

A bridge between: Te Ao Māori and Te Ara Paerangi

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Purpose

Aotearoa New Zealand's Research, Science and Innovation (RSI) system is undergoing a 'once in a generation' reform known as Te Ara Paerangi Future Pathways (TAP). One of TAP's four high-level goals is to embed Te Tiriti o Waitangi across the RSI system. Using the analogy of bridge-making, we draw on insights from Māori submissions to TAP to identify collective Māori expectations for what a Tiriti-embedded system entails.

Method

Submissions were accessed through the document library on the Ministry of Business, Innovation and Employment (MBIE) website. 34 submissions from individuals and collectives were identified as Māori. Qualitative Document Analysis was used to identify major themes.

Results

Results are described with reference to basic bridge-building principles of design, foundations, materials and maintenance. Key thematic findings include: Māori, as Tiriti partners, must be meaningfully involved in the reform design; the RSI system's foundations are deeply colonial - decolonisation is needed to value, respect and protect Māori knowledges and knowledge-holders; workforce development, infrastructure and policies are required to empower partnered and autonomous RSI approaches; and, ongoing system maintenance in the form of monitoring is required to ensure transparency, accountability and equitable benefits.

Reflection

Having committed to embedding Te Tiriti across the RSI system, MBIE now has a duty of care to deliver on its commitment vis-à-vis the National Research Priorities. This paper is a timely opportunity to set a baseline of collective expectations against which to assess the future efficacy of TAP.

Ka mahi mātou, me te takune hei puanani
We will work with the intent to travel freely in any direction

Introduction

Aotearoa New Zealand's Research, Science and Innovation system is undergoing a 'once in a generation' reform. Among other things Te Ara Paerangi | Future Pathways

(TAP) seeks to address low productivity, research fragmentation, unproductive competition, and support Aotearoa's transition to a high wage, low emissions economy. For Māori, TAP represents more than a 30-year sector reset. It is a long-awaited opportunity to genuinely empower Māori knowledge, people and resources, and to remedy the Crown's long standing and systemic failures in this space.

The TAP white paper provides a roadmap for a multi-phased programme of reform and implementation led by the Ministry of Business, Innovation and Employment (MBIE) (Ministry of Business, Innovation, and Employment, 2022b). It describes four high-level objectives for a future-proofed RSI system that: enhances research-policy linkages through long-term National Research Priorities (the Priorities); has a talented, diverse and well-connected workforce; is dynamic, high-impact and high-performing; and, embeds Te Tiriti o Waitangi across all its parts. A recently-released TAP statement by MBIE commits to upholding Te Tiriti across its RSI work programmes, activities and investments (Ministry of Business, Innovation, and Employment, 2023b). The statement does not contain any detail on how TAP will give effect to embedding Te Tiriti beyond committing MBIE to developing and managing a work programme that outlines and reports on its progress to deliver to the various elements of the statement. How MBIE delivers on Te Tiriti will soon be put to the test as it presides over the establishment of the Priorities and funding mechanisms to invest in them (Ministry of Business, Innovation, and Employment, 2023a).

In this paper we draw on insights from Māori submissions to TAP to identify collective Māori expectations for what a Tiriti-embedded system entails. We are particularly interested in the practices, policies and processes that support what we call 'mana Māori' RSI (Māori researchers, knowledge-holders, institutions and knowledges) and its connections to the rest of the sector. To explore these ideas in greater depth, we draw an analogy with bridge-building. Bridges are constructed primarily for the purpose of enabling safe passage between two points but are also designed to support communities on both sides. The movement of Māori people, knowledges and resources within

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a reformed RSI ecosystem requires enduring structures built on solid design principles. By the white paper's own admission, Vision Mātauranga, the sector's policy guiding investment in Māori-related RSI, is clearly not up for this task (Ministry of Business, Innovation, and Employment, 2022b).

Methodology

The conduct of good research requires both methodology and method. Kaupapa Māori (KM) research methodology is employed here as a decolonising research approach that contributes to Māori knowledge advancement and positions research within wider advocacy efforts and social accountability to Māori communities (Haitana et al., 2020; Pihama et al., 2002; Pitama et al., 2011; Wilson et al., 2022). Qualitative Document Analysis (QDA), a widely used method in case study research (Dalglish et al., 2020; Mackieson et al., 2019; Wood et al., 2020), is used to analyse the Māori submissions to TAP (Ministry of Business, Innovation, and Employment, 2021). Rather than analyse documents as objective facts, QDA treats them as formal communiques about the social world that reflect the beliefs, perspectives, norms and values held within communities (Morgan, 2022). For Māori engaged in the TAP process, their submissions are positioned within multiple accounts of the ongoing impacts of colonialism and racism, marginalisation within previous policies, and a lack of acknowledgement of Indigenous rights and the formal place of mātauranga within the RSI system (Kirkwood et al., 2005; Kukutai et al., 2021; McAllister et al., 2019; McAllister, Kokaua, Naepi, Kidman and Theodore, 2020; McAllister, Naepi, Wilson, Hikuroa and Walker, 2020; Rauika Māngai, 2020).

