

The graphic features a dark blue background with a large, intricate Maori koru pattern in a lighter blue shade. The koru is a stylized, unfurling fern frond, composed of many smaller, repeating geometric shapes like triangles and lines. Below the koru, the text is centered in white. At the bottom of the image, there is a green Maori koru pattern, similar in style to the blue one but with a different color and a slightly different internal texture.

TE TĪRITI O WAITANGI PARTNERSHIPS ENHANCES RESEARCH, SCIENCE AND INNOVATION

National Science Challenges
share their experiences



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ACCELERATING INNOVATION AND RESEARCH SOLUTIONS THROUGH TE TIRITI PARTNERSHIPS

This book captures the narrative of a striking innovation from a significant proportion of the science community, across multiple disciplines, who have collectively developed, then reflected upon their Te Tiriti o Waitangi journey.

As stated from the outset, “Each Challenge has surpassed the Vision Mātauranga requirements by quite some margin and has been on an almost decade-long journey of actively understanding and driving research practice that honours Te Tiriti.” This journey has resulted in research that is deeply grounded in rangatiratanga and mana motuhake.

Though not the first, and most certainly not the last, extraordinary outcome emerging from this visionary approach to funding and driving research by government, the National Science Challenges have proven to be a well-spring of bold new ways of developing, implementing and delivering research that embedded mātauranga and kaupapa into their DNA. These eleven Challenges were not established with the specific intention to honour Te Tiriti, or to benefit and include Māori communities, researchers and governance. They were not designed to purposefully enable kaupapa Māori research and methodologies. However, it was those Māori within the Challenges who led the charge in advocating for change; and those changes have far-reaching implications for science and research across Aotearoa New Zealand. Over ten years from 2014, \$680 million dollars in research funding was allocated to National Science Challenges whose missions covered all-encompassing issues, from health and wellbeing across ages and location, to the natural and built environments, incorporating bold and pioneering technologies.

From its inception, those Māori across the nation, who came together, from different iwi, disciplines, and regions, asked what science and research that honours Te Tiriti o Waitangi might look like. Given the colonial and Eurocentric foundations of science and scholarship in the country, one might ask what such a system might look like, one that fosters and advances effective thinking and practice of Te Tiriti. The authors note that there was nothing particularly remarkable about the Challenges. In Aotearoa, the evolution of the sciences and associated funding programmes has seen a plethora of funding mechanisms and research priorities. However, they argue that there has been a consistent failure to effectively draw on the potential overarching potential of Māori communities, leaders and scholars. What evolved over ten years has been, in many ways, revolutionary, and that journey is well chronicled in this important contribution to the scholarship and research that is unique and distinctive to Aotearoa, New Zealand.

All eleven Challenges not only met but surpassed their Vision Mātauranga requirements. Taken together, they have collectively become a unique site for honouring and developing Tiriti-honouring practice. As stated in the report, “If this had happened in one Challenge or in a single research field, perhaps we could put it down to a particular leader, a specific sector need, or some other simple cause, but we can see aligned journeys across the board, and further, a movement has been created that will outlive the funding timeframes of the NSC initiative”.

I am honoured to have played a small part in one those groups of Māori scholars and allies who came together as part of NSC: Building better homes, towns and cities, a name that evolved out of those early conversations. From our first informal gatherings, many of us, like me, asked, “why am I here?”. Coming as I do from an academic background of social science and business studies, not building or design, I was unsure what I could contribute. But, over 2014, we melded as a group with a passion to ensure Māori voices and aspirations were at the heart of the endeavour. We were all equally committed to developing a vision is to contribute to environments that built communities, through a mission of co-created, innovative research that would help transform dwellings into homes and communities that are hospitable, productive and protective.

Working collaboratively with a wide group of stakeholders, that small group, which grew to be one of the largest cohorts of Māori researchers across the Challenges in the early years, created a model that represented not only the research objectives and strategies, but also a framework for working in mutually beneficial ways with Māori. The Tāne Whakapiripiri Framework came about after many months of kōrero, with researchers, the leadership team, and stakeholder from a number of different communities. It is a diagrammatic representation of relationships and responsibilities, values and beliefs. It incorporates manaaki tāngata, forming the ridgepole of the meeting house, protecting and nurturing those within, mana whenua and manuhiri, who together form the foundation. The whare itself faces a metaphoric rising sun to protect the house from prevailing winds. The specific elements of the Vision Mātauranga strategy that informed the research, would underpin a knowledge system predicated on inter-generational and collective wisdom, and these were built into every individual component of the whare.

Alongside the Tane Whakapiri Whare was the commitment from leadership to create a meaningful co-governance structure, from the Kāhui at the most senior level, to co-leadership at the director level, and equitable representative of Māori across all levels within the structure of the Challenge.

This was just one of the Challenges, but the one I am most familiar with, and which I have so proudly seen it develop even further since my departure in 2020. Embedded throughout this book, you will find examples from those others, who, taken together offer something not seen before, but pivotal to moving forward in science and research for Aotearoa. In 2024, we see the close of these Challenges, in a new political environment. In the words of Meduna (2024), “The words “science” and “research” were notably absent when New Zealand’s finance minister, Nicola Willis, last week presented the first budget from the nation’s center-right government, which took power late last year. Instead, the NZ\$3.2 billion spending blueprint released on 30 May calls for shrinking or cancelling a number of science-related programs.”

These are times when science and researchers in Aotearoa, New Zealand, must stand together to protect the gains made, in terms of Te Tiriti and mātauranga. This book makes an invaluable contribution to that kaupapa. Thus, I say to the authors, and all those who contributed to its making, kia kaha, kia māia, kia manawanui, rau rangatira mā.

Ka nui te mihi ki a koutou, rau rangatira mā, tēnā koutou, tēnā koutou, tēnā tatou katoa.

Prof. Ella Henry

(Ngāti Kahu ki Whangaroa, Te Rārawa, Ngāti Kuri)

Reference

Meduna, V. (2024, 3 June). Science takes a hit in NZ budget. Science Insider, retrieved from: <https://www.science.org/content/article/science-takes-hit-new-zealand-s-budget-prompting-researchers-organize>

The 11 challenges in the National Science Challenge

The 11 National Science Challenges focus science investment on issues that matter to all New Zealanders.

The National Science Challenges are cross-disciplinary, mission-led programmes designed to tackle New Zealand's biggest science-based challenges.

They require collaboration between researchers from universities and other academic institutions, Crown research institutes, businesses and non-government organisations to achieve their objectives.

National Science Challenges

A BETTER START

E Tipu e Rea

National Science Challenges

AGEING WELL

Kia eke kairangi ki te taikaumātuatanga

National Science Challenges

BUILDING BETTER HOMES, TOWNS AND CITIES

He Kāinga
Whakamana Tangata
Whakamana Taiao

National Science Challenges

NEW ZEALAND'S BIOLOGICAL HERITAGE

Ngā Kolora
Tuku Iho

National Science Challenges

OUR LAND AND WATER

Toitū te Whenua,
Toiora te Wai

National Science Challenges

RESILIENCE TO NATURE'S CHALLENGES

Kia manawaroa –
Ngā Ākina o
Te Ao Tūroa

National Science Challenges

THE DEEP SOUTH

Te Kōmata o
Te Tonga

National Science Challenges

HEALTHIER LIVES

He Oranga
Hauora

National Science Challenges

HIGH-VALUE NUTRITION

Ko Ngā Kai
Whai Painga

National Science Challenges

SCIENCE FOR TECHNOLOGICAL INNOVATION

Kia kotahi mai –
Te Ao Pūtaiao me
Te Ao Hangarau

National Science Challenges

SUSTAINABLE SEAS

Ko ngā moana
whakauka

EXECUTIVE SUMMARY

The current document is framed through the Pūrākau, Te Orokohanga - the beginning.

The story of seeking to escape a confined, uncomfortable space in search of a brighter future, fits well with the Tiriti o Waitangi journey experienced across the National Science Challenges. This has not been an easy journey, but as the report outlines, experiences of discomfort, experimentation, building collective momentum and realising the possibilities, are all part and parcel of transformation.

This journey has taken place within a particular historical and contemporary context where te ao Māori has been routinely unrecognised, undervalued and underfunded within the RSI system. The National Science Challenge initiative was envisioned as a different way to do science, and yet it had something of an inauspicious start in that it risked reinforcing the same practices and processes that did not work for Māori. As can be seen throughout the pages of this report, however, as each individual Challenge was established and grew, the people involved worked together to ensure a Mission-led approach was taken and Tiriti-honouring practices were front and centre.

Despite a diversity of domains, structures and approaches, clear threads of commonality are evident in terms of the Levers for Transformation employed to achieve the Missions handed to each Challenge. These five interwoven levers include:

1. Capitalising on the *devolution of power from MBIE*, which allowed each Challenge to make decisions on what and how research was conducted, and this was underpinned by a high level of funding-related freedom;
2. Creating alternative *visions* of research that elevated the value placed on indigenous knowledge and methodologies, prioritised collaboration with Māori communities, and focused on meaningful, tangible outcomes for end-users based on shared aspirations;
3. Establishing a *mandate* for change within each Challenge based on partnerships between Tāngata Whenua and Tāngata Tiriti at the management, governance and advisory levels that valued the expertise of both and co-created strategic and financial priorities.
4. Creating an *enabling environment* by putting in place the appropriate structures and processes needed to activate Tiriti-honouring practice; and
5. Investing in capability development through upskilling people and organisations to activate Tiriti-honouring practice.

As important as these levers were, they required the underpinning transformational relationships seen across the Challenges to weave them together and move them beyond tokenistic gestures or hard-and-fast rules. Without such relationships, these levers would have been unlikely to drive and sustain renewed mindsets, or embed behavioural change and significant transformation.

These relationships were experienced differently by Tāngata Whenua and Tāngata Tiriti, and yet there was a common experience perhaps akin to two sides of the same coin. It was important that Māori ways of thinking and being did not have to shrink or conform, and this required non-Māori to dismantle some of their own pre-existing beliefs. Core values informed both partners, individually and collectively, and there was significant overlap here. There was a shared intention to work collectively, and the space for Māori to work with other Māori was felt to be deeply significant; Tāngata Tiriti could enable this when they were in positions of leadership. Finally, Tāngata Whenua and Tāngata Tiriti both expressed appreciation for courageous leaders who were able to provide safety and create space for new approaches.

Interestingly, the Challenges ended in a very different place to where they had begun. The early years were characterised by learning and experimentation, and while some leadership teams started further along their Tiriti journeys, the second five-year phase saw many similar learnings formalised across the board.

In terms of impact, this can be a hard thing to measure with Mission-led initiatives, nevertheless, each Challenge has produced numerous examples of effecting positive real-world change in Tiriti-honouring ways. The current report provides one small case study for each NSC. Impacts included community-delivered programmes co-created with Māori that resulted in high engagement and improved health metrics for participants, and environmental restoration initiatives that drew on both mātauranga Māori and western science to reverse the effects of environmental degradation. New models and frameworks were developed to inform establishment of healthy housing communities for Kaumātua, for improving literacy development in young children, and to guide responses to seismic risk and regulation related to Marae buildings. One research project supported new product development using indigenous plants, while another has incorporated augmented, virtual and mixed realities to share history, knowledge and stories, to connect dispersed communities.

The NSC experience shows that a research and science sector which honours Te Tiriti is an exciting prospect for New Zealanders in terms of the research impact as well as the innovative possibilities of scientific practice that draws on both Indigenous and western science traditions. It isn't easy, but the overwhelming reflection of those who have been engaged in the NSC Te Tiriti journey is that it is worth it.

1. INTRODUCTION

In September 2023, a group of National Science Challenge (NSC) Directors, Chairs and Māori Partnership leads gathered to reflect on their collective Tiriti o Waitangi Journey.

They shared learnings, successes, and changes in worldview as Tāngata Whenua and Tāngata Tiriti, and they talked about the impact of research grounded in tino rangatiratanga and mana motuhake. There was deep reflection on self and systems, openness to learn and listen, and an eagerness to centre and prioritise Māori perspectives.

The National Science Challenge initiative was not originally developed with contractual or performance requirements to honour Te Tiriti or to include Māori communities, researchers and governance, nor did it purposefully enable kaupapa Māori research. Establishment principles did refer to Mātauranga knowledge and included an expectation that research would give effect to the Vision Mātauranga (VM) policy, but predominantly it was Māori within the NSCs who led the charge in advocating for change, supported by Tāngata Tiriti allies.

This is important because Te Tiriti is the legal foundation by which non-Māori people, governance, institutions and knowledge systems find a place in Aotearoa, New Zealand. Honouring Te Tiriti through the practices and behaviours that guide our research, innovation and technology sector is the only way to create a legitimate body of knowledge which speaks truthfully to, and can therefore positively impact and improve, outcomes for this place and all the people who now inhabit it.

As we look back at the journey of the past decade, we can see that each Challenge has surpassed by quite some margin the establishment requirements as they related to Maori knowledge, resources and people, and has actively sought to understand and drive research practices that honour Te Tiriti. The journey has been both deeply challenging and deeply rewarding.

Within the current report, Te Tiriti honouring practice refers to the new ways of thinking and behaving that created, emerged from and nurtured meaningful relationships between Tāngata Tiriti and Tāngata Whenua. These Transformational Relationships - both internal and with external Māori partners - were the crux of creating impact across behaviours, systems and processes, and research outcomes.

Despite the strong relationships developed, the journey has been riddled with hurdles. Ultimately, what helped the NSCs prevail was employing Levers for Transformation; these are practical mechanisms that were Tiriti-honouring. These have included, for example, co-designing research strategy, establishing co-leadership and co-governance, creating funding and reporting processes that work for iwi/hapū, and developing the capability of researchers working inside and outside of the Challenges.

If this had happened within just one Challenge or in a single research field, perhaps we could put it down to a particular individual or simply luck. Yet there is a diversity of contexts, structures, approaches and outcomes that defy any attempt to dismiss the phenomenon as an anomaly. Tiriti-honouring practice can be seen across all the NSCs.

Tiriti-led Relationships and Levers have served to accelerate innovation and research solutions, underpinning the achievement of Mission-led outcomes. These successes have demonstrated the value of Tiriti-driven approaches, something many Challenge leaders reflect on as they come to the end of their journey. They have not seen this as an obligation - they continued to move forward in the ways they did because it was impactful. They recognised the value of doing what is right in partnership with Māori under Te Tiriti, and are gratified to observe the benefits realised.



Photo credit: **Anānia Te Nana**. September 2023

It should be acknowledged, however, that the new thinking and behaviours discussed in this report have been limited to the confines of NSC influence; many external factors remain unchanged. The momentum gained and opportunities presented by an overarching Tiriti-led approach to research, science and innovation must not be lost. The examples contained in this document are shared so that the space and opportunity created by and for Māori within the Challenges, as well as the national impact and benefit this has driven, might become embedded in future funding models and RSI systemic approaches without requiring Māori to fight for and recreate them once again.

This report takes a narrative approach to telling the story of the NSC initiative, drawing on insights and reflections from key NSC personnel to capture the range of experiences that have been both diverse and collective. We frame our narrative with pūrākau, and explore how Te Tiriti of Waitangi is relevant to the RSI system as a whole, as well the Challenges more specifically. We then explore some of the specific levers that can inform others who wish to take a similar journey, and highlight how it is only through establishing and maintaining meaningful relationships, that these levers have been applied effectively. Finally, we introduce some of the impacts created through NSC research.

Ultimately, through sharing these observations, we hope to encourage others to continue the work of creating an RSI system which honours Te Tiriti and drives wellbeing, innovation, and sustainability for all of Aotearoa.

2. PŪRĀKAU: A MĀORI APPROACH TO NARRATIVE

What is pūrākau and why use it?

Pūrākau is a story-telling approach centred on indigenous epistemology and is used in this report to both highlight challenges to the status quo in research, science and innovation, and inspire continued momentum towards transformation.

Academics describe the reclamation of story-telling as critical in understanding the way in which we must collectively respond to the global impact of colonialism¹. Pūrākau offer a frame to hold complexity. Stories are universal in that they engage not only the mind, but also body, spirit and emotion. This can be a powerful space of transformation, where uncomfortable truths are held, compassion for self and others is found, and hope is nurtured.

The NSC journey has been nuanced, emotional, uncomfortable, exciting, challenging, and latent with possibility. Multiple diverse, and sometimes contradictory, experiences can be true at once, and each person's and organisation's changing experience contributes to shaping the future.

There are many versions of the following pūrākau, Te Orokohanga, and each version holds its own mana and perspective. This retelling draws heavily on a version told by Tohunga Mark Kopua from the East Coast tribes. Each reader is invited to find their own connection to the reflections and inspiration that pūrākau offer, and to see their own unique experience irrevocably entwined with the unique experiences of others.

CHAPTER 2

Pūrākau:

a Māori approach
to narrative

¹ Jenny Lee, Decolonising Narratives: pūrākau as Method, MAI review, 2009; n.2:12p.

Te Orokohanga - the beginning

In the beginning, Ranginui (the sky father) and Papatūānuku (the earth mother) were locked in an enduring embrace.

Their many children, atua, moved about uncomfortably in the dark, cramped, unrelenting warmth between their parents.

Over time, some of the children became disgruntled, but it was Kēkerewai, the stirrer of waters, who first spoke out about the situation. "It's not right for us to live our lives like this, trapped between our parents. I can't even stand up straight, I can barely move but for bumping into one of my siblings - I want space, I want something new." His sibling, Toro-i-waho, the connector, spread this message and the darkness began to hum with agreement and discontent. Not all of the siblings agreed; while some saw the possibility, others were angry and tried to shut down the discussion.

One day, Uepoto, another of the atua, noticed a faint glimmer of light in the distance - te Hinātore. Te Hinātore was a phosphorescent light, glowing and shimmering. Uepoto was curious, inquisitive, yearning to know what this glimmer meant and began to see if it was possible to move closer, or to get a better view of this shimmering vision.

In this state of flux and uncertainty, two houses - two schools of thought - began to become apparent. Kēkerewai, Toro-i-waho and Uepoto were joined by other siblings who were curious and seeking change. This house, composed mainly of younger siblings, became known as Huaki Pōuri.

A second house rose up, with the older siblings taking the lead - Tangaroa, Tāne, Tāwhiri and Whiro among them. This house was Tū Te Aniwaniwa who opposed change and avidly protected the existing arrangement. "It's not that bad, who knows what madness and chaos you'll unleash upon us, it's better to stick with what we know. Besides, how could you live with yourself if you separated our parents?"

Undeterred and relentlessly curious and hopeful, Huaki Pōuri tried many strategies to approach the light, the Hinātore. Sometimes, the light seemed closer, the gap widened. Sometimes the strategy didn't seem to have any impact, but inspired another approach - ultimately, however, the atua remained in darkness.

As the younger siblings continued to strain toward their goal, the tuākana watched with interest. Drawn in by their excitement, Tangaroa was the first to say, "perhaps we should listen to what our siblings have to say," and after hearing them out, Tangaroa was convinced to lend his abilities to seeking out and exploring this light.

Tāne was next, he watched the persistence of his younger siblings, and heard them talk about what they hoped to achieve. Perhaps he too would give them a chance - it was, after all, quite uncomfortable and dark in his cramped position. Tāwhirimātea and Whiro remained vehemently opposed - throwing everything they could at Huaki Pōuri to deter their strategies, to dishearten them, to foil their attempts.

And yet, eventually, some of the strategies began to take effect. Their parents were slowly prised apart, little by little, until the Hinātore became a gleaming ray of light deep into the darkness. There in the blinding light lay Tāne, with his back pressed against his mother and his legs pressed into his father - holding them apart as they reached for each other. The siblings began stretching out, standing, calling to each other across the newly opened space in front of them.

Angered by the anguish of their parents, Tāwhiri and Whiro flung themselves at Tāne, while Tūmataurangi hacked at his legs, demanding he release their parents and let them all return to the darkness.

But Huaki Pōuri held firm, and Ranginui and Papatūānuku were separated. Their children stepped out into the new world - Te Ao Mārama - a world of light, of space, of openness and possibility. They began to discuss what they could create.

Reflections from Te Orokohanga: A Cycle of Beginnings

Moana Jackson once said "Treaties are meant to be honoured, not settled", in other words - honouring Te Tiriti isn't a destination, it is a commitment to engaging in an ongoing cycle of growth to illuminate possibility, and the commitment to doing this together. - together.

Te Orokohanga ends with a new beginning, inviting us to consider that transformation is not linear but is a regenerative, cyclical process. There is no final destination - only a commitment to engage in continuous growth - building on each previous level of illumination and possibility.

The move toward honouring Te Tiriti within the NSCs represents possibility - changes that the Challenges have made in their approach to research have engaged in a regenerative cycle with Māori partners, and are having real-world impact, illuminating opportunities and benefits for the research sector, and for Aotearoa.

In this conception of cyclical transformation, one may be engaged in multiple different parts of the cycle at the same time - for example, experiencing discomfort in a particular relationship, but seeing some shifts and changes occurring in a shared project.

When reflecting on a personal or collective journey toward honouring Te Tiriti, this cycle invites us to consider:

- Which part of the cycle best reflects my/our current position?
- **In discomfort:** Are we focused on opportunity or limitations? Do our values align with our purpose and with our actions? What are we protecting when we are resistant to change?
- **In activation and building collective momentum:** What is our role in the collective? Whose values are aligned to ours and what can we gain from their strategies? What opposition exists, and how can we remain open to bringing them along with us, while maintaining our own momentum?
- **In shifts, changes and new possibilities:** What is working and what do we learn from what isn't? How do we maintain the new openings and creations into the future?

As the Challenges have navigated the cycle of beginnings necessary for transformative Te Tiriti honouring behaviour and relationships, success has come from those who have stayed engaged even during the inevitable points of discomfort, as ultimately they represent potential starting points for illuminating new possibilities.

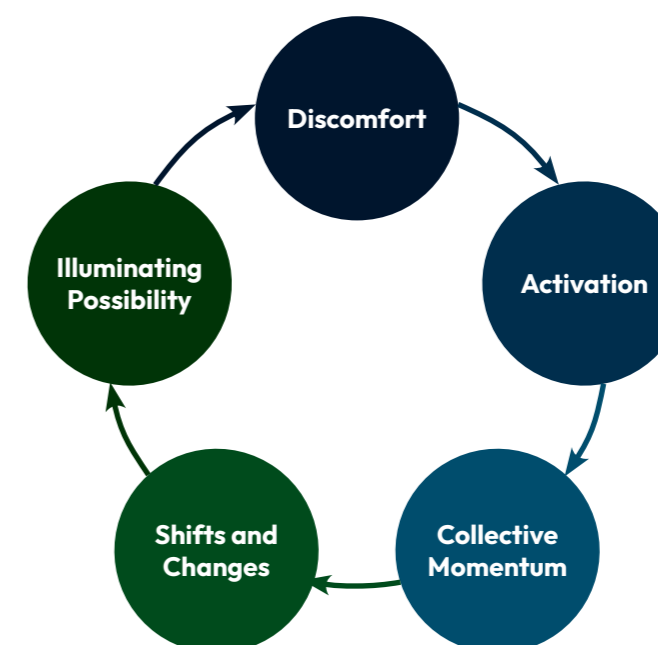


Fig 1: Transformation is a Cycle of Beginnings

CHAPTER 3

Te Tiriti and the RSI System

3. TE TIRITI AND THE RSI SYSTEM

Te Tiriti o Waitangi is the legal foundation by which non-Māori people, governance, institutions and knowledge systems find a place in Aotearoa, New Zealand.

Honouring Te Tiriti through the practices and behaviours that guide our research, science and innovation sector, is the only way to create a legitimate body of knowledge which will generate positive outcomes for this place and the people who now inhabit it. What would a science and research system that honours Te Tiriti o Waitangi look like? It would be a “*system that fosters and advances effective thinking and practice of Te Tiriti as a key element of success for a thriving and prosperous Aotearoa New Zealand.*”²

However, the reality of much scientific practice in New Zealand is that it is founded on a belief in the supremacy of Western scientific traditions over existing indigenous knowledge and practice. This is despite indigenous knowledge, Mātauranga Māori, having been generated from this whenua, and as such, is unique in the world.

3.1 Te Tiriti and the Post-Colonial Research and Science System



Indigenous peoples’ theoretical voices have been rarely heard, let alone engaged in with the same status as those of the West. This is not a surprise to Māori academics, given the ongoing marginalisation of Māori knowledge. Māori knowledge has been under attack since the arrival of colonial settlers to our lands. Within the colonial education system Māori knowledge has been through processes that have denied the validity of our own knowledge and worldviews.³

To understand the impact and enablers of the collective NSC Te Tiriti journey, it is important to understand the historical and current status quo within the New Zealand RSI sector. It has been characterised by:

- The undermining of the legitimacy and value of Kaupapa Māori research, coupled with chronic underfunding of such research
- Māori researchers carrying their own research responsibilities while also providing cultural education and support to colleagues, or in some cases, unable to pursue their own research priorities due to the demand for cultural support. This contributes to Māori researchers:
 - being published less
 - having less access to career advancement and associated opportunities
 - being paid less
 - being overworked/burnt out
 - being exposed to culturally unsafe work environments
- Limited recognition for community-based researchers who are not associated with an established research institution, and a lack of access to funding for these researchers.
- Exploitative and transactional research practices employed when working with tāngata whenua and limited protection in the collection, storage and usage of data gathered.

² MBIE. (2023). Te Ara Paerangi Future Pathways: Embedding Te Tiriti o Waitangi | Te Tāmau i Te Tiriti o Waitangi. p7.

³ Leonie Pihama, “Kaupapa Māori theory: Transforming theory in Aotearoa”, He Pukenga Korero: A Journal of Māori Studies, Raumati (Summer), volume 9, number 2, 2010, 5 - 14.

Transformational change is needed to move the sector beyond the past two centuries of established norms which marginalised Māori knowledge and communities, toward the ideals described in Te Tiriti. The NSC journey demonstrates that while significant intention, resource and energy, is required to ultimately turn the tide, there are many smaller, yet significant, tangible actions that can be taken to create a research funding system that is more equitable and Tiriti-honouring.

While more is needed to address the scope of transformation required – and The NSC Te Tiriti journey will describe the interconnected levers of transformation and the relationships that underpin them – good policy is a valuable starting point.

3.2 Recent Changes in Government Science Policy

The Vision Mātauranga Policy (VM) was introduced in 2005 ‘to unlock the innovation potential of Māori knowledge, resources and people to assist New Zealanders to create a better future’.

It has been described as MBIE’s response to Te Tiriti o Waitangi within the science system. Some Māori involved with the NSCs⁴ believe the policy still has a place, while others consider it to be outdated, too prescriptive, and no longer fit for purpose.

