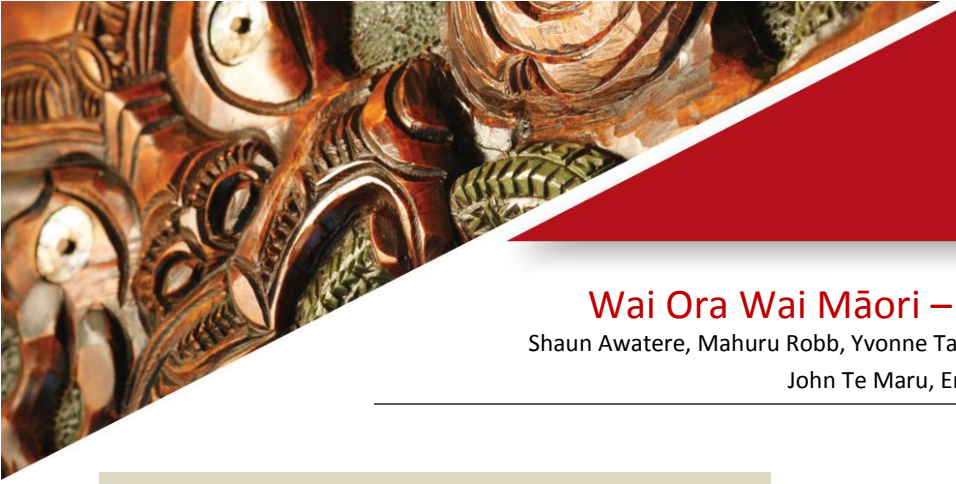

Landcare Research
Manaaki Whenua
POLICY BRIEF
Insights for government, councils and industry

Wai Ora Wai Māori – a kaupapa Māori assessment tool

Shaun Awatere, Mahuru Robb, Yvonne Taura, Kiri Reihana, Garth Harmsworth (Manaaki Whenua);
John Te Maru, Erina Watene-Rawiri (Waikato-Tainui Endowment College)

SUMMARY

The involvement and empowerment of Māori in freshwater decision-making can be facilitated by tools that enable Māori organisations such as iwi/hapū to assess the condition of freshwater. The kaupapa Māori assessment tool – Wai Ora Wai Māori – is one such tool.

The assessment tool comprises of qualitative and quantitative measures for stated attributes consistent with the National Objectives Framework (NOF) bands for assessing and reporting standards and condition of selected attributes. This kaupapa Māori approach can be used to assess and articulate resource condition and impact (e.g. resource degradation, water quality, mauri) related to human activities and land management practices. It can also be used to measure and assess trends towards specific iwi/hapū goals and objectives or in relation to a stated outcome or vision for a resource or culturally significant area.

The tool helps provide a robust, holistic, and complementary data set when used alongside scientifically based quantitative attributes and measures, to inform freshwater management within a kaupapa-based assessment framework and tool to measure progress towards or away from stated iwi/hapū aspirations and outcomes. The structure of the tool can be tailored for use by any other iwi/hapū/kaitiaki group wanting to apply their own values and attributes, while the methodology, measures, and process are consistent and generic.

We recommend that institutions developing plans and policy for improved freshwater management use this tool to improve collaboration, and to identify key attributes and measures that are meaningful and relevant to iwi/hapū groups. A meaningful partnership between institutions and iwi/Māori provides opportunities for iwi/Māori to participate effectively in all planning processes for freshwater management from technical advisory groups to governing entities. It is therefore important to have empowered, well-resourced, and well-informed iwi/Māori contributions at the core of freshwater management, particularly at the technical level where recommendations and deliverables are required.

BACKGROUND

The widespread degradation of water quality and quantity, and its state of mauri, is a significant issue for Māori. It is represented locally by widespread degradation of customary resources, extensive habitat reduction, low flows in rivers and streams, reduction in flora and fauna populations, introduction of invasive species, and poor condition of ecosystems and resources (e.g. mahinga kai, taonga species, and habitats).

