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Whakapapa o te ngāhere

Whakapapa
*a system of understanding
identity and genealogy*

Ngāhere
*the forest and many
binding connections*

KATERINA FRENCH ARMSTRONG



Whakapapa o te ngāhere

*An explorative
discussion and process
of understanding
ecological and cultural
fragmentation*

KATERINA FRENCH ARMSTRONG

An exegesis submitted in partial fulfilment of the requirements
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Te Kunenga Ki Pūrehuroa, Wellington, Aotearoa New Zealand.

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Karanga

Hāere mai rā, e te manuhiri tuarangi e
Kí ngā whakapapa kōrero o te ngāhere e hora nei e
Nau māi, whakatau mai rā

He mihi

Ko Ranginui kei runga
Ko Papatūānuku kei raro
Ko ngā tāngata kei waenganui
Tihei Mauri Ora!

Kei ngā mate o te wā whetūrangitia, kei te mihi
Kí a koutou ngā kanohi ora, tēnā koutou katoa

Kei ngā tupu o te ngāhere kei ngā uri o Papatūānuku, tēnā koutou
Kei ngā kaitiaki o Papatūānuku tēnei te mōkai awhina te mihi nei ki a koutou
Ka mihi au ki te pae o Tararua
Kí te awa o Ōtaki e rere kau ana ki te moana nui a Kahe Te-Rau-o te-Rangi ki
Te Waewae Kāpiti o Tara rāua ko Rangitāne
Tēnei ka mihi ki te rohe pōtae o Ngāti Raukawa ki te Tonga
Kí ngā uri o Mahinārangī rāua ko Turongo, tēnā koutou
Kí a koutou te whare tūpuna kua whakarauika mai hei tautoko
i te kaupapa tēnei te mihi kia koutou
Kí a koutou kua hui mai nei ki tēnei kaupapa kei te mihi
Tēnei te mihi nui ki a koutou katoa

Whatungarongaro he tangata
Toitū he whenua

Haumi e, Hui e, Taiki e!

**Ehara taku toa i te toa
takitahi engari he toa
takitini.**

***My strength is not the
strength of one but of many.***

Whakataukī. Mead, H. M., & Grove, N. (2003).

Ngā Pēpeha a Ngā Tīpuna: The sayings of the ancestors.

Ngā mihi

This mahi and myself wouldn't have grown in the way it has, if it wasn't for all of the people that have been a part of it. First of all aroha nui, to my tīpuna and whānau, you've watched over and supported me with every venture I've been on, every step of the way.

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Abstract

Ko te *Whakapapa o te ngāhere*¹, is an explorative discussion and process of understanding ecological and cultural fragmentation through *kōrero*, *hīkoi* (Smith, 1999; Smith, 2017) and spatial design.

Over the young colonial history of Aotearoa, rapid deforestation, land alienation and land alteration has significantly changed the *whenua* (land) and the relationship between *tāngata* (people), *rākau* (plants and trees) and the *ngāhere* (forest) that once cloaked Māori lands. Through a cross-institutional and interdisciplinary collaboration between Te Herenga Waka Centre for Science in Society and Toi Rauwhārangī College of Creative Arts, this project expands ways of communicating the embedded values and relationships between native *rākau*, *tāngata* and *whenua* within the *rohe* (region) of Ngāti Raukawa ki te Tonga, Ōtaki.

Guided by the overarching principle of *whakapapa* we acknowledge that this relationship extends beyond *rākau* to the pre-colonial *whenua*, dominant with *puna wai* Māori (freshwater systems) and *kōreporepo ngāhere* (swamp forest). The first sections, *ko wai au* and *kupu whakapuaki* work to locate myself, the team and the conception of the wider project. Out of the process of centering *whanaungatanga*, *hīkoi* and *kōrero* of past and future visions arose the spatial design themes of visualisation, immersion and experience. These forms have come together through an installation that will guide people through an immersive visual *karakia* that expresses *whakapapa* and *mauri*, preceding a series of visualisations that represent three familiar sites within Ōtaki that connect *wai* and *rākau*. The purpose is to evoke people to *whakarongo* (listen and feel) and *kōrero* (discuss).

RESEARCH QUESTION

How can spatial design be used to reveal embedded narratives and activate conversations, while revealing the importance of conserving and reconnecting *ngāhere* through a Te Ao Māori lens?

¹ *Whakapapa* translates to 'lay flat' (Taonui, 2015). In the context of this project its meaning spans from a framework of understanding identity, genealogy, layers and interconnections. *Ngāhere* refers to both the forest and the many binding connections within (Shortland, 2011).

Rarangi kaupapa

Contents

Horopaki Context	13
Kupu hau <i>Glossary</i>	15
Tāngata <i>People</i>	20
Ōtaki site map	23
Ko wai au <i>Who am I?</i>	24
Kupu whakapuaki <i>Preface</i>	26
Kupu whakatau <i>Introduction</i>	33
Te Orokohanga <i>Creation</i>	34
Ko Ōtaki te whenua <i>Ōtaki is the land</i>	39
Wero <i>Addressing the challenge and Intent</i>	41
Tukanga Process	45
Raranga <i>Weaving, course and direction</i>	46
Āta <i>Deliberate, purposeful and cautious in intent</i>	49
Hīkoi <i>Step, stride, walk</i>	54
Haumanu <i>Revive, restore, rejuvenate</i>	68
Whakaahua <i>Design process</i>	72
Ako <i>Sharing and Learning</i>	74
Te reo o Tangi <i>Sound and mourning</i>	84
Tukunga iho <i>Design outcomes</i>	95
Whakamātakitaki Te Ara <i>exhibiting the journey</i>	97
Waimanu Lagoon	101
Waitohu Awa	103
Ōtaki Awa	105
Kupu whakakapi <i>Concluding thoughts</i>	118

Horopaki *Context*

Kupu hau

Glossary

It is important to note that the complex nature of te reo Māori can not always be succinctly translated into English definitions. The purpose of this glossary is to help guide the reader through Māori words and concepts. The definitions outlined are based on the definitions in, *The Reed Dictionary of Modern Māori* by P.M. Ryan, *Te Aka Māori-English, English-Māori online Dictionary* and the guidance of Watene Kaihau.

awa river

haukāinga community

hauora health, vigour, wellbeing

hīkoi to step, stride, march, walk

inanga white-bait

iwi extended kinship group, tribe, nation, people

kai food, meal

karakia incantation, ritual chant

karanga the call home, call for manuhiri to enter, an exchange between people and people/ earth and the spiritual world

kaupapa Māori A philosophical doctrine, incorporating the knowledge, skills, attitudes and values of Māori society

kōreporepo wetlands, swamp

kōrero discussion, conversation

māhaki humility, humbleness, modesty

mana prestige, authority, control, power, influence, status, charisma

manaakitanga hospitality, kindness, generosity, support

mana whenua territorial rights, power from the land, authority over land or territory, jurisdiction over land or territory

manuhiri visitor, guest, fleeting bird

maru atua and guardian of wai Māori (fresh water) e.g. streams and rivers

mātauranga knowledge, wisdom, understanding, skill

maunga mountain, mount, peak

mauri life principle, life force, vital essence, special nature, a material symbol of a life principle, source of emotions - the essential quality and vitality of a being or entity

moana sea, ocean, large lake

ngāhere bush, forest

Papatūānuku Earth, Earth mother

pātiki flounder, to be flat

pou whenua boundary marker, land marker post, land symbol of support

pūrākau Traditional story, narrative

rākau tree, stick, timber, wood, plant

Ranginui Sky father

rohe boundary, district, region, territory

tamariki children

Tāne Mahuta atua of the forests and birds and one of the children of Ranginui and Papatūānuku

Koru

In Te Ao Māori the form of an unfurling fern, the koru, represents the creation of new life and direction of home (Royal, 2005).

Ponga, *Cyathea dealbata*

Tāne Whakapiripiri the aspect of Tāne that weaves and unites the children of Tāne (people, birds, plants, insects etc)

tangata whenua local people, hosts, indigenous people

tāngata people, men, persons, human beings

taonga treasure, anything prized - applied to anything considered to be of value including socially or culturally valuable objects, resources, phenomenon, ideas and techniques

taonga tuku iho heirloom, something handed down, cultural property, heritage

tauparapara incantation to begin a speech

Tāwhirimātea atua of the winds, clouds, rain

Te Ao Māori the Māori world view

Te Ao Mārama world of life and light, Earth, physical world

Te Ao Tūroa light of day, world, Earth, nature, enduring world, natural world

Te kore the void, energy, nothingness, potential

Te Pō the world of darkness

te reo language, dialect, tongue, speech

taiao Earth, nature, natural world

tangaroa atua and guardian of moana (seas), awa (rivers) and rotu (lakes)

tikanga custom, method, rule, way, code, meaning, convention, protocol

tino rangātiratanga self determination, sovereignty, autonomy

tohunga a person chosen by the agent of an atua and the tribe as a leader in a particular field

toi art

***tuia** to weave and bind together

tuna eel of various species, including the longfin eel (*Anguilla dieffenbachii*) and shortfin eel (*Anguilla australis*)

tīpuna ancestors, grandparents (eastern)

tūpuna ancestors, grandparents (western)

tūrangawaewae domicile, standing, place where one has the right to stand

wāhi tapu sacred place, sacred site - a place subject to long-term ritual restrictions on access or use

waiata song, chant

wairua spirit, soul

wairuatanga spirituality

wānanga to meet and discuss, deliberate, consider

whaikōrero formal speech

whakaaro thought, opinion, plan, understanding, idea, intention, conscience

whakapapa genealogy, genealogical table, lineage, descent

whakatauākī proverb, significant saying; where the person who said it first is known

whakataukī proverb, significant saying; where the person who said it first, is not known

whānau extended family, family group

whenua land, ground, placenta

urī offspring, descendant, relative, kin

Rākau

Native plants & trees

Definitions based on Manaaki Whenua Ngā Tipu Whakaoranga database (2022) and *Meanings of Trees* by Robert Vennell.

akeake *Dodonaea viscosa*, small tree with hard black wood, favoured as a material for weapons and tool handles

harakeke flax, *Phormium tenax*

horoeka lancewood, *Pseudopanax crassifolius*

kahikatea white pine, *Dacrycarpus dacrydioides*

kānuka *Kunzea ericoides*, white tea-tree a small aromatic tree that forms dense scrub. Weapons and tools were fashioned from the heavy stems while the trunks were also used as building materials

karaka *Corynocarpus laevigatus*

kareao supplejack

kauri *Agathis australis*, large conifer that was second only to the tōtara for building waka in the North. After rituals the tree was felled and the trunk hollowed with stone tools and fire from burning dry rewarewa wood

kawakawa *Macropiper excelsum*, this large shrub with shining green leaves is one of the most important to Māori. Leafy shoots were used in ceremonies connected with birth, death and applying or lifting tapu. The leaves and bark were also used for cuts and stomach pains

kohekohe *Dysoxylum spectabile*

kōhūhū *Pittosporum tenuifolium*, a small evergreen tree with wavy silvery green, glossy leaves. Small branches are waved to welcome important visitors to the marae

koromiko *Hebe salicifolia*, a small bushy shrub with narrow tapering leaves and flowers, common in regeneration and suburban plantings

nīkau *Rhopalostylis sapida*

ponga silver fern, *Cyathea dealbata*

puha sow thistle, *Sonchus kirkii*

pukatea *Laurelia novae-zelandiae*

putaputāwētā marble leaf, *Carpodetus serratus*

rimu red pine, *Dacrydium cupressinum*

raupō bulrush, *Typha orientalis*

tarata lemonwood, *Pittosporum eugenioides*, the noticeably fragrant leaves, flowers or gum were mixed with bird fat and other ingredients to make a scented balm

tawa *Beilschmiedia tawa*

tī kōuka cabbage tree, *Cordyline australis*

tōtara *Podocarpus tōtara*, a familiar conifer with red, easily worked, straight grained wood. Favoured for use in all types of carving. The bark was used for roofing material, while the fruit was gathered for food

wātakirihi watercress, *Nasturtium officinale*

whauwhaupaku five finger, *Pseudopanax arbore*

wīwī rushes, *Juncus edgariae*

Manu

Native bird species

Definitions based on Department of Conservation Native Birds List A-Z (2022) and New Zealand Birds Online encyclopaedia.

hihi stitchbird, *Notiomystis cincta*, a highly vulnerable and sensitive species. There are small recovering populations of hihi that have been reintroduced into mainland predator-proof fenced sanctuaries as well as offshore islands

koekoeā long-tailed cuckoo, *Eudynamys taitensis*

kōkako north island kōkako, *Callaeas cinerea*

korimako bellbird, *Anthornis melanura*, found in native and regenerating forest, especially where there is diverse or dense vegetation

mātātā fernbird, *Bowdleria punctata*, many local populations have been lost due to drainage of wetlands and conversion to pasture, combined with predation by introduced mammals

matuku australasian bittern, *Botaurus poiciloptilus*, a potential indicator of wetland health because they are dependent on the presence of high quality and ecologically diverse habitats and rich food supplies

miromiro tomtit, *Petroica macrocephala*, susceptible to massive land clearances earlier in European settlement and are still vulnerable to mammalian predators

pīwakawaka fantail, *Rhipidura fuliginosa*, a small insect-eating bird found throughout Aotearoa which has a distinctive tail resembling a fan

pōpokotea whitehead, *Mohoua albicilla*

pūkeke swamphen, *Porphyrio porphyrio*

pūtakitaki paradise duck, *Tadorna variegata*

ruru morepork, *Ninox novaeseelandiae*

takahē south Island takahe, *Porphyrio hochstetteri*

tīeke north island saddleback, *Dacrycarpus dacrydioides*, once spread throughout Aotearoa, however their decline began in the mid 19th century, caused by forest clearance and introduced predators

touhou silvereve, *Zosterops lateralis*

toutouwai north island robin, *Petroica longipes*

tūī parsons bird, *Prosthemadera novaeseelandiae*

weka woodhen, *Gallirallus australis*

weweia dabchick, *Poliiocephalus rufpectus*

Tāngata

Tāngata and whanaungatanga (relationships) have been the backbone of this mahi. I would like to use this section to introduce you to a few of the many people that have played a pivotal role throughout this journey of weaving different strengths.

Watene Kaihau

Ngāti Raukawa
Cultural Advisor
Kāpiti Coast District Council

Tungia Kaihau

Ngāti Raukawa
*Teacher, Cultural Advisor
and Mana Wāhine*

Jo Bailey

Designer & Science Communicator
Toi Rauwhārangī – College of
Creative Arts

Cate Macinnis-Ng

Plant Biologist and Ecologist
University of Auckland

Kuini Rikihana

Ngāti Raukawa, Te Āti Awa
Journalist, Writer and Mana Wāhine

Pātaka Moore

Ngāti Raukawa
Environmental Scientist
Te Wānanga o Raukawa

Vicky Gane

Masters Student
Centre for Science in society

Sarah-Jane O'Connor

Ecologist and Science Communicator
Centre for Science in Society

Rhian Salmon

Public Science Engager
Centre for Science in Society

Huhana Smith

Ngāti Tukorehe, Ngāti Raukawa
Artist and Climate Change Advocate
Whiti o Rehua – The School of Art

Stephen Hartley

Biodiversity and Restoration Ecologist
School of Biological Sciences

Ōtaki site map



Ko wai au Who am I?

**Na Toi raua ko Pōtiki te whenua
Na Tūhoe te mana me te rangātiratanga**

**Ko Maungapōhatu tōku maunga
Ko Ōhinemataroa tōku awa
Ko Mataatua tōku waka
Ko Waikirikiri tōku marae
Ko Tūhoe Ko Ngāti Kahungunu ōku iwi
Ko Hāmua me Nāti Mura nā hapū
Ko Mika Ko Warikihi Stevens te whānau
Ko Doug raua ko Wendy ōku matua
Ko Katerina ahau**

No hea au *Where am I from?*

My point of view is of someone that has grown up away from the whenua of their iwi. I grew up on the edges of different worlds, most of my life consciously disconnected from my Māoritanga and knowledge of my whakapapa. I watched how much strength it took from my mum to learn more about our tīpuna. Not having immediate whānau by our sides made it challenging to navigate, so I simply let go of the questioning. The thing is, there was never going to be a right time and waiting certainly wasn't going to make this journey any easier.

Over the last five years I've tentatively walked down the path of uncovering the different threads that make up the tapestry of our whakapapa. Sitting in the carry pack of a conservation biologist (aka my dad) it's been mentioned that before I could walk or talk, the ngāhere and unfolding life within was something I gazed upon in awe. Later down the track, that feeling has not changed. No matter where I am in the world, surrounded by rākau and ngāhere is where I feel most at home.

This relationship was something I did not give much thought to until I came face to face with my Tūhoe whakapapa. It was always there. However, my connection to my tīpuna emerged through my increased connection with the whenua and ngāhere. Te Urewera is the home of ngā tamariki o te kohu (children of the mist), an inland rugged rohe with the largest remaining stands of significant native ngāhere within Te Ika-a-Māui, the North Island.

While my whakapapa connects me to Ngāi Tuhoe of Te Urewera and Ngāti Kahungunu of the east coast, I was born and raised in the rohe of Rangitāne in Manawatū. I grew up beneath the maunga of Tararua and Ruahine in an entanglement of suburbia, farmland and ngāhere. Manawatū means 'heart standing still', named by the great grandson of Kupe, Haunui-a-nanaia who felt this after traversing Te Āpiti (Manawatū Gorge). I'm familiar with that stillness. However, the expanse of kōreporepo (wetlands) and ngāhere that would have laid over the lands as far as the eye could see is now characterised by a broken tapestry of remnants. The maunga stand bare and dry in the distance, scattered with stands of pine trees that will be felled. Soon, new ones will begin to grow. Native ngāhere spreads over the folds of valleys and inclines that are less accessible to man.

Through the journey of this mahi I have wondered, "If these ecosystems are severely separated from our everyday experience, how can we feel connected to them?" If we're not connected to them how could we be driven to protect and conserve them?



Whānau
Small me with my dad
(above) and mum (below).

Kupu whakapuaki

Preface

It was during a hīkoi shared by Rhian Salmon and Sarah-Jane O'Connor along te awa o Ōtaki at Chrystalls Bend where the seed of inspiration began to sprout. There were a number of regenerating areas of native rākau ranging from seedlings to those that are now 25 years old. However, It wasn't clear what these rākau were doing from a cultural, ecological and climate change point of view.