Māori submissions to TAP were accessed through the document library on the MBIE website. Each submission was checked to determine whether the submitter (individual or collective) identified as Māori, either through clear statements of collective positioning, or where iwi or some other form of Māori affiliation was provided. While this information on the website was redacted, we assumed that individuals who provided (redacted) iwi affiliation information self-identified as Māori, while individuals who skipped this question did not. Using this method we identified and analysed 34 Māori submissions.¹

All submissions were uploaded to NVivo 10 software and thematic analysis was undertaken through two cycles of coding (Figure 1)(Saldaña, 2021). The first cycle utilised inductive descriptive analysis where information describing similar phenomena was allocated together to form units of information or codes. The second cycle of coding first used inductive pattern coding where initial codes that shared similar or different perspectives on the same content areas were clustered together to form larger units or categories. Within this cycle of coding a further application of deductive theoretical coding was undertaken

¹MBIE's own summary identified 38 Māori submissions (Ministry of Business, Innovation, and Employment, 2022a). Some of the submissions included in the MBIE summary were not available in the document library at the time of our analysis.

which organised categories that had a common theoretical underpinning. The principles of bridge building were chosen as a framework for theoretical coding because of multiple analogies about 'building bridges' in the cultural competency and safety literature (Crooks et al., 2021; Rix et al., 2016; Rocke, 2015). These analogies stem from the understanding that the purpose of a bridge is connect two places (physical or literal), and/or paradigms which are positioned apart. Bridges are also viewed as civil infrastructures that require "serious insight into its security, resilience and sustainability" (Górecki and Núñez-Cacho, 2022), hence our focus on the principles of design, foundations, materials and maintenance.

Results

Designing the bridge

Bridges are built to overcome environmental or physical obstacles that prevent appropriate access or passage from one side of a bank, island or isthmus to another. A bridge may be seen as a necessary intervention when there is a strong desire to move resources between points. In designing a bridge, engineers must ensure that it is fit for purpose and that the intended communities benefit from its construction and function. Key factors to be considered include purpose, environment and budget (Jagandatta et al., 2022).

A key finding from our analysis is that the current bridges connecting Māori people, knowledge and resources to the RSI system are ridden with design faults: they are hard to find; goods travel largely in one direction; poor visibility results in casualties and wrong turns, and the toll is much higher on one side. This is because Aotearoa's RSI system has been developed by engineers who have created bridges that are more accessible to Pākehā communities, that have prioritised and validated the weight of Western science² over mātauranga, that have assumed the right to draw profits from Māori knowledges, lands and resources without appropriate consent, and have failed to give due recognition to Māori expertise (Haar and Martin, 2022; McAllister et al., 2022; Moewaka Barnes, 2006).

The Māori submissions clearly indicate that their communities are keen to be part of the new engineering team to enact the intent of TAP. There is no dearth of Māori with the expertise to co-design and develop bridges that can take the weight and loads of both knowledge bases to enhance the future RSI system. Māori submissions described a familiarity with both Western science and mātauranga paradigms, and could see natural synergies where each knowledge system could benefit from the other. They expressed concern that the status quo would prevail if the design of new structures did not account for communities'

²We use the term 'Western science' to refer to knowledge typically associated with the empirical scientific method that arose in Post-Renaissance Europe, and which drew together different cultural beliefs and values into a global set of rules that purported to be universal and value-free. Later gaining dominance as part of an imperial agenda that marginalised wider pre-existing knowledge bases, a defining feature of Western science was to understand nature by analysing each phenomenon according to a set of a priori rules (Iaccarino, 2003; Mazzocchi, 2006).

