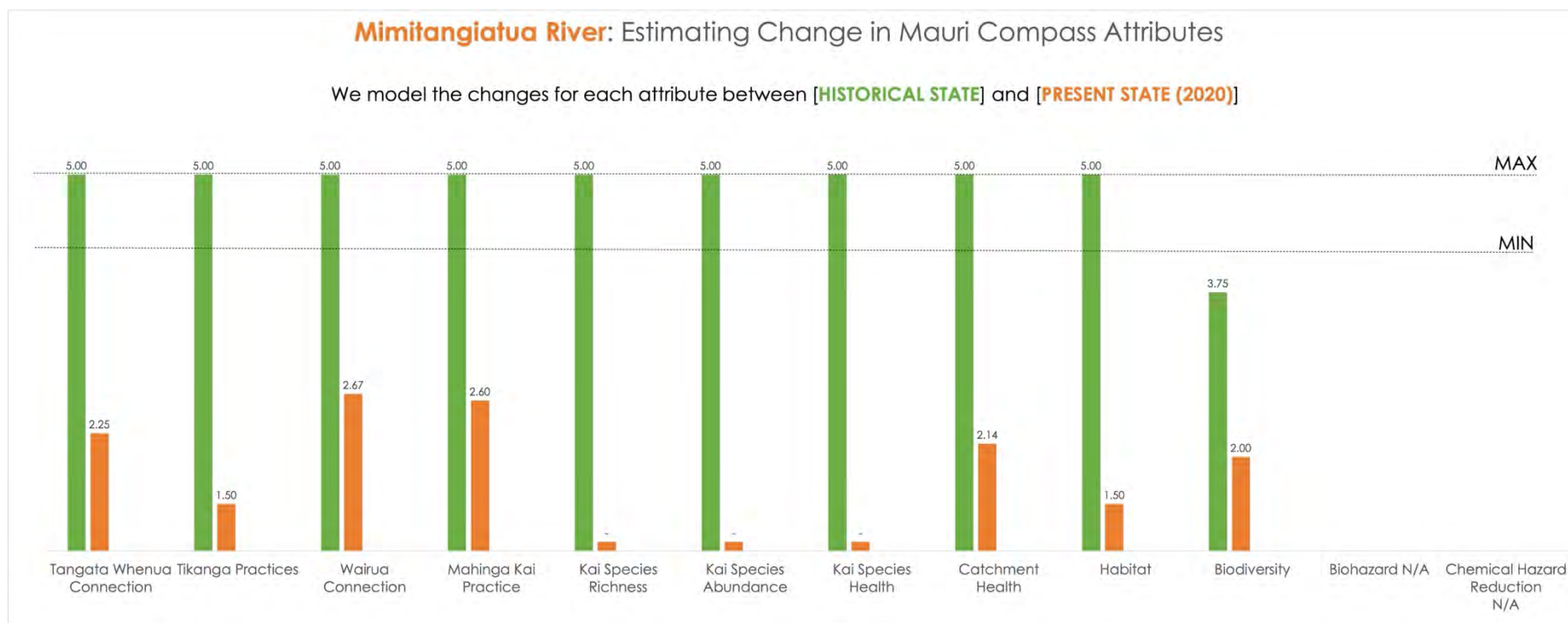


Figure 12: Mimitangiatua River Bar Chart.

Key messages from all Bar Charts include;

- Every attribute value has declined dramatically since pre-European settlement.
- The most significant declines related to Kai Species (Tuna) Richness, Tuna Abundance, and Tuna Health.
- The Biohazard attribute scored the absolute minimum value due to septic tank human sewage pollution.

These are some of the causes of reduced Ngāti Mutunga connections with our awa.

- TRONM received much of the land around the Urenui river mouth back during settlement and also at Okoki pa, which includes access to the awa there. Not all of this is directly under TRONM control due to Campground and reserve status, but there is easy public access to all of this area. This is one reason for the elevated Tangata Whenua connection with the Urenui compared with the Mimitangiatua awa.
- We note the lowest possible score for Biohazards in the Urenui awa due to human sewage / septic pollution,

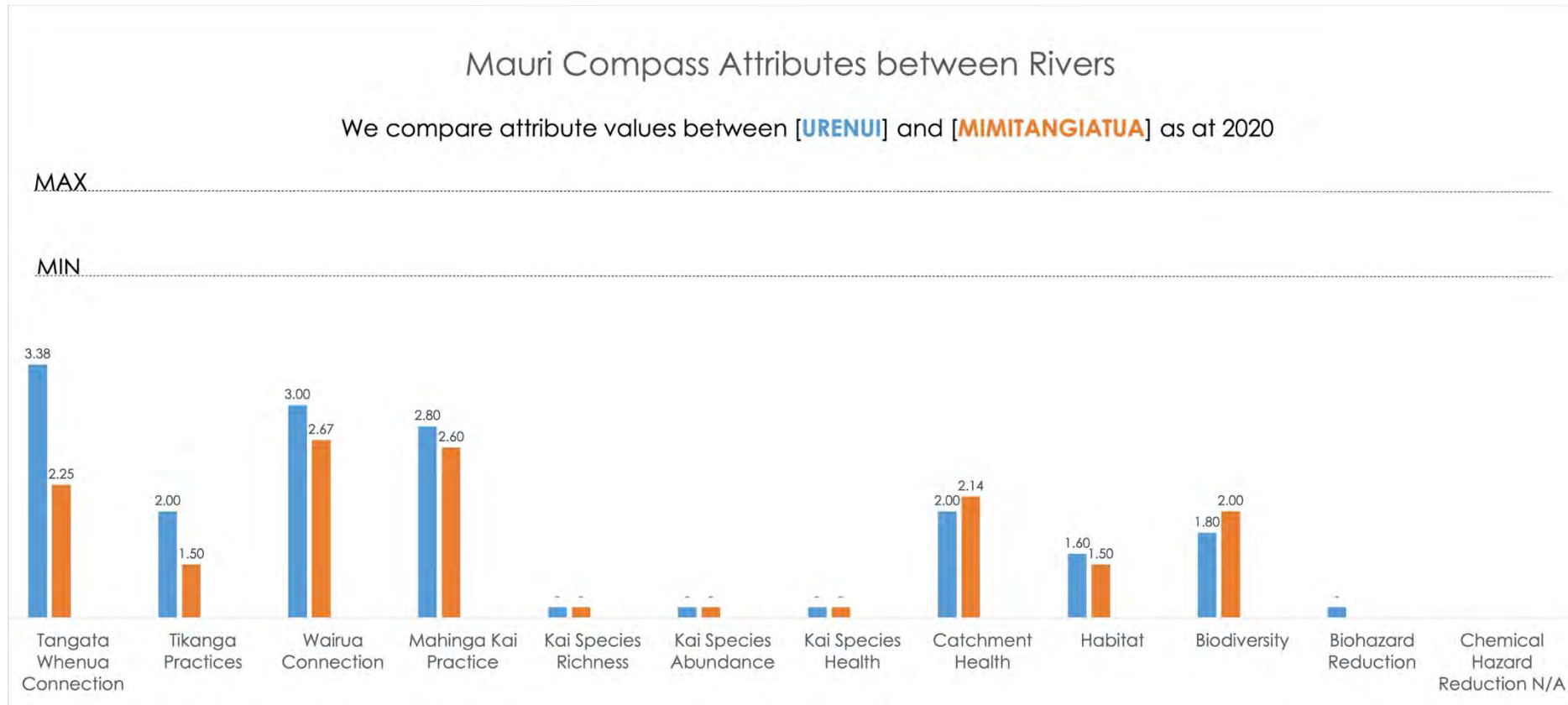
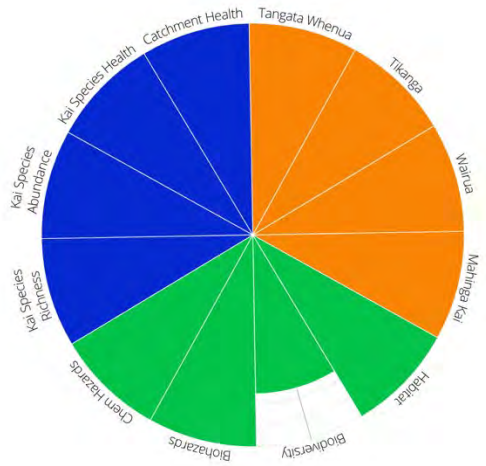


Figure 13: Bar Chart comparing rivers in their current state.