How could a science student and design student help to investigate, engage and communicate the unseen significance and narratives of native rākau?

A few years later is where Vicky and I come into this narrative. Starting with the initial question of how might we communicate carbon and climate change, I opened up the scope of this project in order to find the roots of what the whenua and ngāhere actually meant to tangata whenua of Ōtaki, particularly certain identities from Ngāti Raukawa ki Te Tonga. It led me to understand the dramatic deforestation and modification of the whenua of this area and how this in turn has deeply affected Māori. While there have been times where Vicky and I have wondered where our paths would intertwine, it was nearer to the end that we formed strong kiwai or handles of a kete that we have since filled with ecological relationships needed for ecosystems to thrive. In our kete we also recognise the tools to enhance taonga species and treasured ecosystems so that we revitalise identity, sustenance and health of whānau Māori.

During the project many more seeds were planted and nurtured, while metaphorical lateral roots began to spread and overlap beneath the surface. By beginning with the concept of researching and communicating climate change within a tree planting site, the process of engagement and deep seated friendships unraveled a much larger and more intricate tapestry of events and relationships.

“

2 NOVEMBER 2021

Two masters projects funded by Te Pūnaha Matatini are currently flowing together like a braided river towards creating communications to support community-led environmental restoration in Ōtaki. Design student Katerina French Armstrong (Tūhoe) and science in society student Vicky Gane have been exploring how to communicate the value of reforestation in Ōtaki in very different ways.

Katerina's project connects kaupapa Māori and spatial narratives to navigate community-led environmental restoration, while Vicky's project measures the environmental effects of tree planting along the Ōtaki River.

Friends of the Ōtaki River have been carrying out replanting and restoration along a section of this river for over two decades. Associate Professor Rhian Salmon often visits this beautiful reforested area with her students, and was recently struck by how little she knows about the effect that planting trees has on the environment.

Rhian had a vision for creating a designed, living, growing science communication project that could tell visitors about how much carbon particular trees were absorbing, and how that relates to their climate impact.

She joined forces with designer Jo Bailey and they decided to approach the project from a transdisciplinary angle, bringing together a design student and a science in society student. They also realised they needed the help of Associate Professor Cate Maclinnis-Ng, to contribute her immense knowledge about trees.

For Te Pūnaha Matatini investigators Rhian, Jo and Cate, this is an exciting exploration into deliberately working transdisciplinarily, bringing together science communication, design, ecology and mātauranga Māori.

The overall project also tests institutional boundaries, with Rhian based at Victoria University of Wellington, Jo at Massey University, Cate at the University of Auckland, and funding from Te Pūnaha Matatini.

– Te Pūnaha Matatini press release by Jonathan Burgess (Communications and Marketing Senior Adviser)

Growth

Newly planted native seedlings alongside te awa o Ōtaki at Chrystalls Bend. An interesting juxtaposition between what will soon be native ngāhere against the poplars and willows that

have been extensively planted along waterways in Aotearoa for their fast growing nature.



Kupu whakataau
Introduction

**Kia whakatōmuri te hāere
whakamua.**

*I walk backwards into the
future with my eyes fixed on
my past.*

Whakataukī. Rameka, 2017.

Kupu Whakatau *Introduction*

Kia titiro aku mata ki te pae o Tararua

Ki ngā wai puna ki ngā wai tuku kiri o Papatūānuku e takoto nei

Tae noa mai ki ngā hapū o te rohe nei o Ngāti Raukawa ki te Tonga

(W. Kaihau, personal communication, Nov 04, 2021)

From the pae (ranges) of Tararua and puna (springs) that flow through the rohe of Ngāti Raukawa ki te Tonga this is where the heart of this rangahau is centred. Ōtaki rests between the Kāpiti coast and maunga of Tararua. To the east, te awa o Ōtaki carves a path through the maunga, scattered with fragments of lowland native ngāhere, while to the west the shifting gravel banks and islands become more apparent as its mouth opens up to kōreporepo and the moana (ocean).

While utilising standard terms associated with climate change and carbon isn't at the forefront of this exegesis, the complex nature of ecological degradation, restoration and community impact remains at the core. Local communities and ecological biodiversity are vulnerable to the onset of climate change. For Kāpiti there is an increased risk of flooding and coastal erosion. The face of biodiversity is also rapidly changing with a rise in exotic species that thrive in warmer temperatures (GWRC, 2020). If we don't move quickly to mitigate the effects of carbon being released into the atmosphere, we will see more pressure on te taiao and greater loss of native biodiversity in the region (GWRC, 2020). Through a reflective and iterative process centering tāngata and rakāu this rangahau explores how the intrinsic nature of kaupapa Māori and spatial design can complement one another to add to the growing body of communication and engagement models that can regard climate change complexities and highlight the needs for expanded ecological restoration.

Te Orokohanga *Creation*

The deep rooted connection between Māori and the whenua is reflected within our creation narrative and purākau². It has been profound to reflect upon the synergies and metaphorical meanings woven throughout Te Ao Māori as they continue to reveal themselves. By beginning this unfolding journey with the creation of whakapapa and origin point of tāngata and rākau, it sets a precedent for the following rangahau. Forms of taonga tuku iho, the legacies and treasures handed down by our ancestors (this includes Tāne Mahuta) will be woven throughout to highlight their importance through guiding process and practice.

Back in the beginning of time Te Kore, the void absent of light and dormant potential, was in a state of chaos. Te Po, the various forms of darkness came into being, where out of this darkness, Papatūānuku (earth) and Ranginui (sky) were born (Ihimaera, 2020). While through a brutal and painful act of separation, it was the tamariki of Papatūānuku and Ranginui that laid the foundations for Te Ao Mārama, the world of incandescent light (Ihimaera, 2020). After the separation of Rangi and Papa, Tāne Mahuta journeyed to the heavens to obtain and gift the kete o wānanga (baskets of knowledge, understanding and wisdom) to the tāngata and life of earth (Ihimaera, 2020; Royal, 2007). It is within the kete o wānanga that provided a model and basis for our pōwhiri, kaupapa, tikanga and mātauranga. The following traditional pātere (chant) extends and outlines the narrative of this pursuit (Himona, 2001).

Our mātauranga (knowledge) and world begins with a seed. Soon the life within the universe emerges where everything is linked through whakapapa and mauri (Waitoki, 2016).

Before light and humankind existed, Papatūānuku lived in the embrace of her one true love, Ranginui. Over time they had many tamariki (children), each destined for great things, however what they needed was light and space. The tamariki of Papa and Rangi grew restless of being in the perpetual darkness formed by the tight embrace of Rangi and Papa. Soon they made a plan to prise their parents apart, after many attempts it was Tāne Mahuta who succeeded. After the separation of Papa and Rangi, Tāne, filled with an imitent feeling of guilt, turned his māmā around so she wouldn't be reminded of her one true love. Tāne then adorned Papa with a cloak of ngāhere and all the diverse life within to protect and keep her company. When we experience tōuarangi (rain) it is said to be the ngā roimata (tears) of Rangi mourning his great loss. While separate they will always be linked³

²
Pūrākau are narratives about the creation of the world, people and the natural environment. As taonga tuku iho they work to preserve ancestral knowledge, reflect worldviews and portray the lives of tīpuna in creative and engaging ways (Lee, 2009). The etymology of pūrākau comes from pū; origin and rākau; tree, reflecting the significance of rākau in both historical and contemporary contexts.

³
(W. Kaihau, personal communication, June 03, 2021), (W. French, personal communication, April 11, 2021). It's hard to put an exact reference point to this section. The creation narrative is a story I've heard throughout my childhood, while parts of it have naturally woven in through our hīkoi with Watene. *Navigating the Stars* by Witi Ihimaera (2020) has also been an exceptional resource.

Whakapapa

Whakapapa flows through every form and context, uncovering and mapping genealogical links through time and space (Walker, 1996). The metaphorical elements within te reo and pūrākau also give light to the strong connection between whakapapa and te taiao. Māori built a significant repertoire of knowledge of the native rākau species of Aotearoa, rich with symbolism and practical use showing how closely we evolved in relation to the whenua (Royal, 2007). While there is no single term for biodiversity in te reo Māori, Tāne Whakapiripiri acknowledges the aspect of Tāne that weaves and unites the kaitiaki of Papatūānuku including rākau, aitanga (insects), manu (birds) and tāngata (W. Kaihau, personal communication, April 04, 2022). Although whakapapa can appear sequential on paper, whakapapa itself is not linear. It is in the oral recital that connects each line to the wider context, building a picture while taking the listener on a journey through all the layers.

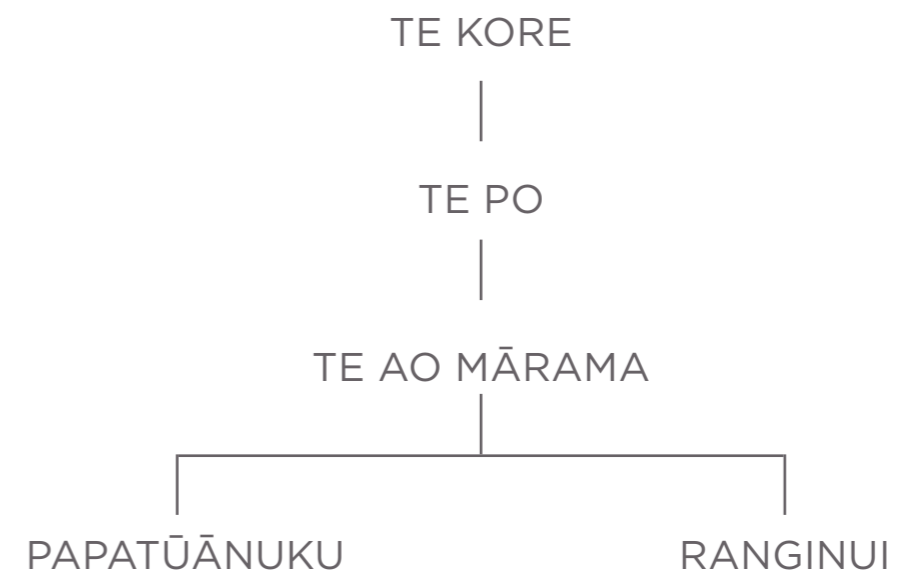
As described by Witi Ihimaera:

Believe me, the whakapapa is better delivered orally, dramatically and visually in performance where the verbatim delivery and oratory skills can crack the kupu, the words, open, and the body can dance into existence their inner talismanic meanings and mysteries

(Ihimaera, 2020, p25).

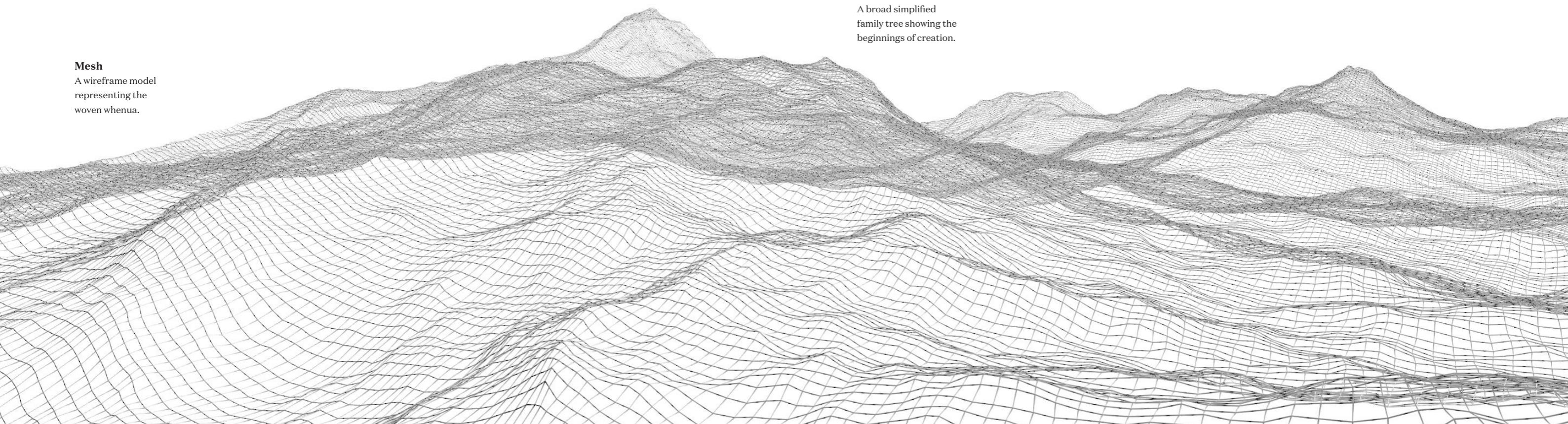
Mesh

A wireframe model representing the woven whenua.



Whakapapa

A broad simplified family tree showing the beginnings of creation.



**Ko Tararua te Maunga
Ko Ōtaki te Awa
Ko Tainui te Waka
Ko Ngāti Raukawa te Iwi**

*The Mountain is Tararua
The River is Ōtaki
The Waka is Tainui
The Iwi is Ngāti Raukawa*

W. Kaihau, Personal communication, April 2022.

Ko Ōtaki te whenua *Ōtaki is the land*

In Ōtaki, Ngāti Raukawa ki te Tonga have mana whenua (territorial rights) of the rohe through generations of occupation. Ngāti Raukawa ki te Tonga, meaning Raukawa of the South, descend from their tūpuna Raukawa, the son of Māhinaarangi and Tūrongo (Royal, 2017). In the early 19th century a series of significant heke (migrations) occurred. In particular for Ngāti Raukawa, they were led by Ngāti Toa rangatira (chief) Te Rauparaha due to ongoing conflict in the north (Winiata, 2019). A large group left their ancestral homes of Maungatautari and Wharepūhanga in Waikato and traversed down the west coast to the rich and expansive plains of Manawatū, Horowhenua and Kāpiti (Royal, 2017). The occupation and settlement of Ngāti Raukawa ki te Tonga is reflected over 25 hapū and 20 marae stretching from south of Te Horo to the Rangitīkei River (Royal, 2017). While the migration has shifted tribal boundaries, each hapū comes from the waka of Tainui (Kereama, 2020). As outlined by composer and researcher Te Ahukaramū Charles Royal (Ngāti Raukawa, Ngāti Tamaterā and Ngā Puhī), occupation occurs in a number of different ways through tikanga Māori and Māori customary land “laws” such as:

Tuku Whenua Gifting land

Take tūpuna Ancestral right, by reason of ancestry

Take taunaha Bespeak, right through oral claim

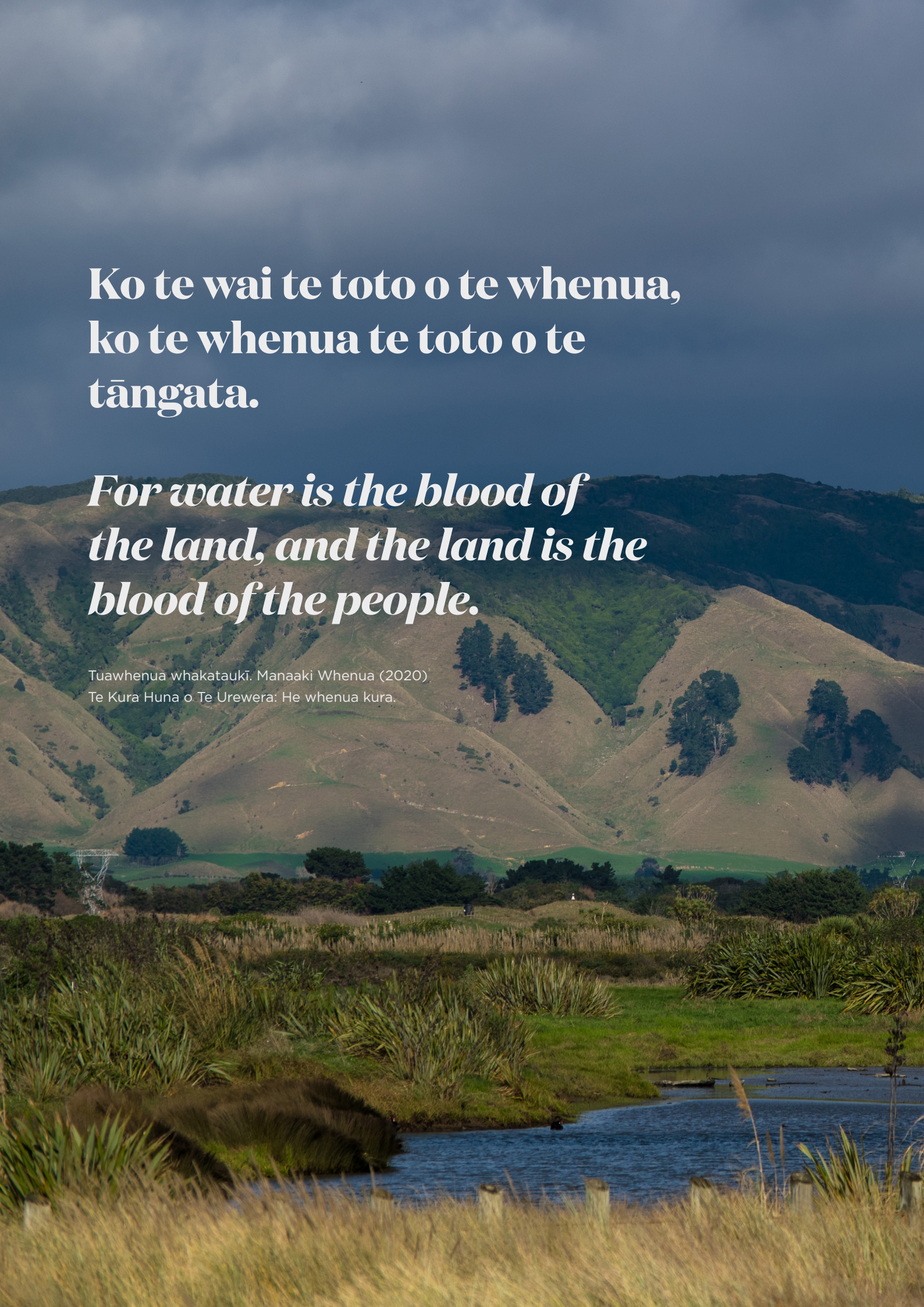
Take noho Occupation rights

Take rahui Reason for reservation

Ahi kā Right of occupation

Ahi kā roa Describes occupation over a long period of time

(Royal, 2017)



**Ko te wai te toto o te whenua,
ko te whenua te toto o te
tāngata.**

***For water is the blood of
the land, and the land is the
blood of the people.***

Tuawhenua whakataukī. Manaaki Whenua (2020)
Te Kura Huna o Te Urewera: He whenua kura.

