

He Pā Mataora—Learning to live with the Living Pā: Final Report



Report to National Science Centre Deep South Challenge
May 2024

Tōia mai rā ngā waka i te au a Tāne ki ngā waikarekare, pareārohirohi o Te Whanganui a Tara. Kia ū ki te take o Ahumairangi.

Orokotomo mai i Te Apa Māreikura o Māui ki ngā pari karangaranga o Rongomaraeroa ki Te Tumu Herenga Waka. Te pātaka kai iringa o te kupu o te kōrero.

He pā mataora. Ka takina te kawa a Te Rangiahuta. E tū e hine mā, e tama mā whakaarahia ake ngā poupou o tō whare o Te Herenga Waka.

He pā kaiao. Ka takina Te Kawa a Māui, te iho o te whakaaro i ahumainuku, i Ahumairangi.

Ko Te Poukairangi te pae kia eke. He pā anamata.

Tīhei mauri ora!

Drag forth the canoes across the rippling and quivering waves of Wellington harbour until you reach the base of Ahumairangi.

Enter through the carved gateway named Te Apa Māreikura o Māui to the reverberating domain of Rongomaraeroa to the carved meeting house, Te Tumu Herenga Waka. The storehouse of words and knowledge.

A thriving community—where the teachings of Te Rangiahuta continue to remind us to stand up, one and all, and maintain the posts of your house, Te Herenga Waka.

A living lab—where the teachings of Māui inspire and extend our understanding that emanate from the earth and from the sky.

Where the Poukairangi becomes the standard to aspire and to ensure a sustainable future.

And so it begins!

Living Pā tauparapara

Acknowledgements

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We also thank the Deep South National Science Challenge for their generous funding and for their support throughout. Ngā mihi maioha ki a koutou.



1. Executive Summary

As Māori, we are facing massive challenges in our world including the protection and nurturing of our identity, language, values, culture and tikanga—the freedom to be Māori in our everyday lives is vital. At the same time, we are dealing with the impact of ongoing climate change, which affects not only how we live and work today, but also how our mokopuna will do so in the future. Against that backdrop, the Living Pā building project represents our Te Herenga Waka marae community’s search for a future focused building that talks to our Māori values and tikanga, who we are, and who we want to be. The Living Pā building and, by association, our He Pā Mataora research project, is entirely focused on achieving a healthy, safe, resilient and beautiful future based on mātauranga Māori and place-based initiatives and interventions.

Our He Pā Mataora research project took the rare opportunity afforded in the lead-up to opening Te Herenga Waka—Victoria University of Wellington’s Living Pā building in December 2024 to explore the needs and challenges of moving an entire marae community into more climate adaptive and resilient practices. The project was built around four interrelated pātaka or storehouses of knowledge, focused on tikanga (Māori cultural practices), reo (Māori language), ako (learning and teaching) and taiao (environment), to explore effective and culturally relevant examples of living, learning and working more sustainably, as Māori, within an urban, pan-Māori context.

The research programme for He Pā Mataora built on the history and vision of our marae, our connections with other Māori communities that have embraced living buildings, and exemplar sustainable practices. As part of the project, we hosted wānanga, visited other inspiring living building sites, interviewed experts and knowledge holders, generated case studies, constructed a framework that reflects our tikanga and sustainability aspirations, collated a small but bespoke Māori corpus, and explored the potential of AI and virtual reality to enhance the educational power of the Living Pā. We also gave conference presentations, developed a new degree major in kaitiakitanga including a course on He Pā Mataora, developed innovative teaching resources, made a poster, a ‘how to guide’ and a set of short videos, and wrote four articles (one for each of the pātaka). Our research outputs and the findings therein will be applied to our local practice at Te Herenga Waka marae, and within our teaching and research programmes, but ultimately the value in this project is how much we can share our learnings and resources with other Māori communities, so together we can be better prepared to face the climate change challenges ahead.

