



'of Milk and Honey

*A design strategy for the ecological, economical and ideological
resilience of a resource rich landscape and its people.*

‘ OF MILK AND HONEY.

*A design strategy for the economical, ecological and ideological
resilience of a cultural landscape and its people.*

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A 120-point thesis
submitted to the Victoria University of Wellington
in partial fulfilment of the requirements for the
degree of Master of Landscape Architecture

Victoria University of Wellington
School of Architecture

2017

*Ko Waiohine, Ko Ruāmahanga ēnei
E wairua tipu mai i Tararua maunga
E oranga e te iwi*

*These are the Waiohine and Ruamahanga,
They are like mothers milk,
flowing out of the Tararua mountains,
for the prosperity of the people.*

*- Hoani Te Whatahoro Jury
Ngāti Kahungunu scholar*

I Abstract

Wetlands are one of New Zealand's most important freshwater ecosystems. They are low-lying waterlogged areas bordering rivers and streams and forming quiet edges of lakes, rivers, low-lying floodplains estuaries and harbours. In the last 150 years more than 90% of New Zealand's wetlands have been destroyed or severely impacted by agricultural developments.

The South Wairarapa region, in the lower part of the North Island, covers 2,485 km² and is characterised by its expanses of lowland plains and lakes, surrounded by mountainous ranges. Once its wetlands provided important ecosystem services filtering nutrients and controlling floodwaters but they are now under pressure from agricultural land use, including drainage, grazing, nutrient runoff and the impacts of pest animals and plants.

*For the indigenous Māori culture of New Zealand, wetlands are often regarded as equivalent to organs that cleanse the body (**tinana**) such as the kidneys (**nga whatumanawa**) and the liver (**te ate**), and therefore represent important sites for purifying and cleaning, by filtering or reducing nutrients, chemicals and suspended sediment before it reaches the Lake Wairarapa. Many wetlands have historical and cultural importance as well as are regarded as source of food (**mahinga kai**) for the Māori tribes, providing important habitats for a range of culturally important food sources such as eel or important flora for carving such as flax, bulrush, tall grasses and bamboo spike sedges. Māori people perceive their own health as directly linked to the condition of their environments.*

This study examines how we can re-purpose / re-configure land use within the region to a more ecologically conscious

industry, finding a balance between the existing farming and agricultural practices that the region relies on and a recognition to the cultural practices of the Māori people and its importance to healthy communities and resourceful environments.

// Preface

This thesis is in part inspired by the people of rural New Zealand and those dedicated to the protection and enhancement of its resources. Growing up and working in rural New Zealand, I have developed an appreciation for the environment and the prosperity it brings to our way of life. For as long as I can recall, the privilege we have for living in Aotearoa has been instilled in my mind and is almost certainly the reason I pursued a career in this profession. I was lucky enough to grow up spending significant amounts of time in the outdoors and experiencing our biodiversity at its purest and it is that exposure that provokes my interest in preserving that experience for children of my own.

*Secondly, the pride of the South Wairarapa community is unlike anything I have experienced before, whether it be Council members, farmers, **iwi**, or just a local attending a town meeting, the passion these people share for their landscape and their openness to an outsiders interest and enthusiasm has been both warming and imperative to this research and I believe that this unique understanding of the importance of ones surroundings is more pertinent now than ever to monitor how we shape these rapidly urbanising two islands we call home.*

/// Acknowledgement

Firstly I would like to thank my supervisor Bruno Marques for the ongoing support and direction over the last year, your help along the way has been invaluable and crucial in times of sleep-deprived uncertainty.

To Matt, Elliot and classmates both present and past, for helping keep my sanity through numerous games of cards, food breaks and other various diversions of procrastination.

To my friends and flatmates for the support throughout the years and picking up my slack when time was running thin.

To my family, who may not understand what I actually study, but encourage and support me anyway.

And lastly, Georgia, the most patient girlfriend in the world, it truly would not have been possible without you.

***IV** Ethics*

*Research ethics approval was obtained from
Victoria University Human Resource Committee in order to conduct this thesis.*

Approval no. 22935.