Wero *addressing the challenge and intent*

The wero is a tikanga Māori practice that addresses and raises a challenge. It is seen in many contexts such as battles and the pōwhiri process onto the marae. It addresses a ceremony of encounter, signifies skill and establishes intent (Keane, 2013).

The wero that this rangahau draws upon emerges from the disconnection and fragmentation within te ngāhere and its impact on the human condition, whilst navigating different cultural values, lenses and methods towards reconnection. In establishing our intent as manuhiri, we create open and collaborative spaces that help to highlight the need for different sets of skills, perspectives and value systems to be applied to our questioning, analysing and addressing of the issues of ecological and cultural fragmentation. By creating a conversation with tangata whenua that builds from and centres rākau, we also centre whakapapa.

Whenua means both land and placenta, further emphasising the view that people come from the land and are connected to it from birth. As the whenua and taiao are increasingly fragmented, society is in turn fragmented, resulting in deep impacts on indigenous communities that connect their existence and identity with these landscapes. Rather than looking at parts of a system in isolation, whakapapa and kaupapa Māori acknowledges the many layers and ways in which they connect. With each gathering over kai, hui and wānanga we held a shared learning experience where the simple act of hīkoi on whenua and kōrero as we walked has illuminated a collective attentiveness for the benefit of the whenua and haukāinga (home people).

Throughout the book; *Tahi ki a Maru - water, fishing and tikanga in Ngāti Raukawa ki te Tonga* by Āneta Hinemihi Rāwiri (Whanganui iwi), the reader is guided by tangata whenua of Ngāti Raukawa ki te Tonga as they share their stories of the whenua and awa (Rāwiri, 2018). Each story highlights visible changes, from growing up connected to the rhythms of nature, tidal patterns and the maramataka, to witnessing the impact of colonisation, shifts of societal values and the depletion of natural ecosystems. It is evident that the awa and whenua of Ōtaki provides a common experience between different generations, different hapū and different community groups. Tangata whenua have an inseparable identity with the taiao that make up their rohe. It's this perspective that has continuously informed my direction towards learning about the relationships between iwi and the past and present whenua and how these meanings are able to inform visions for the future.

LOG BOOK NOTES 26.03.21

The drive from my kāinga in Manawatū to Ōtaki takes you on a relatively straight journey, through farmland dotted with small settlements dwarfed by the maunga of Tararua. Due to the rich soil from the ancient lowland ngāhere and deep kōreporepo regions, agriculture and market gardens have become representative of the region (Park, 1995). Various pūrākau, kōrero and hui have now shaped my perception of how this whenua would have looked like before European settlement.

As I peer through the hazy windows of the car, the solitary tōtara amidst a field of cattle with its weathered form and sparse lower branches reminds me of the other rākau and ngāhere that would have once stood beside it. The bare sunken valleys begin to look more like abundant waterways and kōreporepo lined with harakeke, raupō and tī kōuka. The faint calls of mātātā and matuku are all but a ghost now.



Whenua

A collage expressing the ghost of remnant ngāhere.

Tukanga *Process*

Raranga

weaving, the direction, course and bearing

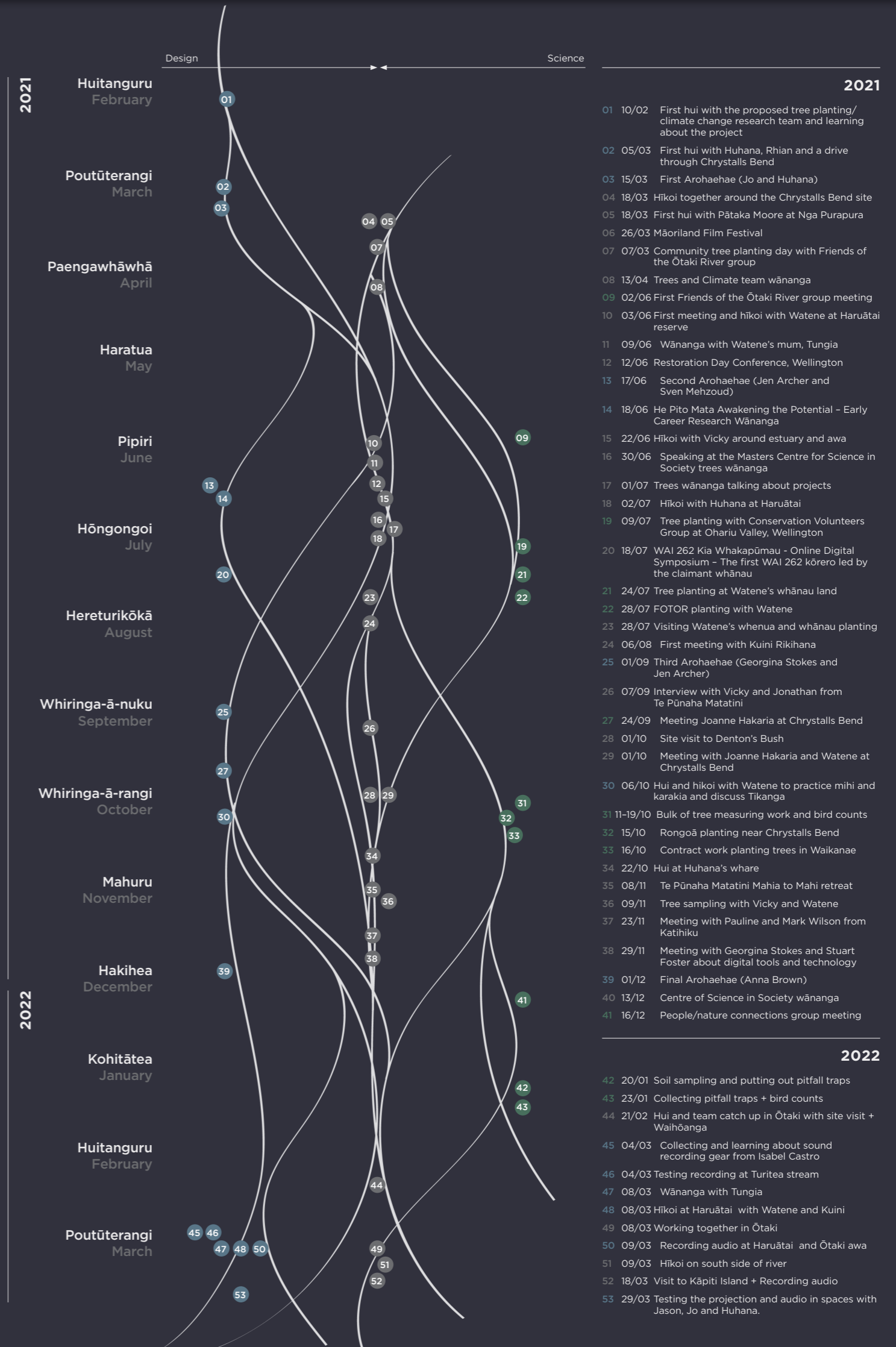
In order to illuminate the process, the following chapters are laid out in a way that best reflects the journey. Similar to whakapapa and a braided river, it moves in various directions over different channels, weaving in pivotal theories, practices and reflective moments.

While working on this interdisciplinary and locally situated project, it has provided a space to weave different backgrounds and perspectives, collectively coming together to create a stronger kete. The process model of *He Awa Whiria: a braided rivers approach* by Angus Macfarlane et al (2015) has acted as a guide and anchor whilst working in a collaborative team of different whānau and community members. He Awa Whiria is based on the analogy of a braided river with two primary channels, similar to how kaupapa Māori and western epistemologies are interconnected by various channel threads, “creating points of convergence that enrich shared outcomes” (Wilkinson & Macfarlane, 2021, p.246). Rather than working in a linear form, the paths of Vicky and I have been informed by various people, conversations, aspirations and personal values. Throughout the project, points have acted as places to come together and see where our paths naturally overlap, link and build off one another or diverge and separate. Both projects have strong synergies and sit in tandem to acknowledge that ecosystems work as whole, whether that be for tāngata or rākau.

Project timeline

The left side represents the mahi focusing on design through myself while the right side represents the mahi focusing on science through Vicky.

The middle represents the moments where we have come together.



- 01 10/02 First hui with the proposed tree planting/ climate change research team and learning about the project
- 02 05/03 First hui with Huhana, Rhian and a drive through Chrystalls Bend
- 03 15/03 First Arohaehae (Jo and Huhana)
- 04 18/03 Hīkoi together around the Chrystalls Bend site
- 05 18/03 First hui with Pātaka Moore at Nga Purapura
- 06 26/03 Māoriland Film Festival
- 07 07/03 Community tree planting day with Friends of the Ōtaki River group
- 08 13/04 Trees and Climate team wānanga
- 09 02/06 First Friends of the Ōtaki River group meeting
- 10 03/06 First meeting and hīkoi with Watene at Haruātai reserve
- 11 09/06 Wānanga with Watene's mum, Tungia
- 12 12/06 Restoration Day Conference, Wellington
- 13 17/06 Second Arohaehae (Jen Archer and Sven Mehzoud)
- 14 18/06 He Pito Mata Awakening the Potential - Early Career Research Wānanga
- 15 22/06 Hīkoi with Vicky around estuary and awa
- 16 30/06 Speaking at the Masters Centre for Science in Society trees wānanga
- 17 01/07 Trees wānanga talking about projects
- 18 02/07 Hīkoi with Huhana at Haruātai
- 19 09/07 Tree planting with Conservation Volunteers Group at Ohariu Valley, Wellington
- 20 18/07 WAI 262 Kia Whakapūmau - Online Digital Symposium - The first WAI 262 kōrero led by the claimant whānau
- 21 24/07 Tree planting at Watene's whānau land
- 22 28/07 FOTOR planting with Watene
- 23 28/07 Visiting Watene's whenua and whānau planting
- 24 06/08 First meeting with Kuini Rikihana
- 25 01/09 Third Arohaehae (Georgina Stokes and Jen Archer)
- 26 07/09 Interview with Vicky and Jonathan from Te Pūnaha Matatini
- 27 24/09 Meeting Joanne Hakaria at Chrystalls Bend
- 28 01/10 Site visit to Denton's Bush
- 29 01/10 Meeting with Joanne Hakaria and Watene at Chrystalls Bend
- 30 06/10 Hui and hīkoi with Watene to practice mihi and karakia and discuss Tikanga
- 31 11-19/10 Bulk of tree measuring work and bird counts
- 32 15/10 Rongoā planting near Chrystalls Bend
- 33 16/10 Contract work planting trees in Waikanae
- 34 22/10 Hui at Huhana's whare
- 35 08/11 Te Pūnaha Matatini Mahia to Mahi retreat
- 36 09/11 Tree sampling with Vicky and Watene
- 37 23/11 Meeting with Pauline and Mark Wilson from Katihiku
- 38 29/11 Meeting with Georgina Stokes and Stuart Foster about digital tools and technology
- 39 01/12 Final Arohaehae (Anna Brown)
- 40 13/12 Centre of Science in Society wānanga
- 41 16/12 People/nature connections group meeting

- 42 20/01 Soil sampling and putting out pitfall traps
- 43 23/01 Collecting pitfall traps + bird counts
- 44 21/02 Hui and team catch up in Ōtaki with site visit + Waihōanga
- 45 04/03 Collecting and learning about sound recording gear from Isabel Castro
- 46 04/03 Testing recording at Turitea stream
- 47 08/03 Wānanga with Tungia
- 48 08/03 Hīkoi at Haruātai with Watene and Kuini
- 49 08/03 Working together in Ōtaki
- 50 09/03 Recording audio at Haruātai and Ōtaki awa
- 51 09/03 Hīkoi on south side of river
- 52 18/03 Visit to Kāpiti Island + Recording audio
- 53 29/03 Testing the projection and audio in spaces with Jason, Jo and Huhana.

LOG BOOK NOTES 27.03.21

On the way to the tree planting sites along te awa o Ōtaki, construction noise echoed through the air as the quarry had been resuscitated for the construction of the expressway. The young rākau that were close to the gravel road were covered in a thick layer of dust, their green foliage now dulled to grey. There was a stark duality between the continuous excavation of the whenua on one side, whilst giving back to the whenua on the other. When looking towards the awa, laid out sections of land were dotted with growing native rākau.

Once we left the construction activity behind, the plots quickly turned from recently planted seedlings, to small shrubs to larger stands of kahikatea, kōhūhū, tarata and tī kōuka. Kuri and tamariki ran around filling the air with laughter as volunteers helped out with planting, it was a picture of a community coming together.



Chrystalls Bend
Photography series

Āta

deliberate, purposeful and cautious in intent

The narratives and history of te awa o Ōtaki is rich, important and poignant, yet as a manuhiri (visitor) they were hidden to me. This is the beginning of my tentative and cautious steps of unfolding the whakapapa that binds tāngata, whenua and rākau within this rohe.

As discussed over the kupu whakapuaki (preface), the wider project was conceived at Chrystalls Bend. About a 30 minute hīkoi north of the main bridge will bring you to the site alongside te awa o Ōtaki. This is where the community group, known as Friends of the Ōtaki River were appointed by the Greater Wellington Regional council over 25 years ago to plant and stabilise the riparian banks with native rākau. Ever since, they have regenerated and managed a number of plots that have slowly begun to grow into denser ngāhere.

While there are a host of benefits associated with regeneration that in turn support native biodiversity, there was something about the site I didn't immediately connect with. The question around the history of the whenua and absence of iwi involvement was in the forefront of my mind. It was during a kōrero with environmental scientist Pātaka Moore (Ngāti Raukawa, Ngāti Pareraukawa) where we were reminded that before European settlement anything involving te awa o Ōtaki would have gone through the hapū of Ngāti Raukawa ki te Tonga (P. Moore, personal communication, March 18, 2021). Through occupation and whakapapa, Ngāti Raukawa ki te Tonga are connected to the waterways, kōreporepo and lakes through the Manawatū and Ōtaki awa catchment and maunga of Ruahine and Tararua (Kereama, 2020). While there is a drive towards tino rangātiratanga (self determination) over taonga sites, mahinga kai (food sources) and puna wai Māori (freshwater supplies), colonial perspectives of land ownership have disrupted and withheld the rights of iwi to be active kaitiaki⁴ for their whenua (Waitangi Tribunal, 2011).

⁴ Kaitiakitanga is a contemporary term that addresses the responsibility of tangata whenua to preserve, restore, enhance, and sustainably use ecosystems within te taiao for the benefit of present and future generations. (Harmsworth & Awatere, 2013).

Manuhiri

The sense of uncertainty of working on a project located on whenua where I was a manuhiri⁵ has driven each of my whakaaro and decisions. While at times I could feel this stalling me, I knew I wasn't isolated in these feelings. Ultimately this would guide us towards making sure we would maintain and honour the principles and protocols embedded within kaupapa Māori. A few weeks into the project, Rhian, who had been looking for a local cultural advisor for the project, had an unplanned conversation with Watene Kaihau (Ngāti Raukawa) about our hesitancy and concerns that changed the course of our direction (R. Salmon, personal communication, April, 2022). Watene soon joined our team and has since become a strong mentor, guide and support over our journey.

While Vicky maintained a practice that zoomed in on the ecological systems and biological characteristics found within Chrystalls Bend, I zoomed out on the wider picture of Ōtaki. My focus built from the relationships between various fragmented patches and the deeply embedded relationships between tangata whenua.

5
Manuhiri is a term that identifies guests and visitors. In the formal context of being welcomed onto a marae, the encounters of meeting are highly structured and embedded with the tikanga of the tangata whenua (Lilley, 2015). "Proceedings follow correct protocol so that the appropriate actions have taken place to move the manuhiri from a status of tapu (sacred) to one of noa (neutrality)." (Lilley, 2015).

Rangahau

Absorbing myself in the rangahau of leaders in kaupapa Māori — Linda Tuhiwai Smith, Ani Mikaere and Leonie Pihama — has helped me to understand the discomfort experienced in navigating different worlds, while trying to balance Māori ethics, research ethics and personal ethics. The following section gives an overview of the principles and importance of kaupapa Māori based rangahau.

First of all it's important to recognise that the terms kaupapa, mātauranga and rangahau tend to be unstated in the heart of Māori communities, as this is simply the way of living. (Royal, 1998; Pihama et al., 2002).

Historically, the process of research has been biased towards Eurocentric models of inquiry. Through theories that have maintained colonial perspectives, indigenous communities have faced ongoing disadvantages, exploitation, oppression and invalidity (Smith, 1999) of their knowledge systems. Kaupapa Māori doesn't reject western theory. However, it redefines power dynamics between the 'researcher' and the 'research' while striving towards a sense of tino rangātiratanga in the way Māori, think, act and communicate. Rangahau aligns to an approach that is critical and grounded by mana (strength), manaakitanga (generosity), māhaki (modesty) and tikanga Māori (Mahuika, 2008). As highlighted in *Decolonising Methodologies* (1999, p.120), Linda Tuhiwai Smith (Ngāti Awa & Ngāti Porou) breaks down the key principles of kaupapa Māori into:

Aroha ki te Tangata a respect for people

Kanohi kitea the seen face; present yourself to people face to face

Titiro, Whakarongo ... kōrero look, listen ... speak

Manaaki ki te Tangata share and host people, be generous

Kia tupato be cautious

Kaua e takahia te mana o te tangata don't trample over the mana

Kaua e mahaki do not flaunt your knowledge

While decolonisation is a complex concept and process, it is integral to reflect on its revolutionary role within Māori-centred rangahau. It requires continuous self reflection and unlearning of systems while critically questioning standard procedures, processes and the position as a researcher (Mercier, 2020). Aligning to the depth and theory of kaupapa Māori helps to decolonise traditional research paradigms while driving research "by Māori for Māori" (Smith, 2016).

Whanaungatanga

Rather than going into a project with a set agenda or envisioned solution, whanaungatanga has guided our practice. Holistic and transformative principles between people and place lie at the heart of both kaupapa Māori and spatial design.