To address worsening water quality and quantity issues across Aotearoa New Zealand, the Government identified a number of priorities and core objectives to improve freshwater management, including the need for collaborative planning, effective provisions for iwi/Māori involvement in freshwater planning and decision-making, and the implementation of a national objectives framework (NOF), through which societal, community, and iwi/hapū values would be determined. To protect and sustain selected freshwater values, national standards in the form of 'bottom lines or limits' for attributes and measures of water quality are being set at bands (A, B, C, D). Each band reflects different levels or attribute states, from excellent to poor, with band C/D representing the national bottom line. Regional Councils, in conjunction with communities and iwi/hapū, can set standards and limits above the national bottom line to protect and manage specific values within Freshwater Management Units (FMUs).

This policy brief describes a kaupapa-based assessment framework and tool to support iwi/hapū participation in setting standards and limits for freshwater. The tool enables Māori to measure progress toward or away from stated iwi/hapū freshwater aspirations and outcomes. It was developed and tested in the Waikato region (see Annex 1), within some of the most culturally important freshwater ecosystem sites for mahinga kai or hauanga kai. In this study the framework identifies freshwater values relevant for Waikato-Tainui along with their associated attributes and measures for mahinga kai or hauanga kai as defined by Waikato-Tainui. We use the term interchangeably with mahinga kai in this policy brief.

The Wai Ora Wai Māori assessment tool provides a robust and holistic framework for assessing and managing freshwater ecosystem health in Aotearoa. The result is a rich mosaic of qualitative and quantitative measures that demonstrate the holistic nature of Te Ao Māori and mātauranga Māori.

NGĀ WAWATA – VISION STATEMENT

The Waikato-Tainui technical advisory group identified the following whakataukī to provide context for the development of the tool:

Tooku Awa Koiora: The River of Life, Each Curve More Beautiful than the Last

This maimai aroha (lament) shared by Kīngi Tāwhiao, the second Māori King, forms part of the vision and strategy to restore and protect the health and well-being of the Waikato River. This vision informs the goals and objectives for freshwater co-management on the Waikato River and potentially represents and informs the highest ranking or band that can be achieved from the Kaupapa-Māori assessment tool.

WAIKATO-TAINUI FRESHWATER DOMAINS

Three main categories or domains were identified by Waikato-Tainui (Fig. 1): biophysical, community connectedness (social), and metaphysical. Within each domain two attributes (ngā uara) were identified as integral for the assessment (Fig. 2).

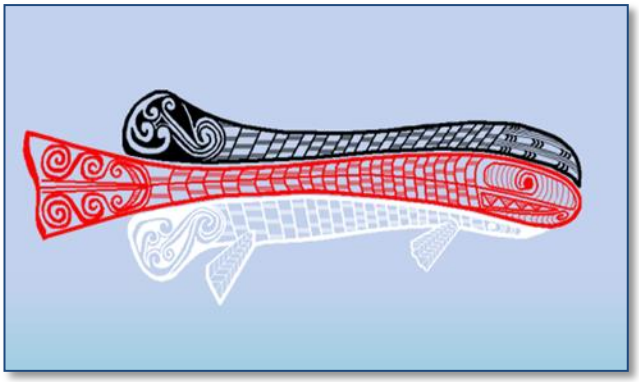

Figure 1. Represents the 3 domains of the tool – Taha Kikokiko, Taha Whānau, me Taha Wairua – used to organise attributes for decision-making. Collectively termed Ngā taha tuatoru (represented by the artists impression of īnanga).

NGĀ UARA – ATTRIBUTES

DOMAIN: TAHA KIKOKIKO – PHYSICAL OR BIO-PHYSICAL TYPE ATTRIBUTES

Attribute: Kai is safe to eat – taonga species like kāeo, tuna, and īnanga are safe for human consumption.

Attribute: Kai has a strong whakapapa – taonga species like kāeo, tuna, and īnanga are part of a flourishing ecosystem.

DOMAIN: TAHA WHĀNAU – SOCIAL TYPE ATTRIBUTES

Attribute: Whānau satisfaction – whānau well-being is enhanced or diminished through the availability of taonga species at functions like hui and tangihanga.

Attribute: Kaitiaki are effective – the ability to practise what is correct from an iwi/hapū position (tikanga), e.g. maramataka, rāhui, karakia, and wānanga, etc.

