WAIWHAKAIHO
WILDLINK VISION

Te wāhi ngaro
Te wāhi huna
Te kūteretere
Matua te Kore
Heke iho, heke iho

Pupuke te hihiri
Pupuke te mahara
Pupuke te wānanga
Wānanga nui a Te Kore
Heke iho, heke iho

Wai nui
Wai roa
Wai rua
Wai ora
Wai Māori

Koia tonu te puna i heke mai ai te tangata
ki te whai ao, ki te ao mārama.
Tihei Mauriora!

Front page photo credit: Brendan Larsen

The Waiwhakaiho Wildlink Vision is a living document and achievement of the vision will take time.

As degradation of the awa has occurred over generations, so too will its restoration, recognising this is an intergenerational challenge.

Restoration is unlikely to follow a straight line, and the level of investment in action and subsequent environmental responses will evolve over time.

Contents

Glossary

TERM	
Ahi kā roa	Long-burning fires of occupation
Awa	River
Connection	Expresses the relationships that the community holds with the Waiwhakaiho and its resources and how this manifests in behaviours.
Hapū	Subtribe
He taura, he iho, he taonga	A braided cord, an umbilical, a valued possession
Hīhī	Stitchbird (*Notiomystis cincta*)
I te ao, i te pō	Day and night
Īnanga	Whitebait, common galaxias (*Galaxias maculatus*)
Kahikatea	White pine (*Dacrycarpus dacrydioides*)
Kaitiaki	Guardian
Kākā	New Zealand kākā (*Nestor meridionalis*)
Kākahi	New Zealand freshwater mussel (*Echyridella menziesii*)
Kākano	Our young
Karaka	New Zealand laurel (*Corynocarpus laevigatus*)
Karakia	Incantation
Kiwi	North Island brown kiwi (*Apteryx mantelli*)
Kōaro	Climbing galaxias (*Galaxias brevipinnis*)
Kohekohe	New Zealand mahogany (*Didymocheton spectabilis*)
Kōkako	North Island kōkako (*Callaeas wilsoni*)
Kōkopu	Giant kōkopu *(Galaxias argenteus),* banded kōkopu *(Galaxias fasciatus),* shortjaw kōkopu *(Galaxias postvectis).*
Korimako	New Zealand bellbird (*Anthornis melanura*)
Korokio	Paritutu korokio (*Corokia cotoneaster*)
Korowai	Māori cloak
Kōtukutuku	New Zealand fuchsia (*Fuchsia excorticata*)
Kōura	Northern kōura (*Paranephrops planifrons*)
Kōwhai	Sophora species
Kūkupa	Kererū, New Zealand pigeon (*Hemiphaga novaeseelandiae*)
Kūmara	Sweet potato
Mahinga kai	Garden, cultivation, food-gathering place. It relates to not just the gathering of kai but also the ecosystems and habitats these species are found in.
Māhoe	Whitey wood *(Melicytus ramiflorus)*
Mai i Taranaki Maunga i uta ki tai	From Taranaki Maunga to the coast
Manu	Bird
Manuhiri	Guests
Maramataka	Māori lunar calendar
Maunga	Mountain
Ngā wai e rua	The two waters of conception
Nīkau	(*Rhopalostylis sapida*)
Pā	Fortified village/place
Papakāinga	Village
Pā harakeke	Whānau
Papatūānuku	Mother earth

TERM	
Piharau	Pouched lamprey (*Geotria australis*)
Pīpīwharauroa	Shining cuckoo (*Chrysococcyx lucidus*)
Pōpokotea	Whitehead (*Mohoua albicilla*)
Porokaiwhiri	Pigeonwood *(Hedycarya arborea)*
Pukatea	(*Laurelia novae-zelandiae*)
Puna	A spring from which water flows
Pūriri	(*Vitex lucens*)
Rākau	Tree
Ranginui	Sky father
Rātā	Northern rātā (*Metrosideros robusta*)
Rimu	Red pine *(Dacrydium cupressinum)*
Riroriro	Grey warbler (*Gerygone igata*)
Rongoā	Natural item used for medicinal purposes
Tāne	Atua of the forest, birds and all forest creatures
Tāngata whenua	People born of the whenua
Taranaki Maunga	Formerly Mount Egmont
Taro	Root vegetable (*Colocasia esculenta*)
Tawa	(*Beilschmiedia tawa*)
Te ātua	A supernatural being
Te Papakura o Taranaki	Formerly Egmont National Park renamed through the historical Te Tīriti o Waitangi (Treaty of Waitangi) settlements and formalised in Te Ruruku Pūtakerongo, the Taranaki Maunga Collective Redress Deed.
Te Tiriti o Waitangi	Treaty of Waitangi
Te Whanganui-a-Tara	Wellington
Tī kōuka	Cabbage tree (*Cordyline australis*)
Tikanga	Correct procedure, custom, habit, method or manner
Tītī	Muttonbird, sooty shearwater (*Ardenna grisea*)
Titipounamu	Rifleman (*Acanthisitta chloris*)
Tītoki	New Zealand oak (*Alectryon excelsus*)
Tohu	A sign or indication that something is going to occur
Toutouwai	North Island robin (*Petroica longipes*)
Tūī	(*Prosthemadera novaeseelandiae*)
Tūpuna	Ancestors
Wai ora	Freshwater
Weka	Māori hen, woodhen (*Gallirallus australis*)
Whakanoa	To remove tapu or spiritually clear an environment
Whakapapa	Genealogy
Whakaparu	Purpose-built structures for harvesting piharau
Whakatū	Nelson
Whānau	Family
Whare	House, building
Whare wānanga	Place of higher learning
Whio	Blue duck *(Hymenolaimus malacorhynchos*)
Wildlink	A pest and weed free corridor of native rākau allowing native species to migrate mai i Taranaki Maunga i uta ki tai.

Introduction

Our whakapapa and role as kaitiaki of water is referenced in the karakia Te Wāhi Ngaro from Taranaki kaumātua Dr. Te Huirangi Waikerepuru. Expertise in this karakia include te wāhi ngaro, te wāhi huna, te kūteretere, Matua te Kore, which references a Taranaki indigenous creation story that describes the beginning of time.

Pupuke te hihiri, pupuke te mahara, pupuke te wānanga, wānanga nui a te Kore outlines the various development stages of consciousness and awareness. Wai nui, wai roa, wai rua, wai ora, wai Māori, koia tonu te puna i heke mai ai te tangata ki te whai ao, ki te ao mārama is the various water states manifesting into the material world as water, which gives life to mankind; herein lies our whakapapa to water. The creation theme reinforces the inherited spiritual and cultural obligation of people to protect water.

Kohikohia ngā kākano, whakaritea te pārekereke, kia puāwai ai ngā hua

Gather the seeds, prepare the seedbed carefully, and you will be gifted with an abundance of food.

The Waiwhakaiho Awa (River) once sustained the livelihood of many hapū. Hapū built whare, papakāinga, and pā on hilltops and ridges of the awa to protect their land and people. They would gather an abundance of mahinga kai from the awa, its mouth, its in-stream islands, its tributaries, wetlands, in-land lakes, and the primeval and often impenetrable forest that cloaked these areas.

Today the Waiwhakaiho does not sustain the same essence of life, because for many decades people and their actions have adversely impacted upon it. These actions include the removal of native forest for pasture, discharging contaminants into the awa and taking freshwater from it, illegal dumping of rubbish, destruction and modification of the riverbanks, its tributaries and sites of significance to Māori, illegal extraction of rock, and many other actions which have led to the awa's current state. This indicates that the community does not value this awa to the degree it should.

The intention for the Waiwhakaiho and its tributaries is for the community to have the ability to actively contribute to the restoration of these waterways and in doing so, have the ability to form a deeper connection to place.

The Waiwhakaiho Wildlink Vision Document has been developed by New Plymouth District Council and tāngata whenua in partnership to guide the management of people for the benefit of the water and land, not water and land management. This vision document places the needs of the awa and our obligation as community to act and give back to the awa at the centre of this document. Furthermore, it outlines how we move forward together over the coming decades.

FAST FACTS:

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There are six native reserves (Waiwhakaiho, Raupiu, Pukeweka, Puketotara, Ngaere and Araheke) along the length of the Waiwhakaiho Awa.

30km

The Waiwhakaiho Awa is 30km in length

885km

The wider Waiwhakaiho catchment has a total of 885km of stream bank.

35%

35% of existing indigenous forest cover.

70%

Approximately 70% of lands adjacent to the awa are in public ownership or esplanade strips in private ownership with the right to access:

Left Bank

18.1km (59%): Public ownership
0.7km (2.2%): Road reserve
5.6km (18.2%): Taken as esplanade strip in private ownership with the right to access.
6.2km (20%): Private ownership.

Right Bank

9.7km (31%): Public ownership
0.2km (0.5%): Road reserve
13.5km (43.3%): Taken as esplanade strip in private ownership with the right to access.
7.8km (25%): Private ownership.

3,900ha

3,900ha of the total 270,300ha of ring plain remains in native bush in public reserve or in small pockets on private land, generally adjacent to waterbodies.

35,000ha

35,000ha of the total 270,300ha of ring plain remains in native bush protected as Te Papakura o Taranaki.

Tāngata Whenua

For decades, many hapū have maintained a living relationship with the Waiwhakaiho, its tributaries and its resources. For these hapū the Waiwhakaiho is part of their whakapapa, connecting those present today with those that have passed and beyond. It is an inseverable lifeline that reminds hapū of their obligations to embody and act on the visions and aspirations of their tūpuna.

For the purposes of this document, these hapū will be collectively referred to as Ngā Hapū.

Ngā Hapū are in partnership with NPDC and other regulatory authorities that own and administer land and have statutory obligations along the Waiwhakaiho. Our relationship is underpinned by the principles of the Te Tiriti o Waitangi including partnership, active protection, reciprocity and the duty to make informed decisions. To this end, the vision document is provided as a basis for the processes that this partnership will embody, to decide on and manage the way in which restoration and development occurs to form the Waiwhakaiho Wildlink Project; and to support the development of effective and efficient ways of working together.

Ngā Hapū are committed to working collectively and collaboratively with our community to achieve the intent and objectives set out within this vision document for the overall restoration of the Waiwhakaiho and its tributaries.

Collectively, Ngā Hapū are intentional in strengthening these connections and forging new relationships with others who can support and enable the vision of the Waiwhakaiho Wildlink Project and advance the aspirations of our current and future generations.

Hihi,
Stitchbird

Building Relationships

At its core the Waiwhakaiho Wildlink vision is about enhancing connection to the Waiwhakaiho Awa. This includes connection for all the community of New Plymouth District and visitors that come to experience the beauty and special character of our place. Building strong and enduring relationships with our community in the development of the vision is key.

