



**Report 8: Exploring the challenges facing councils
and iwi when working around biosolids issues;
Assessment of Cultural Frameworks**

Prepared by



December 2018

Regional Biosolids Strategy – Lower North Island

Report 8: Exploring the challenges facing councils and iwi when working around biosolids issues; Assessment of Cultural Frameworks

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Ref: Regional_Biosolids_Strategy-Report_8-
Cultural_Frameworks_Assessment

Job No.: 10416

Date: December 2018

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Please cite this report as: Lowe Environmental Impact Limited (2018). Report 8: Exploring the challenges facing councils and iwi when working around biosolids issues; Assessment of Cultural Frameworks. Regional Biosolids Strategy: Lower North Island, New Zealand.

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1 EXECUTIVE SUMMARY

1.1 Background

Ten lower North Island councils are working in partnership to develop a biosolids strategy that includes a potential collective approach for sludge management and beneficial end-use. The strategy is led and coordinated by a collaborative management team of Lowe Environmental Impact (LEI), Massey University and The Institute of Environmental Science and Research Ltd (ESR).

Initial stages of the project have carried out stock-take and gaps analysis to highlight the scale of the sludge problem in the region as well as areas where councils could potentially work together to manage their sludge. Initial 'straw-men' strategies were developed and progressed through discussion to the development of draft strategies for the collective management of biosolids for the Lower North Island (Stage 5 Draft Strategy; Task 5b Development of a Draft Strategy).

New Zealand drivers for consultation and public engagement in environmental matters include the Local Government Act (2002), the resource Management Act (1991/2013) and obligations under the Treaty of Waitangi. As a Treaty partner, key stakeholder and environmental guardian, iwi and rūnanga have a very keen interest in being involved in water management and environmental issues. One means by which community interests are considered is through the use of cultural impact assessments (CIA), often carried out as a way of documenting Māori cultural values, interests and associations with an area or a resource, and the potential impacts of a proposed activity on these. A CIA is a planning tool that helps to facilitate Māori participation in the planning process. The CIA may contain a cultural framework which is a tool used to identify the effects of a proposed activity (such as biosolids re-use) on tangata whenua cultural associations with the environment.

There are several cultural health frameworks in New Zealand. These have been developed by academic researchers, scientists, Iwi and other individuals, both Māori and non-Māori to help communicate the needs, intentions and beliefs of Māori which must be considered during project planning and execution.

1.2 Scope

The purpose of this report is to review all available Cultural Impact Assessment Frameworks that could be used to evaluate impacts of biosolids re-use. This report acts as a resource for council and related groups to consult when investigating or determining an appropriate framework for application in this area. Incorporating the values important to Māori is critical to understanding who might be affected by a proposed action or change and how.

1.3 Key Findings

Eight frameworks have been included in this report. It is important to note that more may exist, however, the following have been selected for their appropriateness to the topic of biosolids management and have adequate and detailed information accessible for review.

The cultural health frameworks are based on atua (Māori beliefs and custom, and values); Tikanga (customary protocols and traditions) or mana whenua perspectives.

This report outlines the most commonly used frameworks which include:

1. Using mātauranga Māori to inform freshwater management – Tikanga based;
2. Mauri-Ometer Indigenous Maori Knowledge and Perspectives of Ecosystems – mana whenua and tikanga based;
3. Mauri Compass – mana whenua and tikanga based;
4. Nga Mahi: Kaupapa Māori Outcomes and Indicators Kete – mana whenua and tikanga based;
5. Cultural flows – mana whenua and tikanga based;
6. Treaty-Based Planning Framework - mana whenua and tikanga based;
7. A Cultural Health Index for Streams and Waterways: a tool for nationwide use - mana whenua and tikanga based.

Monitoring provides Māori with tools to articulate perceptions of environmental change, environmental health, and Māori well-being. While the assessed frameworks are a way of capturing some of the values, practices and principles important to Māori, they should be used alongside consultation with tangata whenua, iwi and related parties.

Each marae, hapū and iwi across New Zealand may have different perceptions and values to the next, therefore consultation to understand what is important to each is paramount. The frameworks may act as a way to guide such articulation, but nonetheless engaging with tangata whenua is critical to undertake co-planning, goal setting and joint actions.

2 INTRODUCTION

2.1 Background

Ten lower North Island councils are working in partnership to develop a biosolids strategy that includes a potential collective approach for sludge management and beneficial end-use. The strategy is led and coordinated by a collaborative management team of Lowe Environmental Impact (LEI), Massey University and The Institute of Environmental Science and Research Ltd (ESR).

Initial stages of the project have carried out stock-take and gaps analysis to highlight the scale of the sludge problem in the region (Stage 1 Gap analysis; Task 1a Desktop study, and Task 1b Site visits and field investigations). Areas where councils could potentially work together to manage their sludge were identified (Stage 2 Opportunities to Work Together; Task 2a Opportunities to Work Together). Initial 'straw-men' strategies (Stage 4 Scenario Evaluation; Task 4a Development of 'straw men' scenarios and 4b Workshop Discussion) were developed and progressed through discussion to the development of draft strategies for the collective management of biosolids for the Lower North Island (Stage 5 Draft Strategy; Task 5b Development of a Draft Strategy).

New Zealand has unique central and local government drivers for consultation and public engagement. These include the Local Government Act (2002), the resource Management Act (1991/2013) and obligations under the Treaty of Waitangi. As a Treaty partner, key stakeholder and environmental guardian, iwi and rūnanga have a very keen interest in being involved in water management and environmental issues. They hold extensive knowledge of their local environment and history, along with well-established practices for managing human impacts upon natural resources. Such practices are based around tapu and noa, key cultural constructs that were central to traditional Māori society and operate alongside other concepts and values to inform traditional knowledge and resource management frameworks in the present day.

Identifying alternatives to landfilling of biosolids will typically require a consultation process to identify issues, concerns and the potential effects that the discharges may have on affected parties and key stakeholders. This presents both challenges and opportunities for local government and communities. A cultural impact assessment (CIA) is often carried out as a way of documenting Māori cultural values, interests and associations with an area or a resource, and the potential impacts of a proposed activity on these.

A CIA is a planning tool that helps to facilitate Māori participation in the planning process. Like other technical reports, a resource consent applicant may commission a CIA and the report is regarded as technical advice. The CIA may contain a cultural framework which is a tool used to identify the effects of a proposed activity on tangata whenua cultural associations with the environment.

There are a number of cultural health frameworks in New Zealand. These have been developed by academic researchers, scientists, Iwi and other individuals, both Māori and non-Māori with the intentions of communicating the needs, intentions and beliefs of Māori which must be considered during project planning and execution. This report seeks to discuss these frameworks and related Māori Values and Concepts.

2.2 Māori Values and Concepts

2.2.1 Introduction

A traditional Māori worldview is centered around the physical environment and the appropriate spiritual domains or atua – gods of environmental domains. These include every aspect of the environment, which sit between them.

The following provides a breakdown of atua representing aspects of the natural world from a Māori perspective. Atua may be understood as a mythical force similar to a god, however, not particularly of Christian faith. Rather, an atua such as Ranginui, the sky father from a Māori spiritual perspective.

