



## Waiapu Catchment Technical Advisory Group

### Hui 4 – Report 2: Monitoring Sites and Attributes for Ngā Wai o Waiapu

#### 1.0 Introduction

The purpose of this report is to support discussion on **how we measure progress** towards achieving the outcomes and values identified for the Ngā Wai o Waiapu Catchment.

It sets out an initial assessment of where the current monitoring programme could be improved, where new sites should be considered, and what additional attributes could be monitored to best represent Waiapu-specific freshwater values.

We are seeking feedback from the Group on these issues, to be further tested, refined, and prioritised with hapū, communities, and stakeholders.

The NPSFM requires the Council to identify:

- “representative” monitoring sites for each Freshwater Management Unit (catchment plan area)
- Primary swimming sites; and
- Sites used to monitor Māori freshwater values
- Any additional attributes beyond those in the NPSFM.

#### 1.1 What are Attributes?

Attributes are the way we measure whether environmental outcomes sought from the catchment plan are being achieved.

The NPSFM National Objectives Framework (NOF) includes a number of compulsory national attributes (e.g. E. coli, nitrate, periphyton, etc.) for values like ecosystem health and human contact. For many (but not all) of these, the Council holds data on their current state and trends.

In the Ngā Wai o Waiapu Catchment Plan, we are looking at including some Waiapu-specific values and associated environmental outcomes. To understand progress on these, the Plan will need to develop local attributes that represent these dimensions of freshwater health.

## 2.0 Current Monitoring Programme

### *Monthly monitoring*

Council has a range of current monitoring sites for monthly “State of Environment” monitoring. There may be scope to review the locations to improve the “representativeness” of the catchment’s state of environment. However, changing sites requires robust assessment and there are important practical considerations – in particular, the need for safe, reliable and relatively convenient access. For example - Council has tried to establish State of Environment monitoring sites on private land before and has found this to be difficult. As a result, the standard practice is to monitor off public road bridges, or locations easily accessible from public roads.

### *Annual ecosystem health monitoring*

Alongside the monthly monitoring sites, there are also annual ecosystem health monitoring sites which monitor additional attributes. There is also scope to review if these are the best locations to be “representative” of the Waiapu Catchment. Because these sites are only monitored annually, they can be a bit more off the beaten track, but still need to be able to be accessed easily and reliably.

### *Swimming sites*

The Council monitors two swimming sites in the catchment – at the Waiapu (Rotokautuku Bridge) at Ruatorea, and the Makarika stream by the school. Swimming sites are monitored over the swimming season weekly, which has a significant cost associated with it – so it’s important that they are well-used sites. Feedback is sought as to whether these are appropriate locations.

**Table 1** sets out the current monitoring sites and some considerations for their suitability.

Table 1: Current monitoring sites and considerations

GDC Monitoring Site	Current Purpose	Suggested Purpose in the Catchment Plan	Comments
<b>Ratahi Roto – outlet stream</b>	Monthly SOE Annual Ecosystem Health	Consider if this is an appropriate site going forward, or if monitoring resource would better be reallocated (e.g. Waipiro Str). Consider the lake as part of a lake monitoring programme.	This doesn't monitor the lake itself – but the stream that leaves the lake. It doesn't tell us much about the health of the lake, nor is it likely representative of other lakes in the catchment as the lake is geothermal.
<b>Mata Upper</b>	Annual Ecosystem Health	Annual Ecosystem Health	This is a very healthy upper catchment stream. It provides a good reference to what much of the catchment would once have been like.
<b>Waipiro Stream at Te Puia</b>	Annual Ecosystem Health	Annual Ecosystem Health  Consider if there be value in considering converting to full Monthly SOE site to replace Ratahi Roto.	A useful site as one of few small streams in a modified environment that are monitored.
<b>Ihungia River at Ihungia Road Bridge</b>	Monthly SOE Annual Ecosystem Health Hydrology	Annual Ecosystem Health Hydrology  Consider relocating monthly SOE monitoring to a smaller stream instead in the wider Ihungia catchment less impacted by gully erosion (Koeutumara Stream could be possible), to help monitor and understand the impacts of land use change over time.	Sediment is the main problem in this river which is impacted by multiple gullies and landscape scale erosion. Realistically, it will be difficult to improve water quality in this river over the next 50-100 years, even if the subcatchment was entirely revegetated.
<b>Mata Rver at Pouturu Bridge</b>	Monthly SOE Annual Ecosystem Health	Monthly SOE Annual Ecosystem Health	While sediment is a significant issue in this catchment, having 3 sites on the Mata River (Upper, Pouturu, Aorangi) gives us a picture of catchment health along the length of the river.
<b>Mata River at Aorangi</b>	Monthly SOE Annual Ecosystem Health 5 yearly gravel benchmark monitoring Hydrology	Monthly SOE Annual Ecosystem Health Gravel monitoring Hydrology	While sediment is a significant issue in this catchment, having 3 sites on the Mata River (Upper, Pouturu, Aorangi) gives us a picture of catchment health along the length of the river.  We have a long record of monitoring gravel at this site. It seems sensible to keep monitoring this over time. The monitoring method might change as LIDAR can be an effective monitoring tool, rather than relying on 5 yearly manual surveys.  Current extraction operations are too closely located to the benchmarks and water monitoring sites and need to be setback if gravel extraction is to continue in the future in this river.
<b>Makarika Stream at Keelan Road</b>	Annual Ecosystem Health	Annual Ecosystem Health	Smaller stream impacted by gully erosion and high sediment loads. Long term improvement in health unlikely, but will give a useful benchmark to compare the health of less impacted smaller streams.
<b>Koeutumara Stream at Ihungia Road</b>	Annual Ecosystem Health	Annual Ecosystem Health  Consider if it would be appropriate to convert to a full Monthly SOE site to replace Ihungia River	Useful site. Gives a good idea of what might be achievable in the longer term for the Makarika and other smaller streams impacted by sediment.
<b>Mangaokura Stream</b>	Annual Ecosystem Health	Annual Ecosystem Health	This is a very healthy upper catchment stream. It provides a good reference to what much of the catchment would once have been like.
<b>Tapuaeroa River at Tapuaeroa Road</b>	Monthly SOE Annual Ecosystem Health	Annual Ecosystem Health  Review whether this is the best location for monthly SOE monitoring the health in the Tapuaeroa Catchment. Is there a tributary that is more appropriate to monitor for monthly SOE?	There are many large gullies in this catchment, including the largest in the Wairongomai subcatchment.  No human activity is likely to improve sediment levels significantly over the next 50-100 years.

