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INTEGRATED LANDSCAPE APPROACHES
FROM A NGĀI TAHU KI MURIHIKU
PERSPECTIVE

REPORT TO THE PARLIAMENTARY COMMISSIONER FOR THE
ENVIRONMENT

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Part One: Introduction

Ngāi Tahu ki Murihiku

Historically, Waitaha settled in the South Island approximately 800 years ago and were later followed by Kāti Māmoe and Ngāi Tahu during the major domestic migrations that occurred between the 1500s and 1700s. 'They constantly travelled around their takiwā in whānau and hapū groupings and worked the resources and traded their surplus with people from other areas. This created a complex and far-flung network of relationships which in turn were strengthened by marriage.'¹

The peoples of Waitaha, Kati Māmoe and Ngāi Tahu are today collectively referred to as Ngāi Tahu.

Ngāi Tahu has an extensive territory that includes most of Te Waipounamu and offshore islands such as Rakiura/Stewart Island. Ngāi Tahu means the 'people of Tahu', linking to the eponymous ancestor Tahu Pōtiki. Within the iwi there are five primary hapū being Kāti Kurī, Ngāti Irakehu, Kāti Huirapa, Ngāi Tūāhuriri and Ngāi Te Ruahikihiki.

Ngāi Tahu has centuries' long customary associations, rights and interests in the Gore District (includes the Mataura catchment) and its resources. These associations are both historical and contemporary and include whakapapa, place names, mahika kai, tribal economic development, and landholdings. In this area, Hokonui Rūnanga can exercise mana whenua and associated rangatiratanga and kaitiakitanga.

Hokonui Rūnanga has led and reviewed this report. This report reflects the collective mātauranga of Ngāi Tahu ki Murihiku.²

Hokonui Vision for Te Taiao

Understanding of the natural environment is underpinned by numerous Ngāi Tahu concepts such as kaitiakitanga, tino rangatiratanga, wairua and mahinga kai. These concepts reflect a mix of core values, beliefs, principles, and behaviours that are sustained through Ngāi Tahu associations, uses and practices. Collectively, they represent a management ethic similar to sustainable management and use of the environment which is dependent on a healthy functioning environment. These concepts also shape the kawa and tikanga of Ngāi Tahu and guide Hokonui Rūnanga in the appropriate articulation and application of their expectations for each situation.

From this position, Hokonui Rūnanga has developed the following strategic vision:³

Hokonui Rūnaka will work with local authorities and other agencies as well as the wider Gore and Murihiku communities on behalf of Ngāi Tahu whānui to protect and restore the hauora of te taiao (natural environment) for us and those coming after us.

In turn, the environment will be able to support mana whenua in their expression of ahi kā within their takiwa now and into the future.

Background

The Parliamentary Commissioner for the Environment (PCE) is investigating what an integrated landscape approach (LA) could look like in New Zealand, by exploring 'how a landscape approach to

¹ Dacker (1990), p. 6

² Murihiku includes the Southland region and shared interest areas of four Ngāi Tahu Papatipu Rūnanga (Hokonui, Awarua, Ōraka-Aparima, and Waihōpai)

³ Kauati (2021) Unpublished memo to Hokonui Rūnaka – Environmental Statement of Expectation [Ailsa to Riki]

environmental policy could enable rural communities and tāngata whenua to address climate change, freshwater quality and biodiversity at landscape scale.'

The four components of the PCE investigation are⁴:

- Mapping of the landscape susceptibility to loss of freshwater contaminants and soil nitrous oxide [provided by Water and Land Science]
- Māori perspectives and consideration of opportunities and challenges [provided by mana whenua of the two case study areas: Murihiku and Te Tai Tokerau]
- Land use modelling using Farmax, Nature Braid, and economic analysis [provided by WSP and Nature Braid].
- Offsetting livestock methane with trees [Professor Dave Frame and Dr Nathanael Melia].

This report is part of the Māori perspectives and in this review, we have been asked to prepare a short report on 'frameworks' that outlines a te ao Māori understanding of 'integrated landscape approach'. The scope of the 'frameworks' report will include:

- Discussion and description of related mana whenua frameworks and tools that have been developed by iwi and mana whenua for the Maitai catchment, including a summary of the methodology and results of the tools
- Commentary and questions on the framing of the PCE integrated landscape approach (i.e. the problem definition and research questions).
- Discussion of the integrated landscape approaches being explored by the PCE and a mana whenua approach.

Our commentary does not compare Ngai Tahu ki Murihiku approaches with those utilised by the PCE investigation. It is to be used in parallel with the other reports commissioned by PCE and inform its analysis and reasoning.

Spatial Area – Maitai Catchment

The Maitai River catchment is Southland Region's second largest, and it extends from the Eyre Mountains below the southern tip of Lake Whakatipu/Whakatipu Waimāori (Figure 1). The Waikaitai River is the main tributary, contributing half the flow of the catchment above its confluence with the Maitai, east of Riversdale.

The catchment has been modified with intensive agriculture (including water abstraction), urbanisation (Maitai and Gore) and flood control schemes.

Te Au-Nui-Pihapiha-Kanakana (Maitai Falls) is a very important site for cultural harvest (Figures 2 & 3). This site was particularly renowned for its abundance of kanakana during their runs since its discovery by the Kāti Māmoe tūpuna, Paroparo Te Whenua. The falls have been heavily modified, with industry and hydro-generation schemes on both sides of the awa.

As tangata tiaki/kaitiaki, Hokonui Rūnanga have been heavily involved in the research of kanakana, since at least the late 1990s, and have implemented the country's first freshwater Mātaitai reserve in 2006 (Maitai Te Awa Mātaitai). The Mātaitai covers a 10km section of the Maitai River (including Te Au-Nui-Pihapiha-Kanakana; Figure 4).

⁴ PCE project overview October 2022



Figure 1: Matura Catchment (Source: <https://www.lawa.org.nz/explore-data/southland-region/river-quality/matura-river/>)



Figure 2: Te Au Nui Pihapiha Kanakana before development



Figure 3: Te Au Nui Pihapiha Kanakana after development (2014, Tony Bridge, Te Rūnanga o Ngāi Tahu)

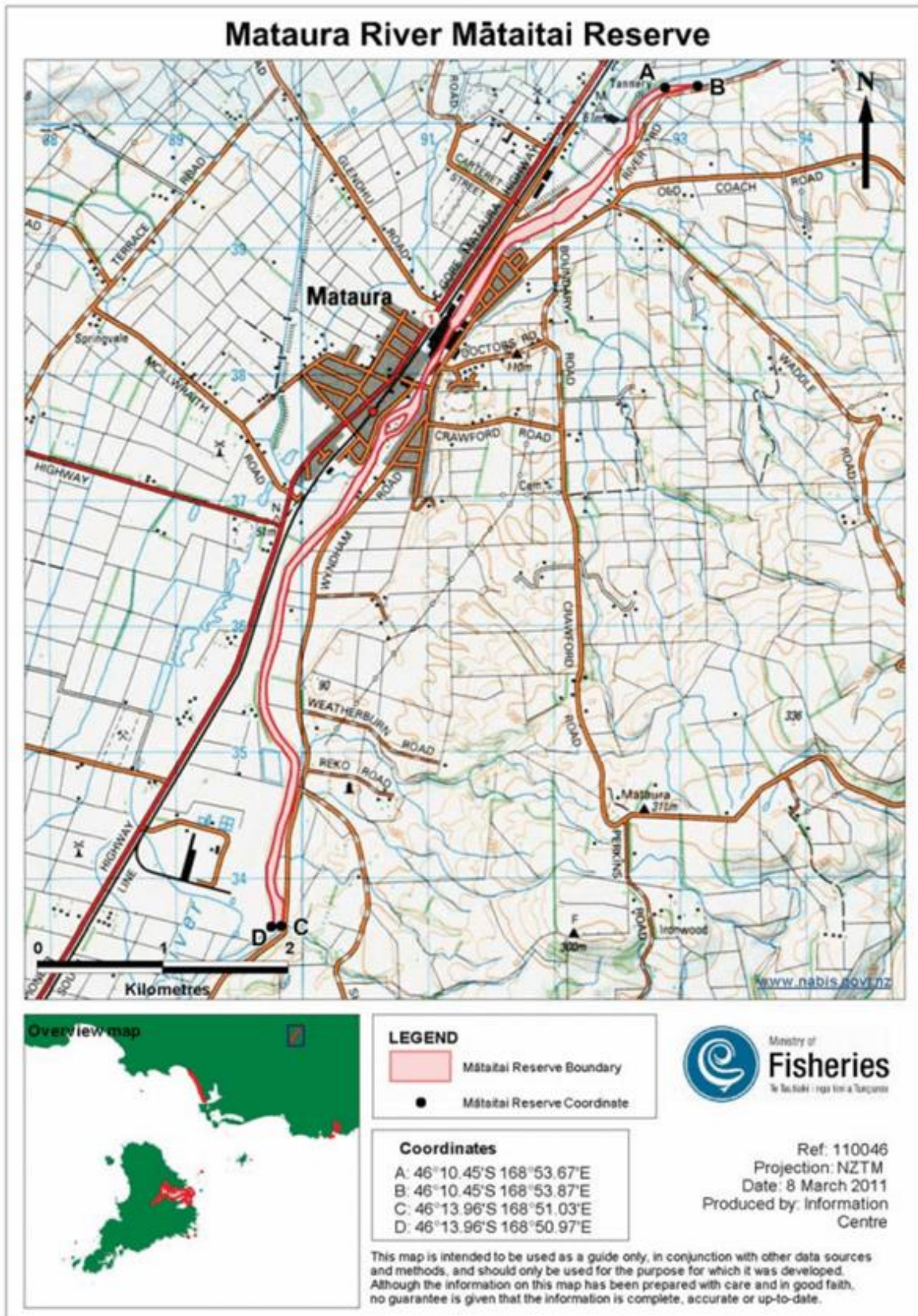


Figure 4: Mātaimai Reserve

Why is the Parliamentary Commissioner for the Environment looking at integrated landscape approaches?

The PCE investigation stems from previous PCE investigations that were synthesized into two reports: *Overseer and regulatory oversight*⁵ and *Farms, forests and fossil fuels*⁶.

The Overseer and regulatory oversight report highlighted *novel modelling techniques such as the physiographic approach, which can help to improve understanding of the drivers of freshwater quality and could potentially be used to achieve more effective freshwater management.*⁷ This report highlighted that there are numerous models and databases that can *'inform our understandings of catchments'*.⁸ We have interpreted this as the PCE wishing to connect different knowledge/data and framework to aid an integrated landscape approach.

The *Farms, forests and fossil fuels* report called for a *"landscape approach" that would "focus on the landscape as a place in which a wide range of interrelated environmental, social and economic services are provided", and "integrate all that we know about environmental processes at the landscape scale with bottom-up, grass-roots knowledge"*. The landscape approach described in this report was around policy development.

What is meant by an integrated landscape approach?

Theory

Integrated landscape approaches (ILAs) are viewed as important socio-ecological management strategies to deal complex multiple objective management issues such as balancing economic development with social, environmental and conservation needs.⁹ In its broadest sense a landscape approach is considered a framework *'to integrate policy and practice for multiple competing land uses through the implementation of adaptive integrated management systems'*.¹⁰ The use of ILAs have not been restricted to the confines of rural land use.¹¹

However, there has been a wide diversity of approaches that have been labelled an integrated landscape approach, and plethora of terms that are used to refer to this concept (Reed et al 2016 identified over 80 such terms). The lack of a coherent definition has hampered the progress and implementation of ILAs.¹²

What ILAs actually are have been defined in a variety of ways, including to be long-term collaborative processes, governance strategies, a framework, a strategy, a way, and a conceptual framework.¹³ This moves how ILAs have been considered to be as a process or an implementation tool, whereas both are important.¹⁴

⁵ PCE, 2018.

⁶ PCE, 2019.

⁷ PCE project overview October 2022

⁸ PCE, 2018

⁹ Båge et al 2015; Pedroza-Arceo et al 2022

¹⁰ Reed et al 2015

¹¹ Pedroza-Arceo et al 2022,

¹² Båge et al 2015; Reed et al 2016; Sayer et al 2013

¹³ Pedroza-Arceo et al 2022,

¹⁴ Carlsson et al. 2017.

There are common elements that relate to current landscape approaches, and principles that can support such approaches.¹⁵ Generally, these principles include participatory processes, multiple objectives, adaptive management and learning, decentralized authority, and long-term perspectives.

Although there have been attempts to incorporate/integrate Indigenous knowledge into landscape approaches, this has generally been overlooked and undervalued.¹⁶ However there are growing numbers of attempts to be inclusive of Indigenous knowledge and Peoples' and using a diverse range of methods, in the last few decades.¹⁷ Here Indigenous knowledge has primarily been integrated into Eurocentric conceptualisations of integrated landscape approaches. Such documented landscape approaches have been based around the needs and visions of Settler Nations, rather than Indigenous People's needs, or if 'cultural values' are incorporated they are often divorced from the indigenous context and knowledge system.

There has been little recognition that Indigenous Knowledge frameworks conceptualise the interconnectedness of the different elements in the landscape i.e., are the original 'integrated landscape approaches' which have been utilised, authenticated, and adapted over centuries (and in some cases over millennium).

¹⁵ Reed et al 2016, Scherr et al 2012, and Sayer et al 2013, respectively.

¹⁶ Adade Williams et al 2020.

¹⁷ Adade Williams et al 2020.

PCE integrated landscape approach

The Parliamentary Commissioner for the Environment (PCE) is investigating what a landscape approach looks like in Aotearoa New Zealand and its potential to improve freshwater quality, climate change and biodiversity outcomes. This ILA is being explored using modelled scenarios in the Maitai catchment (Southland and Murihiku) and the Waioira catchment (Northland/Te Tai Tokerau). The PCE is exploring ILAs rather than conducting or implementing ILAs.