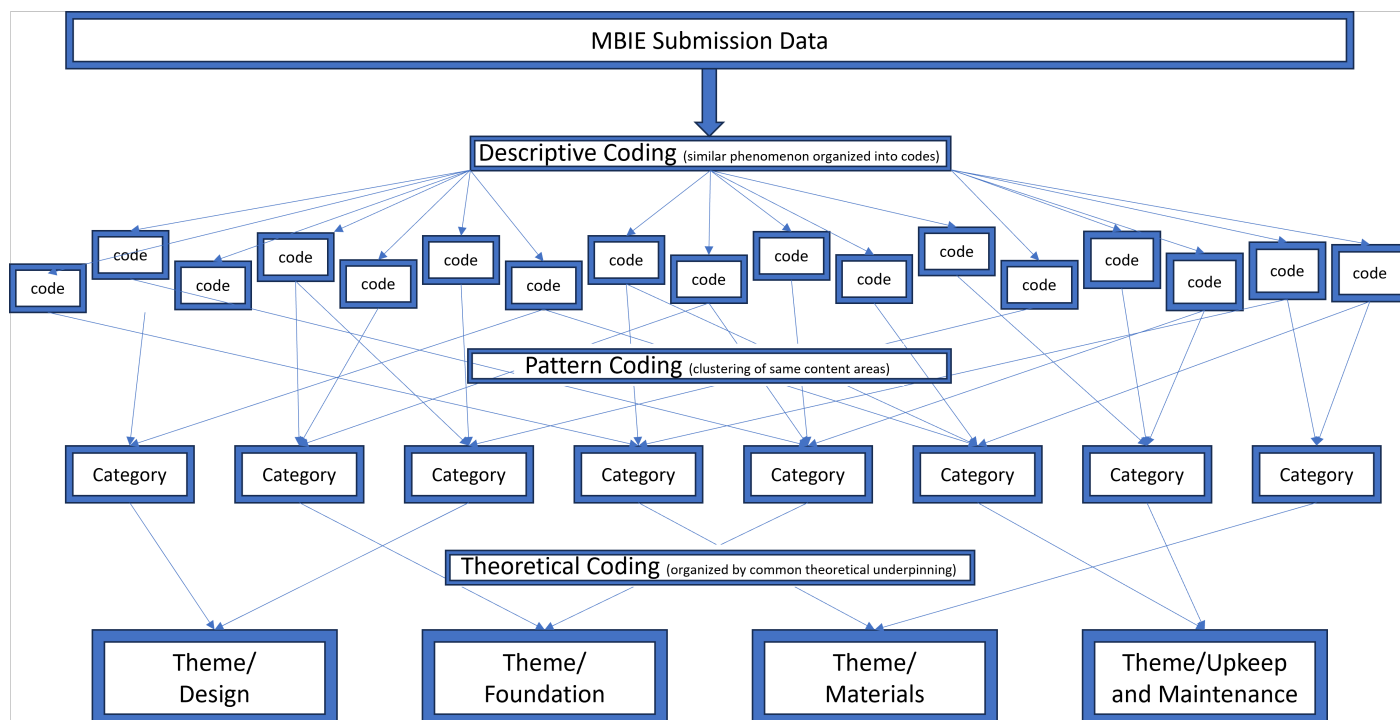


Figure 1: Thematic coding of TAP Māori submissions

priorities and needs, and their shifting capacities and capabilities in different fields of RSI.

Most submissions highlighted the role and importance of right-sized investment in the design of the reformed RSI system. There were clear expectations that Māori, as Tiriti partners, would be meaningfully involved in decision-making about how and when resources were determined and allocated. Underfunding was a real risk that would lead to the ongoing marginalisation of Māori RSI priorities, activities and workforce development.

Building strong foundations

The foundations of the bridge ensure its integrity. The underlying geology, span of the bridge, loads to be supported, and depth and flow of the waterway determine the type of foundations needed for functionality and stability. To ensure the bridge is fit for purpose for its lifespan, the foundations need to be built for current and future needs. This requires modelling to understand future trends and their intersection including population growth, climate-related events (floods, and extreme temperatures) and changes in transport laws (increased tonnage of trucks). Safety is paramount. When rationalising decisions about the foundations, it is critical to understand when and how the foundations could be compromised.

Every society has its own knowledge foundations. The value and importance of knowledge in Te Ao Māori is evident in a myriad ways, from the pūrākau of Tāne-nui-a-Rangi³ ascending to Te-Toi-o-Ngā-Rangi and returning with the three baskets of knowledge, to the iwi/hapū

³In some waka traditions the demi-god Tāwhaki ascended the heavens to acquire ngā kete mātauranga.

based where wānanga that flourished prior to colonisation (Mahuika and Mahuika, 2020; Walker, 1996). Very little of this is evident in the foundations of Aotearoa's RSI sector. Like all universities in settler colonial states (Bhambra et al., 2018), Aotearoa's universities have strong colonial foundations. Our first four universities were established between 1869 and 1897, and modelled on universities from Scotland and England, including the leadership structures, cultures, values and normative behaviours. Universities evolved in the 20th century to include international cultures (American and other European), but have been slow to include Māori values, mātauranga, tikanga and scholarship (Kidman, 2020; Smith, 1999).