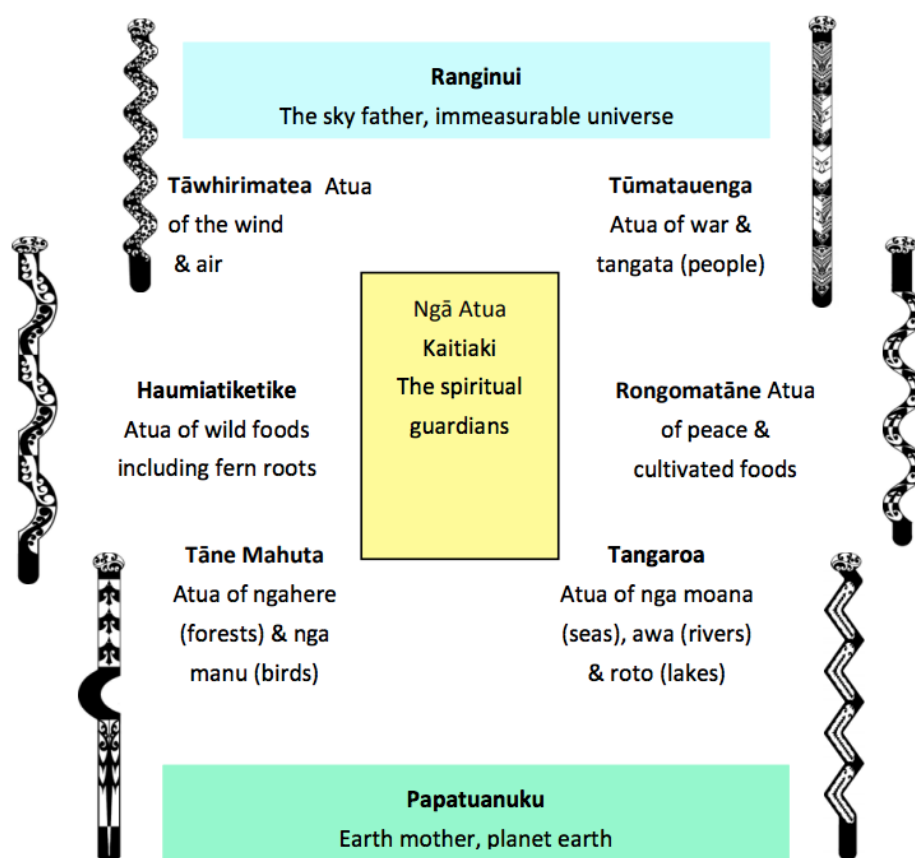


Figure 2.1. The upper section is dominated by Ranginui, the sky father, while the lower section is dominated by Papatuanuku, the earth mother. The children are featured in between Rangi and Papa, their relationship to their parents respective of their position eg, Tāwhirimateā features closer to Rangi as Tāwhirimateā is representative of weather and air, a realm closer to sky than earth. Ngā Atua domains framework, developed by Tiakina Te Taiao, Nelson Motueka. (Awatere & Harmsworth, n.d., p.3).

Important aspects to understand about the Te Ao Māori worldview is the interconnectedness of all things. A small shift in the life force (mauri) of any part of the environment can cause shifts in the mauri, which may affect the whole system (Young et al, 2008, p.7). For example, pollutants entering a catchment upstream, might affect the ecology of an area, which may poison the fish supply, having run-on effects on food collection, dependent wildlife and the broader ecology.

2.2.2 Tapu and Noa

'Tapu' and 'noa' are important concepts in Māori thinking and practice that inform many environmental decision-making processes including the management of treated sewage sludge (biosolids) and wastewater.

In a generic sense, tapu describes a status of forbidden or restricted that is prescribed to something or someone, whilst noa refers to being ordinary or free from restriction.

2.2.3 Mauri

With respect to environmental management, mauri is the critical, overarching concept or spiritual presence embodying environmental health of – in the context of this report, a body of water. It may be defined as the life force of a being or environmental element, and the capacity to support life be it human, animal or ecological.

Of paramount importance is the understanding that mauri may be interpreted differently across individuals, hapū, iwi and wider groups. It does not have a simple English translation, nor a scientific translation, and is unique in its meaning and origins. It may be a difficult concept to grasp entirely; nonetheless, it is a crucial concept across traditional and contemporary Māori culture, society and wider groups.

2.2.4 Kaitiakitanga

An important value in te ao Māori essentially denoting guardianship or stewardship, particularly environmental guardianship. To Māori, kaitiakitanga may be expressed through actions taken to protect the environment from damage, or may be used in the context of taking ownership, stepping up to develop a solution.

2.2.5 Wairua

These concepts guide all activities and relationships with the environment through an elaborate system of ritenga or rules, with goals to regulate and sustain the wellbeing of people, communities and natural resources (Young, Harmsworth, Walker & James, 2008)

2.3 Cultural Health Frameworks

Why a Cultural Health Index?

The right of tangata whenua to take part in managing environmental resources such as freshwater resources has been formally recognised and legislated for.

The challenge for both Māori and resource managers is to find meaningful ways of incorporating cultural perspectives and values into decision making in the absence of knowledge, tools and processes that provide resource managers with access to a Māori perspective.

Cultural Health Frameworks have been developed to provide a means by which iwi can communicate in a way that can be understood and integrated into resource management processes.

Cultural Health Frameworks aims to achieve two main goals:

1. **To provide a way for Māori to take an active role in managing resources** by providing a framework for Māori to apply traditional methods and perspectives in assessing the overall health of the environment in their area.
2. **To provide an opportunity for resource management agencies to discuss and incorporate Māori perspectives and values in management decisions.** Frameworks recognise and express Māori values and links this cultural knowledge to western scientific methods in a way that satisfies the needs of iwi/hapū and resource managers.

(Ministry for the Environment - <http://www.mfe.govt.nz/publications/fresh-water/using-cultural-health-index-how-assess-health-streams-and-waterways/why-0>)

3 SUMMARY OF CULTURAL FRAMEWORKS

3.1 Framework 1: Using mātauranga Māori to inform freshwater management

Authors: Garth Harmsworth, Shaun Awatere and Craig Pauling

Using mātauranga Māori to inform freshwater management, is a policy brief intended for government, councils and industries to inform readers of recommended mātauranga Māori for application to freshwater developments (Harmsworth, Awatere & Pauling, 2013).

This framework consists of 6 recommended steps to incorporate mātauranga Maori to water management. These may be transferred to other environmental, cultural and social domains, however these were developed for integration of Māori values and knowledge into freshwater management (Harmsworth, Awatere & Pauling, 2013). These steps include the following:

1. Mana Whakahaere: A Treaty-based planning framework is used for engagement and policy development
2. Whakamāramatia ngā Pou Herenga: Tāngata whenua values are defined and reflected in engagement processes
3. Whakamāramatia ngā Huānga: Outcomes are defined at the beginning of the engagement process
4. Whakamāramatia ngā Uaratanga: Goals and objectives are established
5. Whakamāramatia ngā Aroturukitanga: Monitoring approaches are developed and implemented
6. Whakamāramatia ngā Mahi: Actions on the ground that demonstrate kaitiakitanga and progress iwi/hapū towards their goals/objectives/aspirations through tangible projects

3.2 Framework 2: Mauri-Ometer Indigenous Māori Knowledge and Perspectives of Ecosystems

Authors: Garth Harmsworth and Shaun Awatere

Mauri-Ometer is a framework for consideration of cultural implications during decision-making processes for planning, execution and assessment of projects involving resource management. It may be applied to various environmental contexts, including marine ecosystems, climate change scenarios, environmental disaster, infrastructure assessment and other environmental statuses.

Example of Mauri-ometer report output (<http://www.mauriometer.com/WebPage/Show/3>)

In this instance, the indigenous context is a superior choice for impact upon mauri. The Do Nothing context will diminish the mauri of the chosen indicators, as demonstrated by the figures in the above diagram. The Do Nothing context can be seen as the triangle in the red zone, and

the Indigenous as the square in the green zone. The outcomes depend upon user input, so each scenario will likely be different.

Mauri-Ometer has been applied to a number of notable incidents and scenarios. These include the contribution of Mauri to the Rena disaster recovery, academic and scientific research projects investigating indigenous values, water management in New Zealand, a number of student projects as well as media coverage within New Zealand. These can be viewed on the Mauri-Ometer website at <http://www.mauriometer.com/WebPage/Show/6>

3.3 Framework 3: Mauri Compass

Author: Ian Ruru, Environmental Analyst for Te Rūnanga o Tūrangānui ā Kiwa.
Designer: Dave Wilson, Gisborne District Council Strategic Planning

A framework developed to assess the mauri of a body of water. Mauri Compass is comprised of three Kete. These include: Kete 1 – Tangata Whenua (local people, or people born of the whenua), Kete 2 – Tane (Land based aspects), and Kete 3 – Tangaroa (Sea or water-based aspects). In this framework, status of these three kete work to determine the overall mauri of freshwater bodies and the affiliated uses and environments.

Within the three kete are 12 scientific and cultural attributes including Māori and Western scientific aspects. These 12 aspects can be numerically measured, resulting in an overall measure of mauri, and showing which of the 12 aspects might be lacking and which are at a healthy level.