<b>Waiaapu River at Rotokautuku Bridge</b>	Monthly SOE Annual Ecosystem Health Swimming Hydrology	Annual Ecosystem Health Swimming Hydrology Review whether this is the best location for monthly SOE monitoring. Is there a tributary in Ruatorea that is more appropriate to monitor for Monthly SOE? Would conversion of the Waitekaha Stream to a monthly SOE monitoring site provide some more useful information?	Very substantial activity across the whole catchment is needed to see any impacts on water quality.  Given the number of gullies in the catchment, unlikely to see improvements in sediment levels over the next 50-100 years.
<b>Mangaoporo River at Tutumatai Bridge</b>	Monthly SOE Annual Ecosystem Health	Monthly SOE Annual Ecosystem Health	While a large river, there has been significant land use change in the catchment and a degrading E.coli trend so this remains a useful monitoring site for land use.
<b>Mangaoporo River at Mangaoporo</b>	Annual Ecosystem Health	Annual Ecosystem Health	Sediment impacted stream but gives a good idea of what might be achievable in the longer term for other streams in this part of the catchment
<b>Huitariki Stream</b>	Annual Ecosystem Health	Annual Ecosystem Health	This is a very healthy upper catchment stream. It provides a good reference to what much of the catchment would once have been like.  Helps understand the effectiveness of Raukumara Pae Maunga in terms of impacts of pest control on sedimentation.
<b>Waitekaha Stream at Tuparoa Road</b>	Annual Ecosystem Health	Annual Ecosystem Health	A useful site as one of few small streams in a modified environment that are monitored.
<b>Poroporo River at Rangitukia Bridge</b>	Monthly SOE Annual Ecosystem Health Hydrology	Annual Ecosystem Health Hydrology Review whether this is the best location for monthly SOE monitoring. Is there a tributary that is more appropriate to monitor for Monthly SOE?	Has been significant revegetation in this catchment over last 10-15 years, although there are very large gullies present driving the high sediment loads.  No human activity is likely to improve sediment levels significantly over the next 50-100 years. Has degrading trends for other indicators – difficult to understand what is driving these (E.coli, ammonia)
<b>Cross-section benchmarks – multiple locations throughout catchment</b>	5 yearly bed level benchmark monitoring	Bed level monitoring	There is a long record of monitoring bed levels at a range of benchmark sites across the catchment and there is value in continuing to monitor these sites over time. The monitoring method might change, as LIDAR can be an effective and efficient monitoring tool, rather than just 5 yearly manual surveys.
<b>Bore monitoring</b> GRC015 Waiomatatini old school GRC016 Pututu Rd GRC017 Tikitiki Beach Rd GRB073 Kakariki Rd GRB074 Tinatoka Rd GRA006 Karewa Rd	Water levels Groundwater Quality	Water levels Groundwater Quality	Ongoing bore monitoring is important as we need to build up an understanding of the aquifers health and behaviour to be able to sustainably manage it.

