Freshwater Plan Change:

Whakapapa-Based Methodologies

Attribute and Baseline States & Hapori Wai Action Plan

RELAND

Tīhema | December 2023

Prepared for the Tangata Whenua Water Advisory Group

Written by Kelly Moana Murphy

Author: Kelly Moana Murphy
Organisation: Reland

Contributions

Reland
Pat Heta - Kaumatua, Chris Moretti - Taiao Advocate, Ashleigh-Summer Scown - Data Specialist and Administration. I would like to acknowledge the contributions of the above people, without who this report and all it contains, would not be possible. My dearest thanks to Chris for his perspective, his ability to think out of the box, speak to the applicability of these thoughts, and always speaking from the heart. To Ashleigh-Summer for your finest skill to accompany me as we weave all this into boxes. And to Pat Heta for your constant patience and willingness to integrate the thoughts, guiding us with tikanga and mātauranga maori.

Te Mana o Te Wai
I would like to acknowledge the Te Mana o Te Wai funded programme Me He Wai and ngā hapū o Te Rarawa. Me He Wai was enabled through the policy of Te Mana o Te Wai, funding from the Ministry for the Environment, alongside the support of the founding partners – Northland Regional Council, Department of Conservation, and Mountains to Sea Trust.

Our time designing and implementing the first year of Me He Wai, allowed us to ground truth the process of hapū engagement through marae – a foundational step in involving and giving effect to tangata whenua in freshwater planning and decision making. The dedication of the engagement team, and the courage tangata whenua showed to turn up and share their aspirations for freshwater, will forever be with me.

Tangata Whenua Water Advisory Group and Northland Regional Council
For those that are holding the flame for tangata whenua and Te Ao Māori in the freshwater planning space, I thank you.

For the willingness to let me imagine how the world my heart knows is possible may come to be, allowing the space for threads of ideas to grow, evolve, and weave into Whakapapa-based Methodologies.

Most meaningfully, the experience of getting to know our Atua more intimately, I thank you.

Contents

1. Introduction

There are many culturally appropriate Te Ao Māori frameworks available. For the gathering of data, ways for tangata whenua to connect with their taiao, their mātauranga, to capture their aspirations, and to inspire action.

In Aotearoa, we have a system that monitors and makes decisions for the management of the environment. When looking at systems we often look to the gap. The barriers tangata whenua face within this system is a lack of space for their gathered data to land and their voices to be heard. Not so much a gap, but a lack of one.

The methodologies in this report could be interpreted as a wedge, in which to plant a seed, to grow a space in the existing system for tangata whenua and a Māori world view. This presents an opportunity not only for Māori, but for all people of Aotearoa to connect to this whenua and their place within it.

Due to that intent, this report orients more towards the methodologies implementation within Northland Regional Council, and the relational space between council and tangata whenua; both parties being able to give and receive.

For tangata whenua: marae, hapū, and iwi. These methodologies and frameworks are for you. How it expresses in your context - what you monitor, how you monitor, how you capture and illustrate your aspirations – is all up to you. I would not want to limit your imagination with any assumption of how that might be. I do hope these methodologies uphold your voice and mātauranga as it flows the other way.

"Most of all, perhaps, they drew together the whakapapa of knowledge and the knowledge of whakapapa. They therefore ensured that just as whakapapa itself is a series of never-ending beginnings, in which new life always eases the sorrow of death, so the possibilities of the imagination could also be infinite.

Thus, when Tāwhaki brought the baskets of knowledge from the heavens, he unleashed the potential for creativity that was always latent in Te Kore. The enlightenment of Te Ao Mārama then followed in the realisation that there was no end to what might be known, because the baskets were infinite in size, too. Indeed, knowledge and imagining were only limited by the willingness to traverse the mind-fields of observation and assumption, philosophy and science, experience and experimentation, reason and hope."

– Moana Jackson *The Art of Having Faith in Ourselves*

2. Whakapapa

2.1 Principle

"Kia whakamanatia Te Mana me te Mauri o te Wai, me noho tōmua, me whakaute, me whakahaumaru, me whakamārohi hoki te waiora ā-wairua, ā-whakapapa tonu o Te Hurihanga Wai i mua i te tau 2040."

“In order to give effect to Te Mana me te Mauri o te Wai, the spiritual wellbeing and whakapapa of Te Hurihanga Wai is prioritised, respected and protected.”

Te Mana me te Mauri o te Wai Statement for Te Tai Tokerau

The overarching primary principle that informs the recommended methods is whakapapa.[1] Whakapapa gives us the structure and function of living things, upon which all life depends.[2] Whakapapa, alongside tikanga, provides a way for society to live in equanimity within our ecosystems.

2.2 Method

The designed method stems from whakapapa. It allows for both quantitative and qualitative data and analysis. This has been chosen in order to allow multiple worldviews to be present, utilising existing data gathered by Northland Regional Council (NRC) and introducing Te Ao Māori (māori world view).

The application of this methodology will provide opportunities for tangata whenua and non-Māori.[3]

On the following pages you will find the data collection and analysis methods. Some tools utilised may be familiar such as the Mauri-o-Meter, and some have been developed in response to engaging with communities around the health and wellbeing of water - Tīpare Framework.

This work has been informed by many that have come before, by mātauranga māori (māori knowledge), and inspired by emerging ways of looking at data (See – Warm Data[4]). While science is good at separating parts, we are not very good at putting them back together. The interrelationality of life is something that Te Ao Māori provides.

The limitations to this methodology include:

- It requires expert knowledge to get it to a working methodology.
- the culture of willingness NRC has to implement it.

Trust

As identified in the literature Review, there are barriers to tangata whenua engaging with Northland Regional Council. To overcome these barriers the methodologies have been designed to establish a culture of trust.

Tīpare Framework

The Tīpare Framework has been developed to receive data and show the story of wai through the landscape. See Appendix A.

Data

The involvement of tangata whenua and hapori in the collection, storage, and analysis of data is imperative. *The above three items are explored in detail at the end of this report.*

1. *"...it can be understood that whakapapa is a structured methodology for creating mātauranga."*

- Royal (1998)

2. *"Whakapapa is a basis for the organisation of knowledge in the respect of creation and the development of all things."*

- Cleave Barlow (Tikanga Whakaaro 1991:173)

3. *"Māori ancestral paradigms that developed... from the heavens to the deep oceans, from the mountains to the sea - can offer ancient yet fresh ways of understanding these systems. For indigenous people, these whole-system paradigms may assist in repowering our ancestral connections, while for others they may offer models that could cultivate creative environmental revitalisation and restitution internationally. For us all, and all our relations, it is vital to care for the earth's waters that are the cleansers and purifiers of new life and energy."*

4. *"Information that does not take into account the full scope of interrelationality in a system is likely to inspire misguided decision-making, which compounds already "wicked" problems. Warm Data is not meant to replace or in any way diminish other data, but rather it is meant to keep data of certain sorts "warm"—with a nest of relations intact.*

- Nora Bateson

3. Part One: Methodologies - Attribute and Baseline States

3.1 Whakapapa

By embedding whakapapa into the framework of environmental management, it allows us to breathe life into this decision making and monitoring system.

When we acknowledge whakapapa and the associated pūrākau (stories) we receive two gifts – *Personification* and *Structure and Function*.

Personification

Examples of personification in Aotearoa are the Whanganui Awa, Taranaki Maunga, and Te Urewera.

Natalie Robertson explores whakapapa and personification through her research, outlined in Para Whenua Mea Muddy Soil of Mother Earth, Personifications of water in Te Ao Māori (The Māori World).[5]

Personification is a pathway for tangata whenua and non-Māori to connect to the environment in a relational way.[6]

Structure and Function

Within whakapapa, pūrākau and te reo Māori, are the structure and function of our living world.[7] Alongside tikanga, we are provided a framework for society to live in equanimity with our ecosystems. We turn to this wisdom as we look to imbed whakapapa into the methodology process.

Whakapapa-Based Methodology Process

Identify the deity/ies of
the realm of focus

Identify the gifts (Structure and Function)
the pūrākau of the deities provide

Identify how the structure and function of the
deity can be measured (Data Flow)

Assess the realm of the deity to understand
the level of mauri present (Mauri Assessment)

To illustrate the application of the whakapapa-based methodology, we will follow these steps through the attribute state Repo (wetland) Health.

Parawhenuamea emerged from her mother as pure (alluvial) spring waters. She then cascaded down the slopes of her mother, falling as a waterfall, then gliding across the surface of the plains ... As Parawhenuamea approached the coastline, she saw the form of Kiwa, the ocean entity in the distance. Kiwa moved forward to embrace Parawhenuamea as she drew closer. Their bodies merged creating Hinemoana, the sea [...}"

- Yates-Smith, Aroha 2019: 2

5. *"In centering Indigenous thought, and reviving cultural knowledge, we can re-learn how to relate to non-human and more-than-human beings as our ancestors rather than as resources. In doing so, the human role of custodianships takes on new possibilities."*

- Natalie Robertson, Para Whenua Mea Muddy Soil of Mother Earth, Personifications of water in Te Ao Māori (The Māori World).