*The participant information sheet and consent form are included as **Appendices A & B***

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1.0

Introduction

1.1 PROBLEM STATEMENT

Agricultural production has always been the backbone of the New Zealand economy. From the landing of the first people, the diverse landscape has offered an abundance of natural resources and fertile environments perfect for the cultivation of crops and raising of livestock. This ecological prosperity was instrumental in allowing civilisation to flourish and to expand to all corners of the country.

Voyaging Māori, who first landed ashore over a millennia ago, arrived with an already deeply rooted perception of the importance of protection and sustainable management of natural resources. Migrating from a place where food and fresh water was scarce, an adaption to resource conservation was imperative to the Polynesian’s survival. Māori culture

developed a congenial relationship with the living world and its offerings. This indigenous knowledge allowed their people to thrive for centuries, living harmoniously within the landscape, caring for its health and benefitting from its riches.

Following the introduction of large scale industrial operations brought by colonising Europeans in the late 18th century, we observed these once thriving natural environments neglected, depleted and destroyed at an alarming rate. Whether it was naivety or just plain greed, vital wetlands and native bush have been burnt off or ripped out in order to accommodate the expansion of farming endeavours.



Fig. 1 | Progression of deforestation

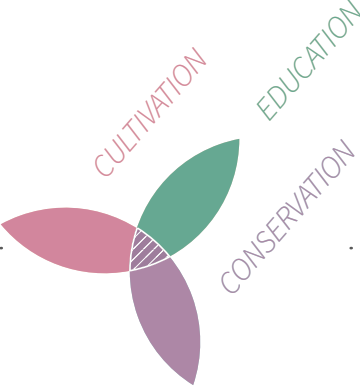
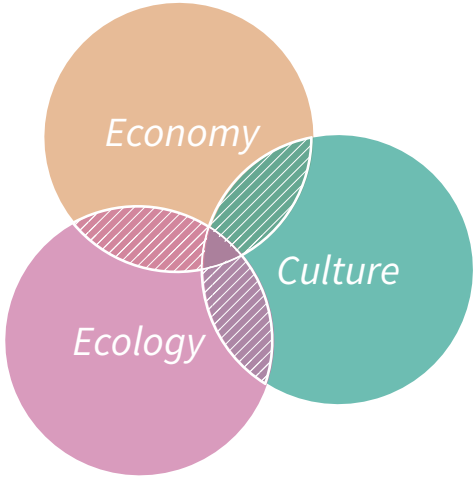
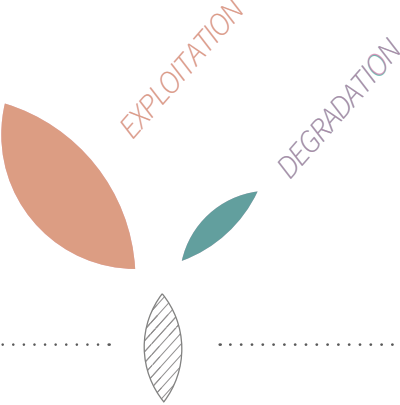
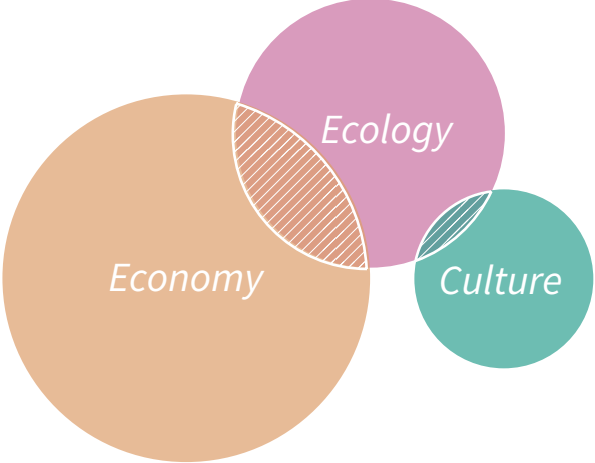
With a growing population came a higher demand for meat and dairy products, along with an expanding primary industry focused on international produce trade. As the country's agricultural sector grew, the demand for more pastoral land saw removal of large amounts of native bush and fresh water wetlands. What we are seeing today as a result of this poor planning is a diminishing environmental quality, species loss through habitat removal, an inability to mitigate weather extremes and most importantly, a divorce of the people and their landscape through the ever-increasing privatisation of rural land in favour of agricultural practices.