2. Project Team

The core research team was based at Te Herenga Waka—Victoria University of Wellington and brought expertise and a range of disciplinary and cultural lenses to the project:

Dr Meegan Hall (Ngāti Ranginui) – Māori studies, higher education

Professor Maria Bargh (Te Arawa, Ngāti Awa).¹ – Māori studies

Tu Tēmara (Ngāi Tahu) – Te Ao Māori

Dr Mike Ross (Ngāti Hauā) – Māori studies

Dr Mere Skerrett (Ngāi Tahu, Tainui, Te Arawa, Mataatua) – Māori education

Kevin Shedlock (Ngāpuhi, Ngāti Porou, Whakatōhea) – Computer engineering

Dr Hiria McRae (Te Arawa, Ngāi Tahu, Ngāti Kahungunu) – Māori education

Rhonda Thomson (Ngāi Tahu) – Project management

¹ In 2022, Professor Bargh was appointed as Deputy Chair to the Independent Electoral Law Review panel so Tu Tēmara kindly agreed to be added to the research team to bolster the work of the Pātaka Tikanga.

Professor Regan Potangaroa, (Ngāti Kahungunu ki Wairarapa)² – Architecture
Robert Mulligan³ – Architecture
Lincoln North, (Ngāti Uenukukōpako) – Property Services

In addition, over the course of the project the Research team hired a number of research assistants who provided invaluable support to the team and energy for the project:

Rangiamohia Dansey-White
Hannah Higgison
Leith Maxwell
Zane Rawson
Avery Smith
Kelly Te Paa

3. Research Kaupapa and connection to Te Taura Fund

Māori communities, particularly in urban settings, are struggling to balance cultural and environmental responsibilities to look after Papatūānuku with lifestyle expectations and pressures from our whānau, work and other areas. We need to make significant changes to our lifestyles and practices to reduce our harm to the planet now, or we are sealing the fate of our mokopuna, just as our tupuna before us suffered. Faced with this looming climate crisis, Te Herenga Waka—Victoria University of Wellington embarked on an ambitious Living Pā building project to construct a 3000m², three storey, learning, teaching, research, and engagement space as part of Te Herenga Waka marae on our Kelburn campus. The Living Pā is designed to meet the Living Future Institute's™ Living Building Challenge™ (LBC) – a high-performance certification framework considered the built environment's most rigorous standard. Premised on evolving evidence of what is possible for green buildings, the Living Pā must meet the LBC's seven performance criteria related to place, water, energy, health and happiness, materials, equity, and beauty.

Our Research project, He Pā Mataora, takes its name from the Living Pā mission statement, 'He pā mataora—a thriving community, He pā kaiao—a living lab, He pā anamata—a bright future'. We wanted to use the rare opportunity afforded in the lead-up to the opening of the Living Pā building to explore the needs and challenges of moving an entire Māori community into more climate adaptive and resilient practices. Our project explored the following research question:

“How can we adapt to climate change and live, learn and work more sustainably, as Māori, within the mātāwaka, pan-Māori context of the Living Pā? “

The core of the research project, He Pā Mataora: Learning to live with the Living Pā, is to blend traditional and contemporary mātauranga Māori with the most climate resilient practices available for living and working in the Living Pā. The project looked at the ways that tikanga, te reo Māori, ako and taiao can be applied to the Living Pā and contribute to reversing climate change. He Pā Mataora has been a chance to rethink, as a Māori community committed to living more sustainably, about our relationship with the whenua (land). It provided an ideal context to learn about and practice adapting to climate change *as Māori*. He Pā Mataora also offered us the chance to rethink ourselves as a Māori community. The research that we proposed to do was not about enhancing the building project directly, rather, it was about reframing an entire Māori community of over 150 Māori staff

² Professor Potangaroa resigned from his position at Te Herenga Waka—Victoria University of Wellington in 2022.

³ Robert Mulligan was an associate of Professor Potangaroa and left the team when Professor Potangaroa resigned.

and 2000 Māori students, working from the inside, and gently leading and inspiring our people into sustainable practice, as opposed to pulling them against their will. It was also about learning from the few other communities that have already embraced living buildings and exemplar sustainable practices — and then applying that knowledge to our local practice, curricula and research programmes, and sharing that knowledge through our graduates and with our community outreach work. It was about finding practical ways to truly live the espoused values and Tiriti obligations of our university, and about learning from our past, learning from each other, and adapting to our changing circumstances.