This report was prepared at the initial stages of the PCE exploration of possible ILAs. The PCE definition and understanding of ILAs is expected to evolve during its investigation.

The initial focus on the PCE exploration was limited to examining existing land use and potential changes to forestry, sheep, dairy, and floriculture with changes in scenarios, including low and high emissions levies, subsidies for environmental benefits, and targeted limits on synthetic fertilisers for high-risk areas.

Five modelled scenarios have been conducted:¹⁸

- Scenario 1A: Low levy, untargeted freshwater regulations.
- Scenario 1B: High levy, funds 'recycled' back into the catchment through untargeted policies (support for riparian planting and stocking rate reductions).
- Scenario 2A: Low levy, targeted limits on synthetic fertilisers for high-risk areas.
- Scenario 2B: High levy, targeted revenue recycling.
- Scenario 2C: High levy, forestry phased out from New Zealand Emissions Trading Scheme (NZ ETS).

The modelled scenarios focussed on privately owned rural agricultural land, under current/past climate conditions. Each scenario analysed economic, environmental¹⁹, and overall emissions outcomes. The purpose of this modelling *'is to stimulate useful, science-based and policy-focused conversations about some of the future pathways under consideration.'*

The policy scenarios were developed by the Parliamentary Commissioner for the Environment (PCE). Modelled parameters were decided by those involved in the construction of the various models in consultation with local community members in dedicated workshops.

¹⁸ WSP. 2023. DRAFT Land use modelling interim report: Maitai scenarios 1A, 1B, 2A, 2B and 2C

¹⁹ Water quality contaminants (Sediment, nutrients), Soil loss, flood mitigation, and kōwhiri habitat connectivity (as an example of biodiversity outcomes).

Part Two: Mana whenua designed and led Frameworks and Tools

This section highlights some of the mana whenua designed and led framework and tools that are used by Ngāi Tahu ki Murihiku for integrated landscape approaches. The characteristics of these frameworks and tools are outlined with how the tools work together and are deployed by mana whenua. All these elements contribute to the Ngāi Tahu ki Murihiku understandings of an 'integrated landscape approach'.

The structure of this section includes:

- ***Ki Uta Ki Tai*** – the Ngāi Tahu philosophy and management framework that connects the different elements of the environment, similar to an integrated landscape approach. Ki uta ki tai connects the relationship of humans to the environment and each other.
- ***Te Tiriti o Waitangi and Treaty principles*** – this is crucial to understand when considering the relationship between tangata Tiriti and tangata whenua, and the context of landscape management in the Maitai catchment.
- The text box describing ***Mātauranga Māori*** - provides context around the knowledge system that informs ki uta ki tai.
- The text box illustrating ***Mahinga kai***- illustrates a key element in Ngāi Tahu cultural identity and wellbeing. Mahinga kai incorporates associations with place, use, values and is dependent on the environment to support the connection of resources, people and across landscapes.
- ***Policy framework for iwi environmental management*** – demonstrates policy written to support ki uta ki tai and kaitiakitanga, and is designed to connect multiple pieces of legislation, and provides articulation of the needs and expectations of mana whenua. The examples provided here are the Ngāi Tahu ki Murihiku Iwi management plan (*Te Tangi a Tauira*), the Hokonui Runanga *Te Kawa o te Taiao*, and the Ngāi Tahu ki Murihiku articulation of *Te Mana o te Wai*.
- ***Āpiti Hono Tātai Hono*** and the ***Murihiku Cultural Water Classification System*** – highlight different methodologies developed by Ngāi Tahu ki Murihiku to enable a comprehensive understanding of landscape and aspects of landscape as known to them. Both methods can incorporate different knowledge systems within their Te Ao Māori frameworks. Āpiti Hono Tātai Hono assessments in this study provide understanding of the landscape. The Murihiku Cultural Water Classification System assesses the state and thresholds around particular cultural uses (Wai Noho and Wai Tuna). Both assessments illustrate tools that provide 'integrated landscape approaches' that provide information and data relevant to iwi environmental management needs.

There is no comparison made with other models such as Nature Braid. This is deliberate so as to see the mana whenua frameworks and tools within their own paradigms and not through the lens of other tools.

Ki Uta Ki Tai

Ki uta ki tai is an environmental philosophy developed by and for Ngāi Tahu Whānui and recognises that everything is connected and must be managed as such. Ngāi Tahu ki Murihiku understands Ki Uta Ki Tai as:

a paradigm and an ethic. It's a way of understanding the natural environment, including how it functions, how people related to it and how it can be looked after appropriately...

Ki Uta Ki Tai gives reference to the Ngāi Tahu understanding of the natural world and the belief that all things are connected – a belief shared by many other iwi and indigenous people. It also highlights the central importance of mahinga kai, the traditional seasonal food gathering rituals of Ngāi Tahu and the role this played in the traditional understanding and management of natural resources.

While being founded on traditional values and understanding, Ki Uta Ki Tai is also a modern management framework that involves the creation of a number of tools, such as natural resource management plans, monitoring and reporting processes and resource inventories and their associated strategies to address the continuing challenges and threats faced by all aspects of the natural environment from the mountains to the sea – ki uta, ki tai.

...Ki Uta Ki Tai, as a concept, comes from the traditions, customs and values of Ngāi Tahu Whānui in relation to the natural environment, and in particular the custom of mahinga kai and transferred between generations through purakau, whakatauki, waiata, korero and on-going practices is the foundation upon which this modern Ngāi Tahu natural resource management framework is built.²⁰

Ki uta ki tai reflects that mana whenua belong to the environment and are only borrowing the resources from our generations that are yet to come.²¹ Ki uta ki tai is the basis of Ngāi Tahu iwi management plans and is recognised in the Southland Regional Policy Statement 2017 and National Policy Statement for Freshwater Management 2020.

At a framework level, Ki Uta Ki Tai is **similar to** the RMA term 'integrated management'. Integrated management is not ki uta ki tai as ki uta ki tai is predicated on Te Ao Māori structures and mātauranga and is greater than but includes integrated management. There is no legal definition of integrated management, but the NPSFM Policy 3.5 Integrated Management instructs that:

Adopting an integrated approach, ki uta ki tai, as required by Te Mana o te Wai, requires that local authorities must:

- (a) recognise the interconnectedness of the whole environment, from the mountains and lakes, down the rivers to hāpua (lagoons), wahapū (estuaries) and to the sea; and
- (b) recognise interactions between freshwater, land, water bodies, ecosystems, and receiving environments; and

²⁰ Te Rūnanga o Ngāi Tahu (2003) pp. 9-10

²¹ Ngāi Tahu Ki Murihiku (2008), p.24

Mātauranga Māori

In this report we use the following definition of mātauranga Māori:

Mātauranga Māori is holistic perspective encompassing all aspects of knowledge and seeks to understand the relationships between all component parts and their interconnections to gain an understanding of the whole system. It is based on its own principles, frameworks, classification systems, explanations and terminology. Mātauranga Māori is a dynamic and evolving knowledge system, has both qualitative and quantitative aspects, and includes the processes for acquiring, managing, applying and transferring that body of knowledge.

Kaupapa Māori research, based on Māori approaches and ethical frameworks, is often used to generate mātauranga Māori.

Source: Tipa et al. 2016

- (c) manage freshwater, and land use and development, in catchments in an integrated and sustainable way to avoid, remedy, or mitigate adverse effects, including cumulative effects, on the health and well-being of water bodies, freshwater ecosystems, and receiving environments; and
- (d) encourage the co-ordination and sequencing of regional or urban growth.

For Ngāi Tahu ki Murihiku, applying Ki Uta Ki Tai means to analyse the interconnected effects across a region. For example, if an estuary is degraded, what is the extent of that state and where, if anywhere, along the contributing waterbodies does the state change from degraded to hauora. The continuum of that degradation also needs to be factored into the spatial assessment.²²

Between the states of hauora (health, vitality, etc) and dead is a continuum – degradation is both a state (i.e., it is either degraded or it's not) and a process (i.e., a continuum of degradation).²³ Ki uta ki tai considers both the state and the process using many tools, including tohu, pūrākāu and placenames. It also considers how people and metaphysical and physical elements are held and nurtured within those spaces, binding many time periods to a single point of time.

Māori is an oral culture, and the oral tradition is a repository of religious and philosophical thinking, customary practice, mātauranga and personal experience. Oral tradition is a richly informative, poetic record of ngā korero tuku iho or the words that were remembered and handed down verbally over generations.²⁴ Within this oral tradition, 'we discern a landscape utterly different from that seen through a 'western lens'. Through poroporoaki, whaikōrero and other mōteatea we enter a universe that tells of waka and how our ancestors settled the landscape; a universe where the world of Māori is reconfigured, with the past not only told differently but also received and understood differently.'²⁵

The distortion of time found within oral tradition is a critical component for ki uta ki tai and Te Ao Māori. Māori elders 'did not see their ancestors and traditions located in some distant timelines separate from us, but instead projected their stories upon their immediate present. Not only was the past projected onto the present, but it was also engaged with as a living entity.'²⁶

Kia whakatōmuri te haere whakamua

I walk backwards into the future with my eyes fixed on my past²⁷

Te Tiriti o Waitangi and Treaty Principles

Ngāi Tahu is a post-Settlement iwi having had its historical grievances heard in the 1980s and 1990s with the Deed of Settlement signed in 1997. The Deed of Settlement, Ngāi Tahu Claims Settlement Act and Te Tiriti o Waitangi/Treaty of Waitangi create a binding legal relationship between the Crown and Ngāi Tahu, however, this is much broader than simply a contract and includes aspects of beneficial/fiduciary relationship. Ngāi Tahu regard these three documents to be of fundamental constitutional importance.²⁸

²² Kitson et al. (2019), para 60.

²³ Kitson et al. (2019), para 14.

²⁴ McRae (2017), p. 1.

²⁵ Tau (2012), p. 21.

²⁶ Tau (2012), p. 27.

²⁷ Rameka (2017)

²⁸ Te Rūnanga o Ngāi Tahu (2019) para 18.

The differences in the Māori and English texts of the Treaty of Waitangi have led to different understandings of the meaning of the Treaty. These differences, coupled with the need to apply the Treaty in contemporary circumstances, led Parliament to refer to the principles of the Treaty in legislation, rather than to the Treaty texts. It is the principles, therefore, that the Courts have considered when interpreting legislative references to the Treaty.²⁹

As summarised by the Ministry for Culture and Heritage, the key differences in the text of Article 2 are:³⁰

In the English text, Māori leaders and people, collectively and individually, were confirmed and guaranteed 'exclusive and undisturbed possession of their lands and estates, forests, fisheries and other properties'. Māori also agreed to the Crown's exclusive right to purchase their land. Some Māori (and British) later stated that they understood the Crown to have a first option rather than an exclusive right to buy.

In the Māori text, Māori were guaranteed 'te tino rangatiratanga' or the unqualified exercise of their chieftainship over their lands, villages, and all their property and treasures. Māori also agreed to give the Crown the right to buy their land if they wished to sell it. It is not certain if the Māori text clearly conveyed the implications of exclusive Crown purchase.

The Waitangi Tribunal does not have a single set of Treaty Principles that are to be applied in assessing each claim to determine whether the Crown acted inconsistently with the Treaty. The context and application of the Treaty Principles are ascertained by the Crown and each iwi/hapū to reflect the unique situation of that specific claim. This localisation then directs how Treaty Principles flow through higher-level policy and planning documents into regional and district plans. In the view of the Courts and the Waitangi Tribunal, Treaty Principles are not set in stone. They are constantly evolving.³¹

Regardless of the differences between the texts, there is a management right and philosophy captured within both versions of Article 2. While the management right is the primary focus of this Article, it must also be recognised that those exercising the right do so in a manner pertinent to them. For Ngāi Tahu ki Murihiku, that includes the environmental philosophy of ki uta ki tai.³² This, with how the Treaty Principles are applied in the Ngāi Tahu takiwā, has shaped regional, district and iwi management plans covering the Matura catchment. Correspondingly, this should shape any ILA applied in Murihiku.

Policy framework for iwi environmental management

The environment and natural resources are fundamental to the identity and wellbeing of Māori. Whakapapa is the foundations in their connections, reciprocal relationships, understanding and intergenerational responsibilities to the protection and enhancement of environment. Māori cultural identity and their landscapes are coupled, and unique to their respective context.

Māori are recognised through their whakapapa as responsible to look after the environment and their respective connections and associations. Treaty Settlement legislations reinforce this role and responsibility. Māori are landowners (either freehold or communally owned), environmental managers or co-managers in numerous different arrangements (continual Māori ownership that was never ceded, lands allocated by the Crown as fishing and mahinga kai reserves, the return of lands,

²⁹ Te Puni Kokiri (2001), p. 74

³⁰ Ministry for Culture and Heritage "Differences between the texts" (updated 20 December 2012) <www.nzhistory.govt.nz/politics/treaty/read-the-Treaty/differences-between-the-texts>.

³¹ Te Puni Kokiri (2001), p. 77

³² Cain (2020)

lake beds, and customary resources, including customary fisheries, and development rights through treaty settlements).

This role also includes the continuation of cultural use and practice in their takiwā/ tribal area. The concept of mahinga kai, often translated as customary harvest, encompasses many entities and relations including the resources harvested (such as fish, plants and stone), connections to place, intergenerational knowledge transmission, cultural tradition, and access. This requires the unique consideration of use within waterways, with resources remaining in-situ across a landscape and corresponding to particular sites.

Mahinga kai

Ngāi Tahu has expressed its aspirations for freshwater and the fundamental importance of mahinga kai repeatedly and consistently for the last two centuries. Mahinga kai is of central importance to the identity, mātauranga, social cohesion, survival and health of Ngāi Tahu (Skerrett 2019). The nomadic lifestyle of Ngāi Tahu ki Murihiku with an expansive reach and wide-spread kaika and nohoanga differ to settlement patterns in the rest of Aotearoa-NZ. Oral and written histories coupled with archaeological records show a preference for sites around freshwater and estuarine waterbodies.