Research funding has followed a similar vein. The New Zealand Institute was established for the study of science, art, philosophy and literature via an Act of Parliament in 1867, later transitioning to the Royal Society. The goal was to conduct science on areas of strategic importance at the time (e.g. primary industries) (McGuinness et al., 2010). Rarely did this include issues of importance to Māori, or Māori scholars, knowledge and expertise. Indeed, before 1990 there were only two Māori ever elected as Fellows of the Royal Society - Te Rangi Hiroa (also known as Sir Peter Buck) (elected 1925) and Bruce Biggs (1966). A major shift in research funding occurred when seven Crown Research Institutes were established under the Crown Research Act (1992). Other research organisations emerged and received funding directly (e.g. Callaghan Innovation), or indirectly from the government (Independent Research Organisations). However, funding and efforts have been duplicated in some areas while others have major gaps. Highly competitive and individualised benefit models have

privileged some types of science while erasing or exploiting others.

Māori submissions to TAP confirm that the colonial foundations of Aotearoa's RSI system are not fit for purpose. Māturanga has not been properly recognised, valued or protected. What constitutes scientific excellence continues to be defined in terms of the values, behaviours and preferences of the dominant group, serving to maintain privilege and tightly regulate the allocation of publicly funded research. Submissions pointed to a lack of historical investment in Māori research, knowledge and priorities, and called for the prioritisation of funding over the next decade to strengthen the sector's foundations to support mātauranga. At the same time there was a concern that if Māori are not enabled to design dedicated Māori spaces in the RSI system, the wider system will continue to privilege and maintain existing arrangements.

There was a sense that decision making will need to be more decentralised and distributed, at both structural and operational levels. Māori submissions generally supported TAP's proposal for the establishment of regional serving Māori research hubs (Ministry of Business, Innovation, and Employment, 2022b), however the number and locations of these hubs, and how they work collectively, require vigorous debate. There was also caution about the level of autonomy required for it to succeed and the terms of engagement with the rest of the sector. The general consensus was that any regional initiative needed to be grounded in hapū/iwi rangatiratanga, with investment in the right kind of infrastructure to enable operational capability. In this decentralised approach, communities would define research questions and conduct the research to solve flax root challenges in a local community, thereby ensuring reciprocity occurs when the research produces tangible short and medium-term benefits for that community. The principles of the locally-driven research findings could be applied to other communities and situations, providing wider benefit.

Selecting the right materials

The materials used to build the bridge are crucial. The properties of the materials must be carefully considered in relation to purpose, and take account of considerations such as cost, availability, environmental suitability and efficiency. Durability and even structural integrity, can be severely undermined if the wrong materials are used. Building an enduring bridge between Māori and the wider sector requires investment in people, infrastructure including data infrastructure, and support in the form of policies, legislation, monitoring and compliance.

A plethora of evidence has documented the systemic inequities within RSI that adversely impact Māori and Pacific peoples (Kidman et al., 2015; McAllister et al., 2019; McAllister, Kokaua, Naepi, Kidman and Theodore, 2020; McAllister, Naepi, Wilson, Hikuroa and Walker, 2020; Pihama et al., 2018). Māori are under-represented at all stages and parts of the sector, from postgraduate students through to professorial and senior management

roles. Cultural safety (Curtis et al., 2019), cultural 'double-shift' (Haar and Martin, 2022) racism and burnout are ongoing issues. Submissions noted how unappealing and precarious the sector is for Māori, especially early career researchers, and the lack of opportunity to research and teach in culturally safe spaces, or to acquire Māori relevant leadership experience and expertise.