One Director noted that during the formation of their Challenge, Māori researchers expressed their concern about the policy: “They weren’t happy and they said if they were going to be constrained by a VM Statement, then they were walking.”⁵ However, if it was removed, the question remains as to what would replace it, for example, something more foundational:



We should be looking for a statement based on Te Tiriti that honours partnership, and moves people to engage their courage and move forward.⁶

Since the VM policy was introduced, there have been several RSI reviews, for example, Te Pae Kahurangi (2020), which explored how New Zealand’s Crown Research Institutes might be better aligned to create national benefit. This exercise highlighted the need for collaboration, particularly if this country’s grand challenges are to be tackled.

More recently, Te Ara Paerangi Future Pathways (TAP), a multi-year reform programme, sought to refresh a large segment of Aotearoa New Zealand’s RSI sector (not including the CRIs). It was initiated under the Labour Government as a critical foundation for enabling a high-wage, low emission economy, and no doubt influenced by a national environment where researchers, communities and the next generation are recognising the importance of Mātauranga Māori as a foundation for scientific practice.



Photo credit: **Anānia Te Nana**. 2023

The approaches offered via TAP went quite some way towards embodying the power and relationship dynamics promised by Te Tiriti o Waitangi. Change was mooted for six key areas⁷:

1. Exploring the role that whole-of-system priorities could play in focusing research activities and concentrating resources towards achieving national goals.
2. Exploring how the research system can best honour Te Tiriti obligations and opportunities, give life to Māori research aspirations and enable Mātauranga Māori.
3. Exploring potential ways to reshape the RSI funding system for the future. It covers how funding can be used to give effect to national priorities, reduce unproductive competition, and ensure our institutions can respond to emerging opportunities.
4. Re-examining how we design and shape public research institutions to enable them to give effect to national priorities, encourage greater connectivity, and be adaptable in a fast changing world.
5. Exploring how we best develop the RSI workforce to ensure it is connected, diverse and dynamic, and has access to attractive and flexible careers and career pathways.
6. Exploring effective funding, governance and ownership arrangements for national research infrastructures and how we should support sustainable, efficient and enabling investment in research infrastructure.

The process was still ongoing as at late 2023, with public submissions having been received, however, as part of the new government’s change in direction, the Te Ara Paerangi Future Pathways programme has since been discontinued. In its place, a new Science System Advisory Group headed by Sir Peter Gluckman, one of the NSC’s original architects, has been charged with providing advice on the science sector’s future structure, efficiency and effectiveness. Working in tandem is a University Advisory Group considering how the university system might be improved; their advice will inform policy changes in that space.

⁴ Cross-NSC Wānanga

⁵ Tāngata Tiriti, Cross-NSC Wānanga

⁶ Tāngata Whenua, Cross-NSC Wānanga.

⁷ MBIE. (2022). Te Ara Paerangi Future Pathways Whitepaper.

4. TE TIRITI AND THE NATIONAL SCIENCE CHALLENGES



He pēpi tonu mātou: We look after our taonga, our pēpi, learning from our mistakes and self-correcting, and looking for solutions with maturity.⁸

Some have said that in light of historical reviews of the science and research system, the NSCs were nothing new, and did not immediately engender excitement amongst researchers or Māori communities. And yet, as they have played out, there was something very enabling in how they were set up which created space for evolution.

CHAPTER 4

Te Tiriti and the National Science Challenges

4.1 The National Science Challenges were a Bold Innovation

The NSC initiative was about utilising science to address Aotearoa New Zealand's biggest science-based issues and opportunities.

The Challenges would bring together the country's top scientists to work collaboratively across disciplines, institutions and borders, to achieve their objectives.

Over ten years from 2014, \$680 million dollars in research funding was allocated to NSCs whose Missions covered issues including health, the natural and built environments, and technology.

There were several notable elements of the NSC funding model. First was the devolution of power to each Challenge from MBIE, providing significant freedom (albeit with a set of guiding parameters) to manage the science process differently than was seen elsewhere. The longer funding periods required a different strategic approach, in that they provided a level of certainty to larger projects of greater consequence. Additionally, the emphasis on research impact, as well as stakeholder and end-user involvement, opened up a new world of possibilities for scientists to take an active role in moving their work out of the lab and into the real world.

Despite aspiring to create something different, the frameworks and systems that informed Challenge development could easily have perpetuated the status quo. However, there was enough of an opening, a sliver of light, through which Te Tiriti-honouring practices could be experimented with and established to create additional research benefits and outcomes.

This section takes a deeper look at the beginnings of the NSCs - what helped (and hindered) the creation of an enabling environment, and how Te Tiriti honouring practice was advocated for and activated despite the system barriers in place.



Photo credit: **Anānia Te Nana**. 2023

4.2 Te Tiriti and the Establishment of the NSC Initiative

This section draws insights primarily from two on-line focus groups and two one-on-one interviews with Tāngata Whenua and Tāngata Tiriti who were present when the NSC initiative was being formed.



Photo credit: Anānia Te Nana. 2023

Participants were invited to reflect on how Te Tiriti was engaged with, championed, and operationalised during those early days, as well as how that impacted NSC evolution and how each Challenge would later be able to give effect to Te Tiriti within its research programmes. Content was also drawn from the Cross-NSC Wānanga held in September 2023.

In a sense, as already noted there was nothing remarkable about the NSCs at their genesis; the science system's history is replete with new investments, alternative funding mechanisms, and updated research priorities. Yet there has been an ongoing failure to draw on the innovative potential of Māori communities, leaders and researchers.

As the NSC initiative was being developed, decisions related to finances, as well as organisational, political and strategic directions, were still being made by people who were not yet able to envision the benefits of allocating power and resources differently, that is, with a high level of Māori involvement. As a result, the status quo was perpetuated. In effect, the NSC aspiration to be a driver of cross-institutional, multi-disciplinary, inclusive and collaborative research was not always reflected in initial decision-making and funding allocations:



The idea about being Mission-led and the 'best' rising to the top wasn't what was happening - it was certain people's idea of who the 'best' were, and there were very few Māori represented.⁹

Frustration experienced by Māori researchers and academics in these early days was compounded through the public consultation process. While people were able to vote on the important priorities via a public media campaign, the research priorities and funding distribution ultimately settled on did not fully align with the community feedback, and this created distrust and disillusionment.

In 2012, prior to the naming of individual Challenges, MBIE ran a series of 'all-comers' hui, for researchers help refine the NSC initiative:



At the beginning of the Challenges, MBIE used to have meetings and would invite us along too. But MBIE couldn't cope with what was being said, especially by the Māori researchers, so we weren't invited anymore.¹⁰

Attendees spoken to in the preparation of this document recall MBIE was given clear guidance on Te Tiriti as a critical foundation of the Challenges, and many expected that this would be reflected in subsequent decision documents. However, when the Peak Panel Reports, documenting the strategic direction of the NSCs as well as the Challenge Missions and priorities, were published in March 2013, reference to Te Tiriti and Māori partners was notably missing. Further, there was no explanation as to how MBIE as a Crown agency would meet its Te Tiriti obligations through the Challenges. Māori input was limited to cultural issues,

end-users and an economic base, and Māori innovation potential was largely ignored.

At the same time as the NSC initiative was being established, the 2012 CoRE funding round was open, and here again, funding allocation decisions appeared to be primarily guided by Western priorities. Ngā Pae o te Maramatanga, New Zealand's Centre of Māori Research Excellence, was initially informed that its funding would not be renewed,¹¹ and this arguably helped to prompt a stronger and more coordinated response from frustrated Māori academics and non-Māori allies:



A silver lining of this was that some of the newly established Challenges, coming off the back of a failed CoRE bid, had already had the discussions about co-governance, co-management, Treaty principles, Māori resourcing and the like, and so it was a much easier conversation to have. Those organisations that had already had some of the courageous conversations, who had brave leaders, moved much faster for Māori. It was not a perfect journey, but easier than for those who were very much wedded to keeping the status quo.¹²

So, in mid-2013, Māori researchers developed a collective response to the Peak Panel reports in the form of an evidence-based paper set within "a background of underinvestment in indigenous research."¹³ The paper, authored by Helen Moeweka-Barnes and Leonie Pihama, was presented to, and endorsed by, the Iwi Chairs forum at Ngaruawāhia. While the absence of Māori in leadership positions within the National Science Challenge initiative was highlighted, the paper also recommended that six Māori principles be reflected and embedded throughout the NSCs:

1. Te Ao Māori, Māori world views, tikanga and te reo
2. Te Tiriti o Waitangi
3. Mātauranga Māori: Māori Knowledge
4. Rangahau orite – Equity
5. Rangahau whai hua – Transformative focus
6. Kaitiakitanga – inter-generational custodianship, protection and enhancement of wellbeing



The paper was a demonstration of collective voice and collective action from across the motu.¹⁵

¹¹ This indication was later revised, and in early 2014 it was announced that Ngā Pae o te Maramatanga would receive further funding.

¹² Tāngata Whenua, NSC Beginnings Focus Group

¹³ Tāngata Whenua, Cross-NSC Wānanga,

¹⁴ The Waitangi Tribunal's 2011 response to the WAI 262 Treaty claim.

¹⁵ Tāngata Whenua, NSC Beginnings Focus Group

⁹ Tāngata Whenua, NSC Beginnings Focus Group

¹⁰ Tāngata Tiriti, Cross-NSC Wānanga

MBIE's response to these collective recommendations was that the VM policy - whose purpose is to *unlock the science and innovation potential of Māori knowledge, resources and people for the benefit of all New Zealanders* - should be considered the NSC's guide to meeting Te Tiriti obligations.

While this was problematic because of an ongoing lack of resourcing, capability and application of VM across the RSI system, which limited its impact, the policy was arguably strengthened through the Challenge mandate and reporting metrics.

Five unique NSC establishment principles were written to guide how the Challenges would function. 'Science Quality' was one, and referred to Mātauranga knowledge as *a critical research capability*, while the last principle required that all NSC research should *give effect to the Vision Mātauranga policy*. These brief directions provided some latitude for interpretation.

Those preparing initial Challenge Establishment Proposals were encouraged to make VM more visible by including clear expectations and criteria around implementing the policy. While this still fell short of what Māori were advocating for, it was a step in the right direction.



So we accepted Vision Mātauranga, but we kept saying, 'It's a subset of Te Tiriti'. Vision Mātauranga is more in that 'appropriateness, responsiveness to Māori' space. Te Tiriti is about all of our obligations, all of our accountabilities. It's about power, decision-making, equity, and vision.¹⁶

4.3 Honouring Te Tiriti while Establishing Individual Challenges

Once approved by MBIE, as each Challenge moved into bringing their teams on board, identifying priorities and setting up their programmes, a period of significant expectation and pressure on Māori began.

This period also brought to light those system features that were at odds with the transformative potential offered by the NSCs.

Many Māori left the Challenges during this establishment phase, and for many who stayed, it was a very taxing time. They were often required to represent Māori across multiple Challenges, and carried a significant workload as well as a high level of cultural responsibility:



It was probably one of the most exhausting periods of my life, trying to hold the line and advocate for the Treaty, principles, Māori inclusion and equitable funding - in five spaces with five very different organisations and five very different approaches.¹⁷



Under Te Tiriti, everything should be Mission-led. As Māori, that's the way we work. It's about transformation, it's about collectivity, it's about challenge, it's about resistance. And that's our lives. It wasn't anything new for us. We were trying to educate them as to what it was, and they wanted our time, our resources, our knowledge to do that.¹⁸

One of the things that had drawn people to the NSCs was the concept of Mission-led research. While many working within the sector could see how the competitive system was excluding them, fragmenting their time and affecting their ability to be promoted, in reality the Science Challenges still used a competitive process in the early days - just in a different way.

There was also an element of gatekeeping within the Challenge initiative. Mission-led discourse was strongly

positioned as creating benefit for all New Zealanders, but this came loaded with the misconception that kaupapa Māori is not about all New Zealanders, that it is not about the best science, and that it is an 'ideology' as opposed to a 'Mission'.

In spite of this, Mission-led research attracted both Māori and non-Māori researchers and academics who wanted to make a difference. Non-Māori academics were attracted to the possibility of doing research that had tangible impact for communities - real-world solutions beyond publishing papers:



"There was heavy criticism from 'pure scientists'," but in 30 years of research, how much of that has changed lives? We wanted to do something that makes a change.¹⁹

"The most important IMPACTS we made were not necessarily publishing."²⁰

"In our own ways we rode out the storminess and stayed the course, strong against external criticism that this was not proper science."²¹

"[Our Challenge] evolved out of a series of conversations, not a preordained call for research. It took about a year to realise how different it was - we were inventing something new."²²

¹⁶ Tāngata Whenua, NSC Beginnings Focus Group

¹⁷ Tāngata Whenua, NSC Beginnings Focus Group

¹⁸ Tāngata Whenua, NSC Beginnings Focus Group

¹⁹ Tāngata Tiriti, NSC Beginnings Focus Group

²⁰ Tāngata Tiriti, NSC Beginnings Focus Group

²¹ Tāngata Tiriti, NSC Beginnings Focus Group

²² Tāngata Whenua, NSC Beginnings Interview



Photo credit: **Anānia Te Nana**, 2023

Māori researchers are, in a sense, experts in Mission-led approaches and so were well placed to take leadership roles within the Challenges, particularly in terms of developing Tiriti-led approaches:



For Māori researchers, it was how they had always worked. Being Mission-led prioritises implementation and initiatives that can be used by people. Māori are experts in this space, not just in providing a cultural lens, but also in drawing on broad ways of thinking that result in much more robust implementation and outcomes, which constitutes an evidence-based knowledge set that brings value to any research project.²³



They kept saying, 'It's new. It's innovative. It's Mission-led', but for Māori that's nothing new. How can something not be Mission-led? How can it not have a purpose that is supposed to be doing the best that you can for your people and for people's well-being?²⁴



Mātauranga Māori and Kaupapa Māori research had a place to flourish - and this was a new thing within the RSI system, a big change. We were looking at ways to work with community and to create real dialogue for us as Māori.²⁵

²³ Tāngata Whenua, NSC Beginnings Focus Group

²⁴ Tāngata Whenua, NSC Beginnings Focus Group

²⁵ Tāngata Whenua, Cros-NSC Wānanga

4.4 Learning from the Past

The National Science Challenges were established without contractual or specific performance requirements to include Māori communities, researchers and governance, or to enable kaupapa Māori research.

Despite this, Māori within the NSCs led the charge in advocating for change and holding MBIE to account, supported by Tāngata Tiriti allies. Ultimately, the Challenges took significant steps to activate Tiriti-honouring practice even from those early days.

Now, as the Challenges are about to come to a close, some of those who were present in the early days warn that political pressure and changing priorities could replicate a similar exclusion of Te Tiriti thinking and prioritisation in future funding models:



In the current climate, this report is about really pushing the value of working in [a Tiriti-honouring] way. And unfortunately, that's kind of where we started. I don't think MBIE saw value in it particularly. I think they felt they just couldn't ignore us. But I think a lot of people and the Challenges increasingly saw the value of working in that way.²⁶



We must influence political will - it isn't politicians that make decisions, its people - politicians just want to get reelected.²⁷

This is an appropriate juncture at which to examine how the Challenges developed as they did to achieve widespread activation of Tiriti-honouring practices.

Section 5 outlines five specific Levers for Transformation that have supported 'doing science differently', and provides some insight into what it has been like, for both Tāngata Whenua and Tāngata Tiriti, to work in this evolving mini ecosystem.

Following this, **Section 6** expounds the value and impact enabled by transformative relationships that existed across the spectrum and at all levels of the NSCs. These relationships, between Tāngata Tiriti and Tāngata Whenua, were significant sites of growth - driving greater clarity of purpose, more enduring and broader reaching research impacts.

²⁶ Tāngata Whenua, NSC Beginnings focus group

²⁷ Tāngata Tiriti, Director interview

CHAPTER 5

Interwoven Levers for Transformation

5. INTERWOVEN LEVERS FOR TRANSFORMATION

All eleven National Science Challenges surpassed their MBIE-imposed Vision Mātauranga requirement by quite some margin, and have collectively become a unique site for Tiriti-honouring practice within the wider science and research system.

If this had been achieved by just one Challenge or had happened in a single research field, perhaps we could attribute it to a particular leader, a specific sector need, or some other simple cause, but we can see aligned journeys across the board, and further, a movement has been created that will outlive the NSC initiative.

So how do we make sense of this? While there is a diversity of contexts, structures and approaches evident, we can nevertheless draw out threads of commonality. These similarities relate not only to what types of transformational strategies were employed by the Challenges, but there are also trends in terms of when the most impactful activities took place over the 10-year timeframe.

This section explores five Interwoven Levers for Transformation in terms of activating VM and Te Tiriti-honouring practice - the 'what'. Each has been important in its own right, but they have also enabled one another; if we were to take away just one, the others would be unlikely to have had as much impact.

It must also be stressed that this has not been a smooth, easy journey - while this report endeavours to highlight and celebrate the impact and benefit of activating Te Tiriti honouring practice within the NSC initiative, it is also important to recognise that there is further transformation needed and further barriers to overcome and dismantle. While this report doesn't dwell on the work still to be done, the pūrākau reminds us that discomfort and challenge do exist in the same story as success and illumination - there is always more to be learnt and we must remain engaged.

The pūrākau also demonstrates learning from multiple strategies to achieve success. This report explores the detail and nuance of different strategies employed by the Challenges. Where there were difficulties, doubts and unresolved issues, these are included as part of the transformation journey. They are tangible examples of Challenges responding to discomfort, remaining engaged and collectively making change

The following section highlights interesting connections to be made with our pūrākau, Te Orokohanga, and also revisits the Levers in relation to distinct time periods: Phase 1, the Midway Review, and Phase 2²⁸ - the 'when'.

What have we learned about activating VM and Te Tiriti-honouring practice?

Drawing in particular from the Cross-NSC Wānanga and Journey Mapping exercise employed in preparing the current document, five interwoven Levers have been identified as depicted in Figure x below.

While the **Devolution of Power** from MBIE is considered to be a foundational Lever within the Challenges' Tiriti Journey, it was put in place by government agents rather than being a decision that key Challenge personnel were responsible for. As such, it is a topic this report explores with a light touch.

²⁸ In late 2023, the NSC Directors undertook a Journey Mapping exercise to capture the individual Challenge and collective experience of activating Tiriti-honouring practice to drive research outcomes. The Journey Mapping process explored three key time periods which collectively resonated across the Challenges.

The next two enablers, **Vision** and **Mandate**, refer to Leadership and Governance co-Creating a Vision with a strong Mandate for Change. These are higher level matters, in a sense slightly removed from the research itself, but essential for creating the ideal conditions needed for elevating Vision Mātauranga and activating Tiriti-honouring practice.

In terms of bringing these alternative **Visions** (such as valuing Māori knowledge, participation and aspirations) to life, genuine Tāngata Whenua - Tāngata Tiriti partnerships at the leadership and governance levels were needed, and having these in place created the **Mandate** for moving forward together. With strong relationship foundations, more collaborative and impactful mahi became possible.

Enablers 4 and 5, **Enabling Environment** and **Capability Development**, are pillars of the Operational Change mooted by Leadership and Governance, and which have directly supported Māori and non-Māori institutional researchers to collaborate with each other, and with Māori research partners and stakeholders.

‘Doing research differently’ required the development of new processes and artefacts. These stretched beyond BAU science system administration to create an **Enabling Environment** supportive of the inclusive behaviours arguably envisioned when the NSC initiative was first conceived. Without these new approaches, there would have been an ongoing struggle to mitigate against mainstream structures and processes such as standard contracting, which are not set up for collaboration, inclusion, or protecting iwi/hapū-specific taonga, for example.

At the same time, as with anything new, it is important to bring people along on the journey, and in the case of elevating VM and Te Tiriti, this has required **Capability Development**, including cultural upskilling. Developing knowledge and skills has been a critical offering to help people move beyond the types of competitive and siloed behaviours commonly sanctioned or even required across the mainstream science and research system.

Each of these five enablers is discussed below.

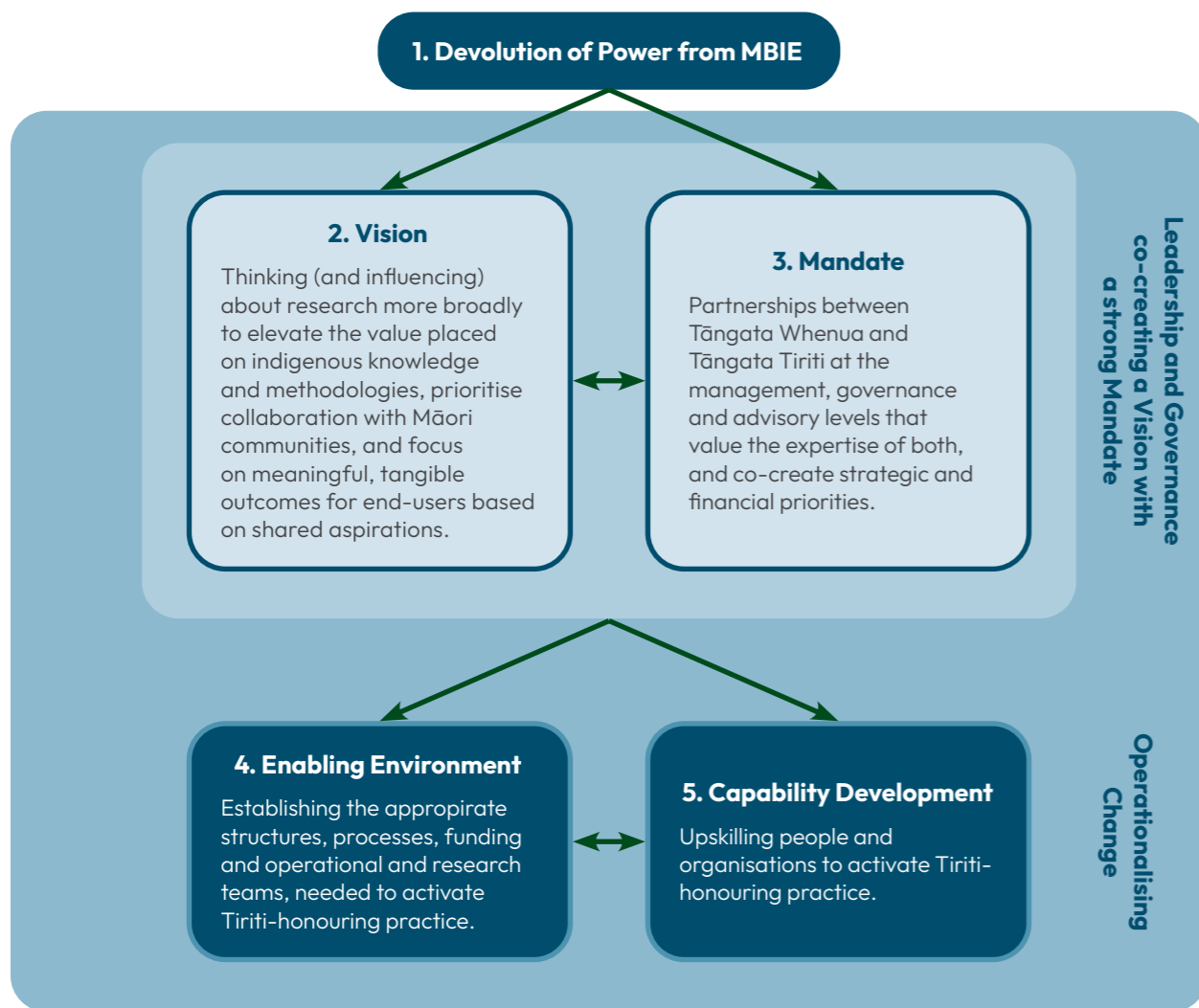


Fig 2: Activating VM and Tiriti-honouring Practice within the National Science Challenges

5.1 Devolution of Power from MBIE



Devolved funding and decision-making allowed us to set our own criteria around what was appropriate, and to make our own decisions.²⁹



I'd been a funder for ages and had a good understanding of what were rules and what were suggestions. It was about doing the right thing vs doing things right... I wasn't angling for MBIE recognition, success equals positive change on the ground.³⁰

This power transfer saw independent Boards formed within each Challenge, with Kāhui Māori as advisors (but not necessarily with decision-making authority). Again, without restrictive rules in place, NSCs gradually moved towards co-Governance and/or merging Governance Groups and Kāhui Roopu.

Because Challenge goals as determined by the original NSC Panel were not overly prescriptive, community views could be

most significant problems, for example, through formally elevating the value placed on indigenous knowledge and methodologies. Further, Challenges were free to determine what constituted expertise worthy of resourcing, and they did so in a way that was very inclusive.

incorporated, and “there was no directional guidance on how to lead Challenges, particularly around VM, and so this meant we all developed a bespoke approach.”³¹ Challenges could define their ideal outcomes through co-designing with end users.

Devolution of power from MBIE enabled leaders to introduce practices such as co-development with community and industry groups, and to form teams through non-usual formation processes:



“The biggest enablers were flexibility and freedom to do what we thought best, rather than adhering to [research institution] rules and regulations; considering everyone rather than just the usual researchers, which led to inclusiveness.”³²

“There was a clear keenness and willingness by all involved to do things differently, and challenge the status quo in order to achieve the Mission of the Challenge. The ‘arms length’ nature of the Challenge (from MBIE and the Host organisation) meant we were able to create new and flexible approaches that were tailored to the needs of iwi, hapū and Māori organisations.”³³

²⁹ Tāngata Tiriti, Cross-NSC Wānanga

³⁰ Tāngata Tiriti, NSC Beginnings focus group

³¹ Tāngata Whenua, Cross-NSC Wānanga.

³² Tāngata Tiriti, Cross-NSC Wānanga

³³ Sustainable Seas Challenge



Photo credit: **Taurite Tū**. 2022

Funding was another key aspect of devolved control, which again left room for Challenge autonomy. Longer, flexible time periods allowed the Challenges to operationalise their ideas around doing science differently, for example, allocating budget to such activities as relationship building, communications, and non-technical capability-building. Further, the original NSC application process, which was administered by MBIE, was quite different. While other funding sources, such as the Health Research Council or the Endeavour fund, tend to hold specific views of research excellence, which in effect favour research silos, this process valued a range of attributes.

One of these attributes was how the NSC Establishment Proposals gave effect to Vision Mātauranga. There appears to have been something of a pivot between Sir Peter Gluckman's earlier influence, and the lens placed on the process once MBIE began managing. Challenges were advised to revise and resubmit their first proposal for a variety of reasons.