The site of focus in this research is the South Wairarapa. Covering just under 2,500km² the region is characterised by its dominating rivers and lakes, and its expansive surrounding floodplains. The region is monopolised by large scale dairy and sheep farming. There is a relatively low population density,

yet has some of the dirtiest waterways in the country due to mismanaged farming run-off, urban pollutants and a range of other influences.

The region is home to two Iwi, **Ngāti Kahungunu ki Wairarapa** and **Rangitāne o Wairarapa**. These people, who were once stewards of the land have been systematically pushed out and as their rights to their indigenous homeland have been dissolved legislatively which has hindered their ability to maintain and monitor the quality of their environment consequently leading to its deterioration.

This research seeks to re-invigorate the connection between the people of South Wairarapa and their environment, a relationship which, without efforts, will cease to exist with the next generation.





THE ISSUE

The relationship between economy and culture does not exist outside the realm of tourism. There is little cultural influence in economic legislation and the spectrum of benefits from indigenous landscape management have not been properly addressed.



THE PROPOSAL

A design framework which lays importance to all three factors equally. Letting the strengths of each inform the profits of the others.

1.2 RESEARCH INTENT

This research uses indigenous knowledge as a basis for the re-configuration of the way natural resources are managed within the agricultural sector of the South Wairarapa, which will as a result reconnect the people of the region to their environment by restoring its ecological health through the regeneration of native wetlands and bush.

1.3 RESEARCH AIMS AND OBJECTIVES

Indigenous Māori understanding and their perception of environmental health will be imperative in finding a balance between the region's reliance on agricultural industries and the restoration of its natural resources. Through the restoration of the native bush and wetland systems of the region, this design experiment aims at creating a more resilient and diverse landscape that facilitates economic and ecological growth mutually, while not only maintaining but enhancing the bond between people and place.

In order to achieve these aims, this research will be completed with the co-operation of the people of the Wairarapa, specifically the Rangitāne o Wairarapa iwi. Relevant precedents and case studies will be examined from both local and international locations and relevant literature on the topic will be reviewed. Throughout this research and design experimentation, there will be an on-going feedback with the interested parties to ensure maximum input from the 'client'.

1.4 METHODOLOGY

In order to best develop a design strategy which not only benefits the environment but boosts the local economy and improves the public perception of their landscape, the ‘client’ will embody a range of stakeholders of the region. This amalgamation of needs, desires and concerns will be quintessential in addressing the issues of local council, farmers, iwi and residents and develop a framework which adheres too all the above.

This research will use the ‘Māori Urban Design Principles’ as a foundation for the inclusion of Māori interests and aspirations when it comes to the design of culturally sensitive landscapes. The document is a collaboration of Māori from all over New Zealand who wanted to produce a strategic document to be used in conjunction with the RMA (Resource Management Act 1991) to ensure that the beliefs and ideologies of Māori culture are considered in a legislative manner.