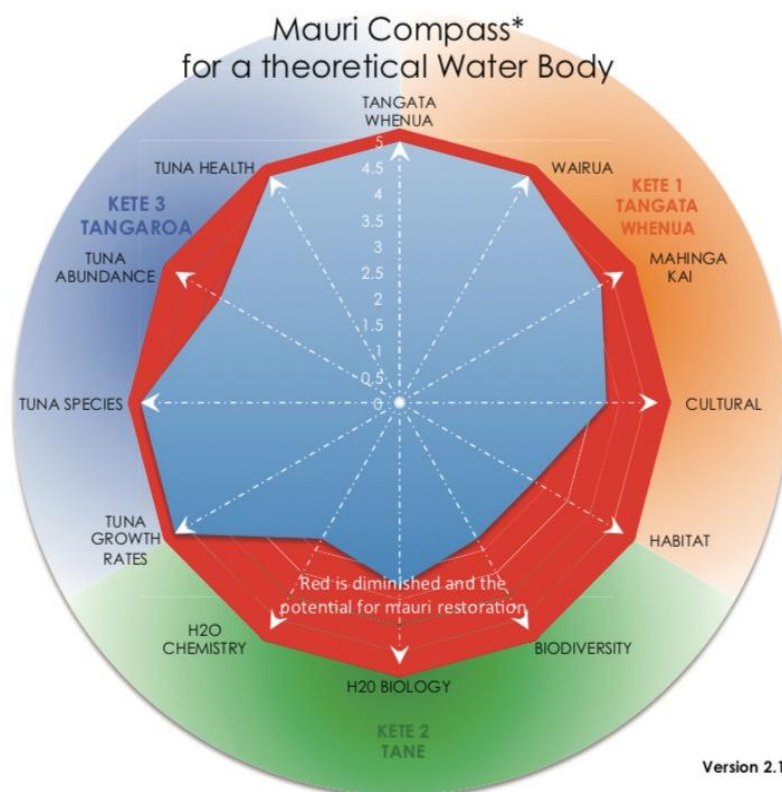


Figure 3.1. The mauri compass, a compass to navigate the journey to restoring the mauri, a pathfinder for kaitiaki.

3.4 Framework 4: Nga Mahi: Kaupapa Māori Outcomes and Indicators Kete

Authors: Richard Jefferies and Nathan Kennedy

The aim of the framework was to provide the means by which councils and iwi could assess the environmental outcomes for Māori, and was part of a wider investigation into whether council planning documents and their implementation were resulting in positive environmental results.

The model is based on ngā tikanga (customs) and focusses on three issues:

1. Mana whenua (literally authority over the land) as the overarching tikanga within which iwi – council relationships should be considered;
2. Tikanga mauri of waterways; and
3. Wāhi tapu (significant or sacred Māori sites)

3.4.1 Guidelines and Worksheets Documents

The physical components of the framework are three kete (based on the three tikanga above) and contains a worksheet and associated advice notes; and two supplementary documents - the tikanga Māori literature review and best examples of Māori provisions within plans¹.

3.4.2 The 3 kete:

Kete 1: Mana Whenua, is comprised of three sets of indexes, within are indicators of the kete. These indexes are intended to assess that mana whenua is appropriately respected. It assesses acknowledgement from local authorities, other government agencies, and the extent which tangata whenua assert mana whenua.

Kete 2: Mauri of Water is comprised of five indexes, containing indicators used for assessment. These indexes are used to assess the status of mauri of a waterbody. It assesses the extent to which local authorities, tangata whenua, other agencies, and wider community protect mauri, and also assesses physical evidence that mauri is being protected.

Kete 3: Wāhi Tapu Kete, (Wāhi tapu interpreted as a sacred site) is comprised of four indexes, and their indicators used for assessment. This kete is used to examine whether wāhi tapu are protected and acknowledged. It assesses the extent to which local authorities, tangata whenua, and other government agencies actively protect the sacred site. Further it assesses the extent that wāhi tapu are identified/protected.

Each kete contains useful, and in-depth measures of the topics of assessment, and allows for a detailed examination of that kete. Scores are interpreted numerically, but also allow for extra comments to be made. Please see Appendix B for a broader brief, however the actual worksheets should be consulted as they include a huge amount of detail.

¹ The outcomes are to ensure mana whenua is respected, ensure the mauri of waterways is in optimal health, and that wāhi tapu are protected (Jefferies & Kennedy, 2009 p.5). The documents may be accessed via the University of Waikato website (<https://researchcommons.waikato.ac.nz/handle/10289/895>).

3.5 Framework 5: Cultural flows

Authors: Gail Tipa and Kyle Nelson

Cultural Flows is a study developed to ultimately assess the health, cultural uses, and other attributes of waterbodies intended for iwi and hapū, and acts as a guide for which 'cultural flow preferences' can be identified. Further, it can be applied by resource managers, developers, wider regional groups and stakeholders (Tipa & Associates, 2018) to better gauge the needs of mana whenua and work towards these collaboratively. It integrates the multi-step framework of COMAR - Cultural Opportunities Mapping, Assessments and Responses, which acts as a guideline for assessment of waterbodies.

COMAR is comprised of 6 steps. These include the following:

1. Initiating the project by identifying the body representing Māori and secure mandates mātauranga Māori frameworks, approaches, & culturally appropriate monitoring tools
2. Documenting the association: identifying mahinga kai/ecosystem attributes related to stream flow and iwi/hapū preferences
3. Cultural opportunity mapping: identifying sites of significance and assessing the impact of stream flows on these significant areas
4. Focusing the investigation: critically assess and identify iwi/hapū mahinga kai/ecosystem attributes that can be applied to an Environmental Flow Assessment (EFA) and those mahinga kai/ecosystem attributes that may be more suitable for assessment by alternative methods
5. Cultural opportunity assessments: to undertake assessments at sites to assess whether different levels of environmental flows sustain iwi/hapū attributes and provide the opportunities sought
6. Analysis to inform decision-making: qualitative analysis and statistical analysis to identify flow thresholds, flow related issues, and management priorities. (Awatere & Harmsworth, 2014, pp. 19-20)

COMAR, developed by Gail Tipa and Kyle Nelson, was created for the purpose of 'identifying and assessing the opportunities for Māori to engage in a range of cultural experiences under different environmental conditions' (Tipa & Nelson, 2008, p.314). It was developed in light of local Māori communities needing to determine, define and deliver their mandates, responsibilities and priorities, from both a scientific perspective but also in light of iwi and hapū kaitiaki, and other needs such as mahinga kai and cultural water uses (Tipa & Nelson, 2008, p319).

3.6 Framework 6: Treaty-Based Planning Framework

Reporting Environmental Impacts on Te Ao Māori: A Strategic Scoping Document

Authors: Sue Scheele, Fiona Carswell, Garth Harmsworth, Phil Lyver, Shaun Awatere, Mahuru Robb, Yvonne Taura - Landcare Research.

Steven Wilson - Maximise Consultancy Limited.

Reporting Environmental Impacts on te ao Māori is a useful document presenting a framework designed through engagements with iwi, hapū and mātauranga Māori experts, as well as Ministry for the Environment and environmental practitioners. Te ao Māori refers to the Māori worldview (Clapcott et al., 2018 & Harmsworth et al., 2016, p.1). The resulting framework demonstrates core Treaty of Waitangi principles, kawanatanga (government or dominion) and mana motuhake (autonomy and sovereignty), and the major principles which fall within these categories and in relation to Treaty of Waitangi obligations such as governance and kaitiakitanga. These relationships can be seen in the below framework.