A pivotal moment arose within **Ageing Well** when its proposal development team was asked to significantly revise its initial application so that it better aligned with the Vision Mātauranga policy. As a result of this, focus was shifted from mere compliance with 'Māori things', to actively embedding VM and ensuring positive outcomes for Māori communities. This created a degree of confusion and anxiety at first, but ultimately led to an environment where the Leadership Team challenged themselves to understand their own positionality better, and to look for expertise beyond the usual places: *"the team changed and the thinking changed."*³⁵

Government policy and process can be slow to change and don't always reflect the current values and priorities of broader society. Devolution of power and decision making from MBIE created space for the NSC funding system to reflect the values and priorities of the current time.

There is a growing groundswell of support for embodying Tiriti-honouring behaviour in research and science. Increasingly, leaders and researchers value the experience and knowledge of Indigenous people and seek to explore the implications of that for their current day practice. The resulting changed behaviours and approach continue to demonstrate the value of Tiriti-honouring practice, for all New Zealanders, across many sectors and communities.



*Devolved funding created freedom to operate.*³⁴

³⁴ Tāngata Tiriti, Cross-NSC Wānanga.

³⁵ Ageing Well Challenge

5.2 Vision

Thinking (and influencing) about research more broadly to elevate the value placed on indigenous knowledge and methodologies, prioritise collaboration with Māori communities, and focus on meaningful, tangible outcomes for end-users based on shared aspirations.

'Vision' has been important in activating VM and Tiriti-honouring practice because it has informed a Mission-led approach that includes indigenous knowledge and priorities at its heart. The Challenges were empowered to think differently about research, and those in leadership roles, together with researchers and community partners, took the opportunity to develop foundational approaches that would effectively challenge the status quo and transform traditional ways of conducting research.



*Ministries measure everything by changing deficits: reduce x or y, rather than increasing well being - that is an anathema to standard measurements. Māori talk about thriving.*³⁶

Forming a new Vision involved several specific strategies on the part of leadership, including:

1. developing formal commitments to Tiriti partnerships and modelling Tiriti-honouring practice
2. actively involving with Māori communities and businesses to refine Missions and determine research focus areas
3. redefining 'research' and 'researchers' to include Mātauranga Māori, Kaupapa Māori approaches, tohunga and other community experts

³⁶ Tāngata Tiriti, NSC Beginnings focus group

³⁷ Tāngata Whenua, Cros-NSC Wānanga.

5.2.1 Leadership and Governance Developing Commitments to Te Tiriti Partnerships and Modelling Tiriti- honouring Practice

If the Challenges were indeed going to activate Tiriti-honouring practices, those in leadership roles needed to model ideal behaviour. In the first instance, it was necessary to set expectations around what was important, the role of relationships, and of course, the need for impact-making. If Te Tiriti is genuinely the foundation, deliberate leadership that brings everyone along on the journey is required, because a natural cadence evolves, and organisations can only go at the pace of the slowest individuals.³⁷

The beginning of Phase 1 was a time of deep learning, and for many Challenges, there was still a lack of clarity around the opportunities presented by Māori communities, Mātauranga Māori and te ao Māori. Despite some uncertainty, there were a few early examples of NSCs setting a Tiriti-focused Vision, and of communicating this clearly to researchers and partners. These first movers recognised that developing a collective commitment to Te Tiriti partnerships was a precondition to operationalising a Te Tiriti approach that could be understood, embraced and supported.



Photo credit: **Anānia Te Nana**. 2023

The **Building Better Homes Towns and Cities** commencement team represented both Tāngata Whenua and Tāngata Tiriti. Ensuring that Māori researchers made a significant contribution fitted well with the NSC Principle related to *'purposeful collaboration between researchers,'* and more broadly, the *'beyond business as usual'* opportunity offered. This approach was not without its difficulties,

and highlighted the lack of support provided by the wider science and research system for taking novel approaches. Nevertheless, ensuring that both Māori and non-Māori researchers were integrally involved in setting the Challenge's direction served to establish a culture of partnership that has continued to pay dividends throughout the programme.

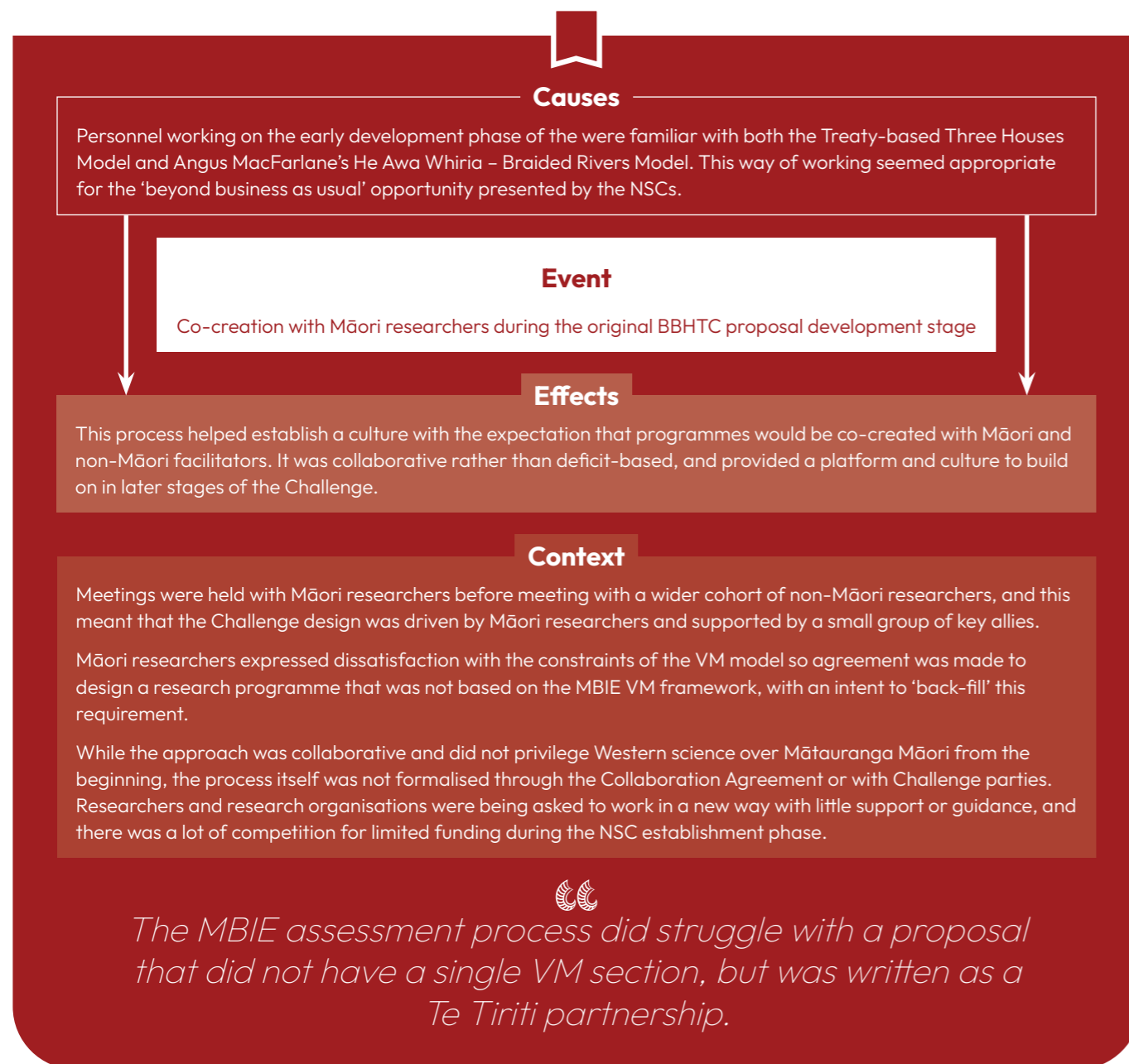


Fig 3: The Original Building Better Homes, Towns and Cities Commencement Proposal was Written in Partnership

Our Land and Water set very deliberate and graspable Tiriti-based expectations early in their journey, despite still being unsure of exactly what the future held.

Nevertheless, their Board realised this approach was needed to both remove naysayers and create momentum:



We tried to remove the ambivalence by having a really deliberate statement about this being something we would embrace and we would transform internally in terms of what our overall kaupapa would be: bringing Te Taiao and Te Ao Māori in as part of the Challenge. It was only a sentence but it tipped things on its head.³⁸



Fig 4: Our Land and Water's Board Highlighted the Importance of Authentic Partnerships

Bioheritage was another NSC that, during the first tranche, clearly stated a set of values that would guide their work practice. These values were purposefully integrated into their Tranche Two Strategy, and fed into new ways of carrying out research design and scoping, as well as aspects of Māori leadership and knowledge. The Kāhui Māori were important enablers of this work, generating many of the

ideas and leading by example. Looking back, key personnel say that the chosen values resonated with researchers and mana whenua alike. They helped weave together the multiple disciplines and knowledges that have contributed to reversing the decline of New Zealand's biological heritage, Bioheritage's overall Mission:



Our values needed to be implemented in practice, addressing inequities, embracing diversity and creating better ways of working collectively for our native species across sectors and communities.³⁹

Our Values	How We Apply Our Values
Mahi whaipanga	We care about making a difference for Aotearoa
Ngākaunui/Uekaha/Ngakau Whakapuke	We are passionate and enthusiastic about our work
Whanaungatanga	We work as a family We have fun together
Manaakitanga	We build trust and create a place that others want to be a part of We build mana in others around us to enhance the mana of the whole
Mana Motuhake/Tino Rangatiratanga	We recognise and empower sovereignty and autonomy
Whakapapa	We recognise interconnections We have an intergenerational vision
Kaitiakitanga	We enable stewardship of our biological and cultural heritage
Mātauranga	We recognise the value of blending traditional and modern knowledge
Tohungatanga/Ngā tiketitanga o te pai	We apply excellence to everything we do
Mahi rangapū	We work respectfully in partnership

Table 1: Biological Heritage - Values

Other Challenges followed suit a little later. Some Tāngata Tiriti note that they had not had exposure to a Tiriti-based way of thinking while working within mainstream research institutions, even in terms of understanding the VM Policy's purpose. Because of this, they were not initially confident in developing Tiriti-led partnerships in the science realm, and yet they learned on the job, not least because of Tāngata Whenua who helped them along their journey:



We had some tough internal conversations about what Tiriti means in our context, for example, talking about climate change as a continuation of colonisation. It was hard to dig into these conversations for me, and also hard for MBIE to get into.⁴⁰

The period from the Midway Review and into the early part of Tranche 2 saw more Challenges formalise their respective Tiriti-led Visions. There was an observable push towards progressing their ability to honour Te Tiriti, especially as they were developing second tranche strategies.

Early modellers of Tiriti-positive behaviour served as an example, not only for researchers and communities, but also for other Challenges who had yet to make progress in their journeys. **Resilience to Nature's Challenges** established a set of Tiriti Commitments at the beginning of Tranche 2, and were assisted by observing what other NSCs were doing. These Commitments had real impact, feeding into organisational changes that brought more Māori into the Challenge as leaders and partners, and they sparked the move towards merging the Kāhui Māori and Governance Group.



Photo credit: **BioHeritage National Science Challenge**. June 2019



Fig 5: Resilience to Nature’s Challenges Developed Formal Te Tiriti Commitments

There is clear evidence that bold messages from senior members of Challenge teams set the tone and direction for planning and action. Those who could put such statements in place early, did, and those who were still learning could learn from those further along in their journey.

5.2.2. Actively Involving with Māori Communities and Businesses to refine Missions and Determine Research Focus Areas

The NSC Establishment Principles did not include any mention of Te Tiriti per se, yet leaders across the Challenges skilfully aligned early guidance, including being Mission-led and involving stakeholders, with their quest to create meaningful space for Māori.

users were invited to explore their key priorities, as well as best approaches to meet them through accessing science and research; each Challenge listened, and shaped its focus accordingly. Developing relationships with these groups enabled Challenges to better understand whānau, hapū, iwi and Māori business aspirations, and to work together to determine how research could contribute. This was a powerful shift in dynamics.

Many leadership teams quickly realised that they needed to engage in further consultation to refine how their assigned Mission would be interpreted. Māori communities and end-



We were grateful and amazed by the calibre of people who attended the Toi Tāngata workshop to help us prioritise research funding. They were all busy people with a lot of responsibility in their own organisations, yet they spared a day of their time to help us. It showed that they valued research as a way of improving health outcomes for Māori.⁴¹



Photo credit: **Fleur Templeton**. June 2019

Healthier Lives, for example, engaged in a process of wide and thoughtful wānanga to obtain a much clearer understanding of one of Aotearoa New Zealand’s most urgent issues - health equity - and where science and research could target solutions. This was no small thing, because it ensured the research was aimed directly at real world impact rather than researcher interests. The Challenge incorporated insights gathered through this consultation into developing the entire Phase 2 Research Programme, including a suite of enabling administrative processes.

This work was quickly followed by a workshop hosted by Māori health provider, Toi Tāngata, aimed at establishing more detailed priorities for Māori-led research in Phase 2. The event was fruitful, with Māori community leaders unanimously agreeing that a single large-scale health equity project should be funded:

Our Land and Water was another Challenge that consulted widely as they developed their Phase 2 Strategy, including Māori stakeholders alongside researchers, Theme Leaders and operations staff. This took place during the Midway Review period when it had become clear that the Challenge’s original Mission was not as inclusive as

they wanted it to be. Specific changes resulting from their process included development of a tool, *Te Ara Hourua*, for assessing the nature and authenticity of Vision Mātauranga integration in research programmes, and this proved very useful to initiate solution-focused discussions about how research could be improved.

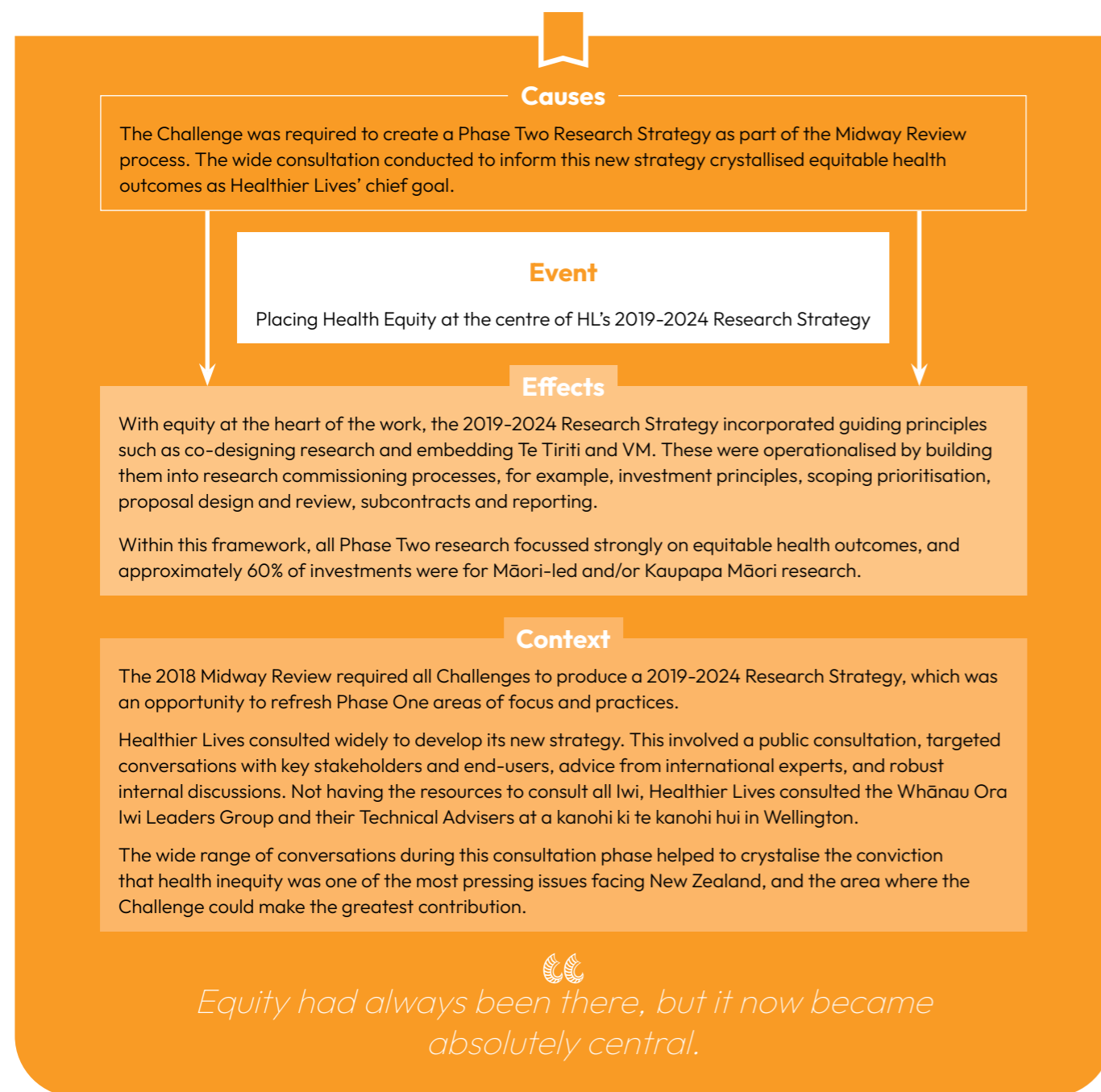


Fig 6: Healthier Lives Placed ‘Health Equity’ at its Heart



Photo credit: **Rebecca McMillan**, March 2023



Workshops and hui were also held by other Challenges to ensure Māori aspirations fed into research development, for example, **Science for Technological Development**, which facilitated two Tranche 1 Mission Labs with Māori and industry representation. **Sustainable Seas** held a series of workshops that were particularly impactful in providing more focussed research directions and identifying partners, and because Māori were integrally involved in these events,

appreciation of Te Ao Māori was elevated in terms of its relationship with Challenge objectives.

Māori communities responded positively to Challenges making genuine efforts to involve them at the heart of research planning and activities. It moved research projects from being investigator-led, to being firmly based on solving real world problems, as was originally intended for the NSC initiative.

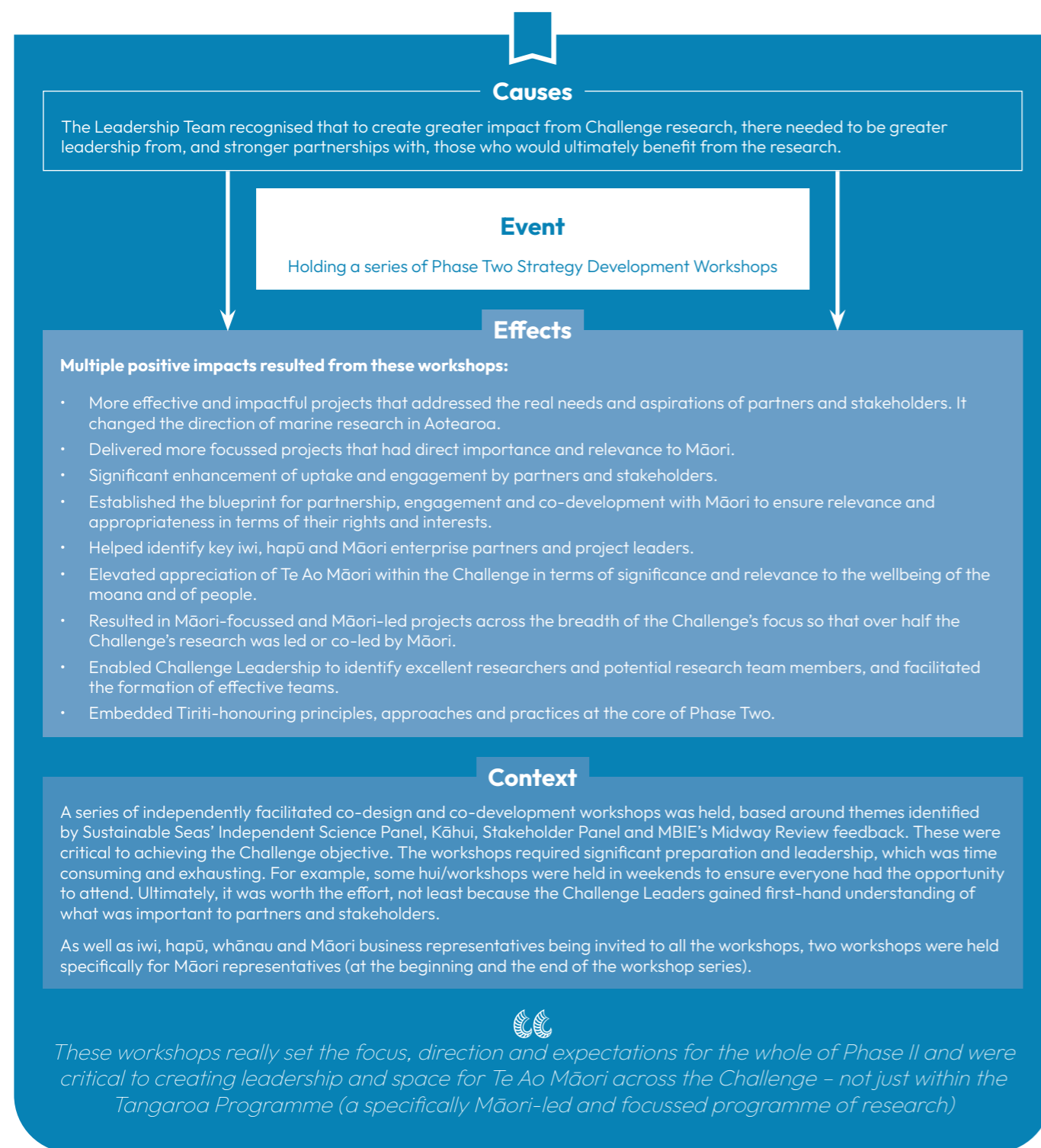


Fig 7: Sustainable Seas Co-Developed Phase 2 Strategy

5.2.3. Redefining Research and Researchers to Include: Mātauranga Māori, Kaupapa Māori Approaches, Tohunga and other Community Experts.



We had a clear and consistent commitment to the inclusion and encouragement of kaupapa Māori and Māori practitioners within the Challenge, including going out and ensuring the opportunities were seen and taken up.⁴²

The Challenges were given guidance in the original Establishment Principles to “bring in new ideas, researchers, and research providers to refresh the Challenge. Each research plan involves identifying and selecting the best science to address the Challenge. Critical research capabilities including Mātauranga knowledge need to remain dynamic and must continue to be built and evolve to maximise outcomes for New Zealand.” Additionally, all NSCs were required to ‘give effect to the Vision Mātauranga policy’. This early guidance raised the possibility of elevating (as a matter of course) the place of community-based experts such as kaumātua, and Kaupapa Māori approaches within research programmes.

Leadership and Governance teams were conscious of how they valued indigenous knowledges, wisdom, experience and practitioners, although maturity levels have differed between Challenges and over time. Nevertheless, safe spaces have been created for community-based experts who do not necessarily consider themselves to be researchers.



I had to be open to learning (from a Māori perspective), acknowledging the importance of mātauranga to the environment in New Zealand, and trust Māori and take their lead.⁴³

A Better Start had adopted the He Awa Whiria - Braided Rivers Model⁴⁴ from its inception. This model guides the integration of mātauranga Māori and knowledge from other sources, and has provided a guide for Challenge researchers on how to expand on purposeful, mutually beneficial and accountable engagements at a range of levels. He Awa Whiria is now used across a broad range of sectors, including tertiary institutions, iwi locations, private corporations and government ministries.



Māori approaches were braided throughout the projects, often in novel ways such as the braiding of Māori participatory research with randomised control intervention design in the Resilient Teens Theme.⁴⁵

He Awa Whiria is a useful conceptual framework for non-Māori colleagues to understand and work in new ways, and as a way of conceptualising research relationships and knowledge systems. For example, it has been particularly useful in facilitating non-Māori researchers to see where their approaches might relate to Māori approaches and Kaupapa Māori research.

As this Challenge was considering its Phase 2 Strategy, a strong call for investment in Māori-led research caused the leadership to explore the issue further; they learned that there was indeed a gap which needed investment. The resulting increase in funding for Kaupapa Māori research met with a favourable response, and resulted in a new project: *Raranga, raranga taku takapau: hapū ora for tamariki*.

⁴² Tāngata Tiriti, Cross-NSC Wānanga

⁴³ Tāngata Tiriti, NSC Beginnings focus group

⁴⁴ Inspired by the pioneering educational research of Professor Angus Macfarlane.

⁴⁵ A Better Start Challenge



Fig 8: A Better Start Formally Recognised Kaupapa Māori Research as a Vital Component of the Challenge

Early in the Tranche 2, **Sustainable Seas**’ quest to better connect and enlarge its overall research impacts concluded that in fact, Te Ao Māori was the common link. This realisation changed the Challenge’s approach to carrying out and synthesising their research, and highlighted the value of Mātauranga Māori within the mahi.

These examples show that when leaders listened to the concerns and advice of Māori researchers, they were better able to re-examine previously held assumptions and attachment to widely accepted ways of approaching their goals.