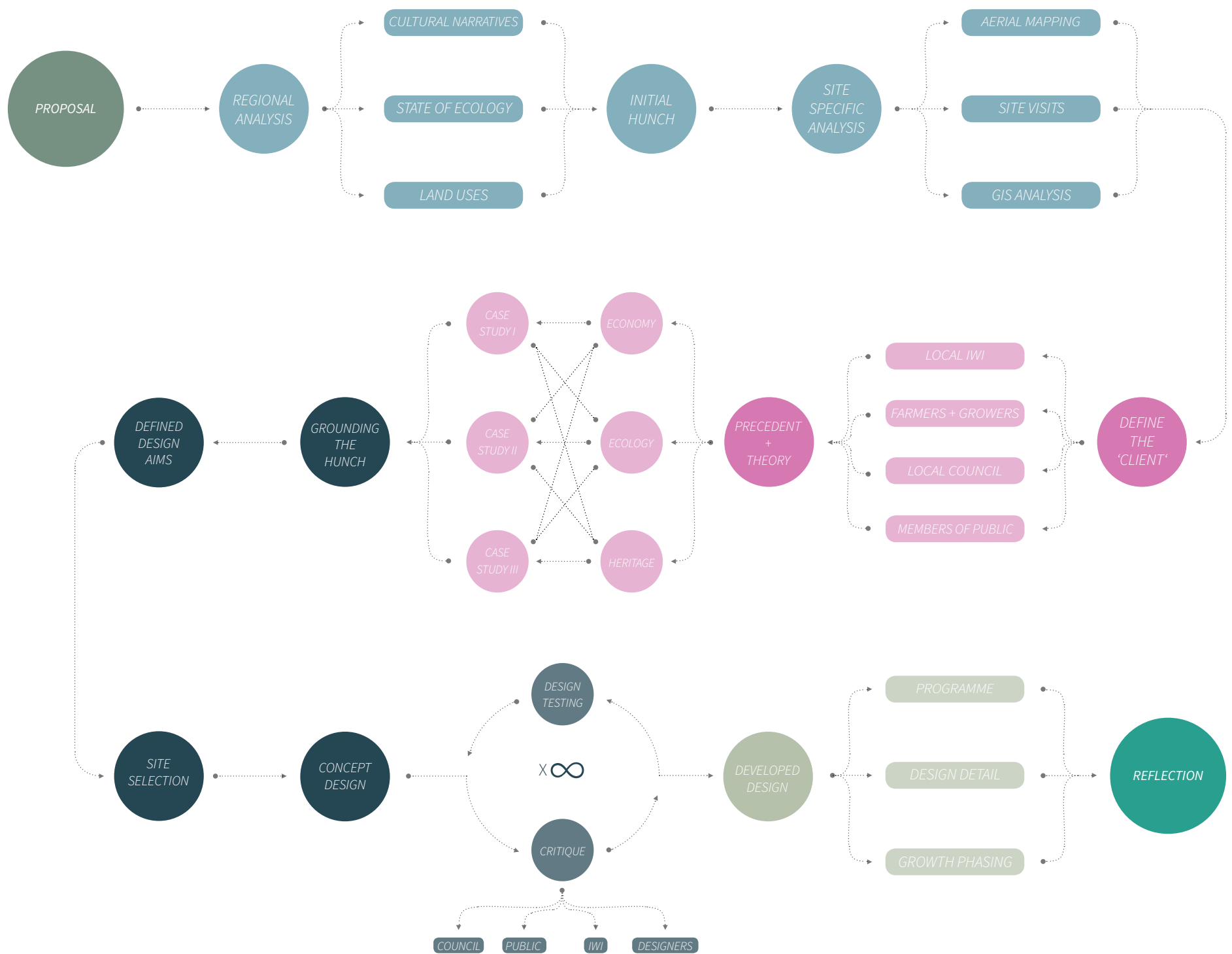
1.5 SCOPE OF RESEARCH

The challenge in this research lies in creating a framework and set of design principles that are relevant and applicable to all regions of New Zealand.

Evolving from an isolated tribal communities only a few generations ago, Māori beliefs, as with many other indigenous cultures, are regionally specific and over time have differed between tribe, family or individual. For example, values of a tribe who inhabited the bush as opposed to one who resided coastally may hold higher importance to the value of soils, as apposed to waterways. Although this research is focused solely in the South Wairarapa, it aims to develop a strategy which can be applied not only to this region but at a national scale, adhering to a set of principles and values that are recognised by everyone throughout Aotearoa.

1.6 THESIS STRUCTURE

As this thesis is led by its design component, it will follow an iterative process inspired by both a experiential and technical site response. The iterations of design are tested at a range of scales and critiqued numerous times along the way by academics and relevant stakeholders, ensuring that the design response is developed and refined to address the initial research intent.





2.0

Site Analysis

2.1 GEOGRAPHIC

The **South Wairarapa**, located in the lowest reaches of the north island, covers an area of roughly 2,500 km². The region is characterised by its dominant water bodies, Lake **Wairarapa** (centred), lake **Onoke** and the **Ruamahanga** and **Tauherenikau** rivers. The region is made up of an expansive floodplain, bordered on either side by the Rimutaka Range to the west and the Aorangi Range to the south east.