6. *"Similarly, the granting of legal personhood to the Urewera ranges, Whanganui River and Mount Taranaki recognises a shift in the colonial systems of conservation and care towards perspectives that are rooted in Māori ancestry and centred in rights of care rather than rights of ownership".*

– Tina Ngata

7. *"It is by language that the Māori are able to know the will and mind and power of the gods... [it has] a life force, a power, and a living vitality. Language has a spirit and also a mauri (that gives it it's unique structure and function)."*

- Cleave Barlow Tikanga Whakaaro 1991:173

4. Identify the deity

4.1 Hine-tū-i-te-Repo

The first step of Whakapapa-Based Methodology is to identify the deity of the realm of focus.

In the case of Repo / wetlands, the goddess is Hine-tū-i-te-Repo.

Figure 1:
Ngā atua wāhine o ngā repo – Goddess Series.
Illustrations: Te Kura Ormsby

There are different versions throughout hapū of how Hine-tu-i-te -Repo became the deity of Repo / wetlands. In a story familiar to Te Tai Tokerau, she was placed between Tāne-mahuta and Tangaroa to provide peace between the two. To undermine the divine and cultural knowledge and importance of her realm is to undermine peace between land and sea.

Structure and Function

To focus on the gifts that Cleve Barlow acknowledges – the structure and function – we look to Hine-tū-i-te-Repo.

As the kaitiaki of Repo, through understanding her responsibilities and attributes to keep a state of peace between Tāne-mahuta and Tangaroa, we can identify the structure and functions of Hine-tu-i-te Repo.

Wai	absorb, hold, clean, release	health and wellbeing of water
Habitat	provide a home for species	biodiversity
Nest and Nursery	breeding and safe space	biodiversity
Adaptable	can absorb flood water and sea level rise	climate change /events

Identifying the structure and functions of **Hine-tu-i-te Repo,** we can then begin to ask questions to understand how we might assess her gifts in relation to wai.

Wai – release, hold, absorb, clean wai

+ Water flow	How much water is she receiving?
+ Current size	How big is she now?
+ Original size	How big was she?
+ Watershed size	What size is the receiving environment?
+ Nutrient load	What levels of nutrients are entering the wetland?
	What levels of nutrients are exiting the wetland?
	What levels of nutrients are present in the wetland?
+ Water Quality	Relative to the geological and habitat context.

Habitat - provide a home for species

+ Flora Assessment	What was there? What is there now?
+ Water Quality	What water quality conditions are relative to those species that inhabit it?
+ Water Quantity	Too wet / too dry?
+ Accessibility	Can species access and flow through the water body?

Nest and Nursery- breeding and safe space

+ Flora Assessment	What was there? What is there now?
+ Water Quality	Is it liveable?
+ Water Quantity	Too wet / Too dry?
+ Accessibility	Can species access and flow through?

Adaptable

+ Adaptability	Is she able to move and grow in response to the environments (Tāne-mahuta and Tangaroas') needs?

5. Data Flow

In order to answer the questions posed, we look to the data we may gather to begin to answer these questions. Information gathered includes both cultural and scientific ways of assessing landscapes, acknowledging that we are not in the environmental context of our tupuna.[8]

This way of combining data also allows non-Māori to see data that already exists through a Te Ao Māori lens.

The data flow illustrates how we move from the personification of the environment, incorporates the structure of the Mauri-o-Meter, to meet the state of mauri, mauri *mate – mauri ora* (Appendix B). This data flow gives a voice to Hine-tū-i-te-Repo (although this is a comprehensive example of the whakapapa-based methodology meeting mauri attributes, it is not complete, and interrogation and/or adaptation is welcome). The voice of which can be heard through the planning response within Northland Regional Council.

5.1 Additional Data

Other data not specific to Hine-tū-i-te-Repo, but in direct relation to her wellness.

- **Soil leaching tests** -To establish rate of leaching and leachate type, from natural and human use areas, i.e., farming, forestry, and horticulture. This can be cross referenced to water samples.
- **Soil respiration tests** -From natural and human use areas, i.e., farming, to establish the microbiology of the soil.

Tīpare Framework

All the information gathered can be placed in the Tīpare Framework (Appendix A).

Data

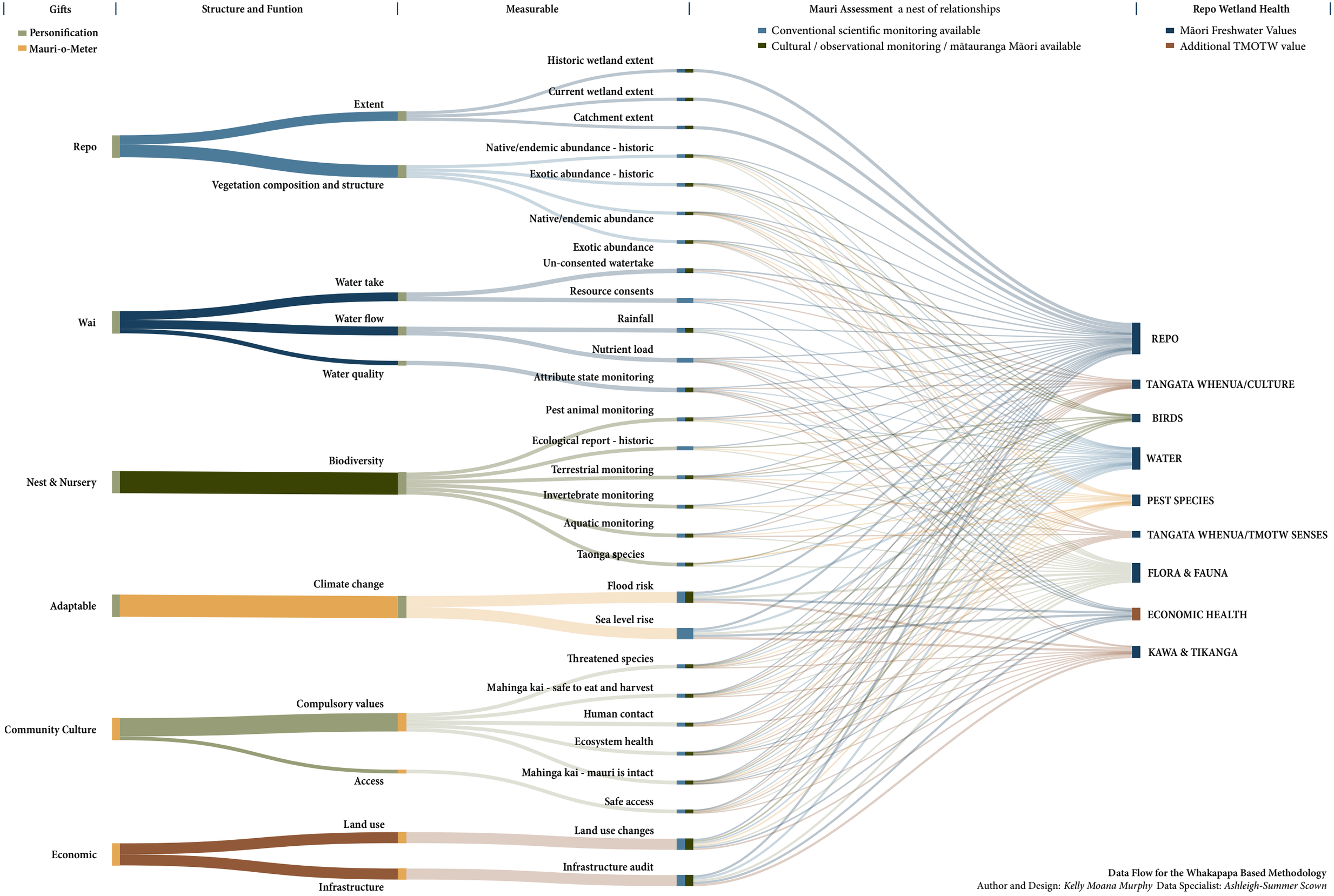
See data guidelines for information specific to the gathering, storing, analysis and use of data.

[8.] *"Within this vision also rests the requirements for us as Māori to engage with the gifts and skills left to us by our ancestors to inform our own creation, uptake and application of modern technology, in order to be the very best kaitieki [kaitiaki] we can be.*

While our ancestors left us valuable messages and inspirational models, we should never forget that our lands and rivers were different for them, with different needs, surrounded by different systems of living. Possibly the most powerful model of inspiration that we can draw from our ancestors is that of careful, purposeful care and observation."