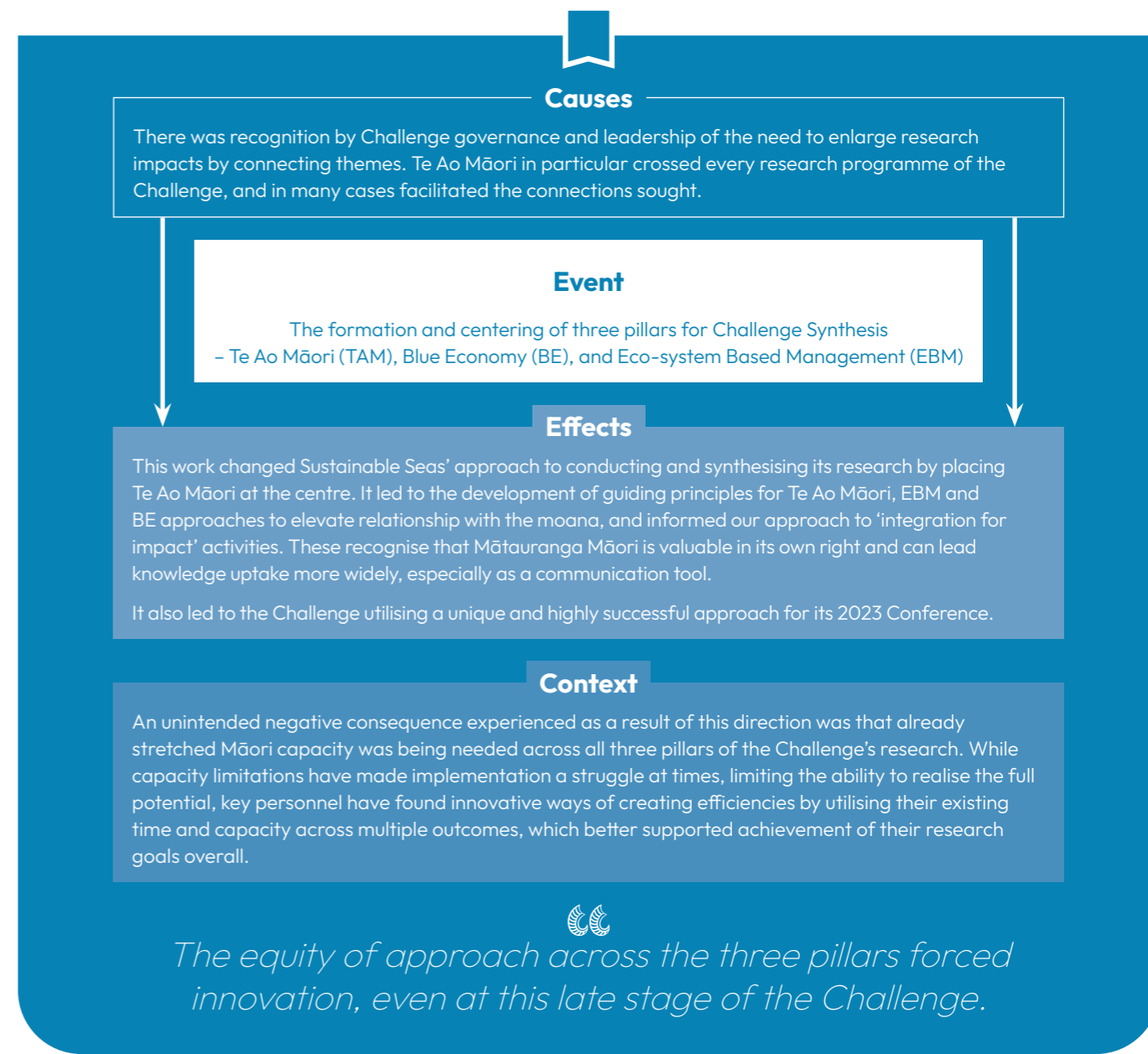


Fig 9: Sustainable Seas Placed Te Ao Māori at the Centre of Research Synthesis

5.3 Mandate

Partnerships between Tāngata Whenua and Tāngata Tiriti at the management, governance and advisory levels that value the expertise of both and co-create strategic and financial priorities.

Leadership, governance and advisory groups have all been crucial in orientating the NSCs' priorities and practices along the collective Tiriti journey. It is noted that within the wider science and research system, Māori have often been overlooked for governance and leadership positions, despite being capable and willing, so the common Challenge expectation that senior roles should naturally be shared by Tāngata Whenua and Tāngata Tiriti has been quite novel for the sector.

Based on feedback from those contributing to the current legacy document, the courage of those early captains (as well as those who followed) in appointing Māori into leadership roles has arguably been the most effective approach to activating Tiriti-honouring practice because when Māori are present, empowered and resourced to influence decision-making, those decisions on how to value, invest in and undertake research, are fundamentally changed.

Creating a true Tiriti-based partnership and mandate for change has involved each Challenge recruiting both Tāngata Whenua and Tāngata Tiriti into influential positions within the Directorate, Leadership Teams and Governance. Equally, working with Māori to ensure meaningful advisory roles were in place has also been critical.



The National Science Challenges have been really powerful - it's powerful walking together.⁴⁶

5.3.1. Directorships

Achieving co-Leadership has for some Challenges required a great deal of effort, persuasion, courage and belief in the outcome, while the process for others has been smoother. Challenges have each taken their own approach, with some appointing co-Directors, for example, and others opting for Deputy Directors - Māori.

BioHeritage changed to a co-Directorship before the close of Tranche 1, with the Māori Manager moving into a newly created Kaihautū Ngātahi (co-Director Māori) role, followed soon after by a new co-Director (Tāngata Tiriti) coming into the Challenge. This arrangement was not usual, and was unknown territory for the host in terms of lines of accountability and potential duplication of functions, but any issues were eventually worked through, and the focus could return to the value and need for diverse ways of knowing and being. Māori co-Leads for the Challenge's Strategic Outcomes (programmes) were also put in place, and Māori advisors and Knowledge Brokers were appointed too:



Courageous leadership, especially in the early stages, built momentum and established behaviours (value-led, co-leadership), and contributed to the success in later phases through to today.⁴⁷

Also in the second half of the first Phase, **Healthier Lives** appointed a Māori Deputy Director to ensure a strong Māori voice within the Leadership Team. In his role, the Deputy Director was instrumental in operationalising some key initiatives, including:

- Driving Healthier Live's representation on, and support of, the Rauika Māngai;
- Leading a consultation hui with Māori health and community leaders to determine Phase Two priorities;
- Advocating for appointing Māori interns to the merged Governance Group-Kāhui Māori (GGKM) group to grow future leaders; and
- Introducing a 'VM review' process to engage Māori community leaders early in research development.



Photo credit: **Luke Pilkinton-Ching**. Feb 2024

⁴⁶ Tāngata Whenua, Cross-NSC Wānanga

⁴⁷ Bioheritage Challenge

A little later, during the Midway Review stage, **Sustainable Seas** established a Manahautū role (Deputy Director Māori), which modelled the expectation that Te Ao Māori was centrally important within the Challenge, and provided assurance to Māori researchers that their contributions were valued, and that they would be supported appropriately.



Fig 10: Sustainable Seas Appointed a Manahautū (Deputy Director - Māori)

Purposeful succession planning was practiced by **Ageing Well**. Creating space for others involved a deliberate power shift, with Pākehā incumbents paving the way for Māori to step into two critical leadership roles: Director and Chair. Prioritising the kaupapa over personal ego was an example

of Te Tiriti principles in action, and this served as a powerful model for those working inside the Challenge, as well as helping to build trust with community partners. A smooth leadership transition was enabled by departing leaders offering ongoing support as needed:



As Māori, it's very hard for us to do things in isolation. If we're to truly flourish in a Tiriti-led kaupapa, then that partnership has to be real and it has to be more than just lip service. I feel that the Ageing Well National Science Challenge has had the influence it's had in our kaumatua communities because of that.⁴⁸

Our Land and Water took a slightly different approach early in Tranche 2, establishing an additional senior Māori role that was on an equal footing with the Director. By this time it had become clear that while there was a strong stated commitment to honouring Te Tiriti, there was also insufficient capacity and capability within the existing Directorate to oversee the practical changes needed to move in the desired direction.

moved to a co-Director or Deputy Director model, OLW preferred to define Directorate leaders by their skills rather than by hierarchy.

The new role of Kaihāpai Māori was established, creating a tripartite Leadership Team of Director, Chief Scientist and Kaihāpai Māori. In contrast to other Challenges that had

One of the significant contributions of the Kaihāpai Māori was the creation of a conceptual model that showed the relationships between the primary sector, communities, the biophysical environment and Te Taiao. This informed the new Research Workplan design, and helped many researchers visualise Te Ao Māori in terms of how it might relate to research investigating land and water quality.



The choice of person for the Kaihāpai Māori role was a critical factor in the success of OLW's Te Tiriti Journey. The role required a rare combination of skills and attributes, including a sound knowledge of Te Ao Māori, connections to Māori stakeholders, empathy, drive, and a genuine commitment to the OLW Mission.⁴⁹

Still another approach was taken by **Science for Technological Innovation**, which determined that because of the high level of Māori representation and expertise already in place across the Board, Kāhui Māori (which included the non-Māori Director), Leadership Team and Programme Office, it was not necessary to create a Māori Directorate role.

While these examples show different approaches to including Māori at the Director level, all Challenges recognised the tremendous value gained from having Māori in leadership who brought their expertise and experience to navigating new ways of working. Whether they were recruited for entirely new roles, or operating within existing ones, Māori Directors were key players in influencing and supporting Leadership Teams to honour Te Tiriti.

⁴⁸ Ageing Well Challenge - Community Partner

⁴⁹ Our Land and Water Challenge

5.3.2. Creating Māori-focused Roles Within Leadership Teams

Making space for Māori within wider Leadership Teams was another critical aspect of the Tiriti Journey in that it brought crucial additional expertise, including (but not limited to) cultural expertise, into these decision-making roles, and demonstrated a commitment to partnership. **Sustainable Seas** was one of the first Challenges to create Māori-

focused roles within their LT in the form of VM and Tangaroa Leaders. These new recruits made a significant difference by attracting Māori-relevant projects into the Challenge's research stable, and they went further by advocating for a Kāhui Māori to be established early in Phase 1, as well as developing important relationships with iwi and hapū.



Fig 11: Sustainable Seas Created New Māori-Specific Leadership Roles

BioHeritage has shown a consistent commitment to reviewing their internal leadership structure to ensure they were living their values of addressing inequities, embracing diversity and creating better ways of working collectively. With this in mind, at around the halfway point, the Challenge

appointed programme co-leads for Tranche 2 to support Māori and non-Māori to work together more closely and apply different knowledge systems to effect change and enhance innovation. Looking back, this addition proved very helpful to the Challenge activating Tiriti-honouring practice.

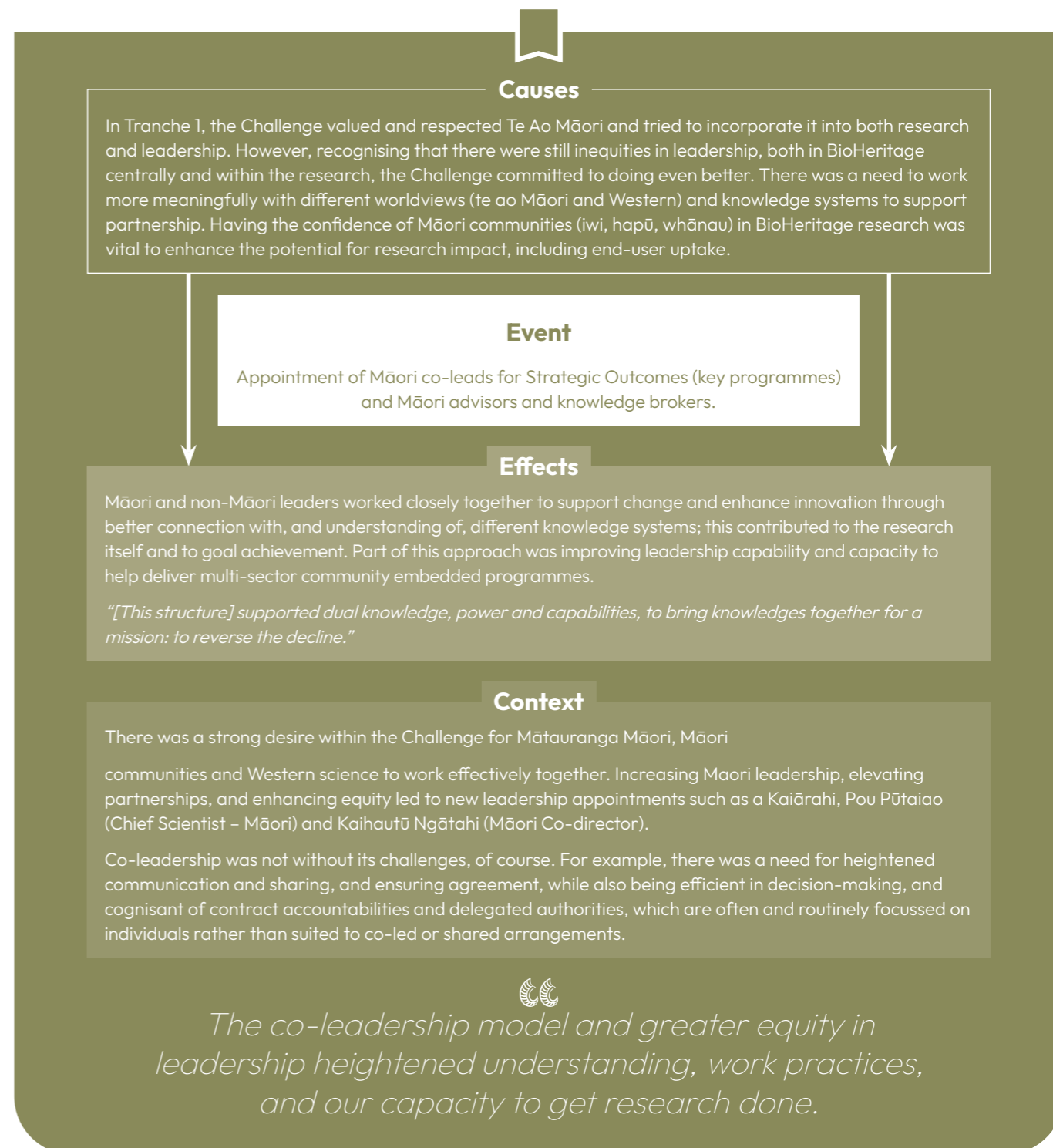


Fig 12: BioHeritage Established Māori and non-Māori Co-Lead Roles for All Major Programmes in Tranche 2

Resilience to Nature's Challenges also created a new leadership role early in the second phase: VM Knowledge Broker. This was the result of Māori research leaders making the case for additional resourcing to support enhanced VM activity for Phase 2. Establishing such a role produced several positive impacts:

- The VM Knowledge Broker assisted with capability building and helped to remove the 'fear-factor' for non-Māori, which in turn enabled them to undertake VM activities in mana-enhancing ways. For Māori, the Broker's activities reduced the amount of unpaid cultural work usually required of them:



It reduced the cultural labour burden on Māori leaders, enabling them to focus on their own research and development, and other system leadership.⁵⁰

- The Broker was also able to take on higher level roles such as supporting relationship-building at the hapū level for kaupapa-Māori and VM projects. Additionally, they were a key contributor to developing the Māori Strategy, He Peka Titoki.

Interestingly, the VM Knowledge Broker's impact has been felt beyond the Challenge, for example, through the creation of frameworks that address a range of engagement and participation issues, which are applicable across the RSI system. They have also supported the Rauika Māngai, and established good practice policies for protecting Mātauranga Māori.

There have been multiple benefits from making space for additional senior Māori personnel, which have extended beyond simply sending signals to the wider environment. They have achieved meaningful impact in terms of agenda-setting, creating tools, and supporting research relationships.

5.3.3. The Kāhui Māori and Governance

The devolution of power from MBIE as well as the NSC establishment requirement for independent governance, were important enablers of the Tiriti Journey, made more significant by the flexibility and a willingness to reorganise initial structures to include Māori as appropriate within each Challenge.

Co-Governance

A problem commonly experienced in the Challenges' early days was a lack of Māori expertise within governance groups, and in fact some had no Māori representation at all. Independent Board members tended initially to be recruited with reference to conventional research areas, institutional stakeholders and competencies.

Not surprisingly, this had a limiting effect on Tiriti-honouring practice in that Māori were not recruited and so had little or no decision-making power at that time. As one senior manager noted,



It's a challenge for a single Māori voice, a lone voice, for Māori things and views on governance.⁵¹



Photo credit: **Taiha Molyneux**. June 2023

There was also the risk of higher scrutiny being placed on Māori-focused initiatives and/or methodologies due to a cultural capability gap.

For these reasons, having Māori representation sitting inside Governance Groups was important. The Challenges have tended to institute co-Governance, which has put confident, well-respected and trusted Māori voices at the table, and created spaces that are culturally safe, supported, and solution-focussed.



The governance component was a critically important stepchange for us. If we didn't have the two people we had on the Governance Board advocating in the way they did and helping to reorientate our group, then we would probably be in the same place as we were in Tranche 1 where less than 15% of the funding was for Māori-led research - now we are at 50%. Those people were critical to fight for us at governance level, and knowing how to orchestrate change. That can't be underestimated, the power at that level to make change at really large scales.⁵²

Building Better Homes, Towns and Cities moved to co-Chairs as one way to live up to their self-initiated commitment to Te Tiriti. Inviting equal Māori and non-Māori representation onto the Board was the foundation for true partnership, and impacted on the underlying culture of the group.

Other Challenges similarly noted benefits of co-Governance. For **SFTI**, it ensured Māori were firmly involved in funding decisions and it made a strong partner-oriented statement to Challenge researchers, Māori partners, and the RSI sector as a whole. For **High-Value Nutrition**, a more focused way of working has emerged, with all Board members taking a stronger responsibility for the Challenge's VM and Te Tiriti direction. **Resilience to Nature's Challenges** moved to a co-Chair arrangement during the second tranche, but have still seen positive impacts. The change has further increased trust with iwi and hapū partners not least because it demonstrated the Challenge's commitment to shared, Tiriti-centered decision-making:



It was the right thing to do, to honour the Tiriti commitments we had made.⁵³

Strong Māori leadership present and influencing at governance level was critical for driving organisation wide change and engaging in transformational relationships with other governors and leaders. The NSC experience suggests that lack of representation is usually reflective of lack of intentionality in appointment, as when this intention was clear and prioritised, there were many qualified and capable candidates.

⁵⁰ Resilience to Nature's Challenges Challenge

⁵¹ Tāngata Whenua, Cross-NSC Wānanga

⁵² Tāngata Whenua, Cross-NSC Wānanga

⁵³ Resilience to Nature's Challenges Challenge



Fig 13: Building Better Homes, Towns and Cities Established Co-Chairs and Equal Representation on their Board

Merging Kāhui Māori and Governance Groups (or not)

The Kāhui Māori roopu were intended to sit alongside governance in an advisory role. All Challenges established their own Kāhui Māori within the first Tranche as an avenue for Māori voices to influence important matters such as the application of the VM policy, and for Te Ao Māori principles more broadly. Kāhui members would often attend governance meetings, but generally had no voting rights in the early days.



The Kāhui Māori took its role very seriously. We executed some things which kept the Challenge safe. No one may ever know about all the ways in which we have supported the governance of the Challenge.⁵⁴



Photo credit: **Sharron Bennet**. December 2015

Three Health Challenges initially shared a single Kāhui Māori, however, this proved less than ideal, primarily due to insufficient hours available to Kāhui members for the work required, and an inability for deeper relationships to be formed given the time constraints. **Healthier Lives** describe establishing their own Kāhui as a key event in their Tiriti-honouring Journey, largely because it allowed members to become integrally involved in strategy development and planning.

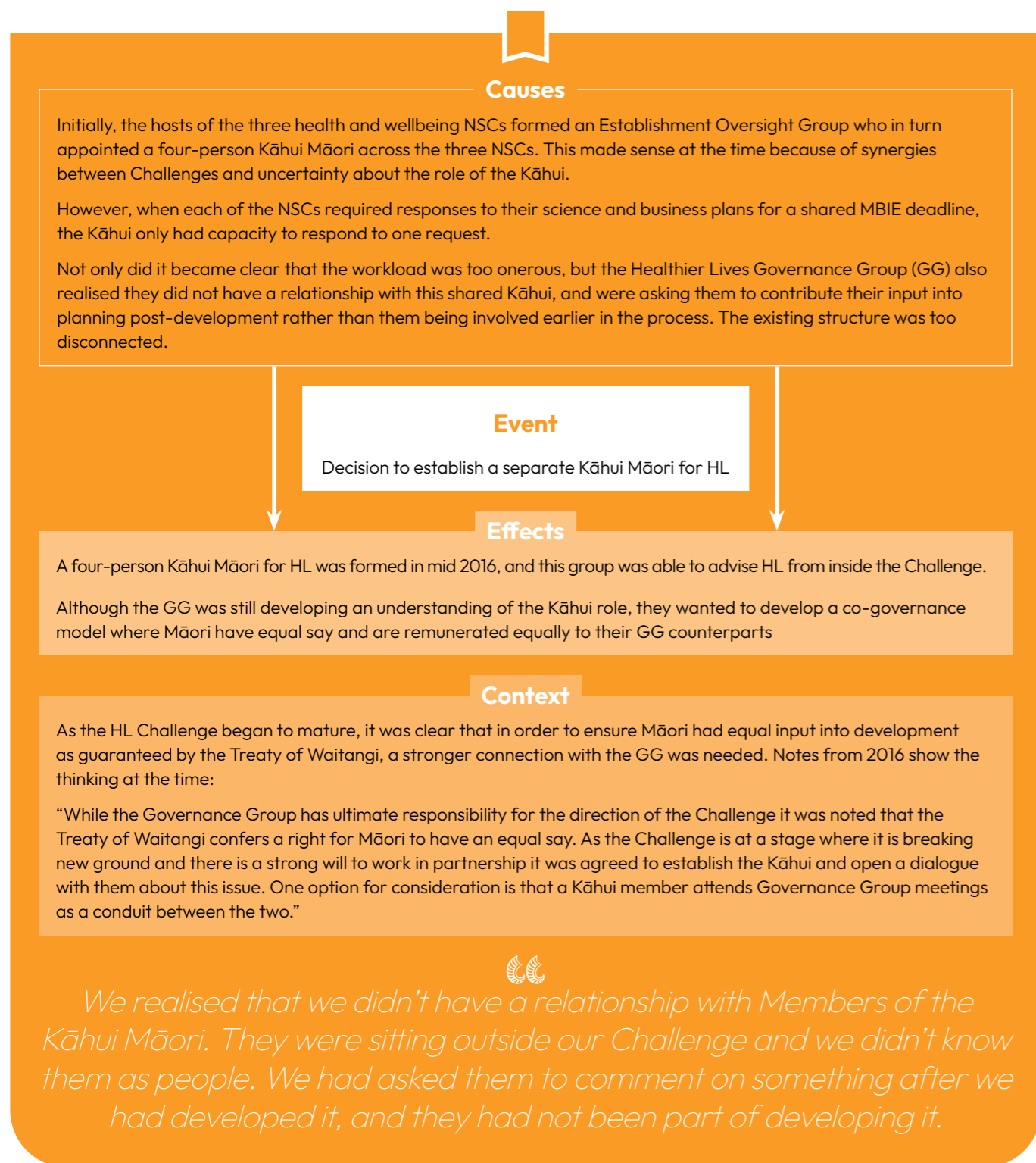


Fig 14: Healthier Lives Established their own Kāhui Māori Early



Photo credit: **Luke Pilkinton-Ching**. April 2024

For **Ageing Well**, the unclear roles and relationships between the Kāhui and governance body caused friction which needed to be resolved. At a hui in late 2016, the matter was discussed robustly, and a unanimous decision was reached to merge the two groups. The benefits of this change quickly became apparent, including increased cohesiveness and more efficient decision-making. Over time, the positive effects continued to increase and spread throughout the organisation, especially in terms of working collectively:

Many Challenges revisited the Kāhui role as they developed their understanding of the relevance of, and opportunities presented by, Te Tiriti to their endeavours and were actively exploring how to operationalise those alignments. Ultimately, eight of the 11 Challenges chose to merge their Kāhui and Governance Group, affording more decision-making power to Māori. The remaining three considered that a separate roopu would be preferable as it could maintain an unapologetically Māori focus.

Those who chose to merge the two groups cited a number of reasons for this course of action, such as adding capacity to the existing Governance Group, and raising the level of trust in the Challenge amongst Māori stakeholders.



There was a feeling of transformation, that we were one team, we were going to do something together with a common purpose.⁵⁵

Looking back, **BioHeritage** considers that merging their Kāhui Māori and Governance to form the Mana Rangatira Governance Group (MRGG) to be a pivotal ‘moment’ in their Tiriti Journey. This transition came after they had already moved to co-Governance, but before the Midway Review, and served to further enhance cultural understanding within the governing body.

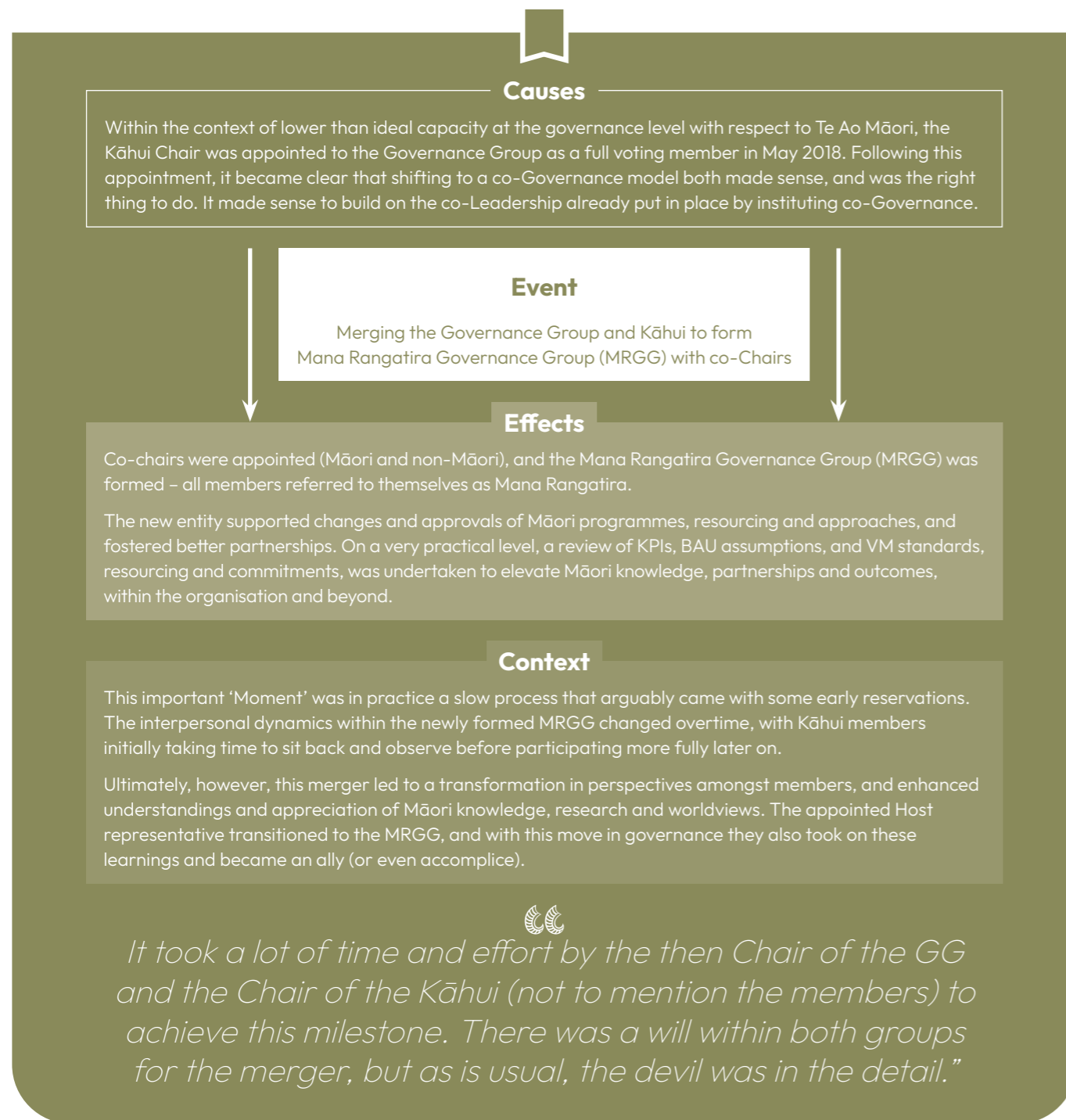


Fig 15: BioHeritage Formed the Mana Rangatira Governance Group (MRGG)

Other Challenges have been similarly positive about merging the two groups. For **Our Land and Water**, because some early decisions had been made prior to more considered Kāhui and Governance structures being in place, Māori had not had a meaningful opportunity to be involved in the decision-making process. As a result, there was a clear need to revisit Māori representation early in the second tranche, particularly with respect to meeting the Challenge’s new strategic commitment to Te Ao Māori:



[Merging the Kāhui and Governance Board] was a positive step for Our Land and Water, and could have been done earlier, perhaps from the start of 2016, had it not been for MBIE’s directive to have two separate governing bodies.⁵⁶



Those who chose not to merge the two groups⁵⁷ were cognisant of the potential to lose advantages already being experienced through having a Māori-focused advisory group. The Kāhui was a place for Māori within a Challenge to share thought processes and ideas in order to create stronger, more positive outcomes for Māori.