From its initial settlement in the 13th century by voyaging Māori, the Wairarapa has been a region rich in natural resources and agricultural opportunity. The name Wairarapa translates to ‘glistening waters’ a reference to the regions predominant geographical features, the lakes, rivers and wetlands which provided the sea faring Polynesian arrivals with the food, materials and the means of transport needed to establish themselves as a people of the region.

The following centuries saw the arrival of European settlers who sore the potential of the large expanse of floodplains. The introduction of their livestock, crops and advanced farming and cultivation methods transformed the Wairarapa into the region rich in agricultural economic activity seen today.

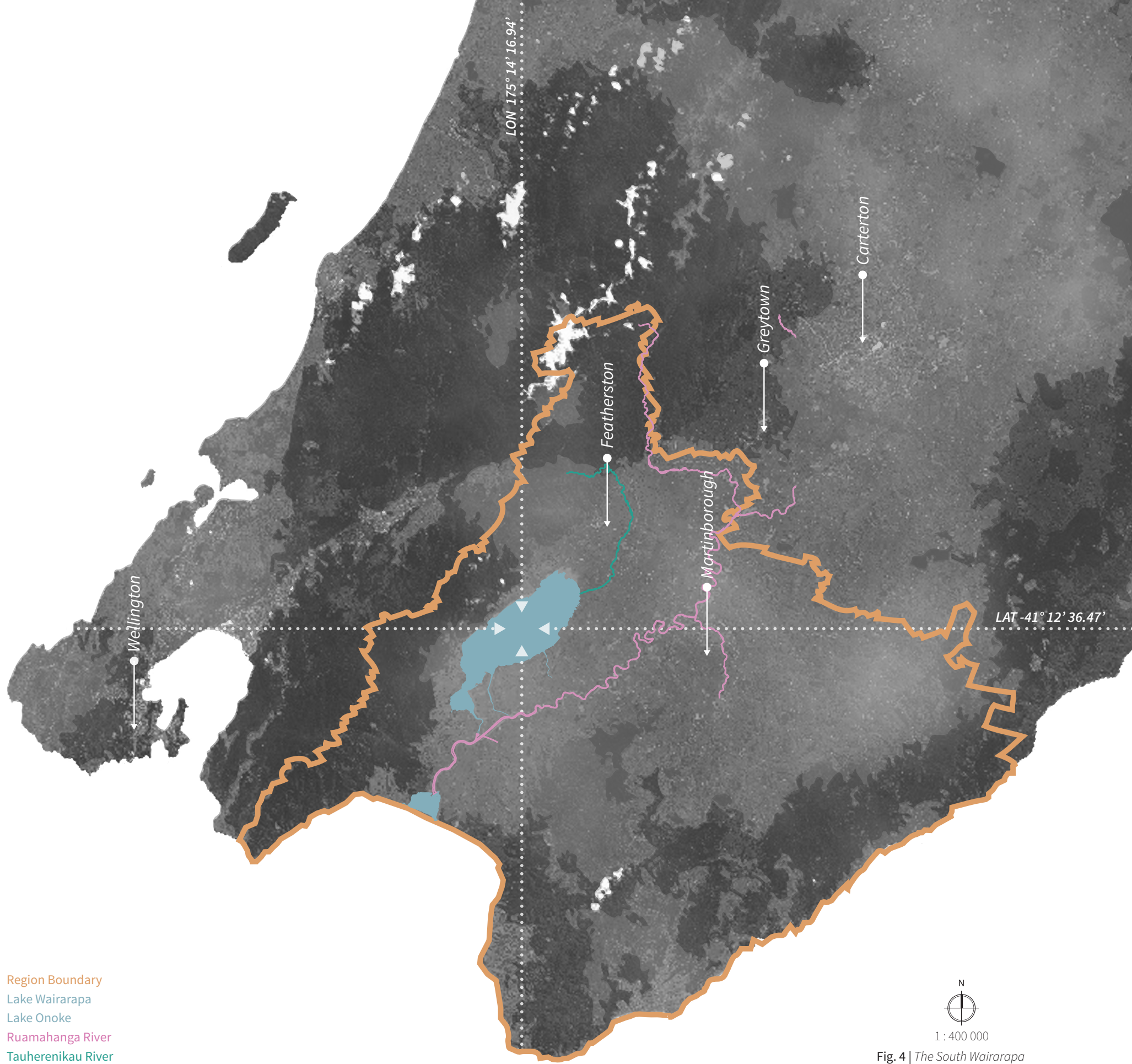


Fig. 4 | The South Wairarapa

2.2 *DEMOGRAPHIC*

The South Wairarapa has a relatively low population density, around one third the national average. The population is growing, but lower than the national rate, likely due to younger residents favouring Wellington city for its employment opportunities.

The region is largely bicultural, with European and Māori making up the majority of the population. The region is home to the fourth largest Māori population per capita.

Most residents of the region are employed within the agricultural sector which includes dairy, sheep and beef farming as well as the growers of the regions vineyards, stone fruits and crops. Like most rural populations, the region has a lower unemployment rate than the national average.