DOMAIN: TAHA WAIRUA – METAPHYSICAL OR SPIRITUAL TYPE ATTRIBUTES

Attribute: Condition of mauri – resilience and adaptation of ecosystems as measured by the level of life-force.

Attribute: Condition of kaitiaki/tipua/taniwha – resilience and connectivity of human beings to metaphysical beings such as kaitiaki/tipua/taniwha.

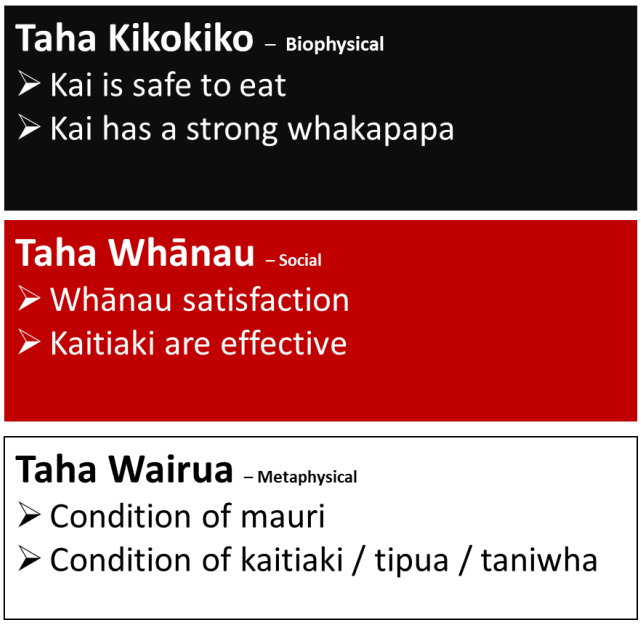

Figure 2: The 3 domains and their attributes

NGĀ INENGA – MEASURES

Scales were developed to score the attributes for each domain. A description of how the scales were developed and are used is outlined in Annex 1.

For the domains Taha Kikokiko and Taha Whānau the scales are kao/no = 0 and ae/yes = 1. The scale band rankings (Fig. 3) are:

- aue/low = 0
- pōhara/poor = 1
- āhua pai/okay = 2
- pai/good = 3
- pai rawa/outstanding = 4.

For Taha Wairua the scales are mauri noho/diminished = 1 to mauri ora/outstanding = 4. The scale band rankings are:

- mauri noho/dormant = 1
- mauri oho/awakening = 2
- mauri piki/improving = 3
- mauri ora/outstanding = 4.

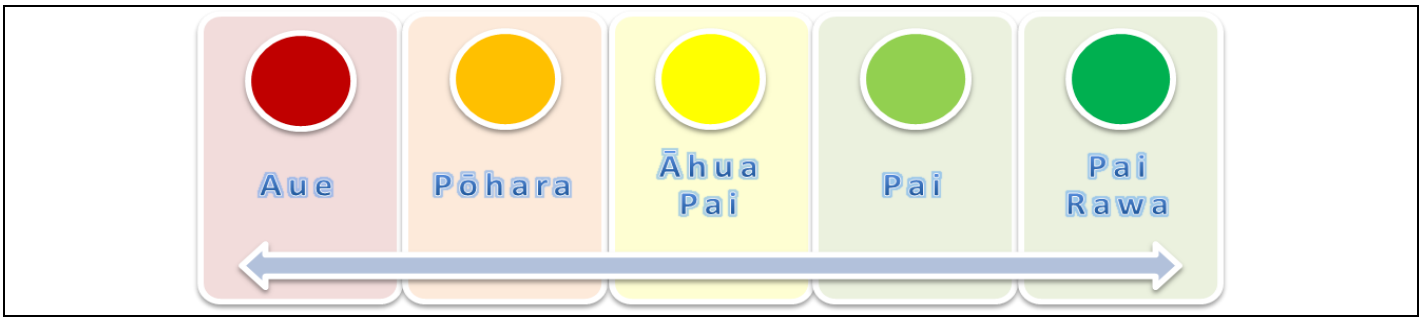

Figure 3. Assessment terms and scale: Aue (system in distress-poor) to Pai Rawa (excellent).