“We’ve had a strong Kāhui from early on, which has operated within and outside the Governance Group. This asserts Mana Motuhake in relation to anything related to Māori – that was our domain and we would take our determinations back to the governance group.⁵⁸

Despite observing many other NSCs making the decision to merge, **Sustainable Seas’** Kāhui recognised the need to maintain a specific forum and role (by Māori, for Māori) to give sole focus to, and preservation of, Māori leadership and interests. Specific benefits of this arrangement included:

- a visible independent Māori leadership voice, advice and guidance to both the Challenge leadership and Governance Group.
- a korowai/support for the Challenge’s Māori leaders – VM, Tangaroa Leaders, Manahautū and VM Leadership Group – adding advice, guidance, weight, authority, integrity and credibility to these key roles.
- having an independent tikanga advisory role to support the work of the broader Challenge.

This joint decision to remain separate was made during the Midway Review, and was relatively easy given the trust and confidence the Kāhui had in Sustainable Sea’s governance:



On reflection, the Challenge Leadership Team (and Manahautū in particular) were grateful for the decision not to merge. The unapologetic Māori focus and guidance provided by the Kāhui Māori has been instrumental to the Challenge’s approach and success overall.⁵⁹

So, while these examples provide no clear guidance on a single best approach to governance and advisory, they do show that honouring Te Tiriti requires a deep consideration of the governance mechanisms in place and how their power arrangement reflects the rights and responsibilities of both Māori and the Crown. Transformation and impact emerged, not from the perfect governance structure, but from the courage to self-reflect, to challenge the status quo and to pursue new possibilities together.

⁵⁶ Our Land and Water Challenge

⁵⁸ Tāngata Whenua, Cross-NSC Wānanga

⁵⁷ Deep South, Science for Technological Innovation and Sustainable Seas Challenges

⁵⁹ Sustainable Seas Challenge

5.3.4. Rauika Māngai

The Rauika Māngai (Assembly of Representatives) was collectively supported by all Challenges, together with Ngā Pae o te Māramatanga. Representatives, including Māori scientists, research leaders and managers, from across the supporting organisations make up the Rauika, and this roopu has taken a strategic leadership role within the science and research system.

The group has provided a much needed space for Māori working across the Challenges to share their experiences and the heavy responsibility of having to continuously affirm a Māori voice within the RSI system. Equally, it has brought Māori together to celebrate Māori research, and the written documents it has produced have helped to drive and position Māori thinking within each National Science Challenge:



Each Science Challenge had this person who was trying to do the Vision Mātauranga aspects, often alone, probably often getting exhausted. So what happened is we collectivised. We had support from each other and we could start to hear about how the others were doing it, and then how we were doing it, and just get ideas from each other. Plus you had a bunch of mates, which is always nice.⁶⁰



Photo credit: **Dave Allen**. June 2023

The WAI262 Best Practice Guide was noted as an authoritative contribution made by the Rauika Māngai. It is especially relevant in the science and research space as the document advises both Māori and non-Māori scientists and researchers to:



Be informed and understand the complexities of the claim itself; to develop respectful relationships with kaitiaki, where kaitiaki leadership of taonga aspects of science projects is upheld; to move aside from leadership roles to ensure co-leadership across all aspects of science projects that do not involve taonga; to co-design projects with kaitiaki; to develop reciprocal and benefit sharing relationships with kaitiaki that build capacity and capability; and to develop a deep cultural understanding of how to be a 'good guest and a good host' as well as the porous boundaries between these standpoints.⁶¹

Another Rauika Māngai publication, *The Guide to Vision Mātauranga*, was mentioned by a number of people as being particularly useful because it was a tangible reference guide around which to build Tiriti conversations. It was described as “very aspirational,” and a useful induction tool for learning how to operationalise and manage the VM policy.



It helped people to see where they were currently, and what they could be moving towards.”⁶²

“MBIE wouldn't review VM when we asked them to, so the Rauika Māngai filled the gap with the 'Guide to Vision Mātauranga. That was really effective.”⁶³

The document presents principles for applying Vision Mātauranga, which if followed, would see a significant improvement in terms of science excellence, impact and success across the science sector. The table below shows specific practices, from poor on the left (representing the status quo in many parts of the science and research system) to excellent on the right (representing best practice). There are myriad examples of the Challenges operating at the right of this table.

Empower Māori Knowledge	
Only Western science legitimised	Mātauranga Māori & Western science valued
Mātauranga Māori merely acknowledged	Mātauranga Māori activity resourced
Taken from Mātauranga Māori experts	By and with Mātauranga Māori experts
Non-Māori as primary Vision Mātauranga experts	Māori as primary Vision Mātauranga experts
Cultural expertise of Māori Researchers overlooked	Cultural expertise valued
Scientific expertise of Māori Researchers side-lined	Scientific expertise recognised
Empower Māori People	
Consulted for projects, programmes & organisations	Māori-led and co-led projects, programmes & organisations
Advice sought to tick the 'VM box'	Advice sought for research value and followed
Informed about the decisions made	Involved as decision makers
Projects about Māori	Projects by and with Māori
Māori rare in the sector	Many Māori in the sector
Cultural labour is unpaid or underpaid	Additional labour is resourced
Māori researchers responsible & isolated	Māori researchers supported & developed
Empower Māori Resources	
Academic aspirations alone	Māori & academic aspirations
Academic publication the most important goal	Publication & benefit for Māori people
IP benefit retention by academic institutions	IP benefit sharing or Māori ownership
Only Western scientific measures of excellence, impact and success	Māori worldview of excellence, impact and success is included

Table 2: Moving from poor to excellent practice in applying the VM Policy⁶⁴

⁶⁰ Tāngata Whenua, Cross-NSC Wānanga

⁶¹ Māngai, R. (2022). A WAI 262 best practice guide for science partnerships with kaitiaki for research involving taonga. Lessons from Māori voices in the New Zealand science sector. (p4)

⁶² Tāngata Whenua, Cross-NSC Wānanga

⁶³ Tāngata Whenua, Cross-NSC Wānanga

⁶⁴ Māngai, R. (2020). A guide to vision Mātauranga. Lessons from Māori Voices in the New Zealand Science System. Wellington, New Zealand: Rauika Māngai. (p10)

Māori have always worked collectively to advocate for and drive change. Often this collective advocacy is unpaid and carried in addition to their primary role. Sometimes Māori are in a position where they have to choose between the expectations of the job they were employed to do, and their responsibility and commitment to their Māori colleagues. This limits the scope of both their contribution and influence.

The Rauika Māngai formalised the organic collective within the stable of NSCs and this enabled Māori researchers to have a degree of freedom - both to assign time to the work of the Rauika Mangai, and to choose priority areas for their meaningful contribution. The Challenges benefited greatly from the high quality, experienced advice of these senior Māori leaders and practitioners.

5.4 Enabling Environment

Putting in place the appropriate structures and processes needed to activate Tiriti-honouring practice.

The wider RSI system generally does not fully understand nor enable a Tiriti-led approach to research, so new approaches had to be created by the Challenges. Appropriate internal structures and processes were needed to operationalise decisions made by the brave, deliberate, and proactive leaders wanting to activate Tiriti-honouring practices. Operational teams that were “quick to ‘yes’, and slow to ‘no’”⁶⁵ were key to putting these enabling environments in place.

This section discusses effective activity across four areas: research planning; funding; contracting and IP; and assessment of both research ideas and impact.

5.4.1 Inclusion of Māori interests, knowledge and aspirations into research planning

Each Challenge approached research planning and development somewhat differently, but there were multiple small practices employed which added up to virtually guarantee that Māori voices were influential. Using collaborative and iterative methods and moving beyond the ‘usual suspects’ to involve iwi, hapū, community, industry and government, were key:



*Collaboration has been the key to enabling agility when needed. It has allowed us to pull researchers together at pace in the face of emergencies such as Whakaari Island. That has only been possible because of the NSCs’ way of doing things.*⁶⁶

Some Challenges forced teams to work together, for example, by not letting people choose their co-Leaders and/or having strong criteria around team formation and capability to ensure a mix of experiences and knowledges were involved. However, this approach was not always successful, so others preferred to work with ‘coalitions of the willing’ instead. Some Challenges utilised existing networks, while others facilitated the formation of completely novel groupings. Regardless of the approach, all research teams were required to take a less hierarchical, more collaborative, values-based, and Mission-led approach to their research:



*Our collaborative approach with communities has really paid dividends. More grassroots groups determining where the research needs to focus rather than the mainstream top-down approach.*⁶⁷

⁶⁵ Tāngata Whenua, Cross-NSC Wānanga

⁶⁶ Tāngata Whenua, Cross-NSC Wānanga

⁶⁷ Tāngata Tiriti, Cross-NSC Wānanga

Healthier Lives was one of the first Challenges to formally use co-design to develop research projects with partners. The experience was so positive that the technique was used again. In addition, an unforeseen benefit was that the process raised the issue of Mātauranga IP rights early, which was subsequently resolved through making contract adjustments.

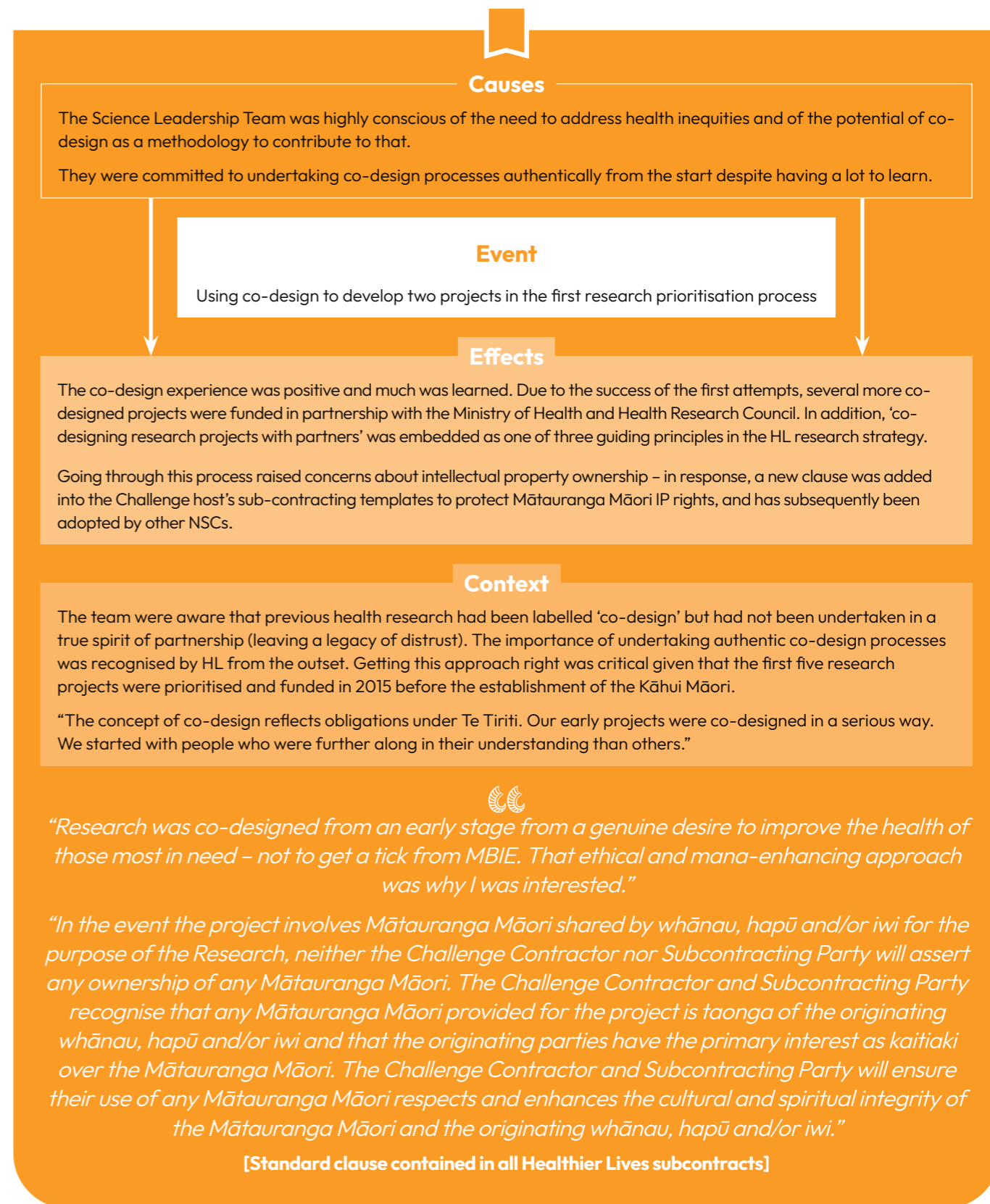


Fig 16: Healthier Lives Used Co-Design to Identify Research Priorities



Fig 17: A Better Start Signed an MOU with Ngāti Whātua Ōrākei

A small number of Challenges reported that they had established formal, high level relationships with external Māori partners, which fed through into research activities.

A Better Start, for example, signed an MOU with Ngāti Whātua o Ōrākei as part of a commitment to elevating relationships with all Māori partners. Several direct impacts came from this initiative, including a detailed assessment of the health and wellbeing needs of Ngāti Whātua o Ōrākei infants and young children from 0-5 years of age.

As Covid impacted business and research around the world, **High-Value Nutrition** pivoted to focus more on the domestic food ecosystem, and in particular, Māori -owned food businesses. Because there was no existing contact database, the Challenge had one created, and then proceeded to make contact with those in the sector. This initiative was well-received and has led to a number of research partnerships.

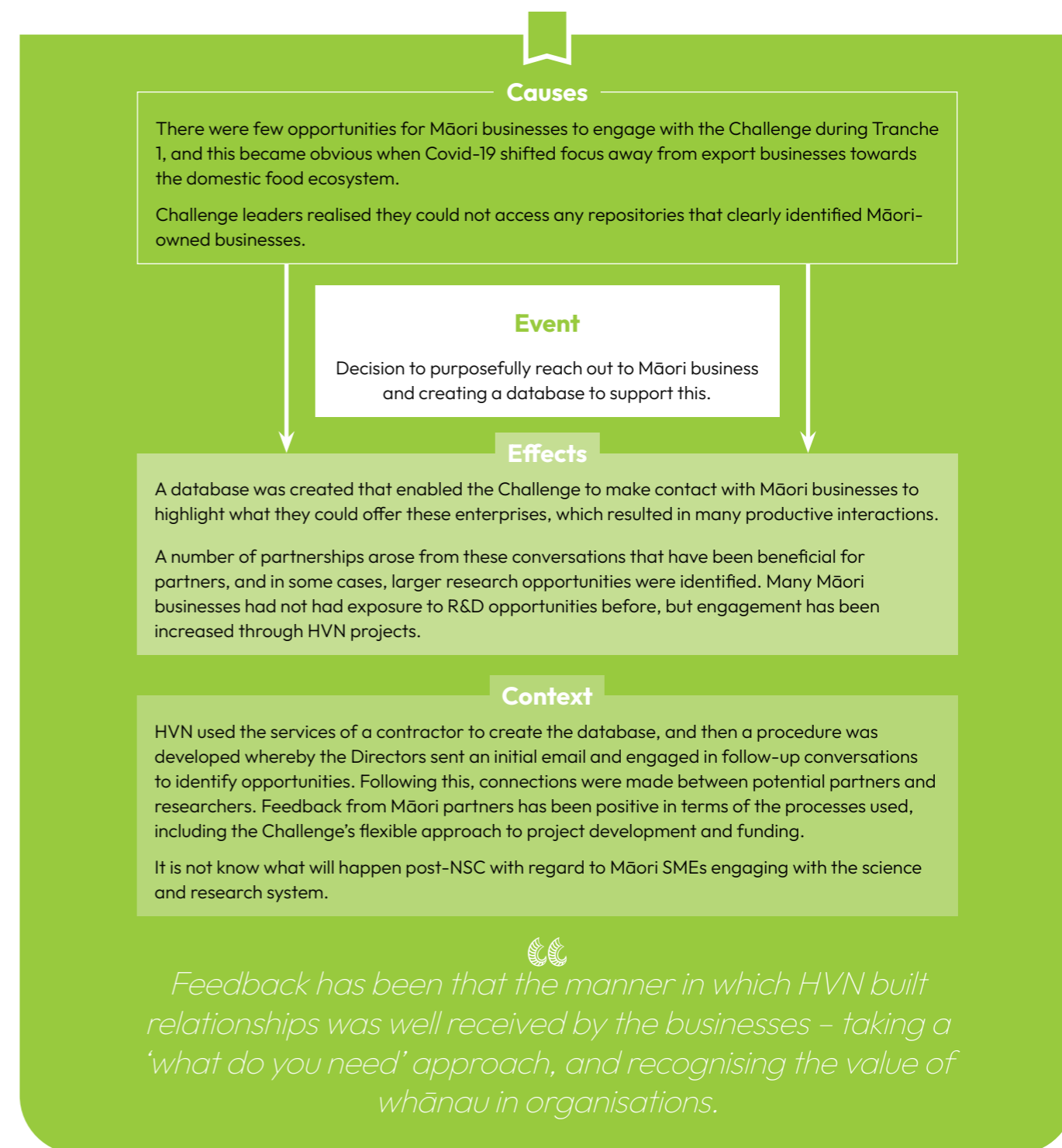


Fig 18: High-Value Nutrition Targeted Māori Food Enterprises to Explore How R&D Might Support Their Aspirations

By the beginning of Phase 2, **Our Land and Water** had recognised some obstacles to Māori participating in research, including poor past experiences and lack of trust, as well as time constraints, lack of funding and contracting roadblocks. In order to meet its stated commitment to honouring Te Tiriti, the Challenge refreshed its Research Workplan using a Te Ao Māori lens, which caused them to alter proposal assessment practices, project personnel requirements, and the composition of the Science Advisory Panel:



There are many actions that were taken over a period of time to gradually move us forward on this journey.⁶⁸

Challenges took a variety of approaches to include Māori interests, knowledge and aspirations into research planning. Senior Challenge personnel have consistently concluded that the time and up-front investment in the relationships required to genuinely co-create research plans is worthwhile – it significantly improved the quality of communication, problem solving and clarity of purpose within the research trajectory. The wisdom of this approach has been reflected in the equally significant growth of tangible research impacts for target communities.



Causes

It was identified that a major change was required for the Challenge to honour Te Tiriti as stated, and equally, for Māori to have confidence that there was value in being involved. Many had been burnt by interactions with researchers and the research sector in the past, and felt unwilling or unable to participate in research design processes. Specific barriers to this participation included time constraints, lack of funding support at the design phase, and issues around established research procurement and contracting processes, particularly the requirement of a typical research CV, and the inclusion of unacceptable (to Māori) IP arrangements. Trust needed to be rebuilt and significant changes put in place. The GG requested the Research Workplan be refreshed, not least because of the existing difficulty in initiating a Tiriti journey within established biophysical-focused research.

Event

Enacting a Te Tiriti partnership in OLW, anchored by a new Research Workplan that reflected a commitment to Te Ao Māori.

Effects

The Research Workplan was refreshed to apply a Te Ao Māori lens to the overarching Challenge framework of three research themes, and this was approved by the GG and MBIE. Specific changes:

- The general requirements for co-design and co-development were further refined for Māori engagement, allowing for longer time frames and adequate resourcing.
- (Almost) all new research was required to be set on a spectrum between Mātauranga Māori and so called “Western” science, with a balance across the spectrum.
- All large research programmes were required to include a senior Māori researcher as a Te Ao Māori Lead. This person could dedicate time to coaching researchers supported by OLW. Resources were made available to support this role.
- A tool for assessing the nature and authenticity of Vision Mātauranga integration in research programmes, Te Ara Hourua, was developed and applied by OLW. This was mainly used to initiate discussions on how things could be improved, rather than an assessment ‘exam’.
- Research proposal templates, application processes and contract agreements were modified where necessary to become more inclusive and to remove obstacles for Mātauranga Māori research and researchers.
- The SAP was modified to include Māori researchers and stakeholders, so that Mātauranga Māori research proposals could be properly assessed.

Context

This work was achieved by people throughout the organisation, from the Governance Group, who initiated it, to the Directorate and Theme Leaders who recrafted the Workplan, to the Kaihāpai Māori and Vision Mātauranga Theme leader (Kaiarataki) who engaged with existing and new research teams to support their Māori researchers and connect to stakeholders. Researchers who were willing to participate in this new way of working, and senior Māori researchers who were willing to step up as Te Ao Māori Leads for their research programme, were key to the initiative’s success. Members of the Science Advisory Panel (SAP) with the capability to assess Mātauranga Māori programmes for funding were also vital. Having a Māori Chair in the Governance Group helped send a message that this was a genuine drive to include Mātauranga Māori.

While more effort was put into working with new research programmes who were willing to embrace a new approach, than with established (early Phase 2) programmes, OLW support was still available to the older programmes. This was a purposeful tactic aimed at ensuring the burden of educating fellow researchers did not fall to Māori researchers in the programme. Some researchers who had been engaged on research funded by OLW chose not to continue their work rather than change.

Fig 19: Our Land and Water Refreshed its Research Workplan Using a Te Ao Māori Lens



Photo credit: **Anānia Te Nana**. September 2023

5.4.2 Funding and Proposals

One of the key drivers for forming the National Science Challenges was funding – they were essentially an alternative mechanism that would tackle some of Aotearoa New Zealand’s biggest challenges through applying science and research in new and creative ways.

Directors have noted that the dominant RSI funding practices have significant hidden costs, not least because a great deal of time is expended across the sector collating multiple lengthy research proposals (with no guarantee of success), and these very detailed documents must then also be assessed by highly qualified professionals; the collective resource used is immense.

Further, funding gatekeepers may not understand Māori-led proposals, and this means that the full potential of Māori research remains under-resourced and unrealised. In fact, research suggests that Māori researchers and organisations

are reluctant to enter into the system given the high input requirements and lower likelihood of success. This is a limiting factor for the RSI system as a whole.

A system will always resource what it values. Pursuing a Tiriti-honouring approach within the NSCs required Challenges to take a keen look at their financial policies, processes and systems, with an eye to understanding how the flow of resources reflected sites of power, how it protected taonga such as mātauranga and taonga species, and how it perpetuated equity or inequity. Challenges have, to varying degrees, considered which values and communities are served by their funding and financial systems.

The Challenges have found ways to be inclusive, as opposed to mainstream funding mechanisms that are designed to exclude, prioritising as they do: research track record, publication history or scalability, among other things.



“Somehow we have all developed sets of criteria and processes that have allowed us to achieve what we have and to invite people in.”⁶⁹

“We developed pre-assessments for VM capability for our really big investments. This involved a Working Group, and applicants wrote a 1-pager on what they wanted to do earlier in the process before writing a full proposal. In return for a small effort, they received a lot of valuable feedback.”⁷⁰

⁶⁹ Tāngata Tiriti, Cross-NSC Wānanga

⁷⁰ Tāngata Whenua, Cross-NSC Wānanga



Photo credit: **Dave Bull**. June 2024

Challenges were generally happy to move away from the usual competitive funding approach. Moving to negotiated funding approaches, often through co-design, enabled Challenges to clearly outline their expectations regarding hapori Māori involvement, VM, Te Tiriti and Te Ao Māori. New assessment frameworks supported this approach, and these could also be applied during competitive funding rounds.

Sustainable Seas evolved from being fully contestable in Tranche 1 to primarily negotiated in the second tranche.

Science for Technological Innovation fulfilled its contestable requirements via smaller Seed projects, while its large research projects (Spearheads) were developed using a collaborative process which also focused on ‘best team’ formation.

It became common for the Challenges to formally allocate a proportion of total funding to Māori-led research.

Ageing Well made the decision before the end of Phase 1 to allocate 50% of its research budget to projects ‘by, with and for’ Māori. The impact of this decision has extended beyond the tangible; it is described as having been “energising, uplifting, and collectivising,” and it led to a feeling that “We’re in this together.”



It was a little bit of a coup, but we were unapologetic about that. We were stoked because I don’t know if any other Challenges were able to do it, but we did.”



