Councillors observing a moments silence with respect to the passing of Te Aitanga a Mahaki elder, Uncle John Ruru

Te kima Klaur Der 2:031521/15:41:49

Council Meeting 352 views Ian Ruru presenting to full Council 22/8/19 Makauri Aquifer Te Karaka Oxidation/Sewage Pond Toxic landfill at Te Pa o Kahu Mortuary waste in sewage system Sewage discharge to rivers and ocean

Waipaoa River 'munted iwi tells council

by John Jones

THE Waipaoa River is "munted" iwi Te Aitanga-a-Mahaki iwi spokesman Ian Ruru told Gisborne District Council.

Mr Ruru was speaking in support of a Matauranga Maori cultural assessment of the mauri of the Makauri Aquifer which described the aquifer and the river as "extremely degraded".

The report said Te Aitangaa-Mahaki understood that that the aquifer and the Waipaoa River were one.

"If one is sick, the other is sick," the report said.

Te Aitanga-a-Mahaki cautiously supported the managed aquifer recharge project and recommended addressing the extremely degraded state of the mauri, continuation of the mauri compass monitoring programme and restoration of the mauri of the river and aquifer for the benefit of all.

Mr Ruru said the iwi had lost their storage and customs relating to the river. "Basically we have lost our identity," he said.

The Te Karaka oxidation pond was in drastic need of upgrading.

"We can no longer drink the water, we can no longer eat fish from the river and can no longer walk the land in safety."

For 56 years the iwi had been protesting about the inclusion of mortuary waste which they wanted separated from the wastewater stream.

"Hopefully the next council might help us move faster with that," he said.

There was an opportunity for Gisborne to be the first city in the country to do this.

"We have got to stop treating our rivers and the ocean as a rubbish dump," said Mr Ruru.

Mayor Meng Foon acknowledged the work that had been done in the assessment.

"Step by step we are making progress," he said.

Speaking for the Rongowhakaata Iwi Trust consultant Murray Palmer said they believed the mixing of two waters of particularly different types was contrary to good practice from a Maori perspective.

The water from the river was very young, aerobic and had sediment contamination whereas the water in the aquifer was anaerobic, had very little oxygen was, highly mineralised and old.

Rongowhakaata saw developing a relationship with the GDC as a fundamental mitigating factor in this process, Mr Palmer said.

(See also page 4)

A Mātauranga Māori Assessment of the Mauri of the Makauri Aquifer



"Mauri must be restored to waterways subjected to pollution and practices that have compromised the relationship that Māori have traditionally had with these taonga;" Ministry for the Environment and Ministry for Primary Industries (2018).

Te Aitanga a Mahaki Trust

June 2019

Acknowledgement

This Report is a result of the support and toil of rangatahi and rangatira, past and present, from the following organisations:

Te Karaka Area School Campion College Gisborne Boys High School Gisborne District Council The KIWA Group Te Aitanga a Māhaki Trustees and Marae representatives

Toitu te marae o Tane Toitu te marae o Tangaroa Toitu te Tangata Whenua Protect and strengthen the realms of the land Protect and strengthen the realms of the sea And only then will the people thrive

Recommendations

Te Aitanga a Māhaki cautiously supports the MAR trial and recommends:

- (1) Addressing the extremely degraded state of mauri
- (2) Continuation of the mauricompass.com mātauranga Māori monitoring programme to assess cultural effects and solutions and
- (3) Restoration of the mauri of the Waipaoa River and Makauri Aquifer for the betterment of all.

Noho ora mai.

lan Ruru.



Executive Summary

This Report forms the substance of a mātauranga Māori assessment (Ministry for the Environment, 2017) of the Managed Aquifer Recharge (MAR) pilot and its potential impact on the mauri of the Makauri Aquifer. Te Aitanga a Māhaki used the Mauricompass.com framework (Rainforth & Harmsworth, 2019) to assess tangata whenua values of the aquifer and the Waipaoa river. The mauri of both the river and aquifer were assessed and the results identified the extremely degraded state of mauri and the factors towards the cumulative decline (Land, Air, Water Aotearoa, 2019). The effects on tangata whenua and their role as kaitiaki and recommendations to restore the mauri of these significant waterbodies are also provided.