There are around 300 landowners that live directly adjacent to the corridor of the awa. The vision anticipates engaging with both these landowners and the broader community to discuss how we can enhance connections and restore the values of the Waiwhakaiho Awa. The aim is to build a community of interest that want to be a part of the vision and contribute to the achievement of the over-arching objectives.

Bringing the community on the journey is a key aspect of the vision. The next steps in the vision development will be all about building these relationships and gaining insight and input from adjacent landowners, reserve lessees and users, and the broader community.

This work will inform the more detailed planning for the Waiwhakaiho Wildlink vision so that it is an inclusive vision.

There will be many ways we can develop these relationships as the vision progresses over time. These may include, but not be limited to:

- Local champions and volunteers who want to partner in achieving the vision.
- Landowners who are interested in enhancing their own land to contribute to the vision.
- Community groups, reserve users and lessees who want to work alongside the vision.
- Other local authorities, such as Taranaki Regional Council to ensure we have aligned outcomes.

The Vision for the Waiwhakaiho

What we want to see 50 years from now

Our vision for the Waiwhakaiho is to restore its ecological resilience through the phased reconstruction of the indigenous forest corridor along its banks from Taranaki Maunga to the sea – *He torohanga a Tāne, mai i uta ki te tai.*

To provide a safe habitat for the return of diverse and abundant populations of birds, fish, insects and invertebrates which are self-sustaining and in balance – *He mauri tau, i te ao, i te pō.*

To reconnect our community to these areas through deep, reciprocal, respectful and enduring relationships to each other and to place – *Ko te whakapapa me te whakawhanaungatanga.*

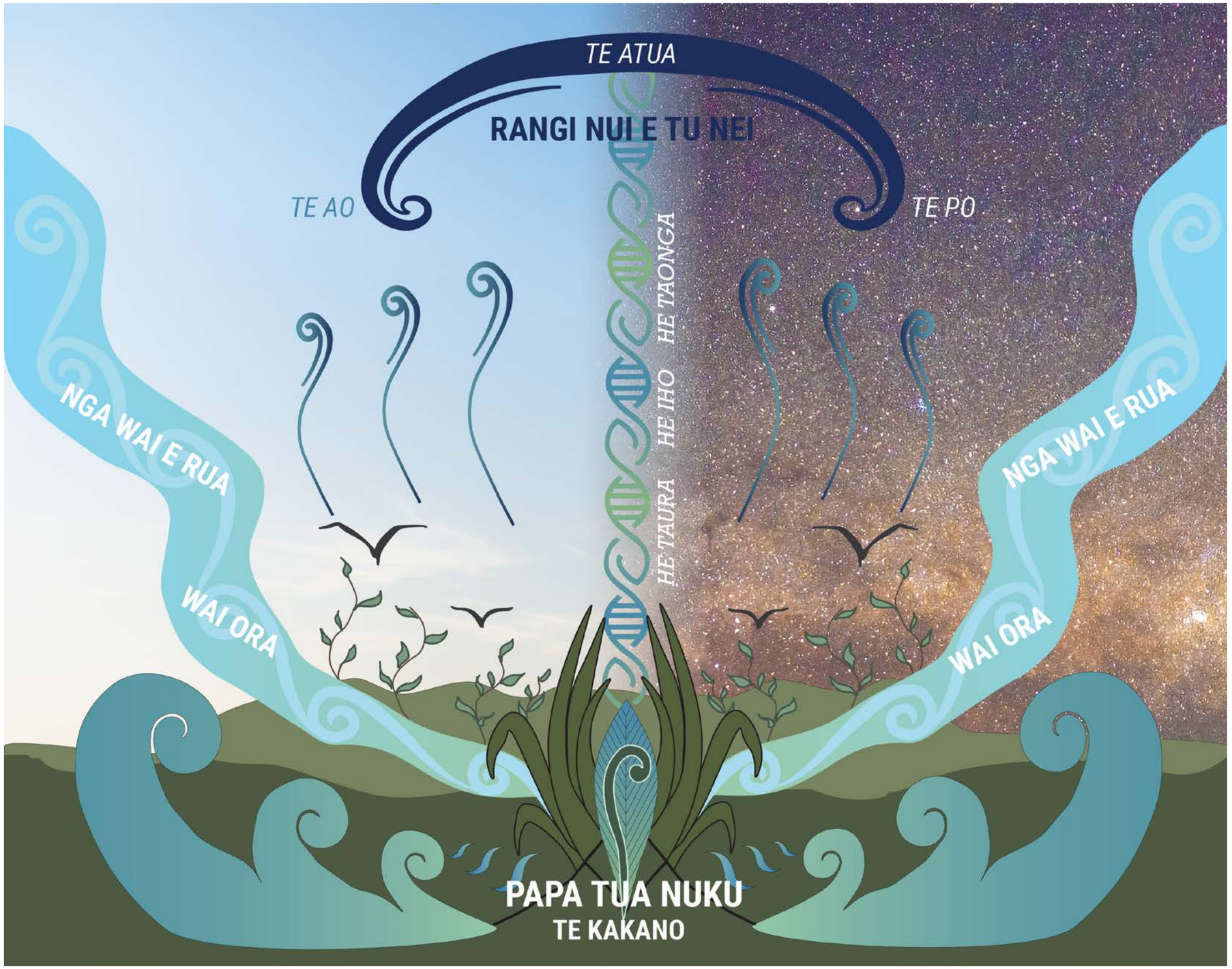
To provide a place of sanctuary, calm and respite, and a place of learning for our current and future generations who will see and hear the return of these species in the decades to come – *Ko te pā harakeke, ka poipoia i te kākano.*

A key focus for this vision is to provide for restoration and protection while allowing community connections, ensuring the vision is appropriate for people and place.

Figure: A mind-map created by hapū which illustrates Papatūānuku (mother earth) and her connection to Ranginui (sky father) and beyond to te ātua (a supernatural being) via the Waiwhakaiho – he taura, he iho, he taonga (a braided cord, an umbilical, a valued possession).

This system is in balance – i te ao, i te pō (day and night). Pā harakeke (whānau) nurture kākano (our young) and the life-giving essence of wai ora (freshwater) and ngā wai e rua (the two waters of conception), allowing our ecosystem to flourish and thrive, and creating a corridor for biodiversity.

Design credit: Damon Ritai.



Objectives

The intent of the Waiwhakaiho Wildlink Vision Document is to set out objectives for restoration and recreational activities that people are able to do together along the awa. It will build trusting, reciprocal relationships with the awa and with each other. It is important to note that restoration activities are paramount to recreational or commercial activities.

The vision document will form part of a business case that will be put forward to subsequent Long-Term Plans for community consultation and subsequent adoption of the recommendations for a staged implementation budget as required to achieve the above intent and objectives and the overall vision for the project.

The vision document is an expression of restoration, identity and connection. It is the intention of Ngā Hapū to work collectively and focus solely on the objectives of this vision. The objectives and associated policies set out how, through coordinated efforts Ngā Hapū, NPDC and other regulatory authorities, and the community will restore the Waiwhakaiho and facilitate respectful relationships with it. The objectives are:

Restoration

To restore the ecological resilience of the Waiwhakaiho through the phased reconstruction of its indigenous forest corridor from Taranaki Maunga to the sea.

– He torohanga nā Tāne, mai i uta ki te tai.

Cultural Identity

To reaffirm our whakapapa and cultural identity through narrative and provide a place of sanctuary, calm and respite for our current and future generations.

– Ko te pā harakeke, hei poipoi i te kākano.

Connection

To reconnect our community to these areas through deep, reciprocal, respectful and enduring relationships and behaviours to each other and to place.

– Ko te whakapapa me te whanaungatanga.

The Waiwhakaiho and its Resources

The Waiwhakaiho flows from a puna high on the eastern flank of Taranaki Maunga and traverses across Te Papakura o Taranaki for 30km before reaching the sea at Te Rewa Rewa Pā. It is one of the largest awa in New Plymouth District and has several tributaries that radiate out across the landscape including the Mangaone and Mangōrei.

The Waiwhakaiho, as its name suggests, flows rapidly, its water once sustaining the land and livelihood of many hapū.

A dense forest corridor once cloaked the riverbanks of the Waiwhakaiho, extending from Taranaki Maunga to the coast. The coastal zone was covered with fern and flax, overshadowed by towering tī kōuka. Further inland from the coast was a semi-coastal forest sometimes wind-shaped with kohekohe, pūriri, tītoki and tawa, and in the deepest shade grew nīkau. Here, soils were dark and rich with nutrients and hapū would establish plantations of potatoes, kūmara, taro, onions, watermelon and pumpkin which in some instances were several square miles in extent, set amongst dense forest. As the land increased in elevation into the lowland zone, the forest was often vigorous and impenetrable with thick creepers and thorns, with forests and groves of rimu, rātā, pukatea, pūriri, kahikatea and swamp maire. The forest provided a plentiful supply of berries, flowers, leaves, fronds, fungi and bark for food, rongoā and clothing. The dense forest canopied the banks of the awa and, in some places, islands within the awa were used as stepping stones to traverse the channel and, at times, to rest.

Birds were plentiful, lively, inquisitive and loud, their notes penetrating through the forest. Seasonally they would follow the succession of flowering or fruiting plants up and down the forest corridor and act as vectors supporting the dispersal of seed. These species included tūī, kūkupa, korimako, kākā, kōkako, kiwi, toutouwai, whio, weka, tītī and hihi.

Hapū would snare these species for food and use the feathers of kiwi, kūkupa, kākā and weka for korowai. The forest and its inhabitants were self-sustaining. The many facets of this forest are something to be desired today.

The awa was teeming with a diversity and abundance of life. Piharau, kākahi, tuna, kōura, kōaro, kōkopu and īnanga were all harvested in accordance with maramataka and tikanga. These mahinga kai species sustained hapū and their manuhiri and were fiercely protected by whānau. The awa was a true mountain stream, rolling over a broad bed of boulders and pebbles. Hapū would use these rocks to make stone tools to clear and till cultivations as well as making anchors for fishing and waka. Rocks and bracken were also used to build structures called whakaparu which were used to catch piharau.

There were several notable whare, papakāinga, pā and whare wānanga on hilltops and ridges of the awa from its mouth to further inland. Among others, this includes Te Rewa Rewa, Waiwhakaiho, Katere ki te Moana, Paraparaiti, Pukemapou, Raiomiti, Rapiho, Rapuke, Ratahaengai, Te Ngaere, Te Rerenga and Papamoa through to Karakatonga on the flank of Taranaki Maunga. The Waiwhakaiho and nearby Mangaoraka were used as a traditional trail from the coast to Taranaki Maunga to collect red ochre or kōkōwai for rituals and water for processes of whakanoa, as well as providing access to whare wānanga or higher centres of learning.