– Tina Ngata Mountains to Sea: Solving New Zealand's Freshwater Crisis

Hine-tu-i-te-Repo



Data Flow for the Whakapapa Based Methodology

Author and Design: *Kelly Moana Murphy* Data Specialist: *Ashleigh-Summer Scown*

5.2 Mauri Assessment

The Whakapapa-Based Methodology process – Data Flow, provides a framework for a Mauri Assessment. The contents of the Mauri Assessment can be curated to the needs and capacity of the hapori wai.

In its most simple form, it could be based mostly on cultural and observational metrics.

This would meet the NPS-FM requirements in its most basic expression. It would not overcome the relational barriers that tangata whenua and Northland Regional Council currently experience.

To realise the methodologies full potential, building the capacity of hapori wai and Northland Regional Council, it could be developed into a freshwater monitoring tool.

Freshwater Monitoring Tool

Freshwater Monitoring Tools, the software and training to use them, are expensive and require expert knowledge to build. This tool could then be made available for hapori wai in their water monitoring and is an example of how to build a relationship and culture of trust with tangata whenua.

State of the Takiwā is a monitoring approach developed by Te Rūnanga o Ngāi Tahu, as outlined in the State of The Takiwā - Te Āhuatanga o Te Ihutai' report from 2007 (Appendix C). State of the Takiwā was informed with some insights from various existing material and monitoring kits and provides an environmental monitoring and reporting system that is rooted in cultural values. (https://api.ecan.govt.nz/TrimPublicAPI/documents/download/1862390)

The existing State of the Takiwā monitoring approach aligns and speaks to many (but not all) of the values observed in the Whakapapa-Based Methodology. It provides an example of a strong base off which to develop a freshwater monitoring tools based on the Whakapapa-Based Methodology. Through development, all captured information could then be interrogated to provide a Mauri-o-Meter based score.

A working tool, compatible with the Esri suite of GIS products, could be developed in collaboration with Reland, or commissioned by Northland Regional Council.

Recommended Action - Maramataka and Kaupeka

It is recommended that any Mauri Assessment include acknowledging and observing the maramataka (moon calendar) and kaupeka (seasons).

Tohu o te taiao

Utilising the maramataka and kaupeka, all taiao based kaitiaki could learn the signs to look out for the kaupeka / phases of summer and winter. This would allow more intimate and accurate understanding of ourselves and the environment of Aotearoa.

“By following such a rigid system of time [the Gregorian calendar], we are imposing a human construct on the shifting phases of nature that distances ourselves from intimately knowing and living within our environment, the way our Māori ancestors did.”

- Rereata Makiha

6. Part One: Methodologies Attribute and Baseline States - Summary

6.1 Whakapapa-Based Methodology – Attribute and Baseline States.

The Whakapapa-Based Methodology includes:

- how to hold and integrate tools of multiple world views
- dissolve the existing barriers for tangata whenua in the management of the environment.
- realise the full opportunity of Te Mana me te Mauri o te Wai.

The Mauri Assessments are starting points. Each hapori wai can customise their Tīpare Framework, as well as the measurables, through engagement (Hapori Wai Action Plan) with Northland Regional Council.

If it is embraced in its fullness, it has the potential to achieve the vision, Te Hurihangawai. It allows the integration of Te Aō Maori to sit alongside conventional monitoring tools in the National Planning Instrument, both worlds able to speak to one another.

Expert Mātauranga

Developing the Whakapapa-Based Methodology will require experts in Whakapapa – such as Rereata Makiha or Charles Royal who hold the mātauranga and mana to articulate ngā atua and the associated pūrākau.

Beyond Wai

Shown through the structure and function of Hine-tū-i-te-Repo, much of the data gathered could be used in assessing other deity realms. I.e. Ngahere, Awa, Roto, Soil, etc.

With whakapapa as a base, threads can be developed that come back to the source of whakapapa such as

- Education
- Communication
- Decision making
- Ecological management practices
- Cultural and ecosystem connection

Mātauranga Māori Taiao Framework

The Whakapapa-Based Methodology could be utilised for the larger piece of work to form a mātauranga Māori framework for environmental monitoring.

Additional Attribute States

Repo Health, Roto Health, Awa Health, Groundwater Health can all follow the above methodology to develop Mauri Assessments for the baseline health of each of these water bodies.

The other attribute states; Cultural Health, Te Mana me te Rangatira, Access to Wai, tangata whenua Water Allocation, Water Quality for Drinking, are explored below.

Baseline States

In some cases, baseline states may be able to be presented from a desk top assessment.

Target States

Target States can initially be demonstrated through the needs of selected taonga species. These are required to be identified and further refined through Hapori Wai engagement.

Cultural Health

- Is the Whakapapa-Based Methodology being implemented?
- Is Mauri being assessed?
- Are tangata whenua involved in the assessments?
- Does council understand the TMOTW aspirations of each marae?

Te Mana me te Rangatira

- Utilising Whakapapa and Mauri Assessment as decision making tools.
- That states of mauri are key information in decision making.
- Utilising the states of mauri as part of the planning mechanism takes the subjectivity out of decision making.
- IHEMPS. How many marae are developing IHEMPs? How many marae want to?

Access to Wai

Undertake a desktop assessment.

- Map access to current water bodies.
- NZ Walkways commission for Current Public Access.
- Identify esplanade strips and reserves and access to these.
- Identify paper roads.
- Cross refence the above with marae sites of significance and marae whakapapa waterbodies (some maunga, awa, moana could be identified through desktop analysis. Others through hapori wai engagement).
- What percentage of the length of the waterway is accessible? What activities are available?
- Look at planning regulations around subdivision or land amalgamation. When there is a land change such as this, can provision be made for access to wai for the public?

Load all information into catchment size Tīpare Framework. This can be distilled down to Hapori Wai Tīpare Framework once their boundaries and aspirations are known.

Tangata Whenua Water Allocation

- Current resource consents.
- Review of all allocations and align to the same timeline.
- What are the needs of tangata whenua / hapori? How are all their needs being met and are these being met before wider economic interest?

Water Quality for Drinking

When looking to establish the Water Quality for drinking, there is a need for a standard to be set for non-treated water – water that may be taken from streams, or when treatment is not available or appropriate, but is required to be consumed. This allows for the reconciliation of tangata whenua to wai: their connections to kai, culture, health and spirit.

A bottom-line attribute State from Desktop

Setting a bottom-line attribute state for drinking water could include referring to Historic Water Quality drinking standards – appendix item. These would need to be updated to include recent research of effect on Human Health such as nitrates in water.

Baseline states – understanding geological context of hapori (high sediment)

Following the understanding of water quality at the source, this could become the target state.

The baseline state needs to be understood through the geological context of the hapori wai, to establish if there needs to be any change to the target state due to the geological influences in water quality as it moves through the catchment.

What if the hapori wai target is different to the above?

- Understand why there is a difference.
- If it is achievable and holds up the first priority in the hierarchy of Te Mana o Te Wai, set as the Target State.

7. Part Two: Hapori Wai Action Plan

7.1 Whakapapa

At the heart of the Hapori Action Plan, is centring Whakapapa; recognising the connection of people to place.

As marae are the physical gathering place for haukāinga (and hapū), the recommended approach for undertaking a 'local level' on the ground freshwater planning processes with tangata whenua in Te Tai Tokerau, is through marae.

Whakapapa-Based Hapori Wai Action Plan

Relationship

Communicate with Marae

Engage with Marae

Identify the Hapori Wai with Marae

Populate Tīpare Frameworks for each Hapori Wai
Past, Current, and Future Tīpare layers.

Relationship

Identify the nature of relationship between NRC and the marae of Te Tai Tokerau. The nature of the existing relationship will help determine the amount of cups of teas required to get to engagement with marae.

1. List of marae.
2. Does NRC already engage with the marae?
3. How willing is the marae to engage with NRC?
4. What environmental monitoring is currently being undertaken by NRC in the marae catchment?
5. Does the marae have an IHEMP?
6. Are they undertaking environmental monitoring themselves?
7. Are they involved in decision making regarding their environment?

It is recommended that TWWAG are involved in the detailed design and implementation of the Hapori Wai Action Plan.

Communicate with Marae

A communications package to be designed and delivered that communicates Northland Regional Councils plan to engage with marae.

Be clear on the purpose of the engagement including: tangata whenua part of environmental monitoring, mauri as a measurement, and the benefits to tangata whenua. Refer to the Trust guidelines under the mātauranga Māori. Section of this report.

Engage with Marae

Identifying where each marae is at on a scale of readiness.

