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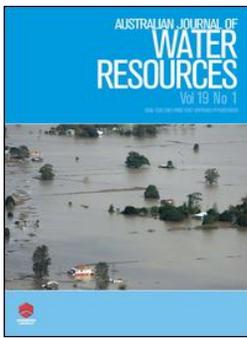
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## Ngā Puna Aroha: towards an indigenous-centred freshwater allocation framework for Aotearoa New Zealand

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### ABSTRACT

Aotearoa New Zealand's environmental policy and legislation recognises Māori Indigenous principles and values, and gives prominence to Te Mana o te Wai (the authority of water itself). However, current policy, legislation, and practice are inadequate for enabling Māori rights and interests in water takes and instream flows and levels, in terms of both involvement and specific allocation mechanisms supporting Māori values. We argue that a policy and implementation space needs to be created that ensures indigenous Māori engagement and outcomes in freshwater governance, planning, and management. This space should provide for an integrated, precautionary, and bicultural 'First Principles' approach, ensuring that Māori rights and interests consistent with Te Tiriti o Waitangi/the Treaty of Waitangi (1840) are enabled, including the exercise of mātauranga Māori (knowledge informed by Māori worldviews), tikanga (Māori customs and lore), and kaitiakitanga (guardianship). We outline a potential water allocation framework, Ngā Puna Aroha, that could provide direction and give confidence and certainty to the implementers of national water policy. Such an approach would need to be supported by a broader bicultural policy and we suggest an overarching philosophy Ngā Taonga Tuku Iho, which would encompass all natural 'resource' management, providing a korowai (cloak) for the management of each particular 'resource' or taonga (treasure) including freshwater. This type of bicultural proposal could inform freshwater and wider natural 'resource' management policymaking, regulatory frameworks, and implementation nationally and internationally.

### ARTICLE HISTORY

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Tikanga; mātauranga; taonga; indigenous rights; co-governance; co-management; bicultural; freshwater allocation; policy; legislation; reform; framework

### 1. Introduction

Indigenous people's rights and interests in freshwater allocation, and broader water management, are significant topical issues, both within Aotearoa<sup>1</sup> and internationally. Water rights, in contrast to ownership, generally come from native title but also emerge from treaties, constitutional rights, and modern settlement (Durette 2010). In Aotearoa, Te Tiriti o Waitangi/the Treaty of Waitangi (hereafter referred to as 'the Treaty') stipulates partnership between the Crown and iwi (indigenous tribes). However, current water policy and legislation do little to realise Māori rights and interests under this partnership. Both Māori engagement in water governance and management, and specific allocation mechanisms reflecting Māori values are lacking. Māori water rights have recently been investigated through a national inquiry WAI 2358 (refer Waitangi Tribunal 2012 & 2019) that addressed significant legal and political issues, including how Māori water rights and interests can be resolved and enabled alongside those of other users. This paper is intended as a contribution to this topic, providing thought and guidance to support implementation of Māori water rights and interests.

While there is substantial literature considering indigenous engagement in water governance and

management (e.g. Te Aho 2010), and many cultural tools and frameworks for water management (e.g. Harmsworth 2016), an indigenisation of water allocation policy and strategy is needed. Guidance is needed to inform planning provisions, processes, and methods for water allocation that are informed by tikanga (Māori customs and lore) and mātauranga (knowledge informed by Māori worldviews), in order to give effect to Māori rights and interests.

We begin with a summary of Māori aspirations regarding waimāori (freshwater) and highlight issues with Aotearoa's current water allocation system (section 2). An analysis of the current legislative framework is then presented (section 3), complemented by case studies, showing the limitations but also some opportunities for Māori to engage in water allocation (section 4). It is argued that a transformative policy and implementation space needs to be developed to support and provide for Māori rights and interests while modernising water management in Aotearoa. We propose a reconceptualisation of natural resource management to one which recognises environmental 'resources' as taonga (section 5). We call this Ngā Taonga Tuku Iho (NTTI), the treasures handed down. Then for water allocation specifically, we propose (section 6) a tikanga-based framework Ngā Puna

Aroha, reflecting the springs or genesis of waimāori and the love and respect required for appropriate management of our ancestral waterways, taonga passed down from Papatūānuku (our earth mother). This could, at a minimum, be created within the current policy settings, albeit with changes that elevate protection of and provision for cultural values alongside environmental values.

More fundamentally, the proposition is that a reframing of environmental governance to one based on tikanga and mātauranga will stimulate more caring attitudes to water across Aotearoa (section 7) – to enhance and protect the mauri (health and well-being) and mana (spiritual power, authority, prestige) of waimāori and, reciprocally, human communities.

## 2. Māori aspirations for waimāori (freshwater)

*Ko te wai te ora ngā mea katoa*

*Water is the life giver of all things*

As tangata whenua (people of the land), Māori are intimately tied to the water and land within their rohe (tribal territory). Water is the lifeblood of Papatūānuku (earth mother); it is the essence of life. Like everything else in Te Ao Mārama (the natural world), water has inherited elements from the Atua (gods): tapu – sacred potential and wairua – the spiritual force of the water; mauri – essential life force; and mana – utmost privilege and authority and reciprocal obligations that come with it. Water is significant for spiritual health and healing.

Every iwi and hapū connects directly to waters within their rohe and identify themselves through reference to that water source within their tribal pepeha and mihi (personal introduction and greeting). Mana whenua (those with territorial rights) have an inherent obligation, to their tipuna (ancestors), themselves, and future generations, to ensure the health of their water. Over hundreds of years of interaction with the natural world within their rohe, Māori have developed ways of knowing (mātauranga) and doing (tikanga) to fulfil these obligations through the exercise of kaitiakitanga (caring for the environment) (Clapcott et al. 2018). And mātauranga is not a static knowledge base rooted in the past; it is a knowledge-generating system which includes, but is not limited to, traditional Māori knowledge (Mercier 2018). The above exemplifies a reciprocal relationship whereby Māori are obliged to care for those taonga through manaakitanga and kaitiakitanga (Waitangi Tribunal Wai 2358 2012:43–44).