“Whakawhanaungatanga is the process of establishing whānau relationships, literally by means of identifying, through culturally appropriate means, your bodily linkage, your engagement, your connectedness, and therefore, an unspoken but implicit commitment to other people”

(Bishop, 1996, p. 118).

When working with Māori, whakawhanaungatanga and manaakitanga is at the core. It's in these moments that we truly connect and build the foundations of relationships through respect and generosity. Throughout and beyond the scope of this project, by simply following kanohe kitea, which refers to being a seen face and having a physical presence (Smith, 1999), connections have arisen organically and shaped over time. When working with a commitment to relationships it has also been important to reflect upon the practical barriers to creating rangahau and design that reflect the richness of kaupapa Māori. As highlighted in the 'Ngā Aho Designing Māori Futures' research report, “the nature and expected speed of design processes can create barriers for Māori communities to adequately engage or influence design outcomes” (Menzies et al., 2017, p.16).

Through identifying shared values and building key relationships it has revealed certain frustrations as well as the desires of whānau Māori within this project and the wider context. Moments where whakapapa and tikanga around te taiao should not only be acknowledged but respected and valued. Using visual tools to communicate the whakapapa of ngāhere reveals the deep rooted concepts that inform tūrangawaewae (a place to stand), mauri (life principle) and ki uta ki tai (mountains to sea). Each of these are fundamental to the relationships and approaches needed to support and nurture te taiao.

Mātauranga Māori

While kaupapa Māori principles have informed our guiding ethics, the continuum of theory and practices embodied in mātauranga Māori (Royal, 1998) have informed our methodologies which centre hīkoi and taonga tuku iho. Through the space of migrating, traversing and learning to live in sync with the whenua, our Polynesian ancestors have developed an extensive body of knowledge, techniques and stories that have shaped Māori existence, defined by what we now know as mātauranga Māori (Hikuroa, 2017). It encompasses broad systems of knowing and understanding that weave through time, space, place and discipline (Mercier, 2018). Te Ahukaramū Charles Royal as well as a number of other distinct researchers (Durie, 2021; Mercier, 2018) emphasise that mātauranga Māori continues to evolve and adapt in relation to contemporary circumstances.

Ōku kainga waewae.

*The scope of my
feet's activity.*

Whakataukī Mead & Grove (2003).
Ngā Pēpeha a Ngā Tīpuna.

Hīkoi

Step, stride, walk

The rangahau, *Hei Whenua Ora* by Huhana Smith (Ngāti Tukorehe) brings light to the extensive mātauranga and relationships that unfold over complex cultural landscapes through hīkoi, kōrero tuku iho⁶ and whakapapa (Smith, 2007). It's within these deeply connected processes where we are able to inform transformative actions, "Kaumatua recollections have underpinned strategies for improving wahi tapu and historical papa kainga site protection" (Smith, 2007, p101). From a spatial design lens hīkoi is also an expression of embodied research that figuratively and physically maps out our connection to our environment. This form of mapping also relates back to whakapapa, allowing us to hīkoi through genealogical links over times and places that we may not be able to physically reach.

⁶
Kōrero tuku iho are the discussions and conversations passed down from tipuna. They are rich with oral histories and stories that tell us about the past (Te Awa, 2021).



Hīkoi and kōrero
Rhian, Watene and Vicky
near Chrystalls Bend.

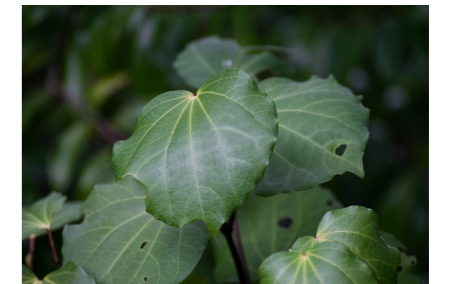
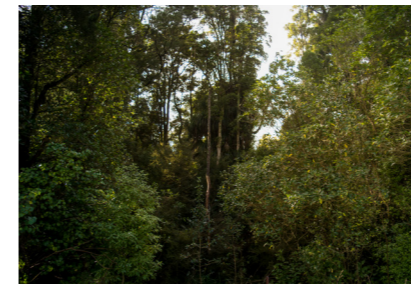
Haruātai

While looking over maps to see what current vegetational sites were near the awa and central township of Ōtaki, one that I kept on coming back to was Haruātai reserve. It is a regionally significant remnant of primary lowland swamp ngāhere. This was admittedly the first time I had come across the definition, but given the low lying whenua was made up of waterways and floodplains, it all made sense. Standing water would have been a characteristic over this ngāhere that the rākau such as kahikatea and tawa adapted to through their wide buttress root systems.

LOG BOOK NOTES 03.06.21

The grass glistened with dew as we tentatively walked through an interesting mix of native and exotic rākau. Some planted purposefully, some considered weeds. The further we walked alongside and into the denser native ngāhere, a cloak of solitude began to wash over me as the mauri flowed between the mana of different life forces. Although it was our first hiko with Watene in Haruātai, the small pocket of ngāhere felt immediately comfortable. Rather than sitting in an indoor space, there was a natural flow and ease to our kōrero and whakaaro. An opening in the fringes of karamu, tarata, kawakawa and putaputāwētā led us into a small section where all noise but the chirps of an interested piwakawaka faded into stillness.

After identifying a few unfamiliar leaves, we realised that we were beneath a tall stand of kahikatea and tawa, watching over us as we recited a karakia. While I was familiar with smaller regenerative species, being amongst podocarps that would have been over 100 years old amidst a suburban landscape was a taonga. In these moments, we were grounded, connected and supported by the whenua and rākau.



Haruātai reserve
Photography series

Ngāhere

After going on a number of hīkoi that introduced us to the whenua and ngāhere, Watene soon suggested a visit to the whenua of his whānau. Before setting foot near their whenua we went through a wānanga with his mum, Tungia Kaihau (Ngāti Raukawa). We arrived with nothing but ourselves and arms full of kai. It wasn't a time for us to speak; it was a time for us to whakarongo mai. I could feel the intensity of mauri flowing between each of us, from those that were physically present to those that were watching over us. The vibrations of te reo Māori and karakia stirred something within me. While I may not have a full understanding of te reo, Tungia emphasised that the sounds will resonate and feel familiar because they are already within me (T. Kaihau, personal communication, Aug 04, 2021). It would take perseverance and patience to reveal them. It was deeply inspiring to hear the stories and kōrero tuku iho from a kuia that has been shaping her worldview and matāuranga for years. Soon after, our next hīkoi would lead us back to the edges of Haruātai.



Whenua visit
Photography series

LOG BOOK NOTES 28.07.21

The air was crisp as the sun shone alongside the fresh dusting of snow on the distant maunga of Tararua. On this day, we were fortunate to visit a section of the Kaihau's whenua. After walking over to the soccer field to meet Vicky and Watene, we made our way over a battered fence and through muddy farmland, weaving between curious cows while making our way to an isolated patch of ngāhere in the distance. After climbing over another fence, native rākau tangled in front of us as the sounds of manu grew louder. An abundant refuge

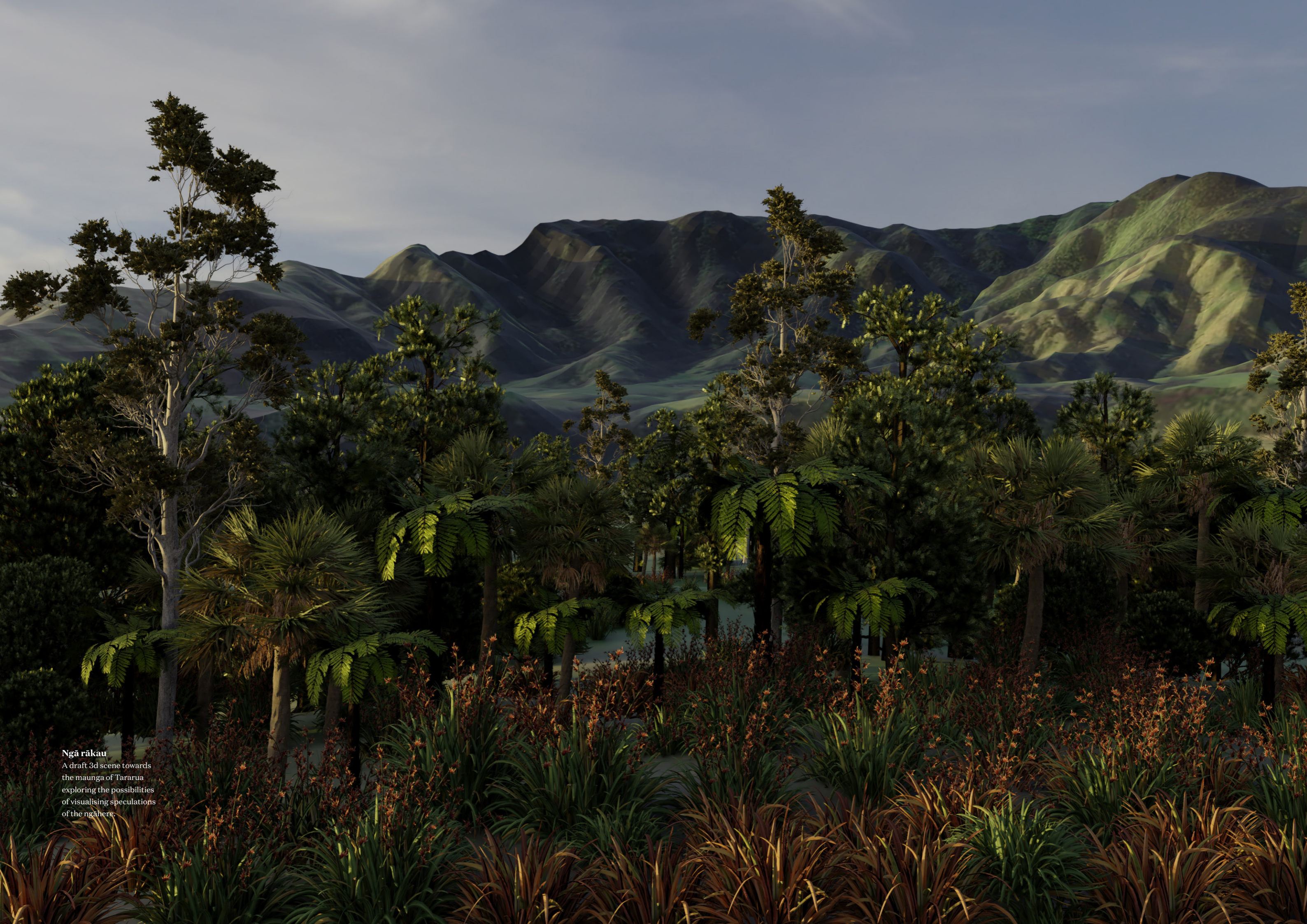
caught in between an expanse of farmland. Further north lies Waitohu Awa, a mahina kai abundant with tuna that connects back to te awa o Ōtaki and the moana. The light struggled to make its way past the dense canopy of tawa, tarata, pukatea and kahikatea, but a flurry of juvenile karaka weaved over the understory. Something about being here transported me to the other ngāhere I had explored over Aotearoa. While the species and climates differ, the feeling reflected within the wairua and mauri remain familiar.

LOG BOOK NOTES 01.10.2

As we drove towards the familiar backdrop of maunga, we passed an expanse of farmland dotted with small stands of native ngāhere. A typical picture of the whenua of the lower North Island. We soon arrived onto the property that had been part of the Lutze family for generations. Titiro⁷, whakarongo, the sounds of a narrow flowing awa led our eye to a small lake that was surrounded by a symphony of tawa, nikau and kohekohe. After passing a small paddock of calves, we walked through a small gate into another world. The complex buttress root systems of

stealthy tawa weaved over the ground as their thick canopy filtered out the sunlight. After years of previous ownership allowing cattle to graze through it, the understory was slowly but surely coming back. Deep within the ngāhere a small clear puna (spring) flows to the surface, the source of the Waimanu stream which flows into the restored Waimanu Lagoon near Chrystals Bend. The more sites we visited, the more noticeable their similarities and differences became. While the cloak of ngāhere was disconnected, they were still connected by wai (water).

⁷ Titiro refers to the practice of observation and inspection. However, its meaning goes beyond what you see with your eyes. It is a way of seeing that engages a deeper level of awareness and connection between, wairua (spirit), mauri (life essence) and whakapapa. Tohunga, Rereata Mākiha (Ngāti Whakaheke, Te Aupouri, Te Arawa) aligns the principle and act of titiro to our close relationship and sense for the natural world (Mākiha, 2018). Engaging with tools such as photography and videography during hīkoi heightens environmental awareness while serving as a form of visual data documentation.



Ngā rākau

A draft 3d scene towards the maunga of Tararua exploring the possibilities of visualising speculations of the ngāhere.

Moana

LOG BOOK NOTES 06.08.21

A wandering fig tree adorned the ceiling of the kuia's whare as we sat on the sun lit lounge chairs having a kōrero about everything from Te Rauparaha to the whenua of Ōtaki. A few moments beforehand we had met at te moana. As we stood in stillness, we absorbed the sounds of the crashing waves and recited the traditional karakia⁸, Whakataka te hau⁹:

Whakataka te hau ki te uru,

Whakataka te hau ki te tonga.

Kia mākinakina ki uta,

Kia mātaratara ki tai.

E hī ake ana te atakura.

He tio, he huka, he hauhū

Haumi e! Hui e! Taiki e!

We soon drove to a whare, close to where the awa and moana meet. The faint cries of a karanga welcomed us, Kuini Rikihana (Ngāti Raukawa, Te Āti Awa) is someone who holds great mana in Ōtaki. It was both special and important for us to meet her. As we connected over the awa and ngāhere,

she quickly reflected upon her whānau memories of the thriving mahinga kai and resource systems of the nearby Lake Waiorongomai and Haruātai reserve. Hearing these stories reinvigorated the loss and dramatic change of cultural practices and connections that are woven into our whenua. (K. Rikihana, personal communication, August 06, 2021).

8

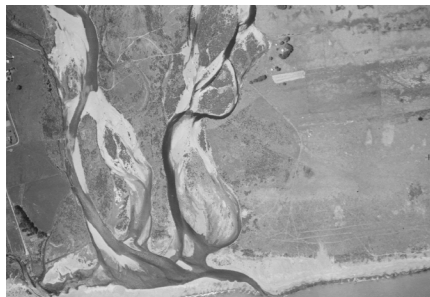
Karakia are customary te reo Māori incantations that are used to cleanse and adjust spaces, create bridges between different realms and address topics or issues (Mead, 2003). While their form is commonly linked to those of Christian religious prayers, karakia are often secular and neutral in their prose while creating poetic and metaphorical imagery. From pre-colonisation to present day their recital has held a core role in grounding and expanding the relationships between tāngata, te taiao and tūpuna.

9

Over hīkoi, hui and mihi, Whakataka te hau shared by Watene (W. Kaihau, personal communication, June, 2021) has been a karakia that has united Vicky, Rhian, Watene and I.



Ōtaki Awa Estuary
Photography series



Restrain

Figure 1. Sourced from Retrolens and Google Earth depicting the modification of Awa Ōtaki from 1939 to 2020. <http://retrolens.nz> licensed by LINZ CC-BY 3.0 [Map showing location of Ōtaki River Google Earth, earth.google.com/web/](http://earth.google.com/web/)

Kōreporepo

While this project has arisen from the significantly fragmented ngāhere and the multi dimensional values of native rākau, kōreporepo (wetlands) have also faced a similar and poignant narrative of removal and disconnection. The Resource Management Act (1991) defines wetlands as “permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.” Through various kōrero relating to the whenua of Ōtaki, we can quickly understand that Kōreporepo, the awa and wai (water) are both taonga and whakapapa for Ngāti Raukawa ki te Tonga.

After meeting and connecting with different local people and learning more about the ecological and cultural history of Ōtaki I revisited my initial whakaaro and relationship with Chrystalls Bend. Plots of young native rākau spread over the grassy areas, yet these rākau weren’t in place to restore the whenua back to its original state; they were in place to prevent flooding. Our feet were standing on what would have once been the braiding channels of te awa o Ōtaki, now reduced to a narrow path, continuously modified by gravel extraction and banks.

Just south of the centre of Ōtaki and across the awa, Katihiku Marae sits amongst remnant kōreporepo as well as farmland. There is a scattering of willows, pines and macrocarpas that protrude from the stable sand dune terrain. Due to the modification and construction of stopbanks on the northern side of te awa o Ōtaki, the size, direction and flow of the previously braided channel systems has dramatically changed. As the Ōtaki township lies on the floodplain of the awa it is vulnerable to flooding events. However, the redirection of the channel means that it has begun to increasingly erode the southern banks (P & M Wilson, personal communication, November 23, 2021).

Whilst meeting and having a kōrero with Pauline and Mark Wilson from Katihiku Marae, it was evident that they had a vision of one day being able to return or give their future generations the opportunity to live closer to their marae through a papakāinga. This vision has been a common theme over each of the whānau we have connected with. Papakāinga are self-sufficient community settlements that strive towards mana motuhake (soverignty), while aiding intergenerational living and connectedness between one another and the whenua.

There is a sense of urgency to reconnect, restore and conserve the mana of these taonga ecosystems as they provide a natural source of flood prevention and identity that has ultimately been stripped from the whenua through draining and deforestation.