- An initial engagement where NRC communicate the hapori wai engagement purpose and process.
- Wānanga where people come to NRC (information, training, tools that relate to everyone).
- Wānanga where NRC go to the people (where it is specific to the hapori wai).

Tuatahi

For this engagement, the team at NRC present to the Marae committees.

- The engagement process.
- The information NRC seek.
- The information NRC has to share – show populated Tīpare Framework, with space for them to make it their own.
- Set date for marae wānanga.

Tuarua – Wānanga

Introduce the tools available between Northland Regional Council and tangata whenua.

Present the desktop populated Tīpare Framework, identifying the gaps in information.

Go over examples of cultural indicators. Marae choose what aligns with their whenua, and have the ability to add other measurables. E.g., specific taonga species presence / abundance, or add others. This is captured in their aspirations and becomes a measurable for that also.

Identify hapori wai boundaries, their visions, values, objectives, plan provisions and actions etc., for freshwater. These can be added to their Tīpare Framework and can be included in the regional plan via future plan changes.

7.2 Populate Tīpare Frameworks

Tuatoru – Kaimahi Wānanga

Wānanga in the field NRC Staff alongside tangata whenua. To capture data and establish the current baseline health of the hapori wai.

Tuawha

Present the populated Tīpare Framework: where they have come from, where they are, and where they want to go.

Discuss options for steps to reach their taumata.

In some instances, there may be hapū that do not have a marae. Engagement with these hapū as to their preferred place of meeting is advised.

7.3 Initial Costings

Find attached the initial costings (high level) for a marae level engagement (Appendix D).

Initial engagement

In the initial engagement that main cost will be time and travelling. Many cups of tea.

Personnel

The initial costings for personnel is interdependent on the approach that is chosen, which has too many variables to determine an outcome.

Core engagement team

The recommended approach would be a core hapori wai engagement team at Northland Regional Council who would be closely supported by the Māori engagement team.

- Project Lead / Facilitator
- Scribe / Administration
- Data Specialist / GIS
- Communications

Hapori wai liason

It is recommended that one person per Hapori Wai is nominated by marae for tuatoru and tuawha wānanga. This person becomes the point of contact for organising dates for engagements between NRC and Hapori Wai and communicating any pātai (questions) between the two. A flat fee of $1000.00 could be attributed to this mahi.

Environmental monitoring kaimahi

It is recommended that every environmental monitoring kaimahi at NRC is allocated marae. This person would attend the tuatoru monitoring wānanga.

7.4 Hapori Wai Action Plan – Summary

The process has been informed by the design and first year of implementation of the Te Runanga o Te Rarawa Me He Wai project.

It is an ambitious methodology but one that is incredibly rewarding and meaningful.

Time

Know that this process will take some time. The willingness of Northland Regional Council to meet tangata whenua will need to be shown. For some marae, they will need to observe this many times over before they are willing and ready to engage.

Targets

The pace of the work is less important than the quality of the work. Some realistic targets for resources meeting scale of readiness might be a baseline of 10% of marae per year (approx. 18 marae), distributed over at least one catchment in each iwi rohe.

It is more important that the work happens, and the relationships are built, than to set unrealistic targets and costs which stop the relationship before it has begun.

Marae intersecting with Hapori Wai

There are approximately 180 Marae in the Northland Regional Council boundary (based on 'Tribal' marae within the Te Puni Kōkiri 'Marae of Aotearoa' dataset).

Each marae can determine a hapori wai alongside other marae It could be from the second engagement on, that NRC are engaging with more than one marae at a time for a hapori wai.

To get an early indication of hapori wai, we overlay **Tribal Marae** and **Sea Draining Catchments** (SDC). Using SDC to group relative marae could prove meaningful in terms of the whakapapa of wai, this however, doesn't recognise any past and present political groupings or structure.

There are 183 Tribal Marae in the Northland Regional Council boundary.

- 24 Marae *do not* directly intersect (spatially) with a SDC – these could be manually associated a SDC.
- 159 *do* directly intersect.
- There are 78 SDC that directly intersect (spatially) with Tribal Marae – potentially 78 hapori wai.

Using takiwā groupings - marae to marae, fit within Iwi structure – but may not capture the flow of wai.

8. Mātauranga Māori

Mātauranga Māori is growing and being created. This methodology will create new mātauranga.

The Whakapapa informed methodologies – allowing for novel and tradition tools of observation, actively observing and engaging with the kaupeka – provides space for rematriation. [9.]

It is integral that Māori are part of the collecting, storing, and analysis, as well as the use of this new mātauranga, including decision making.

8.1 Trust

Mātauranga Māori is part of Te Ao Māori. If we are to have a methodology where two worlds meet, it is important to cultivate a culture of trust between council and tangata whenua. Providing spaces of shared culture in order to overcome the barriers Aotearoa faces in environmental and social restoration.

Trust is built by many small acts. Our recommendations do not involve costly grand expressions, but small and frequent opportunities for connection.

Safe Spaces

A space where it is safe for both Māori and non-Māori to work together. To share and ask questions.

This includes aspects such as engaging experienced facilitators, and decolonisation – an example being the Te Pumaomao programme run by Takawai Murphy. For the confidence of all staff to work in partnership, we need to understand our place. This professional development journey is recommended for all staff, including governance.

Inclusive

Tangata whenua are present at all stages – collection, storage and decision making.

Opportunities for Connection

NRC environmental monitoring staff allocated as contact people for marae environmental queries.

Mutual Learning

Mutual learning is providing a space where both Northland Regional Council and tangata whenua can learn together. It is recommended that wānanga are held where both are invited. Although the learnings that individuals will glean from a wānanga will all be different, the important aspect is that they are learning together.

Respect

It must be understood that mātauranga Māori is not lesser than. This is a meeting of two worlds, each with their own validity.[10]

Note

When looking to the costs of implementing a trust-based approach, it is imperative that we also look at the costs of *not* implementing a trust-based approach. i.e. could the litigation with Rakaumangamanga have been avoided if a culturally responsive framework was in place?

[9] *"The fulfilment of our roles as kaitiaki can therefore only occur once we are rematriated back to our tribal territories. I've borrowed this term from Steven Newcomb, Shawnee/Lenape director of the Indigenous Law Institute in Lenapehoking (New York), who says: 'By 'rematriation' I mean 'to restore a living culture to its rightful place on Mother Earth,' or 'to restore a people to a spiritual way of life, in sacred relationship with their ancestral lands, without external interference.' As a concept, rematriation acknowledges that our ancestors lived in spiritual relationship with our lands for thousands of years, and that we have a sacred duty to maintain that relationship for the benefit of our future generations.'*

We must physically be beside our waterways in order to utilise them, to speak with them, to listen to them and what they are saying through their scent, through their sound, through the taste of their kai, through their levels, through the life within them (or lack thereof), in order to realise this sacred relationship."

- Tina Ngata Mountains to Sea: Solving New Zealand's Freshwater Crisis

[10]. *'Mātauranga Māori may at times be enhanced by western science, but must never be dictated by it.'*

– Hal Hovell

9. Data

9.1 Data Collection

Consider data availability for the area of interest. When collecting or populating new data for an existing dataset with no information for the area of interest, or when generating an entirely new dataset, please follow these guidelines.

- Data that does not yet exist, and sits within the current Data Sets of Regional Council
- Dataset(s) that are yet to be established within Northland Regional Council.

Collection of New Data

Permission to collect new data must be granted by hapori wai. Additionally, if hapori wai expresses a desire to be involved, they should be present and participating (an example of mutual learning).

Example of data process: New Flora & Fauna Assessments

NRC Action

- Through Desktop assessments, identify the species that would likely to or have shown to be present at the water body.

Hapori Wai and NRC Action

- Identify any additional species or special relationship with e.g., taonga species, mahinga kai.
- Undertake monitoring alongside tangata whenua.
- Through desktop assessments, identify the species which should or have been present at water body.

Mātauranga Data Sovereignty Agreement

Where permission for the collection of new data from hapori wai is granted, a Māori Data Sovereignty Agreement will be established between hapori wai and Northland Regional Council. This agreement will define the terms governing the use, distribution, and storage of the collected data to align with the interests of hapori wai.

Data Storage

In addition to meeting the access terms in the Māori Data Sovereignty Agreement, Northland Regional Council should consider establishing a private API service to provide hapori wai with secure access to their data, provided the necessary infrastructure is in place. This would enhance data accessibility, promote secure communication, and facilitate efficient interactions between NRC and hapori wai, ensuring a streamlined and controlled exchange of information.

Where Northland Regional Council maintains its servers, secure storage, such as a dedicated database, should be provided exclusively for holding all relevant data related to hapori wai. The designated database within Northland Regional Council's infrastructure will serve as the sole location for the storage of this data.