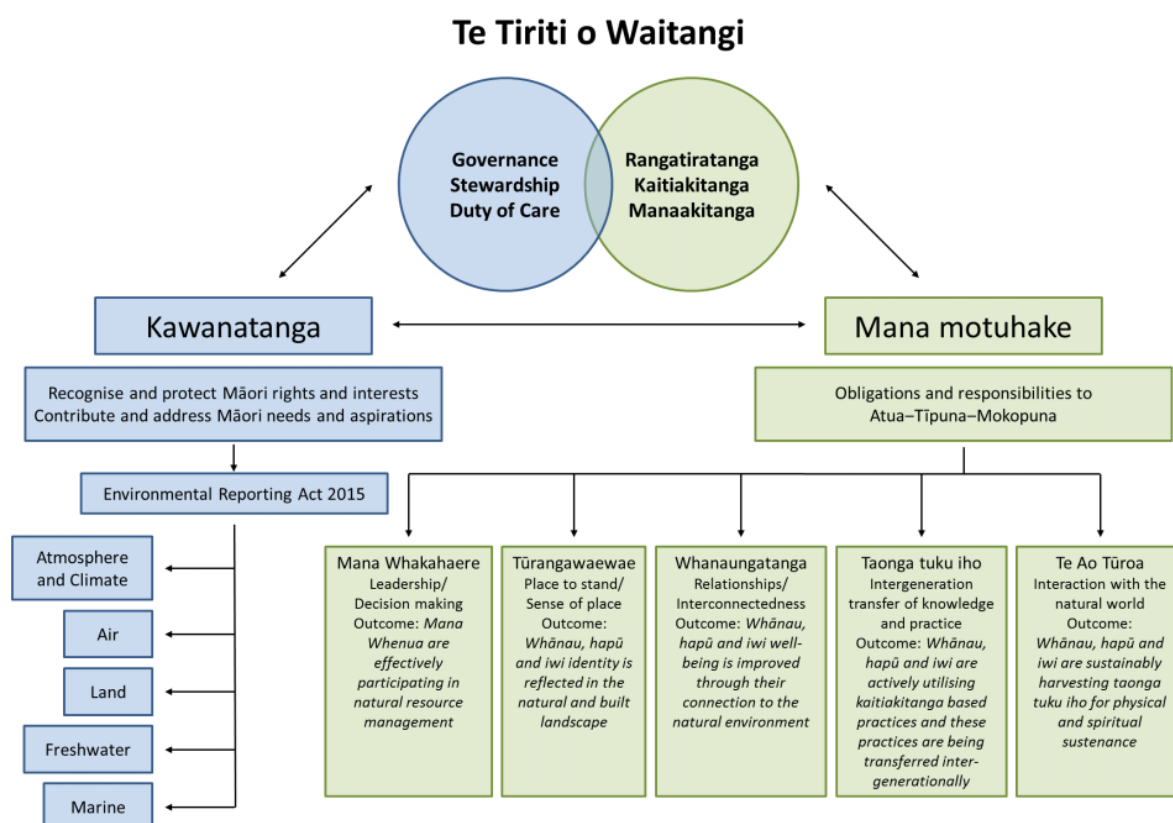


Figure 3.2. Te Tiriti o Waitangi, a framework proposed by Johnnie Freeland (Auckland Council) and adapted according to Awatere and Harmsworth 2014. (Harmsworth et al., 2016, p.6).

The framework can act as an environmental reporting template across the five principles identified as important to tangata whenua, with suggested possible application to topics such as wetland extent, marine life abundance, water quality, food availability and other related measures (Harmsworth et al., 2016, p.24).

3.7 Framework 7: A Cultural Health Index for Streams and Waterways: A tool for nationwide use

Authors: Gail Tipa and Laurel Teirney

A Cultural Health Index (CHI) for Streams and Waterways presents a three-component framework for application and assessment of waterbodies. These three parts include 1: site status, 2: mahinga Kai, and 3: cultural stream health.

Delving deeper into each of these parts gives a better breakdown of concerns which Māori and the wider community may face, and how to approach these. A detailed breakdown of these can be found in appendix B. An example of a site assessment outcome is shown in figure 3.3.

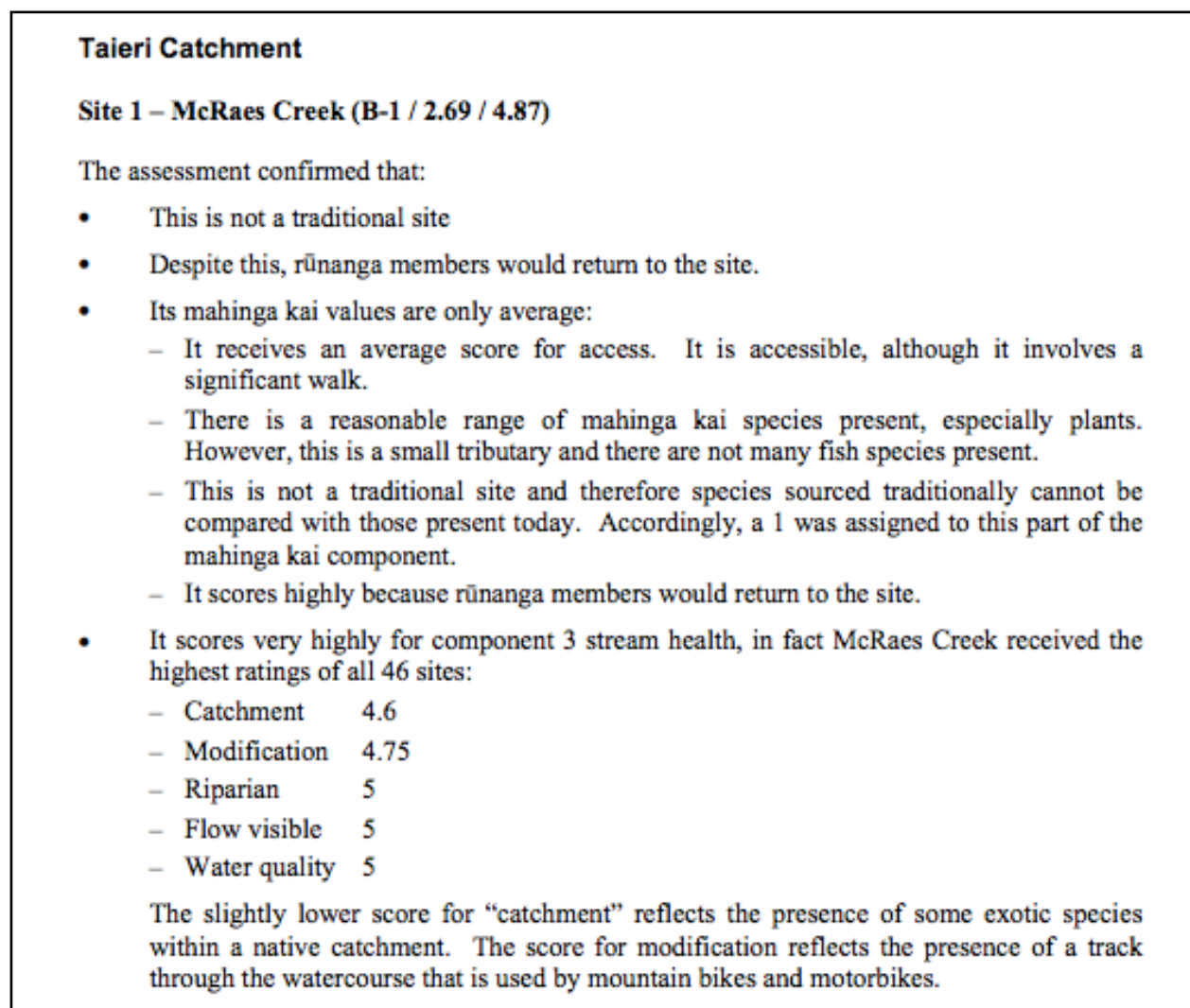


Figure 3.3. A site assessment outcome as relating to the Cultural Health Index (CHI) Image credit to authors Gail Tipa and Laurel Teirney

This CHI for Streams and Waterways tool provides a framework for in-depth assessment of a water body. It reviews a wide range of aspects important to both tangata whenua, communities, and gives an indication of ecological health of the site at hand.

3.8 Conclusion

Each framework presents a unique guide for users to follow to better understand, gauge and determine the needs, values and cultural beliefs of Māori people and Māoritanga. Paramount to correct use of each framework is the need for consultation with tangata whenua, iwi, and hapū groups alongside the frameworks. Each region, iwi, hapū and individual may hold specific and unique views and understandings of their environment and concepts, which must be communicated and included to produce meaningful outcomes for all.

It is likely that many concepts are translatable across groups such as the importance of mauri to a region and its people; however, other values may exist unique to a particular area or group. It should not be assumed that a single framework will meet the expectations of all iwi and hapū groups; instead robust consultation and communication with tangata whenua needs to be maintained throughout the whole process to ensure the cultural relevance and responsiveness of any Cultural Impact Assessment Framework to Māori.