The awa's productivity and beauty rivalled any in the world. It was self-sustaining, both in terms of biodiversity and people.

This lifestyle for hapū existed for centuries until the arrival of Pākehā to our shores. Hapū adapted their lifestyles to meet these changes and built new pā that could be used to both defend and attack from. However, after multiple sieges from invading groups, they sacrificed everything and travelled south to Te Whanganui-a-Tara and Whakatū for another existence whilst maintaining their ahi kā roa as best as possible within these circumstances.

At this time, everywhere on the banks of the Waiwhakaiho and its tributaries there remained traces of former cultivations and of native villages. Upon the return of some hapū, their lands had been surveyed and sold to European settlers or confiscated for municipal infrastructure, and a number of native reserves created along the Waiwhakaiho for large numbers of Māori to settle. Despite this, settlement seldom occurred on these reserves and, in another act of injustice, these reserves were further alienated from Māori and placed in Council ownership for municipal facilities, parks and reserves or private ownership. These native reserves include Waiwhakaiho, Raupiu, Pukeweka, Puketōtara, Ngaere and Araheke.

Despite these actions, the importance of the Waiwhakaiho as a thriving ecosystem still echoes throughout the landscape with the presence of remnant sites and place names which utter the nature and function of these places within the broader network of sites of significance to hapū and remind us of what once was.

To reinstate the ecological resilience of the awa through the Waiwhakaiho Wildlink Vision Project is to restore our relationship and connection back to the awa, its resources, our ancestors and the values they lived by.

Bioregional Approach to Restoration

Biodiversity loss is a global issue, with nature declining at a dangerous and unprecedented rate[1]. Aotearoa is confronting the same problem[2], especially in coastal and lowland environments where people live and ecosystems are most threatened.

Despite extensive modification, cities are increasingly heralded as places providing opportunities to reverse declines in indigenous biodiversity due to their substantial resources, large population bases, and potential to reconnect people to nature[3]. Urban centres are therefore critical components of wider regional-scale native biodiversity restoration[4]. By taking a bioregional approach, successful long-term restoration of resilient ecosystems is more likely to be achieved.

The Taranaki Maunga Ecological Region covers 270,300ha and comprises the maunga of Taranaki, Pouākai and Kaitake, and their ringplains. Approximately 38,900ha remains in native bush, of which a little more than 35,000ha is protected as Te Papakura o Taranaki. The remainder is public reserve or in small pockets on private land, generally adjacent to waterbodies. These ringplains are biodiversity depleted (< 10 per cent native vegetation cover) having been largely deforested for farming or urban settlement. Coastal (including semi-coastal) and lowland ecosystems are significantly under-represented in the protected natural areas network.

There is a critical need to protect and restore our region's unique natural environment, moving beyond revegetation and developing a much bolder bioregional approach to restoration inclusive of pest plant and predator control.

Such an approach must target the restoration of ecosystems and habitats that provide riparian and inland function to sustain full assemblages and species occupancy. There is a need to build habitats for all components of ecosystems, not just bringing back birds. Coupled with this is the need to have tāngata whenua and our community driving this approach, and restoring our relationship with the natural environment.

Since 1982, Professor Bruce Clarkson has advocated a vision to reconstruct biodiversity corridors from Taranaki Maunga to the sea as a critical aspect of a bioregional restoration approach for Taranaki. The corridors identified at that time included the Waiwhakaiho, Hangaātaahua, Waingongoro and Pātea awa.

A biodiversity corridor is a belt of wildlife habitat, generally native vegetation, which joins two or more larger areas of similar wildlife habitat. Corridors are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations. By providing landscape connections between larger areas of habitat, corridors enable migration, colonisation and interbreeding of plants and animals[5].

Approach to Restoring the Waiwhakaiho

The Waiwhakaiho Awa has been selected as a starting point for the bioregional approach to restoration in Taranaki. Professor Clarkson's rationale for selecting this awa related to it having a relatively high portion of public reserves and private land on the awa already cloaked in remnant indigenous vegetation. Furthermore, NPDC has acquired approximately 70 per cent of lands on both banks of the main stem of the awa as esplanade strip or reserve at the time of subdivision, enabling the implementation of restoration planting and pest control activities. Additionally, the Waiwhakaiho demarcates the northern and eastern edge of the ecological region.

There is significant potential to reconstruct a biodiversity corridor on the main stem of the Waiwhakaiho, initially to increase the amount of available habitat for regionally significant species, increase representation of vegetation types in the Taranaki region, allow migratory species to access Te Papakura o Taranaki from the sea, and create a gradient that crosses several vegetation types.

It is expected that this initial step utilising largely public land on the main stem of the Waiwhakaiho will catalyse action more broadly across its tributaries and the 14,500ha catchment.

Beyond the Waiwhakaiho

Looking beyond the Waiwhakaiho, it is anticipated that planning and action will extend into the surrounding catchments and to other awa such as those identified by Professor Clarkson (Hangaātaahua, Waingongoro and Pātea awa).

Extending beyond the Waiwhakaiho will move towards a mosaic of restored landscape that provides for a swathe of ecological connectivity around our maunga mai i Taranaki Maunga i uta ki tai.

For this approach to flourish, a holistic perspective is required across both public reserve and private lands to protect and manage ecosystems and ensure connectivity between remnant and newly restored indigenous vegetation fragments.

Pōpokotea, Whitehead

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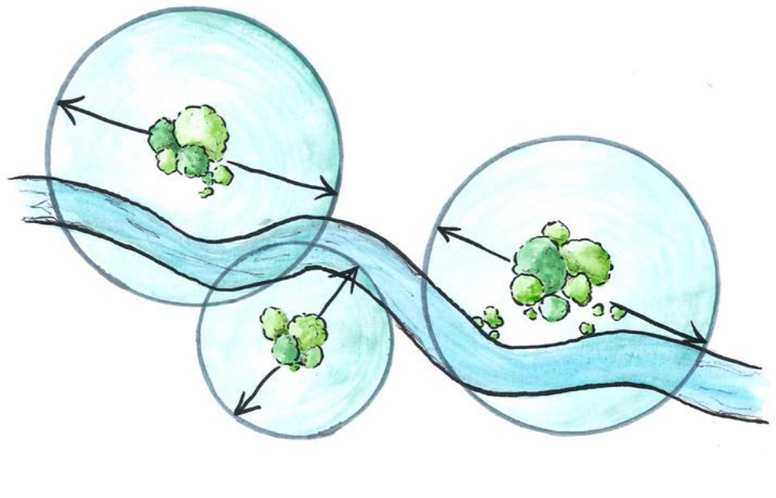
5. *Wildlife corridors - natural resource management information note (nsw.gov.au)*

Bioregional Approach to Restoration

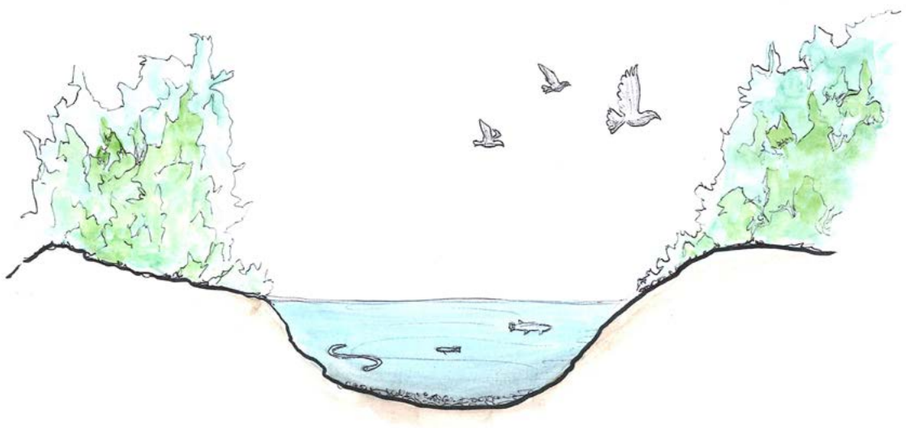
As a general rule, the wider the corridor the better as it provides for greater diversity, has fewer effects from adjoining land uses and associated edge effects (e.g., weeds, predators etc), and provides habitat. International standards state that 50m is considered the minimum width to facilitate corridor function.

Overall, corridor management should aim to ensure that ecological processes and corridor function are maximised:

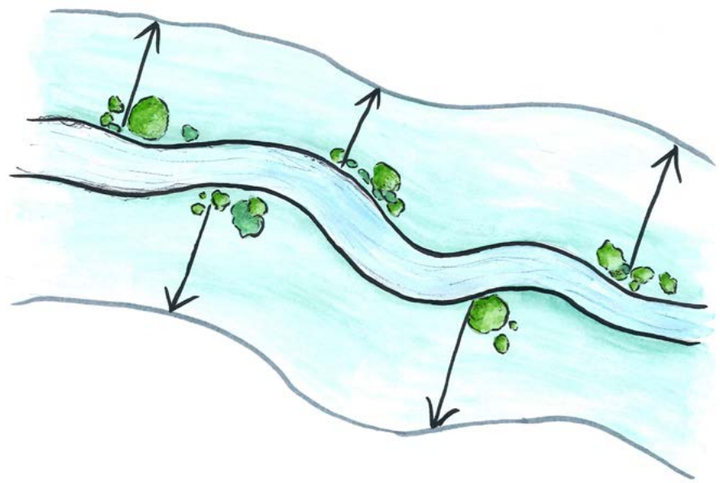
- Maintain and increase vegetation cover and habitat quality to maximise connection between larger remnants of vegetation. This will help dispersal of wildlife populations between larger remnants and ensure genetic interchange and seasonal wildlife movement.



- Provide specific habitat resources and ecological needs, particularly for threatened species (e.g., korimako and piharau).



- Maximise corridor width and function by revegetation and control of weeds and pest animals.



- Maximise the protection/linkage of landforms (i.e., valley floors, floodplains, gullies, mid-slopes and ridges).

Bioregional Approach to Restoring the Waiwhakaiho

Interconnections and Interdependencies of Biodiversity Corridors

Corridor management should aim to ensure that ecological processes and corridor function are maximised. This seems an achievable feat when standing amongst islands of functioning forest system. In this scenario, it is easy to become complacent and your attention to focus at macro level. However, when standing in a system stripped of nature and its life-sustaining capacity, you realise the enormous task ahead of you when reconstructing what was.

We must therefore start at a micro level and understand the interconnections and interdependencies between organisms as we plan and reconstruct biodiversity corridors.