## 2.1 Monitoring Gaps – NPSFM Values

In some locations, there is not enough data to understand the current state and whether the catchment plan environmental outcomes are being met. In particular, key spatial gaps for NPSFM values are in the Maraehara Catchment / Rangitukia Area and coastal catchments. There are no monthly SOE monitored sites in these areas.

Because of the high cost of monitoring a full suite of NPSFM attributes, the difficult logistics of adding more sites (locations need to be very accessible), combined with the likelihood that water quality issues in these areas are likely to be similar to the wider Waipapu catchment it is suggested that the best way to “fill the gaps” could be through a combination of additional annual Aquatic Ecosystem Health monitoring sites, and community/hapū monitoring.

The NPSFM focuses on physical monitoring of water quality and quantity, but this does not tell the full story particularly for threatened species and ecosystem health outcomes.

## 2.2 Monitoring Gaps – Other Values

Wetlands are an important part of the freshwater system in the Waipapu Catchment. Council is not currently undertaking wetland monitoring. This is a region-wide issue as well as a particular matter for the Waipapu Catchment.

Work is underway in the Council to identify how to undertake wetland monitoring, but it is recommended that the Waipapu Catchment Plan provide some specific requirements about what should be monitored and where.

Wetland monitoring undertaken in other regions is generally an annual, or multi-year activity.

## 2.3 Monitoring Māori Freshwater Values

In terms of monitoring Māori Freshwater Values, there are two key matters we need to identify:

- What attributes should be used.
- Where they will be monitored.

It is envisaged that cultural attributes may be required alongside the NPSFM and non-NPSFM attributes for all values where the standard attributes cannot appropriately measure the environmental outcomes.

The need for monitoring cultural values has been identified. However, how this monitoring is undertaken (i.e. by whom, how the data is held) is still being discussed in relation to other catchments and forms part of wider discussions around data sovereignty.

Example cultural attributes have been provided in **Appendix 1**. These attributes have been informed by Te Aitanga a Mate through various kaupapa taiao initiatives they have been involved in over the last 10-15 years. The example attributes have been provided to prompt the discussion

of what attributes should be monitored to provide for Māori Freshwater Values that will be included in the Catchment Plan.

It is envisaged that cultural attributes identified in the Catchment Plan may be measured differently within the Catchment Plan area as determined by hapū who maintain mana whenua.

## 2.4 Where should additional attributes be monitored?

Those attributes that can be spatially located (e.g. mahinga kai) should be monitored at those specific locations. In the same way that NPSFM attributes use “representative” sites, these additional attributes should aim to do the same. So for example, not every mahinga kai site in the Waiapu Catchment may be monitored, but instead “representative sites” e.g. perhaps those close to marae, could be identified and monitored. The group will need to decide which sites should be used as these will need to be identified on a map to ensure that the same location is consistently monitored to see trends.

Some attributes – eg access to drinking water, or management of sites in accordance with tikanga would require catchment-wide analysis, but the sites to which the attribute applies would need to be mapped.

## 4.0 Next Steps

Feedback from the roopu on the monitoring sites and attributes is sought. Following this, a draft proposal will be brought back for review.

APPENDIX 1: Cultural Attribute Examples – For Discussion Only

**APPENDIX 1: Cultural Attribute Examples**

These attributes have been informed by Te Aitanga a Mate through various kaupapa taiao initiatives over the last 10-15 years. The example attributes have been provided **in confidence** to prompt discussion of what attributes should be monitored to provide for Māori Freshwater Values included in the Catchment Plan. Please consult Te Aitanga a Mate before sharing this information.

Value	Human Contact – Swimming (Compulsory)		
Significance	High		
Value Description	<p>Many of the rivers and streams within the Waiapu Catchment are used for swimming and bathing during the warmer months. Swimming and bathing is highly valued because it enables us to connect physically and spiritually with our awa and maintain whakapapa to wai and strong relationships at place.</p> <p>Water quality and quantity impacts our ability to maintain strong connections to waterways through swimming and bathing.</p>		
Environmental Outcome	<p>Locals and visitors are able to enjoy swimming and bathing in waterways that are safe and healthy, clean and clear with low levels of algal growth and deposited sediment throughout the catchment. Ngāti Porou whakapapa to wai is protected, maintained and strengthened through swimming, bathing and cultural rituals. There is enough water to swim or bathe. Activities within or adjacent to rivers and streams do not impede access, ability, safety and enjoyment of swimming and bathing.</p>		
Example Attributes	NPSFM Attributes	Non NPSFM Attributes	Cultural Attributes
	<p>E.coli</p> <p>Deposited Sediment</p> <p>Suspended Sediment</p>	<p>Slash</p> <p>Sediment (swimming season only)</p> <p>Access (Public, private or no access)</p> <p>Stock present</p>	<p>Is the water clean enough for swimming/bathing?</p> <p>Are whanau swimming here?</p> <p>Reports of whanau unwell after swimming at this site?</p> <p>Does swimming at this site make you feel connected to people and place?</p> <p>Is there enough water for the whole whanau to swim?</p> <p>How do you feel when swimming/bathing at this site?</p> <p>Stock control</p> <p>Is the site safe to swim at (e.g. gravel operators etc)</p>