4 GLOSSARY

Awa - River, stream, creek, other flowing water

Atua - God (either of a religion, spiritual belief or ancestral nature), spiritual or supernatural being

Hāpu - Sub tribe, extended family, or other kinship group or in other context to be pregnant.

Iwi - tribe of an area descended from the same common ancestor.

Kaitiaki - a guardian or someone with trust bestowed unto them. A keeper or minder.

Kaitiakitanga - Similarly to above, guardianship, stewardship, a trustee or trust.

Mana whenua - Authority or territorial rights over land.

Māoritanga - Māori culture, Māori practice, or Māori way of life

Mātauranga - Māori principles or ways of doing things, see Appendix A.

Mauri - Life force, capacity to support life be it human, animal or ecological.

Ngati Apa - Iwi originating south of the Whangaehu River in the North island, but also located in northern parts of Te Waipounamu.

Ngāi Tahu - The largest iwi of Te Waipounamu, with approximately 55,000 affiliated.

Ngāi Tahu tanga - Within the cultural context of Ngāi Tahu. For example, the unique Ngāi Tahu dialect might be considered Ngāi Tahu tanga, within the common identity of Ngāi Tahu.

Taiao - natural world or environment.

Tangata Whenua - People of the land, locals

Tapu - To be sacred or forbidden. Under the protection of atua.

Te Ao Maori - The Māori World

Te Wāipounamu - The South Island of New Zealand. Literal translation being water (wai) and greenstone (pounamu).

Te wai urutapu - The natural state of water in its purest health form, a benchmark when assessing the health of a waterbody and its mauri

Wai - Water in the form of liquid. Can be used to explain a stream, creek or river, further can be used to describe tears flowing. Multiple other meanings including waiata, as well as when questioning a name.

Wāhi tapu - A sacred site or location, such as a battle ground or prolific landmark with spiritual ties such as an ancestral canoe dig site.

Whānui - Iwi population.

Rahui - Rahui is a form of displaying or practice intended to restrict or stop gathering resources at a particular location, such a fishing spot. The rāhui can be to limit any resource not exclusively fish. Further, a rāhui is a way of separating people from tapu (sacred) things. During a rāhui the remaining resource population become tapu. It is a tradition which can be initiated by an individual of high regard, or through the Ministry of Fisheries.

Ritenga - Rule, custom or practice

Rohe - Geographical boundaries

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6 APPENDICIES

Appendix A. Cultural Context Example - Ngāi Tahu Context

Appendix B. Cultural health frameworks

Appendix C. Other related Frameworks

APPENDIX A

Cultural Context Example - Ngāi Tahu Context

Because different iwi and hāpu may hold differing values, belief systems or opinions to other iwi and hāpu, each must be considered case by case through discussion. Most iwi and hāpu groups have unique tikanga which they practice and live by, these are usually unique. The values of tangata whenua involved or affected should be considered alongside the cultural framework measures. Consider the following Ngai Tahu iwi tikanga for context as an example of iwi tikanga.

Particularly relevant for a Te Waipounamu (south island) context are the overarching values which guide the work and intentions of tangata whenua, hāpu and the wider Ngāi Tahu iwi. These tikanga are of utmost importance to the iwi, alongside the Treaty of Waitangi, Te tāhū o te whāriki - the iwi climate change strategy and Te Rūnanga o Ngāi Tahu Freshwater Policy. These principles are implemented to set the tone of values and their application to all work and engagements the iwi may undertake. Each iwi will have unique guiding principles that are developed from their history and culture, which may be different across iwi.

This concept of values is not unique to Ngāi Tahu, many iwi have similar values which guide them, however the values themselves are usually unique to an iwi or hāpu eg, the core values of Tainui might be different to those of Ngāi Tahu.

Ngāi Tahu Values:

Whanaungatanga - Family

We will respect, foster and maintain important relationships within the organisation, within the iwi and within the community.

Manaakitanga - looking after our people

We will pay respect to each other, to iwi members and to all others in accordance with our tikanga (customs).

Tohungatanga - expertise

We will pursue knowledge and ideas that will strengthen and grow Ngāi Tahu and our community.

Kaitiakitanga - stewardship

We will work actively to protect the people, environment, knowledge, culture, language and resources important to Ngāi Tahu for future generations.

Tikanga - appropriate action

We will strive to ensure that the tikanga of Ngāi Tahu is actioned and acknowledged in all of our outcomes.

Rangatiratanga - Leadership

We will strive to maintain a high degree of personal integrity and ethical behaviour in all actions and decisions we undertake. (Ngāi Tahu, 2018)

These principles guide the strategic direction for Ngāi Tahu and environmental actions, which seek to ensure the following strategy:

Ngāi Tahutanga (Ngāi Tahu culture and identity) and tikanga (customs and values) guide innovative, effective climate change responses for all Ngāi Tahu.

Every generation understands climate change impacts and the importance of the taonga and resources that have been diminished or lost. No matter what they are, Ngāi Tahu whānui can maintain relationships to places, resources and taonga under the new climate conditions, which will carry through their identity and pride as Ngāi Tahu.

Ngāi Tahu Whānui understand that their Ngāi Tahutanga is woven into all levels of tribal responses to climate change, and understand how to express that in their own lives and actions (Te Rūnanga o Ngāi Tahu, 2018, p.15)

(Direct excerpt from Te Tāhū o te Whāriki - Climate Change Strategy 2018)

For a more in-depth understanding of Ngāi Tahu iwi values, culture and principles the Ngāi Tahu website is a great starting point for resources to context and understanding. The following links are useful for the context of this report and application to water bodies.

<https://ngaitahu.iwi.nz/ngai-tahu/values/>
<https://ngaitahu.iwi.nz/culture/mahinga-kai/>
<https://ngaitahu.iwi.nz/environment/>

Ngai Tahu 2018 Climate Change Strategy:

<https://ngaitahu.iwi.nz/wp-content/uploads/2018/11/Ngai-Tahu-Climate-Change-Strategy.pdf>

“Mō tātou, ā, mō kā uri ā muri ake nei”
“For us and our children after us”

While the above information is unique to the context of Ngāi Tahu, it serves to demonstrate the values of just one iwi within New Zealand. Engaging with relevant iwi to understand their unique values, views and practices is paramount to effective functioning of the selected framework.

APPENDIX B

Cultural health frameworks

Framework 1: Using mātauranga Māori to inform freshwater management

Understanding Mātauranga Maori

Mātauranga Maori may be referred to broadly the knowledge, comprehension, or understanding of everything visible and invisible existing in the universe, and in a contemporary setting, extends to present, historic, local and traditional knowledge, systems of knowledge transfer and storage, and the goals aspirations and issues from an indigenous perspective (Manaaki Whenua Landcare Research, 2018). In Māori language, Mātauranga Maori refers to knowledge and wisdom in the context of Maori tradition.

Mātauranga Māori may take the form of intergenerational knowledge or beliefs (Manaaki Whenua Landcare Research, 2018), ranging from concepts with a physical impact such as placing a rāhui on a river if it is considered over fished (Clapcott, 2018, p.460), to less hands-on concepts such as integration of the Treaty of Waitangi into policy and legislation. It is important to understand that mātauranga Māori may be interpreted differently across iwi or hāpu, and the exact determination of mātauranga Maori principles may be unique to particular groups, this solidifies the importance of consultation of tangata whenua and other parties involved to fully grasp the context and importance.

Framework 2: MauriOmeter Indigenous Māori Knowledge and Perspectives of Ecosystems

For example, if the user would like to assess the impact of a project upon the fish population of a water catchment, the tool delivers a numerical assessment of the impacts on the actions selected based on impact weightings. Another appropriate example includes impact on cultural factors such as inclusion of local knowledge, tikanga Maori and sacred and spiritual places among other dimensions within the four aspects.