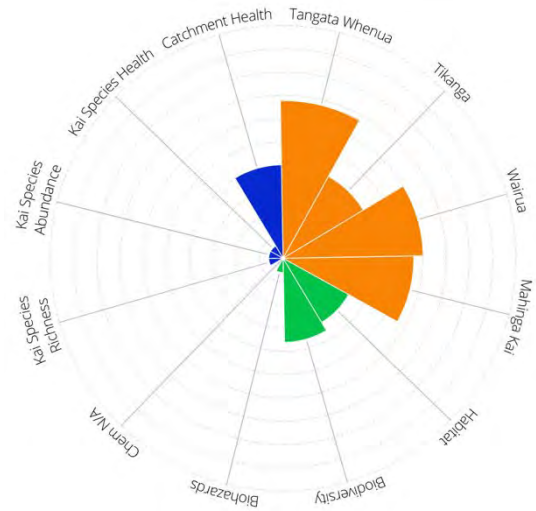


Mauri Compass Dashboards

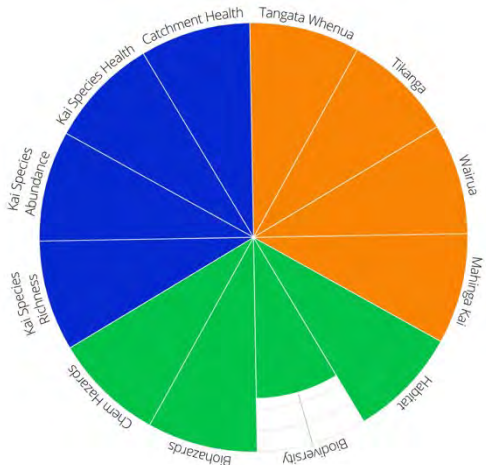
Urenui River  
pre-European State



Urenui River  
Current State



Mimitangatua River  
pre-European State



Mimitangiutua River  
Current State

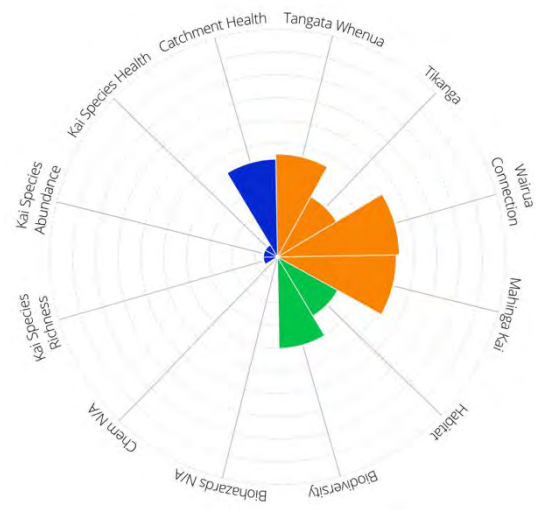


Figure 14: Dashboards comparing pre-European and current states.

Key observations from the Dashboards:

- Mauri, in any form, no matter how weak it may appear, can be nurtured and restored; the dashboards above illustrate how dire the situation is and has sparked our motivation to urgently intervene and act accordingly.

- The 'biodiversity' indicator for the pre-European state of both rivers is not 100% because we assume the impact of customary fishing on the biodiversity of our awa.
- The 'mahinga kai' indicator for both rivers is greater than all three 'kai species' indicators because we include all the mahinga kai species identified in Table 4. The taonga freshwater 'kai species' that we include in this assessment relates only to Tuna. If 'mahinga kai' was to only relate to Tuna then that particular indicator would be extremely low.
- The 'biohazard' and 'chemhazard' results were derived from Taranaki Regional Council Reports (see Combined Appendices) which are summarised in our discussion section under 'consented discharges'.

## Discussion

### Te Ao Māori

Indicator: Tangata Whenua

(how strong is the overall connection to the waterbody?)

Comments from February 2020 Mahinga Kai:

*Mimitangiatua 45% vs Urenui 68%*

After some discussion, Ngāti Mutunga whānau accepted this result and recognised that people had a stronger connection to the Urenui than the Mimitangiatua. The main reason for this was identified as the ease of access to Urenui – especially the river mouth – estuary part of the awa.

This is despite the fact that there were problems identified with the amount of development around the Urenui river mouth and estuary due to the increasing numbers using the Urenui campground and the impact of the Urenui township on the awa due to the sewage entering the estuary via the towns stormwater system.

This result was also backed up by the Community Online survey carried out by Ngāti Mutunga during the Curious Minds Te Āhua o Ngā Kūrei - Estuary project. The results of this for how healthy the respondents felt the estuary was as follows:

*Urenui river – 17 out of 25 or 68% felt the awa was healthy*

*Mimitangiatua river – 3 out of 12 or 25% felt the awa was healthy*

Full results for the survey – Kūrei Mōharatanga are attached to this Report.

The Cultural Health Index monitoring that was carried out by Ngāti Mutunga whānau during the Curious Minds Te Āhua o Ngā Kūrei - Estuary project also gave the Urenui a higher score as follows:

Urenui river:

Mahinga Kai State: Score A (17 – 21) Good

Site Indicator Score: 67 out of a maximum of 115

Taonga Species: 16 out of 25

Mimitangiatua river:

Mahinga Kai State: Score B (12 - 16) Good

Site Indicator Score: 49 out of a maximum of 115

Taonga Species 20 out of 25

In the past, due to relationships with landowners, it was easy for Ngāti Mutunga whānau to access the Mimitangiatua river, particularly at the river mouth and so people were able to preserve their relationship with and use of this awa.

Whānau also recognised the difference that receiving the land surrounding the Urenui estuary and at Okoki Pa as part of the Crown Settlement had on their feelings about and relationship with the Urenui awa.

It was also acknowledged that difficulty of access had a major effect on the other three values for the Te Ao Māori component.

Comments from March 2020 Tuna Mahi:

Connection to awa – There was much discussion from the participating whānau on the connection between people feeling connected to awa and connection with ease of access to a river.

For Mimitangiatua, access via surrounding landowners used to be easier 50 – 60 years ago due to Ngāti Mutunga whānau having better relationships with the landowner whānau. This has also been affected by erosion at Waitoetoe beach as it used to be easier to drive here and walk round to Mimitangiatua – also, ease of accessing river mouth from Wai-iti has changed due to change in sand levels and erosion.

For Urenui - TRONM received much of the land around the river mouth back during settlement and also at Okoki pa, which includes access to the awa there. Not all of this is directly under TRONM control due to Campground and reserve status, but there is easy public access to all of this area.

Access also has a direct impact on the values below i.e.,

- Tikanga i.e., healing, blessing and karakia still commonly carried out at Urenui vs. Mimitangiatua

- Wairua – connection to the wairua of the awa is strengthened by the ability to visit, use for traditional purposes and practice tikanga
- Mahinga kai – access impacts on this, however, both estuaries which were traditional centres of mahinga kai gathering have also been impacted on by upstream use – ie, RNZ, increase in sedimentation, changes in estuary structure (mainly at Mimitangiatua) and human sewage polluting the estuary at Urenui.

So the surprise in the result was that ease of access to Urenui balanced out the degree of modification of the awa from the Campground and township.

Indicator: Tikanga

(how prevalent are the cultural practices with the waterbody?)

*Mimitangiatua 30% vs Urenui 40%*

As for above ie, lack of access and the feeling of a lack of control at Mimitangiatua because Ngāti Mutunga do not own any land adjoining the estuary.

- Problems with access for Mimitangiatua – used to be able to access estuary and river from several places due to ownership by Ngāti Mutunga and by landowners.
- Urenui has easier access, and the land on both sides of the estuary is owned by the Rūnanga as part of its treaty settlement.
- The balance between ease of access versus the modification that this brings ie, the numbers of people who use the Urenui campground, impact of sewage from Urenui township entering the estuary.

Indicator: Wairua

(how strong are the spiritual connections with the waterbody?)

*Mimitangiatua 53% vs Urenui 60%*

These two results were closer for both awa – people felt a strong whakapapa connection to the awa, and this was reinforced when they were able to visit – whānau reported feeling that the Mimitangiatua felt 'lonely' and that Ngāti Mutunga needed to make a point of visiting more often and improving the relationship with landowners so that this could happen. Have had very good support for the estuary monitoring from the McLeans and Tuffery's at Mimitangiatua.