APPENDIX 1: Cultural Attribute Examples – For Discussion Only

Value	Mahinga Kai (Compulsory)		
Significance	High		
Value Description	<p>Mahinga kai is an indicator of ecosystem health and the wellbeing of people within the catchment. An abundant food source indicates a healthy waterway and reflects upon the ability and mana of hapū to exercise mana motuhake, kaitiekitanga, and manaakitanga. Mahinga kai is highly valued right across the Waiapu Catchment through providing sustenance for whanau, manaakitanga at whanau and hapu gatherings and enable hapu members to maintain traditional practices and allow for intergenerational transfer of knowledge. Mahinga kai practices throughout the catchment are impacted by reduced ecosystem health in aquatic ecosystems and adjacent terrestrial ecosystems. High sedimentation levels in rivers also impacts kaimoana species.</p>		
Environmental Outcome	<p>Mahinga kai species are abundant and diverse so that mahinga kai practices can be carried out regularly in accordance the tikanga and kawa of respective hapu.</p> <p>The traditional kai species are regularly consumed by whanau and hapu.</p> <p>Mahinga kai practices enable whānau and hapū members to restore traditional practices and intergenerational transfer of knowledge.</p> <p>Water users follow regenerative practices to support the restoration of mahinga kai species.</p> <p>Matauranga a hapū informs decision making that affects the kapata kai of respective hapu.</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
	<p>Fish</p> <p>MCI</p> <p>Deposited Sediment</p>	<p>Rapid Habitat Assessment</p> <p>Fish passage barriers</p> <p>Spawning habitat quality</p>	<p>Mahinga Kai species presence / absence</p> <p>Suitable size / numbers for harvest?</p> <p>Catch effort</p> <p>Access</p> <p>Are whanau actively practicing mahinga kai / is intergenerational transmission of knowledge occurring?</p> <p>Mohiotanga – kawa, tikanga, matauranga</p>

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Value	Ecosystem Health (Compulsory)		
Significance	High		
Value Description	<p>The ability for our freshwater ecosystems and receiving coastal environment to support thriving aquatic ecosystems enables people to thrive.</p> <p>We recognise that freshwater ecosystems include puna, awa, repo, roto and their health is fundamentally connected to the health of the land. Activities in or adjacent to waterways ultimately impact the ecosystem health of our takutai moana as the ultimate receiving environment. Whanau and hapu view themselves as apart of these ecosystems and not separate. The wellbeing of people in the catchment is intrinsically connected to the health of these ecosystems.</p> <p>These ecosystems provide for connection/s, relationships and customary practices that are integral to our cultural identity.</p>		
Environmental Outcome	<p>Waterbodies are managed in an integrated manner that considers waterbodies in their entirety as well as the interconnectedness they have with the coastal environment.</p> <p>Terrestrial ecosystems are maintained or restored to reduce erosion and sedimentation within freshwater bodies.</p> <p>Reduced sediment levels delivered to the coastal environment.</p> <p>Aquatic and connected terrestrial environments are improved so that indigenous species are abundant and diverse.</p> <p>Water quality and quantity is maintained or restored so that customary and recreational practises can be carried out by generations to come.</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
	MCI	<p>Rapid Habitat Assessments</p> <p>Fish passage barriers</p> <p>Spawning habitat quality</p> <p>Wetlands</p>	<p>Mahinga Kai species presence / absence</p> <p>Suitable size / numbers for harvest?</p> <p>Catch effort</p> <p>Indigenous biodiversity e.g. riparian zones, bird song present</p> <p>Stock / pest control</p> <p>Water is clean, cool and clear</p> <p>Water level and flows provide suitable habitat</p>