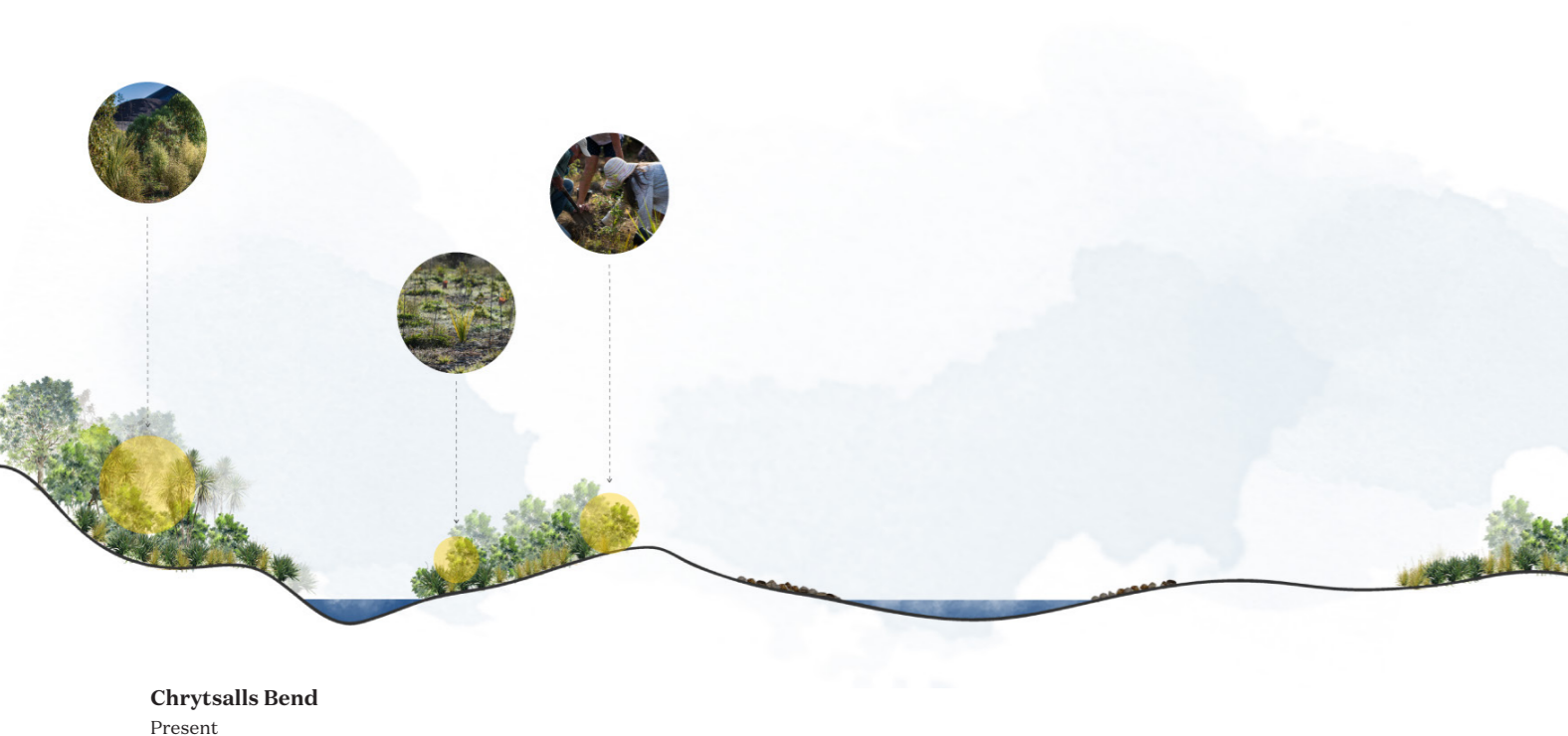
Juxtaposition
The mixed landscape near
Ōtaki Awa Estuary.

Haumanu

Revive, restore, rejuvenate

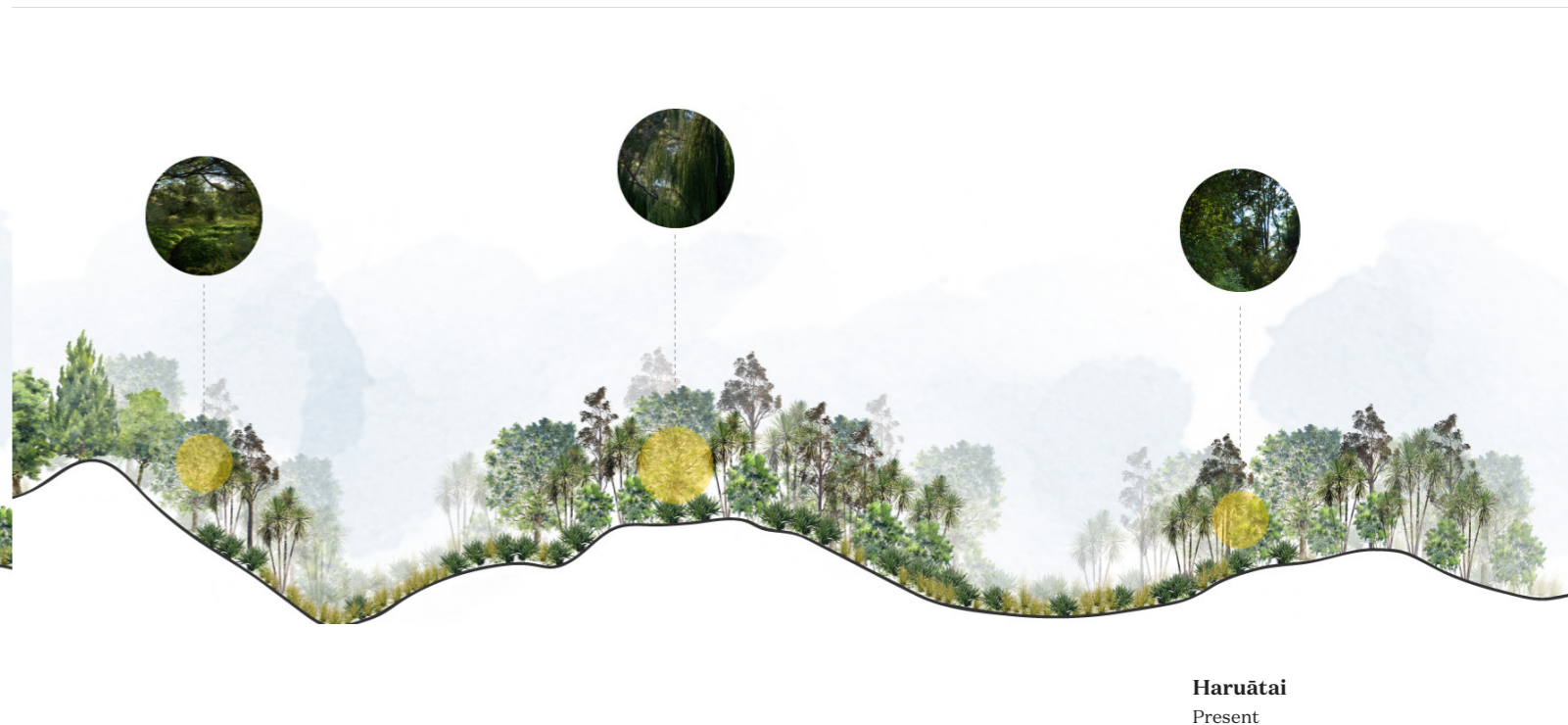
How could we take elements from each site, hīkoi and kōrero to act as a precedent for reimagining, restoring and reconnecting different ngāhere?

Ecological restoration through planting corridors, fringes and stepping stone patches (Meurk et al., 2013) begins the process of reconnecting fragmented ecosystems. Valuing tāngata, their kōrero, whakaaro and mātauranga strives to reconnect broken connections between identity and whenua. The following images show sections of Chrystalls Bend and Haruātai Park where community members and whānau are working to regenerate, restore and reconnect native rākau and ngāhere:



Mauri

In Te Ao Māori, mauri is a fundamental principle that indicates and determines life and health through every inanimate and animate object (Harmsworth & Awatere, 2013). While whakapapa will always connect Māori to te taiao, mauri — the life force that flows through these genealogical links — is vulnerable to being disrupted, in turn disrupting the flow and connection between tāngata. This disruption and loss of mauri within ngāhere, wai tapu and taonga ecosystems is caused by ecological degradation, damage, contamination and fragmentation (Harmsworth & Awatere, 2013). Mauri can also be materialised and concentrated within an object such as a stone that is placed within an ecosystem, working to protect and symbolise mana that may have been lost (Taonui, 2007).



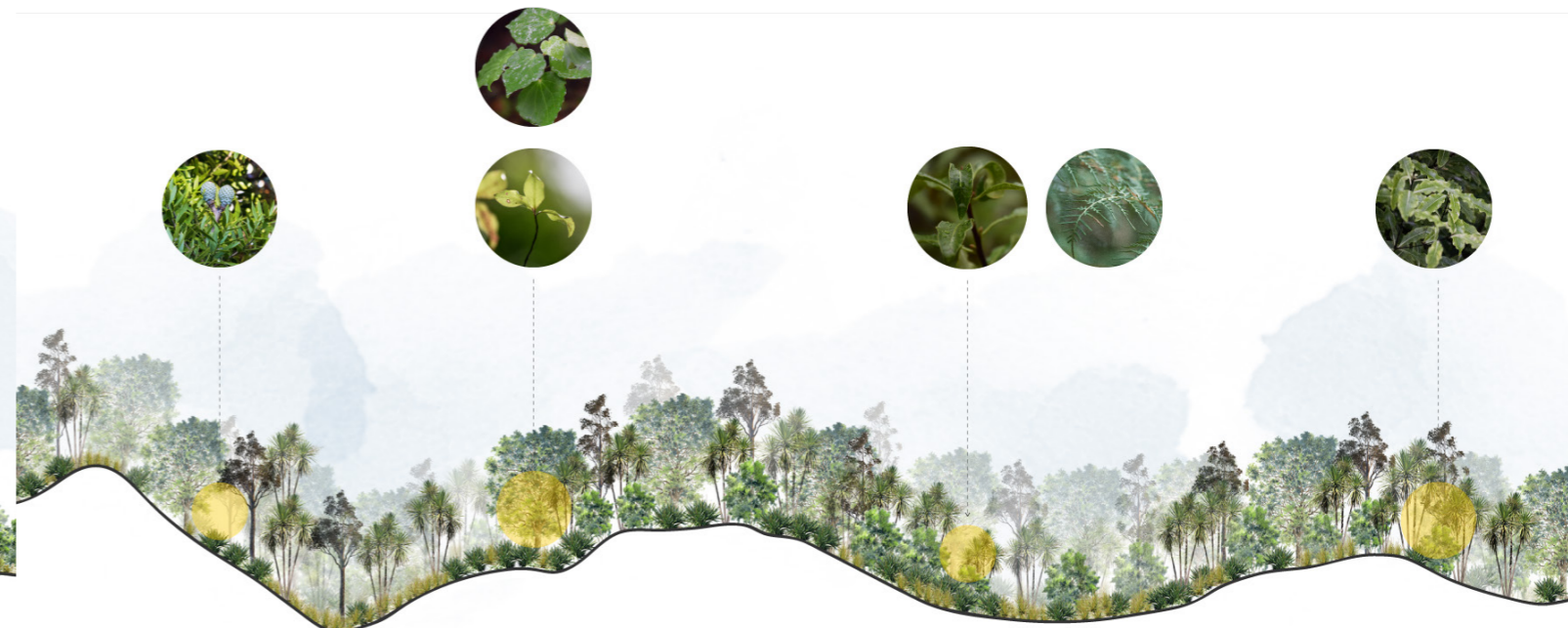
LOG BOOK NOTES 28.07.21

A chorus of manu echoed through the fringes of tī kōuka and pukatea, as we stood on the previously bare patch of grassland, now planted with a mix of mānuka, kōhūhū and harakeke. These are a few of the native rākau that are considered nurse or pioneer species as they are tolerant to exposed whenua and conditions, whilst supporting

the growth of successional rākau (V. Gane, personal communication, March 18, 2021). Not only is the Kaihau whānau working to reconnect the disjointed fragments of ngāhere, but while doing so they are connecting their tamariki, mokopuna, kuia and kaumātua back to their whenua.



Chrytsalls Bend
Present



Haruātai
Present

Whakaahua

Design process

How can my skills as a spatial designer act as a vessel to represent and visualise the depth of layers and whakapapa that connect tāngata and te ngāhere?

The first phase of the design process involved researching landscape and environmental based precedents that have been informed by kaupapa Māori and collaborative relationships. Prominent (Ngāti Hau & Ngāpuhi) Architect Rau Hoskins created the Te Aranga Principles as a baseline for working with tangata whenua through urban design processes (Kake, 2016). These principles reflect the values embedded in kaupapa Māori in a way that can be easily applied to any design processes. The framework emphasises that the principles are simply a guide; adaptable and likely to change depending on where and who they are being connected with (Menzies et al., 2016).

Through centering the kōrero of tangata whenua and importance of ecological sensitivity, I soon realised that it didn't feel appropriate to conceptualise and propose a tangible site-based form. As expected, this design process has been cyclic, reaching towards various directions and creating some interesting full circle moments (the kinds of moments where previously rejected concepts soon make complete sense). While each whakaaro and kōrero have informed a meaningful and rationalised process, there has been a natural and at times bewildering sense of fluidity.

Past and future visions:
Speculative visualisation

Oratory and whakapapa:
Immersive experience

SPECULATIVE

Looking at the present through the lens of the past and future sparks the question of how taonga ecosystems and Māori relationships may have looked pre-colonisation and what they could look like in another hundred years. Speculative thinking, design and visualisation renders scenarios that are informed by fact, aims and imagination. Forms of design act as a vessel in which we can create conversations around reimagining the narratives of place, while shifting our way of seeing can inherently create interest towards actualisation of speculative visions. Dunne & Raby also speak of the way speculative design can be an act of critique to “challenge narrow assumptions” (2013, p34).

IMMERSIVE

My initial thoughts around finding a way to connect and communicate speculative visions of the sites was through the form of an augmented or virtual reality experience. After a conversation with Stu Foster and Georgina Stokes (Ngāi Tahu) I was reminded that while these forms of technology hold value, they don't necessarily speak to the collective experience that has been woven throughout this process (S. Foster & G. Stokes, personal communication, Nov 29, 2021). Instead of augmenting visuals, how about sound? It had already been staring at me in the face. While difficult to convey through text, sound and listening has been here every step of the way. Hearing the voices of kuia, kaumātua, the recital of karakia, the manu and the flow of wai over different awa have undoubtedly helped to connect me to the whakapapa and mauri weaving through this whenua.

Augmented reality provides a digital recontextualisation of space when trying to reimagine the world (Raupach, 2018). Through a system of hybrid layering of information, the audience is able to connect what is being communicated to their existing experience, whether that be through forms of visuals or sounds. Just as augmented reality shifts the way in which we see our physical world in the present, it also has the power to shift the way in which we think about the world beyond the augmented reality experience (Brinkman, 2014).

NARRATIVE

As previously discussed, oral traditions hold a pivotal importance within indigenous communities. The foundations of te reo emphasise the different ways of creating, storing and passing on mātauranga and pūrākau. An advantage of communicating a scene or story through sound is that it encourages the viewer to create their own picture informed by memories or knowledge associated with certain sounds. Audio has the power to transport us to different dimensions while visuals have the power to fix these dimensions in place.

Ako

Sharing and learning

Ako recognizes a reciprocal responsibility and obligation to learning. Ako is a sharing idea, sharing knowing, experience, time, space and energy. Ako includes action through content and transmission for a that is context rich, relevant and appropriate, learner centred and links with the other tenets.

(Edwards, 2013)

Through discussing and presenting my rangahau over design arohaehae (critique) and a number of hui, I slowly found my footing towards holding onto my figurative pouwhenua whilst navigating my tūrangawaewae and multiple audiences. These moments provided environments rich with support and exchange where I built confidence in sharing my whakaaro and skillset with whānau we had been working alongside. Each relationship I've established over this process has unfolded a different way of looking and doing things. At times it has been challenging to shift, mould and adapt. However, it is in this iterative dynamic informed by relationships and perspectives that has shaped and strengthened the base of our kete.

Wānanga *to learn*

While the term wānanga is used within contemporary formal educational settings, its meaning goes back to pre-colonial Aotearoa and the homelands of Rangiātea and Hawaiki (Waitoki, 2016). A Whare wānanga, loosely translated as a house of sacred learning, was an intensive and structured environment based upon ceremonial procedures reserved for a select few people (Calman, 2012). These spaces provide a link to tīpuna while knowledge was passed on and embedded through oral transmission (W. Kaihau, personal communication, April 21, 2022). The teachings traced back to the creation narrative, where new forms of energy, thoughts and knowledge emerged from Te Kore, Te Po and Te Ao Mārama, the world of light and enlightenment (Salmond et al., 2019).

Taonga rākau

A 3D render highlighting some of the familiar taonga species over the rohe: ti kōuka, nīkau, kahikatea and harakeke.



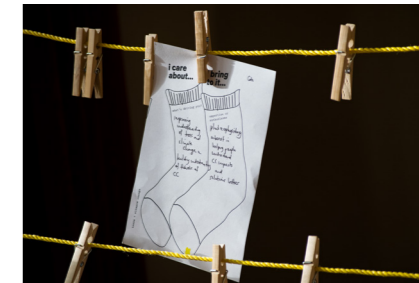
Hui to gather

After prioritising kotahitanga, whakarongo, māhaki and mana over the relationships we had established within the rohe, about halfway into the year we organised a hui to have kai and kōrero over rākau. While we had plenty of rich discussions over hīkoi, this hui was a time for me to show more of my design thinking with a focus on visualisation.

LOG BOOK NOTES 22.10.21

Fresh ika fritters wafted through the air as we gathered in the living room with a plate of kai. I remember it clearly because my stomach was circling with nerves. After picking up Tungia and Kuini with Vicky, we made our way to Huhana's whare in Kuku. It was a place where many hui had unfolded. The atmosphere was warm and comfortable like I had been there before, like I had known each of these people for years, but the uncertainty of communicating my whakaaro and design mahi felt vulnerable. I began with a karakia and mihi to acknowledge Ngāti Tukorehe, the uri of Raukawa, those that were no longer with us and those that had made the journey to be a part of the kōrero. While I didn't grow up embedded in te reo Māori, it's in mihi, karakia and whakataukī that I feel at home. Shortly after, I unfolded the journey that we had been on and the

forms of visualisation and concepts that had arisen from it. It raised a discussion around the deep connection between whānau and the ngāhere and the ways in which visual imagery can help to convey this kaupapa. Te reo Māori creates poetic imagery through oral traditions. Creating and speaking through visual forms helps me realise and articulate this kaupapa and whakapapa within.