- Only go to Mimitangiatua for specific purposes

- Urenui still used for healing/karakia/baptisms – ie, boat ramp area
- Effect on both awa by upstream activities specifically:

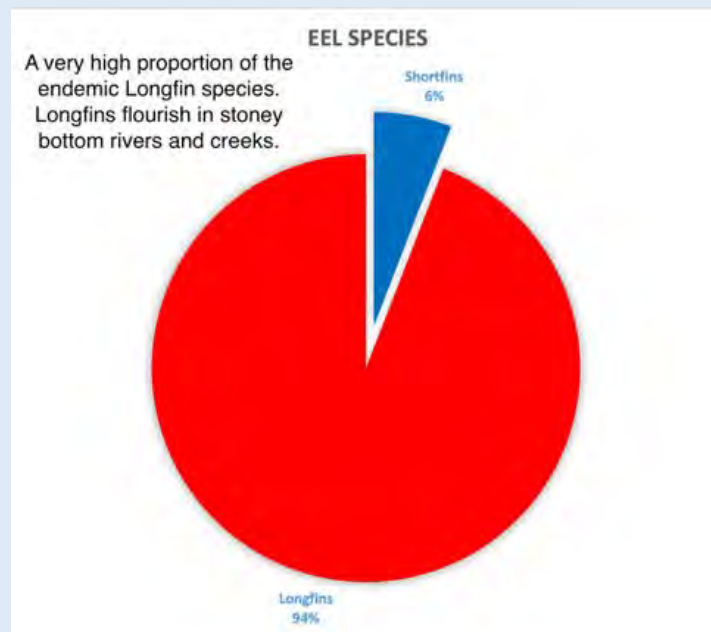
Indicator: Mahinga kai  
(is mahinga kai practiced?)

Mimitangiatua 52% vs Urenui 56%

These values are closer together and reflect the decline in available Mahinga Kai on both rivers, particularly in their estuaries.

Nga Tini A Tangaroa

Indicator: Kai species richness



Numbers of Tuna caught were extremely low. The results for these were similar for both awa and participating Ngāti Mutunga whānau feel this is accurate.

One problem with calculating this is the lack of good information about the decline in taonga species and when it happened and why.

Only confirmed knowledge from peoples actual memories is:

- The decline in size and numbers of Tuna (linked by participants to commercial fishing)
- The decline in Piharau - (linked to sedimentation? But not sure)

Known decreases in diversity from personal memories:

- Piharau from Mimitangiatua
- Tuangi from Mimitangiatua

Harvest

- No good data on this for either river – anecdotally little commercial take in last ten years (reports from landowners and Ngāti Mutunga whānau)
- Commercial take reported having had a huge impact. Jellyman (2009) described development of the commercial eel fishery in three phases: (i) an exploitation phase (1965–1980); (ii) a consolidation phase (1980–2000); and (iii) a rationalisation phase (2000 on).
- Customary take – always have enough Tuna for some to go out at Tangi for the hākari, but this is usually limited to less than 15 tuna in total collected for this
- No permits have been issued for customary take; although the Rūnanga does have a policy and procedure in place for this – we will discuss changing this as a way of ensuring that the quota is retained at the current level and also to gain data on Tuna harvested for this purpose.
- Recreational take difficult to estimate but is not known to be significant

Indicator: Taonga/Sentinel kai species abundance

Our mahinga kai research confirmed the almost total absence of our taonga freshwater tuna species. Extremely low numbers were observed and the species ratio was 94% Longfin and 6% Shortfin.

Table 3: Eels observed at each mahinga kai site.

River	Eels Up-stream (Average)	Eels Down-stream (Average)	Total Eels per Site (Average)
Mimitangiatua	2.7	2.8	5.5
Urenui	1.8	1.2	3.0

- Need to repeat mahinga kai - see plans for repeating and expanding the mahi described below
- A gut feeling that it is improving – recovering after-effects of commercial eel fishes going through (anecdotal kōrero from landowners – went through about 2000)
- Anne-Maree – never used to see them when she was younger and spent time in the rivers at Pukearuhe even when they dammed the streams – now we never do any water testing without seeing a tuna eventually.

Indicator: Taonga/Sentinel kai species health

(how healthy is the kai in the waterbody?)

- All Tuna caught were alive and lively (comment from Sam and Barry that they used to be more lively)
- Only three eels from each awa were dissected. No external or internal signs of abnormalities or parasites were observed. Otoliths were preserved for ageing at a later date. This will provide an insight into length
- No external signs of skin disease etc. on any of the Tuna caught
- Decided that not enough data to enter a value for this.

Indicator: Catchment Health

(what is the ecosystem state upstream and downstream of the waterbody?)

Clear-felling of riparian margins and hill-country could be contributing to increased sedimentation and higher water temperatures. The river channels have become slumped and shallow over time.

Mimitangiatua

- Clearance of forest on slopes for Mimitangiatua.
- Drainage of reporepo – lungs of the river causing rapid rises and falls in river levels.
- Remediation New Zealand site.
- Jones's Quarry site.
- The possible effect of SH3 Mt Messenger road construction.

Urenui:

- Three closed rubbish dumps – Urenui campground, Avenue road and most worryingly Okoki which had an unknown amount of chemicals dumped there in the 1980s
- Increase in forestry



- Both awa have large areas of native forest in catchment
- Figures for both awa come from Robertsons Estuary Study – Taranaki Regional Estuaries – Ecological Vulnerability Assessment
  - Information on Urenui – Page 25
  - Information on Mimitangiatua – Page 22
  - Link to report:
    - <https://www.trc.govt.nz/assets/Documents/Research-reviews/Coastal/Taranaki-Regional-Estuaries-2020>.
- Not much riparian planting on either awa due to rules around fencing only applying at present to Dairy farming – will change under new rules for healthy waterways and update of TRC freshwater plan
- Urenui has fencing, and some riparian planting on 3.5 km of the 42 km – a further 2 km goes through forest in the headwaters
  - Total: 5.5 km out of 42 km or 0.13 %
- Mimitangiatua – has fencing and some riparian planting on 5 km and a further 3.8 km is in forest in the headwaters
  - Total: 8.9 km out of 34.6 km or 25%

Discharges:

- Mimitangiatua –
  - Composting business
  - To discharge contaminated leachate and stormwater onto land where it may enter the Haehanga stream (Mimitangiatua awa tributary) - 7 consents
- Quarry
  - To discharge stormwater from a quarry site into a tributary of the Mimitangiatua awa – 3 consents
- Dairy farms
  - treated dairy effluent from oxidation pond and wetland into un-named stream Mimitangiatua awa catchment – 2 consents
  - Effluent onto land in Mimitangiatua awa catchment - 2 consents

- Treated effluent into Mimitangiatua awa directly – 4 consents
- Untreated dairy effluent onto land – 1 consent
  
- Chicken Farms
- To discharge washdown water onto land in the vicinity of Mimitangiatua awa – 2 consents
  
- Goat Farms
- Goat dairy effluent onto land within Mimitangiatua awa catchment – 1 consent
- Treated effluent from a goat dairy oxidation pond into a tributary of Mangahia stream – 1 consent
  
- Urenui –
  
- Sewage/Wastewater disposal
- Discharges from Urenui township of sewage (illegal)
- Discharges from sewage treatment into groundwater in the vicinity of Urenui River - 3 Resource Consents
  
- Dairy farms
- treated dairy effluent into Urenui Stream – 1 consent
- Untreated dairy effluent onto land – 1 consent
- Treated dairy effluent into a wetland in the Urenui awa catchment – 1 consent
  
- Chicken Farm
- Washdown water from cleaning onto land in Urenui awa catchment – 1 consent

Te Ao Taiao

Indicator: Habitat

How natural is the habitat in and adjacent to the waterbody?

Loss of Habitat

- Widespread clearance and drainage of reporepo in both catchments but more impact in Mimitangiatua, which has led to the loss of habitat and also effected the flow patterns of this river – ie, now has a rapid rise and fall pattern as there is nowhere to store the rain when it happens. This is due to drainage of reporepo (lungs of awa) and clearing the slopes upriver
- Clear-felling of riparian margins and hill-country could be contributing to increased sedimentation and higher water temperatures. The river channels have become slumped and shallow over time.
- Very little riparian vegetation on both awa
- Pest plants – some willows and lots of Japanese walnuts on Mimitangiatua
- Some modification of river path – seen mainly in Mimitangiatua near Parininihi

Indicator: Biodiversity

How diverse is the plant and animal life associated with the waterbody?

Figures for both awa come from Robertsons Estuary Study – Taranaki Regional Estuaries – Ecological Vulnerability Assessment:

- Information on Urenui – Page 25
- Information on Mimitangiatua – Page 22

Link to report:

<https://www.trc.govt.nz/assets/Documents/Research-reviews/Coastal/Taranaki-Regional-Estuaries-2020>

Indicator: Biohazards

How germ-free is the waterbody?