Healthy and replenishing resources in situ, in multiple sites across Murihiku, continue to be important to Ngāi Tahu in practicing mahinga kai and for its cultural identity and wellbeing (Cain 2019).

The Ngāi Tahu Claims Settlement Act (NTSCA) defines mahinga kai as: *“the customary gathering of food and natural materials, and the places where those resources are gathered”*.

Mahinga kai is more broadly explained in Ngāi Tahu ki Murihiku (2008) as being about: *“places, ways of doing things, and resources that sustain the people. It includes the work that is done (and the fuel that is used) in the gathering of all natural resources (plants, animals, water, sea life, pounamu) to sustain well-being. This includes the ability to clothe, feed and provide shelter”*.

Over the centuries, Ngāi Tahu has developed a complex calendar for mahinga kai that is based on the moon, life cycles, migratory patterns, seasons and spatial locations. Mahinga kai requires people to travel seasonally, usually to multiple sites a year for extended periods of time. Water is a significant feature in mahinga kai due to its use in habitat, cultivation, harvesting, manufacturing, and transport as well as for human consumption. The characteristics of the waterbody (smell, shape, bed, flow, etc) have a direct impact on mahinga kai health and surrounding lands, and what is harvested from it and when (Cain 2019).

Mahinga kai are not a one-off resource. For an area to be used and a species harvested, the collective parts must be able to sustain themselves within a specified cycle. This cycle also determines the types and quantities of resources that can be harvested during that season (Cain 2019). Hapū rights and responsibilities guide mahinga kai and hapū are expected to manage their resources so that is available for future generations.

Attributes that are developed for mahinga kai require consideration of those around the resource, the harvester/user and the environment that supports both (Figure 5).

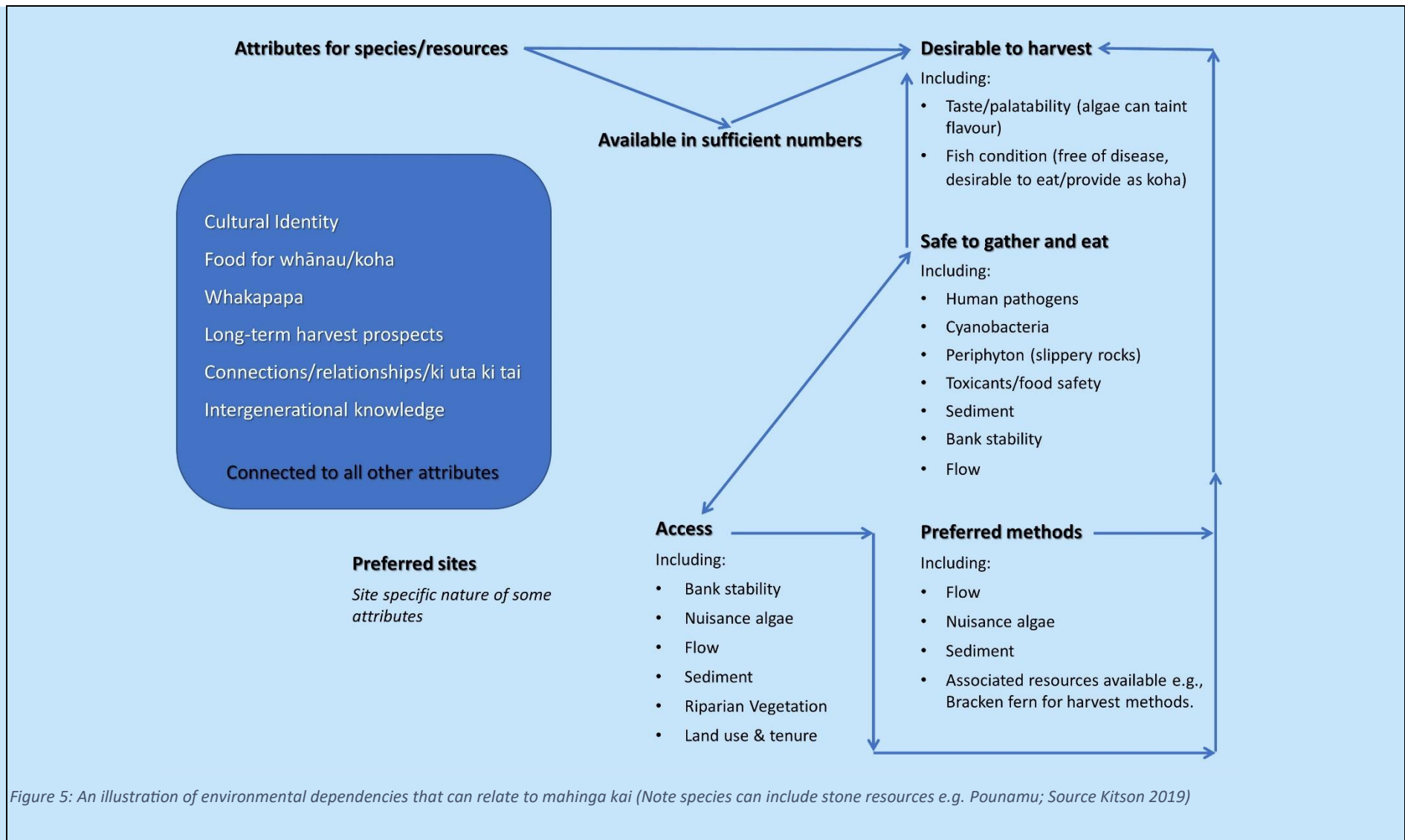


Figure 5: An illustration of environmental dependencies that can relate to mahinga kai (Note species can include stone resources e.g. Pounamu; Source Kitson 2019)

Te Tangi a Taurira: The Cry of the People

The four Rūnanga Papatipu o Murihiku; Te Rūnanga o Awarua, Te Rūnanga o Oraka/Aparima, Te Rūnanga o Hokonui and, Te Rūnaka o Waihōpai are collectively involved in the protection/promotion of the natural and physical resources Murihiku (includes Southland). They developed Te Tangi a Taurira (Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008) to be a living, working document that can assist Ngāi Tahu ki Murihiku to effectively participate in natural resource and environmental policy and planning. It also is an important document in aiding councils in meeting their statutory obligations by ensuring Ngāi Tahu ki Murihiku issues and policies are provided for in planning documents.³³

Te Tangi a Taurira is written as a statement that consolidates Ngāi Tahu ki Murihiku values, knowledge and perspectives on natural resource and environmental management issues. It is an expression of kaitiakitanga.³⁴ Te Tangi a Taurira is a ki uta ki tai plan, acknowledging interconnectivity and reflecting that we belong to the environment and are only borrowing the resources from our generations that are yet to come. Ngāi Tahu ki Murihiku regarded it as their duty to leave the environment in as good or even better condition than received from their tūpuna.³⁵

The purpose of the Plan is to:

- describe the values underpinning the relationship between Ngāi Tahu ki Murihiku and the natural environment.
- identify the primary issues associated with natural resource and environmental management in the takiwā, from the perspective of Ngāi Tahu ki Murihiku.
- articulate Ngāi Tahu ki Murihiku policies and management guidelines for natural resource and environmental management, wāhi tapu and wāhi taonga.

The environmental outcomes sought are:³⁶

- To ensure environmental outcomes accommodate for cultural and traditional spiritual values held by Ngāi Tahu ki Murihiku.
- That integrated management of natural and physical resources is encouraged and that existing relationships with and between local agencies are maintained and enhanced to ensure collaborative goals are set and worked toward.
- To ensure the protection, restoration and enhancement of the productivity and life supporting capacity of mahinga kai, indigenous biodiversity, air, water, land, natural habitats and ecosystem, and all other natural resources valued by Ngāi Tahu ki Murihiku.
- That Ngāi Tahu ki Murihiku become actively involved in the delivery and awareness of the kaupapa of this Plan with respect to protection and enhancement of the natural environment. This includes the delivery of programmes that promote awareness and provide education regarding the environment to achieve environmental outcomes.
- That Ngāi Tahu ki Murihiku capacity is enhanced to become more involved in “on the ground” monitoring of environmental ecosystems.

³³ Ngāi Tahu Ki Murihiku (2008), p. iii

³⁴ Ngāi Tahu Ki Murihiku (2008), p. 28

³⁵ Ngāi Tahu Ki Murihiku (2008), p. 24

³⁶ Ngāi Tahu Ki Murihiku (2008), p. 35

Te Kawa o Te Taiao

[It is difficult to] connect to the land these days. It could be [anywhere] - I don't recognise myself in the landscape [anymore]." – Hokonui Rūnanga whānau member

Te Kawa o te Taiao collates Hokonui Rūnanga Taiao Associations, Values, Expectations and Aspirations. It is not an iwi management plan but a strategic approach to resource management in the Hokonui takiwā. The strength of Te Kawa o Te Taiao is that it draws together relevant information in one place for a clear purpose. It is a simple, clear, and high-level mauri stone for Hokonui Rūnanga – and particularly Hokonui Rūnanga Kaupapa Taiao - to refer back to when engaging in taiao-related kaupapa.³⁷

Much of what is contained in this document comes from other sources, including:

- Te Tangi a Tauria - Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan (2008)
- The Hokonui Rūnanga Charter of Understanding with Gore District Council (2021)
- Cultural Use in Murihiku (Draft) (2011)
- Report on Wastewater and Cultural Pollutants (2021)
- Ngāi Tahu ki Murihiku Freshwater Objectives (Draft) (2020)
- Hokonui Rūnanga Statement of Environmental Expectations memorandum (2021)

Ki uta ki tai is a principal matter of interest for Hokonui Rūnanga. The aspects of the environment listed in Te Kawa o te Taiao span ki uta ki tai and show the expectations Hokonui Rūnanga have for each. Meeting those expectations means the district will be in a better position to achieve environmental health that aligns with kawa and the return to a healthy environment ki uta ki tai.³⁸

Te Mana o te Wai

Ngāi Tahu ki Murihiku is primarily focused on strategic and ki uta ki tai/integrated freshwater management, including advocating for complex interdependencies such as mahinga kai, and embodies an intergenerational and long-term approach to planning (Cain 2019).

Te Mana o te Wai is a principle that was introduced into the National Policy Statement for Freshwater Management in 2014 and has undergone two subsequent renditions in order to clarify and strengthen this concept. Te Mana o te Wai is a concept for fresh water that encompasses several different aspects of the integrated and holistic health and wellbeing of a water body (MfE 2017). The NPS-FM 2020 recognises Te Mana o te Wai as the fundamental concept for freshwater management.

Although 'Te Mana o Te Wai' is not a term Ngāi Tahu ki Murihiku would generally use, it is a concept that is expressed in their iwi management plan and Ngāi Tahu policy. Ngāi Tahu ki Murihiku have developed their understanding of this concept more fully and this is now incorporated into the pSWLP. Te Mana o te Wai puts the spotlight on water and land rather than human use and consumption, where ki uta ki tai holistically binds and integrates all elements. The pSWLP "*embodies ki uta ki tai and upholds Te Mana o Te Wai and they are at the forefront of all discussions and decisions about water and land.*" (pSWLP-Second interim decisions of the Environment Court³⁹).

Te Mana o te Wai puts the mauri of the waterbody and its ability to provide for te hauora o te tangata (the health of the people), te hauora o te taiao (health of the environment) and te hauora o

³⁷ Hokonui Rūnanga (2021), p. 2

³⁸ Hokonui Rūnanga (2021), p. 9

³⁹ [2020] NZEnvC 93 Aratiatia Livestock Limited vs Southland Regional Council

te wai (the health of the waterbody) to the forefront of freshwater management (Figure 6). Te Mana o te Wai is influenced by five key factors:

- a) the values that are determined for the waterbody and how they are weighed locally.
- b) the current state of the waterbody.
- c) the timeframes tāngata whenua and the community establish to achieve defined objectives, and quality and quantity;
- d) the mechanisms and tools used to achieve defined objectives, and quality and quantity states; and
- e) the quality and availability of technical information (Environment Southland 2016).

Therefore, Te Mana o te Wai is the tool that weaves together different threads to create the picture of what tāngata whenua and each community aspires to for their waterbodies (Cain 2019).

The coupling of Te Mana o te Wai with Ngāi Tahu Indicators of Health is the outcome sought by Ngāi Tahu ki Murihiku in the pSWLP. Ngāi Tahu Indicators work with NPS-FM attributes and Te Mana o Te Wai to maintain and improve water quality and quantity in a culturally relevant manner across the Murihiku takiwā. Te Mana o Te Wai aligns management tools with Ngāi Tahu values and aspirations. The inclusion of Ngāi Tahu Indicators of Health is significant for the application of Te Mana o te Wai, as well as enabling the development of conditions for resource consents that will provide for, and monitor, species and other indicators of significance to Ngāi Tahu ki Murihiku (Cain 2019). Te Mana o te Wai disrupts the regulation of the status quo by Resource Management Act (RMA) tools as it makes the mana of water, its health and status, the paramount priority. It gives reverence to water, rather than regarding it solely as a commodity to benefit land-based production, economic development, and land use change (Cain 2019; Kitson and Cain 2022).