Appendix A – The Tipare Framework

Tīpare Framework

Author: Kelly Moana Murphy

Tīpare Framework

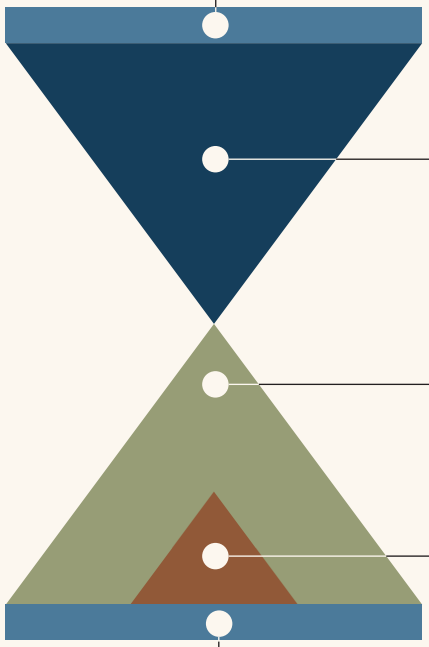
The *tīpare* is a flax band woven of two strands intertwining in a repetitive pattern, which adorns the head.

The **Tīpare Framework** also weaves together elements - *soil* and *water*, *environment* and *people*, *science* and *Te Ao Māori*. The **Tīpare Framework** receives data (via the whakapapa based methodologies) and conceptualises this data flow into a visual representation; showing the *story of wai* as it moves through the landscape - *Ki Uta, Ki Tai* (from mountains to sea).

The story of wai carries the tales of the landscape it has traveled through. This helps community understand the health and wellbeing of their environment. From this place of knowing, those utilising the framework can identify

- Where they would like to be (restoration).
- The steps to get there.

The Tīpare is able to be scaled from catchment to landowner size, supporting landowners to understand what is occurring on their whenua, and their place in the wider catchment. It can also hold various ways of being in the world - a space for *shared culture*.



Whakapapa

Acknowledging our common ancestors (Ranginui *Sky Father* and Papatūānuku *Earth Mother*) to the tūpuna maunga (*mountain*), awa (*river*), and moana (*ocean*) of the hapori wai (community linked by water). As well as the marae, hapū and iwi of the hapori wai.

The whakapapa of the maunga and whenua (*land*) from a scientific perspective can also be presented here, showcasing the geological landscape and any effect it may have on ***the story of wai***.

Wai *water*

On the maunga (or land area), we can identify the quality of wai at source (or where it enters the property).

This includes all the life within the wai.

Whenua *land*

Native Forest, hillside pasture, pests and birds, all have their story to tell. The water carries it.

The water moves through the whenua and rests in it, taking form in *water bodies*. Providing habitat for our more-than-human kin.

Soil

Beneath the surface is the engine room of life itself. The more life in the soil, the slower wai travels, nourishing life with it's rich interactions.

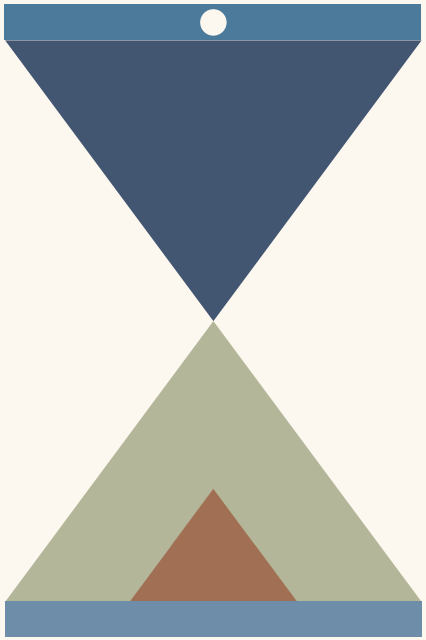
Moana *Ocean*

When the wai meets the ocean, it is accompanied by the story of its travels through the land. If we listen, we can begin to understand if we are upholding the mana and mauri of wai. If there are places we are not, we can begin to take steps towards restoration.

WHAKAPAPA

Acknowledging our common ancestors (Ranginui *Sky Father* and Papatūānuku *Earth Mother*) to the tūpuna maunga (*mountain*), awa (*river*), and moana (*ocean*) of the hapori wai (community linked by water). As well as the marae, hapū and iwi of the hapori wai.

The whakapapa of the maunga and whenua (*land*) from a scientific perspective can also be presented here, showcasing the geological landscape and any effect it may have on the *story of wai*.



The Whakakpapa Of Water And Land

We can acknowledge the whakapapa of the water and land, through enquiry into the

- Ngā Atua *Dieties*
- Ingoa *Names*
- Pūrākau *Stories*
- Scientific Research

Tangata Whenua

We can acknowledge the long and deep history of tangata whenua within this land through identifying the whakakapapa of the marae and it's people.

- Tūpuna Maunga *Ancestral Mountain*
- Tūpuna Awa *Ancestral River*
- Tūpuna Moana *Ancestral Ocean*
- Pūrākau of taniwha, kaitiaki, wāhi tapu, etc.
- People - ngā hapū, location of marae.

Hapori Wai Boundaries

Through this enquiry, tangata whenua can identify the boundaries of their hapori wai.

Historic Ecological Assessment

What was/should be present? What previously existed in the catchment?

- Ecosystem type
- Flora and fauna

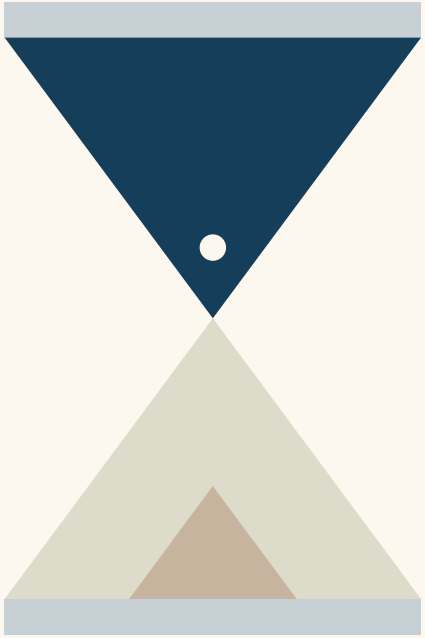
This information can be collated starting from published data - such as ecological reports - and added to through the engagement process with marae and their mātauranga Māori.

Data: *Boundaries, Maunga, Awa, Moana, Hapū, Marae, Taniwha, Kaitiaki, Wāhi tap, Historic ecosystems, Historic waterbody extent, Catchment extent, Flora and fauna - historic, Land use.*

WHERE ARE WE?

WHERE ARE WE? • BASELINE STATES

Utilising the Whakapapa Based Methodology, we can begin to populate the Tīpare Framework. This will provide the data to inform the baseline states of the hapori wai and to understand *where we are*.



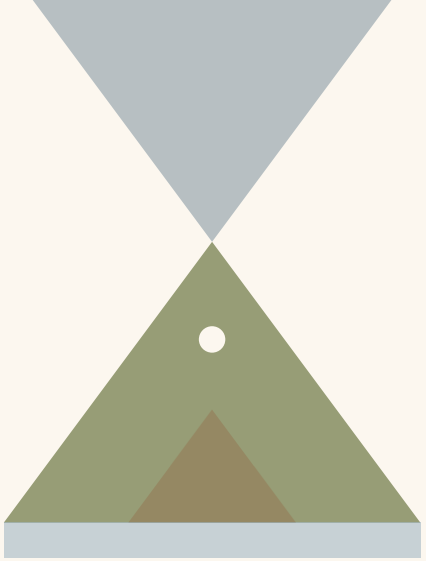
Wai • water
On the maunga we can identify the quality of wai at source. This can become the **target state** of water for a hapori wai.

Multiple water samples can be taken throughout the hapori wai - specifically at the entry, and mouth of water bodies - to add details to the story of wai as it flows through the catchment.

Flora and Fauna
Those that make their home within the aquatic environment are also included in the assessment for water quality.

Individual Landowner
For an individual landowner, they can identify the water quality of the water entering and exiting the land. Their target states could then be set as: leaving no worse than it entered, leaving better than it entered, leaving at the level of the hapori wai target states.