Five Te Aitanga a Māhaki marae sit directly on the Makauri Aquifer and another six Māhaki marae sit in the headwaters of the Waipaoa River that nourishes the aquifer (Te Aitanga a Māhaki, 2019). The oriori, Pōpō!, was composed by Te Aitanga a Māhaki ancestor Enoka Te Pakaru over 400 years ago and recounts the subterranean connections with the aquifer and the highly fertile land and bounty it provided for Māhaki (Ministry of Education, 2019). In these times, the abundant native flora and fauna in the Makauri area linked strongly to the mauri of the environment and the mana of tangata whenua through whakapapa, traditions and mātauranga Māori.

The irrigation of horticultural crops in the 1980s has lead to the decline of the aquifer (Gisborne District Council, 2019). Losing biodiversity erodes mauri and degrades the ability of tangata whenua to express kaitiakitanga (Ministry for the Environment & Stats NZ, 2019). Eels are a particularly significant taonga to Te Aitanga a Māhaki and their demise has impacted on the ability to express ahikāroa and the connection with awa and whenua.

Te Aitanga a Māhaki understand that the Makauri aquifer and Waipaoa river are one. Each relies on the other for sustenance. If one is sick, then the other is sick. Restore the mauri of one means you restore the mauri of the other.

The mauricompass.com assessment and mātauranga Māori monitoring programme identified that in 1650 the Makauri aquifer enjoyed an A-level Mauri State (80-100% extremely healthy) which has declined in 2019 to a E-level Mauri State (0-19% severely degraded). Insufficiently treated human sewage from Te Karaka into the Waipaoa River and Gisborne city sewage overflows into the Taruheru River are repugnant and have degraded the wairua, spirituality and connections to Atua. Ten of the twelve attributes of mauri ranked in the lowest possible E-state, with the tikanga attribute attaining a D-state and the tangata whenua attribute attaining a C-state.

The Gisborne District Council and stakeholders, through the MAR project, are investigating the risks and rewards of injecting Waipaoa river water into the Makauri aquifer as a means to ensure its ongoing use (Gisborne District Council, 2019).

Te Aitanga a Māhaki take a pragmatic approach to the MAR project with cultural health indicators and mauri measures from mātauranga Māori providing a better understanding of cultural impacts for decision making. Te Aitanga a Māhaki has strong kinship ties with Mangatu Blocks, Te Whanau a Taupara Trust and the Wi Pere Trust — all large economic drivers in the community. Partnering with these Māori businesses will allow a method to restore both the health of the Waipaoa and the economic health of the iwi, a win-win goal (Gisborne Herald, 2018).

Te Aitanga a Māhaki cautiously supports the MAR trial and recommends (1) addressing the extremely degraded state of mauri, (2) continuation of the mauricompass.com mātauranga Māori monitoring programme to assess cultural effects and solutions and (3) restoration of the mauri of the Waipaoa River and Makauri Aquifer for the betterment of all.



This is a dashboard summary of the matauranga Māori assessment. Details can be found on Page 21.

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Part One

Applies the mauricompass.com as a *framework* to ascertain the relationship that the tangata whenua, Te Aitanga a Māhaki, has with the Waipaoa river and the Makauri aquifer.

Part Two

Applies the mauricompass.com as a *Mātauranga Māori assessment tool* to assess the cultural health and wellbeing of the aquifer.

Part Three

Provides the detailed assessment results and *recommendations* for further monitoring the effects of the trial on the mauri of the Makauri (Mauri Monitoring Plan).

Mauri Monitoring Plans are based on the Environment Court Decision Maketu v BoP Regional Council April 2016 [Rachel Boyte] Link: <u>http://www.lowerkaituna.co.nz/cmsAdmin/uploads/2016-nzenvc-097-ngati-pikiao-ki-maketu-ngati-makino-heritage-trust-v-bay-of-plenty-regional-council_001.pdf</u>

Dashboard Infographic



Loss of taonga species due to decreased water flows reduce the mauri of the environment and the ability of tangata whenua to exercise kaitiakitanga of their waterways

Tangata Whe

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LO.

Te Aitanga a Māhaki have whakapapa, traditions and knowledge that relates to native flora and fauna that link strongly to the mauri of the environment and the mana of the people.

Cultural health indicators and mauri measures from mātauranga Māori provide a better understanding of cultural impacts for decision making.

Eels are a significant taonga to Te Aitanga a Måhaki. Their demise impacts on the ability of tangata whenua to express ahakāroa, connection with place.