The Treaty provides a legal foundation for Māori rights and interests in freshwater. Article I attributes *kawanatanga*, administrative governance responsibility, to the Crown. Today, this *kawanatanga* is expressed through the entire apparatus of New

Zealand law, including the overarching resource management legislation, the Resource Management Act (RMA) 1991, and authority delegated from the Crown to local authorities. Article II guarantees *rangatiratanga*, meaning chiefly authority, translated as ‘full exclusive and undisturbed possession of their lands and estates, forests, fisheries, and other properties’ as taonga. For Māori, freshwater is a taonga and, the exercise of *kaitiakitanga* for the sustenance of waimāori is as much a part of collective identity for the *mana whenua* of any given rohe and of cultural purpose, as of biophysical integrity. And Article III guarantees respect for *tikanga Māori* (culturally determined customs and notions of the right way to go about things) in application to water resources as in other facets of life.

While fulfilment of these aspects is often considered ‘aspirational’ it is actually a part of upholding the Treaty. The Treaty ‘principles’<sup>2</sup> which all persons acting under the RMA should take into account include among other things, the duty to act in good faith and in partnership; and the protection of Māori interests, taonga, and development opportunities. The duty of the Crown is ‘not merely passive but extends to active protection of Māori people in the use of their lands and waters to the fullest extent practicable’ (Waitangi Tribunal 2019:18).

In its Stage 1 Report of the National Freshwater and Geothermal Resources Inquiry (WAI 2358), the Waitangi Tribunal identified Māori rights and interests, which are summarised in Table 1. How Aotearoa’s resource management system gives effect to these rights and interests, and ideas about how it could be improved to give fuller effect are discussed in the following sections. The rights and interests are grouped by key concepts in the left-hand column of the table.

## 3. Māori and water allocation under the resource management act

Water management is regulated by two levels of government. Central government sets national policy and standards, and local government agencies (regional councils) have responsibility under the overarching legislation, the Resource Management Act 1991 (RMA) for water planning (e.g. water allocation policy and rules; water quality limits, catchment management), and decision-making on resource consents (e.g. water and discharge permits) for water takes, dams, diversions, and discharges.

Water allocation policy differs among the 16 regional councils, providing potential opportunities for iwi and hapū to influence policy relevant to the specific waterways and contexts within their respective rohe. There are plan-making requirements for local government to consult tangata whenua and *take into account*

**Table 1.** Māori rights and interests.

Key Concepts	Māori Rights and Interests
Access and Use Property rights Ownership	Being able to exercise rights to control access to and use of water (with the authority sometimes shared between hapū but always being exclusive to specific kin groups); and with permission to use and payments sometimes being required of outsiders
Cultural and economic practices	Having customary rights in some water bodies that could equate to legal ownership of property in the English sense Being able to use freshwater bodies for the sustenance of the life and health of the person, both in body and in spirit Being able to use freshwater bodies for rituals, including tohi (baptism rite) Being able to use freshwater bodies for their resources, both food (e.g. fish) and other materials (e.g. aquatic plants)
Metaphysical Mauri Kaitiakitanga	Recognising that Māori have a physical and metaphysical relationship with water under tikanga Māori (Māori lore) Recognising water bodies as living ancestors (tupuna awa), indivisibly encompassing banks, bed, water, fish, aquatic plants, and their spiritual guardians (taniwha) Recognising and maintaining the mauri (life force) of water bodies, which if it sickened, affects the mana and mauri of the people too Having kaitiaki obligations to care for and protect water

any iwi planning documents lodged with the councils. The Ministry for the Environment (2019a) reports that 190 iwi management plans had been provided to relevant local authorities by 2014/15, with an average of eight new or modified plans developed per year since then. In practice, the general extent of tribal influence in council plans is difficult to ascertain but appears minimal. Such influence usually depends on the extent to which councils choose to engage with iwi and hapū and the capacity and capability of iwi and hapū to respond. This is incongruent with the partnership principle espoused by the Treaty.

Nationally, an average of 2427 water permits was granted each year in the four years 2014/15 to 2017/18. In that same period, an average of 88% ± 11% of all consent decisions by Regional Councils were decided as non-notified applications (Ministry for the Environment 2019a), in accordance with regional plans through internal processes. This highlights the importance of iwi and hapū involvement in the development of regional plans where they can influence water allocation and consequential outcomes. The state of freshwater is not only a cultural and ecological issue but also one of the governance and politics (Fenemor et al. 2011a).

Water allocation in Aotearoa is mostly driven by commercial demand but limited by hydrological realities. While restrictions on allocation may occasionally resonate with mātauranga and tikanga, more work is required so that allocation frameworks and implementation provide for cultural principles and outcomes (Te Aho 2018). Mātauranga needs to take its place alongside the scientific knowledge currently informing water allocation. From a hydrological perspective, water should be managed at a catchment scale because water flows and storage need to be accounted for (i.e. measured) within topographic and waterbody boundaries (Fenemor et al. 2011b). Catchment scale generally fits with iwi and hapū management scales, but tribal interests in catchments often overlap, complicating matters. In addition, as water availability varies through droughts and floods, it is necessary to manage water allocation on the basis of

frequency of occurrence (return periods) and duration of such events, not just on the basis of average availability: return periods and durations of low flows provide the basis for calculating reliability of supply for users (Fenemor, Davie, and Markham 2006) and the impacts of abstractions on waterbody values, including cultural values. These principles of the water balance are in step with Māori perspectives, which recognise that variability of river flows, climate, and the seasons help sustain the health and well-being of water.

While in a waterbody such as a stream, lake or aquifer, water has public good (collective) characteristics. It is available to all; many use-values related to recreational and cultural purposes are non-consumptive, so do not reduce water availability for others. In contrast, water can also be allocated as a private good (potentially tradable), and the taking of that allocation – for example, for public water supply or irrigation – means that quantum is not available to others. Māori interests could be provided for through specific cultural allocations (a portion of the available quantum); however, this mechanism has rarely been implemented. The 2008–2017 National-led government contended that ‘no-one owns water’, while the current Labour-led government says that ‘everyone owns it’ (Mills 2018). Tangata whenua argues that some of those who have been granted allocation through consents have leased or sold allocations, which are evidence of ‘ownership rights’ (Mihinui 2019, pers. comm.). While those consent holders may not own the water itself, they own the exclusive right to take for the duration of that consent.

Water also has an option value, reflecting a desire to reserve its use for the future, especially in the face of uncertainties about water availability and demand (Sharp and Cullen 1991). This is consistent with long-term views of kaitiakitanga, recognising that future generations need similar opportunities for water use. Thus, consideration should be given in plans to reserving and potentially re-allocating water as community values change. There is intrinsically a tension between

in situ use values and the values obtainable with commercial transactions (O'Connor 1994; Moore 2015:226). The relative weights given to use and exchange values by iwi, hapū, and other communities and agencies may evolve over time, even for a single waterbody.