While TAP promises stronger requirements on institutions to support good workforce outcomes and embed Te Tiriti into institutional practice, submissions were sceptical that it would produce the kind of workforce needed to power Māori-led RSI at scale and facilitate the tika flow of knowledge and people across the system. The expertise of knowledge-holders and practitioners is neither recognised nor rewarded by a system dominated by a 'mana as metrics' mindset. Several Māori submissions noted that nurturing Māori RSI talent needs to be collective in orientation, rather than focused on building individual capability. This, coupled with the pressing need for regional responsiveness and expertise, calls for strategies that support new and existing talent and expertise outside of the usual suspects of universities and CRIs.⁴

Submissions noted that communities often have a clear idea of the challenges they face, and the research they need, but want more choices on how to deploy partnered and autonomous approaches. Being plugged into institutional projects as end users not only devalued their expertise, leadership and contribution, but also missed important opportunities to bring different knowledge and methodologies to the problem definition and solution. One submission from a prominent hapū-based Māori incorporation noted that after years of supporting others' research with very little direct benefit, it had strategically committed to driving its own research agenda. Its approach to research was driven by long-term values that prioritised whenua and mokopuna wellbeing, and strengthening the research capability of its whānau and hapū. A focus on building a workforce 'at home' makes sense for a number of reasons, not the least of which is Aotearoa's changing demographic composition. As the Pākehā population faces accelerated structural ageing, the 'demographic gift' of structurally youthful Māori and Pacific populations offers ample opportunities for strategic workforce development (Jackson, 2011). In Gisborne, for example, 80% of the regional tamariki population will be Māori by 2038 (Stats NZ, 2021). KM initiatives which support rangatahi Māori to engage with science on their own terms, are crucial supports for building an agile Aotearoa RSI workforce that meets te ao Māori needs.

Having the right infrastructure is also an essential

⁴The new MBIE-funded initiatives Kanapu (<https://kanapu.maori.nz/>), He Aka Ka Toro (<https://www.mbie.govt.nz/about/news/new-initiatives-support-maori-and-pacific-peoples-research-aspirations/>) and He Tipu Ka Hua (<https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/expanding-the-impact-of-vision-matauranga-2023-investment-plan/he-tipu-ka-hua-investment-fund-call-for-proposals/>) are modest, but positive, steps in this direction.

component of a future focused RSI system. Hapū/iwi controlled data infrastructure went hand in hand with regional research hubs and aligned with the trend towards more distributed, decentralised data systems. The clear expectation from TAP submissions is that Māori decide the terms by which mātauranga crosses over from community spaces into the wider RSI sector, and that the bridge will have the right support in terms of policies, and data and digital infrastructure.

Policy and legal settings are particularly important when it comes to the Crown's Tiriti obligations to actively protect taonga, including mātauranga (Rauika Māngai, 2022; Waitangi Tribunal, 2011). There was a general view that the government has done a poor job of this to date. This assessment is confirmed by a recent report highlighting a lack of a central, whole-of-government approach to, and policy for, mātauranga (Mead et al., 2022). Several submissions noted that the government's failures to actively protect mātauranga had resulted in lost opportunities, including the loss of significant commercial value. The kind of protection envisaged in a reformed RSI system extended far beyond institutional guidelines, codes of conduct, and capability building. Many submissions were explicit about the need for bespoke legal protections and policy settings that met te ao Māori requirements. This is an area that traditional knowledge-holders, academics, practitioners and legal specialists had already put substantial time and effort into, dating back to at least the Mataatua Declaration (Commission on human rights sub-commission of prevention of discrimination and protection of minorities working group on Indigenous populations, 1993).

Linked to this was a call for legislation, policies and practices to protect Māori data sovereignty. Universities and CRIs had amassed enormous amounts of Māori data through research (for a definition of Māori data, see Te Mana Raraunga (2018)). Very little of it was accessible to, or benefitted, the people and places from which it came. Few institutions had explicit data sovereignty policies or had even met minimum requirements, such as the CARE principles for Indigenous data governance (Carroll et al., 2020). In Aotearoa and elsewhere, universities are coming under closer scrutiny for their poor practices regarding Indigenous data governance and management, and are being called on to support Indigenous-controlled data repositories and, in some instances, repatriate Indigenous data back to Indigenous communities (Garrison et al., 2019; International Indigenous Research Conference 2022 IDSov Colab, 2022; Prehn et al., 2023; Tsosie et al., 2021). As with mātauranga and intellectual property rights, Māori already have significant expertise in this area that should inform future developments (Golan et al., 2022; Hudson et al., 2020; Kukutai et al., 2021; Paine et al., 2020). The Māori data governance model offers a ready model. Published by Te Kāhui Raraunga, the operational arm of the National Iwi Chairs Forum data iwi leadership group, the model has been designed for use across the public service but can be readily extended to the public sector more widely, including RSI institutions (Kukutai et al., 2023).