Our overarching research question was broad in scope, so we focussed the project on four distinct but connected research areas—Pātaka Tikanga, Pātaka Reo, Pātaka Ako and Pātaka Taiao. We chose ‘pātaka’ or storehouses of knowledge to characterise our research areas as they link literally and metaphorically to our Living Pā context, the primary site of our research. The project was given ethical approval by the Te Herenga Waka—Victoria University of Wellington Human Ethics Committee (approval #0000030475), which allowed us to undertake interviews, wānanga, and site visits to inform our project. We also conducted a number of literature reviews, and collected historical and contemporary texts about the marae, sustainability and the Living Pā project, thereby creating a customised Māori corpus. We also used AI (described in the Creating a LLM for the Living Pā Project report) and research assistants to analyse its contents.

The iho (core) of the project was to blend traditional and contemporary mātauranga Māori with the most climate resilient practices available for living and working in a new building, the Living Pā. In line with Kaupapa Rangahau (KR) 1 Mātauranga and our changing climate, the entire research project explored the ways that tikanga, reo, ako and taiao can be applied to the Living Pā and contribute to climate change adaptation. The research project also investigated the intimate relationship between te reo and tikanga and Māori ways of living, as per KR2 Te Reo Māori and climate change, starting with a literature review and culminating in an insightful journal article (Skerrett, Hall & Dansey-White, under review). In keeping with KR3 Resilience and wellbeing, we produced findings that could help and teach others, such as a suite of teaching resources and case studies that we created for our new major and minor in kaitiakitanga, and undergraduate He Pā Mataora course that has been approved by CUAP. A key research output of our project was the development and application of a tikanga framework (as per KR4 Tikanga for planning and decision making), as set out in our article about the tikanga and sustainable design principles that will now guide our decision-making and the everyday practices of our marae community (Hall, McCrae et.al., under review).

He Pā Mataora was grounded by KR5 Te Tiriti o Waitangi and, given our marae’s location within a university setting, its institutional commitments to a Te Tiriti o Waitangi Statute and Māori values. The project gave us multiple opportunities to express KR6 Tino Rangatiratanga through such things as exploring our tikanga practices, and taking time to determine how we wanted to live, as Māori, in a Māori controlled marae space set within an urban university setting. It was also a vehicle for KR8 Decolonising climate action and adaptation, such as through the consideration of the accessibility and importance of public education discussed in our article, *Sharing knowledge “in the most beautiful way”*: *Creating community connection through Indigenous sustainability out-of-classroom education* (Hall et.al., under review). Through the Indigenising policy and action kaupapa, the project had a strong focus on building the mātauranga Māori and sustainability capability of our students and kaimahi. Our project was also set at a marae, where the sharing of food is commonplace but, in keeping with KR9 He kai kei aku ringa, we interrogated our beliefs and practices around manaakitanga and produced a case study around how we propose to host visitors in the Living Pā while managing food supply issues and wastage.

One of the challenges of the Living Pā building was working within local planning and building regulations, so our Pātaka Taiao team engaged with KR10 Local government: Barriers and

opportunities and shared their project journey in a 'How to guide' that they produced, called *He Pā Mataora: Our experience of building a living building* (North & Thomson et.al., 2024). In relation to KR14 Cultural heritage, our project team recognised there are significant risks to our marae, Te Herenga Waka, if we are not better prepared for the impact of climate change. There will also be challenges that the Living Pā building will create, particularly with its strict water, energy and materials requirements, so we must refine our tikanga for these changing contexts. We also recognised the huge opportunities that the Living Pā presents, in relation to KR15 The built environment: Assessing and addressing risk to infrastructure important to Māori, for us to develop a model for building sustainably while drawing on mātauranga Māori as outlined in our Beacon article, *The Living Pā – Building in pursuit of Kaitiakitanga* (Thomson & North 2023).