In terms of soil, the mycorrhizal network is critical to supplying the life-giving nutrients that keep our forests healthy. The mycorrhizal network is a fungal organism made up of mycelium which are tiny threads that live in the soil that wrap around or bore into tree roots, connecting individual plants, to transfer water, nitrogen, carbon and other minerals. Amongst this network are hub trees or mother trees which are mature, seasoned trees in the forest which have been shown to favour saplings when sending resources through the fungal network. The mycorrhizal network is critical to supplying the life-giving nutrients that keep our forests healthy.

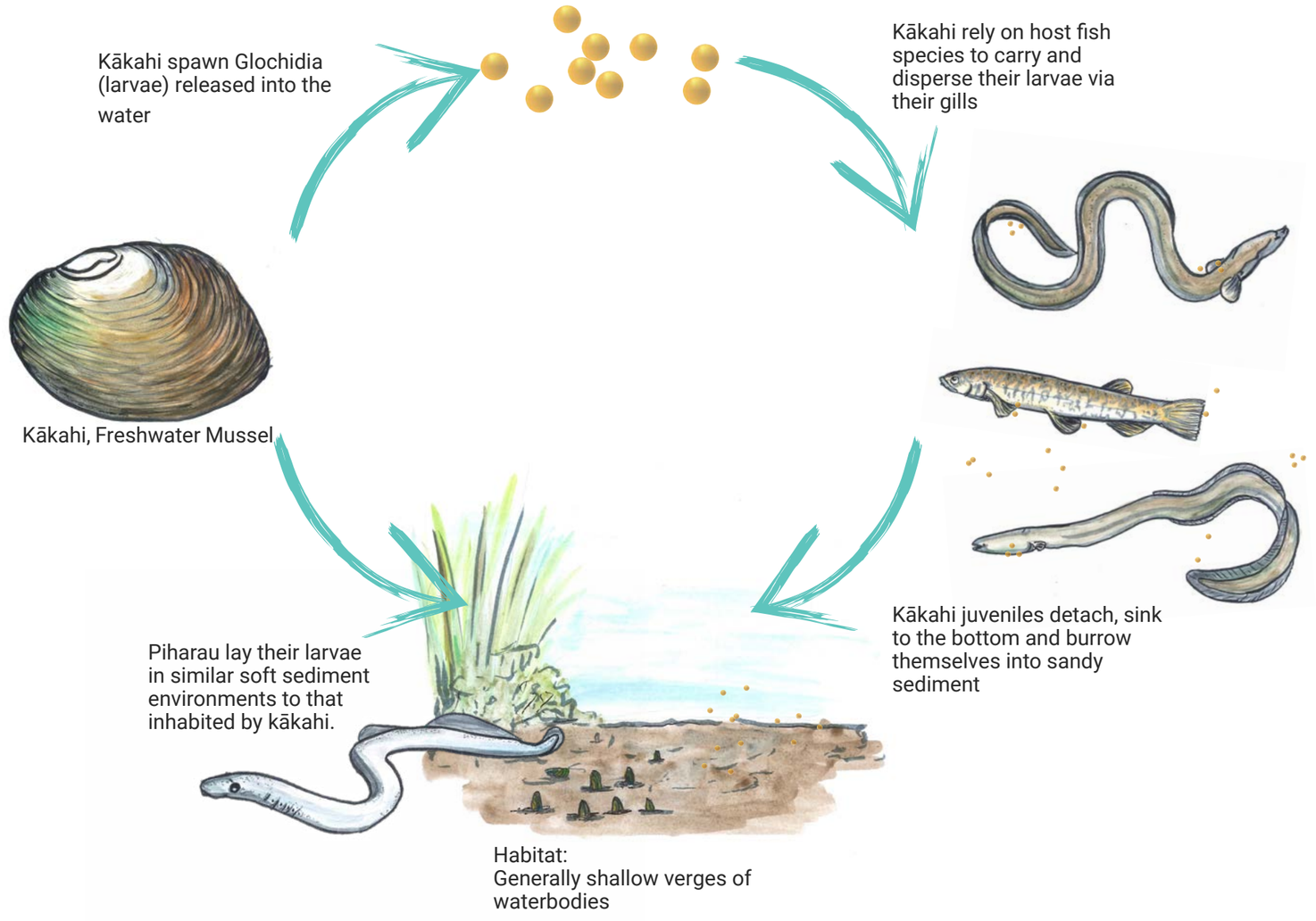
The tree root system stabilises awa banks and reduces erosion. Riparian plants can also act as a sieve to filter out impurities such as chemicals, nutrients, sediment particles or bacteria before they enter the water, which improves the water quality.

The tree canopy, once established, shades the water and lowers its temperature, reducing weed and algae growth and providing stable temperatures for aquatic life. Cold water also has a higher viscosity which suspends sediments, transporting them through the system instead of letting them settling and smothering aquatic life.

Birds also play a role in the nutrient cycle. They eat plants and fruits, and when they digest their food, they disperse nutrients back into the soil through their droppings. This enriches the soil, providing essential nutrients for plant growth.

Freshwater fish have some of the most complex lifecycles in the world with both ocean and freshwater dwelling phases. Complexity increases when these species are relied on by other sensitive species to complete integral parts of their lifecycle. Kākahi (nationally vulnerable) rely on host fish species to carry and disperse their larvae via their gills; this includes tuna (long-fin: declining; short-fin: not threatened), kōaro (declining), banded kōkopu (not threatened) and common bullies (not threatened).

Piharau (nationally vulnerable) lay their larvae in similar soft sediment environments to that inhabited by kākahi. These areas, generally shallow verges of waterbodies, are subject to modification and pugging from cattle if not fenced, putting further stress on the existence of these species and their interdependencies. Without these interdependencies, the delicate balance of a biodiversity corridor is disrupted, therefore we must plan for these relationships and protect them as kaitiaki.



Bioregional Approach to Restoring the Waiwhakaiho

Bioclimatic Zones

Bioclimatic zones are a combination of elevation, distance from the coast, climate, and plant communities within each zone that have uniquely evolved to match the differing conditions. Each zone has slightly different land forms, climate, soils, human history and land use. The type of plant communities in each zone also vary, depending on whether there is well-draining or poorly draining soils.

References:
Wild For Taranaki. Restoration planting in Taranaki: A guide to the Egmont Ecological District. Available from: https://www.trc.govt.nz/assets/Documents/Guidelines/Land/Restoration-Guide-Egmont-Ecological-District.pdf

COASTAL AND SEMI-COASTAL
0-150m above sea level

Coastal and semi-coastal zones are grouped together. Depending on the location and drainage, coastal and semi-coastal ecosystems can include:

- Karaka-kohekohe-tawa forests.
- Pohuehue-spinifex-pingao duneland.
- Coastal herbfield.
- Taupata-harakeke scrub and scrubland.
- Pukatea forest; and
- Oioi-saltmarsh ribbonwood estuary (only naturally occurring location is at the Waitara River mouth).
- Harakeke-raupo-kuta swamp.

LOWLAND
150-450m above sea level

The lowland zone is located between 150m and 450m above sea level. Key ecosystems within this bioclimate zone include:

- Rimu-rātā/tawa forests and.
- Pukatea-kahikatea/swamp and maire forests.
- Harakeke-raupo-kuta swamp.

Coastal (including semi-coastal) and lowland ecosystems are significantly under-represented in the protected natural areas network.

LOWER MONTANE
450-760m above sea level

The lower montane bioclimatic zones is located between 450m and 760m above sea level, positioned straddling both the ring plain and inside the National Park. Key ecosystems include:

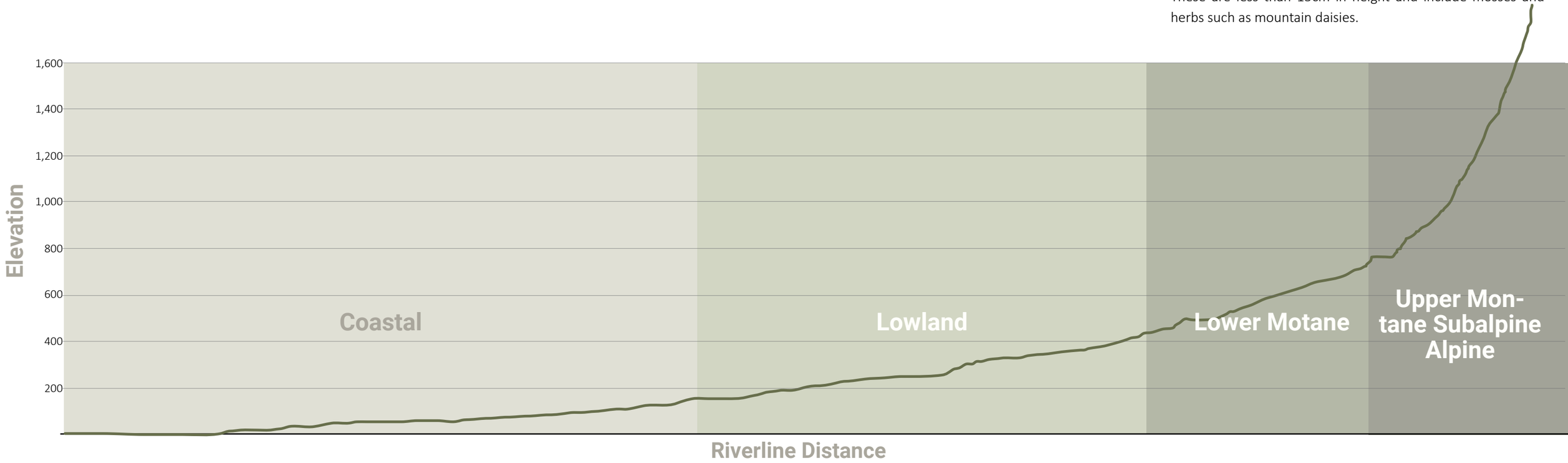
- Rimu-rātā/kamahi forests.
- Kahikatea/kamahi and swamp maire forests.
- Machaerina-manuka fen (wetlands in high-peat areas developed in shallow, poorly draining areas).

UPPER MONTANE - SUBALPINE - ALPINE
760-2,518m above sea level

Upper montane (760-1,100m above sea level)
The predominate vegetation type in the upper montane zone is short-stature kamahi-mountain totara forest, including the Goblin Forest.