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Value	Threatened Species (Compulsory)		
Significance	Moderate		
Value Description	<p>All native species within the catchment are considered whakapapa species to the whanau and hapu within the catchment. Whanau and hapu as katieiki have an obligation through whakapapa to protect and provide for all native species so that they are abundant and available for customary use. When native species are threatened, whakapapa is threatened.</p> <p>Many threatened species are present within the Waiapu Catchment and are a part of taonga ecosystems that sustain people within the catchment. Despite a decline in abundance, remnant populations of threatened species are still present in the catchment. The catchment is a stronghold for the nationally threatened tuna (longfinned eel). Other threatened species present in the catchment include Whio (Blue Duck), Hochstetter’s Frog, and Shortjaw Kokopu amongst many others.</p>		
Environmental Outcome	<p>Waterbodies and riparian areas are managed in their entirety so they provide suitable habitat, sufficient water quantity, good water quality and a pest-free environment for all indigenous species including threatened species.</p> <p>Indigenous species are abundant and diverse within waterbodies and connected terrestrial environments.</p> <p>Whanau and hapu remain kaitieki over threatened species within their takiwa.</p>		
	MCI	<p>Rapid Habitat Assessments</p> <p>Fish passage barriers</p> <p>Spawning habitat quality</p> <p>Wetlands</p>	<p>Mahinga Kai species presence / absence</p> <p>Suitable size / numbers for harvest?</p> <p>Catch effort</p> <p>Indigenous biodiversity e.g. riparian zones, bird song present</p> <p>Stock / pest control</p> <p>Water is clean, cool and clear</p> <p>Water level and flows provide suitable habitat</p> <p>Restoration efforts</p> <p>Landuse / freshwater activities support restoration of taonga species</p>

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Value	Mauri		
Significance	High		
Value Description	<p>Mauri is an intrinsic part of wai as well as whanau and hapu who hold mana whenua mana moana over their respective takiwa. Mauri connects us physically and spiritually to our wai and all aspects of the taiao and is fundamental to our relationship with wai. Mauri is reflected in the physical, spiritual and cultural wellbeing of our people. The relationship between whenua, ngahere, moana and our people is essential in the assessment of mauri of wai.</p>		
Environmental Outcome	<p>The wairua and mana of our wai is upheld and restored where needed.          Healthy waterways and interconnected ecosystems supports the health and wellbeing of the people who live by and are sustained by those waterways.          Whanau and hapu are commonly interacting with their waterways through activities such as swimming, bathing, mahinga kai, restoration efforts etc.          Mahinga kai species are abundant and diverse.          Whanau and hapu exercise their rights and obligations as kaitiaki guided by whakapapa, kawa and tikanga (including decision-making).</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
	MCI	<p>Rapid Habitat Assessments          Fish passage barriers          Spawning habitat quality          Wetlands</p>	<p>Mahinga Kai species presence / absence          Mahinga kai species abundance / diversity          Indigenous biodiversity e.g. riparian zones, bird song present          How does wairua feel?          Nga Tohu o te Taiao regularly observed and followed e.g. maramataka and other indicators (i.e. living in-sync with taiao)?          Stock / pest control          Water is clean, cool and clear          Water level and flows provide suitable habitat          Restoration efforts / whanau are connected to site in some shape or form          Landuse / freshwater activities support restoration of taonga species          On-site treatment of pollutants / Nature-based solutions?          Land use/freshwater activities priorities health and well being of wai</p>

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Value	Ahi Kaa		
Significance	High		
Value Description	<p>Ahi kaa are the whanau and hapu members who live at home and uphold kaitieki roles and obligations.</p> <p>Ahi kaa are interdependent with all other freshwater values identified in this plan. As whanau who rely on traditional resources to sustain them, when the taiao thrives so will the ahi kaa.</p>		
Environmental Outcome	<p>Whanau are encouraged to live on their whenua so that ahi kaa form a large proportion of the population within the Waiapu Catchment who uphold kaitieki rights and obligations.</p> <p>Ahi kaa have access to clean drinking water and traditional resources sourced from local areas.</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
			<p>Ahi kaa presence e.g. marae, whenua maori, papakainga</p> <p>Access to site(s): public land / private land / no access</p> <p>Ahi kaa are informing / participating in decision making</p> <p>% of households with known safe water supply</p> <p>Water availability for domestic use</p> <p>Access to natural resources (ie regulatory barriers)</p> <p>Resilient infrastructure</p> <p>Flood protection</p>
Value	Drinking Water		
Significance	High		
Value Description	<p>Municipal drinking water supply is not provided within the catchment and adjacent coastal communities. Drinking water is typically sourced from traditional sites (e.g. springs) that have sustained our whanau and marae for generations. Accessing clean drinking water from traditional sites is essential to ensuring ahi kaa can live at home and uphold the mana of their respective whanau, hapu and marae.</p>		
Environmental Outcome	<p>Drinking water is sourced within the respective takiwa of the whanau and communities they supply.</p> <p>Activities are managed to protect and/or restore the water quality and quantity of the drinking water supplies of ahi kaa and marae.</p> <p>Whanau and hapu remain kaitieki over their drinking water resources and participate in decision making over them.</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
			<p>% of households with known safe water supply</p> <p>Water availability for domestic use</p>