Losing biodiversity erodes mauri and degrades the ability of tangata whenua to express kaitiakitanga.

Human sewage from Te Karaka into the Waipaoa River and city overflows into the Taruheru River are repugnant and diminishes the wairua, spirituality and connections to Atua.

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Te Aitanga a Māhaki take a pragmatic approach to the MAR project which aims to inject water from the Waipaoa River into the aquifer to ensure its ongoing use. Te Aitanga a Māhaki has strong kinship ties with Mangatu Blocks, Te Whanau a Taupara Trust and the Wi Pere Trust — all large economic drivers in the community.

> Partnering with these Māori businesses will allow a method to restore both the health of the Waipaoa and the economic health of the iwi, a win-win goal.

Te Aitanga a Māhaki cautiously supports the trial and recommends (1) addressing the extremely degraded state of mauri, (2) continuation of the mātauranga Māori monitoring programme to assess cultural effects and (3) restoration of the mauri of the Waipaoa River and Makauri Aquifer. ianruru@gmail.com April 2019

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Part One: Tangata Whenua Values

The relationship between Te Aitanga a Māhaki and the Waipaoa River



The Waipaoa River is the ancestral river of Te Aitanga a Māhaki. This ancient connection, highlighting mana, tangata whenua and kaitiakitanga, is symbolised in the pepeha:

Tangata Whenua

Ko Maungahaumi te Maunga

Ko Waipaoa te Awa

Ko Te Aitanga a Māhaki te Iwi



Te Aitanga a Māhaki Trust represents Te Aitanga a Māhaki as an "iwi authority" for the purposes of the Resource Management Act 1991 and as the "mandated iwi organisation" under the Maori Fisheries Act 2004. The Trust represents its 12 marae spread throughout the largest catchment in the Te Tairawhiti, the 2,200 square kilometre Waipaoa River Catchment and was incorporated as a Charitable Trust in 1995 to 'advance and promote Te Aitanga a Māhaki as an iwi, <u>www.Māhaki.com</u>



Figure 1: Map of the twelve Te Aitanga a Māhaki Marae, Maungahaumi and the Waipaoa River leading to Turanganui a Kiwa.

The twelve marae of Te Aitanga a Māhaki are; Mangatu Marae, Matawai Marae, Ngatapa Marae, Parihimanihi Marae, Pakowhai Marae, Rangatira Marae, Rongopai Marae, Takipu Marae, Takitimu Marae, Tapuihikitia Marae, Tarere Marae, and Te Wainui Marae.

There are only five marae that sit directly on the Makauri Aquifer. They are Tarere, Pakowhai, Rongopai, Takitimu and Parihimanihi.

Tangata Whenua There are only six marae that sit in the headwaters that replenish the Makauri Aquifer. They are Ngatapa, Takipu, Rangatira, Tapuihikitia, Mangatu and Te Wainui.

Figure 2: Map of the Makauri Aquifer and its relevant marae.

Wairua

There are many cultural sites of significance including pā sites, wāhi tapu and urupā that are geo-spatially mapped and archived.

Wairua

Figure 3: Map of the Makauri aquifer and Te Aitanga a Māhaki's Cultural Sites of Significance. Source: New Zealand Archaeological Association.

The relationship between Te Aitanga a Māhaki and the Makauri Aquifer.

Tangata Whenua The oriori, Pōpō, was composed by Te Aitanga a Māhaki ancestor Enoka Te Pakaru over 400 years ago and records the arrival of the first people to Tūranganui a Kiwa many centuries before that. Pōpō also explains the origins of Makauri and its subterranean connections with Te Toka Ahuru (Ariel Reef), 12 kilometres off the coast of Gisborne.

The Makauri forest originated from seedlings from the undersea forest that grew at Te Toka Ahuru. These subterranean connections with the aquifer and the highly fertile land and bounty was seen to be a gifted treasure for Māhaki.

Ka Makauri anake i mahue atu i waho i Toka-ahuru.

Ko te peka i rere mai ki uta ra.

Hei kura mo Māhaki.

Ko Mangamoteo, ko Uetanguru

Ko Te Kōiwi, ko Rongorapua.

In those times, the abundant native flora and fauna in the Makauri area linked strongly to the mauri of the environment and the mana of tangata whenua through whakapapa, traditions and mātauranga Māori (Ministry of Education, 2019).