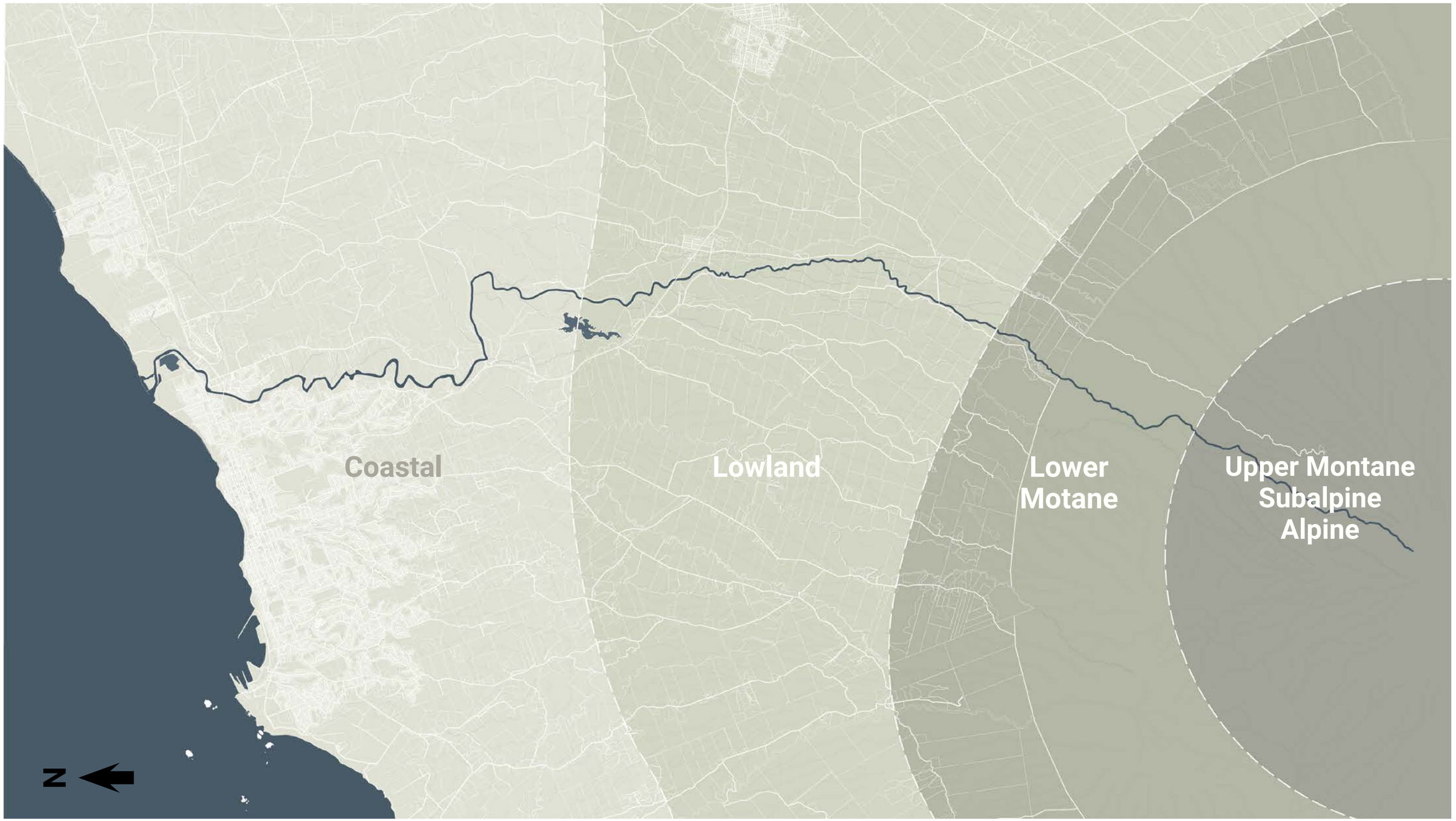
Subalpine (1,100-1,600m above sea level)
The subalpine zone is comprised of scrub and shrubland, commonly dominated by daisy, leatherwood, and tussockland with red and silver tussocks.

Alpine (1,600-2,518m above sea level)
The alpine zone comprises alpine herbfields and gravelfields. These are less than 15cm in height and include mosses and herbs such as mountain daisies.



Bioregional Approach to Restoring the Waiwhakaiho

Bioclimatic Zones



Bioregional Approach to Restoring the Waiwhakaiho

Native Rākau

From these native bird species, we have further examined their foraging behaviours and identified the following complement of native rākau, which are key sources of food for these bird species. Importantly, these native rākau are also used by Māori for cultural uses, food and medicinal purposes. They include:

Kōwhai
Sophora microphylla

Kōwhai (not threatened but has undergone considerable logging and forest clearance)

Birds: frequented by tūī and kūkupa which all feast on nectar and fruit.

Flowering times: August – November.

Nectar and fruiting times: September – November.

Rongoā uses: an infusion of the bark was drunk for internal pains, applied externally for bathing bruises, and for removing internal blood clots.

Tawa
Beilschmiedia tawa

Tawa (not classified as a threatened species)

Birds: relies solely on the kūkupa and (where present) the North Island kōkako for dispersal of its seed.

Flowering times: September – December.

Fruiting times: October – February.

Cultural/rongoā uses: the bark was used for medicinal purposes, carving and buildings.

Pūriri
Vitex lucens

Pūriri (not threatened but vulnerable to habitat loss and browsing from introduced pests)

Birds: frequented by tūī, korimako, kākā and kūkupa who feast on leaves and flowers. Titipounamu and toutouwai are also frequent visitors in search of insects and spiders.

Flowering times: almost year-round flowering, but more so in the winter.

Nectar and fruiting: 8+ month fruiting cycle that will fruit heaviest over the summer.

Cultural uses: the tree produces a red dye that Māori use for tattooing and dyeing.

Rongoā uses: the tree also has cultural significance and is associated with healing and protection.

Karaka
Corynocarpus laevigatus

Karaka (not classified as a threatened species)

Birds: kūkupa are the only birds left (all others are now extinct) big enough to swallow the large fruits of the karaka tree and disperse it. Tūī also feed on the ripe flesh of the karaka berry.

Flowering and fruiting times: flowers appear from late winter through to spring with the fruit ripening from green to that eye-catching orange in mid-summer to autumn.

Traditional food: the kernels could be boiled/steamed and seep in running stream water, stored for several months and re-cooking to soften for eating. The raw flesh of the bright orange fruit is also edible, and has a strong apricot flavour.

Kōtukutuku
Tree fuchsia
Fuchsia excorticata

Kōtukutuku (not threatened but vulnerable to habitat loss and browsing from introduced pests)

Birds: frequented by tūī and korimako, and sometime kūkupa, who feast on the nectar-rich flowers and berries.

Flower and fruiting times: flowers appear in spring/autumn and are closely followed by red/purple berries or konini, which are filled with masses of tiny seeds.

Cultural uses: the inner bark was used for weaving and making clothing and baskets.

Traditional food: the tree provided a food source, as the berries were eaten when ripe.

Tītoki
Alectryon excelsus

Tītoki (not threatened but vulnerable to habitat loss and browsing from introduced pests)

Birds: frequented by tūī and korimako for its red fruit.

Nectar/fruiting and seeding times: flowers in summer, followed by bright red fruit in autumn.

Cultural uses: wood is used to make traditional carvings and weaving tools.

Rongoā uses: leaves and bark are also used for medicinal purposes.

Bioregional Approach to Restoring the Waiwhakaiho

Māhoe
Melicytus ramiflorus

Māhoe, whitey wood (not classified as a threatened species)

Birds: mahoe provides a habitat for native birds including tūī, korimako and kūkupa.

Flowering times: November – February.

Fruiting times: November – March.

Cultural uses: the bark makes a yellow dye. Its wood was used for making tools, weapons and utensils.

(Paritutu) Korokio
Corokia cotoneaster

(Paritutu) Korokio (not classified as a threatened species)

Birds: attracts tauhou (wax-eyes) and other native birds.

Flowering times: September – April.

Fruiting times: February – September.

Cultural/rongoā uses: used for ulcers and considered good for the kidneys and bladder, as well as for diarrhoea.

Pukatea
Laurelia novae-zelandiae

Pukatea (not classified as a threatened species)

Flowering times: September – December.

Fruiting times: October – January.

Cultural uses: the timber was used by Māori to create figureheads.

Rongoā uses: an extract from the bark containing the alkaloid pukateine is used in traditional Māori herbal medicine as an analgesic.

Rimu
Red Pine
Dacrydium cupressinum

Rimu, red pine (not classified as a threatened species)

Birds: tūī, korimako, mohua and kūkupa feed on rimu berries.

Flowering times: December – March.

Fruiting times: fruit take a year or more to mature and co-occur with young female cones. They are most frequently seen between February and May.

Cultural uses: the wood was traditionally used for tools, carvings. The bark was used for fires, and the grubs found near the roots of trees associated with rimu were used as pigment for moko.

Rongoā uses: the wood is used for medicine.

Porokaiwhiri
Pigeonwood
Hedycarya arborea

Porokaiwhiri, pigeonwood (not classified as a threatened species)

Birds: its bright orange fruit found on the female trees provided food for pigeons and possibly moa.

Flowering times: December – February.

Fruiting times: March – June.

Northern Rātā
Metrosideros robusta

Northern rātā (threatened – nationally vulnerable)

Birds: tūī, korimako and kākā.

Flowering times: October – February.

Fruiting times: December – March.

Cultural uses: Māori would use the timber for craft.

Rongoā uses: its bark was used by early Māori to treat a number of skin conditions.

Kahikatea
White Pine
Dacrycarpus dacrydioides

Kahikatea, white pine (not classified as a threatened species)

Birds: it is dispersed by birds that eat the fruit, digest the fleshy berry and excrete the seed. Common dispersers are tūī, kūkupa and korimako.

Flowering times: October – January.

Fruiting times: February – April.

Cultural/rongoā uses: used the tree's bark for weaving, and wood for carving and building waka.

Kohekohe
New Zealand mahogany
Didymocheton spectabilis

Kohekohe (not classified as a threatened species)

Birds: nectar-feeders like tūī, korimako, hihi and tauhou visit the flowers.

Flowering times: March – June.

Fruiting times: April – August.

Cultural uses: timber to carve waka for river navigation.

Rongoā uses: kohekohe leaves in medicines to treat a range of ailments.

Bioregional Approach to Restoring the Waiwhakaiho

Native Manu

To determine the current connectivity of forest fragments on the Waiwhakaiho and what lands would need to be acquired, we have examined the flight and foraging behaviour of the following native bird species:

Pīpīwharauroa,
Shining cuckoo

Pīpīwharauroa, shining cuckoo (not threatened).

Presence/absence: present.

Diet: predominantly invertebrates.

Feeding behaviour: forage amongst dense forest.

Flight distance: good flyers, migrating from Australia in spring and summer.

Cultural importance: a tohu for the coming of spring and this is expressed in many karakia and waiata. It is dependent on the riroriro (grey warbler) as it lays eggs singly in their nests for these foster-parents to care for.