A significant negative being the human sewage/septic pollution detected at the mouth of the Urenui awa.

Figures for E.coli<sup>1</sup> only available from testing done in Urenui awa as follows:

Urenui:

- Testing for bathing quality carried out by TRC at Urenui river mouth – testing is done over summer, at high tide, and only if it has not been raining (link to TRC website below for results). There has never been a test above the threshold for safe to swim i.e., 200 E Coli MPN/100MI
- <https://www.trc.govt.nz/assets/Documents/Environment/Monitoring-SOE/Coast/BathingBeachSEM19.pdf>
- Freshwater contact recreational water quality at Taranaki sites State of the Environment Monitoring – Annual Report 2018 – 2019
- Urenui Results on Page 79 – Maximum E.coli found was cfu/100ml 49 – link to this Report
- <https://www.trc.govt.nz/assets/Documents/Environment/Monitoring-SOE/Freshwater-bathing/FreshwaterRecreationSEM19-web.pdf>
- Testing is done during the Ngāti Mutunga Curious Minds Te Ahua o ngā Kurei - Estuary project – testing for EColi done at the two stormwater outlets into the Urenui estuary and the Punawahakakau Stream – (results Hills Laboratory Report – Dated 7 August 2019, attached)
- Testing specifically for faecal steroids carried out on the two stormwater outlets which showed a strong indication for the presence of human sewage (results E S R Laboratory Report – Dated 16 October 2019, attached)
- The E.coli testing was repeated by NPDC, and the level at the northernmost stormwater outlet was recorded at 150,000 MPN 100ml

Mimitangiatua:

- Information re E.coli only available through testing carried out by TRC in their monitoring of the Remediation New Zealand Site (results on page 23 Remediation (NZ) Limited AEE Resource Consent Application Revision 15 February 2020 ) which states
- Results for Mimitangiatua river above site – 122 MPN/100ml
- Mimitangiatua river below site – 142 MPN/100ml
- These results were from a sample taken in May 2018, and this testing has apparently not been repeated.

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<sup>1</sup> Escherichia coli (E.coli). E. coli are common germs (bacteria) normally found in the gut of warm-blooded animals and people.

Indicator: Chem-hazards

How free of chemical pollution is the water body?

- Have limited results from sediment testing for metal concentrates carried out in the Mimitangiatua and Urenui estuaries during the Ngāti Mutunga Curious Minds project. All are within the ANZECC guidelines, but the sediment cores showed that the levels were increasing in the sediment nearer the top of the core.
- This needs more work to see if the levels are increasing or if this is related to the grain size changing.
- Will be excess nitrogen entering river from farming – more of an impact when Urea was more widely used as a fertiliser
- Increased sedimentation levels in water observed every time it rains on Mimitangiatua – not so much of a problem on the Urenui.

References:

- Ngāti Mutunga Curious Minds Te Āhua o ngā Kūrei Sediment testing results (Hills laboratory report dated August 2019) is attached in the 'Combined Appendices' section.
- The Report summarising results from Thomas McElroy is attached in the 'Combined Appendices' section.

### Pressures most relevant in our rohe

Comments from Ngāti Mutunga about which of these pressures are most relevant in our rohe:

#### Predation:

- Low shag and trout numbers
- No pest fish recorded from these awa

#### Disease and Parasites

- None identified during this mahi – but need more data

#### Contamination

- Stormwater and road runoff could be factors
- Limited industry – 2 sites on Mimitangiatua awa that are potential/confirmed sources of contamination.

#### Reduced Connectivity

- No dams, flood control schemes or unnatural river mouth closures
- Some culverting for farm tracks and accesses and roading

#### Land and Infrastructure Management

- Very little fencing to prevent stock access
- Limited water extraction – probably not a problem for either of these awa
- Limited impact from dairy farms (low numbers on both awa)
- Will be excess nitrogen entering river from farming – more of an impact when Urea was more widely used as a fertiliser (comments from Barry Matuku)
- Some river straightening on tributaries and smaller waterways
- Increased sedimentation levels in water observed every time it rains on Mimitangiatua – not so much of a problem on the Urenui.

Table 4: List of Mahinga Kai species for Urenui and Mimitangiatua awa.

	Urenui		Mimitangiatua		Comments:
	Historic	Current	Historic	Current	
Shark	Yes	Yes			
Piper	?	Yes			
Kahawai	Yes	Yes	Yes	Yes	
Kumukumu/Gurnard	Yes	Yes	Yes	Yes	
Pōtiki/Flounder	Yes	Yes	Yes	Yes	Numbers declining
Kanae/mullet	Yes	Yes	Yes	Yes	
Kātaha/herring	Yes	Yes	Yes	Yes	
Stingray			?	Yes	
Īnanga/Whitebait	Yes	Yes Giant Kōkopu Banded Kōkopu	Yes	Yes Giant/Banded /Short-jawed Kōkopu	Numbers declining
Pipi	Yes	Yes	Yes	?	Numbers declining
Kutai/Mussels	Yes	Yes		Paparoa	Numbers declining
Tio/Oysters			Yes	?	
Redfin Bully	?	Yes	?	Yes	
Tipa/Scollaps			Yes	Yes	
Pacific Oysters	1980's	Yes			
Pupu	Yes	Yes	Yes	Yes	
Tuangi/Cockles	Yes	Yes	Yes	No	Numbers declining
Tuatua	Yes	Yes	?		
Toheroa	Yes	Yes			
Toretore/Anemone	Yes	Yes		-	
Hanikura/Wedge Shell	Yes	Yes	Yes	Yes	
Mud Crabs	Yes	Yes	Yes	Yes	
Tāmure/Snapper	Yes	Yes	Yes	Yes	Numbers declining
Tuna – Long-finned	Yes	Yes	Yes	Yes	Numbers declining
Tuna – Short Finned	Yes	Yes	Yes	Yes	Numbers declining
Pīharau	Yes	Unknown	Yes	Unknown	Numbers declining

Further Mahinga Kai information is required via:

- General fish surveys
- Piharau Study – apply for resources
- Whitebait Study – apply for resources
- Whitebait most common still – then Tuna – Piharau rarest at Mimitangiatua only – no knowledge of them in Urenui awa
- Knowledge of decreases of taonga species are anecdotal only:
- Piharau decrease from Mimitangiatua – suggested due to covering of boulders that they used to attach to ie, at site 1 on River 1
- No reports of Piharau from Urenui river (need to check this)
- Piharau breeding sites found on Waitara river at Purangi recently
- Whitebait – reported decreases from all awa in Ngāti Mutunga rohe but not clear by how much
- Tuna – decreases due to commercial eel fishing in the 1980s? Refer to Appendix B: Commercial Eeling Data.
- Most landowners talked about no longer letting commercial eel fishers' in but they can still put nets in public access places ie, under bridges in the road reserves. However, no reports of them being active in Ngāti Mutunga rohe in last few years.
- Te Rūnanga o Ngāti Mutunga holds eel/tuna quota but does not use or onsell it in order to protect the fishery
- Effects on mahinga kai species in Mimitangiatua estuary due to change in estuary and sedimentation that occurred during Cyclone Bola – we no longer see tuangi as we presume they were smothered
- Decreases in Mahinga kai in Urenui estuary – tuangi and pipi, now not able to be eaten due to human sewage contamination.



## Freshwater Priorities for Ngāti Mutunga:

### Tangata Whenua

- Increase Tangata Whenua connection by running wānanga on each awa and inviting other Ngāti Mutunga whanau to come on the monitoring trips – this is especially important for the Mimitangiatua river
- Run a Ngāti Mutunga whanau overnight camp on Mimitangiatua at Blydes Baches (when it gets warmer!)

### Ngā Tini a Tangaroa

- Increase and expand the level of baseline knowledge by:
- Repeating and expanding the mahinga kai sites to include Onaero and Wai-iti
- Research over a whole year – 4 times to pick up seasonal variations
- Expand water testing to include E.coli testing
- Projects on Piharau and whitebait in future
- Follow up with TRC re dairy farm on Urenui awa that is unfenced
- Work on current update of the Fresh Water Plan for Taranaki to push for wetland protection and reparation and fencing and exclusion of stock on drystock farms

### Te Ao Taiao

- Expand water testing to include E.coli testing
- Repeat Sediment core measurements including carbon dating to increase knowledge about sedimentation rates historically and if they are accelerating
- More surveying of sediments to see if metals are increasing (last tests not conclusive).