Gather

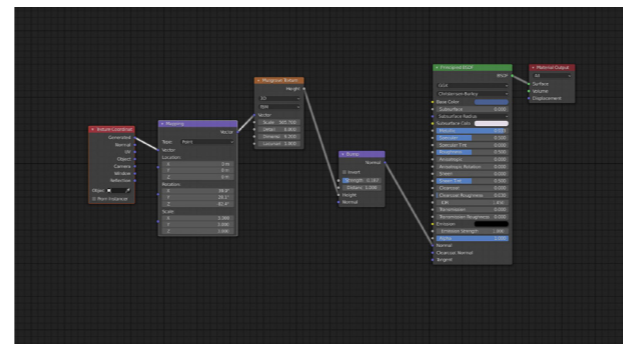
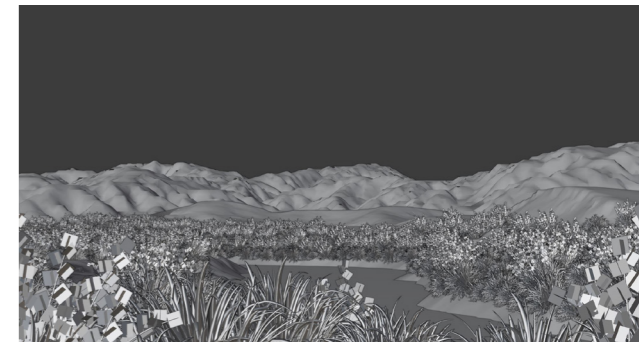
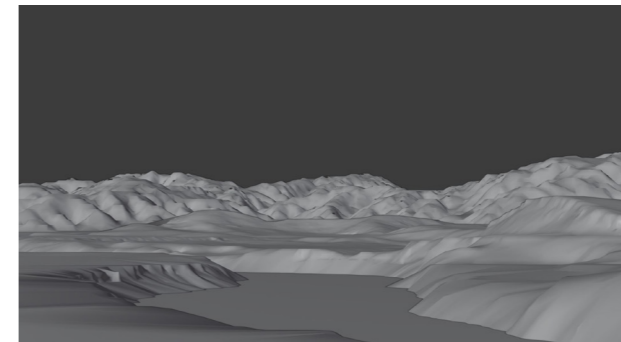
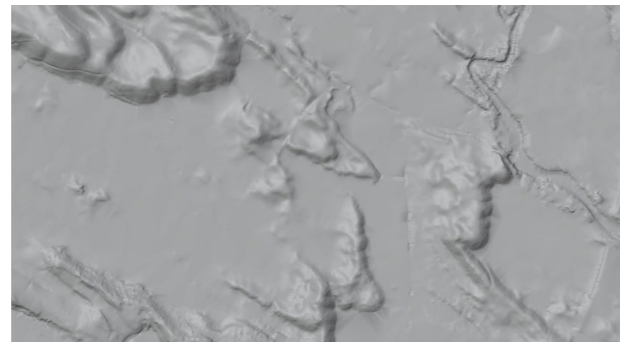
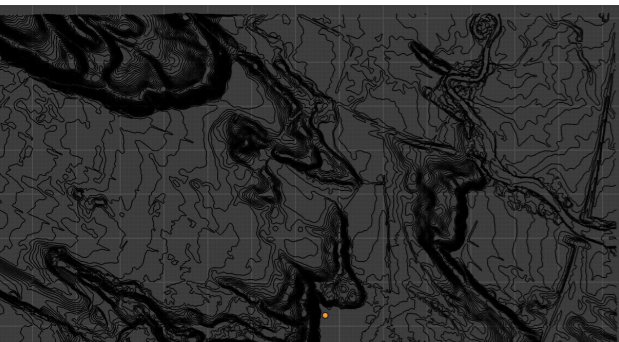
Moments along the way.
Figure 2: Bottom four images
Sourced from Jo Bailey and
Rhian Salmon (2021).

Visualisation

While 3D modeling and visualisation tends to sit within my comfort zone, working with a new software (Blender) has come with its hurdles and advantages. I wanted to use this section to outline the components and thought process that goes into creating a rendered image. As discussed over the previous chapters it all begins with connection and relationships. Hikoi, kōrero and titiro help to map out the whakapapa and mauri as well as the geography of a site. This in turn informs the process of creating a scene, speculative vision and atmosphere.

Process

Starting with contour lines sourced from geospatial data platform, Koordinates, I import these into Blender as a shapefile. The Delauney tool then takes these geographical contours and forms a triangulation mesh that becomes the base of the terrain. Depending on the goals of the 3D scene, for creating a still image I first set up a camera and adjust the height, angle and focal length until I find a composition. Then over different layers and iterations I add different levels of plants and trees. Using an override material allows for quick render tests of light, form and composition while the nodes material editor helps to adjust materials and mapping. After rendering out a scene I readjust colours, then overlay textures such as fog and rain in Adobe Photoshop to create a sense of ambience and atmosphere.



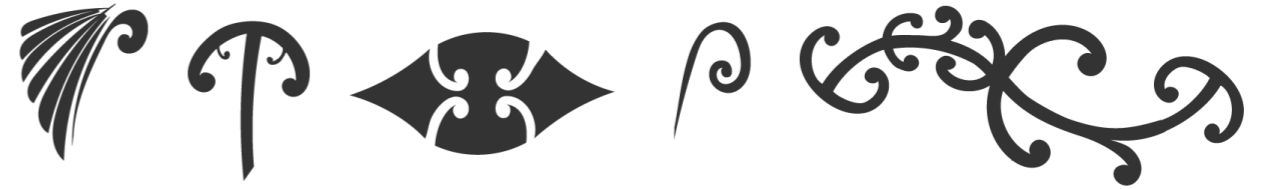
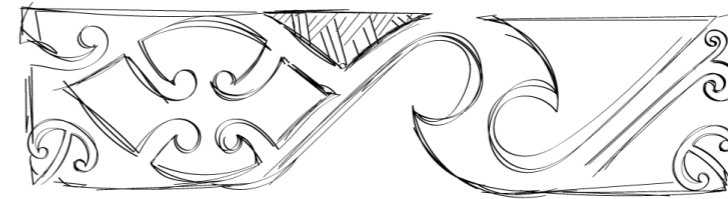


Cloak

A 3D scene visualising native rākau along the banks of Waiothu Awa.

Kowhaiwhai

While moving through the design process and points of ako (sharing), I wondered how a visual form could work to express the kaupapa within this mahi. This led me to delve into the meanings and intentions behind different kowhaiwhai. Kowhaiwhai, which are a form of pattern traditionally seen on the heke (rafters of a marae) are used to portray, enhance and reaffirm narratives that connect to the iwi and hapū belonging to that marae (Smith. H, personal communication, 20 April, 2022). The following iterations (next page) show my process of suggesting a pattern inspired by kowhaiwhai that reflect the way in which tipu, rākau, wai, mana, and manaaki weave together.



Te reo o Tangi

Sound and mourning

Through the power of ako I began to shift my design whakaaro and work more towards connecting and highlighting the journey through my design concepts. Sound had become the link that strengthened and pieced everything together.

From the cries of karanga to the ominous calls of kōkako, sound has the power to stir emotional response while carrying narratives through time and space. With the tamariki of Tāne Mahuta and Tāwhirimātea (atua of the winds, clouds, rain), the tangi of the ngāhere is a key element we can each tune our senses to.

Depending on the dynamics of the space, musician and sound ecologist, Dr. Bernie Krause (2008) has broken down the extensive relationships between sounds into three core sources: Biophony (biological-symphony), Geophony (geological-symphony) and Anthrophony (anthropological-symphony). Through engaging in titiro and whakarongo, the soundscapes I have experienced within each site have been extensively different, from the level of human access and activity to the density and size of rākau. After doing a 5-minute manu count with Vicky at Chrystalls Bend, we observed a large number of goldfinches, chaffinches and tauhou ducking in and out of the fringe areas of re-vegetation. In Haruātai Reserve, pīwakawaka and tūi were more likely to occupy the denser vegetation. With a recording device and microphone in hand I went into the ngāhere to collect and immerse myself in te reo o te ngāhere. Similar to how visual forms such as photography and 3D modeling can shape the way we see our surroundings, listening to an isolated amplification of sound waves has the power to shift and enhance our environmental awareness.

LOG BOOK NOTES 08.03.2

As the seasons shift into autumn, the ngāhere of Haruātai has become quiet. Suddenly the beating wings of a pīwakawaka comes into the foreground until my attention sways to the rustling of a small twig dropping down through the canopy, layer by layer. The sounds I wouldn't have been aware of were now in the foreground. A few sharp tweets dart in and out again. I'm not sure if the pīwakawaka was laying out a wero or interested in my microphone and the leaf litter I was shifting with my steps. Either way I was glad to have their company. Other than the few muffled calls

of tūi in the distance, the silence became eerie. The previous day, Kuini mentioned that there used to be pīwakawaka weaving in every direction, trying to intercept your every step, that you could barely hear your own thoughts with the reo of the manu (K. Rikihana, personal communication, March 04, 2022). Haruātai is a place where you can feel the mauri of the abundance of life that would have once inhabited it. The translation of tangi to mean both sound and mourning feels fitting within these familiar landscapes.



Haruātai reserve
Photography series

Ki uta ki tai

Land to sea

Ki uta ki tai acknowledges a holistic whole system philosophy towards te taiao. It recognises the movement of wai from the maunga to moana and how everything in between plays an important role in creating functioning and healthy ecosystems.

During a hīkoi along te awa o Ōtaki we spoke about the flow from the maunga to the moana, leading towards the offshore island of Kāpiti providing a whakamaurutanga (sanctuary) for the tamariki of Tāne. Watene spoke of the full name of Kāpiti; Ko te Waewae Kāpiti o Tara rāua ko Rangitāne which refers to the island as a point in the boundary between Ngāi Tara and Rangitāne tribal lands. The southern side of the island became the home of Te Whanganui-a-Tara iwi while Rangitāne iwi settled over the northern side of the boundary. However, the island is now in the territory of Ngāti Toa (W. Kaihau, personal communication, April 04, 2022). To learn more about the whakapapa of ngāhere we stepped into a notion of the past by heading over to Kāpiti, a dominant island rich with history that rests on horizon line between Raukawa Moana and Ranginui.

LOG BOOK NOTES 18.03.22

I was familiar with Kāpiti as a distant silhouette on the evenings I would come to the coast, a mysterious rugged form that extends from the occasionally flat moana. This morning, the light of the rising sun spilled over the island to reveal the familiar textures of native ngāhere. As we stepped off the ferry, we were welcomed by the dense cloak of foliage and growing calls of manu. The familiar calls of korimako and tūi boomed in synchrony from the estuarine area of whauwhaupaku, horoeka, tī kōuka and harakeke before the whenua reached towards a dramatic incline. We encountered; weka, toutouwai, tieke, kōkako, pōpokotea, takahē and koekoeā, all manu that struggle to inhabit the mainland whenua without continuous managed conservation efforts.

It was a world that was right there, but for some reason felt out of touch. Like when you try to grab something in a dream, but it dissipates into nothing. These manu have found a whakamaurutanga amongst a whenua that has been stripped and engulfed by mammalian predators (Hansford, 2021). It's a sigh of relief. However, the fear of imminent ghostly quietness stirs my mind.



Kāpiti Island
Photography series



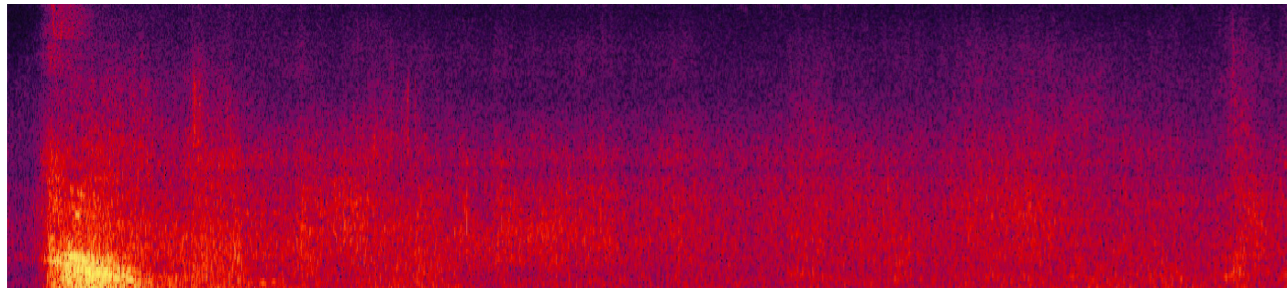
Tirohanga

A view of native ngāhere
covering the rugged
landscape of Kāpiti Island.

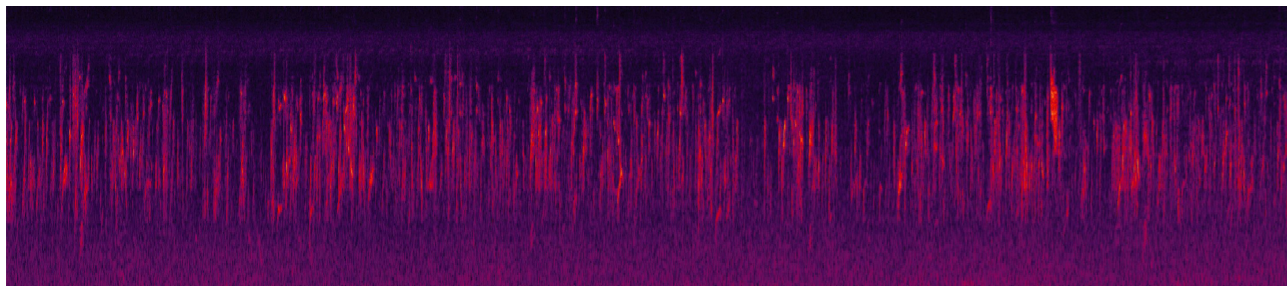
Spectral sound frequency

Spectral frequency graphs determine the range of sound frequencies that a human ear can recognise (Gleeson, 2021). The following graphs created in Adobe Audition act as audio maps to show the variation of sounds that I have recorded over different sites. The higher sound frequencies are shown at the top of the graphs, while the varying brightness of the colours indicates the strength of particular sounds.