Kaitiaki responsibilities

Tikanga

Te Aitanga a Māhaki are of the view that the Makauri aquifer and the Waipaoa river are interconnected and interdependent. In a traditional sense, the Makauri aquifer and the Waipaoa river are the veins of Papatuanuku and are therefore inextricably entwined. In a contemporary sense, the Makauri aquifer has been 'recharged' over the millennia by the Waipaoa river. Reciprocally, aquifers have provided puna, artesian wells and freshwater springs for mahinga kai or spiritual purposes.

"The Makauri Aquifer and Waipaoa River are one. Each relies on the other for sustenance. If one is sick, then the other is sick. Restore the mauri of one means you restore the mauri of the other".

Mahinga

Kai

Mahinga Kai

Tuna (eels) are a taonga tuku iho o Te Aitanga a Māhaki both in terms of whakapapa and manaakitanga. Migratory patterns of the eel to and from their ancestral spawning grounds near Hawaiki utilise subterranean rivers and aquifers. Similarly, iwi from Te Taitokerau can also refer to their underground rivers, aquifers and 'puru tuna' as migrating pathways and places of refuge for their eels.

The Gisborne Herald • Saturday, July 21, 2018

ALARMING SURVEY DATA: Fisheries scientist lan Ruru near the Waipaoa River mouth with a female endemic longfin, migrating back out to her oceanic spawning grounds. He is alarmed to see a 90 percent decline in eel numbers after ating a 2008 stock assessment survey this year.

Picture supplied

Call for a ban on catching eels in depleted Waipaoa

GISBORNE'S Te Aitanga a Mahaki are calling for a ban on commercial eel fishing in the Waipaoa River until catches are back to their 2008 baseline levels. Fisheries scientist lan Ruru said they were alarmed to see a 90 percent decline in eel numbers after repeating a 2008 stock assessment survey this year. "Both our endemic longfins and native shortfin species have suffered big losses," he said.

said.

"In 2008 we caught 353 longfins — but only 12 this year. For shortfins the numbers were 602, now down to 79. The implications for sustaining our 12 marae are huge." The research team used the innovative mauricompass.com framework to assess eel numbers and exactific the docling in the provide

numbers and quantify the decline in the mauri (lifeforce) of the Waipaoa and its waterways. "That has been a huge advance in

sophistication because we can now measure changes in mauri as required under the Tairawhiti Resource Management Plan. The effectiveness of remedial action such as a ban on commercial eeling and mauri restoration plans can now be tracked over time," said Mr Ruru. Las Buru's late forber Bill Buru, who led

Ruru. Ian Ruru's late father Bill Ruru, who led the original 2008 survey, often joked that he was sick of the sight of eels as a child because it was their staple diet growing up at Waituhi. In less than one generation, those traditions, tikanga (practices) and matauranga (knowledge) had been lost, he said. Te Aitanga a Mahaki chairman Pene Brown said there was a reciprocal relationship between the iwi and the Waipaoa River. "Eels are our taonae species (ancient

"Eels are our taonga species (ancient treasure) — a talisman for the mauri of our ancestral river," he said.

"As kaitiaki (guardians) we need to rebuild the tuna populations by improving habitat and

the tuna populations by improving habitat and water quality. "This, in turn, increases the ability of the Walpaca River to sustain important cultural and spiritual practices of Te Altanga a Mahaki". Te Altanga a Mahaki also holds a commercial eel quota but has always volunteered not to catch it, nor profit from it. Te Altanga a Mahaki Asset Holding Company director Tama Brown said "our 12 marae could benefit from the extra commercial eel income but we have chosen to consistently force that quota, as a matter of principle and

forgo that quota, as a matter of principle and until the eel population has recovered to the 2008 baseline".

Te Altanga a Mahaki is making a formal submission to Fisheries New Zealand as part of the review of North Island eel sustainability measures for 2018.

Figure 4: Māhaki Chairman, Pene Brown said there was a reciprocal obligation between Te Aitanga a Māhaki and the Waipaoa River. Rebuilding tuna populations will enable the Waipaoa to sustain important cultural and spiritual practices.

Part Two: Methodology Method Video Evidence

The following video clip links explain the methodology that was developed for monitoring the mauri of the Makauri aquifer and also developing the mātauranga Māori for the Waipaoa river.