The overall outcomes that we sought from this research project are better ways to support Māori communities to enact KR16 Just transitions. We have started to share our ideas through conference presentations (at IIRC 2022 and IIRCS 2023) and hui (such as Tiaki Mai, Tiaki Atua) but look forward to continuing to share our learnings through our ongoing teaching and presenting opportunities, and using the range of resources that we have produced, such as a poster about our tikanga framework, a display for the Living Pā based on our VR scanning (Huia Bird Report), and short videos that we created to capture the focus of our four pātaka, to share the story of He Pā Mataora in our teaching.

4. Research Activity and Outputs

The outputs for He Pā Mataora can be generally grouped under the four pātaka for the project — Pātaka Tikanga, Pātaka Reo, Pātaka Ako and Pātaka Taiao — although we are conscious that as the project developed, the overlaps across the four became more apparent. This section describes the research activities that were undertaken by the Pātaka teams and the outputs they produced.

4.1 Pātaka Tikanga

The key output of the Pātaka Tikanga work was to develop a framework that connected the LBC performance criteria around place, water, energy, health, materials, equity, and beauty, with core tikanga Māori. This was able to be developed after:

- Site visits and communication with other Māori communities with living buildings, particularly Te Uru Taumatua in Tāneatua and Te Wānanga o Raukawa in Ōtaki.
- Community wānanga to dialogue with our staff and students, as well as mana whenua members in our rohe. The basis for the kōrero was that our tikanga has worked for us up to this point and is based on principles and practices refined over hundreds of years. Moving into the Living Pā simply provides an opportunity to reflect on what adjustment may be necessary.
- Exploring the origins of the Te Herenga Waka marae, from the land endowment through to how the tikanga and kawa for the marae were established.
- Professor Tā Hirini Moko Mead's book on tikanga Māori (2003) provided a useful steer on key tikanga Māori that were relevant for Te Herenga Waka. His descriptions of a set of fundamental tikanga Māori were used as a starting point for discussion in order to develop a unique framework for our University marae.
- The Pātaka Tikanga team also had access to interviews recorded at the marae in 2000 with Professor Tā Hirini Moko Mead, Tā Pou Temara and others associated with the development of the marae. The analysis and synthesis of these interviews provided important information on how the tikanga of the marae was established.

Drawing from this research, the Pātaka Tikanga members and others in the research team, were able to craft a tikanga framework for the Living Pā/Te Herenga Waka marae that blended the seven tikanga drawn from Mead’s (2003) work — manaakitanga, mana, tapu, noa, *take*, utu, and ea — with the design principles of the Living Building Challenge — place, energy, materials, water, health and happiness, equity, and beauty.

The draft framework was tested against the Living Pā tauparapara (see page 2) and the waiata ‘Kāore Taku Raru’, to ensure that all 14 tikanga and design principle elements were reinforced by and aligned with the original vision for the marae and Living Pā. Two case studies were also developed to provide examples of how our tikanga framework relates to common activities at our marae – one is about the pōwhiri process for new University students to Te Herenga Waka marae, and the second focusing on our engagement with and use of food.

The resultant tikanga framework has been summarised in an A3 poster, which will be used to inform practice at Te Herenga Waka marae, shared through future presentations by the research team, and taught about in our undergraduate kaitiakitanga courses. It also provided the basis and main findings for a journal article, *He Pā Anamata: A marae-based tikanga framework for the future* (Hall, McRae et.al., under review) that has been submitted to *MAI Journal*. The article shares how the tikanga framework bring the philosophies of te ao Māori (the Māori world) and living buildings together, explaining the key components of the framework and providing case study examples of how it applies in practice. It is also about shifting a marae community into more climate adaptive and resilient practices without compromising on tikanga to achieve ‘he pā anamata’, a marae for the future.