Fig 20: Ageing Well Dedicated 50% of its Research Budget to Māori-focussed Research

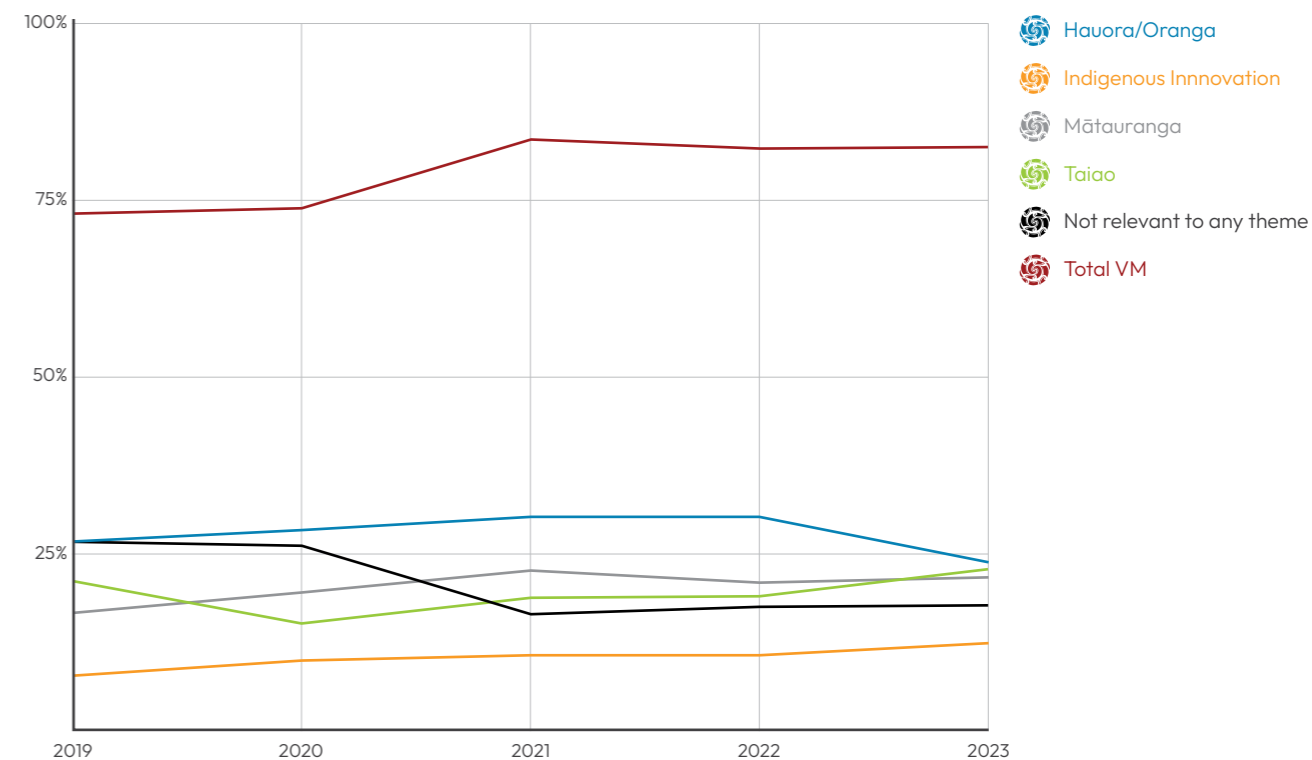


Fig 21: Allocation of Funding Related to Vision Mātauranga (%)

Fig 21 above illustrates the level of funding being spent on VM-related research⁷². After starting from a high base of 73% at the close of Tranche 1, a small increase can be observed over the next four years, with the Challenges collectively spending just shy of 80% of their total budget on research that fitted into one of the four VM categories. The largest proportion was spent on research that addressed

health and social wellbeing (Hauora/Oranga), and the least went towards research aimed at contributing to economic growth through distinctive R&D (Indigenous Innovation). There was a great deal of variance between the Challenges depending in large part on the Mission they were focussed on, but for the year to June 2023, six of the 11 Challenges spent 90% or more of their budget on VM aligned projects.

⁷² This has been calculated as a proportion of total funding rather than number of projects.

Fig 22 below shows how research funding has been allocated in terms of participation of, and relevance to, Maori. Represented in dollar spend, this graph shows a steady increase in spending on such research, with amounts reasonably evenly distributed across the four categories. In contrast, research not involving, and not specifically relevant to Maori, declined slightly.

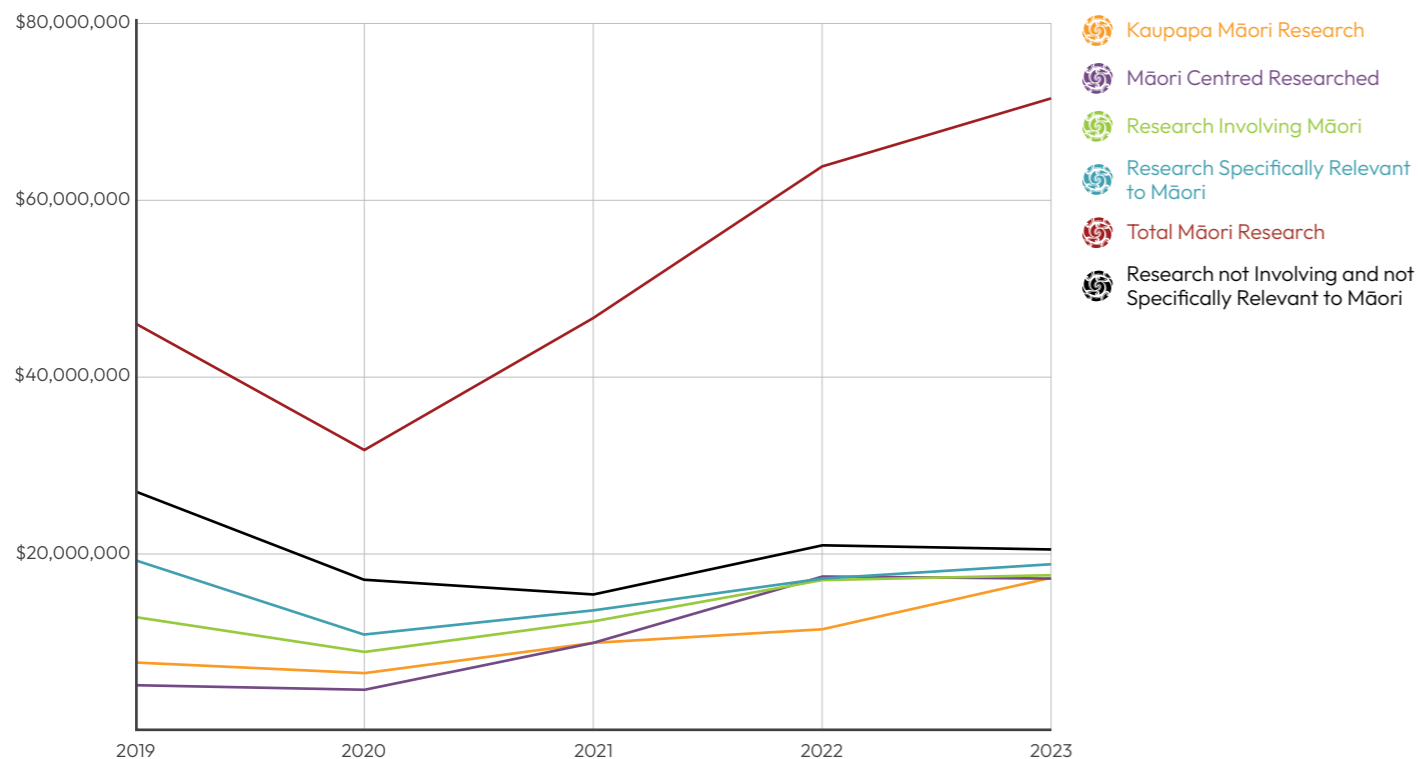


Fig 22: Allocation of Funding Related to Relevance to Māori (\$)

One of the limitations of this data – both the funding related to VM and the allocation of funding – is that those responsible for allocating funding categories, may not always have had the oversight and capability to accurately distinguish, for example, between what was Māori centred research and what was Research Specifically Relevant to Māori. There has also been some contention around the definitions, and ultimately each Challenge was given the autonomy to decide how they would interpret these categories and assign their research investment.

In spite of this, these graphs do reflect the work done by each Challenge to change their funding mechanisms and application processes to provide greater accessibility and relevance to Māori research and researchers. Every Challenge has found ways to serve the pursuit of equity, protection and value of mātauranga Māori. Ultimately, this is reflected in the increased funding to Māori-led and relevant research, and to non-institutionally linked Māori community researchers.

5.4.3. Flexible Contracting and IP

One of the most widely experienced barriers to operationalising a commitment to Te Tiriti in the science and research system is that commonly-used contracts do not accommodate non-institutional research organisations and/or non-standard research arrangements. This has had wide-reaching consequences, particularly for projects led by iwi, hapū and Māori businesses.



Mainstream generally doesn't let iwi, hapu and whānau keep things private or manage their own development, but it is important to do so.”⁷³

“Contracting has been difficult, especially getting our host to engage with Māori. They have high staff churn, which complicates things, so keeping their organisational capability just didn't happen. We need more expertise in this area.”⁷⁴

There are many contributing factors. For example, those in management roles often lack experience and awareness of potential barriers to contracting iwi organisations. Similarly, project leaders may not have worked with Māori in the past, impacting their ability to both contract and implement research projects appropriately.

Iwi, hapū and Māori organisations may also have had limited involvement in contracting and/or implementing research projects in the past. Iwi organisations may not have a financial buffer to support proposal development prior to approval and contracting, making it difficult to even enter into a contestable process.

Additionally, the basic requirements of contestable funding are not easy to negotiate for those outside of large institutions. Research leaders and contract holders must generally have an academic 'track record', for example. Administrative infrastructure for contract management of Health and Safety can be onerous for less well-resourced organisations. Ethics approval processes require specific expertise and can be time-consuming, and mechanisms to protect mātauranga Māori within contracts are often lacking.

These barriers have flow-on effects. For **Sustainable Seas**, they have resulted in tension between themselves and community-based researchers at times. Negative outcomes caused by the Challenge's early use of standard contracting, many of which have also been experienced by other Challenges, have included difficulty in ensuring appropriate Health and Safety procedures were implemented during fieldwork, and inadequate project-tracking in terms of progress, delivery and outputs.

A great deal of work has been carried out across the Challenges to remedy the problems caused by standard research contracting. Adjusting procedures that wrap around contracts, often involving funding, has encouraged greater levels of partnership and uptake, as well as a flourishing of Te Ao Māori approaches, knowledge generation and implementation within the research. Specific tactics have included:

- Moving to negotiated funding approaches.
- Prioritising mātauranga Māori-based skills, knowledge and expertise in the identification of project leads and teams
- Establishing dedicated funding for researchers working outside institutional research organisations to participate in developing project proposals
- Working with host organisations, partner institutions and project leads to provide practical support for community organisations to meet administrative requirements attached to research funding. Examples include: creating contract and subcontract templates, creating Health & Safety templates, and pre-populating as much of the regular reporting requirements as possible.

⁷³ Tāngata Whenua, Cross-NSC Wānanga

⁷⁴ Tāngata Whenua, Cross-NSC Wānanga

Intellectual Property

Intellectual Property protection has also required attention. There is a general expectation for publicly funded research to have broad benefit and scalability of impact, however, some Māori knowledge and research is nuanced and tightly safeguarded, and so not intended to be shared widely.

The option of progressing a small piece of research into a large scale or pan-Māori research output, as opposed to preserving hapu- or iwi-specific knowledge generation, needs to be treated on a case by case basis and contracted appropriately:



Some are happy to share far and wide, but others have been burned in the past and don't want to scale beyond their hapū, for example. We are being proactive in protecting contractually, and in helping groups manage knowledge for themselves in terms of dissemination. It's a tough one.⁷⁵



Photo credit: **Jeremy Hill**. Nov 2023

Some Challenges have worked with iwi, hapū and Māori organisation partners to develop bespoke ethics processes based around tikanga Māori, for example, while others have chosen not to require written outputs containing sensitive Mātauranga to be submitted for public access.

Several Challenges created their own IP Management Plans and specific contract clauses to protect Mātauranga Māori. **Science for Technological Innovation** has accounted for Mātauranga Māori and taonga within their standard IP Contract. Further, they have developed a 'Policies and Principles' document⁷⁶ outlining requirement for projects involving Mātauranga Māori or Taonga Species, in these cases, project leaders will:

1. require employees, contractors, grant holders and any other personnel to acknowledge the relevant ownership and rights associated with Mātauranga Māori Project IP;
2. unless agreed otherwise, keep the Mātauranga Māori, Taonga Species and the Mātauranga Māori Project IP out of the public domain;
3. consider whether protection options other than the statutory Intellectual Property options would better protect the Mātauranga Māori Project IP;
4. consider what steps can be taken to stop misuse and misappropriation of Mātauranga Māori, Taonga Species and the Mātauranga Māori Project IP; and
5. work with Māori to enable Māori to exploit or commercialise any Mātauranga Māori, Taonga Species or Mātauranga Māori Project IP.

Difficulties commonly encountered by the Challenges with respect to contracting and intellectual property have required creative thinking and flexibility to ensure collaboration with Māori partners could take place. These experiences also highlight very clearly some shortcomings in mainstream contracting practices.

⁷⁵ Tāngata Whenua, Cross-NSC Wānanga

⁷⁶ www.sftichallenge.govt.nz

5.4.4. Updating Assessment Criteria to be Relevant to Both Tāngata Whenua and Tāngata Tiriti

Assessment criteria have a direct impact on the operations of any organisation, whether they relate to recruitment, evaluation or investment decisions, among other things. It was common for Challenges to develop new criteria that were more aligned with Te Tiriti, and enabled Mission-led outcomes to be achieved. For example, some Challenges

developed their own assessment criteria for VM capability, while others adopted specific questions around values alignment. Crucially, these alternative criteria were not subordinate to the more traditional RSI criteria such as the high value placed on academic publishing, but instead sat alongside them:



We had governance groups that didn't evaluate our new criteria using a Western Model, they trusted what we were developing.⁷⁷



Photo credit: **Mark Coote**. May 2021

This approach was not only an important aspect of building the right teams (which, for example, allowed early career researchers to 'get a foot in the door'), it also signalled a new culture of collaboration based on team members holding values aligned with Te Tiriti and the Missions, and bringing a variety of relevant capabilities into teams, which in turn impacted research practice.

⁷⁷ Tāngata Tiriti, Cross-NSC Wānanga

A Better Start explicitly embedded VM into its Project Assessment Framework in response to advice from MBIE, and this resonated with the Challenge's own goal that their research would deliver benefit for Māori. Through a process of reviewing other funders' assessment practices, a bespoke process that more explicitly addressed VM was introduced.



Fig 23: A Better Start Embedded VM into their Project Assessment Framework

5.5 Capability Development

Upskilling people and organisations to activate Tiriti-honouring practice.

Challenge representatives recognise that significant ideological shifts and behavioural change have been needed to activate Tiriti-honouring practice, both individually and collectively. These shifts have been driven by key learning experiences and relationships.

Traditionally, Crown entities develop comprehensive frameworks to articulate and describe the skills and characteristics of Tiriti-honouring practice under the title of 'cultural capability'. This feeds into a common misnomer that cultural perspectives and skills are the domain of Māori, when in reality, everyone has a cultural perspective, and understanding your personal lens is a prerequisite for understanding another. Further, while these frameworks can be useful, they often remain detached from day to day decisions and interactions, becoming an optional add-on, rather than integral to the mahi.

By contrast, Capability Development across the NSCs has largely been aligned to Mission achievement and honouring Te Tiriti. While investment has been allocated to formally developing the capacity of internal personnel and external partners, the most significant change has arguably occurred in the context of close working relationships; mentors, teammates, research partners. This looks like: asking questions, hearing and debating different perspectives, seeing and feeling first hand the benefit of a completely different approach, or building trust to take risks and stretch comfort zones.

This type of development is organic, and can easily be missed as it is not always characterised by one explosive learning moment but a series of small realisations or questions. However, those who have contributed to this report reflect that this growth has deeply affected those who have worked within the NSCs and will endure beyond this work into their next opportunities and spheres of influence.

5.5.1 Internal Capability Development

A useful starting point has been to recognise the unique roles that Tāngata Whenua and Tāngata Tiriti have in a Tiriti-led science and research partnership. As one senior contributor to this report described it, each partner is accountable for building the relationship:



Our partnership is like a marriage - both sides need to take responsibility.⁷⁸

Indeed, moving away from a model of colonial control into an empowering trust model does require both Tāngata Whenua and Tāngata Tiriti to take personal responsibility for their own capability. As discussed during the Cross-NSC Wānanga, for Māori this means owning their personal reo and history journey so that the responsibility does not always fall on a small number of other Māori with high cultural knowledge:



The Challenges have increased the capacity for researchers, especially non-Māori researchers, to engage with Māori, although there are differences across the Challenges, and still some gaps, for example, regarding deep Mātauranga capability gap so this still falls to a small number of senior researchers.⁷⁹



Photo credit: Louise Thomas

At the same time, non-Māori need to be responsible for their own cultural capability development: first, so that they have a sense of their own cultural foundation to work from⁸⁰; and second, so that Māori do not always have to carry that weight for them, something which comes to the fore particularly around issues pertaining to Te Tiriti and relationships with hāpori Māori:



It makes it so much easier when everyone comes together with a base knowledge so we can have an equal conversation.⁸¹

While Challenges were clear that governance and leadership support was crucial in terms of directing capacity development investment, it was also important that they were not too prescriptive about how people arrive at an endpoint. Some Challenges engaged in tough internal conversations that helped to build collective understanding and commitment to ongoing learning:



There is a richness that comes from your ability as a team to have these korero about how it needs to be expressed programme by programme.

(Wānanga)

Overall, there was appreciation that people were on a learning journey and would sometimes make mistakes, but that maintaining a long term focus would help everyone stay grounded.

With regard to internal capability development, specific areas of focus have included: enabling Māori to progress in science and research, and expanding the worldview and lived experiences of non-Māori.



Photo credit: Anānia Te Nana. 2023

Enabling Māori Progress in Science and Research

Investing in the next generation is challenging and it takes time. From a Māori perspective, looking back to ancestors and forward to the next generations is important. While the NSCs have consciously made space for Māori to take roles in governance and senior leadership teams, they have also focused on strengthening the pipeline into science, as well as supporting ECRs into research roles:



The NSCs have been great for opening up spaces for us to invest in that we know is important, for example, Pūhoro to support internships.⁸²



Capacity building and bringing in a new generation of researchers including those, such as Early Career Researchers, who may not have had the opportunity to be involved under more standard RSI criteria.⁸³

⁷⁹ Tāngata Tiriti, Cross-NSC Wānanga

⁸⁰ There is no evidence that this aspect of cultural upskilling was emphasised within the Challenges.

⁸¹ Tāngata Whenua, Cross-NSC Wānanga

⁸² Tāngata Whenua, Cross-NSC Wānanga

⁸³ Tāngata Tiriti, Cross-NSC Wānanga

Some Challenges have utilised a Tuakana-Teina approach to mentor emerging research leaders into the governance and/or leadership spaces, and this has resulted in a wide range of ages being represented. **Science for Technological Innovation** is one Challenge that has taken this approach within both its Kāhui Māori

and Board. Rangatahi have brought fresh knowledge of new technology and served as a bridge between older incumbents and younger generations; equally, they have gained valuable experience to propel them forwards in their careers.



Fig 24: Science for Technological Innovation Applied the Tuakana/Teina Model

A capability gap at the ECR level has been highlighted, however, as young people across the science and research sector are offered roles that stretch their capability, but without the necessary support for success:



Now that we are creating space for Māori, everyone wants them. So there are big demands on them, and it’s a lot of pressure on Māori ECRs.⁸⁴



Building non-Māori Capability and Confidence to Engage with Hāpori Māori and Mātauranga Māori

The cultural double shift is something Māori researchers have long experienced. This cultural tax, recently labelled Aronga Takirua⁸⁵, has several potential solutions, including building the capacity of Māori researchers to say ‘No’ to cultural labour, and targeting investment in developing the cultural capability of non-Māori.

Increasing understanding of Māori culture amongst Tāngata Tiriti has been important for establishing Tiriti-honouring practices. Expanding the ability of non-Māori researchers to work fruitfully with Māori researchers and communities can be achieved informally, for example, through providing opportunities to participate in events led by Māori where they can gain confidence in this environment. Some researchers had little or no previous exposure to Māori communities, so contact with partners was significant in changing behaviour. There are myriad formal learning opportunities which have also been productive.

⁸⁴ Tāngata Whenua, Cross-NSC Wānanga

⁸⁵ A paper produced by the SFTI’s Building New Zealand’s Innovation Capacity speaks to just this phenomenon: Haar, J., & Martin, W. J. (2022). He aronga takirua: Cultural double-shift of Māori scientists. *Human Relations*, 75(6), 1001-1027.

Because of their earlier work, **Healthier Lives** knew that codesigning research with Māori communities was crucial for achieving their Mission, and so they invested in a focussed co-design workshop aimed at deepening researcher understanding of this practice. Pākehā researchers in particular reportedly gained a great deal of benefit from the research, which then fed into their subsequent research practice.



Fig 25: Healthier Lives Upskilling Researchers in How to Co-Design Research with Hāpori Māori

Science for Technological Innovation's Mission was to 'Enhance the capacity of Aotearoa-New Zealand to use physical sciences and engineering for economic growth and prosperity' and so it has taken particular interest in researchers' human capacity (influencing, collaborating, communicating) and relational capacity (building and maintaining networks with industry, Māori and other scientists across disciplines). Capacity Development investment in this Challenge has enabled scientists to collaborate with Māori communities and business, for

example, through supporting attendance at the Federation of Māori Authorities (FOMA) conference, which exposed scientists to the Māori economy and those working within it – a unique opportunity within the RSI system.

It was noted that Tāngata Tiriti scientists are worried about making mistakes, for example in terms of tikanga, and so this keeps them from engaging with Māori-led domains; investing in non-usual capacity development can open up new possibilities.



Fig 26: High-Value Nutrition Built Knowledge of WAI262 Amongst its Leadership



Photo credit: **Meika Foster**. March 2020

To ensure that senior leadership understood the implications of the WAI262 Claim on their mahi, **High-Value Nutrition** offered capability development opportunities on the topic. External experts were engaged to assist, and the training was later expanded on by the Rauika Māngai, to provide guidance to those working across the science and research sector.

Biological Heritage organised a two-day facilitated Tiriti o Waitangi Training Workshop to provide the Mana Rangitira Governance Group with an in-depth, current and shared understanding of why Aotearoa New Zealand has a Treaty, what it says, colonisation and its impacts, and Te Tiriti issues today. With a current, shared understanding of Te Tiriti issues, the roopu was able to construct a formal statement of Commitment to Honour Te Tiriti, which served as a guide for subsequent organisational activities. As a result, greater investment was placed in enhancing Māori leadership and research led by hāpori Māori in partnership with researchers.



He whakaaetanga tūroa Te Tiriti mō te pātuinga roa e puta ai he painga ki ngā taha e rua, ko te whakapono, ko te whakaute tētahi ki tētahi te muka tuitui.

Te Tiriti is an enduring agreement for the on-going relationship of mutual benefit, built on trust and respect between the parties.⁸⁶



Photo credit: **BioHeritage National Science Challenge.**
October 2019

Efforts to build capability for both Tāngata Whenua and Tāngata Tiriti have led to marked changes in relationships between researchers and hāpori Māori, and between researchers themselves:



We have seen great changes from where Māori researchers didn't even want to be in the room with some non-Māori researchers, to now those people becoming some of the biggest advocates for Māori. I can't say exactly how this has happened.⁸⁷

Many who have grown up through the NZ Education system have been exposed to only Western based systems of knowledge and Western cultural perspectives on how knowledge is validated and measured. Without exposure to other cultural knowledge systems, this can create an environment – which many non-Māori in Aotearoa find themselves in – in which Western based systems of knowledge are superior or exclusive, rather than recognising it as one cultural perspective.

While the impact of this belief is harmful, it is often merely the result of a lack of experience – and exposing researchers to new communities, perspectives and ultimately knowledge systems can be profoundly transformational – recognising that Māori knowledge systems have a unique and foundational role to play in research in Aotearoa, and expanding their research paradigm and leadership approach to reflect that.

5.5.2 Building the Capability of External Entities

Many Māori researchers work outside large research institutions such as universities and CRIs, basing themselves instead in small companies or community organisations. This has implications for being involved in funded RSI projects, given the barriers presented by standard research contracting already covered in section 5.4. Because of this, Challenges have had to be creative in helping external partners to increase their capability in certain areas, while still respecting the approaches they were already taking:



“We started by trying to bring more Māori into a more traditional, Western-based model, but this is difficult because of the systemic issues. So we evolved more towards developing and facilitating capacity within communities for people who didn't consider themselves to be researchers but who were actually doing research, for example, in climate adaptation.”⁸⁸

“We must keep the high standards of research, but how do we also develop iwi and hapū to elevate caring and keep focused on what matters to the community?”⁸⁹

As a result of investing in capability building of community partner organisations, some exceptional people who would not have thrived in the wider RSI system have become deeply involved in the research. An important aspect of this has been to consider succession – investing in the next generations of community researchers.

⁸⁶ Biological Heritage's Statement of Commitment to Honour Te Tiriti

⁸⁷ Tāngata Tiriti, Cross-NSC Wānanga

⁸⁸ Tāngata Tiriti, Cross-NSC Wānanga

⁸⁹ Tāngata Whenua, Cross-NSC Wānanga

Due to the difficulties (already identified) related to formalising research partnerships with community partners within the normal administrative practices, **The Deep South Challenge** made changes to their funding model for the second tranche. Providing in-house support for funding applications reduced

the burden on Māori community researchers working outside well-resourced institutions, as did flexibility regarding reporting requirements, for example, accepting verbal reports as negotiated. Ultimately, these changes resulted in a wider selection of proposals being resourced.



Fig 27: The Deep South Challenge Provided Greater Assistance to Community-Based Researchers Within their Funding Process

In an initiative not directly related to a specific research project operating at the time, **Science for Technological Innovation** co-facilitated two Data Futures Hui that brought together experts in Indigenous Data Sovereignty and Intellectual Property to wānanga these topics with researchers

and hāpori Māori. The events made a significant contribution to bringing the issues of Māori data and protection of taonga into community conversations. Relationships that were strengthened during this initiative have developed into a new Challenge research project led by Māori partners.



Fig 28: Science for Technological Innovation Brought Together Experts on Māori Data Sovereignty and IP



Fig 29: Healthier Lives Created an Implementation Network to Assist Community Providers in Accessing and Applying Research Evidence to Their Work

Healthier Lives sought to empower Māori and Pacific community-based health by providing access to evidence-based advice on improving health outcomes. The Implementation Network was carefully co-created to ensure it met the evident needs and in a way that was appropriate.

Overall, the Challenges recognised that a broader approach to upskilling - beyond technical - was required to progress their objectives in Tiriti-honouring ways, and to maximise the collective contribution of all parts of the ecosystem. While much capability building was achieved informally or as a byproduct of working with diverse groups of people, investment was also made in formally developing capability to good effect.

CHAPTER 6 Transformational Relationships

6. TRANSFORMATIONAL RELATIONSHIPS

The Levers discussed above could be replicated elsewhere, and there is no doubt they would have some impact. But without something to weave these Levers together and move them beyond tokenistic gestures or hard-and-fast rules, they would be unlikely to drive and sustain renewed mindsets, embedded behavioural change or significant transformation.

The underlying enabler of transformation in the NSC Te Tiriti journey has been relationships: strong and stable, built within the NSCs and by the NSCs.

Transformative relationships seen within the Challenges are robust, open and mutually beneficial. They have established and maintained the trust required to share power and resources, make mistakes and learn from them, stretch comfort zones and grow together.