Good practice for water allocation policy generally involves balancing three parameters, none of which provides explicitly for Māori interests and values:

- Environmental flow limits, such as prescribed minimum flows for surface waters, and minimum groundwater levels for aquifers, often including trigger levels for restricting water takes.
- Allocation blocks representing limits to the flow or volume of water able to be allocated for taking, for a stated reliability of supply.
- A target reliability of supply for water users.

While the RMA allows councils to prioritise the taking and use of water for specified purposes, the default approach is 'first in, first served'. Fixed allocations are made based on demands for human uses such as irrigation, household supply, or industrial uses. These are easier to quantify in commercial terms than the ecosystem and cultural benefits of leaving water in a waterbody. An alternative approach is proportional allocation, in which the allocation block reduces continuously as streamflow falls; this has not been favoured in policy in Aotearoa because of the difficulties of monitoring and enforcing continuously varying allocations.

Deciding environmental flow, allocation, and reliability limits is no longer seen as an analytical technocratic decision (Fenemor et al. 2011a), although hydrological and other expert knowledge is still an essential consideration (Berkett et al. 2018). Rather, decisions on limits involve weighing up stakeholder values, for example, through collaborative decision-making processes (Sinner, Brown, and Newton 2016; Cradock-Henry et al. 2017). This leads to the observation that over-allocation is a values-laden concept, not an absolute, and that environmental flow, allocation, and reliability limits can and should change over time, as stakeholder preferences change (Fenemor 2013). However, the role of, and provision for, iwi, and hapū as indigenous rights holders under the Treaty rather than mere stakeholders, is not well accommodated in this process.

Water allocation issues vary from rohe to rohe, but a frequently concerning issue is that in many catchments RMA 'rights and interests' to take water and discharge nutrients are already over-allocated. Most water permits are presently held by others outside the iwi or hapū. Historically, iwi and hapū have been excluded from water allocation due to land and resource loss and marginalisation, followed by

a regulatory system that is first in first served (Waitangi Tribunal 2019). Iwi advisers have suggested to the Crown that an audit should be carried out of all consent holders to identify instances where allocated consents are not actually being used, and those consents could then be re-allocated to iwi and hapū or reserved for future use (Mihinui 2019, pers. comm.). This could occur now under the current regime and is particularly important in catchments where water is already fully or over-allocated and where iwi and hapū are consequently marginalised.

In summary, the practices and principles that shape current institutions of water allocation in Aotearoa provide limited opportunities for Māori rights and interests in water allocation. We identify six key issues and opportunities for remedying this (Table 2).

#### 4. Opportunities for Māori within the RMA

In Aotearoa, the Crown's current position with regard to redress of Māori proprietary rights is that there will be no national settlement or generic share for Māori, leaving the RMA as the only mechanism for proprietary redress (Waitangi Tribunal 2019:521). This section considers what opportunities exist within the current RMA system by discussing three regional case studies and moves by the central government to strengthen Māori involvement in water management.

Unlike most regions, in Canterbury, the Regional Council's Land and Water Regional Plan includes a specific policy that elevates customary purposes (among other things) over and above use for irrigation, hydroelectricity, and other economic purposes. In the Waitaki River catchment the respective iwi, Ngāi Tahu, was able to negotiate a cultural flow allocation for enhancement of mahinga kai (food and food gathering places and practices) through engagement in a planning process for water sharing in the lower river (Whiting, Ellison, and Fenemor 2016). The commissioners' decision allocated 10 m<sup>3</sup>/s of Waitaki River flow for mahinga kai projects that align with

**Table 2.** Issues and opportunities for Māori in water allocation.

1. The opportunity for authentic Treaty-based partnership in water policy at national, regional, catchment, and rohe scales
2. Cultural flows and allocations that reflect Treaty principles and could provide redress for past alienation of Māori from their waters as taonga
3. Ensuring market mechanisms for water allocation are based on holistic principles and recognise and provide for iwi and hapū rights and interests in water
4. Enabling of mātauranga and tikanga in policy and processes, for example alongside hydrological and economic principles and in the development of flow regimes and allocation limits
5. The need to build iwi and hapū capacity and capability to engage more generally in water allocation planning and processes, and in catchment management
6. The need to develop central and local government capacity and capability to overcome systemic blockages and institutional inertia, and to enable and empower iwi and hapū in water allocation planning and processes

Ngāi Tahu values. Anyone would be able to seek a resource consent to use the allocation (not solely Ngāi Tahu), as long as the proposed activity was for enhancing mahinga kai. The decision effectively requires the rūnanga (iwi authority) of Ngāi Tahu (Ngā Rūnanga) to be consulted, but not to have a veto. This example, based on the RMA as currently written, illustrates both the opportunities and the procedural difficulties iwi and hapū face in having a significant role in decision-making. The RMA delegates that role to the council, albeit in consultation with Ngā Rūnanga. There was widespread support in submissions for the concept of reserving water; however, there was a debate about the meaning of mahinga kai in a contemporary setting. The commissioners determined that the practice of mahinga kai evolves and adapts over time, and may include commercial activity.

In the Rotorua rohe, Ngāti Rangiwewehi is working with the Rotorua Lakes Council (RLC) on iwi-led identification of kaitiaki flows to be protected under a joint water take consent (White et al. 2020 (in press)). This project demonstrates the linking of mātauranga and science, council and iwi, for a municipal water supply sourced from Taniwha Spring, in the Awahou Stream spring complex, which supplies water to Rotorua City. Kaitiaki flows are stream and spring properties (e.g. water flows, water levels, and water quality) that meet iwi needs (i.e. amenity, food-bearing capacity, economic, spiritual, and landscape). They were defined by a 4-year iwi-led process of engagement with their hapū and the science community. Science and mātauranga about Awahou Stream and its catchment were summarised by Ngāti Rangiwewehi and GNS Science in a 2-year programme (White et al. 2020 (in press)). Preferred flow options were identified and used in co-management discussions between Ngāti Rangiwewehi and RLC over water permit conditions for Taniwha Spring. They then incorporated preferred options into a Cultural Impact Assessment of the Taniwha Spring water supply, as part of the consenting process. Kaitiaki flows are now built into the Taniwha consent. Ngāti Rangiwewehi sought monitoring conditions that include the following elements: continuous monitoring of Awahou Stream flow with data available on a website; trigger levels that provide digital warning of potential kaitiaki flow breaches; a drought management plan to allow for water supply in extreme climatic events; and a water quality monitoring programme. Ngāti Rangiwewehi aims to complete a water resources capability plan that will develop the iwi's capabilities in water management and they also aim to promulgate research results to other iwi and to water suppliers.