The scales are consistent with the 4 rating categories used for NOF bands (NPS-FM 2014) and support the NPS-FM and Te Mana O Te Wai values and framework. Individual scores can be given and then aggregated to determine the condition of specific locational values, such as freshwater taonga (e.g. roto, repo, awa, and taonga species and habitats). This kaupapa Māori approach allows any selected freshwater body or culturally significant area (e.g. awa, repo, mahinga kai site) to be assessed and measured within each domain and set of attributes. The approach can then be used to assess and report – over time – on trends (e.g. better or worse). This information could be aggregated up to a freshwater management unit (FMU) or catchment (NPS-FM 2014) to help set standards and limits.

APPLYING TO THE WAIKATO REGION

The description of the measures for the attributes in each domain for the Waikato Region is outlined in Figure 4. These measures were aggregated and averaged for the number of assessors/kaiarotake.

To improve consistency of assessment, interpretation, and presentation, effective collaboration with iwi/hapū and kaitiaki is essential to determine the tikanga (e.g. principles, correct steps, and process) for all assessments, for setting standards and limits based on this tool for catchments or freshwater management units (FMU), and to achieve desired outcomes. The Likert-type scale data matrix should be augmented with a narrative or kōrero to supplement details and knowledge to the assessment. An additional summary comment added to the Likert-type scale signifying the importance of a FMU, drawing on narratives reflecting the historical and metaphysical connection that iwi/hapū/kaitiaki Māori may have to that water body (e.g. whakataukī/proverbial sayings) would fulfil this expectation.

TAHA KIKOKIKO – Biophysical

Kai is safe to eat

Ae	1	Kāeo: shells look moist and are tightly closed; hua is fat and creamy
Kao	0	Kāeo: shells are cracked and shell lids are not tightly closed with a foul ordour
Ae	1	Tuna: has even colouring, fins are intact and bright eyes
Kao	0	Tuna: looks dull or pale with visible signs of boils, ulcers, parasites and pale eyes
Ae	1	Īnanga: has even or grey-green translucent colouring and bright eyes
Kao	0	Īnanga: low numbers, visible signs of parasites

Kai has a strong whakapapa

Pai Rawa	4	The whakapapa of taonga species (recruirment, habitat, and foodwebs) is very strong and there is minimal impact from invasive pest species and land-use change
Pai	3	The whakapapa of taonga species (recruirment, habitat, and foodwebs) is mildly impacted and there are mild impacts from invasive pest species and land-use change
Āhua Pai	2	The whakapapa of taonga species (recruirment, habitat, and foodwebs) is moderately impacted and there are moderate impacts from invasive pest species and land-use change
Pōhara	1	The whakapapa of taonga species (recruirment, habitat, and foodwebs) is severely impacted and there are numerous impacts from invasive pest species and land-use change
Aue	0	The whakapapa of taonga species (recruirment, habitat, and foodwebs) is very severely impacted and there is widespread impacts from invasive pest species and land-use change

TAHA WHĀNAU – Social

Whānau satisfaction

Pai Rawa	4	Abundant kai available for hui like tangihanga and to feed the whānau
Pai	3	Sufficient kai available for hui like tangihanga and to feed the whānau
Āhua Pai	2	Some kai available for hui like tangihanga and to feed the whānau
Pōhara	1	Sparse kai available for hui like tangihanga and to feed the whānau
Aue	0	Kai unavailable for hui like tangihanga and to feed the whānau

Kaitiaki is effective

Pai Rawa	4	Tikanga (e.g. maramataka, rāhui, karakia, wānaga etc) are practised, maintained or shared; kaitaki have full access to the mahinga kai
Pai	3	Most tikanga are practised, maintained or shared; kaitaki have some access to the mahinga kai
Āhua Pai	2	Some tikanga are practised or shared; kaitaki have limited access to the mahinga kai
Pōhara	1	Few tikanga are practised or shared; kaitaki have no access to the mahinga kai
Aue	0	Tikanga are not practised or shared; kaitaki have no access to the mahinga kai