Data: *Extent, Vegetation composition and structure, Water take, Water flow, Water quality, Biodiversity , Climate change, TMOTW compulsory values, Access, Land use, Infrastructure*

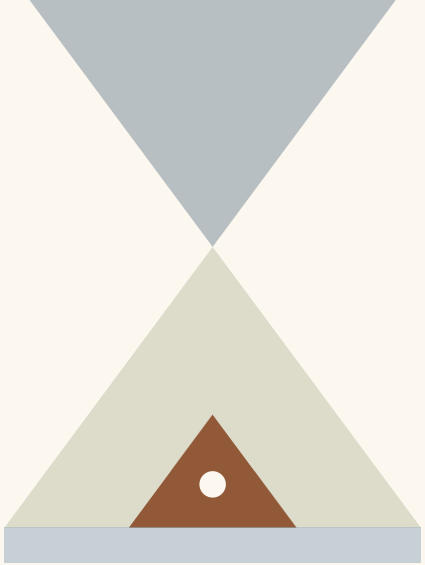


Whenua • land
Tāne Te Waiora (also god of the forest) married **Hinetuparimaunga** (mountain maid) and they begat **Parawhenuamea** (Mother of all waters).

This helps us to understand, *what is cloaking the land, what activities are being undertaken on the land, the species which inhabit these ecosystems*, will all be impacting on the water.

Merging the water data with land use data, will help understand what is happening to the water. This could be in the form of vegetation assessments, Flora and Fauna Assessments (indigenous and exotic, pest and invasive species), stock numbers, land management practices, infrastructure and so on.

Data: *Extent, Vegetation composition and structure, Water flow, Biodiversity, Climate change, TMOTW compulsory values, Access, Land use, Infrastructure*



One • soil

The relationship between soil and water is perhaps the most profound tale in the story of wai.

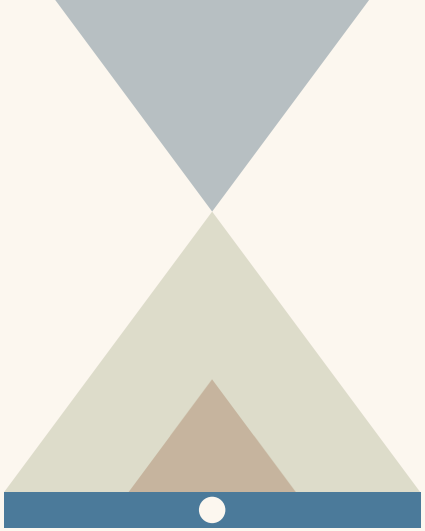
The level of life in the soil directly influences the soils ability to hold water , keep sediment, and absorb nutrients.

Growing awareness and knowledge of this relationship, and supporting life in our soils, can mitigate flood risk, poor water quality, and nutrient run off.

*"**Hineahuone** is the mother of humanity. She was formed from the Earth and imbued with the essence of the ira atua."* (Mikaere 2003).

With **Hineahuone** as the mother of humanity, what happens to our humanity as we degrade our soils?

Data: *Vegetation composition and structure, Water flow, Biodiversity, Climate change, TMOTW compulsory values, Access, Landuse, Infrastructure*



Moana • Ocean

From the joining of **Parawhenuamea** (mother of all water) and **Moana-nui-a-Kiwa** (guardian of the ocean), life burst forth.

When the wai meets the ocean, it is accompanied by the story of its travels through the land. If we listen, we can begin to understand

- The story of wai
- If we are upholding the mana and mauri of wai
- If there are places we are not
- The consequences of not upholding mana or mauri

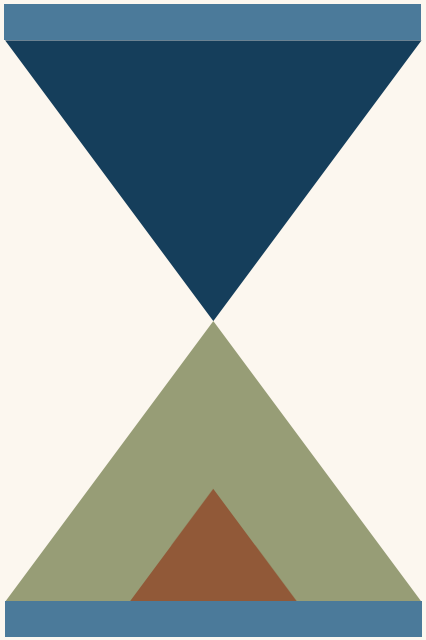
From this place of understanding, tangata whenua can identify where they want to be (target states), and begin to take steps of restoration.

Data: *Vegetation composition and structure, Water flow, Biodiversity, Climate change, TMOTW compulsory values, Access, Landuse, Infrastructure*

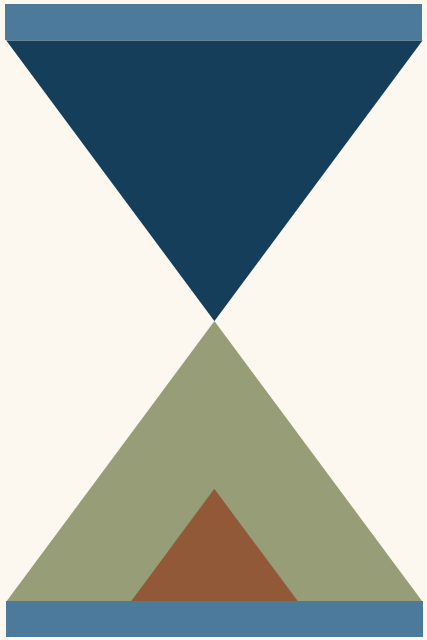
WHERE ARE WE GOING?

WHERE ARE WE GOING? • TARGET STATES

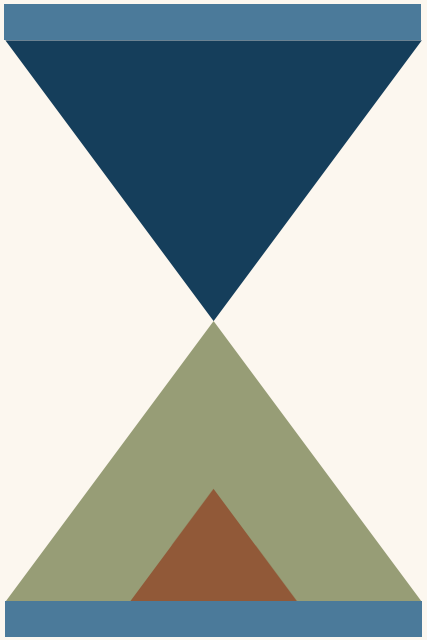
From this place of understanding, tangata whenua can identify where they want to be (target states), and begin to take steps of restoration. Engagement is complete when all three layers of the Tīpare - Whakapapa, Baseline States, Target States - are absorbing the data and telling the past, present and future story of each hapori wai.



Whakapapa
Where we have come from.
From our celestial origins to recent ecological reports.



Baseline States
Where we are now.
Our current context



Target States
Where we are going.
Te Ara Taumata

Appendix B – Attribute Table A6 – Repo/Wetland Health including Mauri attribute state

Attribute Table A6: Repo / Wetland Health

Value (and component)	Māori freshwater values
Freshwater body type	All
Attribute unit	Repo / Wetland Health
Attribute band and description	Narrative attribute state
A a. Repo / Wetland health is excellent and ecological / flood mitigation functions are optimal. b. The vitality of the wai is healthy. c. There is an abundance and diversity of lush riparian vegetation, indigenous flora, fauna, and kai species for tangata whenua to access sustainably. d. The area is teeming with native birds. e. The area is pest and invasive species free. f. Te matangaro o tangata whenua is elevated through te tairongotanga (touch/feel, sound, sight, smell, taste) o te wai. g. Tangata whenua return to the area regularly for ceremony, to gather, to swim and access the healing abilities of wai. h. Kawa and tikanga are in place to assist enhancement of mauri.	Excellent / Mauri ora
B a. Repo / Wetland health is reasonable and ecological / flood mitigation functions are generally good. b. The vitality of the wai is somewhat healthy. c. Riparian vegetation, indigenous flora, fauna, and kai species are present but not in a state of abundance. d. Native birds are generally seen and heard. e. Evidence of harm from pests and invasive species. f. Te matangaro o tangata whenua is somewhat elevated through te tairongotanga (touch/feel, sound, sight, smell, taste) o te wai. g. Tangata whenua return to the area intermittently for ceremony to gather, to swim and to access the healing properties of wai but this may depend on the condition of the wai and surrounding eco-systems. h. Kawa and tikanga are in place to assist enhancement of mauri.	Good / Mauri piki
Te Tai Tokerau Bottom Line	
C a. Repo / Wetland health is diminished or impaired but some ecological / flood mitigation functions exist. b. Life giving and healing properties are in decline and the wai struggles to sustain the surrounding eco-systems. c. There is little riparian vegetation, indigenous flora, fauna, and kai species present. d. Native birds are rarely seen and heard. e. The area is swarming with pests and invasive species. f. Te matangaro o tangata whenua is diminished through te tairongotanga (touch/feel, sound, sight, smell, taste) o te wai. g. Tangata whenua do not return to this site often. h. Kawa and tikanga are generally absent and do not assist enhancement of mauri.	Diminished and impaired / Mauri heke
D a. Repo / Wetland health is poor and ecological / flood mitigation functioning limited. b. Surrounding eco-systems are negatively impacted. c. There is little to no riparian vegetation, indigenous flora, fauna, and kai species present. d. Native birds are not seen and heard. e. The area is overtaken with pests and invasive species. f. Te matangaro o tangata whenua is negatively impacted through te tairongotanga (touch/feel, sound, sight, smell, taste) o te wai. g. Tangata whenua do not return to this site. h. Kawa and tikanga are absent and mauri is degraded.	Poor / Mauri noho / mate
Advisory Note: (a) Tangata monitor this attribute. Mechanism needs to be developed to enable this to happen such as a s.33 transfer of powers or a joint management agreement. (b) Tangata whenua will need to determine the best percentage for each - species, birds, tohu.	