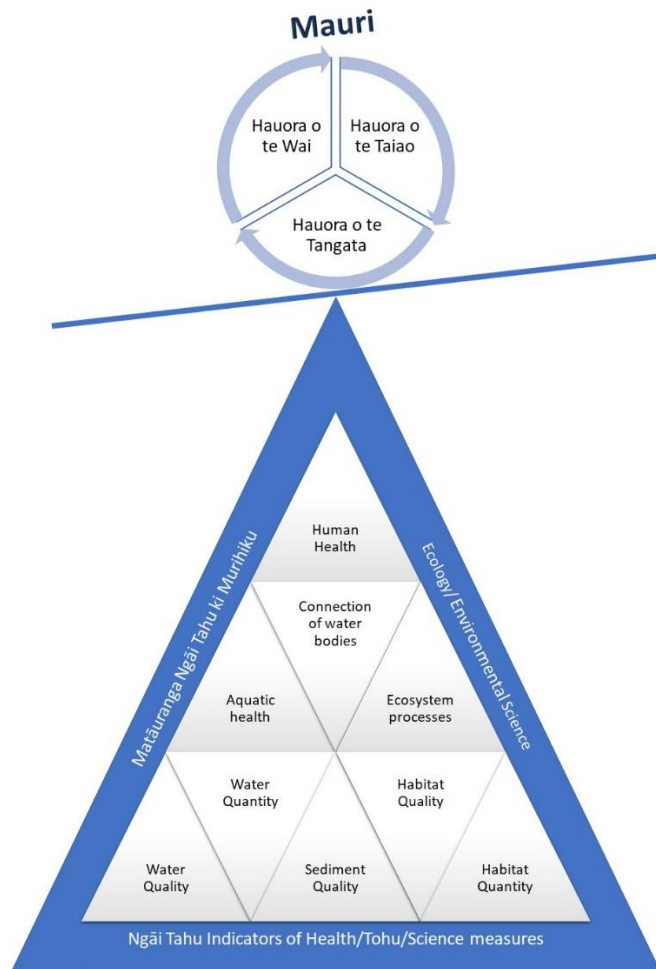


Figure 6: Balancing the multiple attributes of Hauora for Te Mana o Te Wai within a Ki Uta Ki Tai management framework. (Source: Kitson & Cain 2022).

Āpiti Hono Tātai Hono: Ngā Whenua o Ngāi Tahu ki Murihiku

In 2021, Ngāi Tahu ki Murihiku released its landscape methodology it named Āpiti Hono Tātai Hono in recognition of the act of ordering whakapapa. The methodology was designed by Ngāi Tahu ki Murihiku to enable a comprehensive understanding of landscape as known to them. The methodology is founded on the interwoven relationships between Ira Atua and Ira Tangata and the continuum of time and whakapapa. It acknowledges change, interdependencies, ki uta ki tai, duality (e.g., intangible/tangible, tuakana/teina, masculine/feminine) and the philosophies and paradigms of Ngāi Tahu ki Murihiku.⁴⁰

The methodology does not assess significance; it considers what is held within a landscape and what is appropriate at place. A landscape holds and exerts many things in different ways, including whakapapa, mana, kawa, tikanga, mātauranga, identify, connections, practices, history, and future aspirations.

Āpiti Hono Tātai Hono captures a thought and analytical process often used by Ngāi Tahu ki Murihiku but is largely at odds or invisible from the predominant western styles of environmental

⁴⁰ Cain and Manihera (2021), p. 7

management and landscape assessment.⁴¹ The methodology formalises that process by identifying layers, the associated concepts, philosophies, mātauranga and terminology, factors to be assessed and the process for doing so.

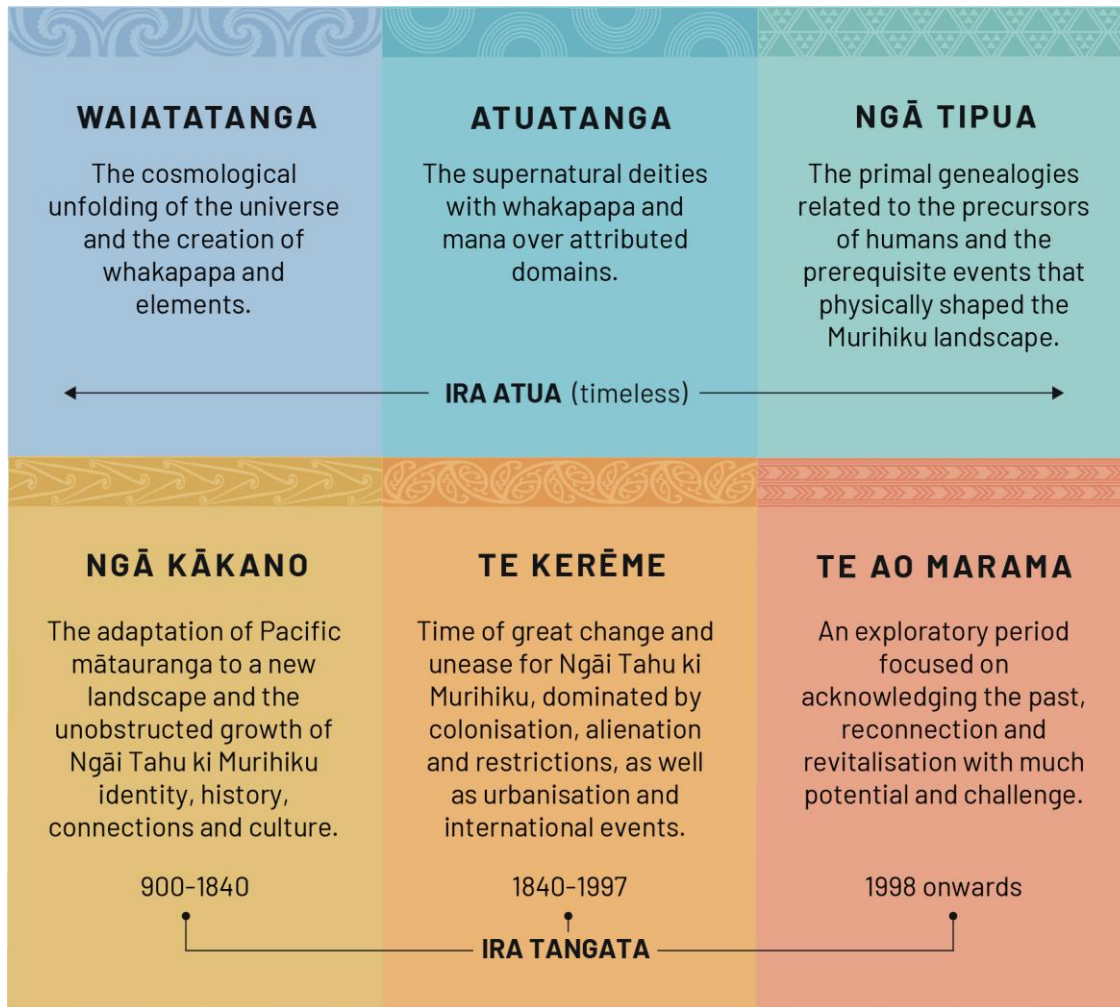


Figure 7: Summary of Ira Atua Ira Tangata layers

Āpiti Hono Tātai Hono blends Te Ao Ngāi Tahu philosophical concepts and mātauranga with aspects of heritage and landscape practice. It characterises the landscape into six layers based on Ira Atua Ira Tangata, with Ira Atua taking primacy as the tuakana.

Ira Atua recognises the metaphysical elements of culture and landscape and is not confined by time. Ira Atua has always existed and always will. The Ira Atua layers:

- **purpose** – acknowledges the metaphysical and related connections and reverence they have in the kawa, tikanga and culture of Ngāi Tahu ki Murihiku.
- **recognise and manage** – whakapapa, mauri, mana, tikanga, kawa – fundamental philosophical components of culture and identity; what is right and wrong, and the interconnections between the elements, landscape and people.

Ira Tangata recognises the associations and connections humans have within the landscape over a defined period of time. The period focuses on 900ce to the modern day and into the future. The

⁴¹ Cain and Manihera (2021), p. 18

methodology acknowledges that some connections and events cross these periods; therefore, the dates are a guide rather than fixed starts and ends. The Ira Tangata layers:

- **purpose** – identifies tangible and intangible cultural heritage and mātauranga, the evidential record of human occupation, personification of landscape and place names, and future aspirations.
- **recognises and manages** – safeguarding whakapapa and connections between whenua and people, the human record, history, and continuing evolution of Ngāi Tahu ki Murihiku cultural heritage and mātauranga.

The assessment of cultural landscapes is undertaken by desktop, hīkoi, hui and wānanga. It draws on the collective knowledge of the kaitiaki whānau, hapū and iwi as well as the expertise of mana whenua undertaking and leading the assessment. Āpiti Hono Tātai Hono does not emphasise the role and expertise of an individual practitioner.

Each of the relevant Ira Atua Ira Tangata layers are considered individually by mana whenua in the first instance with the respective layer description. Conflicts between the layers are expected and this is deemed to be acceptable. It is through understanding whakapapa and how to act within these relationships⁴² that the appropriate outcomes will be determined.

Also, layers are not interpreted individually for a specific land type, activity or situation, e.g. using Ngā Tipua for a determination on outstanding natural landscapes. To do so is a direct contradiction of Āpiti Hono Tātai Hono and fails to recognise Ira Atua Ira Tangata.

It is expected that as the supporting information grows over time, these six layers will be refined, and more layers may be added. Āpiti Hono Tātai Hono applies equally to water, air, sky, and star/night scopes. Āpiti Hono Tātai Hono is also applicable to other types of landscape assessment as it is premised on a holistic overview of Ira Atua Ira Tangata that makes no distinction between ‘cultural’ or ‘natural’ or any other dissociative classifications.

Ngāi Tahu ki Murihiku are currently working with local authorities to include the methodology in regional and district plans. Building useable data sets is a key matter for Āpiti Hono Tātai Hono. Proactive partnerships between local authorities and mana whenua provide opportunities to undertake Āpiti Hono Tātai Hono assessments through master planning and zoning processes, and investigations of high risk and sensitive areas for local authorities and/or mana whenua.⁴³

Āpiti Hono Tātai Hono assessment were undertaken by mana whenua at two sites in Matura followed by discussions on the findings. Standard practice for any Āpiti Hono Tātai Hono assessment is that the full assessment is not publicly released by Ngāi Tahu ki Murihiku as it contains restricted information and is susceptible to misappropriation and misuse. Instead, a summary assessment is publicly released with the context and recommendations as is the case for the two Matura sites that have been included in Appendix E and F.

⁴² Royal (2010), p. 8.

⁴³ Cain and Manihera (2021), p. 42

Murihiku Cultural Water Classification System

For Ngāi Tahu the continuation of cultural uses and practices associated with the freshwaters in their takiwā/ tribal area, is crucially important for the sustenance of cultural identity, social cohesion, health and wellbeing. The concept of mahinga kai encompasses many entities and related aspects, including the resources harvested (such as fish, plants and stone), connections to place, intergenerational knowledge transmission, cultural tradition, and access. Use and associations are a key element that binds Ngāi Tahu to the landscape, and numerous attributes require landscape scale biocultural processes and connections to be protected and enabled.

Although mahinga kai is a central element in the Ngāi Tahu Treaty Settlement legislation, the protection and enhancement of mahinga kai is impeded by the numerous pieces of legislation and government agencies involved, that are not unified in this purpose, and in some cases act against this purpose.

This challenging situation requires mechanisms to empower decision-making and outcomes for Māori and protection of cultural use. To this end, Ngāi Tahu ki Murihiku, developed the Murihiku Cultural Water Classification System (MCWCS). The development of the MCWCS was part of six-year MBIE funded research programme Ngā Kete o te Wānanga: Mātauranga: Science and Freshwater Management (C01X1318).

The Ngā Kete o te Wānanga: Mātauranga programme (NKotW) sought to align with Ngāi Tahu ki Murihiku freshwater research and management priorities, the current freshwater management context, the skillsets of Murihiku expert knowledge holders and scientists, and the outcomes expected by MBIE.

The Murihiku freshwater management context assessment was completed in year one of the NKTW research programme (Kitson et al. 2014). The Context report covers topics such as: whānau uses and values associated with freshwaters; whānau aspirations and expectations for freshwaters; the state of freshwaters from a whānau perspective; and research, monitoring and management needs of whānau (Kitson et al. 2014). This, alongside the Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan, led directly to the formation of hypotheses and the design of an approach to deliver a MCWCS that met the strategic and capacity building needs of Murihiku rūnanga. For Ngāi Tahu ki Murihiku there was the added complexity of developing tools that help them manage multiple portfolios and assist decision-making across numerous regulatory resource management frameworks (Figure 8) across the hierarchy of agreements, acts, policies and plans that informs TAMI policy development and their expectations for resource management in Murihiku.

The MCWCS is a mixed methods approach to strengthen cross-cultural understandings about Murihiku cultural values and uses, and their water-related dependencies- as defined by Murihiku whānau – in a robust, respectful and meaningful way. The approach was built on the foundations of Ngāi Tahu ki Murihiku tikanga and mātauranga and includes understandings of place, time, and connections within the landscape, and different knowledge streams blended from various disciplines (including mātauranga Māori, social science, science and cultural heritage) around different cultural value/use theme that are of importance to Murihiku whānau (Figure 9).

The initial themes developed as part of the NKotW are:

- Wai Pounamu (Waters for the movement, collection and working of pounamu)
- Wai Nohoanga (seasonal camping areas across the landscape) and
- Wai Tuna (waters that sustain the intergenerational harvest of tuna/eels).

Common among all the themes was the development of attributes that reflect the needs of the resource, the harvester/user, and the environment that supports both. To assess the themes required Cultural Health Assessments (adapted from the Cultural Health Index; Tipa and Tierney

2006) and science measures, and monitoring assessments that were participatory and undertaken by a group of mana whenua. Mana whenua were also involved in developing the targets and trigger points for the data analysis and interpretation.

The MCWCS was developed across a culturally relevant spatial scale – along a Te Ara Tawhito (traditional travel route) that connected multiple catchments and illustrates that ki uta ki tai is not limited by being within one hydrological catchment.⁴⁴

He Puna Whakaata o Mātauranga visualisation tool was developed to assist Ngāi Tahu ki Murihiku to communicate with the numerous agencies involved in the management of the environmental dependencies around their cultural uses. The name of the tool was provided by kaumatua Michael Skerrett, and the name refers to the purpose of the tool, as a mirror to reflect the current state of Murihiku cultural uses at specific sites to external parties. He Puna Whakaata o Mātauranga has been widely socialised by Ngāi Tahu ki Murihiku with agencies and interested parties through the dissemination of two policy briefs.