TAHA WAIRUA – Metaphysical

Condition of mauri

Mauri Ora	4	The mauri of the mahinga kai is vibrant and thriving, there are no restrictions to access and whānau well-being is florishing
Mauri piki	3	The mauri of the mahinga kai is growing, there are few restrictions to access and whānau well-being is expanding
Mauri Oho	2	The mauri of the mahinga kai is improving, there are some restrictions to access and whānau well-being is improving
Mauri Noho	1	The mauri of the mahinga kai is diminished, access to mahinga kai is restricted and whānau well-being is dormant

Condition of kaitiaki/tipua/taniwha

Mauri Ora	4	The mauri of the kaitaiki/tipua/taniwha is florishing
Mauri piki	3	The mauri of the kaitaiki/tipua/taniwha is expanding
Mauri Oho	2	The mauri of the kaitaiki/tipua/taniwha is improving
Mauri Noho	1	The mauri of the kaitaiki/tipua/taniwha is dormant

Figure 4. Attributes and measures for each domain.

APPLYING THE TOOL TO HAUANGA KAI SITES

The Waikato-Tainui environmental plan defines hauanga kai as:

Hauanga kai – the customary and contemporary gathering and use of naturally occurring and cultivated foods.

To date, the mahinga kai value is the most developed of the kaupapa Māori freshwater values and is a compulsory freshwater value within the National Objectives Framework for freshwater NPS-FM 2014. Different tribal terms can be used to describe the sites and locations where indigenous freshwater species have been traditionally used, or where natural resources and taonga can be harvested, such as food, tools, supplies, medicines (Awatere & Harmsworth 2014). Collecting or using customary resources directly from the environment strengthens the relationship with iwi/hapū Māori well-being. Specific mahinga kai sites

- tend to be known to local communities
- form a significant part of Māori relationship with place
- are also frequently referred to in iwi and hapū environmental management plans. These plans are designed to re-establish or support the collection of food for family and community consumption as well as describe sites for the development or transfer of mātauranga Māori.

Mahinga kai is therefore one of the primary means of maintaining and enhancing sustainable relationships with freshwater bodies. This assessment approach reinforces the connection with mahinga kai and the revitalisation of mātauranga Māori in specific locations, allowing the mauri, health, and condition of these sites to be assessed and reported on.

Figure 5 provides an example of how the tool can be applied and implemented for mahinga kai sites. The assessment can be augmented with narrative kōrero and traditional knowledge. For the three domains, measures and scoring are given for all attributes, and then aggregated up to provide a final aggregated metric reported within 4 distinct ranges:

- A = 17–21
- B = 12–16
- C = 7–11
- D = 2–6

The bands (A, B, C, D) on the left of Figure 5 reflect different levels of attribute states (Taha Kikokiko, Taha Whānau, and Taha Wairua domains), from excellent to poor. These bands can be used for reporting, and setting standards and limits.

SETTING LIMITS AND STANDARDS FOR HAUANGA KAI

Figure 6 provides an example of how the attributes of hauanga kai can be assessed. The aggregation and Likert scoring of measures into ranges provides an assessment and reporting framework to identify 'bottom lines or limits' for mauri and water quality from a kaupapa Māori perspective. In this example, three assessors (Kaiarotake 1, 2, 3) have recorded assessments for one site (Mahinga Tuatahi). Each assessor has evaluated the condition of the site based on the attributes, e.g. Taha Kikokiko domain – *Kai is safe to eat*, Taha Whānau domain - *whānau satisfaction*, and Taha Wairua domain – *condition of mauri*.