Video 1 Campion College

KAHU AND ELI'S IMPACT PROJECT MAURI COMPASS PART 2 THANK YOU UNCLE RAY FARMER

To watch the videos, click on the links below:

https://www.facebook.com/kaitiakiapp/videos/vb.100004340114007/1085424098278917

Video 2 Te Karaka Area School

https://web.facebook.com/kaitiakiapp/videos/866320493522613/?I=8625733805811050002

Infographic Evidence

Tangata Whenua

vn and d

Tikanga

Wairua

Mahinga Kai

Figure 5: Trend Analysis of River Temperature, Dissolved Oxygen and pH. Each parameter is assessed against ideal conditions for eels.

Habitat

Biodiversity

Bio-

hazards

Chemical Hazards

Figure 6: LAWA results from the GDC Tucker Road site in relation to Tarere pā. *Noting that the E coli grade has deteriorated from a 2018 'D' State down to and 2019 'E' State.

Figure 7: Kahu and Eli's native fish data.

Figure 30: Otolith extraction and microscopic examination of annual growth rings. (Photo; I Ruru.)

Figure 8: Analysis of eel growth rates.

Part Three: Results of Assessment and Recommendations

Tangata Whenua Attributes: Tangata Whenua, Tikanga, Wairua and Mahinga Kai

Assessment Detail

Matauranga Maori / Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Tangata Whenua	Knowledge of Tangaroa, Wahi tapu/taonga/tupuna	MC*	Objective Narrative: Wananga ArchSite.org	Tangata Whenua connection to the waterbody is absolute. The waterbody 'runs through their veins'.	Historical knowledge of waterbody still retained by pā/marae people.	С	W
Tangata Whenua	Knowledge of Tangaroa, Wahi tapu/taonga/tupuna	MC*	Objective Narrative: Wananga	Tangata Whenua continue to highly value and access the waterbody.	The waterbody is still highly valued but highly polluted. Freshwater springs have dried up.	С	W
Tikanga	Protocols and practices	MC*	Objective Narrative: Wananga	Tangata Whenua always engage tikanga (management practices and protocols) around rahui, tangi and marae events related to the waterbody.	Waterbody tikanga impaired by extremely poor water body conditions.	D	W
Tikanga	Protocols and practices	MC*	Objective Narrative: Wananga	Tangata Whenua practice traditional protocols relating to the harvesting and management of fish.	Harvesting of tuna/eels are not encouraged due to potential health issues. No customary permits have been authorised.	D	W
Wairua	Spiritual connection with Tangaroa, Wai tapu/taonga/tupuna	MC*	Objective Narrative: Wananga	Tangata Whenua use the waterbody to heal and purify.	Extremely impaired by human sewage and E coli.	E	W

Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Wairua	Spiritual connection with Tangaroa, Wai tapu/taonga/tupuna	MC*	Objective Narrative: Wananga	Taniwha/Kaitiaki are identified, protected and accessed by Tangata Whenua.	Historical knowledge of waterbody still retained by pa/marae people.	E	W
Wairua	Spiritual connection with Tangaroa, Wai tapu/taonga/tupuna	MC*	Objective Narrative: Wananga	The waterbody is used and recognised as an important site for providing a wide range of rongoa Maori for Tangata Whenua.	Severely impaired. Freshwater springs have dried up.	E	W
Wairua	Spiritual connection with Tangaroa, Wai tapu/taonga/tupuna	MC*	Objective Narrative: Wananga	The waterbody is free from human sewage.	City sewage periodically overflows into the Taruheru. Te Karaka has inadequate sewage treatment into the Waipaoa river.	E	W
Mahinga Kai	Traditional food gathering places and practices	MC*	Objective Narrative: Wananga	The waterbody is used and recognised as an important site for fishing and customary resource gathering.	Insufficient quality and quantity for customary purposes	E	W
Mahinga Kai	Traditional food gathering places and practices	MC*	Objective Narrative: Wananga	The waterbody is known for the quality and abundance of resources.	Severely impaired.	E	w
Mahinga Kai	Traditional food gathering places and practices	MC*	Objective Narrative: Wananga	Traditional areas for gathering food or harvesting fish continue to be accessed.	Severely impaired.	E	W
Mahinga Kai	Traditional food gathering places and practices	MC*	Objective Narrative: Wananga	Tangata Whenua use the waterbody to provide fish for hui or tangi.	No customary permits have been authorised.	E	W