The MCWCS was applied to two sites in the Maitaia, with the themes of Wai Noho and Wai Tuna (one site) applied. The assessment results are provided as He Puna Whakaata o Mātauranga (see Appendix E and F).

⁴⁴ Kitson et al 2018, Williams et al 2022.

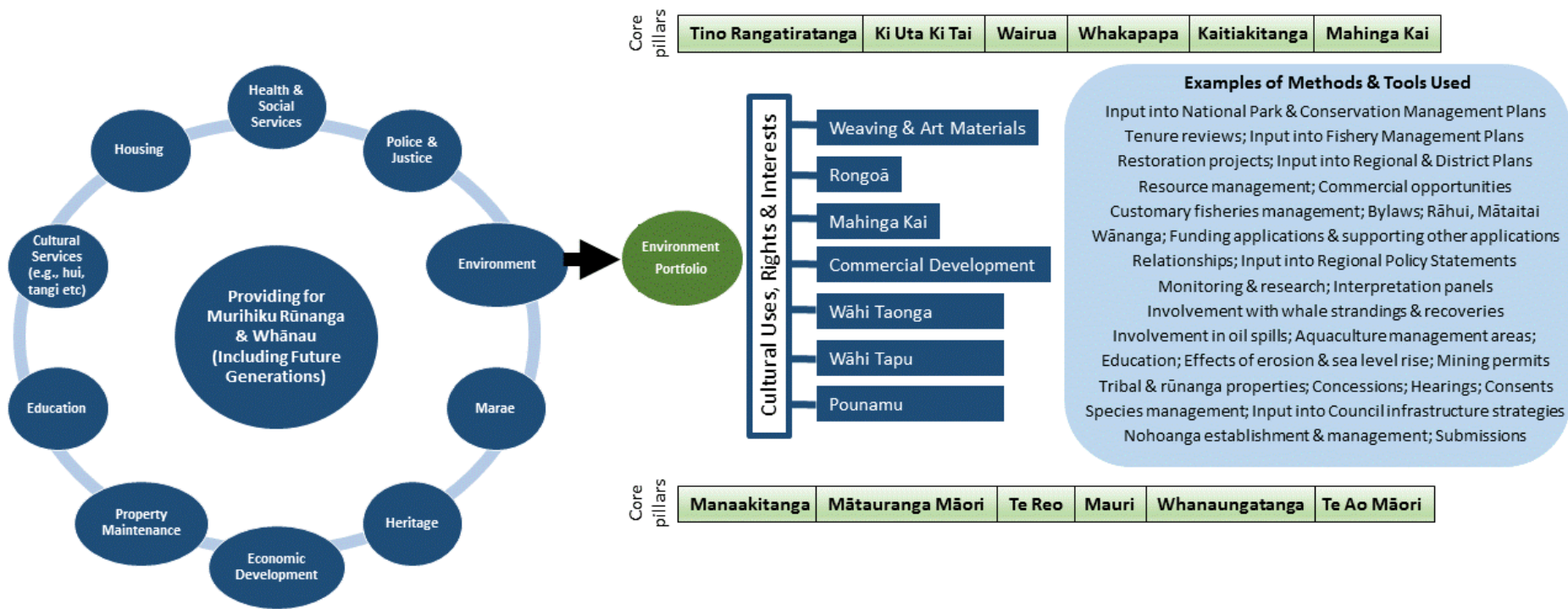


Figure 8: (Left) The multiple portfolios operated by Murihiku papatipu rūnanga; and (Right) The core pillars guiding the implementation of the environment portfolio and some examples of the services facilitated by Papatipu Rūnanga on behalf of, and in collaboration with, Murihiku whānau. (Source: Kitson et al. 2014).

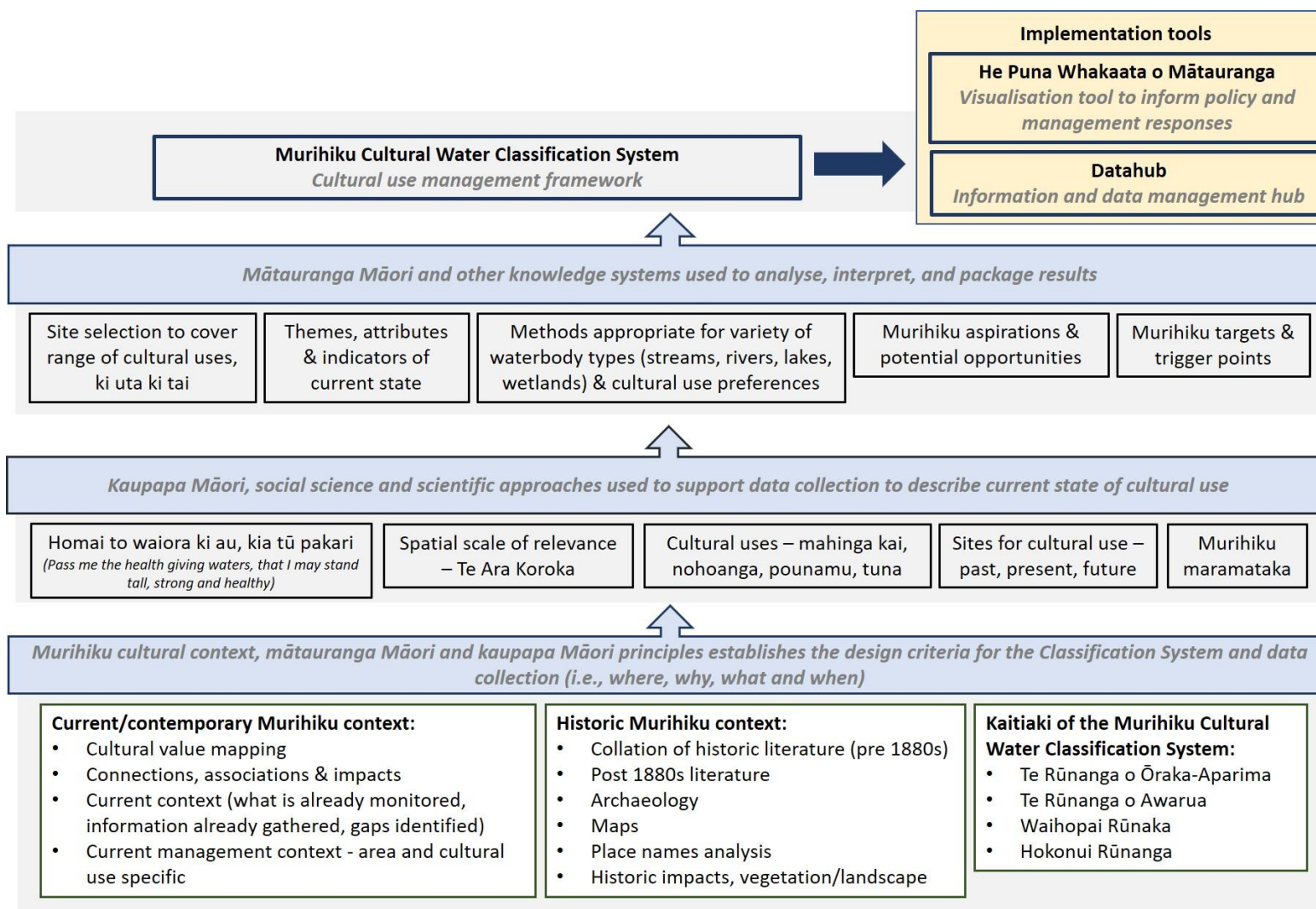


Figure 9: **Components contributing to the development of the MCWCS.** A mixed methods approach was used to gather knowledge about historical and contemporary Murihiku uses, values and associations with Wai Nohoanga, Wai Pounamu and Wai Tuna sites associated with Te Ara Koroka, including cultural value mapping, wānanga, hīkoi, interviews and literature reviews. From Williams et al 2022.

How the mana whenua frameworks and tools work together

All the mana whenua designed and lead frameworks and tools described here work together as they are based on the same philosophies and principles, and their application and implementation are guided by the kawa, tikanga and mātauranga of Ngāi Tahu ki Murihiku. Their foundations are aligned with the inherent meanings, social norms and epistemological traditions of Ngāi Tahu culture. While the tools look at different parts of landscape, they are organised in the same way; consciously and subconsciously ordered by whakapapa and Ira Atua Ira Tangata. The tools expect to inform ki uta ki tai, they expect to draw on the collective knowledge of tangata tiaki/kaitiaki.

Āpiti Hono Tātai Hono and Murihiku Cultural Water Classification System have different but complementary roles. Āpiti Hono Tātai Hono sets the scene by organising the landscape into six layers and using tikanga and mātauranga to make sense of the conflicts, parables, and lived experiences.

This organisation assists with finding the data gaps and limitations and puts other research in its place. For example, ordering an archaeological report in the Ngā Kākano layer highlights that it is one piece of the puzzle, not the complete Ngāi Tahu understanding of a landscape nor the entirety of what needs to be considered in the management of that space. Physiographic modelling assists with Atuatanga and Ngā Tipua but not with whakapapa and metaphysical elements. The outcome of categorisation and analysis is a comprehensive Ngāi Tahu ki Murihiku understanding of that landscape.

MCWCS holds space for the conversations had through Āpiti Hono Tātai Hono. These conversations can assist with site selection and what MCWCS assessment is to be undertaken at that site. MCWCS has selected culturally relevant tohu related to each cultural use and outlines the current state and ability to undertake that cultural use at that site (Tables 1 & 2). These tohu are assessed using numerical, narrative and visual information. MCWCS can guide policy development and responses and data for rules, monitoring and trends. It enables whānau to determine and prioritise their resources and responses. MCWCS also feeds back into Āpiti Hono Tātai Hono and its assessments.

Part Three: Discussion regarding Integrated Landscape approaches being tested.

We have found it difficult to compare the PCE exploratory Integrated Landscape Approach with the approaches that have been led and developed by Ngāi Tahu ki Murihiku. In a way it is unfair to compare them, as they are based in different paradigms around the understanding and relationships of humans and the landscape. The Ngāi Tahu ki Murihiku system has had centuries of development of understanding their landscapes, ki uta ki tai. This system is adaptative and has had the ability to incorporate different knowledge systems and tools developed by mana whenua to articulate understandings and states of landscape and connections within landscape. The application of these Integrated Landscape Approaches and the protection of cultural values and uses, have been impeded by the nature of New Zealand's legislation, implementation of legislation and institutional barriers.

There has been a lack of understanding, or wanting to understand, the holistic management and diverse information needs for the protection of Ngāi Tahu uses and values. Over time Māori developed tools to 'talk to' the different silos involved in the holistic management of a landscape. All the tools whānau have developed from the bottom-up and are embedded in our understanding of how we are connected and inherited responsibilities to te taiao- our whakapapa and ki uta ki tai.

Tangata whenua are already undertaking targeted approaches through their own philosophical and principled designed frameworks and tools. Ki uta ki tai has been the basis of the Ngāi Tahu ki Murihiku iwi management plan for several regional and district planning cycles. The more relevant question for tangata whenua is why haven't their frameworks and tools been used in targeted responses regionally and locally? What are the barriers to a ki uta ki tai landscape approach?

The PCE approach is an exploratory one. It is not a complete approach as it looks at pre-determined mechanisms as tools to inform an approach that is yet to be defined. The modelling parameters have been determined by the PCE and the modelers, with some consultation from the community at workshops. The approach looks at climate change, freshwater quality and terrestrial biodiversity, and possible policy levers around emissions and current freshwater legislation on agricultural land uses on private land.

The tools and models have been based around euro-centric 'western' science paradigms and have acknowledged that they are unable to consider social or cultural outcomes from the different scenario produced. The PCE exploration is set in a paradigm that cannot accommodate the Ngāi Tahu ki Murihiku understandings of landscape. This is not to say that the exploration into ILA is not of value to Ngāi Tahu, enhancing environmental and economic values are important. However, there needs to be recognition that cultural uses and values cannot be taken from one paradigm to be integrated and modelled by another and be expected to cover the range of information and management needs required.

There needs to be recognition that the expertise and skills sets of the modelers are unlikely to extend to that of tohunga and cultural practitioners. Additionally, it is clear that the problem definitions, reasoning and data inputs differ greatly between the models, tools, and frameworks investigated by PCE. The outcomes sought in ILA are also based on several assumptions, most notably for this commentary, what are the principal or secondary outcomes. For example, if consideration is given to Ira Atua Ira Tangata, the principal outcome(s) is for the ILA would be driven by Ira Atua and may be based on reverence to utu, mauri, wairua, domains and whakapapa of elements and atua, duality in landscape, intergenerational and interspatial connections, etc. The secondary outcomes may be focused on the daily and long-term needs of tangata whenua and communities.

Framing the questions for ILAs is equally as important as the models and data selected. An issue for ILAs is that regional expressions of mātauranga Māori and tikanga are often not used in the framing of the questions or problem definition and model selection. This divorces the findings of any ILA from the inherent meanings, social norms and epistemological traditions of each iwi/hapu. Including a fragment of a culture or its mātauranga divorced from its paradigm is not a sustainable or ethical approach to ILA nor it is useful or relevant to Māori.

Āpiti Hono Tātai Hono and MCWCS capture thought and analytical processes often used by Ngāi Tahu ki Murihiku but largely at odds or invisible from the predominant western styles of landscape approaches and management. These tools have high risk of being undervalued, disregarded, or misunderstood by ILA practitioners and experts given that they are based on Te Ao Māori and an alternative regional approach to the dominant landscape approaches rolled out across the country.