Bridge upkeep and maintenance

Once a bridge is built, maintenance is needed to ensure that it functions optimally as conditions change, and that structural integrity is maintained. Similarly, Māori submissions reinforced the need for ongoing monitoring of the RSI system to ensure that it delivers benefit for Aotearoa. System level accountability includes delivering on Tiriti obligations and producing equitable outcomes. Operational level accountability includes the tools and processes that improve transparency and accountability within the new system.

The evidence is clear that the current RSI system does not equitably support KM or Māori-led research or Māori researchers (MartinJenkins, 2023). Analysis of eight major RSI funds for the period 2018-2020 found that the proportion awarded to KM research (projects that said they were at least 50% KM) was abysmal at just 2% (MartinJenkins, 2023). For the three funds where ethnicity data were collected, Māori received just 9% of the funding despite comprising 14% of the adult (15+ years) population. Structural and operational biases contribute to these outcomes. Māori submissions shared that the current RSI system does not value KM research, Māori researchers or Māori communities as evidenced by no or low FTEs on grants that purport to produce benefits for Māori. Historically, there is a void of accurate ethnicity data, or analysis on whether a funding strategy is performing. For example, Vision Mātauranga Capability Funding (VMCF) is explicitly designed to build connections between Māori organisations and the RSI system, and enhance Māori individual development. However, to date, Māori receive only 23% of VMCF funds (MartinJenkins, 2023).

Submissions called for reporting and monitoring requirements in the RSI system to be significantly lifted. Demographic and ethnicity data need to be captured at application, funding, monitoring and reporting stages. For all government funding, applications should explain how the research will benefit Māori with deliverables included in the contract, and monitored to determine if they have been achieved. Only then, will data accurately quantify concerns raised in the Māori submissions about the low number of Māori researchers in the RSI system, the number of projects Māori researchers work on to understand the fragmented workforce, no/low FTE for KM and Māori-led research, and the lack of quantifiable benefit to Māori from the \$2 billion-plus spent on RSI each year. Funding systems are built to produce specific outcomes. When funding outcomes do not match objectives or performance metrics, then the fund should be redesigned.

Reflection: What lies ahead?

We see this paper as a timely opportunity to set a baseline of collective expectations against which to assess the future efficacy of TAP. We intentionally position the voices of Māori stakeholders as experts within the RSI system, and prioritise their aspirations, knowledge, counsel and goals for a future RSI system. The collective aspirations of Māori submissions to TAP are clear. To return to the bridge

analogy, their vision is for a decolonised bridge that supports equitable participation, outcomes and benefit for Māori - and indeed all of Aotearoa's communities. It needs to be attractive, inspiring, and accessible, with equitable support for stakeholder communities and bidirectional travel of people and benefits. Such a bridge cannot, and ought not, be designed and built by government agencies alone.

Te Ao Māori expectations for TAP will soon be tested with the setting of the Priorities which will receive a significant share of the annual RSI budget as 'mission-led' research investments. MBIE has indicated that an Independent Strategic Panel will consider analysis and advice provided by a cross-agency working group to "determine the most important issues and opportunities for all of New Zealand that research, science and innovation can address" (Ministry of Business, Innovation, and Employment, 2023a). It notes that the portfolio of Priorities will need to be future-focused, enduring and honour Te Tiriti. However, a real risk of promoting a strongly government-oriented research agenda is that the Priorities will become captured by the issues of the day (and related monitoring and evaluation of interventions), rather than the longer-term thinking that is actually needed - thinking that was strongly evident in Māori TAP submissions.

Having committed to embedding Te Tiriti across the RSI system, MBIE now has a duty of care to deliver on its commitment vis-à-vis the Priorities. Much will hang on the outcome of that process.

Acknowledgements

We express our gratitude to all of the Māori individuals and collectives who generously shared their expertise, experiences and aspirations in their submissions to Te Ara Paerangi. We also thank Dr Jesse Whitehead for his assistance with locating and analysing the Māori submissions, and Jane Tarrant, from Tarrant Design Limited for her engineering advice on bridge-building. Finally, we thank the reviewers for their constructive feedback. Any errors or omissions are ours.

Glossary

hapū	subtribe
iwi	tribe
mana	prestige, authority, influence
mātauranga	Māori knowledge and ways of knowing
mokopuna	grandchild(ren), descendants
Pākehā	New Zealander of European descent
tamariki	children
tika	proper, just, fair
whānau	family group, extended family
whare wānanga	traditional houses of learning for the intergenerational transmission of knowledge
whenua	land

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