Tūī

Tūī (New Zealand status: endemic).

Conservation status: not threatened.

Presence/absence: present within the Waiwhakaiho catchment.

Diet: their preferred diet is nectar and honeydew, and they will often shift to, or commute daily or more frequently to, good nectar sources such as stands of pūriri, kōwhai, kōtukutuku, rewarewa, flax, rātā, pōhutukawa, gums and banksias.

Feeding behaviour: tūī follow a seasonal succession of flowering or fruiting plants. Often absent when there are high populations of korimako competing for a limited nectar source.

Flight distance: will commute more than 10km daily to feed on rich sources of nectar.

Cultural importance: most common passerine found in Māori middens.

Riroriro,
Grey warbler

Riroriro, grey warbler (not threatened).

Presence/absence: present.

Diet: entirely insectivorous.

Feeding behaviour: typically seen foraging on the bark of trunks and branches of trees, or hovering just outside the canopy while they glean insects from the outer leaves.

Flight distance: flies short distances only, moving between branches in the canopy.

Cultural importance: host bird for the pīpīwharauroa and its parasitic laying behaviour.

Korimako,
NZ Bellbird

Korimako, NZ bellbird (New Zealand status: endemic).

Conservation status: not threatened.

Presence/absence: present.

Diet: mainly feed on nectar from many native and introduced plants.

Feeding behaviour: dominate tūī for nectar resource.

Flight distance: up to 10km.

Cultural importance: enshrined in waiata and karakia. Not known as a food source for Māori.

Kawekaweā,
Long-tailed Cuckoo

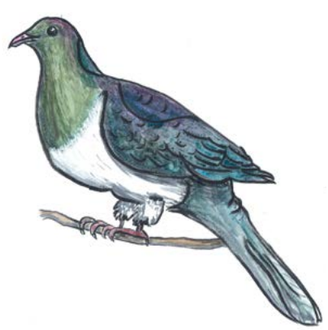
Kawekaweā, long-tailed cuckoo (nationally vulnerable).

Presence/absence: present.

Diet: mainly eat invertebrates.

Flight distance: good flyers, migrating from other countries to New Zealand in spring/summer.

Cultural importance: a tohu for the coming of spring and this is expressed in many karakia and waiata. Dependent on the pōpokotea (whitehead) as it lays eggs singly in their nests for these foster-parents to care for.



Kūkupa, NZ
Wood Pigeon

Kūkupa, NZ wood pigeon (New Zealand status: endemic).

Conservation status: not threatened.

Presence/absence: present.

Diet: buds, leaves, flowers and fruit from a wide variety species, both native and exotic.

Feeding behaviour: due to their large mouth-width and diet of fruit, kūkupa are the most important vector for the transfer of seeds between widely-spaced fragments of native forest (e.g. only disperser of tawa fruit).

Flight distance: up to 60km.

Cultural importance: common food source for Māori before protected under the Conservation Act.

Bioregional Approach to Restoring the Waiwhakaiho

Native Manu

Kākā,
Bush Parrot

Kākā, bush parrot (New Zealand status: endemic).

Conservation status: recovering.

Presence/absence: absent however observed nesting in Rotokare Barrett Domain and flying over Kaitake Range. Short-term aspiration to return back to Taranaki Maunga.

Diet: consume seeds, fruit, nectar, sap, honeydew and tree-dwelling (especially wood-boring) invertebrates.

Feeding behaviour: forest birds that obtain all their food from trees. Seasonal specialists, moving from food source to food source as different fruits, seeds and nectar become available.

Flight distance: easily fly 50km in one day.

Cultural importance: common food source for Māori and found in hāngī.

Toutouwai,
NI Brown Robin

Toutouwai, North Island brown robin (New Zealand status: endemic).

Conservation status: declining.

Presence/absence: present. Ninety-five toutouwai returned to Taranaki Maunga (in 2017/2018) after a 112-year absence.

Diet: invertebrates and also eat small ripe fruit.

Feeding behaviour: forage on the ground.

Flight distance: can only fly short distances. Pairs have territories of 1-5ha. Dispersed as far down as Lake Mangamahoe.

Cultural importance: not known as a food source for Māori.

Kōkako

Kōkako (New Zealand status: endemic).

Conservation status: nationally increasing.

Presence/absence: absent however 10 breeding pairs and singles at Parininihi and some observed in Waitaanga. Last heard calling at the maunga end of Māngorei Road in 1989. Long-term aspiration to translocate pairs back to Taranaki Maunga.

Diet: fruit and leaves and, less often, flowers, moss, buds, nectar and invertebrates.

Feeding behaviour: During winter kōkako mainly eat leaves, fern fronds and some insects. In spring kōkako feed more on nectar and leaf buds. Over summer kōkako mainly eat fruit, moths, caterpillars, wētā and other invertebrates.

Flight distance: they are poor fliers; they usually bound around trees, but may glide some hundreds of metres down gullies from treetops. Net natal dispersal is usually c.1.4km. Defend 4-25ha territories year-round by singing, which limits density.

Cultural importance: considered sacred by Māori. Not often eaten.

Titipounamu,
Rifleman

Titipounamu, rifleman (New Zealand status: endemic).

Conservation status: not threatened.

Presence/absence: present. Two translocations of 60 individuals from Taranaki Maunga to Rotokare, Eltham in 2019 and 2013, and one translocation to Tarapuruhi Busy Park in Whanganui.

Diet: almost exclusively insectivorous.

Feeding behaviour: forage in the canopy or on tree trunks; in the absence of introduced predators, also on the ground.

Flight distance: relatively poor flyers with limited dispersal capability. They typically move through the forest using short flights, mainly from canopy to canopy.

Cultural importance: not known as a food source for Māori.

Kiwi,
NI Brown Kiwi

North Island brown kiwi (New Zealand status: endemic).

Conservation status: not threatened.

Presence/absence: absent, however 170 released on Taranaki Maunga.

Diet: small invertebrates, especially earthworms and larvae of beetles, cicadas and moths; they also eat centipedes, spiders, crickets and wētā. Some small fallen fruit and leaves are eaten.

Feeding behaviour: nocturnal feeder.

Flight distance: flightless but can walk distances of up to 13km.

Cultural importance: common food source for Māori and found in hāngī.

Whio,
Blue Duck

Whio, blue duck (New Zealand status: endemic).

Conservation status: nationally vulnerable.

Presence/absence: present. Eighteen pairs on the upper reaches of the Waiwhakaiho under active protection.

Diet: exclusively on freshwater invertebrates.

Feeding behaviour: require water of modest gradient, riparian forest and the river runs clean.

Flight distance: pairs disperse along rivers. Once established, the territory is generally held for life between 1-5km. Dispersed as far down as Lake Mangamahoe.

Cultural importance: not known as a food source for Māori. Māori did not find them tasty.

Bioregional Approach to Restoring the Waiwhakaiho

Native Freshwater Species

In terms of freshwater ecosystem function, we have also examined the ecology and threats of freshwater fish and molluscs that are important mahinga kai species and provide an indication of overall water health due to their sensitivities and tolerances to different conditions. They include:

Kākahi, Freshwater Mussel

Kākahi, freshwater mussel (New Zealand status: threatened).

Conservation status: nationally vulnerable.

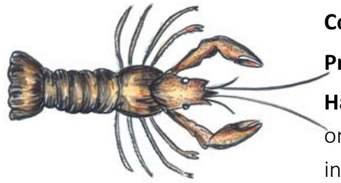
Presence/absence: unknown.

Habitat: Small, fast-flowing streams and lakes.

Threats: under threat and are declining due to loss of habitat, eutrophication (too rich in nutrients) and other types of pollution, and possibly through loss of the host fish (kōaro) on which completion of the life cycle depends.

Migration inland: dependent on host fish who carry Glochidia (larvae).

Cultural importance: important food source for Māori. Used as rongoā for the sick. Shells used to cut adults' hair, umbilical cords and scraping vegetables.



Kōura, Freshwater Crayfish

Kōura, freshwater crayfish (New Zealand status: not threatened).

Conservation status: not threatened.

Presence/absence: yes.

Habitat: live in streams, lakes and ponds, and even in swamps. Will shelter between stones on gravelly bottoms but they can burrow into muddy bottoms, and will burrow well down into swamps that dry out over summer to wait until the water returns.

Threats: removal of native bush, the drainage of wetland areas, too much sediment, eutrophication in lakes (too many nutrients), and the introduction of pest species to our waterways.

Migration inland: observed at high elevations.

Cultural importance: important food source for Māori.

Kōaro, Whitebait

Kōaro, whitebait (New Zealand status: at risk).

Conservation status: declining.

Presence/absence: unknown.

Habitat: prefer clear, swiftly flowing streams of small to moderate size that flow through native forest. High elevations and mountainous streams.

Threats: destruction of riparian vegetation, competition and predation from introduced fish species. fishing juveniles in the whitebait season, introduction of aquatic weeds.

Migration inland: travel as far as 400km inland and climb as high as 1,300m.

Cultural importance: important food source for Māori.

Short-jaw Kōkopu, Banded Kōkopu, Giant Kōkopu, Whitebait

Short-jaw kōkopu (NZ status: threatened), **banded kōkopu** (NZ status: not threatened) **giant kōkopu** (NZ status: at risk).

Conservation status: nationally vulnerable (short-jaw kōkopu), not threatened (banded kōkopu), declining (giant kōkopu).

Presence/absence: unknown.

Habitat: short-jaw kōkopu is rarest of the whitebait species with most restricted distribution (Taranaki region). Banded kōkopu is a coastal species and prefer forested streams with pools and undercut banks. Giant kōkopu prefer coastal freshwater habitats and are not usually found far inland.

Threats: destruction of riparian vegetation, competition and predation from introduced fish species. fishing juveniles in the whitebait season, introduction of aquatic weeds.

Migration inland: varies between species.

Cultural importance: important food source for Māori.

Īnanga, Whitebait

Īnanga, whitebait (New Zealand status: at risk).

Conservation status: declining.

Presence/absence: unknown.

Habitat: lowland freshwater habitats.

Threats: destruction of riparian vegetation, competition and predation from introduced fish species. Fishing juveniles in the whitebait season, introduction of aquatic weeds.

Migration inland: they are poor climbers therefore poorly designed culverts and weirs can arrest their upstream migration.

Cultural importance: important food source for Māori.

Piharau, Lamprey

Piharau, lamprey (New Zealand status: threatened).

Conservation status: nationally vulnerable.

Presence/absence: present.

Habitat: larvae disperse into the stream environment and burrow into the sandy substrates.

Threats: habitat loss, fish passage barriers, contaminants such as pesticides, predation from shags and eels. If larvae pheromones are not strong then adults won't return to those rivers.