4.2 Pātaka Reo

The Pātaka Reo team was interested in the deeply embedded Māori language that we have around our marae, climate change and sustainability. Also, because of the technology skills of one of the team members, the team was able to pick up the virtual/augmented reality interests of the project (which were initially part of the Pātaka Taiao programme of work) and even add a dimension around the use of AI. This was all explored through:

- Completing a literature review on the Pātaka Reo topics.
- Gathering examples and observations while on site visits and during wānanga, such as modelled by Ngāi Tūhoe, of reo usage that expresses climate adaptation knowledge and experiences. This includes taking note of different language domains, and language use in various parts of pā, marae and buildings.
- Creating a indexed corpus of texts relating to the Living Building Challenge and Te Herenga Waka marae including interviews, waiata, wānanga, naming processes, governance documents, and conference presentations.
- Developing an AI tool that could draw out meaning and insights from a synthesis of corpus material around sustainability, resilience, health and wellbeing that are immersed in tikanga and te reo Māori.
- A gift to the Living Pā from the School of Biological Sciences of a pair of taxidermised huia birds. A conservator was engaged to restore the birds, after which they were 3D scanned in a process overseen by a Pātaka Reo team member.

Building on this work, a report about the AI tool and its functionality, *Creating a LLM for the Living Pā Project*, was completed for this project, as was a *Huia Bird Report* on the 3D scanning of the huia birds. The manuhuia will be installed in glass boxes in the Living Pā and will tell their story via augmented reality and including the use of te reo Māori.

We were also able to produce a journal article, *He Reo Mataora, He Pā Mataora: An Indigenous language-based response within a marae-based climate mitigation context* (Skerrett, Hall & Dansey-White, under review) submitted to the *International Journal of Indigenous Social Development* that emphasises our belief that language is a crucial component of a thriving, sustainable Indigenous marae community set in a university setting. It provides a brief overview of the University's marae, as well as the broader context of settler colonialism, decolonisation and kaitiakitanga within which it is operating. It also presents the process to develop our corpus of language and texts and explores how such a collection can both articulate and challenge our understandings of marae-based cultural practice and sustainability.

4.3 Pātaka Ako

The Pātaka Ako team explored ways to communicate our findings about living sustainably and well within a Māori environment, as inspired by the Living Pā and the work of some of our nearby organisations, to other communities and people through our learning and teaching programmes. This was achieved through:

- Gathering examples and observations while on site visits (such as at Papawhakaritorito Charitable Trust and Mangaroa Farms) and during wānanga about the educative processes that have been part of working within the different sites.
- Reviewing existing teaching programmes and research literature that focus on sustainability and climate adaptation in a Māori context. A research assistant was contracted to work on this review.
- Conducting interviews with staff at Zealandia, the Wellington Botanic Gardens, and Te Papa, and then working with a research assistant to analyse the responses and synthesise/summarise the findings.
- Helping to organise the April 2024 Tiaki Mai, Tiaki Atū event with the Deep South National Science Challenge team, and co-hosting the second day of the event on site at our Kelburn campus.

This work culminated in a number of outputs including, developing a new degree major and minor in kaitiakitanga that has been approved by the University's Academic Board and Universities New Zealand's Committee on University Academic Programmes (CUAP). It will be offered from Trimester 1, 2025 and will include a specific He Pā Mataora course. The team also developed learning and teaching resources (one about safety and the other on harakeke) that can be incorporated into existing and new climate adaptation courses and programmes, and hired a research assistant to create a suite of short videos that can be used in teaching to explain the focus of He Pā Mataora and particularly the Pātaka approaches that it engages with.

Members of the Pātaka Ako team joined a panel discussion at the Tiaki Mai, Tiaki Atū event, to share about the approach and learnings of He Pā Mataora, and presented at both the IIRC 2022 and IIRCS 2023 conferences hosted by Ngā Pae o Te Māramatanga.

The team also drew on all of the research activities to produce a journal article, *Sharing knowledge "in the most beautiful way": Creating community connection through Indigenous sustainability out-of-classroom education*. The article considers the potential for developing education outside the classroom opportunities that build on the mātauranga Māori and sustainability practices demonstrated through the Living Pā project. It was submitted to the *SOTL in the South* journal to be part of their Special Issue on out of classroom education.