A final example highlighting the potential opportunities in the current management system is in the

Motueka, Moutere, and Marahau catchments in response to submissions from iwi of Te Tau Ihu (Nelson-Marlborough). Reservations for water were proposed by the Tasman District Council (TDC) in 1999 for Māori perpetual lease lands and formally included in the Tasman Resource Management Plan (TDC 2008). This approach pre-allocates water for the irrigation of Māori perpetual lease land until leases revert to iwi. This was because Māori landowners were unable to modify the lease agreement to require water permits for irrigation of irrigable land to be obtained or exercised. The rules also help ensure future access to water for this specified class of iwi land by preventing site-to-site transfer of water away from any Māori perpetual lease land that is currently being irrigated. As of 2019, water allocations reserved for Māori perpetual lease land totalled 362 l/sec (TDC, pers. comm.). However, any allocation of water for a reserved purpose is subject to the allocation limit for that zone. While these reservations of water allocation were made before those zones became fully allocated under the first in, first served doctrine, implementation of the approach in fully or over-allocated zones would require water allocations to be relinquished or taken from consent holders. This highlights that different policy approaches will be needed in those zones or catchments that are not fully allocated, compared with those zones that are, a matter which is of ongoing concern to Te Tau Ihu iwi.

Despite these examples of attention to Māori values in current RMA decisions, cultural flows and allocations are not yet commonplace or consistently applied across Aotearoa. However, frameworks for identifying relationships between cultural health and stream parameters including flow have been developed, making it possible for Māori values to be incorporated into environmental flow assessments (Harmsworth et al. 2011; Crow et al. 2018). Policy reform created by the NPS-FM (2017) and amendments might also provide the impetus for cultural flows and cultural allocations to become the norm. Objective D1 directs councils 'to provide for the involvement of iwi and hapū, and to ensure that tangata whenua values and interests are identified and reflected in the management of fresh water ...'.

The overarching principle within the National Policy Statement (NPSFM), Te Mana o Te Wai (TMOTW), 'acknowledges and protects the mauri of the water', which 'requires that in using water you must also provide for Te Hauora o te Taiao (the health of the environment), Te Hauora o te Wai (the health of the waterbody), and Te Hauora o te Tangata (the health of the people)' (NPSFM amended 2017: preamble). TMOTW forms the basis for community discussions on freshwater values, objectives and limits, providing opportunities for Māori, communities and the Crown to explore, and

articulate their ‘shared interests in freshwater’ (MfE 2018). However, it is important to recognise that implementation of TMOTW and other provisions (including Objective D1) for Māori involvement is directed by, and at the discretion of, regional councils with no clear mandate or role for Māori in governance and decision-making. Neither there are clear pathways to enable mātauranga and tikanga Māori. Despite the bicultural rhetoric, there is a lack of methods to support implementation of TMOTW (Burkhardt 2016). The particular policy language of TMOTW has been a point of contention, reflecting historic breaches of Māori rights and interests through weak policy and legislation. Te Kāhui Wai Māori (2019:25) quite rightly reinforced to the Crown that anything weaker than ‘give effect’ or ‘provide for’ TMOTW ‘is, in fact, illusory and does not carry the necessary agency to achieve the desired outcome’. The decision to include ‘give effect’ to TMOTW in the latest Crown discussion document Action for Healthy Waterways (MfE 2019b) indicates increased understanding and positive transitional change on behalf of the Crown towards Treaty-compliant water management.

The Crown has also acknowledged its obligation and ability to deliver ‘use and control’ to Māori through more appropriate decision-making roles and economic benefits (Waitangi Tribunal 2019:532). However, in consideration of a specific allocation for mana whenua, the Tribunal cautions the Crown that the option to provide an allocation for Māori land, in and of itself, would fall short of satisfying Māori rights and interests as guaranteed by the Treaty (Waitangi Tribunal 2019:552):

if the Crown’s decision is still to confine allocation to Māori land development, then that will not produce a result that makes the RMA and its allocation regime compliant with Treaty principles. Too many Māori have lost too much land throughout the country as a result of Treaty breaches for that approach to have any prospect of being compliant with Treaty principles.

Rather, Treaty-compliant regulation of water use requires a specific allocation for the exclusive use of iwi and hapū. The Tribunal contends that ‘this allocation would be inalienable other than by lease, and it should be perpetually renewable (as all consents are in theory, provided there is still allocable water available)’. Such changes could indeed be achieved through amendment of the RMA and its allocation system, rather than a national settlement.<sup>3</sup>

## 5. Ngā Taonga Tuku Iho – Reframing natural resource policy

*He wai tapu, he wai tipua, he wai atua, he taonga tuku iho.*

*These are the sacred waters of our ancestors and atua, our spiritual well-being, we must look after these treasures – the health of our waters – through time, forever . . .*

It is clear that the prioritisation of Western knowledge, legal systems, values, and management practices ahead of indigenous Māori ones has shaped the current freshwater allocation situation in Aotearoa. It follows then that a more effective framework for water allocation will require a rebalancing of Western and Māori values and systems, with more recognition of tikanga and mātauranga.

The Reverend Māori Marsden (1924–1993), a tohunga (expert – scholar, writer, healer, minister, and philosopher) argued that Aotearoa needs a transformative attitudinal change towards ourselves and our environment (Marsden in Royal 2003:46):

A new sense of awareness, new attitudes are required to turn us completely round; attitudes to counter the production, expansionist, materialistic mentality.

This attitudinal change should be informed by wisdom, and again Marsden provides insight (Marsden in Royal 2003:1):

Wisdom is a thing of the heart.

It has its own thought processes.

It is there that knowledge is integrated

For this is the centre of one’s being.