Migration inland: can penetrate inland to altitudes of more than 300m.

Cultural importance: continue to be an important food source for Māori.

Bioregional Approach to Restoring the Waiwhakaiho

Native Freshwater Species

Long-Fin Tuna,
Long-Fin Eel

Long-fin tuna (New Zealand status: at risk).

Conservation status: declining.

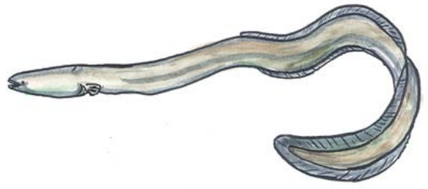
Presence/absence: present within higher reaches of the Waiwhakaiho catchment.

Habitat: predominant in forested streams further inland.

Threats: forest clearance and wetland drainage, overfishing, flood protection works, and migration barriers such as hydro-dams.

Migration inland: can penetrate inland to altitudes of more than 1,150m.

Cultural importance: continue to be an important food source for Māori; however, concern now at the scarcity of very large specimens.



Short-Fin Tuna,
Short-Fin Eel

Short-fin tuna (New Zealand status: not threatened).

Conservation status: not threatened.

Presence/absence: present within lower reaches of the Waiwhakaiho catchment.

Habitat: prevalent in lowland pasture streams, lowland lakes, and wetland.

Threats: forest clearance and wetland drainage, overfishing, flood protection works, and migration barriers such as hydro-dams.

Migration inland: can penetrate inland to altitudes of more than 700m.

Cultural importance: continue to be an important food source for Māori.

Ability to penetrate inland to altitudes

This map shows the ability of migratory native fish species to penetrate inland along the Waiwhakaiho corridor based on their species altitude limits:

Piharau / Lamprey
300m above sea level

Short-Fin Tuna
700m above sea level

Long-Fin Tuna
1,150m above sea level

N

Altitudinal limits for tuna/eel and piharau species along the Waiwhakaiho Catchment

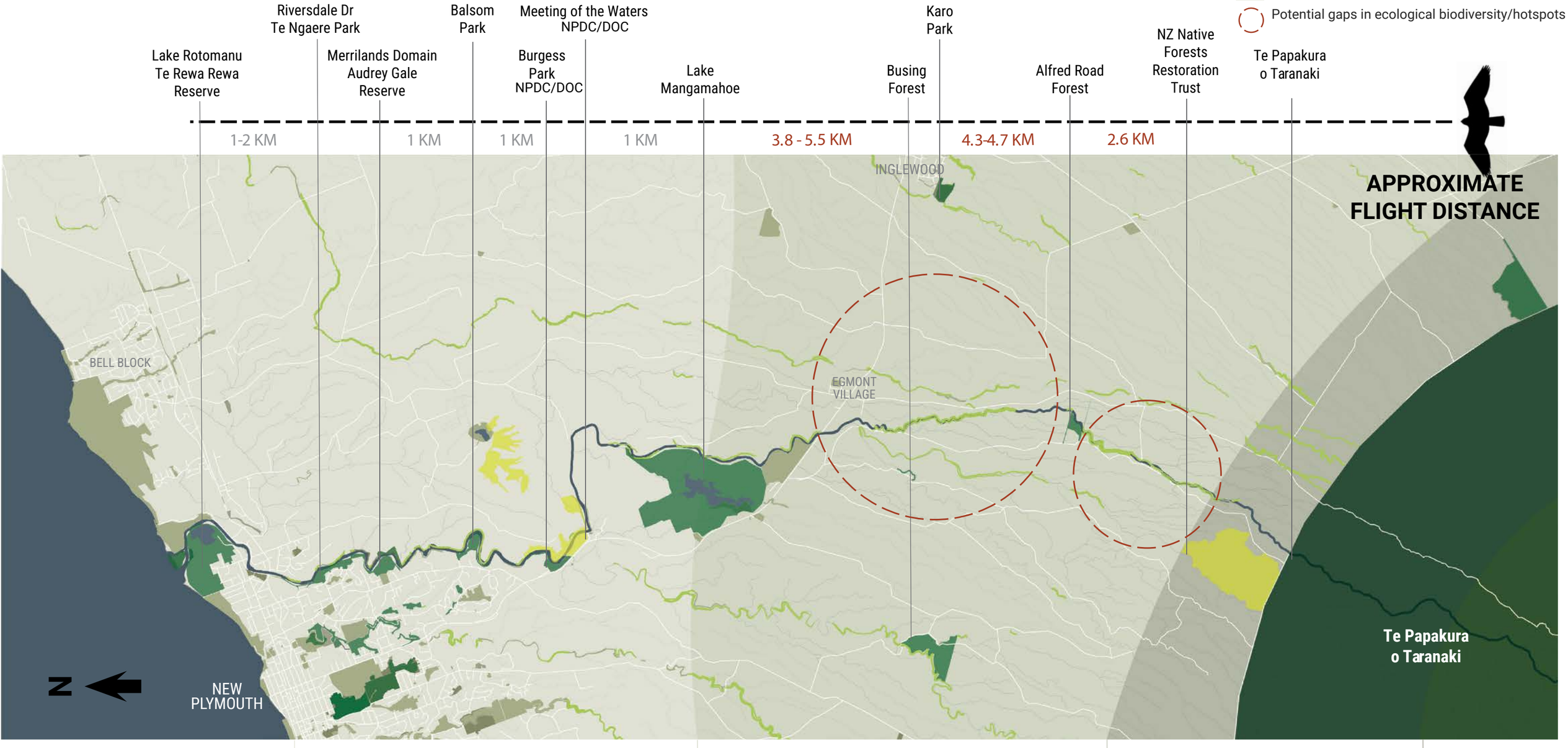
Bioregional Approach to Restoring the Waiwhakaiho

Islands of Biodiversity and Bird Flight Distances

This map shows current connectivity of forest fragments with respect to flight distances of native bird species within the Waiwhakaiho corridor:

MAP KEY

- Esplanades strips and reserves
- Other ownership
- NPDC reserves with bush remnants
- Other NPDC reserves, sports fields, cemeteries, etc
- Potential gaps in ecological biodiversity/hotspots



Coastal
0-150m above sea level

Lowland
150-450m above sea level

Lower Montane
450-760m above sea level

Upper Montane - Subalpine - Alpine
760-2518m above sea level

Threats

PESTS

Mammalian predators such as rats, mice, possums and mustelids both act as predators and competitors to birdlife, preventing bird populations from recovering while they are present. Rats have been observed killing and predating the nest of smaller birds such as robins, tomtits and fantails. Stoats kill juvenile kākā, kiwi and whio, and have also been observed raiding nests of smaller birds. Possums are omnivores and compete with honey eaters and raid nests. Pest control will need to be a constant factor as the number of indigenous fauna increase.

Possum

Rats and Mice

Stoat

Ferret

Weasel

Cat

WEEDS

Large-scale deforestation across the ringplain in mid-1800s has resulted in the extent of weeds which we see today. Because of this, initial weed control and replanting efforts may be difficult. Therefore, weeding existing bush fragments and expanding any future planting efforts from these existing fragments will increase connectivity and reduce edge effects that impact smaller bush fragments. This will minimise invasions into both new and older forest sites.

Gorse

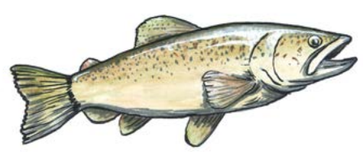
Japanese Honeysuckle

Ragwort

WATER POLLUTION

The Waiwhakaiho is subject to a number of threats to water quality, water quantity, water temperature, and habitat loss and modification. This is the result of widespread deforestation, intensification of land uses such as dairy farming, and residential, commercial and industrial activities. These activities and actions have led to a catchment which is severely degraded. Awa health is particularly important for the Waiwhakaiho, as a major source of the district's drinking water supply. Today, water for New Plymouth, Lepperton, Waitara, Tikorangi, Onaero and Urenui is sourced from the Waiwhakaiho River via Lake Mangamahoe. This water is treated at the New Plymouth Water Treatment Plant. It is incumbent upon us to enhance the health of the awa through replacing ageing infrastructure with solutions that do not impact on the awa, utilise water-sensitive design to manage these impacts on land, improvements in the responsibility and accountability of regulatory management and changing behaviours.

Negative interactions between any freshwater fish species and any predator or competitor (such as trout) will become worse when the environment they both live in is degraded. The best way to minimise negative interactions between trout and indigenous species is to provide an abundance of diverse, good-quality habitat. This means lots of clean, clear, cool water, and plenty of instream pools, runs and riffles.



Trout

Objectives and Actions

The objectives set out how, through coordinated efforts tāngata whenua, the community, the Council and regulatory authorities that own and administer land and have statutory obligations in this area, will restore the Waiwhakaiho and facilitate respectful relationships with it.

This vision defines the objectives over the next 50 years, coupled with the actions that the community will engage in to drive this vision forward.

Objective 1 - Restoration

He torohanga nā Tāne, mai i uta ki te tai

To restore the ecological resilience of the Waiwhakaiho through the phased reconstruction of its indigenous forest corridor from Taranaki Maunga to the sea.

Objective 2 - Cultural Identity

Ko te pā harakeke, hei poipoi i te kākano

To reaffirm our whakapapa and cultural identity through narrative and provide a place of sanctuary, calm and respite for our current and future generations.

Objective 3 – Connection

Ko te whakapapa me te whanaungatanga

To reconnect our community to these areas through deep, reciprocal, respectful and enduring relationships and behaviours to each other and to place.

SHORT-TERM ACTIONS

- Start sharing the story of the awa with the wider community.
- Formalise a collaboration agreement between Ngā Hapū, the Council and other regulatory authorities that own and administer land.
- Identify gaps in the corridor.
- Acquire land along the awa through subdivision applications as they develop.
- Work with landowners.
- Start restoration work.
- Develop resources and planting guides for landowners.
- Start recreation outcomes.
- Reconnect with mahinga kai sites.
- Restore cultural narratives.

MEDIUM-TERM ACTIONS

- Investigate feasibility of pathway connections.
- Hold community events including planting days.
- Deliver restoration education, including to schools and community groups.
- Organise riparian planting, fencing and pest management.
- Develop Waiwhakaiho Protection / Management Plan.
- Monitor indicator species (birds and freshwater species).

LONG-TERM ACTIONS

- Implement intergenerational focus that engages future generations.
- Provide opportunities for exotic plantations to transition and regenerate as natives.
- Prioritise gaps in the corridor.
- Formalise a joint management agreement between Ngā Hapū, the Council and other regulatory authorities that own and administer land.
- Investigate joint venture opportunities on the land.