Tane (Land) Attributes: Habitat, Biodiversity, Bio-hazards, Chemical-hazards

Assessment Detail

Matauranga Maori / Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Habitat	Taonga landmarks; Maunga, Awa, Puna	MC*	Drone Assesment	Riparian stream cover	Highly modified environment	E	М
Habitat	Native Flora and Fauna	MC*	Survey Assessment	Riparian stream cover	Highly modified environment	E	М
Biodiversity	Taonga species; plants, trees, animals and birds	MC*	Survey Assessment	Requires assessment	Requires assessment	E	Μ
Biodiversity	Invertebrates	LAWA/MC*	M.C.I Index	Requires assessment	5 year median: not available	E	М
Biodiversity	Invertebrates	LAWA/MC*	M.C.I Index	Requires assessment	Trend: not assessed	E	М
Biodiversity	Invertebrates	LAWA/MC*	Taxanomic richness	Requires assessment	Requires assessment	E	М
Biodiversity	Invertebrates	LAWA/MC*	Percent EPT richness	Requires assessment	Requires assessment	E	М
Biodiversity	Groundwater Ecosystem	ESR	Percent EPT richness	Requires assessment	Requires assessment	E	0.5 Y

Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Bio-hazards	E.Coli	LAWA	E.coli		5 year median: 1300 n/100ml	Е	М
Bio-hazards	E.Coli	LAWA	E.coli	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	E	М
Bio-hazards	E.Coli	LAWA	E.coli		State: "E" NOF Band	Е	М
Bio-hazards	E.Coli	LAWA	E.coli	Trend: Improving	Trend: very likely degrading	E	М
Bio-hazards	Human sewage	MC*	Narrative Objective	Through land treatment for Te Karaka. No overflows for Taruheru.	Human sewage from Te Karaka and Taruheru	E	М
Chemical- hazards	Clarity	LAWA	Black disc		Not assessed	E	М
Chemical- hazards	Clarity	LAWA	Turbidity		5 year median: 12 NTU	E	М
Chemical- hazards	Clarity	LAWA	Turbidity	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	Е	М
Chemical- hazards	Clarity	LAWA	Turbidity		Trend: very likely degrading	Е	М
Chemical- hazards	Nitrogen	LAWA	Total Nitrogen		5 year median: 2.5 g/m3	Е	М
Chemical- hazards	Nitrogen	LAWA	Total Nitrogen	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	Е	М

Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Chemical- hazards	Nitrogen	LAWA	Total Oxidised Nitrogen	State: In the best 25% of like sites in NZ	5 year median: 1.2 g/m3	E	М
Chemical- hazards	Nitrogen	LAWA	Total Oxidised Nitrogen	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	E	М
Chemical- hazards	Nitrogen	LAWA	Total Oxidised Nitrogen	State: In the best 25% of like sites in NZ	State: "C" NOF Band	Е	М
Chemical- hazards	Nitrogen	LAWA	Ammoniacal Nitrogen	State: In the best 25% of like sites in NZ	5 year median: 0.108 g/m3	E	М
Chemical- hazards	Nitrogen	LAWA	Ammoniacal Nitrogen	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	E	М
Chemical- hazards	Nitrogen	LAWA	Ammoniacal Nitrogen	State: In the best 25% of like sites in NZ	State: "B" NOF Band	E	М
Chemical- hazards	Nitrogen	LAWA	Ammoniacal Nitrogen	State: In the best 25% of like sites in NZ	Trend: very likely degrading	E	М

Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Chemical- hazards	Phosphous	LAWA	Dissolved Reactive Phosphorus	State: In the best 25% of like sites in NZ	5 year median: 0.099 g/m3	E	М
Chemical- hazards	Phosphous	LAWA	Dissolved Reactive Phosphorus	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	E	М
Chemical- hazards	Phosphous	LAWA	Dissolved Reactive Phosphorus	State: In the best 25% of like sites in NZ	Trend: Indeterminate	E	М
Chemical- hazards	Phosphous	LAWA	Total Phosphorus	State: In the best 25% of like sites in NZ	5 year median: 0.21 g/m3	E	М
Chemical- hazards	Phosphous	LAWA	Total Phosphorus	State: In the best 25% of like sites in NZ	State: In the worst 25% of like sites in NZ	E	М
Chemical- hazards	Phosphous	LAWA	Total Phosphorus	State: In the best 25% of like sites in NZ	Trend: not assessed	E	М