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Value	Mana Motuhake		
Significance	High		
Value Description	<p>Ngati Porou whanau and hapu are the kaitiaki over their kapata kai, drinking water and traditional resources that have sustained their people for generations.</p> <p>Ngati Porou whanau and hapu continue to assert their rights and obligations in managing freshwater resources within their respective takiwa.</p>		
Environmental Outcome	<p>Whanau and hapu are the kaitiaki over their kapata kai, drinking water and other traditional resources and participate in decision making that affects them.</p> <p>Whanau and hapu are able to undertake cultural practices and exercise tikanga and kaitiakitanga over the freshwater resources within the catchment.</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
			<p>Hapu involvement in decision-making</p> <p>Recognition of matauranga a hapu in decision-making</p> <p>Whanau / hapu connection to site</p> <p>Ahi kaa have access to natural resources</p> <p>Whanau and hapu are enabled/empowered to lead taiao monitoring and restoration efforts</p>
Value	Wahi Tapu		
Significance	High		
Value Description	<p>Wahi tapu are areas of cultural, historical, and/or spiritual significance that whanau and hapu have an obligation to protect and share korero tuku iho for future generations.</p> <p>Wahi tapu connects whakapapa and matauranga Ngati Porou to the respective whanau and hapu.</p>		
Environmental Outcome	<p>Wahi tapu sites are respected and protected from extreme weather events and commercial activities.</p> <p>Wahi tapu continue to connect whanau and hapu to their whakapapa, tikanga and mohiotanga.</p> <p>Knowledge of wahi tapu is managed in a respectful manner according to the tikanga of respective whanau and hapu.</p> <p>Matauranga-a-whanau/a-hapu informs how waahi tapu are managed and cultural concepts such as tapu and noa are respected.</p>		
Example Attributes	NPSFM Attributes	Non NPS Attributes	Cultural Attributes
			<p>Is wahi tapu respected or protected?</p> <p>Whanau and hapu connection to wahi tapu?</p>

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Value(s)	Attribute	A	B	C	D
Human contact - swimming	Are whanau swimming at this site?	Yes – this site is often utilised by many whanau due to cleanliness, access, and safety.	Yes – limited whanau due to cleanliness, access or safety.	No – due to concerns of cleanliness or safety.	No – water is suitable for swimming but no access.
Human contact - swimming	Is the water clean enough for swimming/bathing	Water often/always suitable for full emersion.  Water usually clears quickly after rainfall events.  No smell, foam, scum or visible pollution.	Water is usually suitable for swimming / bathing during summer season.  Slight cloudiness may be present following rain events but still suitable for swimming / bathing.  Scum or foam occasionally present outside of swimming / bathing season.	Water is sometimes suitable for swimming.  Water is often murky.  Not suitable for full emersion due to high sedimentation or e.coli contamination.  Scum or foam occasionally present during swimming / bathing season.	Water is rarely suitable for swimming during swimming/bathing season due to turbid water, excessive algae growth and/or high deposited sediment.  Offensive smell, foam or scum present.
Human contact - swimming	Can you swim without getting sick?	No reports of whanau getting sick after swimming at this site.	Occasional reports of whanau getting sick after swimming at this site.	Regular reports of whanau getting sick after swimming at this site.	No swimming at this site due to high risk of getting sick.
Human contact - swimming	Deposited sediment	No deposited sediment present.	Deposited sediment present but does not impact swimming/bathing.	Enjoyment of swimming / bathing is impacted by deposited sediment.	Unable to swim / bathe due to deposited sediment.

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Value(s)	Attribute	A	B	C	D
Human contact - swimming	Does swimming at this site make you feel connected to people and place?	Yes because swimming here maintains whakapapa to whenua and wai. Swimming here fills you with joy, peace and connection. The wai feels welcoming and familiar.	I have some knowledge / association to this site. I often swim here with whanau.  Wai feels safe but cannot explain why.	I have limited personal and/or family knowledge of the whakapapa of this site.	I have no connection to this site. I am a recreational swimmer.
Human contact – swimming	Is there enough water for a refreshing swim for the whole whanau?	There is often/always enough water for swimming for all whanau members.	There is usually enough water for swimming for most of the whanau throughout the swimming/bathing season (excluding unusually low flow periods)	There is sometimes enough water for swimming for the whole whanau however usually only suitable for Tamariki.	There is never/rarely enough water for swimming during swimming/bathing season due to low flows or stagnant water.
Human contact – swimming	How do you feel when swimming/bathing at this site?	Energised and at peace. Wairua is refreshed and you feel a sense of belonging.	The water leaves you clean and fresh. You feel comfortable however a little tentative.	The water leaves you feeling dirty or apprehensive. You exit sooner than planned.	I would not get in the water at this site.
Mahinga Kai Ecosystem Health	Mahinga Kai Species / Absence	All traditional mahinga kai species are present at this site.	Majority of traditional mahinga kai species are present at this site.	Very limited traditional mahinga kai species present at this site.	No traditional mahinga kai species present at this site.