Appendix C – State of the Takiwā

Appendix B – Takiwā Monitoring Forms used within the Study

State of the Takiwā — Site Definition Form

Site Code ☐

Site Name ☐ Defined by ☐ on __ __ / __ __ / __ __ __ __

Assessment type: (tick one) ☐ New site ☐ Update

Region of NZ ☐ *eg Otago* Catchment/Feature ☐ *eg Waiau River*

Zone (tick one): ☐ Mountains ☐ Hills ☐ Upper Plains ☐ Mid Plain ☐ Lowland Plains ☐ Urban ☐ Coastal/marine ☐ Other. Specify: . . . .

Ecosystem Types: ☐ Alpine ☐ Native forest ☐ Exotic forest ☐ Tussock/dryland ☐ Farm/agrisystem ☐ River/Stream ☐ Lake/Wetland ☐ Estuary/Lagoon ☐ Coastal/Dune ☐ Marine ☐ Other. Specify: . . . .

Ownership: ☐ Private ☐ Council ☐ DOC ☐ Maori ☐ LINZ ☐ Crown ☐ Unknown ☐ Other. Specify: . . . .

Mana Whenua ☐

Site Description (100m radius. Including site issues, pressures and general notes):

Legal Protection: ☐ Informal/none ☐ Reserve ☐ NZAA site/silent file ☐ Legal covenant ☐ Conservation ☐ Other. Specify: . . . .

Settlement Site: ☐ Nohoanga ☐ Topuni ☐ Tribal property ☐ SA ☐ Unsure

SITE-SIGNIFICANCE DETAIL Is this a traditional site? Yes No Unsure Are there any signs of traditional use? Yes No

Significance of site: ☐ Urupa ☐ Pā/Kāinga ☐ Mahinga kai ☐ Wāhi Pakanga ☐ Other

Please explain site significance / List any observations:

Traditional Abundance List species and resources traditionally known to be present at this site.

NGĀ MANU / BIRD SPECIES	**Abundance**	**NGĀ IKA / FISH SPECIES**	**Abundance**
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots

NGĀ RAKAU / PLANT SPECIES	**Abundance**	**OTHER TAONGA / Natural Resources**	**Abundance**
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots
	Few Some Lots		Few Some Lots

Geographical Position Area (sq m) ☐ Altitude (m) __ __ __ __ __ __ __ Map No (if 260 series) __ __ __

East __ __ __ __ __ __ __ North __ __ __ __ __ __ __ Accuracy/Offset (m) ☐

Photos taken? Yes No Direction facing, Photo 1: ☐ Photo 2: ☐ Photo 3: ☐ Photo 4: ☐

Use camera on 35mm or equivalent. Preferably take four photos, facing North, East, South and West, from the GPS reference point. Also consider Upstream, Downstream, etc.

Describe these photos:

OFFICE USE ONLY Entered into Takiwā database by: ☐ Date: __ __ / __ __ / __ __ __ __

Photo filed: ☐ Filename: . . . .

Site mapped: ☐ TUMONZ/GIS code: . . . .

State of the Takiwā — Visit Form

Site Code [ ]

Use a separate form for Questionnaire — **Visit Code** [ ]

VISIT DETAILS

Site Name: [ ] No. in Group: __ __

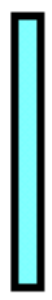
Visit date: __ __ / __ __ / __ __ __ __ Time: __ __ : __ __ am / pm Hours at Site: [ ]

Visitor Name: [ ] ☐ First visit here? ☐ First evaluation here?

Visitors from: [ ] Visit Purpose: [ ]

Weather Centre

1. Temperature:
Enter 'C here __ __ 'C
or
indicate approximately
on scale below



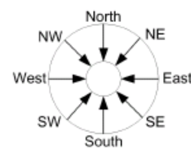
Hot	25'C or more
Warm	20
Mild	15
Cool	10
Cold	5
Freezing	0'C or less

2. Cloudiness
(circle one)
Clear sky
Mainly clear
Streaky
Partly cloudy
Heavy
Breaking
Overcast

3. Precipitation
(circle one)
None
Mist or fog
Drizzle
Light
Moderate
Heavy
Hail
Snow

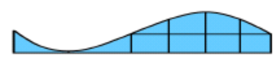
4. Wind If wind, circle its direction

(circle one)
None
Minimal
Light
Stiff or breezy
Gusty
Strong



5. Moon: Circle the shape or tick if not applicable: ☐

6. Tide: Draw a circle on the sea-level curve, or tick if not applicable: ☐



7. Extra comment on weather:

Heritage/Archeological Details Are there any signs of traditional use? Yes No

Describe signs / list observations

Site Issues or Pressures

Site Actions or Responses

Recent Flow Conditions

Circle the number best describing the past 6 weeks:

5 Stable flow
4 Brief flooding (less than 2 days)
3 Several brief floods
2 Prolonged flooding (5 days +)
1 Prolonged low flows

Recent Land Use Conditions (Up to 1 km upstream and within 500m of banks.)

List any disturbances to the stream that are noticed or known (last 6 weeks). eg stock in channel, wastes, chemicals, stormwater, weed clearance, earthworks, etc.

Photos taken? Yes No Direction facing, Photo 1: [ ] Photo 2: [ ] Photo 3: [ ] Photo 4: [ ]

Use camera on 35mm or equivalent. Preferably take four photos, facing North, East, South and West, from the GPS reference point. Also consider Upstream, Downstream and of any s

Describe these photos:

OFFICE USE ONLY Entered into Takiwā database by: [ ] Date: __ __ / __ __ / __ __ __ __

Site previously mapped : ☐ **Photo filed:** ☐ Filename: ....

Site mapped: ☐ TUMONZ/GIS code: ....

State of the Takiwā — Site Assessment - General

Site Code

A Visit form is also needed — Assessment Code — Visit Code

ENTRY DETAILS Site Name: — Visit date: __ __ / __ __ / __ __ __ __

Visitor Name: — Number of people represented: __ __

A. SITE ASSESSMENT DETAILS For each question, please circle the appropriate number, then explain it in the box following.

1. How would you describe the pressure on this site? Immense presure 1 2 3 4 5 Minimal pressure

Details (including recreational access, surrounding landuse, discharges, etc.):

2. What is the degree of modification/change at this site? Extreme modification 1 2 3 4 5 Low modification

Details (including drainage, burning, discharges, abstractions, developments):

Questions 3, 4, 5 and 6 consider suitability for harvesting mahinga kai

3. IDo you consider access to this site is sufficient to harvest mahinga kai? Not able to gather 1 2 3 4 5 No restrictions

Details:

4. Would you harvest mahinga kai at this site? Definitely no 1 2 3 4 5 Definitely yes

Details:

5. Tick if site is wahi tapu: ☐

6. Would you return to this site in the future? Yes No

Details:

7. What actions are required to improve the health of this site? Tick relevant boxes.

- ☐ Better management by landowner, council, etc.
- ☐ Consideration of ownership/purchase by tribe/rūnanga.
- ☐ Protection / Access arrangement for significant sites with landowner
- ☐ Interpretation / Signage
- ☐ Restoration of native species
- ☐ Pest / weed control
- ☐ Other — Specify:

7. How would you describe the overall health of this site? Very unhealthy 1 2 3 4 5 Very healthy

Details (including any problems, pressures, issues, smells etc. noticed):

Next page for Abundance questions ...

B. ASSESSMENT OF ABUNDANCE For each question, please list the species that you can see or hear, and circle their abundance. If they are mahinga kai species, please tick the MK box. List more on blank paper if necessary.