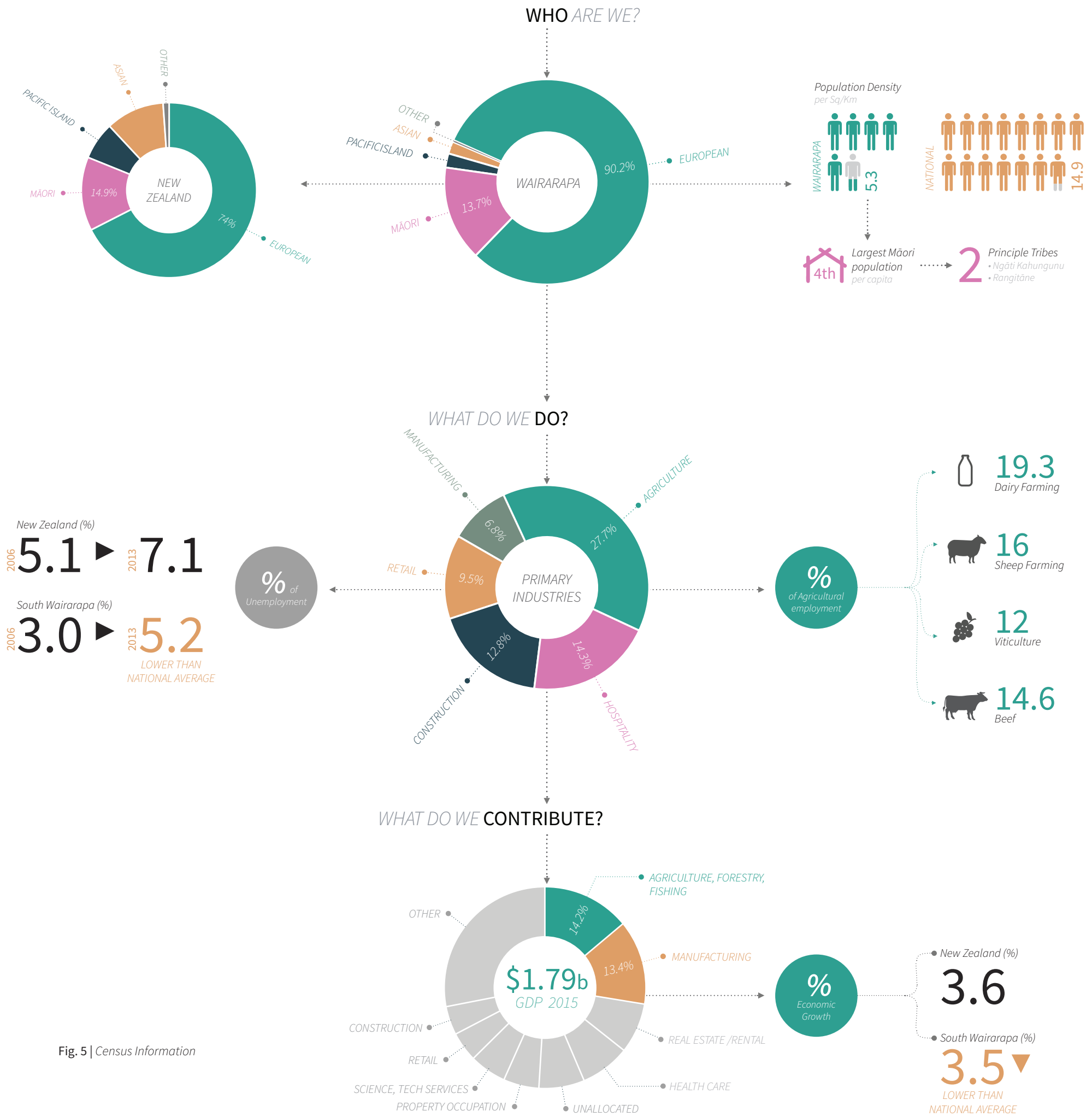


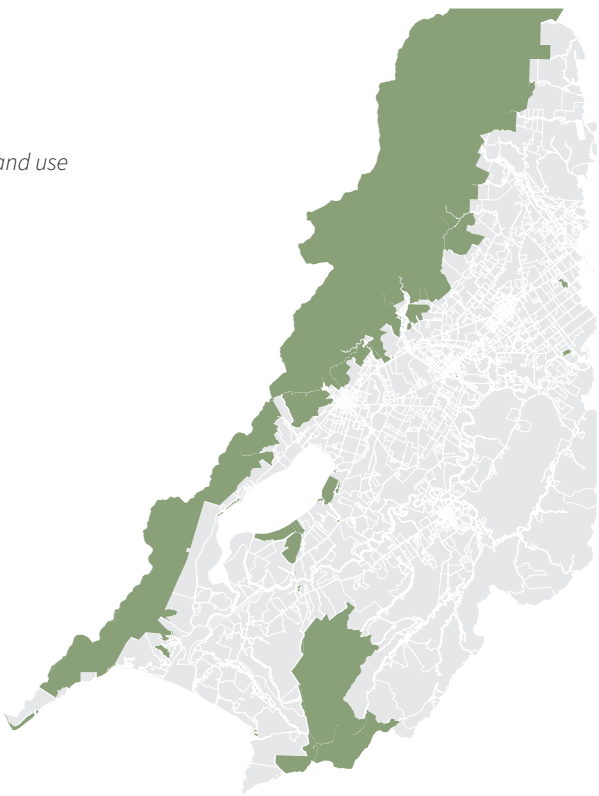
Fig. 5 | Census Information

2.3 TOPOGRAPHIC

The Wairarapa region today has seen most of the native vegetation recede to the surrounding hills as settlers cut down or burnt off bush in favour of expanding grazing land for their livestock in the plains. Beef, sheep and dairy farming operations