## Significance of Tuna to Ngāti Mutunga

The significance of tuna (eel) to Ngāti Mutunga is noted in the Heads of Agreement, 24 September 1999 (below). In particular, and as part of the cultural redress options, is the ability to apply for a special permit that allows for a tuna enhancement or aquaculture project. The possibility of farming tuna or tuna enhancement warrants further investigation as one means of rebuilding the decimated tuna populations in our rohe and perhaps a small economic opportunity for our iwi.

### TUNA (EEL)

4.34 The Crown proposes that the Deed of Settlement will provide for:

4.34.1 consultation by officials of the Ministry of Fisheries with Ngāti Mutunga, in each of the 3 years following the Settlement Date, concerning:

- (a) the maximum quantity of undersized tuna (eel) that is likely to be permitted to be taken under section 63 of the Fisheries Act 1983 (the "Permitted Catch") from each of not more than 3 sites within that part of the rohe of Ngāti Mutunga specified by Ngāti Mutunga to the Ministry of Fisheries in writing; and
- (b) the likely conditions of any Permitted Catch under section 63 of the Fisheries Act 1983 in relation to each of those specified sites, including the likely conditions in relation to the relocation of any of that Permitted Catch in:

38

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### 4. PROPOSED CULTURAL REDRESS

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- (i) waterways in the rohe of Ngāti Mutunga; and
- (ii) aquacultural farms;

4.34.2 In recognition of the particular importance of the tuna (eel) fishery to Ngāti Mutunga, the Ministry of Fisheries to consider, in accordance with the relevant legislation and operational processes, any application from Ngāti Mutunga for a special permit to take undersized tuna (elvers or glass eels) from waterways within the rohe of Ngāti Mutunga as part of any enhancement or aquaculture project;

4.34.3 the Minister of Conservation to consider, in accordance with the relevant legislation and operational processes, any application from Ngāti Mutunga for a special permit to transfer undersized tuna (elvers or glass eels) to waterways within the rohe of Ngāti Mutunga, or between tribal rohe where the appropriate agreement exists, as part of any enhancement or aquaculture project;

4.34.4 tuna (eel) to be defined as:

- (a) *anguilla dieffenbachii* (longfinned eel);
- (b) *anguilla australis* (shortfinned eel); and
- (c) *anguilla rheinhartii*; and

4.34.5 undersized tuna (eel) to be defined as tuna (eel) with a weight of less than 220g.

Figure 15: Cultural Redress; Heads of Agreement 1999.

## Tuna Biology



As part of the Mauri Compass process, biological knowledge of tuna was shared amongst our group based on a learning resource in the Appendices (Ruru, 2008).

Observations and comments:

- Tuna Species. In this study we found;
  - 94% *Anguilla dieffenbachii* (long-finned eel). This species is a particular taonga because;
    - It is endemic (found only in NZ) to NZ.
    - It is the largest species of *Anguilla* species in the world.
    - It is the apex predator of NZs freshwater environment
    - It is the most fragile, population-wise
    - Long-fins prefer stony bottom flowing rivers.
  - 6% *Anguilla australis* (short-finned eel).
    - Native but not endemic because it also naturally occurs in Australia.
    - The most numerous population-wise
    - Short-fins prefer slow moving water or stagnant water like lakes.
  - 0% *Anguilla rheinhartii* (Australian long-finned eel). The least common of the three species. Native but not endemic because it also naturally occurs in Australia.
- Anatomical features and functions;
  - Our tuna biology lesson included identifying and understanding the purpose of;

- Gills; dorsal & pectoral fins; vent; lateral line (GPS system); gut; heart; liver; gonads; kidney; swim bladder; scales; brain
- Life cycle and reproductive cycle
  - Internal and external signs of maturation
    - Blue eyes
    - Pink or white gonads
    - Tuna greater than a metre long are females
    - We did not observe any tuna that were preparing for the 'tuna-heke' or migration back to their ancient oceanic spawning grounds
- We learnt about the relationship between our awa and tuna in terms of:
  - Water quality
    - Dissolved oxygen
    - Temperature
    - Ammonia and pH
    - Suspended solids
    - Salinity
  - Weather patterns
  - Food type
  - Food availability
  - Water flow
  - Predators and pests
- Optimum growth conditions
- Abnormal features and behaviours that indicate potential health issues
  - Luckily, we did not observe any of the following:
  - Lethargic behaviour
  - Ulceration (appearance of skin lesions or sores)
  - Abnormal kidney or liver
  - Parasitic worms
  - Infectious disease caused by viruses, bacteria or protozoans
  - Non-infectious diseases caused by external factors such as nutrition, environment or physical trauma.
  - We will however, continue to be vigilant.
- Factors that influence growth
- Ageing tuna using their otoliths
  - We retrieved five pairs of tuna otoliths. Ian will have them aged so that we can derive some length-at-age data.
  - This will provide some insight into the growth rates of our tuna.



## Piharau

Piharau was one of the six species specifically mentioned in the taonga species list in the Ngāti Mutunga Deed of Settlement with the Crown (2005) – as a result, commercial fishing of piharau within the Ngāti Mutunga rohe is not permitted unless the Crown can prove that this is sustainable.

Piharau, or lamprey (*Geotria australis*) live in fresh water and the sea. Piharau resemble eels, but have no bones. Piharau are also recognised through our IEMP as being a priority taonga species for Ngāti Mutunga. There has been concern from Ngāti Mutunga whanau about their declining numbers and that they can no longer be found at customary fishing sites along the Mimitangiatua river. Piharau are traditionally served at the haakari during Ngāti Mutunga tangi when in season, and there is concern that this will not be able to continue if numbers decline any further – at present, they are sometimes collected from the Waitara river in the Te Atiawa rohe. Not widespread throughout the north island, piharau are an important and personalised way for Ngāti Mutunga to practice manaakitanga.

Ngāti Mutunga are currently looking for funding for a project to use pheromone detectors to find which of our waterways still contain piharau and then try and find where the juveniles are to locate and protect the spawning habitat. This mahi will contribute to our freshwater monitoring and mauri assessments. The following figure was retrieved from <https://waiMāori.Māori.nz/understanding-taonga-freshwater-fish/> (Williams 2017).



Figure 16: Pressures on Piharau / Kanakana Populations.

## Conclusions and Recommendations

Firstly, we would like to say how much we enjoyed working with Ian and his whānau.

Ngāti Mutunga has been doing freshwater surveying for approximately three years now. Originally we did SHMAK training with Taranaki Regional Council, and we have been carrying this out at five sites on different Ngāti Mutunga awa ever since.

We also have been trying to develop a Cultural Health Index survey with input from Tui Shortland, who held a workshop in Urenui in 2017 and from looking at surveys developed in the South Island by Gail Tipa and their adaptation by Ngai Tahu.

We were not happy with what we came up with and the SHMAK testing for the following reasons:

- The SHMAK test relies heavily on the values obtained via the Macroinvertebrate survey, and we were not happy with this as we did not think we had the skills to do an accurate count of these. We also did not think that other than for a few species (i.e dragonflies) that these were part of a traditional Ngāti Mutunga connection with our awa.
- The values were originally developed by the Taranaki Catchment Commission as a way of monitoring the streams on the ring-plain around Maunga Taranaki, and we do not think they have been adjusted to take into account the different realities of the slower and much muddier! Awa that are mainly what occurs within the Ngāti Mutunga rohe.
- We felt that we were just taking parts of other peoples' Cultural Health Indicator methods, and it began to feel a bit disjointed and disconnected. We needed to develop something that was more suitable for Ngāti Mutunga.

The Mauri Compass had a good balance of mātauranga māori and science data collection. This will make it easier to be recognised by Taranaki Regional Council and the New Plymouth District Council while still putting Ngāti Mutunga cultural values and concerns first.

Using Tuna as the major taonga species built on the knowledge that Ngāti Mutunga whānau have about the customary uses, gathering and protection of a taonga species for Ngāti Mutunga and one which a lot of Ngāti Mutunga had a connection with and knowledge of. The survey also values and recognises the skills and knowledge that Ngāti Mutunga whānau have – Ngā taonga tuku iho.

The Mauri Compass method involved Ngāti Mutunga whānau aged from 2 to 70 plus and it will be easy to involve the whole Ngāti Mutunga whānau during any future surveying we do. This will increase everyone's skills in the collection of scientific data while recognising and affirming the cultural knowledge and expertise and experience of Ngāti Mutunga whānau participating in this work. It also helps to reconnect us and/or strengthen our relationships as tangata whenua to our whenua, our awa and ngā mātua tupuna. We believe this to be important in enhancing and maintaining the mauri of the environment and the health and wellbeing of our people.