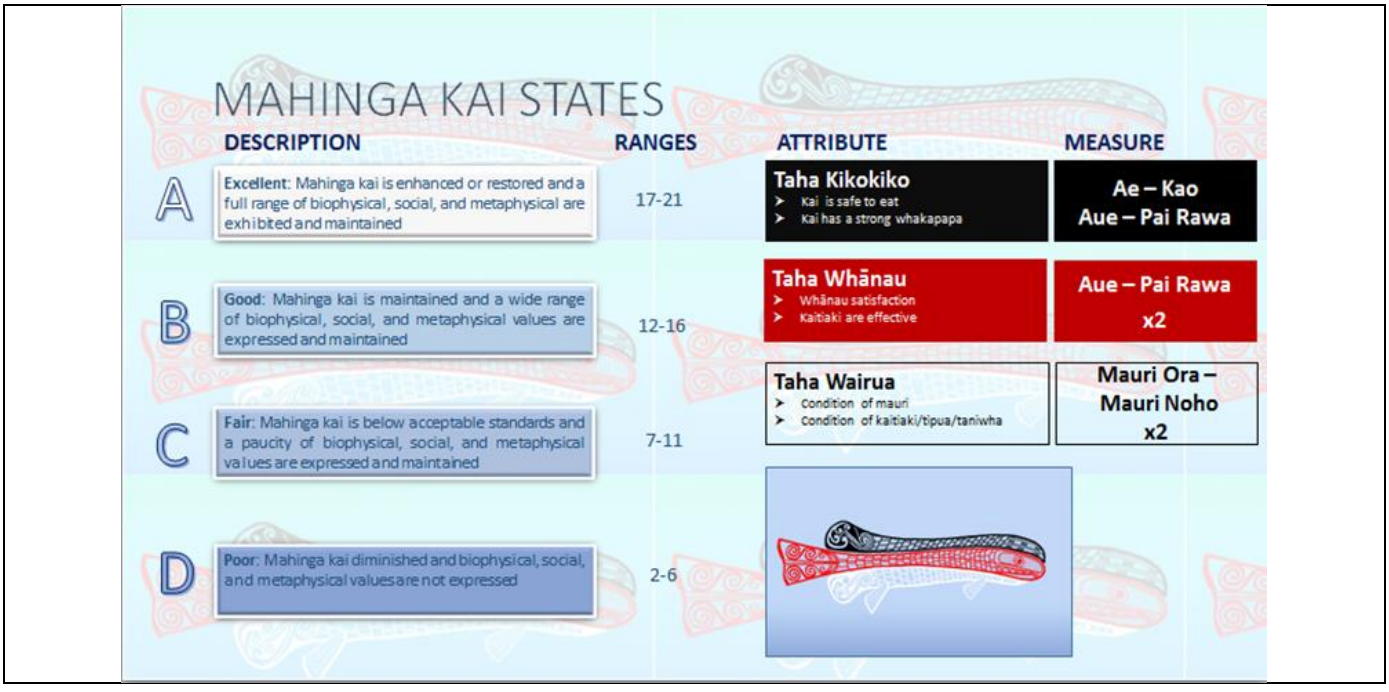

Figure 5. Mahinga kai states.

MAHINGA KAI	Kaiarotake 1	Kaiarotake 2	Kaiarotake 3
Ingoa	Mahinga Tuatahi	Mahinga Tuatahi	Mahinga Tuatahi
Rā	14/10/2016	14/10/2016	14/10/2016
Wā	11:15:00 a.m.	12:15:00 p.m.	12:30:00 p.m.
Taunga	37°47'25.8"S 175°19'17.7"E	37°47'25.8"S 175°19'17.7"E	37°47'25.8"S 175°19'17.7"E
TAHA KIKOKIKO			
Kai is safe to eat	KAO	AE	AE
Kai has a strong whakapapa	AUE	PŌHARA	PAI RAWA
TAHA WHĀNAU			
Whānau satisfaction	AUE	ĀHUA PAI	PAI RAWA
Kaitiaki are effective	AUE	ĀHUA PAI	PAI RAWA
TAHA WAIRUA			
Condition of mauri	MAURI NOHO	MAURI PIKI	MAURI ORA
Condition of kaitiaki/tipua/taniwha	MAURI NOHO	MAURI OHO	MAURI ORA
MAHINGA KAI INDEX SCORE	2	11	21
AGGREGATE SITE SCORE			**11**

Figure 6. Data entry assessment form.

Under Taha Kikokiko domain, two assessors have measured *kai is safe to eat* as *ae* while one has assessed this attribute as *kao*. Under Taha Whānau domain, one assessor has measured *whānau satisfaction* as *pai rawa*, one as *āhua pai*, and one as *aue*. Under Taha Wairua, one assessor has measured *condition of mauri* as *mauri ora*, one as *mauri piki*, and one as *mauri noho*.