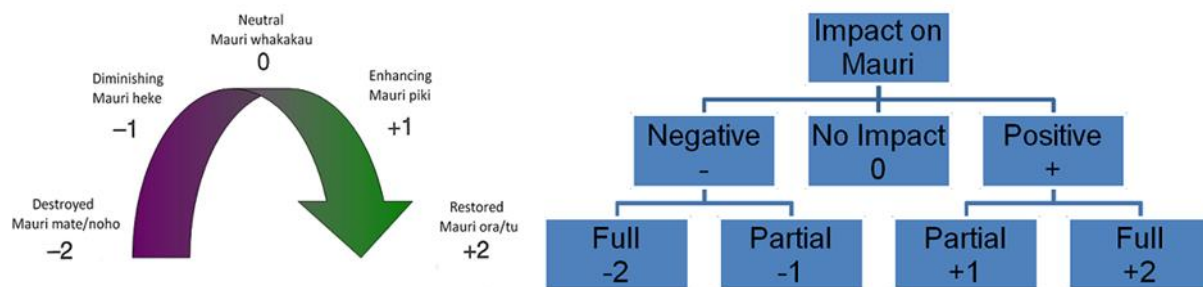
The model measures mauri in four dimensions – environmental wellbeing (taiao mauri), cultural wellbeing (hapu mauri), social wellbeing (community mauri) and economic wellbeing (whanau mauri). Indicators are then chosen that represent the impacts upon mauri for each dimension (Awatere & Harmsworth, 2013; Morgan, 2004).

MauriOmeter provides ten scenario templates such as Climate Change Assessment and Māori land Development assessment templates. There is an 11th option to create a custom template in which the user identifies their own indicators/constraints.

Within MauriOmeter are four dimensions, ecosystem, cultural, community and economic. Each of these dimensions have unique indicators associated, which the user can select based upon their scenario at hand.

Each of these indicators are scored by the user on a scale of -2 through to +2. The score is representative of the impact the decision context has upon the mauri of that indicator. Indicators are given two decision contexts, what the impact upon mauri would be if a 'Do Nothing' approach

is taken, and the impact upon mauri from an 'Indigenous' context. The following diagram demonstrates the scoring index applied to both which can be seen in the output diagram.



Source: <http://mauriometer.com/DataEntry/Page1> .

Framework 3: The Mauri Compass

"The Mauri Compass is both an assessment tool and a framework for assessing and restoring the mauri of any ocean, river or lake" (<https://www.mauricompass.com/>). The tool provides a set of appropriate measurable indicators of mauri of a water body if there is a proposed activity, resource consent application or other change which might affect the water body and it's mauri. The framework can be found on the website, MauriCompass.com, and is accessible on any device or browser and supports offline functionality in most remote settings.

The Compass was developed to to restore mauri of the Gisbourne waterways, and acts as a symbol of positive engagement between Iwi and the Council. Mauri compass has generated attention within both the Gisbourne region where it was developed, but also from councils nationally. It has been presented with interest from the Ministry for the Environment (Neilson, 2016), and has been applied to a number of cases. It has also featured in a number of news articles, viewable on the Mauri Compass website.

Further reading available at <https://www.mauricompass.com/>

Framework 4: Nga Mahi: Kaupapa Maori Outcomes and Indicators Kete

In depth breakdown of Kete indicators and their measures

For ideal understanding of this framework please consult the PUCM worksheets themselves, this section acts as a summary but does not capture all of the details included by the authors. These are available at <https://researchcommons.waikato.ac.nz/handle/10289/895>

Kete 1: Mana Whenua

Index 1: Extent to which Local Authorities acknowledge Mana Whenua

Indicator 1: Whether respondent agrees that Local Authority acknowledges mana whenua

Measure based upon experience and understanding of the conductor (running the assessment)

Indicator 2: Extent to which iwi/hapū tribal boundaries are known to Council

Measure 1. Council is familiar with the extent of tribal lands within its area

Measure 2. Extent to which Council holds information about mana whenua

Measure 3. Funding or resources provided by councils to assist with the investigation of tribal lands / boundaries

Measure 4. Council addresses competing claims to mana whenua

Indicator 3: Whether Statutory Plans recognise and provide for mana whenua

- Measure 1. Extent of TLA plan provisions for mana whenua
- Measure 2. Quality of TLA planning provisions for mana whenua
- Measure 3. Council has non statutory instruments designed to protect mana whenua
- Indicator 4: Extent to which Council monitoring has determined whether Anticipated Environmental Results (AERs) relating to mana whenua provisions have been achieved
 - Measure 1. Council undertakes monitoring of whether Anticipated Environmental Results relating to mana whenua provisions have been achieved
 - Measure 2. Council findings of whether Anticipated Environmental Results relating to mana whenua provisions have been achieved
- Indicator 5: Extent to which Council provides for mana whenua input into decision making
 - Measure 1. Strength of Council policy provisions for tangata whenua participation in decision making
 - Measure 2. Extent to which relationship is formalised between tangata whenua and Council

Index 2: Extent to which Other Government Agencies acknowledge Mana Whenua

- Indicator 1: Whether respondent agrees that Agency acknowledges mana whenua
- Indicator 2: Extent to which Agency's policy documents provide for mana whenua
- Indicator 3: Extent to which iwi/hapū tribal boundaries are known to Agency
 - Measure 1. Agency is informed regarding tribal rohe within its area
 - Measure 2. Extent to which agency holds information about mana whenua
 - Measure 3. Agency addresses competing claims to mana whenua
- Indicator 4: Extent to which Agency provides for mana whenua input into decision making
 - Measure 1. Strength of Agency's policy provisions for tangata whenua participation in decision making
 - Measure 2. Extent to which relationship is formalised between tangata whenua and Agency

Index 3: Extent to which Tangata Whenua assert Mana Whenua

- Indicator 1: Extent to which Tangata whenua assert mana whenua within statutory processes
 - Measure 1. Extent to which tangata whenua assert mana whenua in TLA processes
 - Measure 2. Extent to which Tangata whenua assert mana whenua within statutory processes of other Crown agencies
 - Measure 3. Extent to which Tangata whenua proactively assert mana whenua within legislative instruments
- Indicator 2: Extent to which Tangata whenua assert mana whenua generally
 - Measure 1. Tangata whenua respond to encroachments by other iwi/hapū
 - Measure 2. Tangata whenua make public statements regarding their mana whenua
- Indicator 3: Whether Iwi exercises mana whenua on behalf of its whānau/hapū
 - Measure 1. Iwi Authority has delegated authority of its whānau/hapū which hold mana whenua
 - Measure 2. Iwi authority consults its whānau/hapū on issues relevant to their mana whenua

Kete 2: Mauri of Water

Index 1: Extent to which local authorities protect mauri

- Indicator 1: Whether respondent agrees that Local Authority actively protects mauri
- Indicator 2: Whether Territorial Local Authority documents contain provisions to protect mauri
 - Measure 1. Extent of Council planning provisions designed to protect mauri
 - Measure 2. Quality of Council planning provisions designed to protect mauri
 - Measure 3. Council has non statutory instruments designed to protect mauri
 - Measure 4. Council has planning provisions which - while not referring explicitly to mauri – will help protect mauri

Indicator 3: Whether territorial local authorities act to protect mauri

Measure 1. Council takes measures to foster understanding of mauri

Measure 2. Territorial Local Authority effectively manages information associated with mauri

Measure 3. Territorial Local Authority utilises a range of strategies designed to protect mauri

Measure 4. Territorial Local Authorities have a track record in the protection of mauri

Index 2: Extent to which tangata whenua protect mauri

Indicator One: Whether respondent agrees that tangata whenua actively protect mauri

Indicator Two: Whether tangata whenua have management documents with provisions designed to protect mauri

Indicator Three: Whether tangata whenua act to protect mauri

Measure 1. Tangata whenua are actively involved in processes associated with protecting mauri

Measure 2. Tangata whenua are working with landowners to ensure mauri are protected

Measure 3. Tangata whenua take direct action to protect mauri

Measure 4. Tangata whenua effectively manage information associated with mauri

Index 3: Extent to which other agencies protect mauri

Indicator 1: Whether respondent agrees that other Government agencies actively protect mauri

Indicator 2: Whether agency takes measures to foster understanding of mauri

Indicator 3: Whether agency has strategies designed to protect mauri

Index 4: Extent to which actions of the wider community affect mauri

Indicator 1: Whether respondent agrees that actions of the wider community affect mauri

Indicator 2: Extent to which individuals and groups are informed about mauri and how it should be protected

Indicator 3: Whether individuals and groups take active measures to protect mauri

Index 5: Physical evidence that mauri is protected

Indicator 1: Whether respondent agrees that mauri is protected

Indicator 2: Characteristics of the water

Measure 1. Water is safe to drink

Measure 2. Water clear so that the stream bottom can be seen

Measure 3. Absence of visible foam on the water surface

Measure 4. Water has a natural taste

Measure 5. Water has natural smell

Measure 6. Water feels oily when rubbed between the fingers

Measure 7. Sediment/slime absent on riverbed

Indicator 3: Characteristics of the waterway and its immediate environment

Measure 1. Presence or absence of stock in the riparian margins and waterway

Measure 2. The extent of riparian vegetation, including the presence or absence of overhang

Measure 3. Natural range of plant species within riparian margins

Measure 4. River flow characteristics

Indicator 4: Characteristics of waterway inhabitants.