Marsden’s wisdom is not new. Other scholars share similar sentiments. For example, Scharmer and Kaufer (2013) talk about an ‘emerging future’ that moves away from a mindset of ‘me’: maximum material consumption, bigger is better, and special-interest-group-driven decision-making towards a societal shift from the head to the heart, and from an ‘ego-system’ awareness that cares about the well-being of oneself to an ‘eco-system’ awareness that cares about the well-being of all, including oneself (Scharmer & Kaufer 2013:2). A fundamental shift is required that recognises and is attentive to the inherent reciprocity in the relationship between the health of the environment and the health of people; and that this also requires healthy culture and economy too (Akins et al. 2019).

We propose that, in Aotearoa, by embracing Te Ao Māori (the Māori worldview) we can make this shift – starting in environmental management and specifically water management – via *Ngā Taonga Tuku Iho (NTTI)*. This is a Māori way of knowing, giving primacy to the treasures (or gifts) that have been handed down to us through whakapapa from the primal parents and our ancestors. It goes beyond the well-being of our human communities and broader ecosystems, to include spiritual and metaphysical elements which are integral to Aotearoa’s indigenous culture.

We contend that adopting NTTI as a fundamental principle of the RMA could be a catalyst, or a radical ‘tipping point’, stimulating the sorely needed ‘new sense of awareness, new attitudes’, and behaviour change towards prioritising environmental and socio-cultural health and well-being.

By recognising the full value of water as a taonga, and tupuna, and the accompanying body of tikanga and mātauranga, there is an opportunity to transform water policy and implementation. This could occur through a first principles approach that reconceptualises ‘resource management’, beginning with the view that our environmental ‘resources’ are taonga as Marsden points out, that there is a reciprocal relationship between the environment and ourselves, and that the health and well-being of people depend on the health and well-being of our taonga, which we have a responsAbility<sup>4</sup> to protect and sustain.

While an approach that centralises our relationship with Papatūānuku (mother earth) and recognises ‘resources’ as taonga is based on a Māori world view, it has synergies with many other cultural conceptualisations of ‘mother nature’. The Greek ‘Ge or Gaia’ is another personification of Earth. And over time, ‘mother earth’ has become a common concept used in Western society. In this sense, the conceptualisation of water as taonga to be appropriately cared for by those who have inherited it in Aotearoa has bicultural potential. While this idea has been posited elsewhere (e.g. Severinsen and Peart 2018:87), it has not yet been explored for application in Aotearoa’s environmental planning and policy. Examples exist internationally though where ‘mother nature’ is being protected at the national level.

National constitutions in Ecuador and Bolivia, enacted in 2008 and 2009, respectively, adopted an approach to protect ‘Pachamama’ (Earth Mother), based on indigenous values and concepts. The Latin-American model sought to balance community, ecology, and culture (Carducci 2013, cited in Romanò 2018:7), expressed by the term buen vivir or vivir bien (sumak kawsay or suma qamana in native idioms), which is concerned with the harmonious balance between material and spiritual aspects.

New Zealand legislation has shown its capacity to accommodate Te Ao Māori ways of thinking in the recent Treaty settlements, Te Urewera Act (2014) and Te Awa Tupua (Whanganui River) Act (2017), which recognise that some of our land and waterscapes have agency as ancestors (Ruru 2018). Both Acts recognise environmental resources or taonga as their own legal entities with all the rights of a legal person. Ruru (2018:221) contends that such recognition of a forest and a river as its own legal entity is ‘acknowledgement of significant positive transformation for Aotearoa’s environmental laws’ and that ‘the RMA needs to catch

up with these commitments to more holistically acknowledge and support the intent of Tangata Whenua to know and care for lands and waters’. These settlements set a precedent for tikanga and mātauranga in governance and management of shared resources, albeit at a local scale.

We argue that an NTTI-centric approach offers a useful philosophical basis to work from and that it is pragmatic because it can accommodate human interests in sustainable use of water and socio-economic and development interests. It does not seek to separate humans from nature or place nature on an untouchable pedestal, nor does it perpetuate the solely reductionist approach to water management which has prevailed for the past 50 years (Knight 2016). NTTI offers a korowai (cloak) for framing legislative environmental reform at the national level. The korowai provides a holistic and integrated approach, encompassing all environmental taonga, while more taonga-specific policy and legislation such as the NPSFM and regional plans can give effect to individual taonga at regional and catchment scales.

The planning hierarchy in Figure 1 shows the Treaty as the underpinning constitutional agreement between the Crown and iwi/hapū. Provisions that should give effect to this Treaty partnership and honour Māori rights and interests under the Treaty are included in other subsidiary policy and legislation. With respect to environmental taonga, these subsidiaries could be cloaked by NTTI, particularly given the specific guarantee to iwi and hapū of rangatiratanga over taonga katoa (chieftainship of all that they treasure). At the regional level, plans (objectives, policies,

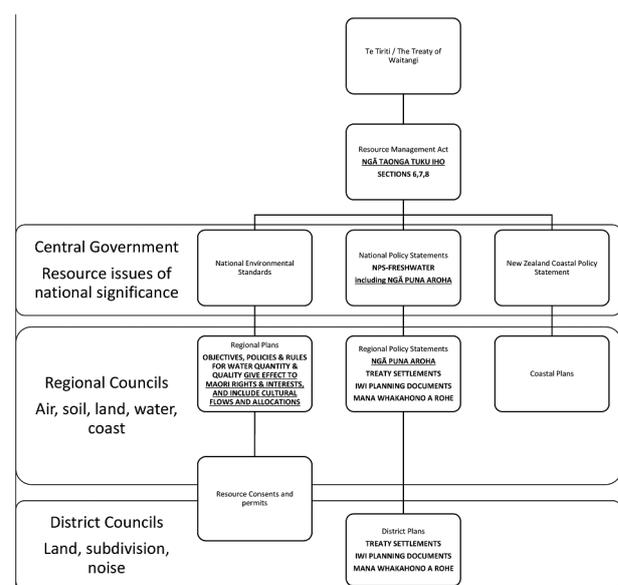


Figure 1. Aotearoa New Zealand’s planning hierarchy showing current provisions for iwi and hapū (bolded black text) and suggested additional provisions (bolded black text and underlined).

and rules), strategies, resource consents, and projects need to take a Treaty-based approach.

In summary, the incorporation of NTTI into environmental legislation offers a powerful opportunity to reframe water allocation and stimulate care for water by embedding tikanga which prioritises water as a taonga for all New Zealanders within natural 'resource' policy.