Each measure is assigned an ordinal ranking, e.g. 0–1 for kao/ae, 0–4 for aue – pai rawa, and 1–4 for mauri noho – mauri ora scales. A cumulative score provides the index score for each site. This score corresponds to a range within a band, e.g. A–D.

For example, Kaiarotake 1's final assessment for this mahinga kai kai site ranks the state within the D or "Poor" band, while Kaiarotake 3's assessment is within the A or "Excellent" band. The scores given by the kaiarotake are then aggregated and averaged, in this case an overall score of 11. These scores result in a C Band – Fair: Mahinga kai is below acceptable standards and a paucity of biophysical, social, and metaphysical values are expressed and maintained.

IMPLEMENTING THE ASSESSMENT TOOL

This tool provides a kaupapa Māori-based approach that has been developed over several years, but more recently refined and tested in the Waikato Region collaboratively with Waikato-Tainui researchers and a TAG group that has guided the direction of the tool and ensured tikanga was followed. It has been applied and validated for hauanga kai/mahinga kai sites. This work demonstrates the assessment tool and reporting system is useful for providing iwi/hapū Māori perspectives to assess and report the changing state and condition of cultural resources to support current work in the NPS-FM and National Objective Framework (NOF). It can enable assessment and reporting of bands A–D and provide a cultural basis for setting limits and standards for FMU's and catchments (NPS-FM 2014) to protect and manage cultural values (e.g. Te Mana o Te Wai). It also helps build iwi/hapū Māori capability and capacity to use and adapt culturally based assessment tools augmented by mātauranga Māori.

A key reason for implementing these types of kaupapa Māori based tools is to empower iwi/hapū Māori to deliver outputs and recommendations that achieve their own aspirations and stated outcomes. Therefore, a critical step within freshwater planning and policy processes is to recognise that iwi/Māori are more than just stakeholders and that they have valuable contributions to make within collaborative planning processes to manage natural resources, which require their own assessment approaches and reporting of values alongside mainstream science.

As part of this empowerment, local government (as the delegated authority from the Crown) will need to enact the principles of the Treaty of Waitangi, including the principle of partnership – the duty to interact in good faith and in the nature of a partnership. A meaningful partnership will provide opportunities for iwi/hapū Māori to participate effectively in all planning processes for freshwater management from technical advisory groups to governing entities. It is therefore important to have empowered, well-resourced, and well-informed iwi/hapū Māori contributions for those core processes of freshwater management, particularly at a technical level where policies, recommendations, and deliverables are developed and actioned.

GLOSSARY OF MĀORI WORDS

Ae	Yes, agreed
Āhua pai	Very good
Auē	Expression of distress
Awa	River, stream, tributary
Hauanga kai	Waikato-Tainui term of mahinga kai, garden, cultivation, food-gathering places
Hui	Meeting, gathering
Hapū	Sub-tribe
Īnanga	Whitebait
Inenga	Measurement, assess
Iwi	Tribe
Kāeo	Freshwater mussels
Kao	No
Kai	Food
Kaiarotake	Reviewer, evaluator, assessor
Kaitiaki	Māori resource manager
Karakia	Prayer
Kaupapa Māori	Māori ideology, Māori based
Kikokiko	Flesh, meat
Kōrero	Language, conversation
Kupu	Word
Mahinga kai	Garden, cultivation, food-gathering places
Mahinga tuatahi	First activity, work, first area to cultivate, first fishery
Maimai aroha	Lament for dead, expression of love or affection
Māori	Indigenous people of Aotearoa
Maramataka	Calendar, daily and seasonal change, planting/fishing to monthly almanac
Mauri	Life force or life essence
Mauri noho	Life essence at a place
Mauri oho	To maintain or enhance mauri
Mauri ora	Life essence to support human well-being
Mauri piki	Actions that support the maintenance or enhancement of mauri
Mātauranga Māori	Māori knowledge
Pai	Good, maintained
Pai rawa	Excellent, a resource in very good condition
Pōhara	Poor condition, impoverished
Rāhui	Restricted, temporary, or regulated access to resources
Repo	Wetland, swamp
Roto	Lake
Taniwha	Monster, kaitiaki, water spirit
Tangihanga	Weeping, crying, grief, funeral
Taonga species	Precious, treasured resources, cultural based keystone or iconic species
Tikanga	Custom, values, practice
Tipua	Supernatural, strange
Tuna	Freshwater eel
Uaratanga	Goals, objectives
Waikato-Tainui	Tribe, people who descend from Tainui waka
Wairua	Spirit, soul, spiritual dimension
Wānanga	Workshop, working meeting
Whakapapa	Ancestry, lineage, connection
Whakataukī	Proverb, saying
Whānau	Family, extended family