Recommendations and Next Steps

Wildlink Vision for the Waiwhakaiho

Develop an understanding of ecosystem, species, habitat and awa corridor (including prehuman, Māori settlement and current state).

Define priorities, goals and scope.

Conceptualise overiding objectives and principles.

Council Meeting

Ngā Hapū present the Waiwhakaiho Wildlink Vision document to the Council for endorsement of scope and intent.

Engagement with landowners

The Waiwhakaiho Awa flows adjacent to many urban and rural properties on its journey from maunga to moana. The vision document seeks to take hapū and landowners on the journey of awa restoration working with:

- Local champions and volunteers who want to partner in achieving the vision.
- Landowners who are interested in enhancing their own land to contribute to the vision.

Engagement with Stakeholders

Work with:

- Hapū, Taranaki Regional Council, Department of Conservation and other agencies that have an interest in the Waiwhakaiho Awa.
- Community groups, reserve users and lessees who want to work alongside the vision.

Refined Vision Document

Annual Plan

Seek seed funding for a budget to develop an implementation plan and business case including:

- Land acquisition strategy.
- Implementation stages and proposed costs.

Implementation Plan

Develop an implementation plan and business case as part of securing funding.

Long-Term Plan

Seek funding through NPDC's Long-Term Plan for project implementation.

Corridor Protection Plan

Including:

- Partnership agreements with landowners and other stakeholder agencies to ensure effective collaboration.
- Land acquisition strategy.
- Planting guides and resources for landowners.
- Detailed assessment of topography and site sensitivities.

Communicate and Implement

DESIGN PROCESS:

Generate. → **Engage.** → **Evaluate.** → **Communicate.**

Refine *Review*

Waiwhakaiho Wildlink Design Process Map

Design elements to be considered in the Design Process

Restoration and biodiversity

- Mahinga kai
- Fishing
- Walking access
- Shared paths
- Separate cycleways
- Dog walking
- Picnic facilities
- Cultural connection and wāhi tapu
- Swimming spots
- Equestrian (Mangamahoe bridle tracks only)

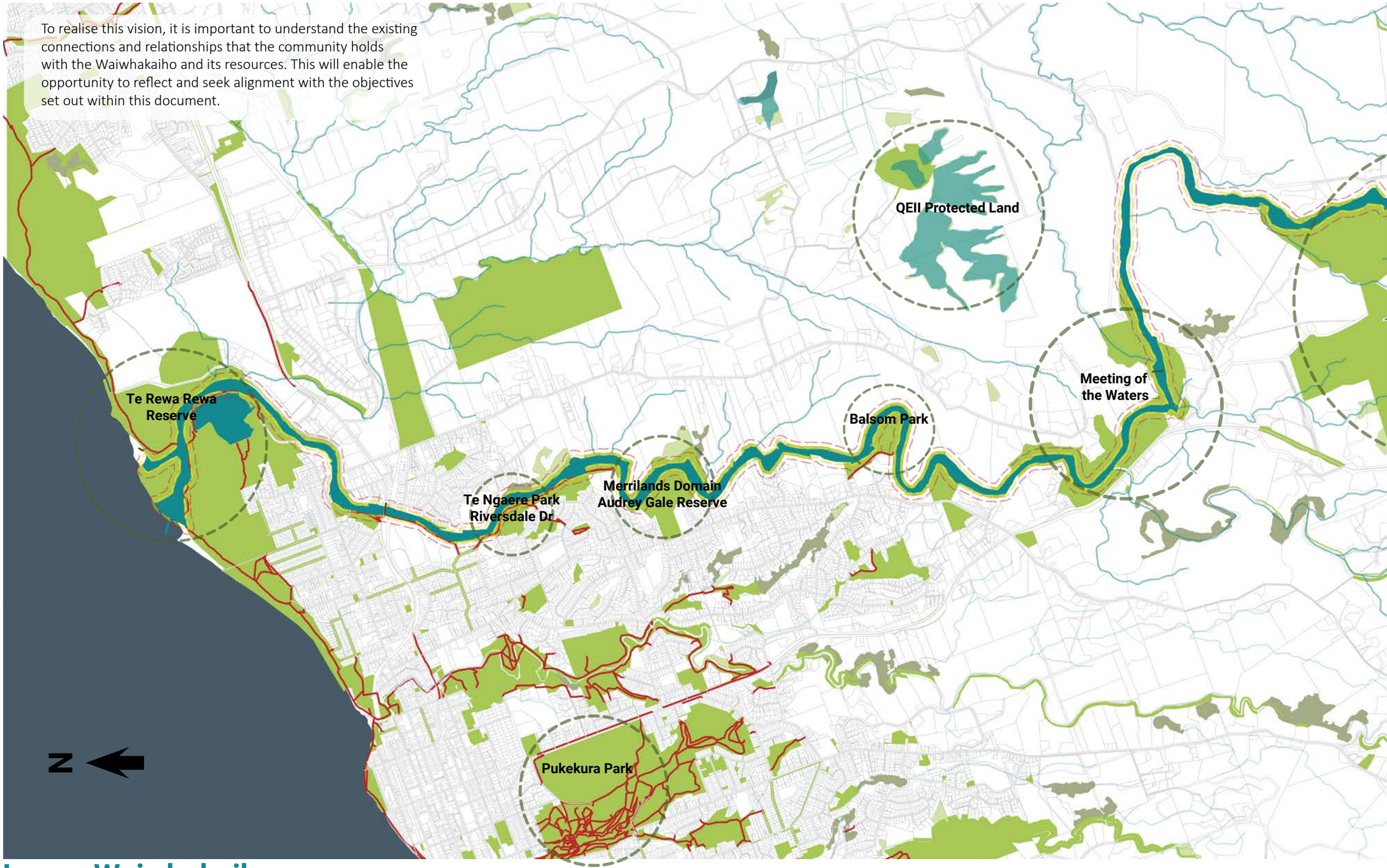
MAP KEY

- Significant Natural Areas under the District Plan
- Public Land, Reserves and Esplanades
- Other Protected Areas
- Bridges
- Islands of Biodiversity
- Existing Access/Pathways

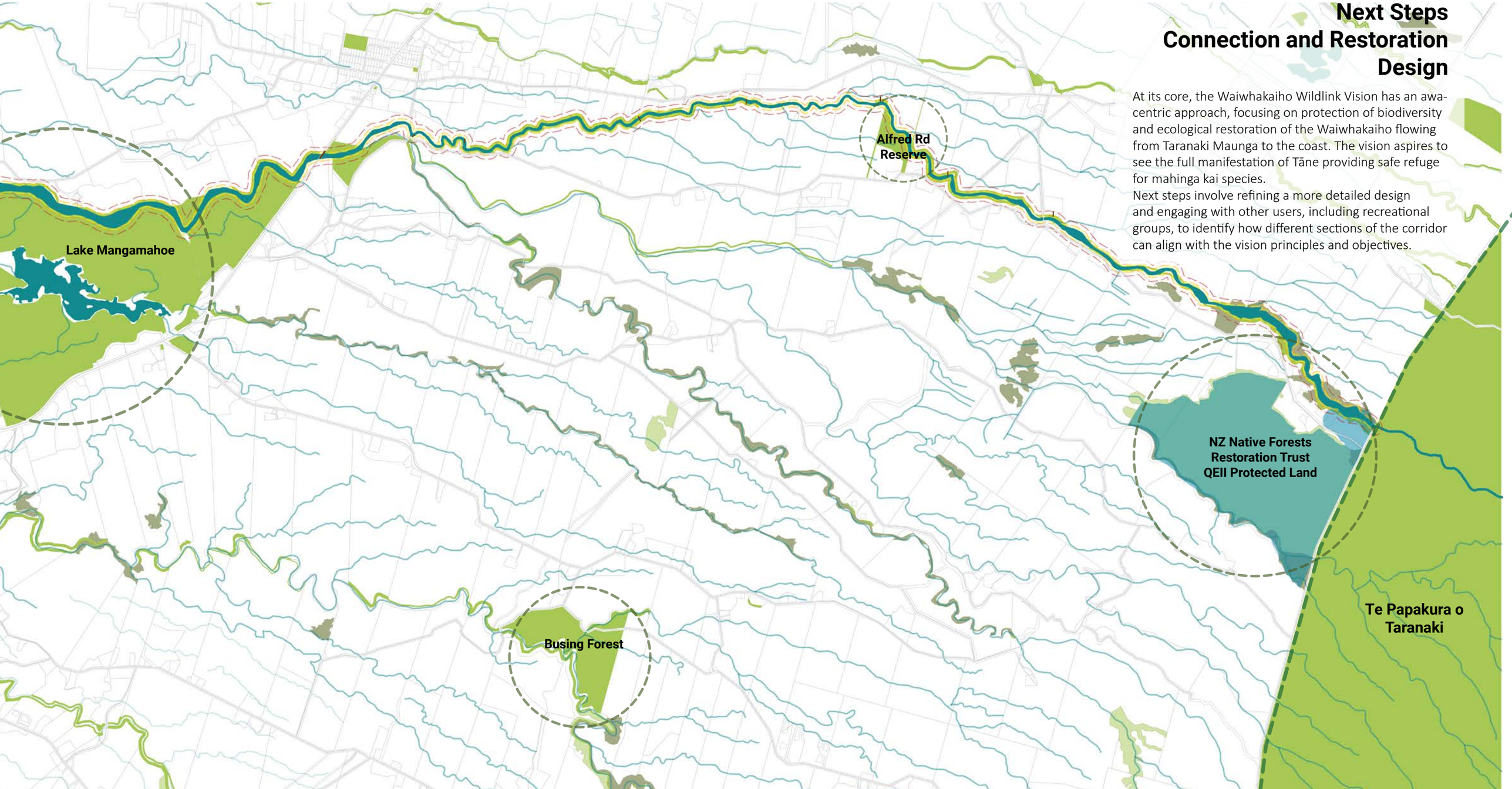
Indicative distance line from Awa:

- 10m
- 20m
- 50m

To realise this vision, it is important to understand the existing connections and relationships that the community holds with the Waiwhakaiho and its resources. This will enable the opportunity to reflect and seek alignment with the objectives set out within this document.



Lower Waiwhakaiho: Te Rewa Rewa Reserve — **Lake Mangamahoe**



Next Steps
Connection and Restoration Design

At its core, the Waiwhakaiho Wildlink Vision has an awa-centric approach, focusing on protection of biodiversity and ecological restoration of the Waiwhakaiho flowing from Taranaki Maunga to the coast. The vision aspires to see the full manifestation of Tāne providing safe refuge for mahinga kai species.

Next steps involve refining a more detailed design and engaging with other users, including recreational groups, to identify how different sections of the corridor can align with the vision principles and objectives.