Tangaroa Attributes: Native Fish, Eel Abundance, Eel Health and Growth Rates

Assessment Detail

Matauranga Maori / Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Native Fish Species	Presence/Absence	MC*	MC* NZFFDB	The waterbody is used and recognised as an important site for fishing and customary resource gathering.	Insufficient quality and quantity for customary purposes	E	W
Eel Abundance	Catch Per Unit Effort	MC*	Standardised method using fyke nets	The waterbody is used and recognised as an important site for fishing and customary resource gathering.	Insufficient quality and quantity for customary purposes	E	W
Eel Abundance	Eel Species	MC*	Distribution and Abundance	The waterbody is used and recognised as an important site for fishing and customary resource gathering.	Insufficient quality and quantity for customary purposes	E	W
Eel Health	Eel Pathology	MC*	Weekly Tests	No internal or external abnormalities identified	No internal or external abnormalities identified	E	W

Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Eel Health	Water Dissolved Oxygen	MC*	Weekly Tests	Ideal Dissolved Oxygen Level Range: Greater than 80%	Majority of Dissolved Oxygen Results were less than 50%	E	W
Eel Health	Water Temperature	MC*	Weekly Tests	Ideal Water Temperature Range: 15 Celsius to 20 Celsius	Water temperature exceeds 20 Celsius throughout January and February	E	W
Eel Health	Water pH	MC*	Weekly Tests	Ideal pH Range: 6.5 to 8.1	pH exceeded 8.0 for the majority of tests	E	W
Eel Health	Water Conductivity	MC*	Weekly Tests	Ideal Conductivity Range: less than 2,000 micro- siemens	Conductivity less than 2,000 micro-siemens for the majority of tests	E	W
Eel Growth Rates	Otilith Analysis	MC*	Size at age data	Comprehensive Knowledge Achieved	Requires Research	E	0.5 Y

Mauri Compass Attribute	Fine Scale Attribute	Source	Method	Aspirational Goal	Assessment Summary	Attribute State	Recommended Monitoring (Wkly/Mthly/Yrly)
Eel Growth Rates	Otilith Analysis	MC*	Genetic History	Comprehensive Knowledge Achieved	Requires Research	E	0.5 Y
Eel Growth Rates	Otilith Analysis	MC*	Catchment History	Comprehensive Knowledge Achieved	Requires Research	E	0.5 Y
Eel Growth Rates	Otilith Analysis	MC*	Climate Change Implications	Comprehensive Knowledge Achieved	Requires Research	E	0.5 Y

Te Aitanga a Mahaki see value in the aquifer tria

TE Aitanga a Mahaki say they take a pragmatic approach to stage two of the Makauri aquifer recharge trial for which directly above the aquifer and another five marae inhabit the headwaters of the Te Aitanga a Mahaki customary fisheries manager Ian Ruru says "we see the aquifer as one with the Waipaoa, starting and finishing at the same resource consent has just been granted. Five Te Aitanga a Mahaki marae sit Waipaoa River that nourishes it.

"Te Aitanga a Mahaki also has strong kinship ties with Mangatu Blocks, Te Whanau a Taupara Trust and the Wi Pere Trust — all large economic drivers Aitanga a Mahaki are using the mauricompass.com framework to assess place and one relying on the other for sustenance". cultural effects of the trial. "Along with Campion College and Gisborne Boys' High School, this tool Gisborne District Council and Te

businesses allows us to seek a method to restore both the health of the Waipaoa and the economic health of our iwi, a winin the community. "Partnering with these Maori

win goal." "Te Aitanga a Mahaki trustees believe it is imperative to strive to restore the

will help enable us to track the effects of the trial on the mauri of the aquifer and assist us as kaitiaki of the Waipaoa" says Mr Ruru.

has now received consent for stage two, which involves new monitoring bores to independent commissioner. The council mauri of the Waipaoa and stage two of this trial is one example that they cautiously support," he said. Gisborne District Council's Rongowhakaata Iwi Trust, leading to a hearing last month before an application for a resource consent for stage two was opposed by support the trial.

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About the Author