### Next Steps

Ngāti Mutunga has applied for funding for equipment to be able to continue and expand the mahi. The plan for this year is to:

- Repeat the mahi at the eight sites that we worked at with Ian and to hopefully be able to survey each site four times per year so as to pick up seasonal variations in water quality and Tuna and other taonga species numbers and health.
- Expand the mahi to include four sites on the Onaero river, which is the other major tupuna awa within the Ngāti Mutunga rohe. We have located four sites on this river where we can access the awa for the survey, including one site in Taramoukou forest where the headwaters of the Onaero are. Ngāti Mutunga has started a pest control programme in this forest working with DOC so it would be good to get some good quality baseline data for taonga freshwater species and also this would be the only site we are testing that is entirely in native forest.
- Expand the mahi to include the collection of data about E.coli - the new SHMAK test kits can be upgraded to include E.coli testing, and Ngāti Mutunga has recently applied for funding to do this. There is a lack of data about E.coli levels in Ngāti Mutunga awa as the TRC does very little testing within the Ngāti Mutunga rohe
- Expand the mahinga kai mahi to include researching other fish species – we have applied for funding to purchase some Gill nets to do this.
- Investigate tuna enhancement options as a means of rebuilding our decimated tuna stocks
- Re-apply to Te Wai Māori Trust for a Tiaki Wai Funded: Piharau survey. Information will inform and compliment this Report.

## Our Kaitiaki Role

This Project has helped us to carry out our kaitiaki role by providing us with:

- Accurate baseline information about the taonga species that are present in the awa, their health, and the health of their habitat.
- A proven and sustainable method of surveying our awa that is based on Mātauranga Māori methods and values.
- Upskilling iwi members so we are able to actively participate in the monitoring and restoration of our tupuna awa.
- Information about what restoration would be effective to restore or enhance the mauri of our awa and our taonga species.
- A monitoring tool to assess if RMA processes and remediation has been effective in protecting our awa and taonga species.

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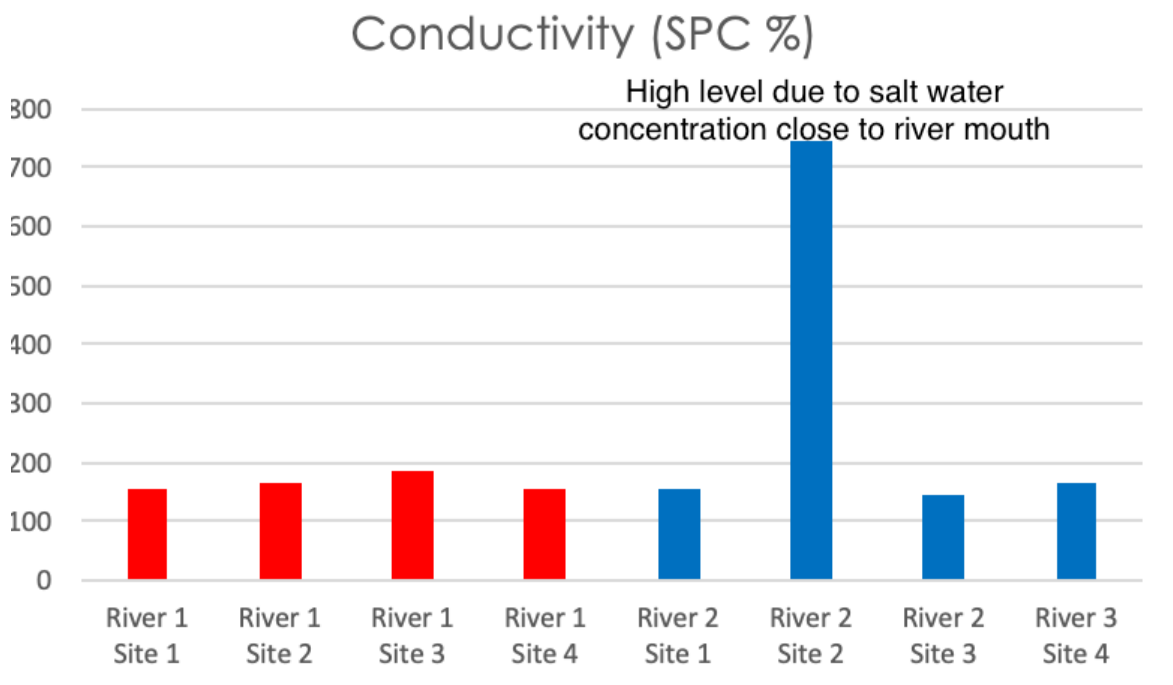
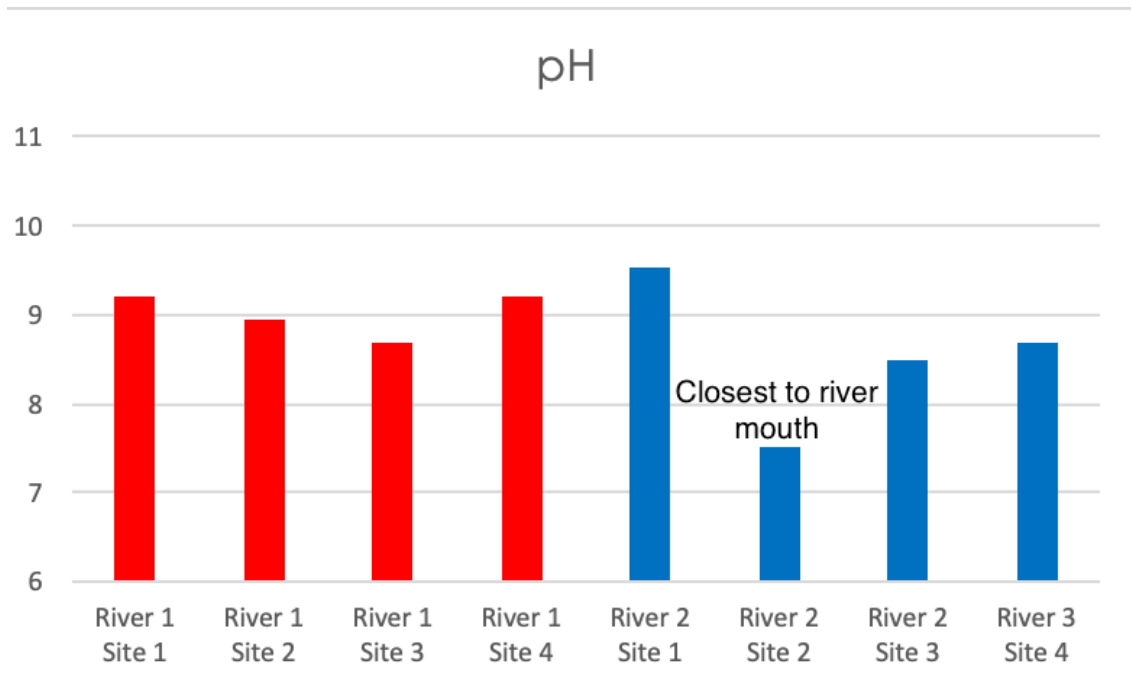
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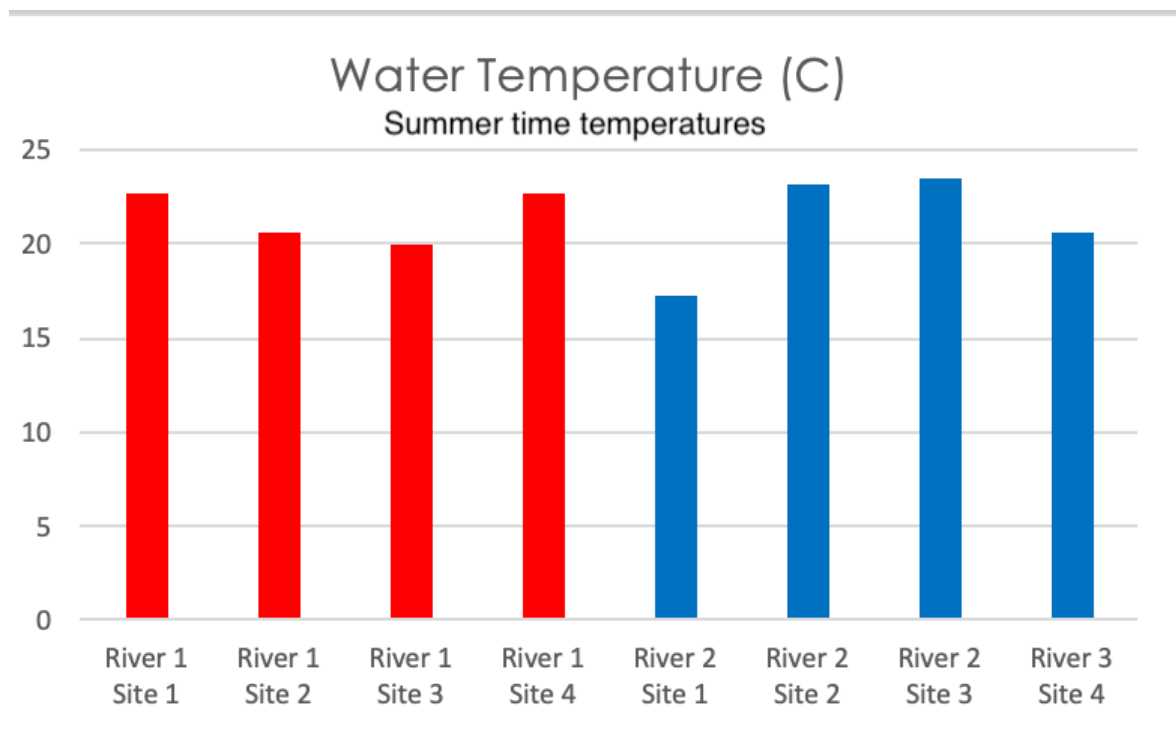
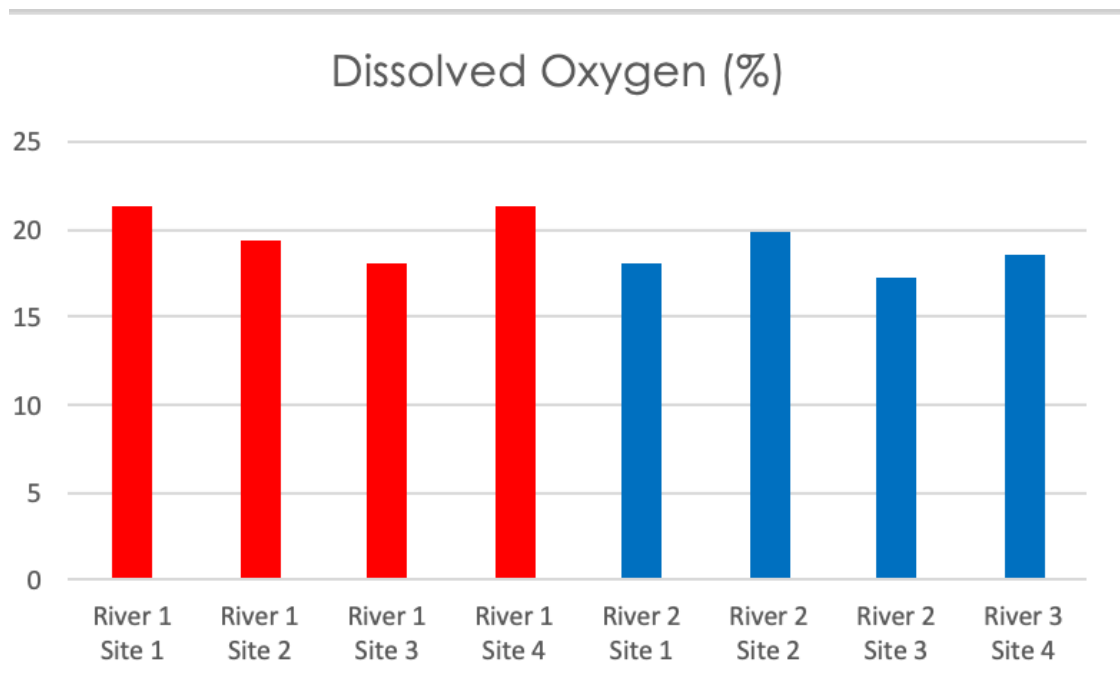
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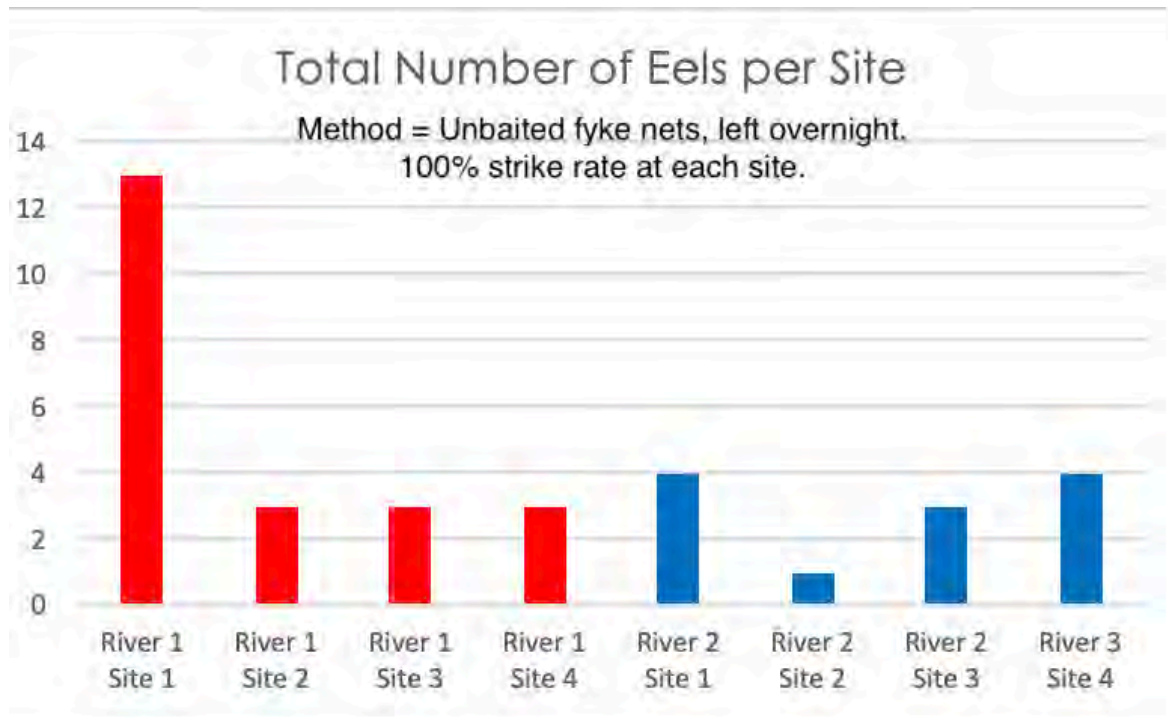
Appendix A Mahinga Kai River Data