1. NGĀ RAKAU MĀORI / NATIVE PLANT SPECIES	Abundance	MK	Notes (condition, habits, etc.)
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	

1a. What % of the total site area is covered by native plant species? (within 100m radius)	0%	a little	25%	50%	75%	most	100%

2. NGĀ MANU MĀORI / NATIVE BIRD SPECIES	Abundance	MK	Notes (condition, habits, etc.)
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	

3. NGĀ IKA MĀORI / NATIVE FISH SPECIE	Abundance	MK	Notes (condition, habits, etc.)
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	

4. NGĀ TAONGA MĀORI / Other Natural Resources	Abundance	MK	Notes (condition, etc.)
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	

5. INTRODUCED PLANTS AND ANIMALS	Abundance	MK	Notes (condition, controls, signs, etc.)
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	
	Few Some Lots	☐	

OFFICE USE ONLY Entered into Takiwa database by: _____ Date: __ __ / __ __ / __ __ __ __

State of the Takiwa — CHI: Cultural Stream Assessment

Site Code: ____

Use general assessment code if have one >> **Assessment Code**: ____ **Visit Code**: ____

ENTRY DETAILS Site Name: ____ Visit date: __ __ / __ __ / __ __ __ __

Visitor Name: ____ Number of people represented: __ __

A. Cultural Stream Health Assessment

For each question, please circle a number.

	Unhealthy						Healthy
1. Catchment Land Use	Land heavily modified Wetlands and marshes lost	1	2	3	4	5	Appears unmodified
2. Vegetation - banks & margins (100m either side)	Little or no vegetation - neither exotic nor indigeneous	1	2	3	4	5	Complete cover of vegetation - mostly indigenous
3. Use of the river banks & margins (100m either side)	Margins heavily modified	1	2	3	4	5	Margins unmodified
4. Riverbed conditions (sediment)	Covered by mud, sand, slime or weed	1	2	3	4	5	Clear of mud, sand, slime and weed
5. Changes to river channel	Evidence of modification, eg stopbanks, straightening, gravel removal, shingle build-up	1	2	3	4	5	Appears unmodified
6. Water Quality, eg foams, oils, slime, weeds, etc.	Appears polluted	1	2	3	4	5	No pollution evident
7. Water clarity	Water badly discoloured	1	2	3	4	5	Water is clear
8. A variety of habitats	Little or no current, uniform depth and limited variety of flow related habitats	1	2	3	4	5	Current and depth varies, creating a variety of flow related habitats
9. Overall health of the river at this site	Very unhealthy	1	2	3	4	5	Very healthy

Please explain your answer:

B. MAHINGA KAI SPECIES

For each question, please list the species that you can see or hear, and circle their abundance. You can use a blank page to list more if necessary.

BIRDS: Please list the mahinga kai bird species that you can see at this site

1.	2.	4.	3.
5.	6.	7.	8.

PLANTS: Please list the mahinga kai plant species that you can see at this site

1.	2.	4.	3.
5.	6.	7.	8.

C. SITE ACCESS FOR HARVESTING MAHINGA KAI

Do you consider access to this site is sufficient to harvest mahinga kai?

Not able to gather at this site 1 2 3 4 5 Able to gather - no restrictions

Please explain your answer:

Would you return to this site in the future? Yes / No

OFFICE USE ONLY Entered into Takiwa database by: ____ Date: __ __ / __ __ / __ __ __ __

State of the Takiwa — SHMAK Assessment

Site Code: ____

Use general assessment code if have one >> **Assessment Code**: ____ **Visit Code**: ____

ENTRY DETAILS Site Name: ____ Visit date: __ __ / __ __ / __ __ __ __

Visitor Name: ____ Number of people represented: __ __

A. STREAM HABITAT

Please enter answers in boxes. You can do the calculations and circle the scores if you want, or leave that task to be done automatically later in the database.

A1 Habitat Quality

Flow velocity Time an object travelling down the centre of the stream (do 3 times): ____ ____ ____ seconds

Distance travelled: ____ metres Divide distance by the average time of ____ seconds

... to get an average velocity of ____ m/sec

eg. For 10m in 38s
Velocity = 0.26 m/s
Score = 8

From velocity:	less	0.1	0.3	0.7	1.0	more
Circle the Score:	1	8	10	5	3	

Water pH ____ From the pH:

From the pH:	less	5.5	6.5	8	9.5	more
Circle the Score:	-5	5	10	5	-5	

Water temperature ____ 'C Temp:

Time of day: ____ Score:

Temp:	less	5	10	15	20	25	30	more
Score:	5	8	10	8	5	1	-5	

Water conductivity ____ uS/cm

Cond:	less	50	150	250	400	more
Score:	20	16	10	6	1	

Water clarity (Take 3 readings): ____ ____ ____ cm Calculate average clarity: ____ cm

Note: for ease of use, scale is in opposite order to that in SHMAK doc.

Clarity:	less	35	55	70	100	more
Score:	1	3	5	8	10	

A2 Composition of the Stream Bed *

Estimate materials making up the stream bottom (to nearest 10%).		Enter %	Score
Bedrock			-10
Boulders	> 25 cm		10
Large cobbles	12 - 25		20
Small cobbles	6 - 12		10
Gravels	0.2 - 6		0
Sand			-10
Mud or silt			-20
Man-made, eg concrete			-20
Woody debris			0
Water plants, rooted in stream bed			0
Check you have 100%			

A3 Bank Vegetation *

True left = left bank looking downstream

Estimate vegetation within 5 metres of the banks (to nearest 10%)	%, true left	%, true right	Score
Native trees			10
Wetland vegetation			10
Tall tussock grassland, not improved			8
Introduced trees (willow, poplar)			8
Other introduced trees (conifers)			5
Scrub			5
Rock, gravels			5
Short tussock grassland, improved			3
Pasture grasses and weeds			-10
Bare ground, roads, buildings			-10
Check you have 100%			

A4 Deposits

Tick best estimation of loose deposited material on the stream bed			Score
None noticed			10
Fine, mainly by edge	thickness < 1 mm		5
Moderate, edge & elsewhere	1 - 3 mm		0
Moderate to thick, patchy, most of bed	3 -5 mm		-5
Thick, most horizontal surfaces	> 5 mm		-10

* NOTE: For A2 and A3 the relative scores are shown but percentage-weighted calculations can't be calculated here.
Use the database to automatically do this and get an overall score for each.

B. STREAM-BED LIFE

B1 Invertebrates

For each of 5 stone, sediment or water plant samples, tick a box if you can see any of these.

	1	2	3	4	5	Score
Worms (eg thin brown/red)						1
Flatworms, leeches						3
Freshwater crustaceans (amphipods, water fleas)						5
Small bivalves (up to 4 mm across)						3
Snails (4-6 mm across, rounded)						3
Snails (1-3 mm across, pointed)						4
Limpet-like molluscs (Latia, up to 8 mm wide)						7
"Axehead" caddis (Oxyethira, 2-3 mm long)						3
Midge larvae (3-7 mm long, white - red)						2
Damselfly larvae						4
Cranefly larvae						5
Beetle larvae and adults						6
Caddisfly larvae (rough stony cases, or of sticks & free living)						6
Smooth-cased caddisfly larvae (Olinga, to 10 mm, chestnut-brown)						9
Spiral caddis (Helicopsyche, to 3 mm wide)						10
Mayfly larvae (2-15 mm long)						9
Stonefly larvae (large species, to 20 mm)						10

B2 Periphyton (on exposed surfaces)

Using the same 5 samples, tick a box if you can see any of these.

			1	2	3	4	5	Score
Thin mat/film	Under 0.5 mm thick	Green						7
		Light brown						10
		Black or dark brown						10
Medium mat	0.5 - 3 mm thick	Green						5
		Light brown						7
		Black or dark brown						9
Thick mat	Over 3 mm thick	Green or light brown						4
		Black or dark brown						7
Filaments, short	Under 2 cm long	Green						5
		Brown or reddish						5
Filaments, long	Over 2 cm long	Green						1
		Brown or reddish						4

OFFICE USE ONLY Entered into Takiwa database by: Date: __ __/__ __/__ __ __ __

Appendix D – Initial Costings

Initial Costings for 18 Marae per year, over 10 years

Marae visit	Wānanga Tuarua - Tuawha	Per visit	Per Marae	Per annum
Venue	Marae Hire (per day)	$500.00	$1,500.00	$27,000.00
	Kai (based on 20 people)	$600.00	$1,800.00	$32,400.00
Resources	Stationary, printed reports and fact sheets, Hapori Wai Map	$1,000.00	$1,000.00	$18,000.00
				$77,400.00
Personnel	Initial contact with marae (time for preparation for thought prior to engagement.)	-	-	tbc
	Facilitator	-	-	tbc
	Scribe	-	-	tbc
	Admin/GIS support	-	-	tbc
	Hapori Wai liaison	-	-	tbc
Total		-	-	**$400,000.00**

A high level annual estimate -- **$477,400.00**
A high level annual estimate over 10 years -- **$4,774,000.00**