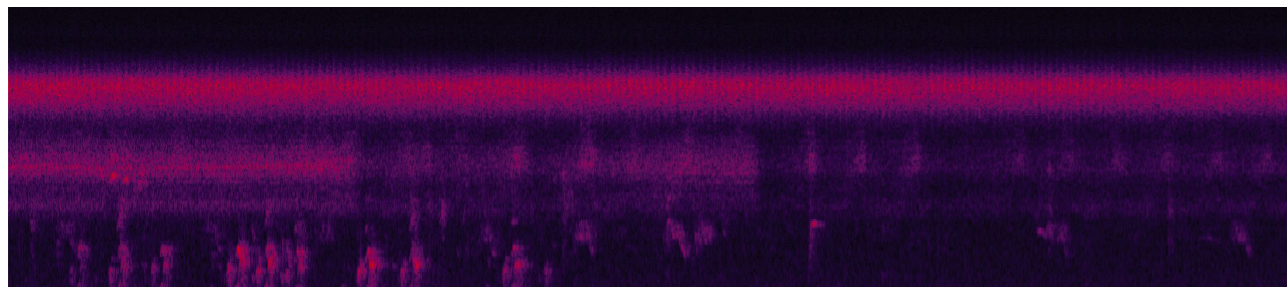
Chrystalls Bend, quarry



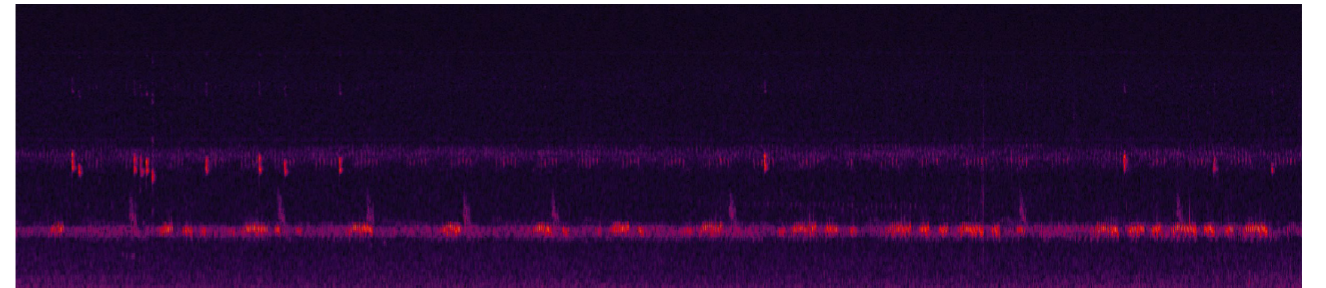
Chrystalls Bend, chaffinches



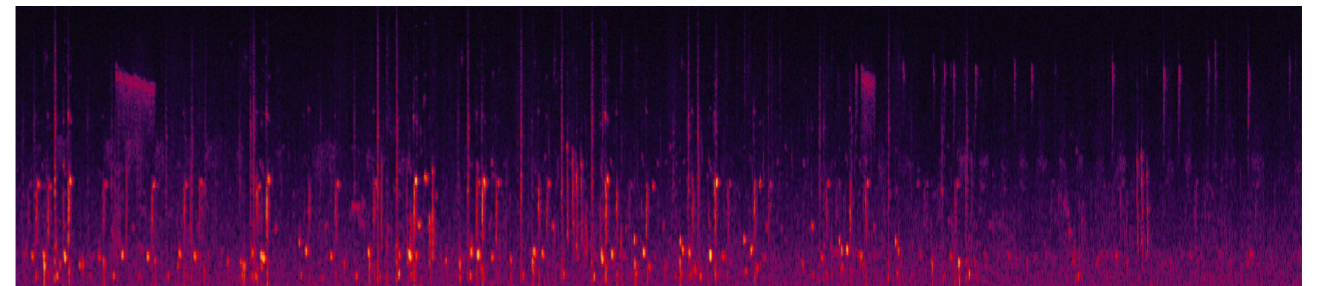
Haruātai reserve, pīwakawaka



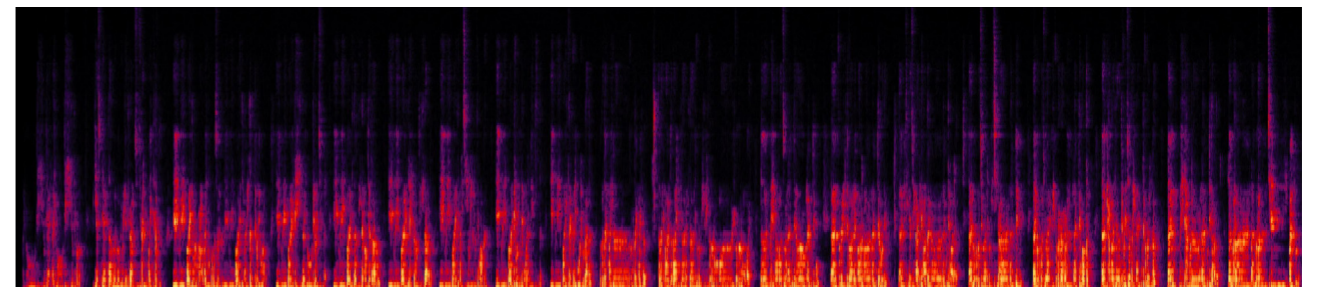
Ōtaki Estuary, tauhou



Kāpiti Island, korimako, toutouwai, tīeke, hihi, pōpokotea



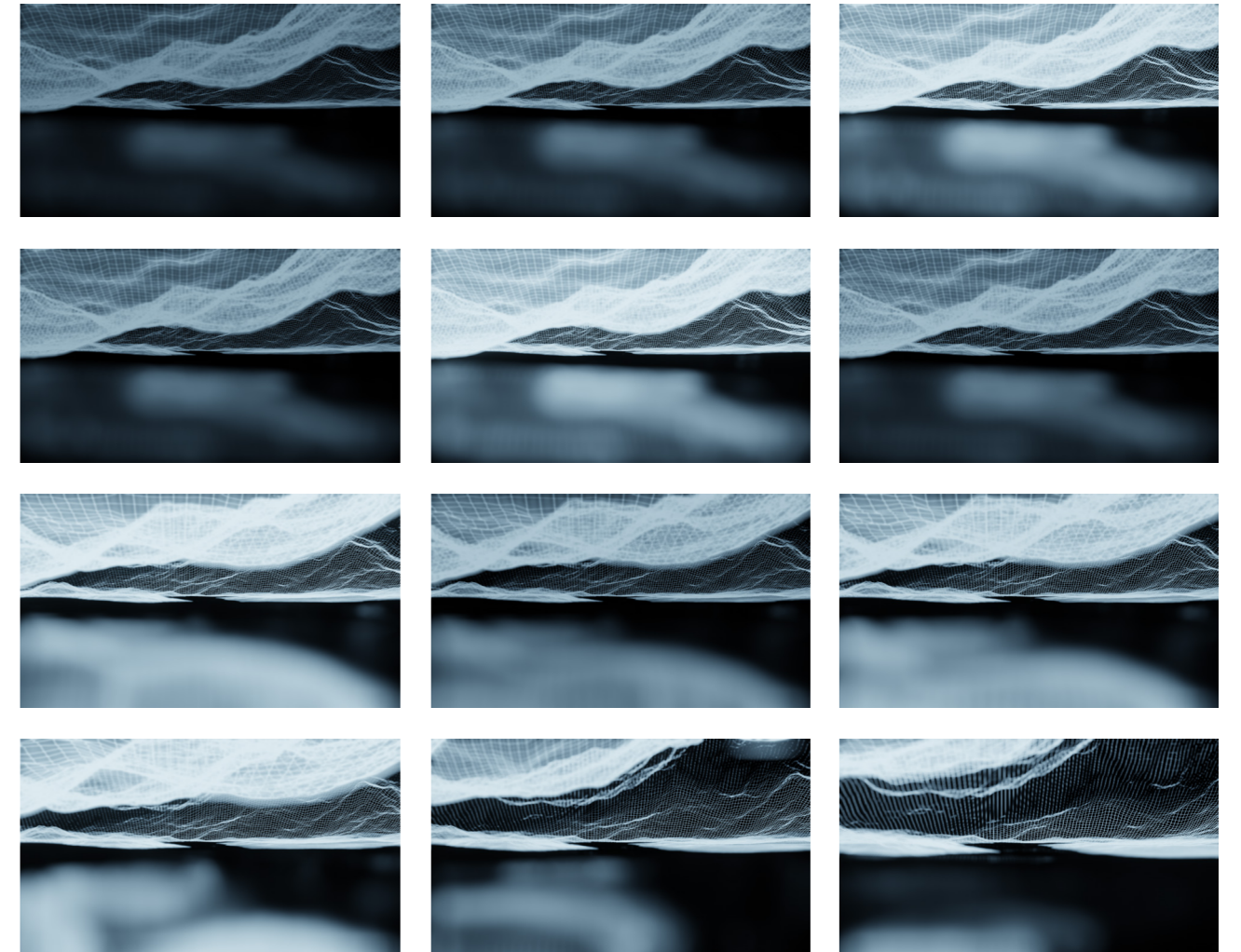
Tauparapara performed by Watene Kaihau



Soundscape

Through utilising site-based audio recording as a form of titiro (observation that goes beyond what you see) I questioned how I could then put these audio samples together in the form of a soundscape. The term “soundscape” essentially means a collection of sounds that describe the dynamic identity and landscape of a place (Pijanowski, et al., 2011).

After working on the audio files in Audition (Adobe Software) and looking at the different forms of sound wave and frequency graphs, I wondered how a visual element could work alongside the soundscape. A visual element that wouldn't completely detract from the experience of listening, but somehow work to compliment and heighten one another. In order to further express the connection between te reo o tangi (the language of sound) and Papatūānuku, it led me to explore ways that an abstraction of the whenua could respond to the certain frequencies and pitches within the soundscape, suggesting their continuous relationship and kōrero between one another.



Ethereal

Luminescent wire frame
3D model that emits light
in response to sound
created in Blender.

Tukunga iho
Design
outcomes



Whakamātakitaki Te Ara

exhibiting the journey

The manifestations of this process weave threads of kaupapa Māori and spatial practices, suggesting moments of conversation, connection and sensory immersion. Touching on the keystone design processes that have reflected this journey — speculative visualisation, immersion and narrative — gave light to how these forms could come together as an experiential design. Through the form of an exhibition, *Whakapapa o te Ngāhere* strives to blend both a physical and multimedia experience. A soundscape alongside an abstracted visual projection acts as a “visual karakia” to reset people’s whakaaro (thoughts and opinions) before leading into the kaupapa and heart of the narrative. Leading the audience through site based information alongside future visualisations aims to evoke challenging and inspiring discussions as well as changing the way people look at these taonga ecosystems embedded within the community of Ōtaki.

The aim of the community-centred exhibition¹⁰ is to continue and extend the dialogue between tangata whenua and the wider community around the narratives embedded within the ngāhere and whenua. Native rākau, a common source of value and meaning between whānau, weave multiple layers from the intangible forms of whakapapa, mauri and tikanga to the tangible forms of rongoā, kai and shelter.

SPATIAL NARRATIVE

The sound responsive light-emitting projection leads the audience through a deep space of contemplation through whakarongo (listen and feel) to a place of curiosity and speculation. A series of banners then locally situate the installation through identifying three taonga sites that ground the narratives of place; Waimanu Lagoon (part of Chrystalls Bend), Waitohu Awa (near Haruātai) and Ōtaki Awa.

The following sections work to decipher parts of the journey and process of understanding into key readable segments of information.



Woven
An abstract representation of the woven connections of whakapapa and mauri that embody the whenua. 3D model.

¹⁰ Developing a way to share back to the community was a hugely important part of the kaupapa throughout this mahi. This took place in Māoriland in October 2022, a few months after the submission of my MDES to allow for further elements to be developed.

**Tihei Mauri ora, ki te
Whaiao, ki Te Ao Mārama.**

*The breath, the energy
of life and moving from
darkness into the world of
enlightenment.*

Whakataukī. Te Tāhuhu o te Mātauranga Kau Whatareo (2022).





Waimanu Lagoon

Reconnecting wai and manu through the restoration of native rākau

The hum of activity from the nearby quarry fades into a secluded stillness. The songs of manu spill out from the growing ngāhere as the flowing wai of waimanu stream grows louder. Our feet are standing on what would have once been the braiding channels of te awa o Ōtaki, now reduced to a narrow path and continuously modified and excavated gravel banks.

The Waimanu stream begins from a wai puna (spring) nestled within a remnant ngāhere near Rāhui road, which then feeds into the manmade Waimanu Lagoon. Like many of the waterways over Ōtaki, Waimanu is considered a rich mahinga kai (food gathering site) abundant with wātakirihi (watercress) and freshwater tuna.

The area where Waimanu lagoon sits is known as Chrystalls Bend. A small haven in what seems like an unlikely place where community group, Friends of the Ōtaki River, have been regenerating native rākau alongside the banks of te awa o Ōtaki.



Waimanu
An abstract scene looking into a speculative vision of Waimanu Lagoon. A grey override material has been used to emphasise an ethereal intangible quality.

Vignettes
Waimanu Lagoon



Waitohu Awa

Envisioning the reconnection of Haruātai ngāhere and Waitohu Awa

An opening in the fringes of karamu, tarata, kawakawa and putaputāwētā lead into a small section of ngāhere where all noise but the chirps of an interested pīwakawaka fade into stillness.

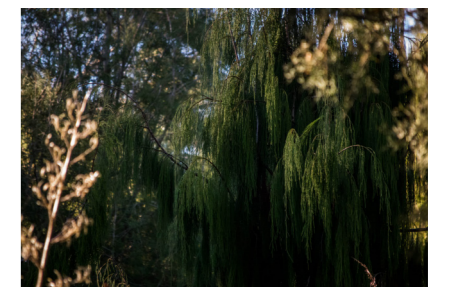
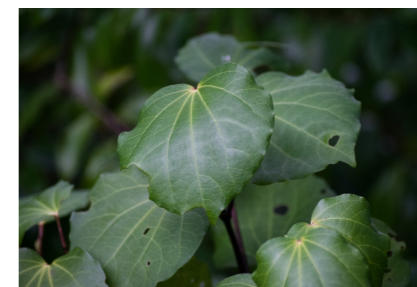
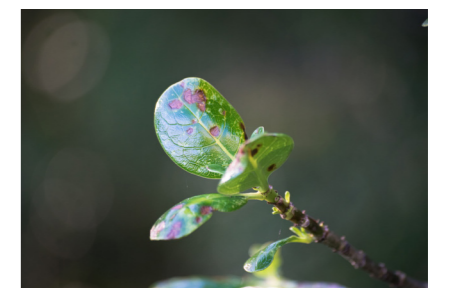
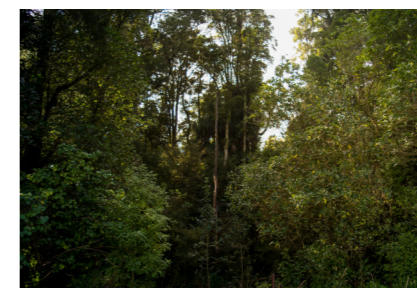
Haruātai is a fragmented remnant kōreporepo ngāhere (swamp forest) caught in between an expanse of farmland. Further north lies Waitohu awa, a mahinga kai abundant with tuna that flows from the foothills of Tararua to te moana o Raukawa. Hīkoi and kōrero tuku iho evoke the thought of how these previously connected taonga ecosystems could be rejoined once again.

Kaitiaki of Ngāti Raukawa are working to restore the mana of sites along the Waitohu awa through ongoing ecological and cultural revitalisation.



Waitohu

While the use of an override material helps with testing light and composition it also evokes a blank canvas and open ended question around how we see our surrounding landscapes.



Vignettes
Haruātai reserve



Ōtaki Awa

Where te pae o Tararua, te awa o Ōtaki and te moana o Raukawa meet

Te awa o Ōtaki is the largest and most distinctive awa within Kāpiti Coast. It is the only semi-braided gravel awa in the region, while providing an important source of ecological diversity and cultural identity for Ngāti Raukawa ki te Tonga. Its wide channels are fast and dynamic. However, through flood management engineering systems, the awa has been extensively modified and constrained.

Through the built up stopbanks and dense willows, there is currently a sense of disconnection between the public walkway and awa. How could prioritising native plantings support the awa and biodiversity while reconnecting people to these areas?



Ōtaki Awa

These Lo-fi scenes represent speculative visions that aim to connect people to rākau and the awa.

Vignettes
Ōtaki Awa Walkway

Display

Tāngata Whenua Rākau

Ko Tararua te Maunga
Ko Ōtaki te Awa
Ko Tainui te Waka
Ko Ngāti Raukawa te Iwi

*The Mountain is Tararua
The River is Ōtaki
The Waka is Tainui
The Iwi is Ngāti Raukawa*

Whenua means both land and placenta, emphasising that Tāngata come from the land and are connected to it from birth. As the whenua and iwi are increasingly fragmented, this in turn fragments society and indigenous communities connecting their existence and identity with these landscapes.

Whakapapa is a system of understanding that acknowledges the myriad of layers and ways in which they connect, rather than looking at parts of an ecosystem in isolation. Whakapapa is a core principle flowing through every form, uncovering and mapping genealogical links over time and space.

Ngāti Raukawa descend from their tūpuna Raukawa, the son of Māhinearangi and Tūrangia. In the early 19th century a large group from Ngāti Raukawa left their homelands in southern Waikato and northern Taupō and travelled down to the Manawatu and Horowhenua where during one of the significant heke led by Ngāti Toa Rangiora, Te Rauparaha.

The whenua would have been an expanse of koroporoa and ngāhere, now it is a fragmented mosaic of agricultural land and remnant ecosystems.

Through occupation and whakapapa, Ngāti Raukawa ki Te Tonga are connected to the waterways through the Manawatu and Ōtaki catchment and to the Haurangi and Tararua. While there is a drive towards Teo Rānaustranga over taonga ecosystems, māhinga kai and puna waiake, colonial perspectives of land ownership have disrupted and withheld the rights of iwi to be active kaitiaki of their whenua.

ngāhere forest
ngā many
here connections

purākau stories
pu origin
rakau tree

Ōtaki Site map

In this installation you will find speculative visions for three taonga ecosystems in Ōtaki. Each of these sites have characteristics that are representative of the past whenua and ngāhere.

How can visualisation help to shift our sensory and environmental awareness while creating a conversation around how we envision these native ecosystems in the future?

*Kia whakatōmuri te hāere whakamua
I wāhā backwaters into the future with my eyes
fixed on my past*

Waimanu Lagoon

Te hononga o wai and manu through the restoration of rakau

The hum of activity from the nearby quarry feeds into a secluded stream. The songs of manu spill out from the opening ngāhere as the flowing wai of waimanu stream grows louder. Our feet are standing on what would have once been the braiding channels of te awa o Ōtaki, now reduced to a narrow path and continuously modified gravel banks.

The Waimanu stream begins from a well-preserved wetland with a diverse native near Ōtaki past, which then feeds into the remnant Waimanu Lagoon. Like many of the waterways in Ōtaki, Waimanu is considered a rich māhinga kai boundary with wāwaka and freshwater furu.

The area where Waimanu Lagoon sits in Ōtaki is a beautiful area. It is a place where the water is clear and the air is fresh. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh.

Waitohu Awa

Ata whakauru the reconnection of Haruaitai and Waitohu

An opening in the fringes of Ōtaki, Ōtaki, Ōtaki and Ōtaki. It is a small section of ngāhere where the wai flows but the chaos of an interrupted Ōtaki awa feeds into others.

Waitohu is a fragmented remnant of the Ōtaki awa. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh.

The area where Waitohu Awa sits in Ōtaki is a beautiful area. It is a place where the water is clear and the air is fresh. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh.

Ōtaki Awa

Where te pae o Tararua, te awa o Ōtaki and te mouna o Raukawa meet

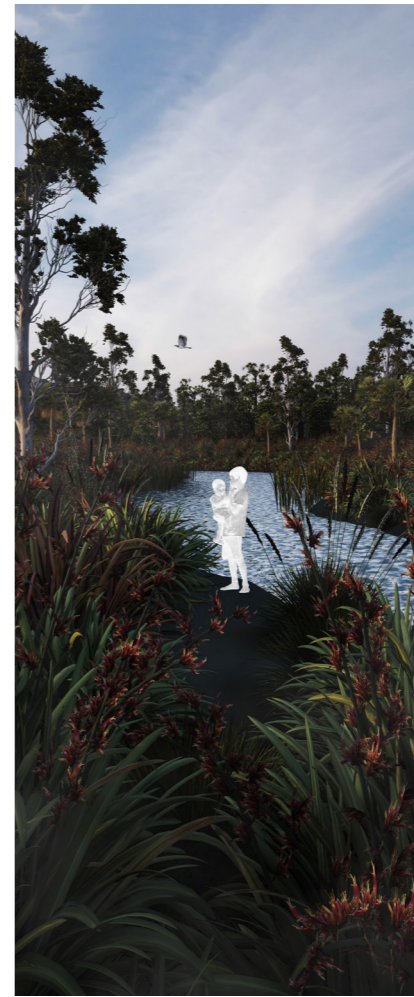
Te awa o Ōtaki is the largest and most distinctive awa within Kāpiti Coast. It is the only semi-enclosed gravel awa in the region, while providing an important source of ecological diversity and cultural identity for Ngāti Raukawa. Its wide channels are fast and dynamic - however, through flood management engineering systems, the awa has been extensively modified and constrained.

Ki uta ki tai
Land to sea

Ki uta ki tai acknowledges a barrier to what is a beautiful area. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh.