Visibility of Te Ao Māori landscape approaches at place is necessary. By not referring to and analysing the landscape as Ngāi Tahu ki Murihiku does, using their vernacular and logic, ILA practitioners and experts applying models in Mataura hide Āpiti Hono Tātai Hono and MCWCS and their processes and recommendations, intentionally or otherwise, from policy interventions and solutions for communities and tangata whenua. This critique does not mean for ILA practitioners and experts to apply tangata whenua designed and led frameworks and tools but to have the professional practice to understand at a high level how they function and why and acknowledge the analysis and findings.

The invisibility of tangata whenua landscape frameworks and tools is not just a matter of professional practice. Invisibility is to the detriment of Ngāi Tahu ki Murihiku as again their matters of importance and understanding of landscape are not woven into the proposed solutions which leads to them not being considered by decision makers when making their determinations for policy and landscape.

We applaud the PCE for initiating the exploration of Integrated Landscape Approaches, as these approaches are perhaps the only way we can tackle the complex ('wicked') environmental issues we are faced within the Anthropocene.

However, to complete a truly integrated landscape approach of New Zealand, requires a system capable of recognizing that there are different disciplines and knowledge systems, ontologies and epistemologies. This requires recognition of and changes to the power and data inequities that exist, and impact on Māori.

Bridging disciplinary and knowledge divides demands patience and an understanding and willingness to embrace differing values, experiences, ontologies, and epistemologies. Meanwhile, achieving greater coordination across sectors and between scales of governance will often require reimagining and reforming existing institutional structures.⁴⁵

⁴⁵ Reed et al. 2021

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Appendices

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A. Āpiti Hono Tātai Hono: Additional information

Summary of Ira Atua Ira Tangata Layers

Layer	Waiatatanga	Atuatanga	Ngā Tipua	Ngā Kākano	Te Kerēme	Te Ao Marama
Category	Ira Atua	Ira Atua	Ira Atua	Ira Tangata	Ira Tangata	Ira Tangata
Time period	Timeless	Timeless	Timeless	900-1840	1840-1997	1998 onwards
Summary Description	The cosmological unfolding of the universe and the creation of whakapapa and elements.	The supernatural deities with whakapapa and mana over attributed domains.	The primal genealogies related to the precursors of humans and the prerequisite events that physically shaped the Murihiku landscape.	The adaptation of Pacific mātauranga to a new landscape and the unobstructed growth of Ngāi Tahu ki Murihiku identity, history, connections and culture	Time of great change and unease for Ngāi Tahu ki Murihiku, dominated by colonisation, alienation and restrictions, as well as urbanisation and international events	An exploratory period focused on acknowledging the past, reconnection and revitalisation with much potential and challenge.
Considerations	<ul style="list-style-type: none"> - Understanding of creation and the interrelated steps - Seniority and mana of elements - Whakapapa between elements - Duality in landscape - Continuum of time 	<ul style="list-style-type: none"> - Domains and whakapapa of atua - Mauri, wairua and hauora - Mana atua, mana tūpuna, mana whenua, mana tangata - Reverence and utu - Ritual - Tikanga, correct conduct - Parables - understanding how the world works and how to act. - Climate and natural state - Biodiversity and ecology - Evolution and change 	<ul style="list-style-type: none"> - Connections forged with atua, Te Waipounamu, Te Ika a Māui and Hawaiki - How/why the landform was shaped. - Geology and geomorphology - Topography and hydrology - Characteristics of natural features - Mahinga kai resources - Aesthetic qualities - Pepeha and whakataukī - Wayfinding and landmarks - Modification of landscape 	<ul style="list-style-type: none"> - Occupation and travel patterns - Evolution of Ngāi Tahu society from its Pacific origins - Maramataka - Cultural practices, uses and associations. - Connections with Te Waipounamu, Te Ika a Māui and Hawaiki - Knowledge systems and tikanga associated with human use of the landscape. - Social structures and control mechanisms - Tangible evidence of human occupation - Intangible evidence of human occupation 	<ul style="list-style-type: none"> - Occupation and travel patterns - Relocation and reordering of settlements and civic structures. - Social and cultural shifts - Human impacts on the environment - Presence, absence, and loss of species - Māori and SILNA lands - International connections - Legislation, social norms, and attitudes - Social structures and control mechanisms - Land use change and alienation - Evidence of human occupation 	<ul style="list-style-type: none"> - Treaty Settlement redress - Legislation, social norms, and attitudes - Occupation and travel patterns - Modern settlements and civic structures - Human impacts on the environment - Climate change adaptation - Presence, absence, and loss of species - Restoration and revitalisation of environment, culture, and society - Future social, cultural and economic aspirations - Ahi kā, return of whānau and whenua

B. MCWCS: Additional information

Table 1: Wai Noho suite of themes, attributes and indicators applied in the Maitara assessments, 5 December 2022.

Wai Noho theme	Murihiku whānau targets	Attribute	Indicators and measures	Reasoning
Access barriers and safety	No barriers for Murihiku whānau to access site	Barriers to access	Murihiku whānau satisfaction with access to site (CHI)	There are various barriers that can restrict whānau to access to Wai Noho sites, including land ownership, land use and infrastructure.
Access barriers and safety	Murihiku whānau can safely access the site	Safety of site access	Murihiku whānau satisfaction with safety of access to site (CHI)	It is important for whānau to be (and feel) safe when accessing a site
Access barriers and safety	Flow / water levels are not impacting whānau safety	Flow	Murihiku whānau are satisfied with flow / water levels to undertake mahinga kai activities safely (CHI)	As above
Access barriers and safety	Bank protection / stability provides safe access to the waterway	Bank protection	Murihiku whānau are satisfied with bank protection / stability (CHI)	The removal of trees and vegetation along river and stream banks can cause erosion, influencing bank stability and introducing excess sediment to the waterway. This can impact the ability of whānau to access a waterway safely for cultural use/practices (Kitson 2019).
Access barriers and safety	Bed/substrate condition provides safe access to the waterway	Bed condition	Murihiku whānau are satisfied with the waterway bed/substrate condition (CHI)	Slippery and high sediment altering the condition of bed substrates can reduce the ability of whānau to access the waterway safely for cultural use/practices (Kitson 2019).

Wai Noho theme	Murihiku whānau targets	Attribute	Indicators and measures	Reasoning
Identity	Murihiku whānau can use the site in the same way as whānau did in the past	Same use as tūpuna	Murihiku whānau can use the site in the same way as whānau/tūpuna did in the past	It is important to identity to connect to a place and understand how Ngāi Tahu whānau were able to use these sites. At sites where these uses can no longer be sustained this can inform restoration (Tipa 2013). Ngāi Tahu whānau can also choose to re/connect to these sites in different ways.
Identity	Murihiku whānau wish to connect/reconnect to the site	Return?	Murihiku whānau desire to return to the site (CHI)	The sites selected for monitoring where those that had a traditional or contemporary connection to whānau. Connection and reconnection to the landscape and geographies is a strong management aspiration for Ngāi Tahu ki Murihiku (Ngāi Tahu ki Murihiku 2008). If whānau consider that they would not return to the site, then this could indicate an issue for connection/reconnection to the site.

Wai Noho theme	Murihiku whānau targets	Attribute	Indicators and measures	Reasoning
Identity	The connection of Murihiku whānau to the landscape/site is appropriately acknowledged	Cultural signage	Appropriate cultural signage	Appropriate cultural signage can be important in acknowledging Ngāi Tahu whānau identity and their connections to a site and the landscape. Such signage needs to be done with care as inappropriate signage can harm cultural identity and wellbeing, as well as potentially putting pressure on a culturally sensitive site (i.e., from pounamu fossicking or desecration of a wāhi tapu site).

Wai Noho theme	Murihiku whānau targets	Attribute	Indicators and measures	Reasoning
Identity	The connection of Murihiku whānau to their cultural landscape is visible/present	Murihiku whānau connection to the landscape	Murihiku whānau satisfaction around feeling connection to the landscape	Māori Identity is connected to geographic places and landscapes (Royal Commission 1988, Durie 1995, Panelli & Tipa 2007). The continuation of this connection is essential. Connection and reconnection to the landscape and geographies is a strong management aspiration for Ngāi Tahu ki Murihiku (Ngāi Tahu ki Murihiku 2008). Connection/reconnection to cultural landscapes are supported if whānau ‘can see themselves in the landscape’, i.e., appropriate place names, signage and displays of pūrākau (e.g., Kearns & Berg 2002, Ngāi Tahu ki Murihiku 2008, Murton 2012).
Aesthetics	Catchment land use does not negatively affect cultural activities	Catchment land use	Murihiku whānau satisfaction with catchment land use. (CHI)	Catchment land use can both impact and improve use of Wai Noho sites.
Aesthetics	Domestic stock are unable to access waterway	Stock access	Murihiku whānau satisfaction that stock are unable to access waterway (CHI)	Stock access to waterways and riparian areas can impact on use of sites and the desire to access sites (Ngāi Tahu ki Murihiku 2008).
Aesthetics	Public infrastructure does not impact Murihiku whānau cultural use of sites	Infrastructure	Murihiku whānau satisfaction that public infrastructure is not impacting the site	Public infrastructure can both impact and improve use of Wai Noho sites

Wai Noho theme	Murihiku whānau targets	Attribute	Indicators and measures	Reasoning
Aesthetics	Murihiku whānau see a potential use of the site to “chill out” and relax	Able to relax	Murihiku whānau satisfaction that there is potential to be able to “chill out” at the site	How whānau feel at a location is an important aspect of the aesthetics of a Wai Noho site.
Resources	Murihiku whānau can use the site for gathering mahinga kai	Mahinga kai	Murihiku whānau can use the site for gathering mahinga kai	Mahinga kai is an important resource to sustain whānau at Wai Noho.
Resources	Murihiku whānau can use the site for gathering cultural materials	Cultural materials	Murihiku whānau can use the site for gathering cultural materials	Mahinga kai is an important resource to sustain whānau at Wai Noho.
Resources	Drinking water is available as a potential use of the site	Drinking water	Murihiku whānau would potentially drink the water	Access to drinking water is an important resource for Wai Noho.
Resources	Water is safe to drink	Drinking water (<i>E. coli</i>)	Presence of <i>Escherichia coli</i>	<i>Escherichia coli</i> (<i>E. coli</i>) is a bacterium commonly found in warm-blooded animals. <i>E. coli</i> is used as the indicator organism for contamination of drinking-water by animal and human faecal matter. (MoH 2005, revised 2018). Some <i>E. coli</i> strains are harmful to humans.
Recreation	Recreation is a potential use of the site.	Swimming	Murihiku whānau would potentially swim at the site	Whānau perceptions around the potential to swim at a site would be important for recreation at Wai Noho.

Wai Noho theme	Murihiku whānau targets	Attribute	Indicators and measures	Reasoning
Recreation	Water is safe to swim in	Water clarity	Murihiku whānau satisfaction with water clarity	Being able to see through the water to identify submerged hazards is an important safety aspect for swimming (Smith & Davies-Colley 1992, MfE 1994).
Recreation	Water is safe to swim in.	Swimming (<i>E. coli</i>)	Presence of <i>Escherichia coli</i>	<i>Escherichia coli</i> (<i>E. coli</i>) is a bacterium commonly found in warm-blooded animals. It is used as an indicator of disease-causing organisms from animal and human faecal matter in freshwaters. In Aotearoa-NZ it is correlated to the risk of Campylobacter infection (McBride et al. 2002, MoH & MfE 2005).
Recreation	Fishing is a potential recreational activity at the site.	Fishing	Murihiku whānau would potentially fish at the site	Whānau perceptions around the potential to fish at a site is important for recreation at Wai Noho

Table 2: MCMCS Wai Tuna suite of themes, attributes and indicators applied, applied in the Maitara assessments, 5 December 2022.

Wai Tuna theme	Murihiku whānau targets	Potential attribute	Indicators and measures	Reasoning
The health of the tuna population (Tuna)	Tuna are available at preferred sites	Presence	Presence / absence	The presence or absence of tuna at sites where this culturally important activity is expected to be undertaken is critical to Wai Tuna. Longfin and shortfin results were combined to score this attribute.
The health of the tuna population (Tuna)	Tuna of a range of sizes are present	Size distribution (Longfin size and Shortfin size)	Length frequency	In a healthy population experiencing limited pressures (e.g., no harvest, no barriers to fish passage) you would expect to have a range of tuna size classes present.
The health of the tuna population (Tuna)	Sufficient tuna within legal size limits are available for Murihiku whānau harvest	Abundance	Catch per unit effort	CPUE is an index of relative abundance that is commonly used in fisheries research.
The health of the tuna population (Tuna)	Tuna are in good condition	Condition	Condition factor	A condition factor (K) is a measure of the weight of the fish relative to its length. Condition is often used as an indicator of how fat or skinny a tuna is, with a higher number indicating better condition. Tuna condition was examined using the Fulton's condition factor.
Murihiku whānau satisfaction with the health of the ecosystem and habitat for tuna (Ecosystem)	Tuna are able to migrate to and from the sea	Connectivity, Ki Uta Ki Tai	Upstream and downstream fish passage provided at hydro dams	A healthy tuna population requires access to and from the ocean, ki uta ki tai, to complete its life cycle. Our assessment considered whether there are significant instream barriers downstream (e.g., hydroelectric facilities) to the upstream and downstream migration of the elver and tuna heke life stages, respectively, and whether these operators had activities in place to mitigate their impact on tuna populations. In this study we did not consider the presence of smaller in-stream barriers, like culverts and fords.