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CONTACT

Shaun Awatere (Ngāti Porou)
Landcare Research, Private Bag 3127, Hamilton
awateres@landcareresearch.co.nz

Yvonne Taura (Ngāti Hauā)
Landcare Research, Private Bag 3127, Hamilton
tauray@landcareresearch.co.nz

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Annex 1: Developing the Kaupapa Māori Assessment Tool

The development of the freshwater assessment and management tool has been guided by Waikato-Tainui values and strategies, and by Waikato-Tainui researchers, informed and supported by: interviews with kaitiaki; three wānanga held during 2016 with a Waikato-Tainui Technical Advisory Group (TAG); a methodology based on the previous project work (Auckland Council's Wai Ora Wai Māori programme; Awatere et al. 2015); and previous literature (scoping report – NIWA 2010; Waikato River report card – Williams et al. 2016; Waikato-Tainui strategies, Waikato-Tainui environmental plan – Waikato-Tainui Te Kauhanganui Inc. 2013; the cultural wetlands handbook – Taura et al. 2017; CHI – Tipa & Nelson, 2012; and other reports and papers, e.g. Awatere & Harmsworth, 2014; Harmsworth et al. 2016; Hudson et al. 2016).

As part of the Ngā Tohu project between 2014 and 2016, a technical advisory group (TAG) oversaw and guided the development of this tool for application to the Waikato Region. The group consists of four marae representatives with strong interests in cultural monitoring and freshwater management. Representatives were primarily from the middle and lower catchments of the Waikato River. The literature review primarily consisted of documents referring to Māori values, cultural monitoring, and freshwater management. Precedence was given to documents created by iwi/Māori authors with in-depth knowledge of kaupapa Māori approaches. Fifteen interviews were carried out with kaitiaki or local resource users with experiential knowledge of significant taonga species like kāeo (freshwater mussel), tuna (freshwater eel), and īnanga (whitebait) in the mid-lower catchments of the Waikato River. The interviews were semi-structured, their main aim being to identify attributes and measures for kāeo, tuna, and īnanga.

An iterative process was used to identify and develop a kaupapa Māori framework and structure in which suitable attributes and measures could be organised. An initial list of 42 attributes and 46 measures were developed from the literature and interviews with kaitiaki carried out by Waikato-Tainui Endowment College and presented to the TAG. The group confirmed the attributes and measures as being consistent with Waikato-Tainui values and principles. However, the group commented that while the list of measures was comprehensive, the practicality of kaitiaki using all 42 attributes and 46 measures for freshwater/mahinga kai assessment was questionable and therefore reduced the list to a more practical number as part of the methodology and process for assessment. Further refinement of the assessment tool and prioritisation of attributes were then determined to achieve fewer attributes and measures. With Waikato-Tainui, this resulted in three main categories or domains, each with two selected attributes.

Developing and applying measures (Ngā Inenga)

Measures for each attribute begin with an informed and interpreted qualitative assessment, largely based on subjective field assessment validated by mātauranga Māori and science. Assessments may have a degree of difference and vary depending on the number of assessors, their knowledge base, and their subjective technique. Use of a Likert-type scale allows conversion of the subjective assessment into more quantitative relative scores. Using data aggregation divided by the number of assessors/kaiarotake can help remove bias and difficulty in aggregating qualitative measures by providing an average score to achieve consistency.

Variation in qualitative assessment can be further reduced by assessors having in-depth knowledge (e.g. mātauranga Māori), training and wānanga, professional interpretation and categorisation of qualitative data, and careful conversion into more quantitative data (e.g. ordinal or numeric data), which is then assigned to each attribute. In this Waikato-Tainui study we used an evaluation approach to score within the three identified domains, as well as standard descriptors, kupu, and scales to score each attribute.