Mahinga Kai River Data								
Site Name	Water Clarity (cm)	Temp (C)	DO %	SPC %	pH	Eels Up-stream	Eels Down-stream	Total Eels per Site
River 1 Site 1	70	22.6	21.3	152.7	9.21	4	9	13
River 1 Site 2	84	20.6	19.3	166.6	8.95	2	1	3
River 1 Site 3	68	20.0	18.1	184.1	8.69	3	0	3
River 1 Site 4	56	22.6	21.3	152.7	9.21	2	1	3
River 2 Site 1	58	17.2	18.0	152.7	9.53	4	0	4
River 2 Site 2	35	23.1	19.8	743.4	7.52	0	1	1
River 2 Site 3	53	23.4	17.2	146.1	8.50	0	3	3
River 3 Site 4	80	20.6	18.5	166.7	8.69	3	1	4

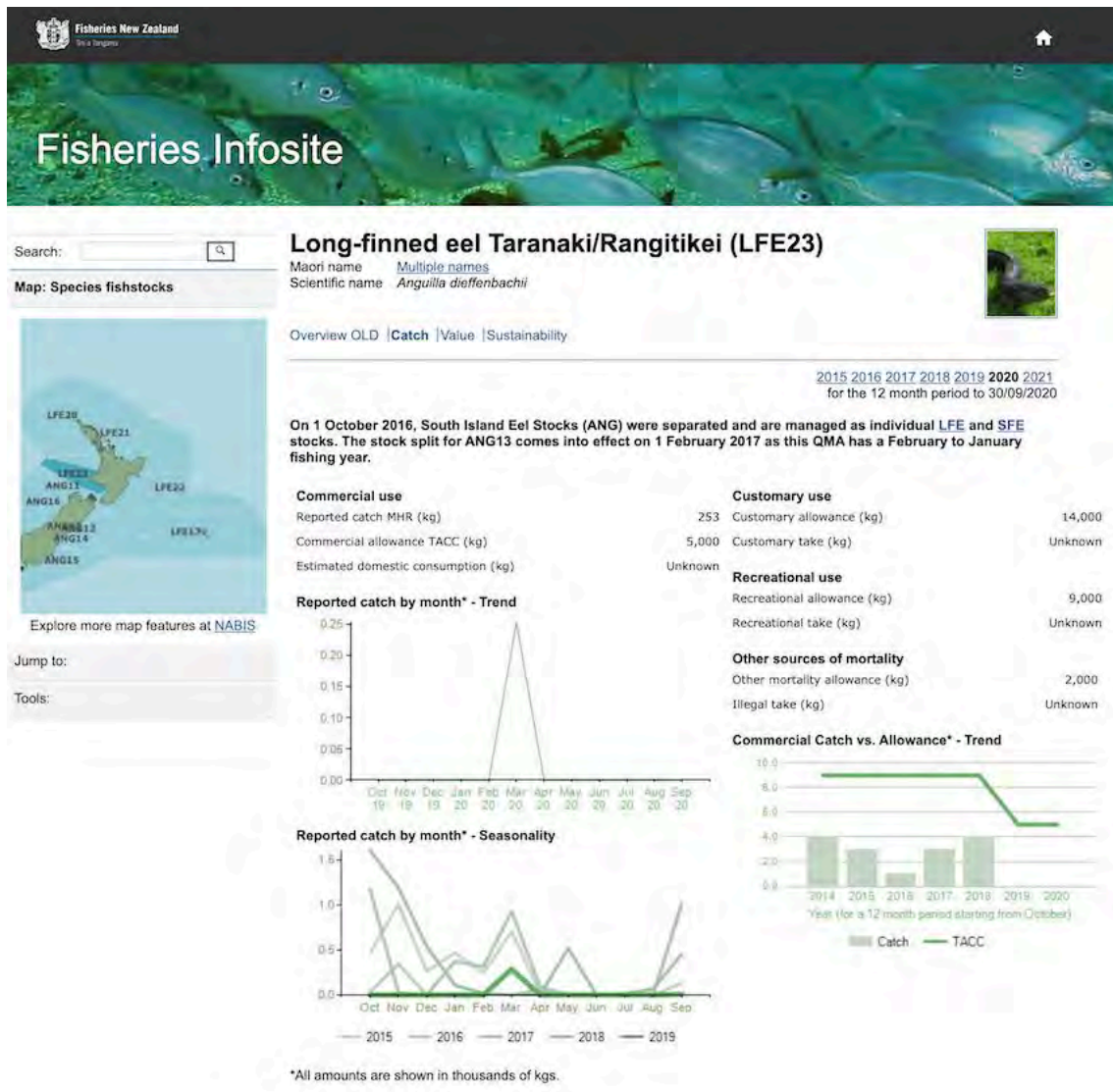
Site Name	Water Clarity (cm)	Temp (C)	DO %	SPC %	pH	Eels Up-stream (Av)	Eels Down-stream (Av)	Total Eels per Site (Av)
River 1	70	21.45	20.0	164.0	9.01	2.8	2.8	5.5
River 2	57	21.07	18.4	302.2	8.56	1.8	1.3	3.0





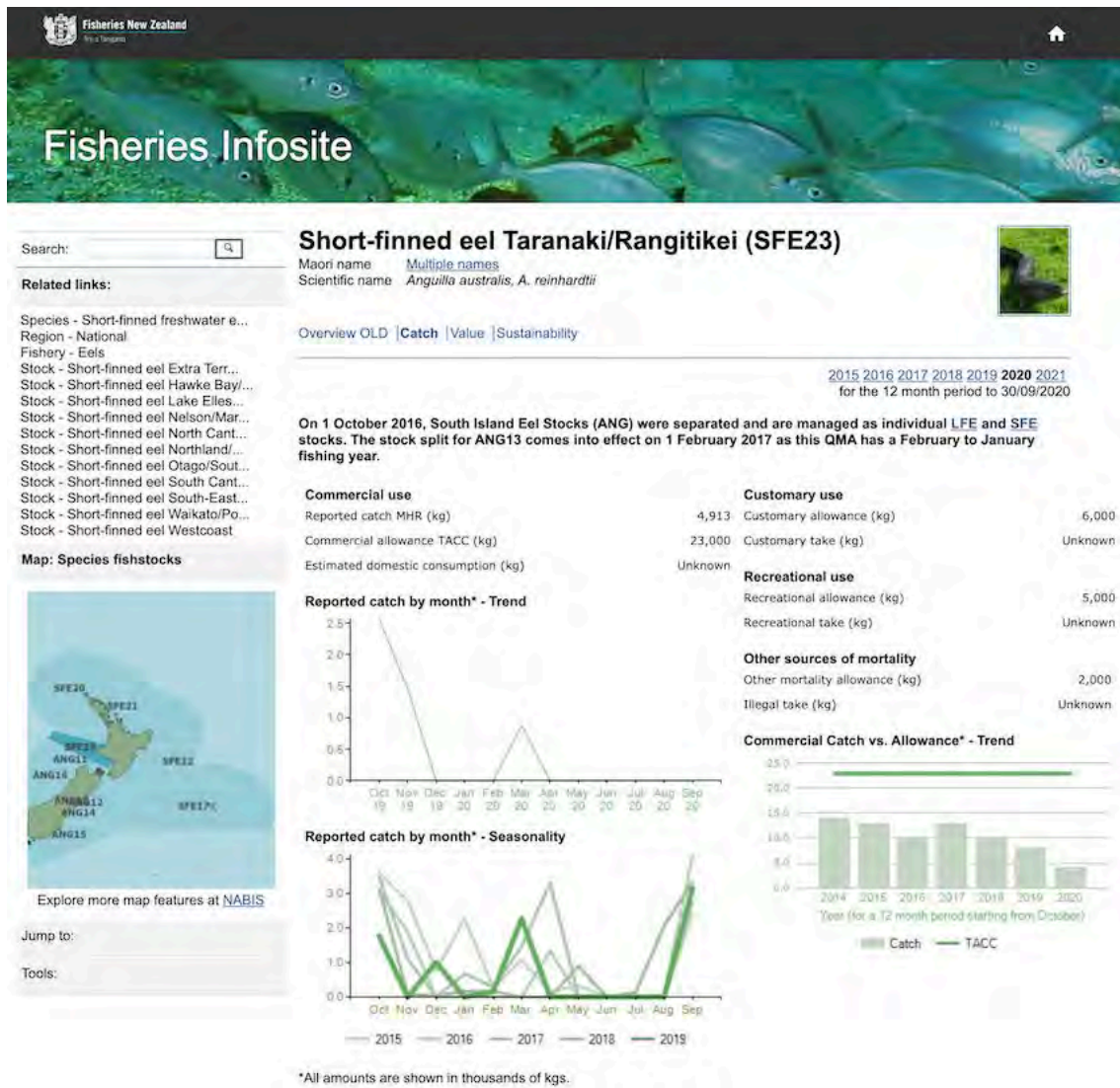


Appendix B Commercial Eeling Data



Relevant Comments:

- Ngāti Mutunga rohe sits within the LFE23 commercial eel fishing area.
- *Anguilla dieffenbachii* is the scientific name for the long-finned eel.
- The actual commercial catch has always been less than 50% of what was allowed.
- For example, in 2018, the total allowable commercial catch for the entire LFE23 area was 9,000 kgs but only 4,000 kgs of long-finned eel was reportedly caught.
- Subsequently in 2019, the total allowable commercial catch was reduced from 9,000 kgs down to 5,000 kgs. At the time of writing this report there was no data on what had been caught commercially in 2019 or 2020.
- The annual Total Allowable Commercial Catch (TACC) for long-finned eel in this area has reduced from 9,000 kgs in 2018 down to 5,000 kgs.



Relevant Comments:

- Ngāti Mutunga rohe sits within the SFE23 commercial eel fishing area.
- *Anguilla australis* is the scientific name for the short-finned eel.
- *Anguilla reinhardtii* is the scientific name for the Australian long-finned eel.
- Catches for these two species are combined for Ministry of Primary Industry purposes.
- *Anguilla reinhardtii* were not observed whilst carrying out this project.
- The Total Allowable Commercial Catch (TACC) for these species is 23,000 kgs but in 2020 less than 5,000 kgs was caught.
- The actual / reported commercial catch has been declining for at least the last four years.



## Ngāti Mutunga Combined Appendices

The Combined Appendices are in two parts to reduce file size:

Ngāti Mutunga Mauri Compass Report Combined Appendices 1 of 2

Ngāti Mutunga Mauri Compass Report Combined Appendices 2 of 2