These relationships have built collective network momentum and strength that is not dependent on government priorities, and will continue to bear fruit beyond the life of the Challenges. But they haven't been easy or straightforward.

Like the generative beginnings described in Te Orokohanga, healthy relationships traverse the highs and lows - between discomfort and tension, hard work and commitment - finding resolution, increased closeness and trust in achieving success. This happens over and over again, with both parties staying engaged and open to each other and their shared goals. In other words, relationships are cyclical.

The activation of Te Tiriti-honouring practice in the NSCs relied on new ways of thinking and behaving that engaged, emerged from and nurtured meaningful relationships with Māori - relationships that followed this ongoing cycle of regeneration and growth.

Examples of Te Tiriti honouring practice include redefining funding criteria and research definitions to respond equitably to mātauranga Māori, and protect Māori sovereignty particularly in relation to data, intellectual property and taonga. Te Tiriti honouring practices have increased iwi and hapū involvement, the amount of kaupapa Māori research being funded, the number of Māori researchers and their allocated hours, and the number of Māori in leadership, including governance.

At the heart of activating Te Tiriti honouring practices, Challenge teams have engaged in deeply meaningful relationships at all levels of operation and across different levels of experience. Relationships and their cycles make sense of:

- **The macro narrative:** The overall direction of movement collectively
- **The micro narratives:** The key moments of change, acceleration and resistance within each Challenge
- **The personal relationships:** The collaboration between key leaders, collectives and external partnerships
- **The personal journeys:** Beliefs, behaviours and actions, underpinned by experiences, understandings and values

At each level, relationships have traversed the highs and lows of the regenerative relational cycles of beginning. Kāhui Māori and Governance groups have leaned into discomfort, to develop new collective approaches, supported by new system settings in order to shift power dynamics and develop their own models that go beyond 'a seat at the table'. Likewise similar relationship dynamics have been navigated by co-Directors, by research teams, and by researchers working with hāpori Māori (Māori communities).

6.1 Te Tiriti: a Relationship between Māori and the Crown

Te Tiriti describes and affirms the power dynamic which is the context for the relationship between Māori and the Crown.

Both parties have a clear role to play in shaping and defining their own future and wellbeing (kāwanatanga is affirmed for the Crown, and tino rangatiratanga affirmed for Māori) while upholding and protecting the rights affirmed to each other. The relationship space of overlapping interests and interconnected well-being is to be navigated in the context of these power dynamics, and guided by shared values.

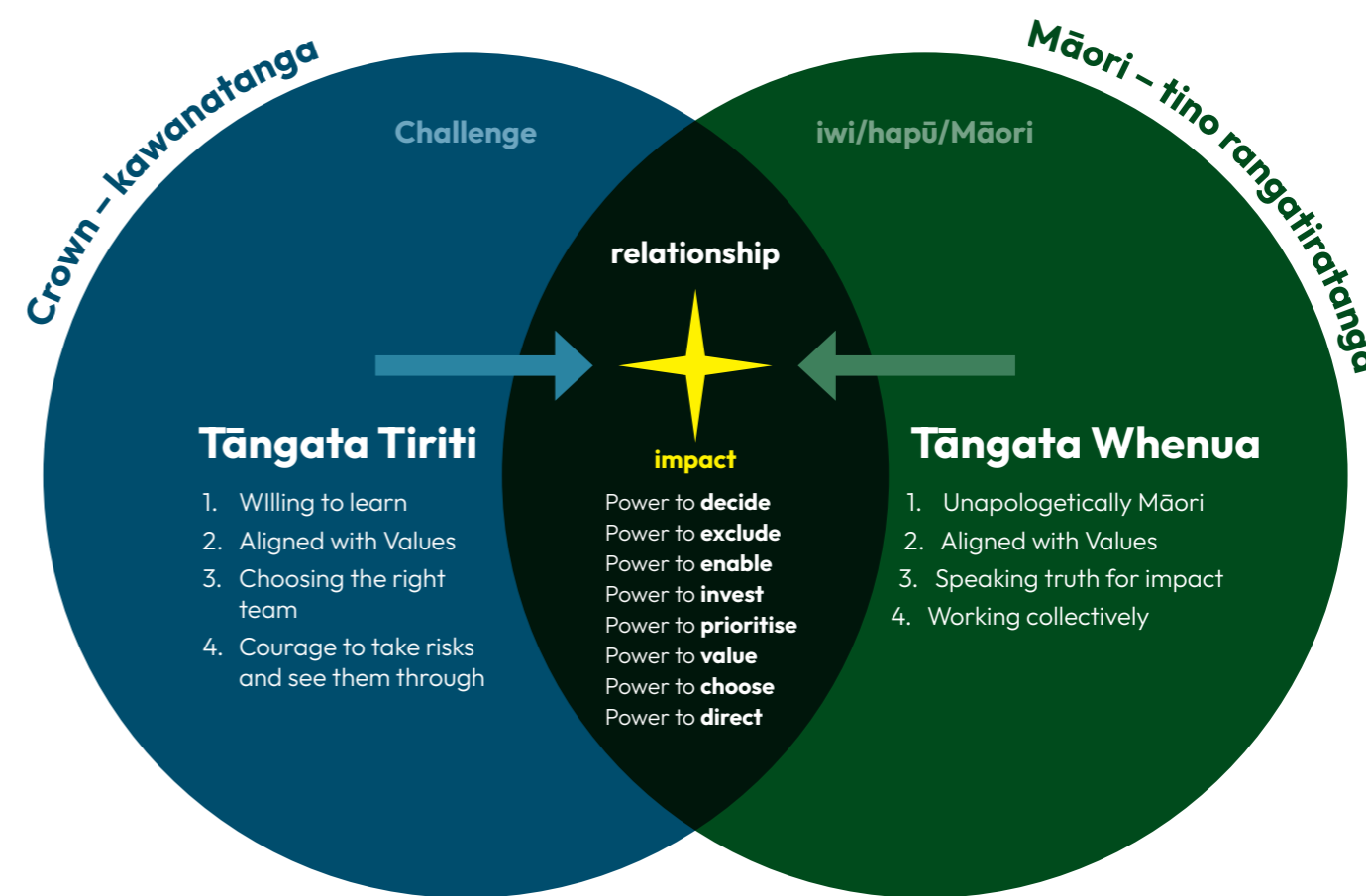


Fig 30: The Impactful Tiriti Relationship

In terms of Te Tiriti relationships in the NSC context, this has predominantly been between a Challenge (operating on behalf of a Crown agency) and a Māori community (hapū, iwi, whānau, or other community group), or between Tāngata Tiriti and Tāngata Whenua working within the Challenges - at governance level (between co-Chairs, Board members or between Kāhui Māori and Governance Groups) and at leadership level (between co-Directors, Leadership Teams and senior researchers).

These relationships have required each partner to take ownership of their unique contribution and have been characterised by an appreciation for different approaches and experiences, as well as a deep commitment to their shared values and goals.

In the co-created relationship space, both parties have power: to include, to decide, to enable, to invest, to prioritise, to value, to choose and to direct. The site of impact and benefit for all New Zealanders emerging from the NSC existed in the relationship between Māori and the Crown.



Photo credit: Kane Fleury. June 2018

6.2 Experiencing NSC Relationships as Tāngata Whenua and Tāngata Tiriti

As a way of understanding the Challenge experience, separate focus groups and interviews were facilitated with Tāngata Whenua and Tāngata Tiriti⁹⁰. Participants were asked to describe both their unique contributions to the kaupapa, and what they appreciated from each other when it came to building transformational relationships that could withstand the challenge of remaining engaged during ongoing cycles of transformation.

For the most part, those offering reflections were speaking from a co-Governance and co-Leadership perspective, although their insights have relevance across the spectrum of relationships that have existed within the Challenges.

Both Tāngata Whenua and Tāngata Tiriti saw roles for themselves to ensure that:

- Māori ways of thinking and being did not have to shrink or conform.**
For Māori this meant grounding themselves in their communities and continuing to bring that voice to all spaces and conversations. For non-Māori it meant dismantling the belief and practice of normalising one particular worldview or approach.
- Core values informed and guided their priorities, personally and collectively.**
There was significant overlap in the way both Māori and non-Māori saw their values playing out in their research roles. Both saw a positive impact on real people, communities and future generations as a guiding star, and this alignment created space for deep understanding and collaboration.
- Working collectively was done intentionally.**
Māori saw deep significance in being resourced to connect and work collaboratively with other Māori. The support and understanding, as well as the cultural grounding and guidance they received in these relationships and networks, enabled them to bring their best selves into their work and partnerships. For non-Māori they recognised that when they were in a position to choose the team and leadership they would surround themselves with, prioritising shared values in regard to honouring Te Tiriti was crucial in building critical mass and momentum for transformation.
- Courage drove them to do the right thing even when it was hard.**
A strong theme from both the Māori and non-Māori interviewed was the importance of having Māori in leadership who could challenge inequitable decisions, highlight blindspots and also guide others to take a different approach. On the other side of this, it was crucial for non-Māori in positions of influence and decision making to trust their Māori partners - enough to 'stick their neck out' and try something new.

The table below further elaborates on the way in which these transformative relationship characteristics were demonstrated by both Tāngata Tiriti and Tāngata Whenua.

Transformational relationships happened when:

Tāngata Whenua	Tāngata Tiriti
<p>Were unapologetically Māori</p> <p>Tāngata whenua reflected on the importance of identifying as Māori, before they identified with a particular role.</p> <p>They were aware of a responsibility to hold space for the experiences, voices and priorities of Māori communities - and not to minimise these voices in order to make themselves more comfortable in a role, or to be convinced to settle for less than what these communities deserved.</p> <p>Partnerships worked well when Tāngata Whenua perspectives were present, strong and centred in relationships.</p> <p><i>"We wanted better outcomes for Māori and for equity. We were fighting for the very best that we thought could be done, as opposed to going where the money is, or personal ambition. Just being persistent, being collective - holding those lines when needed."</i></p>	<p>Were willing to learn from Māori</p> <p>Tāngata Tiriti reflected on the potential that is unlocked by taking the position of a learner, and the ways in which their practice had been expanded and enriched by such experiences.</p> <p>There is often a significant mental shift required to invite Māori to take the lead. It is a move toward trust - which is ultimately a shift in power.</p> <p>Partnerships worked well when Tāngata Tiriti trusted in the legitimacy and soundness of mātauranga Māori, and the skills and expertise of Māori colleagues and practitioners to deliver.</p> <p><i>"I had to be open to learning (from a Māori perspective), acknowledging the importance of mātauranga to the environment in NZ, and trust Māori and take their lead."</i></p>
<p>Were aligned with their own core values: doing good for their communities and the next generation</p> <p>Tāngata Whenua reflected on the importance of intergenerational mindsets.</p> <p>They were cognisant of the long term goals and the need to line up succession, and invest in those who would be able to continue and advance the boundaries they were currently pushing.</p> <p>Partnerships worked well when relationships were intentionally set up with the ability to maintain and give ongoing value to them.</p> <p><i>"I saw it as my role to push rangatahi forward. You learn what you're here for and then you mentor the next generation."</i></p>	<p>Were aligned with their own core values: making a positive difference</p> <p>Tāngata Tiriti noted that they were strongly driven by a desire to make a difference - and a belief that this should be measured in tangible impacts on real people.</p> <p>This became a space of connection and shared vision with Māori partners.</p> <p>Partnerships worked well when Tāngata Tiriti were deeply connected to their values and embodied them in their work and decision making.</p> <p><i>"I'd been around long enough and wasn't angling for MBIE recognition, success for me was seeing positive change on the ground."</i></p>

90 Quotes in Table 3 come from these conversations.

Tāngata Whenua	Tāngata Tiriti
Worked collectively with other Māori	Chose a team with shared values
Tāngata whenua were clear that working as a collective was at the core of retaining their integrity as Māori.	Tāngata Tiriti reflected that they often had influence on who was in a room, making decisions, allocating resources, and creating systems.
In a system that recognises and rewards individualism and self-progression, collectivity grounded them in the connections, traditions, perspectives and behaviours that enabled them to continue challenging the status quo and not being absorbed by it.	This was a low-risk, high-impact way to change the critical mass and momentum toward transformation.
Partnerships worked well, when Tāngata Whenua had space and resources to establish and build strong connected relationships.	Partnerships worked well when Tāngata Tiriti took responsibility for choosing people who would enable Tiriti honouring practice within their span of control.
<i>“For me, it was always about collectivising.”</i> <i>“People on the outside are advocating, challenging, those inside are the eyes and ears.”</i>	<i>“I was able to involve people I know who were already invested in addressing inequity.”</i> <i>“We were changing the way we do research and selecting the researchers (and research boards, and science leaders) who want to do it.”</i>
Spoke their truth and took people on a journey together	Had courage to take risks and see them through
Tāngata Tiriti expressed their appreciation for Māori leadership that provided safety for them to grow and change.	Tāngata Whenua and Tāngata Tiriti both expressed appreciation for leaders who were willing to step outside the box and try something new.
They recognised that there were hard truths and confronting kōrero that needed to find space, and reflected that they were better able to hear and action the behavioural and belief changes when they knew someone also had their back.	When these risks were seen through to completion – despite opposition, or teething pains – they had often become innovative and ground-breaking legacy programmes.
Partnerships worked well when there was both unwavering truth and care present in relationships.	Partnerships worked well when leaders trusted Tāngata whenua enough to take risks based on their recommendations.
<i>“Adversarial voices didn’t land..it needed to be someone who could bridge that space, who had the mana to influence, to be calming in public and a great mentor in private.”</i> <i>“Māori needed to be senior enough and stroppy enough to say it how it is.”</i>	<i>“In our own ways we rode out the storminess and stayed the course (against external criticism that this was not proper science).”</i>

Table 3: Transformational Relationships

When each partner was able to bring these qualities into the relationship, they activated the relationship potential and impact directly followed.

These kinds of relationships result from intentional investment of time and effort and this must be well resourced. In the NSCs, longer funding periods made it

possible to allocate appropriate funds to relationship building up front, and for those same projects and researchers to remain engaged long enough to see significant impact. Many Challenges reflected on the value this added to their research. Transformational relationships still happen in the absence of resourcing, but their impact is bigger and broader, and the task easier, when adequately funded.

CHAPTER 7

Challenge Evolution

7. CHALLENGE EVOLUTION

In this section we introduce the evolving nature of Challenges activating Tiriti-honouring practices over time, drawing together some of the key themes of these time periods and highlighting parallels between the pūrākau narrative and the collective experience in the NSC context.

7.1 Development of the NSC Concept



Their many children, atua, moved about uncomfortably in the dark, cramped, unrelenting warmth between their parents.

Early NSC rhetoric articulated on the one hand, a deep willingness to try something different, while on the other, the initial Peak Panel Reports excluded reference to Te Tiriti and gave little consideration to how Māori would be included in the Challenges. Vision Mātauranga was included as an appendix, but in operation it continued to be a tick boxing exercise. Māori leadership, engagement and presence was lacking, resembling the status quo:



MBIE claimed that in a Mission-led environment, “the best of the best will rise to the top,” but in reality resource allocation and funding priorities were still being decided by the same people and criteria as they always had been, which served to reinforce long-held assumptions about what and who the ‘best’ included.”

For those who benefited from this funding system, it was difficult to see where the pain points were and what could be done differently. Many leaders with good intentions believed they were committed to equity, working with Māori and delivering outcomes for communities, but had also never considered the scope of change possible within the research system.

Those who were marginalised by this funding system felt the most discomfort. Like the restless atua in the pūrākau, some felt cramped by the reinforced status quo and activated their collective voice to highlight and challenge inequities. Many

Māori researchers simply left due to lack of confidence in the process, and many who stayed carried a heavy responsibility to advocate for Māori leadership, partnership and kaupapa Māori research.

What was the Hinātore early in the NSC establishment? The hope that glimmered and drew people forward toward transformation? The common threads of reflection on that time articulate the allure of a research environment that could overcome traditional barriers to drive research with broad benefit outcomes.

7.2 Tranche 1: Set Up and Early Days



Not all of the siblings agreed - while some saw possibility, others were angry and tried to shut down the discussion.

Drawn in by their excitement, Tangaroa was the first to say, “perhaps we should listen to what our siblings have to say,” and after hearing them out, Tangaroa too was convinced to lend his abilities to seek out and explore this light.

Tranche 1 was a time for each Challenge to establish their programme. Many Directors have described this phase as a time for formulating their approach to delivering on the parameters set within National Science Challenge establishment documents; this was going to be a different approach, but exactly what that would look like in practice was as yet unknown.

Some early Vision-setting activity related to Vision Mātauranga and Tiriti-honouring practice was evident, but many leaders may well have been fully occupied with recruitment, establishing relationships with hosts and institutional research partners, and early contracting of research, with some inheriting legacy projects to transition over to the new structure.

Early advocacy for Te Tiriti and for Māori may in many cases be best described as informal, relying on the collectivisation of expertise, organisational influence, and ultimately collective voice. Māori advocated publicly and privately and played key connecting and strategic roles. Tāngata Tiriti advocates were often in strategic leadership positions with the power to approve, drive or activate change.

As Phase 1 continued, however, a great deal of effort was put into refining how the original Missions would be

interpreted. Leadership and governance realised early on that consultation was needed to find a clear pathway from the government’s own objectives for the initiative, towards creating meaningful real world impact.

Challenges also put a great deal of energy into their leadership, governance and advisory structures, across the life of this initiative. Of particular importance was establishing partnerships between Tāngata Whenua and Tāngata Tiriti that valued the expertise of both partners, thereby forming a true Mandate to take each Challenge in a fruitful direction.

While many administrative processes may have initially aligned with RSI status quo, Challenges were beginning to formally require and properly fund more collaborative project establishment processes where communities, businesses and local government, for example, were involved.

One might describe the Set Up and Early Days as a ‘settling-in period’, when people learned to work together and share (or not) decision-making power; it was not always a comfortable space. But as can be seen below, the Midway Review set the scene for an explosion of Tiriti-honouring activations.

7.3 The Midway Review: Taking Stock



Undeterred and relentlessly curious and hopeful, Huaki Pōuri tried many strategies to approach the light, the Hinātore. Again and again these strategies failed, but... eventually, some of the strategies began to take effect.



Photo credit: **Chrystal Marshall**. April 2024

This time period crossed the divide between Tranche 1 and Tranche 2 and is recognised by many as the point at which the change became visible. During this time, Challenges reflected on their experimentation to date, and recognised what had worked to effect the change they had intended, particularly in terms of activating Tiriti-honouring practices. So began a period of accelerated change.

An array of strategies were employed, and while resistance still existed, and systemic barriers still hindered change to a degree, collective momentum had reached a critical point, moving Challenges further toward implementing Tiriti-honouring practice and operationalising Vision Mātauranga.

Despite some negative comments about MBIE's approach to the Midway Review, many Challenges valued the prompt to take stock of their organisation and to review their own internal vision and strategies. Again, this was more frequently undertaken with wider Māori partners and stakeholders.

Challenges sought to articulate their equity and Tiriti-honouring aspirations in ways that could be translated into operational strategy for Phase 2. Visions were developed with reference to the novel practices, processes and artefacts tested throughout Phase 1.

Co-Leadership (at the Directorate, Leadership Team and research levels), and co-Governance arrangements were being established across the Challenges. Serious consideration was being given to the role of Kāhui Māori with some making the decision to merge these roopu with Governance Groups, and some Challenges trialling this arrangement.

A number of administrative changes that had a demonstrably positive impact on Tiriti-honouring practice were wholeheartedly adopted, for example: ensuring reasonable FTEs for Māori working in projects, and developing KPIs relevant to Māori.

As with the Atua, earlier concerted efforts were bearing fruit, and it became obvious that attempts at change were making a positive difference.

7.4 Tranche 2: Accelerate and Close



Their parents were slowly prised apart little by little until the Hinātore became a gleaming ray of light deep into the darkness.

Siblings were stretching out, standing calling to each other in the newly opened space in front of them... Tāwhiri and Whiro flung themselves at Tāne, Tūmataurangi hacked at his legs, demanding him to release his parents and let them return to the darkness.

The final time period covers the five years to June 2024, at which time the Challenges are discontinued. During this second tranche, the NSCs began to see more impactful progress in terms of activating Te Tiriti-honouring practice. They were gathering evidence of the outcomes and broad benefits driven by their new approaches. This had a huge impact on people's mindset in terms of what was possible.

The collective network strength grew, and there was an appreciation of the benefits of diversity and an enjoyment of doing things differently but collectively. The thinking and testing that had taken place during the Midway Review was turned into action. For example, most Challenges (8 of 11) merged their Kāhui Māori and Governance Groups, and the greater proportion had moved to co-governance by the middle of Phase 2. Māori continued to take their place within leadership in greater numbers, with additional roles being created early in Phase 2.

Focused discussions were being held with Māori partners and communities, but these had moved on from: 'What should we be trying to create through the Challenges?' to: 'How do we achieve it?' Insights gained from this work were commonly incorporated into Phase 2 Research Priorities.

Over the period encompassing the end of the Midway Review and early Phase 2, it was common for Challenges to adopt specific Models and Frameworks that supported new ways of working. Addressing contracting inadequacies was particularly impactful, as was purposefully integrating Te Tiriti into Research Workplans (for some).

As this last period runs its course, on the cusp of a new beginning, the Challenges are reflecting on the journey they have travelled so far, and the new space they have created; new opportunities, new practices, new perspectives, new relationships, and new possibilities.

Time is needed to understand and explore the potential of this space. There is a need to hold ground, to spread out, and populate or shape the landscape. There is no appetite for being forced backward, the overwhelming message from those who have been part of the NSC journey is that they are committed to the new beginning and shaping the new world.

With Te Orokohanga as a narrative frame for the NSC Te Tiriti journey, both the obstacles and successes are celebrated as inevitable elements of ongoing engagement in transformative relationships. The invitation to remain engaged extends beyond the NSC journey.

The NSC has provided one example of what it can mean to create a Tiriti-honouring research funding system which benefits and impacts all New Zealanders. As those who have been part of the NSC disperse into new roles and contexts, new opportunities will arise - in the form of discomfort, and there will be opportunity to find and activate communities of shared values, to try (and try again) until new possibility is illuminated and activates the benefits and collective impact we know are possible

8. NATIONAL BENEFIT: TE TIRITI AND MISSION-LED IMPACTS

The document has so far focused on how the Challenges have approached science and research differently; Section 8 outlines some of the real-world impacts that Tiriti-honouring practice has had in terms of the Mission-led outcomes sought via the NSCs.

One issue not yet fully resolved is the question of how best to measure or evaluate impact generated through Mission-led research. Some impacts have focused on the ways in which research is supported and performed: changing how we view research possibilities; increasing leadership experience and capability; developing new, enabling research management practices, and enhancing researcher behaviour. Equally, the Challenges have generated community- and technically-based outcomes that have resulted in real world benefits.

What can obscure the full extent of impact is the time lag often at play - this is relevant both to mainstream science and research, and for research where Maori and non-Maori work together, especially when the changes sought are intergenerational:



Time is relevant when working with Māori communities because the system wants quick wins, but we think intergenerationally. On certain topics you can run a wānanga for two years, and this doesn't produce a quick outcome, but it is setting strong foundations for the future. How do we define and articulate impact with the system's time-bound constraints.⁹²

CHAPTER 8

National Benefit:

Te Tiriti and Mission-led Impacts

Ageing Well

Taurite Tū: achieving equitable injury prevention outcomes for ageing Māori⁹³

This project is a kaupapa Māori falls prevention and wellness programme for older whānau, which draws on mātauraka⁹⁴ Māori and other evidence-based science to empower Māori to age stronger. An early pilot study led by Katrina Bryant and Te Rūnanga o Ōtākou in 2018 showed a clear reduction in the risk of falls, as well as other wellbeing benefits, and led on to a larger study being co-funded by the Health Research Council, the Accident Compensation Commission and Ageing Well in 2021. The original scope grew to include a longitudinal assessment of falls risk reduction during the programme's delivery in the Ōtākou rohe over an 18 month period. The programme was also delivered in six other locations to ascertain whether Taurite Tū could be implemented effectively in other areas.

Why is this research area important? Falls are the leading cause of accident-related deaths for those over the age of 65 years, and are an even greater risk for older Māori, who are 1.5 times more likely to be hospitalised after a fall, and twice as likely to die. As one would expect, there has been significant investment in reducing falls, however, these have not been developed with Māori, and therefore have had little engagement from this group.

In contrast, Taurite Tū, has been designed by Māori, for Māori. It has drawn from best practice derived from western science while also being heavily guided by mātauranga Māori and tikanga. It has incorporated a wide stable of knowledge and evidence including physiotherapy, community falls prevention, and community experts in mau rākau (Māori martial arts), tī rākau (Māori stick games), poi, tākarō (games) and whare tapere (Māori performing arts).⁹⁵

The result is the Taurite Tū Template and a set of carefully designed activities that has had a tangible impact on those participating. Pre- and post-programme participation surveys showed noticeable harm reduction: 159% of post-trial survey respondents reported having had a fall c.f. 269% of pre-trial participants; and 29% of post-trial survey respondents reported having received treatment and/or rehabilitation in the previous year c.f. 58% in the pre-trial survey. The Programme is now being delivered by 26 marae and other Maori organisations nationally.

The Deep South

By the close of the NSC Initiative, The Deep South has seen 25 VM Research teams complete research in their communities, making it *“the largest ever Māori led research into the implications of changing climate conditions for Māori society.”*

As members of the communities they have been working with, the researchers understand the complex nuances of tikanga Māori, using it as their strength, while also drawing on scientific evidence as appropriate. The Deep South's mahi has raised awareness of adaptation and climate change within Māori communities, and has embedded and strengthened advocacy skills. The new tools and knowledge generated, and subsequent climate change conversations, have clearly signalled Māori as critical players in the climate change architecture, with benefits having been provided to Māori communities and the rest of Aotearoa New Zealand.



*The celebration must be in the unlocking of the creative potential of Māori knowledge, Māori people and Māori resources.*⁹⁶

⁹³ Research Team: Katrina Bryant, Hana Bryant, Te Iringa Davies, Professor Leigh Hale, Shirley Keown, Penny Nicholas Associate Professor Bridget Robson, Awhina Akurangi, Professor Debra Waters, Moana Wesley, Tracey Wright-Tawha, Associate Professor Emma Wyeth

⁹⁴ mātauranga NB: Throughout this report, we have adhered to the mita/dialect supplied by our sources.

⁹⁵ tauritetu.co.nz

⁹⁶ The Deep South Challenge

Sustainable Seas Challenge

One of Sustainable Seas' collaborative projects has played a major role in restoring traditional kuku (mussel) beds in Ōhiwa Harbour in the eastern Bay of Plenty.⁹⁷

The problem was the long term degeneration of kuku beds due primarily to a predatory pātangaroa (11-armed starfish) population explosion. Local iwi and kai gatherers reported this taonga species' decline had been evident over decades: in 2007, there were well over 100 million kuku inhabiting a two kilometre stretch of the harbour, but by 2019, the population had dwindled to fewer than 80,000.