occupy the most land within the region and like most of rural New Zealand, is the primary industry and employer.

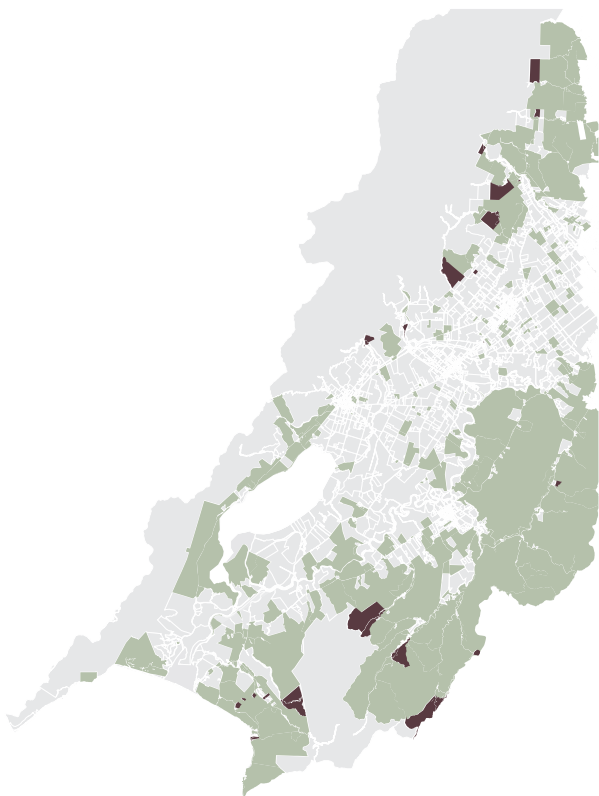
The region is also host to a range of other agricultural activity including deer and equine farming, pine forestry and more notably its wineries and orchards which have become a tourism destination and an icon of the region.