Measure 1. Number of indigenous fish species present

Measure 2. Number of specimens of each species

Measure 3. Health of fish present

Indicator 5: Presence of potential human threats

Measure 1. Withdrawal of water from waterway for other uses

- Measure 2. Incidence of point or non point discharge to waterway
- Measure 3. Local Council has Guidelines designed to protect wāhi tapu
- Measure 4. TLA has planning provisions which - while not referring to wāhi tapu – will help protect them

Kete 3 - Wāhi Tapu Kete

Index 1: Extent to which Local Authorities Actively Protect Wāhi Tapu

Indicator 1: Whether respondent agrees that Local Authority actively protects wāhi tapu

Indicator 2: Territorial Local Authority documents contain provisions to protect wāhi tapu

- Measure 1. Extent of TLA planning provisions designed to protect wāhi tapu
- Measure 2. Quality of TLA planning provisions designed to protect wāhi tapu
- Measure 3. Local Council has Guidelines designed to protect wāhi tapu
- Measure 4. TLA has planning provisions which - while not referring to wāhi tapu – will help protect them

Indicator 3: Territorial Local Authorities act to protect wāhi tapu

- Measure 1. Territorial Local Authorities have a track record in the protection of wāhi tapu
- Measure 2. Territorial Local Authorities effectively manage information associated with wāhi tapu
- Measure 3. Territorial Local Authorities utilise a range of strategies designed to protect wāhi tapu

Index 2: Extent to which Tangata Whenua Actively Protect Wāhi Tapu

Indicator 1: Whether respondent agrees that tangata whenua actively protect wāhi tapu

Indicator 2: Tangata whenua have documents with provisions designed to protect wāhi tapu

Indicator 3: Tangata whenua act to protect wāhi tapu

- Measure 1. Tangata whenua are actively involved in processes associated with protecting wāhi tapu
- Measure 2. Tangata whenua are working with landowners to ensure wāhi tapu are protected
- Measure 3. Tangata whenua purchase or acquire land to ensure control over wāhi tapu
- Measure 4. Tangata whenua negotiate and implement management arrangements over wāhi tapu
- Measure 5. Tangata whenua carry out protest and occupation activities to protect wāhi tapu when these are threatened
- Measure 6. Tangata whenua effectively manage information associated with wāhi tapu

Index 3: Extent to which Other Government Agencies Actively Protect Wāhi Tapu

Indicator 1: Whether respondent agrees that other Government agencies actively protect wāhi tapu

Indicator 2: Historic Places Trust works to protect wāhi tapu

- Measure 1. Historic Places Trust acts to protect wāhi tapu
- Measure 2. Historic Places Trust and tangata whenua have established a positive relationship

Indicator 3: Other government agencies work to protect wāhi tapu

- Measure 1. Agency actively protects wāhi tapu within its own lands.
- Measure 2. Agency effectively manages information associated with wāhi tapu

Index 4: Extent to which Wāhi Tapu are identified and protected

Indicator 1: Whether respondent agrees that wāhi tapu are widely identified and protected

Indicator 2: Physical characteristics of wāhi tapu

Measure 1. Wāhi tapu Condition

Measure 2. Sites for which permission has been granted to modify or destroy

Indicator 3: Characteristics of immediate environment

Measure 1. Whether site location is privately or publicly owned

Measure 2. Description of immediate environment

Indicator 4: Presence of potential threats

Measure 1. Type of threat

Measure 2. Whether use of site is consistent with tikanga

Measure 3. Level of statutory protection for site

Scores are typically averaged and information collected should be scrutinised to identify trends, weaknesses and analysis of indicators. The authors suggest that the information is useful over time because changes can be identified if the framework is repeatedly applied to a particular waterbody, and progress can be tracked. It is suggested that users load the findings of the framework to spreadsheet software and assess variations this way because of the large volume of data gathered.

Further, authors suggest their intentions to develop a database for analysis, management and reporting of information collected against the indicators, however it is unclear if this has taken place. Aside, this framework is a comprehensive representation of many different factors, and could be repeated over time to identify trends of a particular water body and surrounds. (Jefferies and Kennedy, 2009, p.77)

Framework 5: Cultural Flows COMAR Stages

Sourced from Gail Tipa and Kyle Nelsons Introducing Cultural Opportunities: a Framework for Incorporating Cultural Perspectives in Contemporary Resource Management, published in the Journal of Environmental Policy & Planning, 15 November 2008.

1) Project initiation - Identifying Maori representatives to secure and support mandates. This might manifest as meetings with tribe leaders, kaumatua, and other iwi/hapu members.

2) Documenting the association - Identifying dimensions and elements (eg, cultural values, beliefs, interactions and uses) of the waterbody, and determining indicators for assessment of whether environmental systems can support such elements. For example, if a waterbody can support fishing, or if the waterway might have been overfished. This might take place through focus groups or interviews with key Maori or community members, and may be delivered in the form of a report, or list of indicators identified.

3) Cultural opportunity mapping - Identifying cultural values associated with a particular site, heritage significance, and determining the opportunities of that site. For example, how a marae upstream may interact with a waterbody, and the cultural implications of this.

4) Focusing the investigation - Critical assessment and identification of the ecosystem attributes collected and determination of relevance to the issue being investigated.

5) Cultural opportunity assessment - Undertake assessments of sites identified during the mapping stage, to assess whether the conditions can sustain the identified cultural values, and provide the opportunities sought. This may take place through field assessments and focus groups.

6) Analysis to inform decision making - Analysis of data gathered to identify issues, manage priorities and strategies for actions.

Framework 6: Treaty-Based Planning Framework

Reporting Environmental Impacts on Te Ao Māori: A Strategic Scoping Document

The treaty-based framework was developed through engagement with key stakeholders such as Ministry of Environment representatives, kaumātua, iwi environmental practitioners, notable academics and scientists including Garth Harmsworth and Shaun Awatere (Landcare Research), central and local government agencies as well as Pākehā and Māori representatives. Engagement took place at two Hui events, the first in Wellington and the second in Rotorua.

The first hui which took place in Wellington aimed to develop a shared understanding amongst participants to form an agreed framework for how to best measure impacts on the state of Te Ao Māori (Harmsworth et al., 2016, p.3). Particular themes were developed at the first hui, which became the topic of the second hui.

At the Rotorua hui, the focus was to define the themes and measures generated. A modified version of an Auckland Council treaty-based framework was the general consensus deemed appropriate to organise the measure of Te Ao Māori, as seen in the framework brief, page 18.

The results of the hui led to the following aspects being determined as key:

(Direct excerpt from Reporting Environmental Impacts on Te Ao Māori: A Strategic Scoping Document (Harmsworth et al., 2016, p.5))

Mana whakahaere (decision-making authority) is concerned with the effective participation of iwi/ hapū in natural resource management and monitoring. This decision-making right is derived from whakapapa or ancestral connections to an area or natural resource.

Tūrangawaewae (ancestral homelands) refers to the effectiveness of whānau, hapū and iwi identity to be reflected in the natural and built landscape. This connection to an ancestral homeland is based on ancestral lineage and occupation by iwi/hapū/whānau to an area or site.

Whanaungatanga (community connectivity) refers to how well whānau, hapū and iwi well-being and social prosperity is improved through their connection to, and interactions with, the natural environment.

Taonga tuku iho (intergenerational resources) is concerned with how effective whānau, hapū and iwi are in actively utilising kaitiakitanga to manage natural resources and whether these practices are being transferred between generations. To actively implement kaitiakitanga for the sustainable management of ngā taonga tuku iho requires the recognition of whakapapa to an area or natural resource.