## 6. Ngā Puna Aroha – A tikanga-based water allocation framework

In this section, the authors propose a tikanga-based water allocation framework, Ngā Puna Aroha, to strengthen good practice by implementers.

'Puna' is the genesis, the deepest source of freshwater, springing from Papatūānuku our earth mother. Puna is taonga passed down as 'Ngā taonga tuku iho' to be cared for and utilised in a holistic and sustainable way. Tipuna and mokopuna are our genealogy pool, our ancestors, and our future generations, through which flow whakapapa (genealogical linkages) specific to a particular whanau (family), hapū, iwi, and rohe. Reinforcing the importance of connection and place, 'mokopuna' are sometimes interpreted in a way that 'moko' refers to 'tā moko' (traditional tattoo) and 'moko kauae' (tattoo on the chin of a female); each whanau has their own unique design, and 'puna' the spring itself was used as a mirror by our tipuna (ancestors) to look at their moko and kauai. 'Mokopuna', therefore, can be translated as 'the reflection of my whakapapa' (Mihinui 2019). As such, humans are younger generations reflecting their significant tupuna awa, with an inherited obligation to care for their ancestors as kaitiaki (guardians). Whakapapa itself is the vehicle for transmission of tikanga and mātauranga intergenerationally (M. Robb, pers. comm. 2019). It is the umbilical cord that connects people, place and culture, transferring mātauranga and tikanga specific to rohe, catchments and taonga throughout generations of particular iwi, hapū, and whanau.

Aroha refers to the love and respect that is necessary for an enduring relationship between our ancestral waterbodies and ourselves. Aroha sums up prime social values. Water is integral in the gift of life and the maintenance of all living things and their total well-being with respect also to its spiritual and metaphysical elements (R. Mihinui, pers. comm.). Managing and governing water with aroha has the potential to reap the rewards of social approval, honour, and esteem, and while this provides some motivation, the sense of obligation is just as important. Māori social values are based on social obligations which incur some amount of self-sacrifice in the interests of the wider social network (Marsden, in Royal 2003). For water allocation to operate in aroha with love and respect for

Papatūānuku, we must all first listen to the awa – what the awa needs (e.g. Salmond, Brierley, and Hikuroa 2019).

### Box 1: Fundamentals of Nga Puna Aroha

Aroha refers to the love and respect that is necessary for an enduring relationship between our ancestral waterbodies and ourselves. Aroha sums up prime social values. Water is integral in the gift of life and the maintenance of all living things and their total well-being with respect also to its spiritual and metaphysical elements (R. Mihinui, pers. comm.). Managing and governing water with aroha has the potential to reap the rewards of social approval, honour, and esteem, and while this provides some motivation, the sense of obligation is just as important. Māori social values are based on social obligations which incur some amount of self-sacrifice in the interests of the wider social network (Marsden, in Royal 2003). For water allocation to operate in aroha with love and respect for Papatūānuku, we must all first listen to the awa – what the awa needs (e.g. Salmond, Brierley, and Hikuroa 2019).

An appropriate Aotearoa-specific water allocation system must be bicultural and respond to the elements as outlined in Box 1. Ngā Puna Aroha is a framework that could assist iwi/hapū, councils, and wider community with implementation of the NPSFM and TMOTW. This framework is offered to help both the Crown and those entities develop tikanga-based, principled national policy and direction for water allocation, as well as by responsible agencies within their respective regions.

This water allocation framework is intended to strengthen policy on freshwater access and use.<sup>5</sup> Many iwi and hapū are developing their own suggested guidelines for how policy should be modified, and those recommended by Te Rūnanga o Ngāi Tahu (2015 p. 5–7) are consistent with the framework that we propose here.

The allocation hierarchy in Figure 2 means that the flow or volume of water in a waterbody that is left once the tipuna are sustained can be shared among humans for our own use and well-being, including for

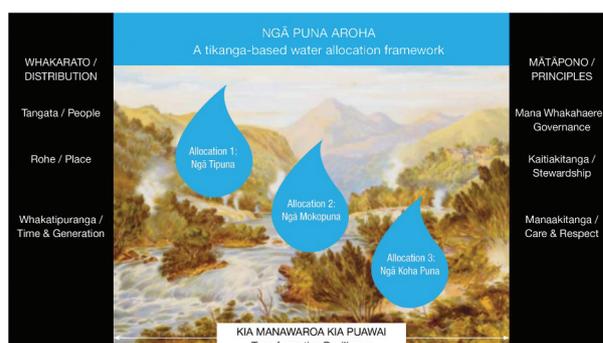


Figure 2. Ngā Puna Aroha – a tikanga-based water allocation framework.

commercial purposes if there is sufficient volume. This wai is a koha (gift) based on aroha, to be used respectfully, responsibly, and sustainably.

The column on the left side of this framework stresses the importance of equitable distribution across people, place, and time including generations. Decision-making for water allocation must be respectful and wise, ensuring sustainability of this taonga for future generations. The column on the right side provides a set of guiding principles to support such decision-making and implementation, as elaborated in Box 2.

#### **Mātāpono/Principles**

##### **Mana Whakahaere/Governance:**

Treaty-based co-governance and decision-making

Multiple scales & adaptability of governance models taking into account community and tangata whenua values

Intergenerational rather than short-term planning

Accountability of all water users to the principles of Te Mana o te Wai

##### **Kaitiakitanga/Guardianship:**

Kotahitanga/Interconnections

- Systems Approach: Ki uta ki tai/integrated catchment management from mountains to sea
- Bicultural knowledge systems
- Bicultural norms and values

Values-based hierarchy for water management to implement Te Mana o te Wai:

- Allocation 1: our first obligation is to the tipuna – our rivers and other waters and their ecosystems for their own well-being and sustainability, including mauri.
- Allocation 2: Is to the mokopuna, the people, for human and stock health and domestic purposes, including marae and papakāinga.
- Allocation 3: the third is a koha, to be used wisely for additional consumptive purposes. A 'Mana Whenua Mana Wai' allocation could be a component of this allocation.

##### **Manaakitanga/Care & Respect:**

Ngā Taonga Tuku Iho

- protection, care, and respect of taonga waimāori are pre-eminent

Koha puna – waimāori is a gift from the tipuna. Koha embeds the principle of reciprocity between puna wai and tupuna awa and ourselves. Waimāori is not just a 'resource' for consumption. Use must not adversely impact on the mauri or mana o te wai.