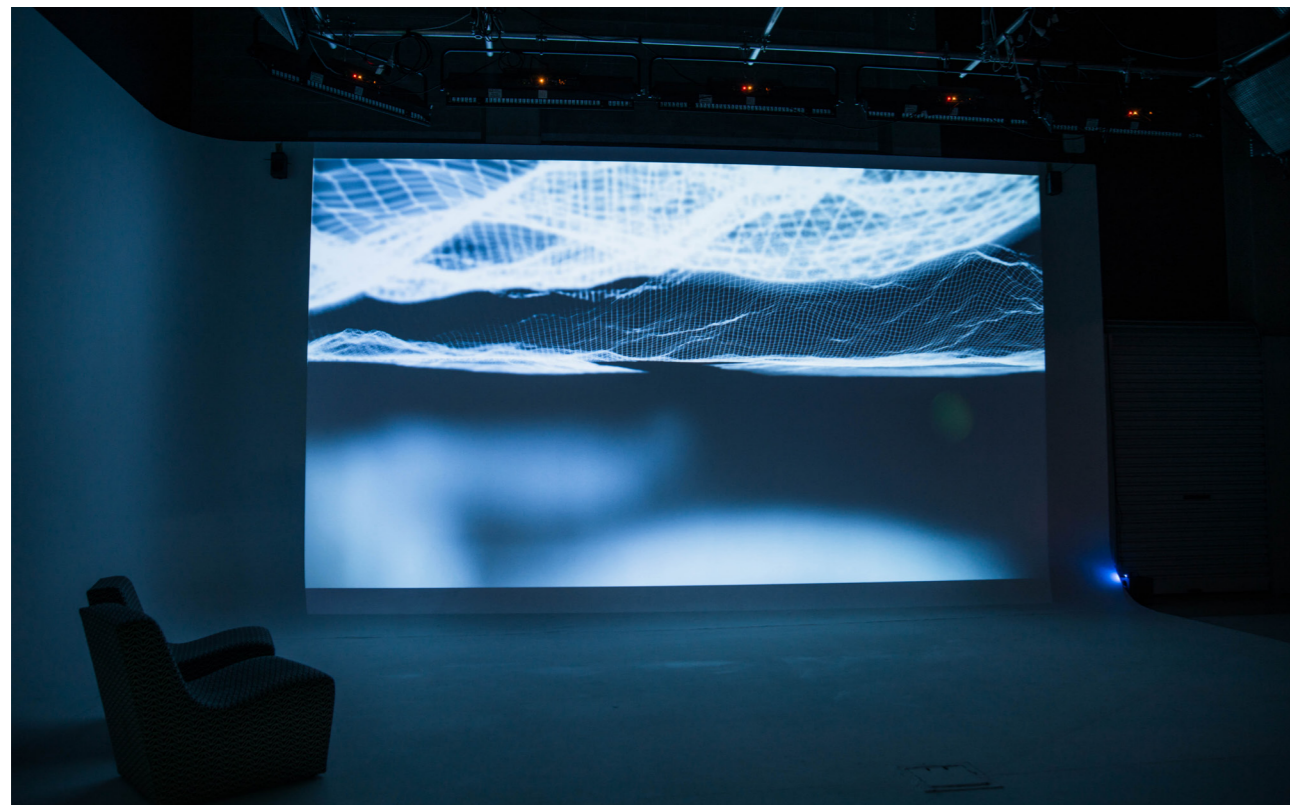
The area where Ōtaki Awa sits in Ōtaki is a beautiful area. It is a place where the water is clear and the air is fresh. It is a place where the water is clean and the air is fresh. It is a place where the water is clean and the air is fresh.

Display



Installation

Through the form of an installation, site-based information is visually communicated through a series of tall banners inspired by the vertical nature of pouwhenua and rākau. This is also presented with a walk through kōrero that gives light to the kaupapa and background of the project. The front-facing sides of the 2000mm by 800mm suspended banners are information-based with abstract monochromatic visuals, while the other sides showcase six coloured 3D renders that reimagine the specific sites. The aim of the spatial layout is to evoke a sense of meandering to highlight the connections between these taonga ecosystems, while inspiring people to visit these sites with new whakaaro and perspectives.



Presentation

To make the most of the immersive quality and height of the space I decided to set up the

installation for my final presentation in the Te Ara Hihiko Lighting studio.



Exhibition

Four months after completing my Master of Design I was fortunate to display my installation alongside Lorna Tawhiti (Ngāi Te Rangi, Waikato Tainui) and a number of supporting Toi Matarau artists for the Aroaromahana Exhibition in Māoriland. Aroaromahana is a showcase of artists that express their connection to te taiao in celebration of the arrival of spring. It was an appropriate and imperative part of the process to display this installation as a culmination of the mahi, kōrero and hīkoi we have done with tāngata within Ōtaki.



Māoriland
Māoriland is a multidisciplinary creative hub located in the heart of Ōtaki.



Aroaromahana
A series of images from the Toi Matarau gallery in Māoriland.



Whakaaro

Contemplating the pre-colonial whenua while looking over a broken landscape, Te awa o Ōtaki.



Titiro

Listen, observe and feel. What is the whenua trying to tell us? Waimanu Lagoon.



**Nāu te rourou, nāku te
rourou, ka ora ai te iwi.**

*With your food basket, and
my food basket, the people
will be well nourished.*

Whakataukī. Ryan (1995). The Reed dictionary of modern Māori.

Ako

Share, learn and give back
for our future generations.
Waitohu Awa.

Kupu Whakakapi *concluding thoughts*

Beginning with the humble rākau and ngāhere, we were guided by the diverging and connecting paths of te a awa o Ōtaki that would have once flowed over the rohe. It was the remnants of the awa that connected each one of the sites that we visited, while connecting each one of the relationships we made along the way. Creating and nurturing relationships with iwi and hapū is an ongoing and indefinite process and this journey has provided me with the grounding foundations and confidence to continue to strengthen and build upon these.

While I began with a loose brief and question, I quickly realised that this project was more about the process of weaving different people, skills and views. As reiterated by Rhian (cited in TPM, 2020), this is a living and breathing project. It follows the course of the taiao and tāngata, which are continuously in a state of flux. Throughout the project, following tikanga, whanaungatanga and kaupapa Māori principles has shaped the way we connect, pose questions and collate information. This project has followed a dynamic process and new way of working that has ultimately enriched the ways we think about and proceed with rangahau. Thinking and looking through a te ao Māori lens has emphasised the methodologies of kōrero and hīkoi as a way of building relationships whilst mapping and visualising whakapapa and space. The unfolding kōrero and perspectives differed between whānau, but the discussions opened up a world of possibilities and shared values of native rākau. These discussions illuminated stories from the past, present and the desire to allow future generations the ability to connect back to their whenua. While navigating multiple relationships, my own tūrangawaewae and an interdisciplinary and trans-institutional team has had its challenges. It has allowed the continuous strengthening of varying views and processes. As this project extends over the next few months, we will continue to kōrero, whakawhanaungatanga and give back rangahau findings through the forms of a tree planting day, an exhibition, and a proposed public signage system. Each moment works to engage, communicate and evoke curiosity and conversations of the seen and unseen narratives of native rākau within Ōtaki and Aotearoa.

**Tēnā koutou, tēnā koutou, tēnā tātou katoa.
Nō reira e hoa mā, me mutu i konei.**

Pata wai
Connected through a
droplet of water.

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Images

Unless otherwise stated all images included are by the author, Katerina French Armstrong.

Figure 1 (Page 64)

Black and white images sourced from Retrolens. https://retrolens.nz licensed by LINZ CC-BY 3.0
Coloured images sourced from Google Earth. Map showing location of Ōtaki River Google Earth, https://earth.google.com/web/

Figure 2 (Page 77)

Bottom four photographs sourced from Rhian Salmon and Jo Bailey. (R. Salmon, & J. Bailey, personal communication, April 06 2022).

Manu Soundscape

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Tieke

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Tūi

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Appendix A

WIDER HISTORY TO THE PROJECT BY RHIAN SALMON

“

The Trees + Climate + People project began when Sarah-Jane O'Connor and I took our students for a tour of the Friends of the Ōtaki River tree planting area in February 2020. We noted that while there were many signs that told us about who had sponsored a plantation, there seemed to be a missed opportunity to share information about trees... specifically, about the role that trees play in mitigating against climate change impacts. Rhian in particular was keen to get a clearer sense of the connection between “trees in the ground” and more abstract carbon offsetting concepts. At the same time, FOTOR were keen to strengthen their relationship with the University - and the way they strengthen relationships is usually by offering sponsorship of plots (\$5000 for 1000 trees and a sign in the ground). We were hesitant to commit to that invitation but did indicate that we might be interested in working together on something educational at some point in the future. A few months later, FOTOR received an endowment, and contacted us to see if we'd be interested in planting a plot of trees that would be funded from that new funding. One of their members had stipulated that it would have to be educational (since this was a University activity) and on our side, we wanted the experience to be more than just shuttling undergraduate students to the site to place pre-grown trees into pre-dug holes.

I mulled this opportunity for a few months and on various occasions mentioned it to colleagues. Jo Bailey, a senior lecturer in Design at Massey University, suggested it could make a really interesting cross-disciplinary (or even trans-disciplinary - link to Jo's cake graphic) research project, with a Master's student in Science in Society, and a Master's student in Design. I had some residual research funding that had to be spent on climate change communication, which was able to almost cover a stipend and scholarship for the Science in Society student. Jo and I are also investigators in Te Pūnaha Matatini (TPM) Centre of Research Excellence, and recognised that this project would need some significant tree expertise for it to be viable. We therefore reached out to a colleague in TPM, Associate Professor Cate MacInnes-Ng, who is based at the University of Auckland and has expertise in tree ecology, climate change and community engagement. She was excited about the idea of a trans-disciplinary and cross-institutional research project focussed on trees and climate, and helped us realise the complexity of processes that would be relevant to this project (ie, trees don't just absorb carbon, you need a whole ecosystem for them to thrive). Given the location of the study site in Ōtaki, which is a hub for cultural revitalisation in Aotearoa, we also all recognised that it would be critical for this research to both have a Mātauranga Māori focus, and also have explicit funding for a local cultural advisor from Ngāti Raukawa.

Having pulled together these key components, we applied to Te Pūnaha Matatini for the extra funding required for the project to be able to support two Master's students, a cultural advisor, and project costs. Happily, the funding was approved, and the positions advertised (link to advert/ see appendix). Katerina Armstrong was the successful candidate for the Master of Design at Massey University. She had a strong interest in both Design and Mātauranga Māori, so Huhana Smith was an obvious second supervisor for her (based at Massey, where she was officially registered). Huhana has expertise in visual design, Mātauranga Māori, and engagement with iwi, and is located near to Ōtaki. Vicky Gane was appointed to the Science in Society Master's at Te Herenga Waka - Victoria University of Wellington, and she had a strong interest in ecosystems and enriching biodiversity (in addition to climate change), so Associate Professor Stephen Hartley was an obvious second supervisor for her who was internal to THW. Stephen has expertise in biodiversity monitoring, citizen science and tree ecology. Cate remained in a supervisory role across the whole project, but particularly for Vicky. In addition, Dr Sarah-Jane O'Connor, who has a PhD in tree ecology and expertise in science communication, remained connected with the project as an advisor, ally (and, nearer the end, third supervisor for Vicky).

So it was that we ended up with a cross-disciplinary, cross-institution, locally-situated research project steered and advised by a collection of amazing people with diverse expertise. Meetings were held every week or two with a combination of these advisors and supervisors, depending on the status of the projects at the time. Katerina and Vicky noted themselves that the two Masters projects at different times felt like two arms of a braided river - at times very close and merging, at other times quite distinct. At the time of writing this, both Katerina and Vicky are writing up their theses, so it's appropriate that they focus on the distinctiveness of their respective projects, and the contribution they each made individually and independently. However, for the examiner and other readers, I feel it's important that they understand the broader context within which this research is situated, including that TPM has granted further funding to support community engagement and outputs from these projects, and for insights from these projects to be written into a paper. We therefore still anticipate future work to emerge from this work.

Project team:

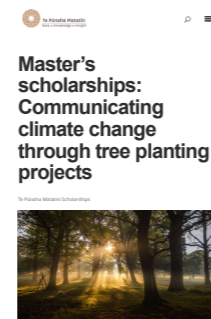
THW: Vicky Gane, Rhian Salmon, Stephen Hartley, Sarah-Jane O'Connor
Massey: Katerina Armstrong, Jo Bailey, Huhana Smith
U Auckland: Cate MacInness-Ng
Ngāti Raukawa: Watene Kaihau

(R. Salmon, personal communication, April 14, 2022).

Appendix B

INITIAL PROPOSAL OF THE PILOT PROJECT

Communicating climate change through tree planting:
an on-the-ground science communication design project that connects tree planting sites with a deeper understanding of carbon mitigation



The problem:

There are many tree planting sites across Aotearoa, often supported by local or regional councils and primarily funded for flood protection purposes, with recognition of the beneficial local ecological advantages the planting provides, such as cleaner water and increased biodiversity. At the same time, 'the public' are informed that tree planting is a good way to combat climate change, for instance by clicking a climate mitigation button after purchasing air tickets, or in policy discussions about carbon trading. There is, however, little information that connects practical 'trees in the ground' to theoretical carbon mitigation – how many trees really need to be planted to absorb the equivalent carbon that is emitted on a flight to Europe? Does it matter what kind of tree is planted? What happens if that tree dies, through natural causes or logging? Do the trees need to stay on dry land? Are native trees better than eucalypts? We propose exploring this gap by developing an on-the-ground science communication design output, focused on how trees absorb carbon, and over what time periods. (I.e, ten trees may absorb enough carbon for a flight between Auckland and Wellington in 30 years but if we wait long enough, they could cover a flight to London in say 150 years.) The intention is that this pilot project will provide templates that could be applied more widely across the country.

The proposal:

To research, develop and design a tree planting site (as a proof of concept pilot project) that engages visitors about climate mitigation as well as ecology. This could include a custom-designed tree planting area; signage integrated across a tree planting location that contains different species and plantings of different ages and stages; and/or other lateral design responses that help communicate the issues/ solutions, both on-site or more widely.

This inherently interdisciplinary project has relevance to biodiversity, climate economics, mātauranga Māori, social justice, design and science communication. It would require an in-depth understanding of science (tree ecology, ecosystems, carbon cycle), design (design of spaces, community use and engagement), and climate communication (appropriate messaging, audience engagement, politics of communication). We envisage this as an exploratory pilot project: while it carries expectations around an on-the-ground experience in-situ, the intention is that the outcomes go beyond that into something that is, or may become, a reusable tool. The pilot project will be situated in Ōtaki, which has a very strong Māori community and culture. Ideally, at least one of the students will have a connection to the area, through whānau or study. The project is a collaboration with Friends of the Ōtaki River, which is providing the pilot site as well as tangible in-kind support. We are also reaching out to colleagues at Te Wānanga o Raukawa, to connect with their Environmental Management (Kaitiakitanga Pūtaiao) programme and/ or students. The research therefore will also have a strong bicultural aspect, including consideration of Mātauranga Māori.

Candidate

Katerina French Armstrong

Supervisor + contact

Jo Bailey

Appendix C

INFORMATION SHEET AND CONSENT

Whakataka te hau ki te uru,
Whakataka te hau ki te tonga.
Kia mākinakina ki uta,
Kia mātaratara ki tai.
E hī ake ana te atakura.
He tio, he huka, he hauhū
Tihei Mauri Ora!
Whakapapa o te Ngahere



Tēnā koe, ngā mihi nui ki a koutou for giving your time and energy to this open discussion around te taiao, ngahere and rākau. Being guided by whanaungatanga, tika, manaakitanga, and mana has created a core foundation within the project. This form allows you to hold onto a summary of information whilst outlining how you wish or do not wish your kōrero to be shared. Please take your time to read through the following and don't hesitate to ask any pātai if anything you read is not clear or if you would like more information.

Ko wai au
Ko Mataatua tōku waka
Ko Waikirikiri tōku marae
Ko Tuhoē Ko Ngāti Kahungunu ōku iwi
Ko Katerina ahau

I am a Masters student based in the rohe of Rangitāne, Manawatū currently doing a Masters of Design project through Te Kunenga ki Pūrehuroa, Massey University.

Summary

Whakapapa o te ngahere is an explorative discussion and response to ecological and cultural fragmentation through kōrero, hikoi and spatial design.

Over the young colonial history of Aotearoa, rapid deforestation and land alteration has significantly changed the face of the whenua and the relationship between tāngata, rākau and the ngahere. Through a collaboration between the Te Herenga Waka Centre for Science in Society and Te Kunenga ki Pūrehuroa College of Creative Arts, this project aims to investigate the relationships between native rākau, people and place. Through site investigation, hikoi and wānanga, this project explores key native ecosystems over the rohe of Ngāti Raukawa ki te tonga in Ōtaki. The main purpose is to create a conversation and explore how spatial design and visualisation can be used to communicate the importance of protecting, conserving and reconnecting te taiao through a te ao Māori lens.

Whakapapa o te Ngāhere | Consent form

Kōrero

This project is committed to manaaki and looking after the mātauranga shared by whānau. We will protect your information, as you desire. See the following and please tick the options that you agree to:

As we have had a number of poetic and rich kōrero and hui, I humbly seek your permission to:

Make in text references to shared kōrero in a reflective way, eg, writing about a hikoi in the format of a journal entry. This will be discussed to make sure you are comfortable with anything shared.

Any forms of mātauranga or outcomes will be handed back to the whānau and iwi to look over and have mana whakahaere, ownership and control over.

Other long term storage options are:

Te Wānanga O Raukawa
Hapū _____
Contact Name _____
Phone: _____
Email: _____
Other

And what access restrictions (if any) do you request?
General Public
Iwi / Hapu

Participation is completely voluntary, you maintain the right to refuse participation, refuse any question and withdraw at any time without any consequence.

Whakapapa o te Ngāhere | Consent form

Karakia

Tēnā koe Watene,

Your guidance towards connecting with both tāngata and te ngāhere has helped ground and plant a steady anchor within this project. As we have discussed, sound and whakarongo has a power towards evoking different feelings within us. My aim through the form of a soundscape is to question how sound alongside visuals could help to evoke a sense of curiosity and connection towards whakapapa, tikanga and te taiao.

This project is committed to manaaki and looking after your mātauranga. We will protect your rights and any performance of shared taonga, as you desire. See the following and please tick the options that you agree to:

In order to achieve this we humbly seek your permission to:

Record oratory such as a karakia or miha for the purpose of a soundscape in a temporary public exhibition of *Whakapapa o te Ngāhere*. This will be done via recording equipment and edited as an Mp3 + Mp4 file with a copy made available to you.

Any forms of data or outcomes will be handed back to iwi and whānau to have mana whakahaere, ownership and control over.

Other long term storage options are:

Te Wānanga O Raukawa
Hapū _____
Contact Name _____
Phone: _____
Email: _____
Other

And what access restrictions (if any) do you request?
General Public
Iwi / Hapu

Participation is completely voluntary, you maintain the right to refuse participation, refuse any question and withdraw at any time without any consequence.

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Huhana Smith:
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+64 (0)21 244871

Rhian Salmon:
rhian.salmon@vuw.ac.nz
+6448864404

Ngā mihi nui, Ngā manaakitanga
Katerina French Armstrong

This project has been evaluated by peer review and judged to be low risk. Consequently it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Professor Craig Johnson, Director (Research Ethics), email humanethics@massey.ac.nz.



**E tu kahikatea
Hei whakapae ururoa
Awhi mai awhi atu
Tātou tātou e**