Te ao tūroa (the natural environment) is concerned with how well whānau, hapū and iwi are sustainably harvesting ngā taonga tuku iho for physical and spiritual sustenance. Sustainably harvesting ngā taonga tuku iho requires access and use rights derived in part from whakapapa.

These aspects form the foundations for Mana motuhake - Obligations and responsibilities to Atua-Tipuna-Mokopuna. Mana motuhake was selected as the name for this category because it implies a strong connection with land and political autonomy (Harmsworth et al., 2016, p.4).

The document includes an in depth table of prioritised measures for applying the framework. An excerpt has been included below, however the full document should be consulted to review the entire application and measures of principles determined from this research.

“Prioritised measures organised by mana motuhake principles with data that could be used to measure Te Ao Māori and whether this exists already” (Harmsworth et al., 2016, p.9).

Table 1 Prioritised measures organised by mana motuhake principles with data that could be used to measure Te Ao Māori and whether this exists already

Principles	Domain	Measure and method	Data owners / providers	Does data exist?	Willingness to share (Definitely, Highly likely, Likely, Unlikely)	Ability to report on under the Environmental Reporting Act 2015
Mana whakahaere	Cross-domain	Active participation of Māori in resource management decision making, indicated by: <ul style="list-style-type: none"> number of Māori city/district/regional council members 	Territorial Authorities Ministry of Justice	Yes – via Department of Internal Affairs and Local Government New Zealand.	Definitely	No; but can be considered under other Ministry policy streams.
	Cross-domain	Active participation of Māori in resource management decision making, indicated by: <ul style="list-style-type: none"> number of Iwi environmental management plans 	Iwi authorities	Yes – Nationally commissioned survey required.	Highly likely	No; but can be considered under other Ministry policy streams.
Tūrangawaewae	Land	Changes of Māori land use, indicated by: <ul style="list-style-type: none"> temporal land-use maps showing Māori freehold land contrasted with other tenures 	Landcare Research Land Cover Database (LCDB) Ministry of Justice Māori Land online Ministry for the Environment Land Use Map (LUM) Landcare Research Whenua Viz	Yes – LCDB data openly available 1996, 2001/02, 2008, 2013/14 https://iris.scinfo.org.nz http://www.maoriandonline.govt.nz/gis/home.htm https://data.mfe.govt.nz/layers/2375-lucas-nz-land-use-map-1990-2008-2012-v016/ http://whenuaviz.landcareresearch.co.nz/	Definitely	Yes
	Land Freshwater	Natural habitat fragmentation, indicated by: <ul style="list-style-type: none"> wetland extent 	1) Wetland delineation tool and Freshwater Ecosystems of New Zealand database (FENZ) 2) Landcare Research Land Cover Database (LCDB)	1) Yes FENZ plus: http://www.landcareresearch.co.nz/science/plants-animals-fungi/ecosystems/wetland-ecosystems 2) Yes – LCDB could be used to characterise contiguity LCDB data openly available 1996, 2001/02, 2008, 2013/14 https://iris.scinfo.org.nz	1) FENZ and wetland delineation tool – Highly likely 2) LCDB – Definitely	Yes
	Land	Mauri of wāhi taonga, affected by impact of visitors, indicated by: <ul style="list-style-type: none"> number of visitors 	1) DOC 2) Territorial Authorities 3) Heritage New Zealand	1) Yes – Nationally commissioned survey required, 2) Yes – Nationally commissioned survey required 3) Yes – http://www.heritage.org.nz/the-list	1) Highly likely 2) Highly likely 3) Highly likely	Yes
	Land	Mana whenua indicated by: <ul style="list-style-type: none"> bilingual signage and interpretation at conservation reserves 	1) DOC 2) Territorial Authorities	1) Yes – Nationally commissioned survey required 2) Yes – Nationally commissioned survey required	1) Highly likely 2) Highly likely	No; but can be considered under other Ministry policy streams.
	Marine Freshwater	Ability to access mahinga kai indicated by: <ol style="list-style-type: none"> abundance of shellfish and inshore fish species (e.g. pāua, kina) abundance of tuna, whitebait and other freshwater species abundance of tītī (harvest) 	1) NZ Fisheries Assessment Reports, MPI, Dept of Marine Science – Otago Uni, NIWA 2) NIWA New Zealand Freshwater Fish Database 3) Rakiura whānau via Tītī	1) Yes – Openly available 2) Yes – Openly available but specific analyses may need to be commissioned. 3) Yes – Data confidential	1) Definitely 2) Definitely 3) Unlikely	Yes

Framework 7: A Cultural Health Index for Streams and Waterways: A tool for nationwide use

Authors: Gail Tipa and Laurel Teirney April 2006:

The structure of this CHI has three components:

1: Site status. This is to establish the traditional significance of the site, and if it may hold significant value, history or importance to tangata whenua. It also seeks to determine whether tangata whenua may use the site in the future (Tipa & Teirner, 2006).

2: Mahinga Kai (Meaning food and other resources of an area): The second component of the CHI addresses the mahinga kai values of a site. This component, in addition to encapsulating the many intangible qualities associated with the mauri of a waterway, is tangibly represented by some of the physical characteristics of a freshwater resource including: indigenous flora and fauna, water clarity, water quantity, and the mahinga kai it yields (Ministry for the Environment 1997). Within Mahinga Kai are four elements each scored on a 1-5 scale, 1 being poor health while 5 being very healthy.

1. Mahinga kai species present at the site

2. Assessment between current species and those which were once present
3. Site access, do tangata whenua have physical and legal access to resources?
4. Assessment of whether tangata whenua would return to the site as they once might have.

3: Cultural stream health: The third and final component of the CHI is the Cultural Health Measure (CHM). This measure is averaged across the 1-5 scores allocated to each of the following 8 individual indicators:

1. Water quality
2. Water clarity
3. Flow and habitat variety
4. Catchment land use
5. Riparian vegetation
6. Riverbed condition/sediment
7. Use of riparian margin
8. Channel modification

After consideration of the 3 assessment parts, an example CHI score may look similar to the following:

Site Status	Mahinga Kai	Cultural Stream Health
A - 1	2.5	5

Structure of the site status indications may be classified as either A-1, A-0, B-1, or B-0.

A-1 A traditional site to Maori, and they would return and use the area as they did in the past.

A-2 A traditional site, however Maori would not return to it.

B-1 A site not of traditional significance, however Maori may go there in the future.

B-0 A site not of traditional significance, and Maori would not go there in the future.

<https://www.mfe.govt.nz/sites/default/files/cultural-health-index-for-streams-and-waterways-tech-report-apr06.pdf>

Each of these indicators receives a score (1–5) from each rūnanga member involved in the assessment. The scores for each indicator are then averaged. The average of all indicator scores is calculated as the CHM (1–5).

APPENDIX C

Other related frameworks

The following items were researched, however for various reasons were not directly included in this report. However, they might serve useful to particular contexts.

Further, there is a lot of work in this area being conducted in New Zealand, however capturing all of this is a near impossible task. Major frameworks have been included in this report. Others may exist especially exclusive to particular regional contexts, iwi, and hāpu across New Zealand. Broader legislation and policy should also be considered specific to particular regions, alongside Te Tiriti o Waitangi.

Te Kohao o te Ngira - Mana Whenua Sustainability Framework

Authors: Auckland Iwi Mana Whenua and Auckland Transport

Te Kohao o te Ngira is an example of a cultural assessment framework based upon matauranga Maori - Maori principles. This framework was intended for direction of decision makers of the Auckland region and Government

There are seven fundamental values the framework delivers:

- Nga Wawata - Aspirations
- He Matakite - Visions
- Nga Pou Heranga - Values
- Nga Mātaponu - Guiding Principles
- Nga Ara Matua - Key Directions
- Nga Uaratanga - Long Term Goals
- Nga Inenga - Indicators and Measures

This framework was developed for use of Auckland city development, and acts as a good guide for understanding aspects important to Maori. It may be tailored to incorporate the values of particular regions, similar to suggested applications for other water body projects within New Zealand such as seen in the Pilot Study on the Papanui Stream - Hawkes Bay (Gregory et al, 2015).



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