4.4 Pātaka Taiao

The Pātaka Taiao team investigated the expectations and reality of the climate adaptation opportunities provided by the Living Pā, in ways that can be transferable to others. This was achieved through tracking the Living Pā build and documenting the way we are already living, and making decisions, in relation to the Pā.

Members of the team:

- Closely monitored the building process.
- Contributed to the development of the harakeke teaching resource and the 3D scanning of the huia birds.
- Organised and led visits to Te Wānanga o Raukawa to learn more about their living building experience.
- Visited Manaaki Whenua in Ōtautahi to collect three different cultivars of harakeke for planting at the Living Pā. These are plants with whakapapa, an exciting context that a number of faculties and schools at Te Herenga Waka will be able connect to.
- Shared the story of the Living Pā through hosting number tours of the construction site, and presenting at events including Tiaki Atu, Tiaki Mai.

Overall, the Pātaka Taiao team developed a case study-based article on the Living Pā process, *The Living Pā: Building in pursuit of kaitiakitanga*, and submitted it to the Construction Sector Accord Beacon Project. Each year, the Accord selects and profiles projects and companies in a series of Beacon case studies. The Construction Sector Accord is a joint commitment from government and industry to work together to create a high performing construction sector for a better New Zealand. Beacon Projects highlight examples of good practice in the construction sector that others can learn from and adopt. 'Beacons' are elements of projects or business practices that demonstrate the Construction Sector Accord (the 'Accord') principles in action and are used to promote and share good practice and lessons learned across the sector. Sharing good practice and lessons learned supports the Accord's vision of 'Creating a thriving, fair and sustainable construction sector for a better Aotearoa New Zealand'. In 2023, the [Living Pā article](#) was published on their website and feedback in 2024 suggests it is their most popular article in the series to date.

The Pātaka Taiao team also developed a 'How to guide', the purpose of which was to share their experiences and hard earned knowledge around delivering a Living Building. The guide, *He Pā Mataora: Our experience of building a living building*, provides tips, tricks, and lessons learnt on our journey from a project management perspective. The aim was to give others what Ngāi Tūhoe (the conceivers of the first Living Building in the Southern Hemisphere) gave to the Living Pā team — an insight into how to start on a living building pathway.



Figure 1 Cover of 'How to guide' about the Living Pā

5 Conclusion

This was a project for Māori not living on their papa kāinga, which despite being the reality for most Māori is a vastly under-researched and under-served Māori context. As a marae within a university environment, we are often dismissed as mainstream – as if our Māoriness cannot exist in the context of a colonial institution. We are overlooked because we do not meet the fixed notions of whānau, hāpu, and iwi operating within their historical boundaries and spaces. This project sought to shift that mindset, to make visible the new pā and other Māori spaces that are springing up in today's modern context and explore the tikanga in those spaces, particularly in relation to sustainability and climate change.

By centring on mātauranga Māori, we repositioned our approach to researching and addressing climate resiliency. Our work was not led by or a response to climate change but was a way to shift the power dynamic by revolving around the potential of tikanga Māori and its ability to adapt and change. Our Pātaka as a methodology approach was a new framing that grew out of our specific research context and goals. As such, it had the potential to not only guide our research in innovative ways but also added to current understandings of kaupapa Māori theory and methodologies.

While the official period of our He Pā Mataora project has now come to an end, its outputs and outcomes will continue through to the opening of the Living Pā building in December 2024 and on into the future. Informed by this project, we hope to see a range of changes around:

- University policy and practice around such things as procurement, water and food use.
- Increased enrolments in Māori courses about climate resilience, and greater awareness of Tiriti o Waitangi responsibilities in relation to climate resilience.
- More Living Building Challenge projects (or Māori versions of) on Māori land that engage in a more tika transition to a zero-carbon economy.
- More widespread uptake of climate adaptation measures amongst communities where tikanga Māori is observed and practiced.
- Increased usage of te reo Māori terminology in relation to sustainability, climate resilience, health and wellbeing.

We also hope that we have made a helpful contribution 'mō te āpōpō—for future generations'.