Researcher, Kura Paul-Burke (Ngāti Whakahemo, Ngāti Awa, Ngāti Pūkeko), had herself witnessed the failing health of this ecosystem, and began working to co-develop a restorative project with the hapū/iwi of Ōhiwa harbour. The Sustainable Seas National Science Challenge began supporting the research in 2020, together with the Bay of Plenty Regional Council and partners of the co-management Ōhiwa Harbour Implementation Forum.

Making significant contributions to this mātauranga-led, science-informed project, local kaumatua have shared their knowledge of traditional mussel bed boundaries, and tohunga weavers have constructed natural fibre spat lines using locally grown ti kouka (Cabbage tree) leaves. Removing the pollution that was previously being caused by plastic spat lines is more consistent with creating a positive intergenerational legacy. Through ongoing monitoring it has been discovered that as these lines break down, whānau groups of kuku drop to the ocean floor together to regenerate as whānau.

More recent observations of the site show that the kuku are returning – last year, 16 million young kuku were seen around the restoration stations, providing hope that the ecosystem can fully recover.

⁹⁷ www.sustainableseaschallenge.co.nz/news-and-events/news/traditional-kuku-bed-comes-back-to-life/

⁹⁸ Reddy, R., Simpson, M., Wilson, Y., and Nock, S. (2019). He Kāinga Pai Rawa Atu Mō Ngā Kaumātua: He Keteparaha Tēnei Mō Te Whare Kaumātua/ A Really Good Home For Our Kaumātua: A Toolkit For Kaumātua Housing. Wellington: Building Better Homes Towns and Cities National Science Challenge (BBHTC NSC). Step 6 Whakatauki: p40

Building Better Homes, Towns and Cities

The He Kāinga Pai Rawa project aimed to better understand the elements that contribute to healthy housing communities for Kaumātua by looking at the example of Moa Crescent Kaumātua Village in Kirikiriroa Hamilton.

As a result of this research, a toolkit was created that can be used by others to co-design culture-centred Kaumātua housing and communities with urban, rural, marae and other communities.

Eight specific steps are outlined in the toolkit, from Te Waihanga Moemoeā/Creating the Vision, through to Te Waihanga Whare Tōtika/Co-creating Fit-for-Purpose Design, and Te Tiaki Whare/Caring for Your Asset. Each step draws on a guiding whakatauki, together with a list of Hikoitanga/Milestones. Examples are provided for kaimahi, and a list of questions for groups to work through. The steps are intended to be followed in order through working together and ensuring the focus remains firmly on Kaumātua.



*Māu tēnā kīwai o te kete,
māku tēnei*

*Each of us at a handle of
the basket.*⁹⁸

High-Value Nutrition

The Tūhauora Kawakawa project investigated the chemical composition of indigenous kawakawa leaves; this plant is a taonga species with a range of rongoā (traditional Māori medicine) applications, such as being an analgesic and anti-inflammatory.

A collaboration with two food-based businesses, AuOra and Chia Sisters, this research was guided by tikanga resulting in a comprehensive understanding of the chemical content of kawakawa leaves, including how many of these compounds are metabolised and excreted by humans after drinking a kawakawa-based beverage. The study also indicated that the beverage may have beneficial health effects.

AuOra is the consumer-focussed health and wellbeing arm of Nelson-based Wakatū Incorporation, a \$350 million business owned by shareholder descendants of four iwi, Ngāti Koata, Ngāti Rārua, Ngāti Tama, and Te Ātiawa. Proving the safety of kawakawa as a consumable will not only enable health giving beverages to be developed for the market, it will also make traversing regulatory systems smoother, particularly for lucrative overseas markets.

A Better Start

Better Start Literacy Approach (BSLA)⁹⁹ is an evidence-based method for developing literacy skills in five to seven year olds. Early reading, writing and oral language success is an important protective factor for young people, and recognised by the United Nations as an equity issue.

The programme's development involved around four years of research, and has been guided by Māori and Pacific education leaders, including Emeritus Professor Angus Hikairo Macfarlane, ensuring it is culturally responsive. Communities and whānau have also participated in the programme's design to ensure it is fit for the Aotearoa New Zealand context.

The BSLA is now delivered by over 3500 teaching professionals across 850 primary schools throughout the nation, incorporating classroom teaching and extension sessions for children who need additional support. Families are also invited to participate. An early reader book series has been released, which incorporates Māori and Pacific themes, language, and cultural elements, boosting its inclusivity.

The data shows that those in the programme are learning foundation literacy skills quickly, and it has been well received by teachers and parents alike because of its effectiveness. In recognition of this nationally significant work, the research team was awarded the 2023 University of Canterbury Innovation Medal.

BioHeritage

Many research programmes examine how to reverse the continuing decline of Aoteroa New Zealand's freshwater quality, however, few have investigated the role of living things in the restoration process, many of which are taonga species.

BioHeritage has invested in Te Tiriti o Waitangi-led research that marries Indigenous knowledge with cutting edge research.

The Freshwater for our Taonga programme includes two significant kaupapa Māori-led, place-based projects, and complementary research from Canterbury University. For the first, Te Karanga o Ngā Tuna – Mana Whakahaere in Action, Nga Kaitiaki o te Awa, Waikato and Waipaa Tuna, worked together on developing a new three-layer bioprotection system for their elver trap and transfer program. The work is ongoing with NIWA assisting to refine and verify the work.

The second project focuses on reversing the decline of mahika kai kanakana. Based on longstanding relationships, researchers and Hokonui Rūnanga have co-developed an innovative captive breeding and translocation programme for kanakana (pouched lamprey). While the work is locally focussed, the learnings are applicable in multiple contexts; as such, it has been possible to incorporate knowledge exchange with First Nations communities overseas, and set in motion an intergenerational vision for the future health of this important species.

The third research area examines biotic interactions at play in freshwater restoration work. It works alongside the two kaupapa Maori-led projects through co-designing strategies to overcome barriers and develop, for example, better on-farm land and waterway management practices.

Healthier Lives

In response to inequitable health outcomes for Maori, the *He Pikinga Waiora Implementation Framework* was developed.

It has Indigenous self determination at its core and consists of four elements: cultural-centeredness, community engagement, systems thinking, and integrated knowledge translation.¹⁰⁰ The Framework focuses on developing, implementing and evaluating health interventions that work for Maori communities.

Having now been widely disseminated, the Framework has informed the National Bowel Screening Advisory Group, and contributed to the 2016-18 Waitemata District Health Board Abdominal Aortic Aneurysm Screening Pilot. Two specific diabetes-related health interventions using the Framework have been co-designed with community partners: *Kimi Ora* with Te Kōhao Health, and the *Poutiri Health Challenge* run by the Poutiri Charitable Trust. The co-design approach has been crucial to the high levels of engagement and success experienced by participants.

⁹⁹ Principle researchers were from Te Whare Wānanga o Waitaha | University of Canterbury (UC) Child Well-Being Research Institute team, led by Professor Gail Gillon (Ngāi Tahu) and Professor Brigid McNeill, and including Associate Professor Alison Arrow and Dr Amy Scott.

¹⁰⁰ Healthier Lives National Science Challenge (2019). He Pikinga Waiora (HPW) Implementation Framework User Manual.

Our Land and Water

Tāwharautia te Wahapū o Waihi is a programme formed in partnership by Our Land and Water and the Sustainable Seas Challenge to respond to the unintended gap created through separating land- and sea-based issues in the National Science Challenge structure.

One of the projects involved uses a kaupapa Māori approach to understand the needs of the Waihi estuary and activate a significant restoration programme to protect the area's mauri. The estuary is currently in poor health, with permanent warnings against harvesting shellfish, and a declining local population of shellfish, seagrass, birds species, and fish.

The multi-year research is led by Professor Kura Paul-Burke (University of Waikato) together with the whānau of Ngāti Whakahemo who sought to understand the history of this estuary and its experiences over time through kōrero tuku iho (oral histories and traditions), and through developing closer relationships with the estuary via monitoring and observation. This enabled Ngāti Whakahemo to help the estuary have its own voice, and a means to determine what it needs to be well again.

While the catchment is relatively small, upstream land use has contributed to the decline meaning solutions are not simple. The project has illustrated the importance of mātauranga Māori and marine science working together to provide evidence-based information on the current state of such a water body. With funding from multiple sources, Ngāti Whakahemo and Pukehina Marae have built their internal capacity, and are working with other organisations such as NIWA and the University of Waikato which are providing science based monitoring tools.

Through this research, the five bordering iwi: Ngāti Whakahemo, Ngāti Whakaue ki Maketū, Ngāti Pikiao, Ngāti Mākinō and Tapuika, are working together for the first time to protect their estuary. In addition to purchasing 30 hectares of land adjacent to the estuary to re-establish a wetland/saltmarsh, providing much-needed filtration between the estuary and the catchment canals, Te Wahapū o Waihi will also work with local farmers and provide support to assist with Farm Environment Plans. Local community groups as well as regional and central agencies have also indicated interest in engaging with the kaupapa.

Whānau, hapū, and marae-based research is quick to gain momentum and demonstrate excellence when strong Māori leadership with science sector experience is in place. The research team were confident the kaupapa would draw restorative investment from communities, government and industry, which proved correct.

Resilience to Nature's Challenges

*Whanake te Kura i Tawhiti Nui*¹⁰¹ focused on increasing the visibility, understanding and transformational potential of mātauranga Māori in natural hazard research and resilience.

It is a response to traditional western science-based natural hazard research failing to take sufficient account of mātauranga Māori, whether that be in considering past events, effects on landscapes and communities, or possible mitigation strategies.

More specifically, this research has generated fundamental mātauranga Māori and applied Māori knowledge to inform future frameworks, tools, models and strategies to provide resilience benefits for tāngata whenua and wider Aotearoa New Zealand. Specific outputs to date include case studies developed as learning opportunities for how best to respond to seismic risk and regulation related to Marae buildings.

Science for Technological Innovation

Ātea¹⁰² was one of SfTI's large Spearhead projects, which incorporated augmented, virtual and mixed realities to share history, knowledge and stories, as well as a customised content management system to connect dispersed communities.

It successfully created an immersive experience of the wharerau Tahu Pōtiki (Te Rau Aroha Marae in Motupōhue/Bluff) that enabled whānau to connect remotely back to their own stories and mātauranga.

The research brought together experts in Artificial Intelligence (AI), Virtual Reality (VR) and Artificial Reality, Natural Linguistic Programming, and Machine Learning with leading Māori academics engaged in Indigenous and Māori Data Sovereignty and digital repositories, Māori industry partners, tohunga, iwi, hapū, marae, whānau, rangatahi and collaborators.

Emerging from one of the Challenge's Mission Labs aimed at drawing out Maori and Industry views on important new research areas, the project was inspired by a comment by Rikirangi Gage, who said, "What if in 200-300 years' time I was able to be a hologram and my mokopuna could sit there and talk to me and I could explain, for example, how the Star Compass worked. Wouldn't that be awesome!"

This Spearhead has also spawned two smaller projects, including one that aims to ensure that as Maori consider how culture translates into virtual spaces, wānanga is not diluted by technology, but rather, is enhanced.

¹⁰¹ Programme Leaders: Acushla Dee Sciascia (Ngāruahine Rangī, Ngāti Ruanui, Te Āti Awa), Massey University, and Kristie-Lee Thomas, Ngāti Mutunga o Wharekauri, Te Āti Awa, Ngai Tohora, Rapuwai), University of Canterbury

¹⁰² Spearhead Leader, Associate Professor Dr. Hēmi Whaanga, University of Waikato. Research Team: Professor David Bainbridge, University of Waikato – Computer Science; Associate Professor Te Taka Keegan, University of Waikato – Computer Science; Professor Holger Regenbrecht, University of Otago – Information and Science.



9. INSIGHTS



After 10 years, there are new ways of doing science and research that enhance outcomes in an appropriate, tika way, and which are effective, efficient and impactful. This experience and learning must not be lost.¹⁰³

CHAPTER 9

Insights

We have learned that **we can accelerate innovation and research solutions through activating Tiriti-honouring practice and building transformative relationships** between Tāngata Whenua and Tāngata Tiriti. The NSC journey illustrates how Tiriti-honouring practice and transformative relationships perpetuate each other – regardless of the starting point, one will result in the other. These relationships and practices drive innovation and excellence, and both are foundational to achieving impacts through science and research in Aotearoa, New Zealand.

Te Tiriti describes how the exercise of power and distribution of resources in Aotearoa must operate in order to build a future in which everyone experiences wellbeing, and can contribute to that end – either as Tāngata Whenua, or in relationship with Tāngata Whenua. It provides a practical lens and a clear set of expectations for reflecting on and challenging the ways in which the research system currently wields power and resources. In the case of the National Science Challenges, the devolution of power from MBIE was for some, a glimmer of possibility – Hinātore – it shifted the established power dynamic and made space to imagine what could lie beyond.

Further, **Te Tiriti affirms the unique, complementary and collaborative roles for Tāngata Whenua and Tāngata Tiriti** in driving change. For the atua trapped in darkness, each played a unique role in transforming their world – some were visionaries, others were networkers, connectors, communicators, while still others spent all their strength and time on testing different strategies. These roles were not divisive; they connected parts of a collective movement.

Despite political spin and embedded social narratives, the NSCs have demonstrated that **Te Tiriti describes a collective vision for the future of Aotearoa – one in which we all benefit**. The NSC experience further demonstrates that Tāngata Whenua and Tāngata Tiriti engaged in transformative relationships have different spheres of influence, different lived experience, and different challenges to overcome in working toward their shared aspirations. However, with a clear vision, both partners found great

fulfillment and benefit in bringing their unique contribution to the table. Like the atua, emerging into the light of Te Ao Mārama, having a collective vision and creating collective momentum ultimately overcame barriers, even for those who were most vehemently opposed to change.

The Levers for Transformation create the context in which the barriers to Tiriti-honouring practice and transformative relationships are minimised, mitigated or removed. These Levers are easier to observe than relationships, which must be experienced to be understood. In the NSC journey, leadership teams and governance developed a strong Vision and Mandate for change within their respective Challenges. Conscious improvements to the Enabling Environment and investment in Capability Development together created spaces in which Tiriti-honouring practice could be operationalised.

The levers on their own may be insufficient for driving deep and enduring change – without underpinning relationships, they risk become a tick-box exercise – yet without these levers, to resource, enable, and prioritise transformational relationships, the innovation and vision of these partnerships would face barrier after barrier as they come up against the rigidity of an established system that has never worked for Maori. Like the atua, using their unique skills and strengths to pursue the light, transformation requires us to use all the levers at our disposal within our spheres of influence. While the task of transformation can at times seem daunting, the exploration of Levers for Transformation within the NSC highlights the plethora of starting points and impact points available to us.

There has been an obvious evolution during the Challenges' Tiriti Journeys, which have generally ended in places that surpassed early expectations. The NSC journey is evidence that in **giving effect to Te Tiriti, ongoing engagement in partnerships is more important than perfection**. Small steps and trial and error are all part of that journey.

Just as the younger atua tried many strategies to reach the Hinātore, and their early attempts appeared unsuccessful, the Challenges started Tranche 1 taking risks with new approaches not seen elsewhere in the RSI system, and met opposition at times. And just as the atua continued with their trial and error, and worked to persuade their older siblings and were eventually successful, the Challenges have each been successful in shifting mindsets and practices toward research funding. Genuine active attempts to drive change, within the context of open, supportive relationships will either be successful or provide opportunities to learn, innovate, change course, and develop better solutions together. The positive evolution seen across the NSCs has come about because of the people who stayed engaged in transformational relationships despite periods of discomfort.

The benefits are clear. The National Science Challenges have increased funding to Māori-led research, and in particular research that is happening outside of traditional research institutes. Much of this research is deeply embedded in the intergenerational workings of hapū, marae and whānau, and the enduring impact is already visible. More broadly, research teams have gathered data, influenced policy, developed resources and found solutions that directly impact the day to day lives of New Zealanders.

As we look to the future, a major risk is that post-NSC, funding mechanisms and business-as-usual structures commonplace elsewhere in the science and research system disrupt the relationships that have been developed, and leave little space to embed the learnings around doing science differently generated by the NSC, meaning that common barriers and inequities will prevail, and Aotearoa New Zealand's unique opportunities remain untapped. **This risks loss of momentum, loss of relationships, loss of knowledge, and the likelihood that we will fail to maximise positive long term outcomes,** not least through failing to leverage the energy and newly gained skills of the researchers and staff who have engaged deeply in the NSC process.

Furthermore, there are risks to community partners, hapū who may not have the resources to 'put things on hold' while new funding mechanisms are established.

While these risks need urgent attention and action, we can also look to the future with hope. The NSC narrative, through the lens of Te Orokohanga, reminds us that **we do have collective power to move from spaces of discomfort and restriction, to places of illumination and possibility.**

Those who have experienced new ways of thinking and practicing research and funding within the NSCs are much better equipped to advocate for the things that work, and that have broad impact for Māori and all New Zealanders. We know that we must adequately resource Māori leadership and building of relationships. We know that continued commitment to kaupapa Māori and Māori expertise (such as the Rauika Māngai) has immeasurable benefit to research impact. We know capability can be developed, and flexible and adaptive approaches can be enabled – in many different evidenced ways.

There are opportunities to show international leadership and demonstrate the way in which Indigenous and immigrated knowledge systems can provide benefit to each other. There are opportunities to work across other sectors and share best practice, to extend the impact of Tiriti-honouring practice.

The NSC experience shows that a research and science sector which honours Te Tiriti is an exciting prospect for New Zealanders, in terms of the research impact as well as the innovative possibilities of scientific practice that draws on both Indigenous and western science traditions. It won't be easy, but the overwhelming reflection of those who have been engaged in the NSC Te Tiriti journey is that – it is worth it.

Stay engaged in transformative relationships, persevere through the highs and lows of cyclical beginnings. Be intentional and aspirational about the new world we can open up and create together.

Tihei Mauri Ora, ki te whaiao, ki te ao Marama!¹⁰⁴

GLOSSARY

Pūrākau	a narrative or story that prioritises Māori epistemology
atua	gods, ancestors, powerful beings
tuākana	elder siblings
tēina	younger siblings
hinātore	a glimmer of light
Te Orokohanga	the beginning (of creation)
Vision Mātauranga Policy (VM)	an MBIE policy introduced in 2005 to unlock the innovation potential of Māori knowledge, resources and people to assist New Zealanders to create a better future
Te Tiriti o Waitangi	a legal agreement, signed in 1840 between Māori and the Crown
rangatahi	young people
Early Career Researcher (ECR)	a researcher who is within 8 years of the award of their PhD
Tāngata Whenua	people of the land, indigenous people, Māori
Tāngata Tiriti	people in New Zealand by right of Te Tiriti ie non-Māori
Tiriti-honouring practice	behaviour and thinking that creates, emerges from or nurtures relationships between Tāngata Whenua and Tāngata Tiriti
taiao	environment
tino rangatiratanga	absolute political sovereignty for Māori
mana motuhake	self determination
kāwanatanga	government
mātauranga Māori	Māori knowledge systems
Tranche 1	the period spanning from the time in which a Challenge proposal was accepted through to the Midway Review (mid 2019)
Tranche 2	the period spanning from the Midway Review (mid 2019) through to the end of the NSC (mid 2024)
Midway Review	an MBIE initiated stocktake of NSC research funding during Tranche 1
Te Ao Marama	the world of light, from the creation story – the physical plane of existence inhabited by people
Huaki Pōuri	the coalition of younger siblings who advocated for separating their parents
Tū te Aniwaniwa	the coalition of predominantly older siblings who advocated for remaining in the status quo
Te Ao Māori	the Māori world
Tiriti journey	the process and experience of building understanding of Te Tiriti and operationalising the implications of that knowledge

¹⁰⁴ The breath, the life essence – to the light of dawn, to the world of light. A saying often used in oratory to reference the emergence from darkness into light.

APPENDICES

Appendix 1: Methodology

This Legacy document has been informed by several data collection activities including:

1. A facilitated wānanga was held in Auckland in September 2023 attended by Challenge Directors, Board members and other senior personnel.
 - a. The wānanga was built around the reflections and experiences of leadership across the NSC. Attendees were asked to prepare by considering the following questions:
 - i. what have we achieved as National Science Challenges?
 - ii. what has changed over the course of the Challenges (how and why)?
 - What stimulated and nurtured changes?
 - What was the intention of the changes?
 - What was the outcome?
 - What was the impact?
 - Was this a collective wisdom paradigm that we took together?
 - How has being part of the National Science Challenge collective influenced our pathways?
 - iii. what are the paths that we have taken and why did we choose our paths?
 - iv. what are the processes we have used and are using now?
 - v. what tools, resources, frameworks and processes that we have used to support our journeys and transformation that might be of use to others?
 - b. The wānanga was facilitated by Alannah Marriott, who guided the group through seven kaupapa kōrero: Outcomes, People & Capability, Governance, Process, Challenges & Solutions, Collaboration and The Future. Each kaupapa was discussed by a panel of 3-4 attendees who had prepared reflections and insights to share, and then opened up to the wider group for further discussion
 - c. Quotes from the wānanga are identified by Tāngata Whenua or Tāngata Tiriti.
2. A Journey Mapping exercise was undertaken individually by each Challenge between November 2023 and June 2024.

This reflective retrospective mapping asked Challenges to identify key events that were impactful on their

Challenge's ability to activate Tiriti-honouring practices that have enabled their Mission to be realised: these were called 'Moments that Matter'.

- a. Journey Mapping involved describing the key narrative elements surrounding each chosen 'Moment';
 - i. timeline
 - ii. Context
 - iii. Causes and effects
 - iv. People involved
 - v. Thoughts and reflections
- b. These Moments have been incorporated in a number of ways throughout the report.
- c. Quotes attributed to each Challenge as appropriate.
3. Online NSC Beginnings focus groups and interviews in December 2023 and January 2024 with Directors, Co-directors and Governance group members who had been present in the early days of the NSC.
 - a. Participants were asked to reflect on the visibility and priority given to Te Tiriti within the Challenges, how operationalisation of Te Tiriti was enabled or resisted, and the impact that had on Challenge evolution. Specific questions included:
 - i. What drew you to the NSC, and what potential did you see?
 - ii. What was your initial experience of the NSC? What was the vision for Te Tiriti (and or VM)?
 - iii. What were the key enablers of making Te Tiriti and VM visible in the NSC set up? What were the key barriers?
 - iv. Is there anything that you would do differently in hindsight?
 - v. What role have Tāngata Whenua and Tāngata Tiriti played in activating VM and honouring Te Tiriti?
 - b. Quotes are identified by Tāngata Tiriti or Tāngata Whenua, and Focus Group or Interview.
4. A Steering Group oversaw the project comprised of six Challenge Directors

The writers updated the Steering Group monthly on report progress and direction, and received feedback and guidance where needed.

Appendices

Appendix 2: NSC Principles

- 1. Mission-led**
Each Challenge is mission led and focuses research on achieving the Challenge objective and outcomes. Each research plan provides a credible impact pathway of research and related activities to achieve the outcome of the Challenge.
- 2. Science Quality**
Each Challenge is dynamic and includes mechanisms to bring in new ideas, researchers, and research providers to refresh the Challenge. Each research plan involves identifying and selecting the best science to address the Challenge. Critical research capabilities including Mātauranga knowledge need to remain dynamic and must continue to be built and evolve to maximise outcomes for New Zealand.
- 3. Best research team collaboration**
Each Challenge involves purposeful collaboration between researchers, across a number of research providers. Each Challenge is clearly linked with international research activity that supports the achievement of the Challenge.
- 4. Stakeholder engagement & public participation**
Each Challenge involves public outreach and exhibits strong engagement between researchers and intended end users of the research activity, including, in some cases, obtaining investment from end users in the Challenge's research.
- 5. Māori involvement and Mātauranga**
All Challenge research gives effect to the Vision Mātauranga policy.

[Source: <https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/national-science-challenges>]

Appendix 3: List of Challenges

The 11 Challenge Objectives or Missions were simply stated, with additional detail created and refined by each Challenge throughout the early period of the first tranche:

A Better Start:

To improve the potential of young New Zealanders to have a healthy and successful life. (\$34.7m)

Aging Well:

To harness science to sustain health and wellbeing into the later years of life. (\$34.9m)

Building Better Homes Towns & Cities (BBHTC):

To improve the quality and supply of housing and create smart and attractive urban environments. (\$47.9m)

The Deep South:

To understand the role of the Antarctic and the Southern Ocean in determining our climate and our future environment. (\$51.1m)

Healthier Lives:

To reduce the burden of major New Zealand health problems. (\$31.3m)

High-Value Nutrition:

To develop high-value foods with validated health benefits to drive economic growth. (\$83.8m)

New Zealand's Biological Heritage (BioHeritage):

To protect and manage New Zealand's biodiversity, improve our biosecurity, and enhance our resilience to harmful organisms. (\$63.7m)

Our Land and Water:

To enhance primary sector production and productivity while maintaining and improving our land and water quality for future generations. (\$96.9m)

Resilience to Nature's Challenge:

To enhance New Zealand's resilience to natural disasters. (\$59.4m)

Science for Technological Innovation:

To enhance the capacity of New Zealand to use physical and engineering sciences for economic growth. (\$106m)

Sustainable Seas:

To enhance utilisation of our marine resources within environmental and biological constraints. (\$71.1m)

Appendix 4: Additional Research Outcomes Details

Ageing Well - Taurite Tū: achieving equitable injury prevention outcomes for ageing Māori

Kā Whakamihi/Acknowledgements

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High-Value Nutrition - The Tūhauora Kawakawa Project

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Industry partners:

Riddet Institute, Human Nutrition Unit, Chia Sisters and AuOra of Wakatū Incorporation

Further reading:

Jayaprakash R et al. (2024). Human Metabolism and Excretion of Kawakawa (*Piper excelsum*) Leaf Chemicals. *Mol Nutr Food Res.* 68(6):e2300583. doi: 10.1002/mnfr.202300583.

Jayaprakash R et al. (2022) Exploring the Chemical Space of Kawakawa Leaf (*Piper excelsum*). *Nutrients.* 5;14(23):5168. doi: 10.3390/nu14235168.

Ramzan F et al. (2022) Acute Effects of Kawakawa (*Piper excelsum*) Intake on Postprandial Glycemic and Insulinaemic Response in a Healthy Population. *Nutrients.* 14(8):1638. doi: 10.3390/nu14081638.

Bioheritage - Freshwater for our Taonga programme

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