Wai Tuna theme	Murihiku whānau targets	Potential attribute	Indicators and measures	Reasoning
Murihiku whānau satisfaction with the health of the ecosystem and habitat for tuna (Ecosystem)	Domestic stock are unable to access waterway	Domestic stock access / fencing (Stock access)	Murihiku whānau satisfaction that stock are unable to access waterway (CHI)	Along many Murihiku waterways, riparian zones have been highly modified and degraded as a result of poor land management, weed invasion, stock access, and land use activities. Riparian areas are often associated with mahinga kai and other customary use activities (Ngāi Tahu ki Murihiku 2008).
Murihiku whānau satisfaction with the health of the ecosystem and habitat for tuna (Ecosystem)	Bank vegetation is healthy and the right vegetation	Bank vegetation	Murihiku whānau satisfaction with bank vegetation health (CHI)	Along many Murihiku waterways, riparian zones have been highly modified and degraded as a result of poor land management, weed invasion, stock access, and land use activities. Riparian areas are often associated with mahinga kai and other customary use activities (Ngāi Tahu ki Murihiku 2008).
Murihiku whānau satisfaction with the health of the ecosystem and habitat for tuna (Ecosystem)	Diversity of tuna cover/habitat is present (riparian and instream)	Range of habitats	Murihiku whānau satisfaction with bankside and instream habitats to support tuna (CHI)	The quality and diversity of bankside and instream habitats are important for mahinga kai and other customary use activities.
Murihiku whānau satisfaction with the health of the ecosystem and habitat for tuna (Ecosystem)	Substrate / bed condition is healthy	Bed condition	Murihiku whānau satisfaction with bed/substrate condition to support tuna (CHI)	As above

Wai Tuna theme	Murihiku whānau targets	Potential attribute	Indicators and measures	Reasoning
Murihiku whānau satisfaction with the health of the ecosystem and habitat for tuna (Ecosystem)	Flow/water levels keep springs, backwaters, wetlands, and/or tributaries connected to mainstem	Flow connects habitats	Murihiku whānau are satisfied that flow/water levels keep springs, backwaters, wetlands, and/or tributaries connected to mainstem (CHI)	Skerrett (2019) explains “Flood banks now confine the rivers and speed up the flow, with significant effects. Mahinga kai is found in the bends of the river – straightening means these species are no longer found there. Drainage and stop banks have resulted in a huge loss of habitat for instream species.”
Murihiku whānau preferences and ability to safely harvest and consume tuna (Whānau Fisher)	Murihiku whānau are able to harvest tuna from preferred sites	Legal Access barriers	Land ownership allows access for Murihiku whānau to harvest tuna. Permits are not required for Murihiku whānau to harvest tuna	The loss of mahinga kai is attributed to several factors including legislative barriers that impede access and changes in land tenure that affect ability to access resources (Ngāi Tahu ki Murihiku 2008). National parks (permit from DOC required), private land ownership and fishing regulations can act as barriers to Murihiku whānau harvest. The tuna fishery must be readily accessible to Murihiku whānau from a legal perspective to maintain this cultural use.
Murihiku whānau preferences and ability to safely harvest and consume tuna (Whānau Fisher)	Bank protection / stability satisfies Murihiku whānau harvest preferences	Bank protection	Murihiku whānau are satisfied with bank protection / stability (CHI)	The removal of trees and vegetation along river and stream banks can cause erosion, influencing bank stability and introducing excess sediment to the waterway which can impact the ability to use a preferred harvest method safely (e.g., netting or spearing) (Kitson 2019).

Wai Tuna theme	Murihiku whānau targets	Potential attribute	Indicators and measures	Reasoning
Murihiku whānau preferences and ability to safely harvest and consume tuna (Whānau Fisher)	Flow / water levels are not impacting customary harvest preferences	Flow / water levels to undertake activities safely	Murihiku whānau are satisfied with flow / water levels to undertake mahinga kai activities safely (CHI)	Yes. The ability of Murihiku whānau to use preferred mahinga kai harvest methods at preferred sites is dependent on having the right flows / water levels to conduct the chosen activities safely (e.g., netting, line fishing, spearing) (Tipa & Associates 2013, Kitson 2019).
Murihiku whānau preferences and ability to safely harvest and consume tuna (Whānau Fisher)	Water quality is not impacting customary harvest preferences	Water quality to undertake activities safely	Murihiku whānau are satisfied with water quality (CHI)	There are occasions when fishers need to get into the water to use their preferred mahinga kai harvest methods – sometimes this may involve swimming and immersion (e.g., Kitson 2019).
Murihiku whānau preferences and ability to safely harvest and consume tuna (Whānau Fisher)	Pest species are not impacting customary harvest preferences	Presence of pest species that may impact customary harvest preferences (pest species)	Presence/absence of pest fish and/or didymo	Ngāi Tahu ki Murihiku have lost a lot of their food gathering places due to a variety of reasons, including the introduction of pest species (Tipa 2010). Biosecurity is an important issue for Murihiku whānau. The presence of pest species can impact customary harvest preferences in a number of ways, including whānau do not want to inadvertently move pest species around sites of cultural importance and the additional time it takes to clean/dry nets and/or sort catches when pest species are prevalent.

He Puna Whakaata o Mātauranga Structure

The assessment results are presented below using the visualisation tool developed as part of the Murihiku Cultural Water Classification System (Figure 8). The name He Puna Whakaata o Mātauranga refers to the purpose of the tool as a mirror to reflect the current state of Murihiku cultural uses at specific sites to external parties. Its structure varies for each Wai thematic and the colours used relate to the site assessment scores, where:

	<p>The centre of Puna Whakaata provides Ngāi Tahu ki Murihiku with a site summary for a particular cultural use. Classifications for cultural uses include:</p> <ul style="list-style-type: none"> ▪ Wai Pounamu: Waters for the movement, collection and working of pounamu. ▪ Wai Noho: Places that sustained Ngāi Tahu whānau moving through the landscape to undertake different cultural activities. ▪ Wai Tuna: Waters that sustain the intergenerational harvest of tuna.
	<p>The middle circle of Puna Whakaata shows the themes (or components) that the indicators were grouped into when assessing the ability of the site to support cultural use.</p> <p>The terminology and groupings have been characterised by Ngāi Tahu ki Murihiku and while they should influence policy development and responses, the themes are not driven or biased towards any specific legal/legislative or professional terminology and should not be read as such.</p>
	<p>The outer circle of Puna Whakaata shows the indicators that were assessed for the cultural use at a site. Site and cultural use selection is a considered act. Historical, contemporary and potential sites have been selected by Ngāi Tahu ki Murihiku.</p> <p>The outer circle is a mixture of objective and subjective indicators that include numerical, narrative and visual assessments conducted by Ngāi Tahu ki Murihiku. The indicators selected have a direct correlation to the cultural use as practiced by Ngāi Tahu ki Murihiku.</p>

C. Location of Site Assessments

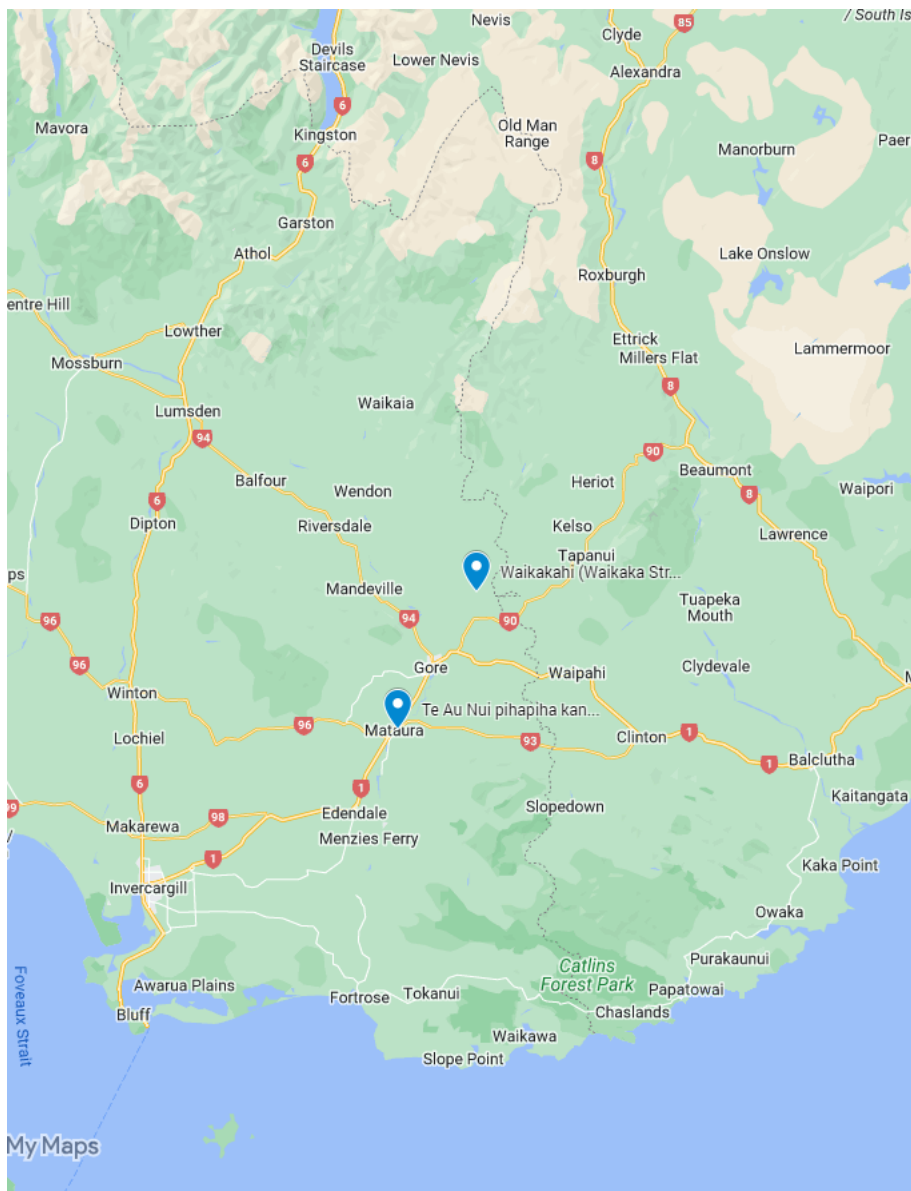


Figure 10: Sites where assessments of AHTH and MCWCS were undertaken by mana whenua.

D. Murihiku Cultural Water Classification System

Introduction

The MCWCS is a mixed methods approach, developed by Ngāi Tahu ki Murihiku, to articulate the state and thresholds of Murihiku cultural uses and values and their environmental dependencies.

Attributes include those that relate to the resources, mana whenua who are connected to those resources and the environment that supports both. It illustrates a wide range of environmental dependencies, and associated information requirements by mana whenua in their environmental management context.

The MCWCS was developed as part of the MBIE funded research programme Ngā Kete o te Wānanga: Mātauranga: Science and Freshwater Management (C01X1318, NKotW). This approach is design to assist Ngāi Tahu ki Murihiku decision-making across numerous regulatory environmental management frameworks and institutions.

As part of the MBIE programme three cultural use/value themes were developed, and more can be created using the technical framework developed as part of the research⁴⁶. The three initial themes developed as part of the NKotW are:

- Wai Pounamu (Waters for the movement, collection and working of pounamu)
- Wai Nohoanga (seasonal camping areas across the landscape) and
- Wai Tuna (waters that sustain the intergenerational harvest of tuna/eels).

Methods

Two sites in the Mātaura were assessed on the 5th December 2022 using the Murihiku Cultural Water Classification System methodology.⁴⁷ The sites were Te Au Nui Pihapiha Kanakana (an important mahinga kai site within a customary fisheries protection area, that is surrounded by an industrial/urban area, including a freezing works and two hydro-generation schemes), and Waikākahi (Waikaka Stream- Maitland; a agriculturally dominated area with wāhi ingoa indicating mahinga kai resources (Waikākahi/freshwater mussels, and a nearby stream (that no longer exists) called Waikōura (freshwater crayfish).

The sites were considered Wai Noho, because Te Au Nui Pihapiha Kanakana is located within a contemporary settlement area, and Waikākahi was situated in an area that could be amenable for camping. Both sites would be considered Wai Tuna sites, however, to ensure the assessments could be completed within the day, only Waikākahi was assessed for this cultural use.

Eight mana whenua participants collected data using Cultural Health Assessments, adapted from the Cultural Health Index⁴⁸, developed to assess indicators that relate to the attributes developed for Wai Noho and Wai Tuna (Tables 1 & 2). SHMAK kits were used for water quality measurements (*E. coli* and clarity), three baited fyke nets (and gee's minnow nets) were placed at the Waikākahi site by an experienced tuna harvester.

Before each of the site assessments we held a brief around the site context, health and safety, the cultural assessment form, and questions and what other monitoring was involved. Debriefing also occurs after each site assessment to gain a collective understanding of everyone's scores.

⁴⁶ Williams et al 2023

⁴⁷ Williams et al 2023,

⁴⁸ Tipa and Tierney 2006

The top of Te Au Nui Pihapiha Kanakana was first accessed via the old paper mill buildings, and the downstream from the falls using public access point upstream from where the Mataura bridge crossed the river. The lower site enabled water sampling and to get closer to the water more safely. The assessment forms were completed at the downstream site.

The Waikākahi site was accessed from a bridge going across the stream on Glenkenich Road at Maitland. The site is designated as a road parcel.