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Value(s)	Attribute	A	B	C	D
Mahinga Kai Ecosystem Health	Are kai species present in suitable size and numbers for harvesting?	Multiple kai species present with high numbers and size distribution. Size and condition excellent for eating. Sufficient numbers for regular harvest or harvest at marae gatherings.	Kai species present but in reduced numbers and size. Suitable for smaller harvest or occasional harvest at marae gatherings.	Few kai species present in small numbers and/or size. Harvest may occur on rare occasions to maintain practice.	No kai species present, mahinga kai has ceased at this site.
Mahinga Kai Ecosystem Health	Catch Effort	Can easily and quickly harvest enough kai for regular harvests or marae gatherings.	Can get a decent catch to share amongst other whanau members however requires more effort than previously at this site e.g. time, distribution and/or equipment (set multiple nets)	Can still get a small kai for the whanau however requires significant effort e.g. time, distribution and/or equipment (set multiple nets)	Very difficult to get a kai at this site so do not bother.
Mahinga Kai Human Contact – Swimming Wahi Tapu	Access	Site is accessible to public. If on private land, there is open access to whanau and hapu.	Site is on private land but whanau/hapu can easily and regularly access with permission from landowner.	Site is on private land but whanau/hapu may have difficulty with gaining permission from landowner.	No access.
Mahinga Kai Human Contact – Swimming Wahi Tapu	Access	Site access is not impeded by erosion or impacts of weather events.	Site access is sometimes impeded by erosion or impacts of weather events.	Site access is regularly impeded by erosion or impacts of weather events.	Access is difficult or impossible due to erosion or impacts of weather events.

APPENDIX 1: Cultural Attribute Examples – For Discussion Only

Value(s)	Attribute	A	B	C	D
Mahinga Kai	Are whanau actively practicing mahinga kai at this site? Transferring knowledge	Regular practice by Tamariki and pakeke. Knowledge of site and practices are commonly shared regularly during gathering.	Practice mainly carried out by Pakeke. Tamariki participate occasionally. Knowledge is shared byt not always retained. Some story gaps emerging.	Only a few whanau members carrying out practice and hold knowledge. Practice is not common.	No active practice or transmission of knowledge. Sites are no longer visited or used. Knowledge sits dormant or has been lost to the awa.
Mahinga Kai	Mohiotanga	Mahinga kai karakia, tikanga, korero tuku iho is widespread and confidently held across whanau.	Solid knowledge base exists among uncles/aunties and kaumatua. Some gaps emerging in rangatahi. Practices are known, but not always explained or taught.	Knowledge is held by a few.	Serious threat of losing knowledge.
Ecosystem Health Threatened Species Mauri	Taonga Species	Taonga species are abundant and diverse. Native biodiversity is thriving.	Some taonga species present but not abundant. Combination of indigenous and exotic species present.	Little or few taonga species observed. Exotic species dominate.	No taonga species present.
Ecosystem health Threatened Species Mauri	Riparian Zones	Thick mature native riparian zones with thriving native understorey. Loud native birdsong present.	Young/regenerating native riparian zone. Native birds occasionally present.	Predominately exotic and some minor native riparian vegetation.	No riparian vegetation.
Ecosystem health Threatened Species Mauri	Stock / Pest Control	Stock and pests are controlled.	Some stock or pest control is in place.	Stock or pest control is being progressed.	Stock and pests are not controlled.