Te Mana o Te Wai – embedding of these principles which already exist in the NPSFM (2017)

- Integrated and holistic
- Environmental and socio-cultural ethics and equity are more important than 'economic' efficiency and are provided for by the 'values-based hierarchy'
- Through careful & respectful use of waimāori, tupuna awa will reciprocate through koha (provision) for 'economic' well-being

Universal Precautionary Principle (Akins et al. 2019)

- Designed to assist with strategic planning, frameworks, and decision-making.
- Tool to help with implementation that ensures socio-cultural and environmental precaution and transformative resilience. Cultural and environmental health and resilience are interdependent.
- The default position in all decisions should be the precautionary approach of Te Mana o te Wai, where the health of the water will come first, and allocation considerations beyond people's basic needs will come last.

#### *Box 2: Principles which guide Ngā Puna Aroha*

We suggest that a restructured system of water allocation, grounded in indigenous principles, would provide the fundamental shift needed in our conception and use of freshwater.

Three factors are critical to this allocation framework. One is that waimāori is appreciated as a taonga, as per the overarching principle Ngā Taonga Tuku Iho, proposed in Section 5. Two is TMOTW. If the mana of the wai (which is our tipuna and taonga) is upheld, then so is the mana of the people, the place, and the culture; once again emphasising the reciprocal nature of a tikanga-based management approach. Three, that Māori rights and interests are provided for, alongside others, in each of the categories.

In Box 2 and Figure 2, the first priority for allocation (Allocation One) 'Ngā Tipuna' ensures that the mauri and health of ngā tipuna must be provided for through an environmental baseflow and mauri allocation<sup>6</sup> (and thus ecological well-being). Allocation Two, 'Ngā Mokopuna', provides for 'priority' human and domestic consumptive purposes but includes water allocated for marae and papakāinga (communal Māori dwellings). Allocation Three, 'Ngā Koha Puna', provides for commercial takes of water and includes Māori rights and interests related to the development and commercial enterprises (Figure 3).<sup>7</sup>

## **7. Implementation**

Incorporation of the proposed Ngā Puna Aroha framework above into an Aotearoa allocation system would align much better with Māori rights and interests under the Treaty. A more tikanga-based approach

is a critical aspect of the transition towards a Treaty-compliant water management system. This framework aligns with recommendations to the Crown that an evolved system could use regulatory mechanisms for water allocation, if it was based on suitable principles to inform and drive decision-making (Severinsen and Peart 2018). The current regime lacks sufficient direction for allocation between different classes of activities or towards the highest and best use (Severinsen and Peart 2018). Ensuring cultural bottom lines that deliver TMOTW and mandatory consideration of cultural allocations creates a more equitable system and helps redress the alienation of Māori from access and use of waimāori through current processes and institutions. Furthermore, these provisions would reframe our water management system to one predicated on the sustainability and well-being of waimāori first, but also the sustainability and well-being of human society, culture, and economy.

TMOTW as per the NPSFM (2017) and MfE (2019b) is to be defined and provided for by tangata whenua, communities, and councils on a catchment-by-catchment basis. TMOTW, as determined by those actors, could determine the relevant allocation limits for ngā tipuna, ngā mokopuna, and ngā koha puna. However, there must be some consistent and mandatory guidance set by a national-level co-governance body, which ensures adequate minimum environmental and cultural flows or water levels to protect and enhance the mauri and mana o te wai. The Māori advisory group Kāhui Wai Māori appointed by the government in 2019 recommended to the Crown that the establishment of an independent national regulatory Te Mana o Te Wai Commission to embed TMOTW and lead structural reform with at least half the appointed Commissioners to be Māori (Ministry for the Environment 2019b:18). This commission could set national direction, and monitor regional or local implementation of the NPSFM by councils and mana whenua. It should also provide support and advice to implementers and, importantly, enforce compliance. Regional implementation requires bicultural forums at regional and catchment level to direct strategy, implementation, and monitoring. A current example at regional level is Auckland Council's Mana Whenua Kaitiaki Forum, which developed from a 2012 WaterCare forum established to engage the region's 19 mana whenua tribal entities on water and wastewater infrastructure and management.

Implementation of Ngā Puna Aroha will require capacity and capability building of both Māori entities and government agencies, including collaborative and mātauranga-led processes at catchment and sub-catchment levels. Agreement on principles and an increased understanding of Te Ao Māori and associated values and aspirations (and how to enable those) will be requirements of resource managers.

Being familiar with iwi planning documents and Treaty settlement provisions is a helpful first step, but only a starting point for partnering with iwi and hapū. Relationship building between agencies and iwi/hapū is essential, and for councils that do not already have well-established and meaningful relationships, the recently added RMA provisions (ss 58 M-58 U), Mana Whakahono ā Rohe: Iwi Participation Arrangements, are useful mechanisms to start this process. Resourcing is an important consideration. Central government, in its kawatanga (governing) role and in establishing the RMA and NPSFM (i.e. regulatory requirements), and regional government, being responsible for implementation through their plans, both have an obligation to facilitate this (Ministry for the Environment 2019b).

While values and allocations are being established, transitional limits are required until appropriate governance arrangements can be made within regions and catchments. Catchments that are fully or over allocated will need to be proactively managed with precautionary approaches informed by scientific knowledge as well as mātauranga, and by structured value assessments. While more clearly defined rights and interests will provide greater certainty and equity overall, a transitional phase will be required to ensure existing users and consent holders are not unfairly prejudiced (MacPherson 2017).

With respect to a specific cultural allocation, in catchments where water has not been fully allocated, there is potential to put in place 'Mana Whenua Mana Wai' allocations (Figure 3), similar to the reservations of water for Māori reserved lands undertaken by Tasman District Council and described in section 4.