E. Site Visit Results - Te Au Nui Pihapiha Kanakana

Photographs



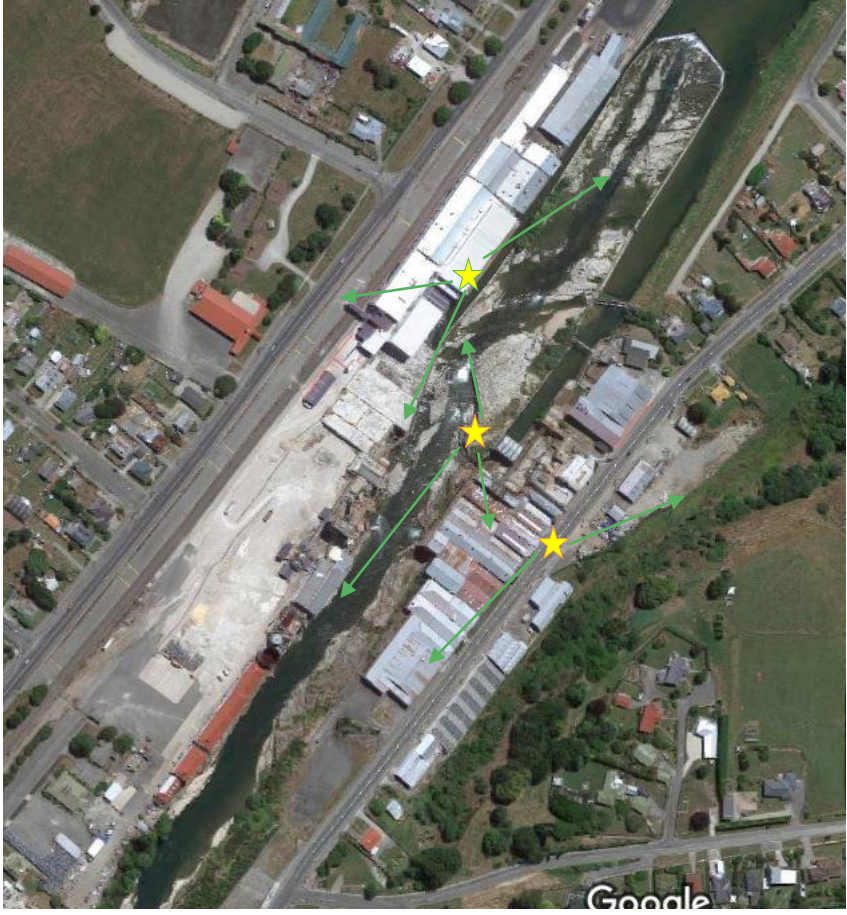
Figure 11: The top of Te Au Nui Pihapiha Kanakana.



Figure 12: Downstream from Te Au Nui Pihapiha Kanakana.



Figure 13: Downstream from Te Au Nui Pihapiha Kanakana.

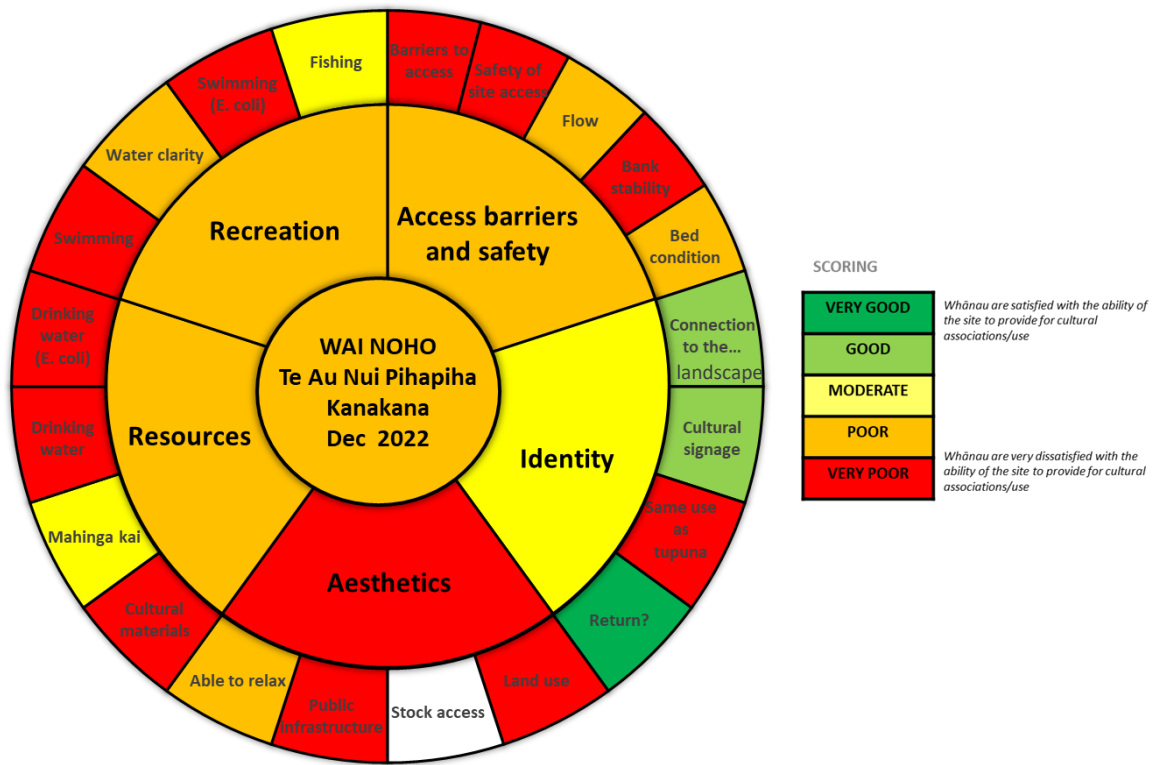
Ngāi Tahu Ki Murihiku Āpiti Hono Tātai Hono Site Assessment	
Site Name	Te Au Nui Pihapiha Kanakana - Mataura Falls
Map	
Date	24 November 2022
Site Characteristics	<p>Heavily modified waterfall within the Mataura River. Currently situated between a freezing works and disused paper mill, which both draw hydroelectric power from the area surrounding the Mataura Falls. Falls are accessible only via these buildings, as the river surrounding Falls is heavily channelized, and bordered exclusively by private property (incl. fences and other obstructive structures).</p> <p>The area has connections to the Hokonui Hills, Tukurau, the wider Mataura catchment, and is part of the Takitimu Waka creation stories. It is closely connected to tributaries of the Mataura River, namely the Waikana and Waimumu, which are both immediately downstream.</p> <p>The Mataura Falls are historic habitat for kanakana and tuna, as well as koaro. (At lesser numbers now)</p>
Description of Association	The whānau and hapū association with the Mataura Falls are closely linked to its historic use as a place to practice mahinga kai. Further to this, it is a

	<p>prominent landmark along a number of ara tawhito utilized by Ngāi Tahu whānui tipuna, including those on Ruapuke Island, and other whānau travelling inland. The Falls also sit within the wider Takitimu waka cultural associations and are tied to tribal histories relating to Paroparo Te Whenua, Matamata, and the Tukurau Raid. Hokonui Rūnanga and other Ngāi Tahu whānau members also hold contemporary associations with the Falls as a symbol of cultural identity, and a place that requires mana whenua to uphold their kaitiaki responsibilities to protect and restore. There are also associations held by mātāwaka who established communities in the surrounding town and gain a sense of identity from living for several generations in close proximity to the Falls, and in some cases, sourcing food from them too.</p>
<p><i>Recommendation:</i></p>	
	<p>Actions and activities that improve access to the falls should be supported. This will enable the many positive impacts of reconnecting with this area that Hokonui Rūnanga are experiencing to improve exponentially. It will also improve the safety of the area by rebalancing ira atua and ira tangata.</p> <p>Actions that improve the ability for taonga mahinga ka species – especially kanakana – to thrive in this environment should also be supported. This includes improvements to migratory pathways (including remediation of downstream tributaries), and removal of artificial barriers impeding fish passage in this area. Activities that improve actual and perceived water and air quality should also be encouraged, including the removal of discharges into the waters and air surrounding the Mataura, and the ceasing of the dumping of rubbish into areas surrounding the Falls. These actions will enable the Falls to be interacted with in ways that Ngāi Tahu tūpuna once did, including through recreation and food-gathering. It will also improve the mauri of the Falls, enabling Ngāi Tahu to better receive the spiritual benefits of engaging with the Falls, and restore its mana.</p>

MCWCS assessment: He Puna Whakaata o Mātauranga

Date: 5 December 2022

WAI NOHO



WAI TUNA – not assessed.

F. Site Visit Results - Waikākahi (Waikaka Stream- Maitland)

Photographs



Figure 14: Upstream at the Waikākahi site.



Figure 15: Downstream at the Waikāhahi site.




Figure 16: Tuna monitoring at the Waikāhahi site.



Figure 17: Waikoura caught at the Waikākahi site.



Figure 18: Upland bully caught at the Waikākahi site.

Ngāi Tahu Ki Murihiku Āpiti Hono Tātai Hono Site Assessment	
Site Name	Waikākahi (Waikaka Stream- Maitland)
Map	
Date	24 November 2022
Site Characteristics	<p>Freshwater, spring-fed stream within the Māruawai area. Runs predominantly through agricultural pasture, and is a tributary of the Mataura River, which is a Statutory Acknowledgement Area. It is shallow and rocky bottomed with stony beach areas at some bends. Waikaka has clear water that is home to trout populations and was historically habitat for taonga mahinga kai species such as kākahi and tuna. Recent water quality data shows high levels of <i>E.coli</i>, and some agricultural rubbish can be seen on its banks.</p> <p>Access to Waikaka stream varies, with the majority running through or adjacent to private land that has been fenced. It shows signs of channelisation and is bordered by willows and other introduced species/weeds. It also crossed by road bridges at points, with piles sunk into the riverbed. Once accessed, however, the stream is a calm and relaxing place to be, and feels safe to enter and recreate alongside.</p> <p>The area has connections to the Hokonui Hills, Tukurau, the wider Mataura catchment, and is part of the Takitimu Waka creation stories.</p> <p>The correct name for the Waikaka Stream is the Waikākahi</p>
Description of Association	<p>Waikaka stream is part of a wider tapestry of local streams that historically provided sustenance to local mana whenua communities through mahinga kai species including kākahi and tuna. It is also a place mana whenua associate with naturalness and tranquility.</p> <p>Due to its location, the Waikaka is also associated with the Takitimu waka traditions, and the semi-nomadic mahinga kai-centric lifestyle of Murihiku Ngāi Tahu tūpuna, due to its proximity to ara tawhito that follow the Mataura river.</p> <p>Despite its modification over time, mana whenua still associate the Waikaka with recreation and mahinga kai activities, and can connect spiritually with atua</p>

Māori through the mauri of the area and its surrounds. Hokonui Rūnanga have aspirations to strengthen these associations going forward through improving water quality, replacing exotic invasive species with native flora, and supporting taonga species such as tuna and kākahi to once again thrive in this river as they historically did.

Recommendation:

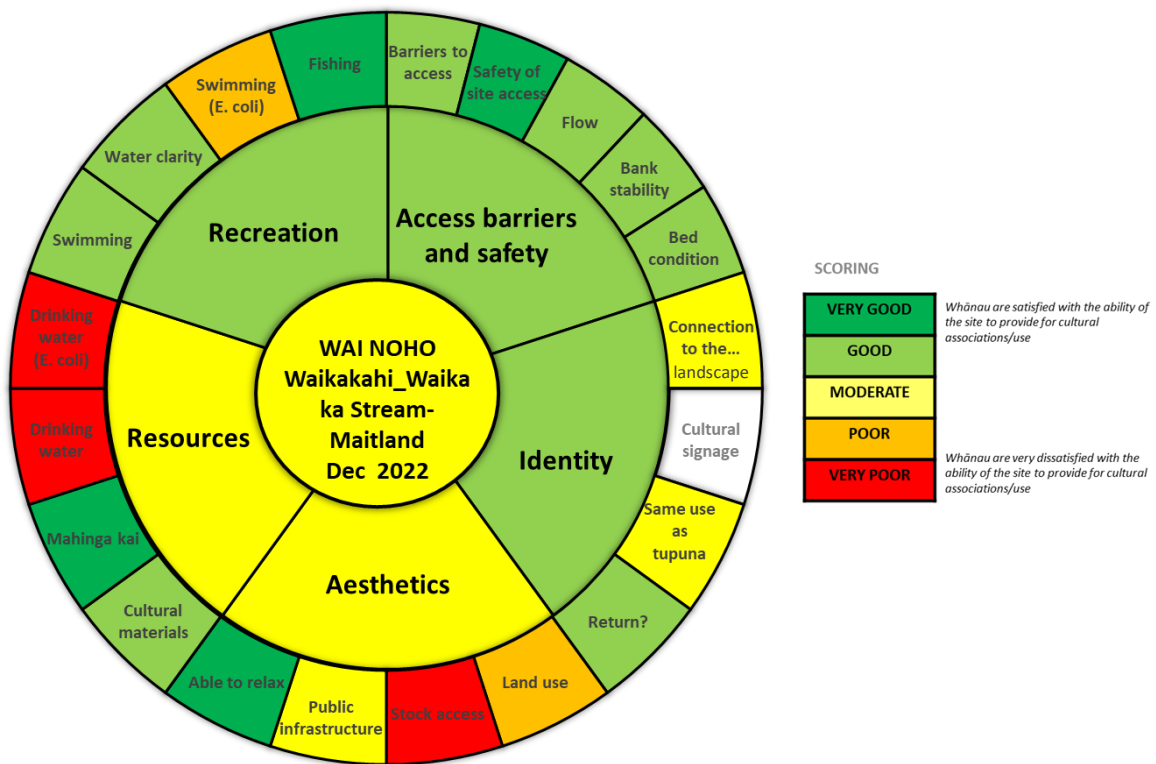
Activities occurring in or adjacent to the Waikaka stream should contribute to the aspiration of naturalizing the stream and its wider ecosystem. This includes supporting native vegetation planting, removal of exotic weeds, and activities that have positive effects on water quality. Activities that retain or enhance the natural tranquility of the Waikaka should also be encouraged. These types of activities allow mana whenua to enjoy and engage with the Waikaka in ways similar to their tipuna, and accentuate the presence of the various atua visible in the space.

Activities that further modify the Waikaka from its natural state, degrade the ecological health of the waterway and its ability to provide habitat for taonga mahinga kai species, or detract from the naturalness and tranquility of the area should be discouraged.

MCWCS assessment: He Puna Whakaata o Mātauranga

Date: 5 December 2022

WAI NOHO



WAI TUNA