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Drinking Water Mauri	Water quality	Water is safe for drinking and cultural practices most of the time.	Water is sometimes safe for drinking and cultural practices.	Water is rarely safe for drinking and cultural practices. Only used for non-potable uses.	Water is never safe for drinking and cultural practices. Unsuitable for non-potable uses.
Ecosystem health Threatened Species Mauri Human Contact – Swimming	Water quality	Water is crystal clear, visibly flowing, cool to touch.	Water is mostly clear with occasional cloudiness or turbidity.	Water appears murky or stagnant at times. Warm to touch.	Water is regularly cloudy, turbid, stagnant or smells.
Threatened Species Ecosystem Health Mauri Ahi Kaa Mahinga Kai	Restoration efforts (e.g. fencing, planting, stock/pest control)	Restoration efforts are in place and maintained.  Whanau and hapu are connected to this site through maintaining and monitoring restoration.	Restoration efforts are being progressed at this site.  Whanau and hapu are connected to this site through restoration efforts.	Restoration efforts are being progressed at this site however whanau and hapu are not involved.	No restoration efforts are being progressed at this site.
Threatened Species Ecosystem Health Mauri Ahi Kaa Mahinga Kai	Land use / freshwater activities support restoration of taonga species	Land use / freshwater activities support restoration of taonga species.	Land use / freshwater activities maintain existing taonga species however no active improvement.	Unsure if land use / freshwater activities impact or support taonga species.	Land use / freshwater activities actively contribute to degradation of taonga species.
Mauri	How does wairua feel at this site?	The site feels alive and welcoming. Peaceful, balanced, spiritually uplifting. Birds sing. You feel restored upon arrival.	The site is calm, quiet and reflective—but still feels respectful. Whanau visit. A sense of quiet stillness remains. He wahi tau.	Wairua feels unsettled like the mauri is blocked. Might feel a bit lonely, ignored, or heavy. No birdsong. Whanau have expressed concern about this wahi.	Wairua feels closed off. No life present. Cold, oppressive atmosphere. People avoid staying or engaging culturally.

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Mauri	Nga Tohu o te Taiao regularly observed and followed e.g. maramataka and other indicators (i.e. living in-sync with taiao)?	Nga tohu o te taiao are regularly observed and followed.	Nga tohu o te taiao are occasionally observed and followed by some.	Nga tohu o te taiao are known but not followed.	Nga tohu o te taiao are not known.
Mauri Ahi Kaa Mana Motuhake	Connection to site	Whanau and hapu are regularly connected to this site e.g. swimming, mahi kai, restoration efforts, monitoring etc.	Whanau and hapu occasionally connect with this site e.g. swimming, mahi kai, restoration efforts, monitoring etc.	Whanau and hapu can recite their hononga to this site however rarely physically connect with this site e.g. swimming, mahi kai, restoration efforts, monitoring etc.	Whanau and hapu may be able to recite hononga to this site however not physically connected to this site.
Ahi Kaa	Ahi Kaa Presence e.g. Marae, papakainga, whenua maori	Strong ahi kaa presence.	Moderate ahi kaa presence.	Minor ahi kaa presence.	No ahi kaa presence.
Ahi Kaa Mana Motuhake	Ahi kaa are informing / participating in decision making	Yes	Sometimes	Rarely	No
Ahi Kaa	Proportion of households with known safe water supply	Majority of households have safe water supply.	Many whanau have safe water supply.	A few whanau have safe water supply.	No safe water supply.
Ahi Kaa	Water availability for domestic use	There is enough water to meet whanau and marae needs throughout the year	There is often enough water to meet whanau and marae needs throughout the year (expect extreme drought conditions)	Whanau and marae occasionally struggle with water supply in summer period.	Common for whanau and marae to run out of water in summer period.

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Ahi Kaa Mana Motuhake	Access to natural resources e.g. water, gravel etc (ie regulatory barriers, resource availability)	Able to access natural resources for domestic and commercial purposes.	Access for domestic purposes but may have difficulty accessing for commercial purposes.	Difficult to access natural resources for domestic and commercial purposes.	No access to natural resources.
Ahi Kaa	Resilient infrastructure	Resilient infrastructure in place and maintained.	Resilient infrastructure in place but not maintained appropriately so may be impacted.	Critical infrastructure for access is commonly impacted during and following weather events.	No infrastructure in place to maintain access.
Ahi Kaa Mana Motuhake	Are whanau and hapu are enabled / empowered to lead taiao monitoring or restoration efforts	Whanau and hapu are actively leading multiple taiao monitoring or restoration efforts supported by external stakeholders.	Whanau and hapu are leading some taiao monitoring or restoration efforts independently or with support by external stakeholders (or at least no barriers from stakeholders)	Whanau and hapu are participating but not leading.	Whanau and hapu not included in restoration efforts.
Wahi Tapu	Is Wahi Tapu respected?	Wahi tapu is fully recognised, protected, and actively maintained. Ecosystems are thriving. Kaitiekitanga is central to management and decision making.	Wahi tapu is acknowledged in freshwater management. Access & protection efforts in place, but require support. Hapu/whanau monitor area and involved in decision making.	Some recognition of wahi tapu in planning but little enforcement. Some access to sites but environmental degradation affects integrity. Cultural and ecological functions of the area are damaged. Land use pressure evident.	No acknowledgement of significance. Matauranga tuku iho has been lost or disconnected. Access is blocked or seriously degraded. Desecration through inappropriate land use.