Water-trading markets may develop formally over time in Aotearoa (Fenemor 2013), as has been the case in many other countries. Both Australia and Chile have included special provisions for their indigenous peoples (e.g. refer Jackson and Langton 2011; Jackson and Barber 2013; MacPherson 2017). If markets are considered for Aotearoa, we recommend that Ngā Puna Aroha is used to assist with this consideration and potential market development. Figure 4 is a simple illustration of where one might start, with

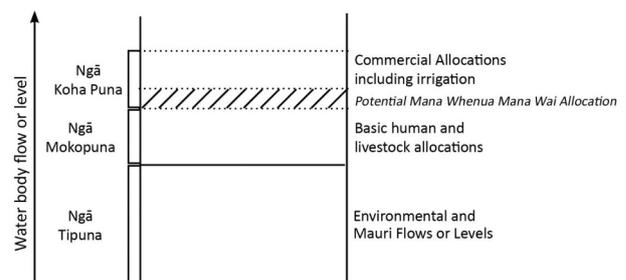
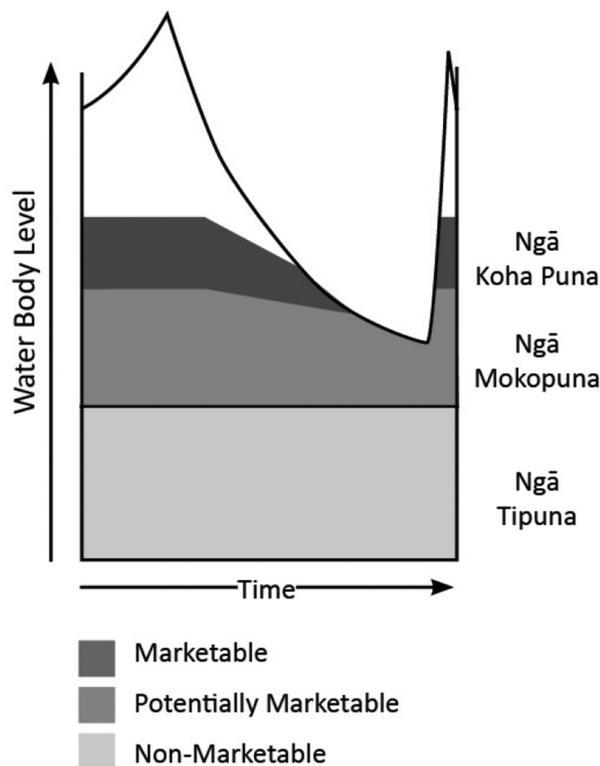


Figure 3. Allocation hierarchy for Ngā Puna Aroha.



**Figure 4.** Potential water-trading allocation framework based on the principles and proposed water allocation hierarchy of Ngā Puna Aroha.

the white area being unallocated water to be precautionary and to allow variability of residual flows.

The guidance above provides ideas for good practice for a regulatory system that reclaims and redefines the way that we manage and protect our water (and potentially other taonga) for our future. Its legislative delivery could be achieved in multiple ways, for example, based on TMOTW rather than starting from scratch with RMA reform. It responds to, and expands on, the issues and opportunities identified in sections two and three, as the key factors for Māori regarding approaches to water allocation.

In summary, enabling of tikanga and mātauranga Māori is central to a renewed bicultural vision that recognises water as a taonga and tupuna, to help resolve the socio-econo-ecological issues such as over-allocation and impacts on aquatic ecosystems that Aotearoa faces today.

## 8. Conclusions

There is currently a disconnect between Māori rights and interests for freshwater allocation, as guaranteed as indigenous peoples and Treaty partners, and their ability to engage in the freshwater management process. Further, it is clear that freshwater allocation across Aotearoa is not delivering the sustainable

management outcomes desired by most New Zealanders.

This paper has proposed to resolve both issues through a framework in which water management is re-conceptualised within a Te Ao Māori worldview, underpinned by a *Ngā Taonga Tuku Iho* (the ancestral treasures handed down) principle whereby the starting point for water allocation is that our relationship is reciprocal and based on respect and aroha. The principles within the tikanga-based framework implement a true partnership approach to water governance and management, which we have called Ngā Puna Aroha. This framework defines a stronger hierarchy of water values in which cultural values now have an appropriate place, and explicitly provides for consideration of cultural flows and allocations in water allocation planning. This type of approach, informed by inherited wisdom, would help re-conceptualise water governance and management for the twenty-first century, through much-needed change in our societal awareness, attitudes, and behaviours.

The proposed multi-scalar tikanga-based environmental management system is intended to complement and support existing freshwater policy and particularly implementation of Te Mana o Te Wai with respect to water allocation. These ideas may also inform the current environmental reform more broadly. The approach suggested is a 'first principles' approach that is integrated, precautionary, and bicultural. It encourages a re-centring of mātauranga and tikanga to inform and influence water allocation. It is posited that all New Zealanders would benefit from a regulatory approach that respects and gives effect to water (and other resources) as taonga.

## Notes

1. Aotearoa is a Māori name both for New Zealand's North Island and often used for the entire country, as is the case in this paper.
2. Since 1975 many New Zealand laws have referred to the principles of the treaty, all attempting to define the meaning of the Treaty of Waitangi in contemporary New Zealand society. Treaty principles have been referred to in court cases, new laws, Waitangi Tribunal findings, and a 1989 government statement. For a useful guide, refer to He Tirohanga o Kawa Ki Te Tiriti o Waitangi: A guide to the principles of the Treaty of Waitangi as expressed by the Courts and the Waitangi Tribunal.
3. The other allocation mechanism proposed by the Tribunal, to satisfy 'proprietary redress' if regulatory reform is the only option, is royalties/charges.
4. The authors have included the term 'responsAbility' as coined in 'ResponsAbility: Law and Governance for Living Well with Earth' (Martin et al (eds) 2018) to prompt debate about 'what is responsAble water allocation and broader governance and management?'. ResponsAbility comes from our relational life and

our bonds with others; expressed as love (aroha), as a response to need, or as remedial action. Its focus is exploring the ethic of shared responsibility and relationships among communities as the building blocks for social action. It encourages precautionary, accountable, and relational approaches denoting a proactive and prospective orientation.

5. The framework is informed by Ngā Matapono ki te Wai which is supported by many iwi (Freshwater Iwi Leaders Group 2019).
6. We note that the 2019 freshwater reforms propose mahinga kai as a metric rather than mauri (Ministry for the Environment 2019b).
7. In comparison, as referenced in section 55 earlier, Article 318 of the Ecuadorean constitution explicitly prioritises these different water uses: 1. Human consumption (domestic water); 2. Irrigation for food sovereignty; 3. Environmental flow; and 4. Productive activities. And in Australia, some water reserves have been proactively set aside in Queensland and the Northern Territory to help indigenous communities achieve socio-cultural aspirations, including commercial aspirations (Jackson and Langton 2011; Jackson and Barber 2013).

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