1 : 800 000
Fig. 6 | Current South Wairarapa land use



NATIVE VEGETATION

Most native vegetation has been removed in favour of pastoral or arable uses. Most remaining bush is on the surrounding hills.



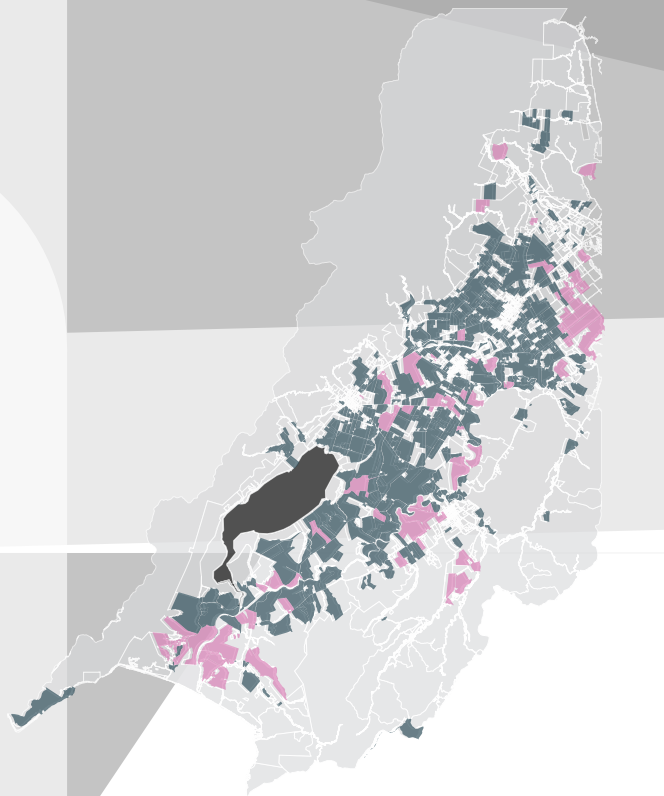
SHEEP / BEEF / DEER

The primary industry today and for the past century has been meat production and export.



FORESTRY

Large Radiata pine plantations have provided timber to the Wellington region since 1940.



DAIRY FARMING

In recent years the dairy industry has proven more financially viable to the region and many farmers have begun transitioning to it.



EQUINARY FARMING

The region is home to number of equinary services and farms.



RESIDENTIAL / LIFESTYLE

The South Wairarapa is home to around 8800 people, with the population slowly increasing.

The region is at risk of population decline as young people are leaving in search of city jobs.



MIXED FARMING

Land with a changing use, usually either beef, sheep, dairy or hay.



VITICULTURE

The Wairarapa region has produced world class wine and is home to very successful vineyards since c1900.

2.4 HYDROGRAPHIC

Wairarapa Moana is a term used to describe the network of water bodies that run through the Wairarapa valley which includes Lake Wairarapa, Lake Onoke and both the Ruamahanga and Tauherenikau rivers. This chain of waterways has, since the first settlement, offered a source of food, transport and has been vital to agricultural operations. Over the last few centuries it has been re-shaped and re-routed through large scale infrastructural changes to adapt to the growing demand for grazing land and irrigation and to improve the speed of flood water drainage during periods of severe weather.

The re-shaping of the regions water bodies has led to Wairarapa Moana waterways becoming severely polluted by the run-off of nearby farms within the valleys catchment as well as soil erosion from forestry activity in the surrounding hills.

Because of the flat topography of the region, the rivers catchment areas are extremely large meaning that during heavy periods of rainfall, the pollutants that have come from agricultural operations, deforestation and urban waste from the wide reaches of the floodplains are carried into the rivers and are deposited into the lakes without sufficient treatment in the surrounding wetlands.

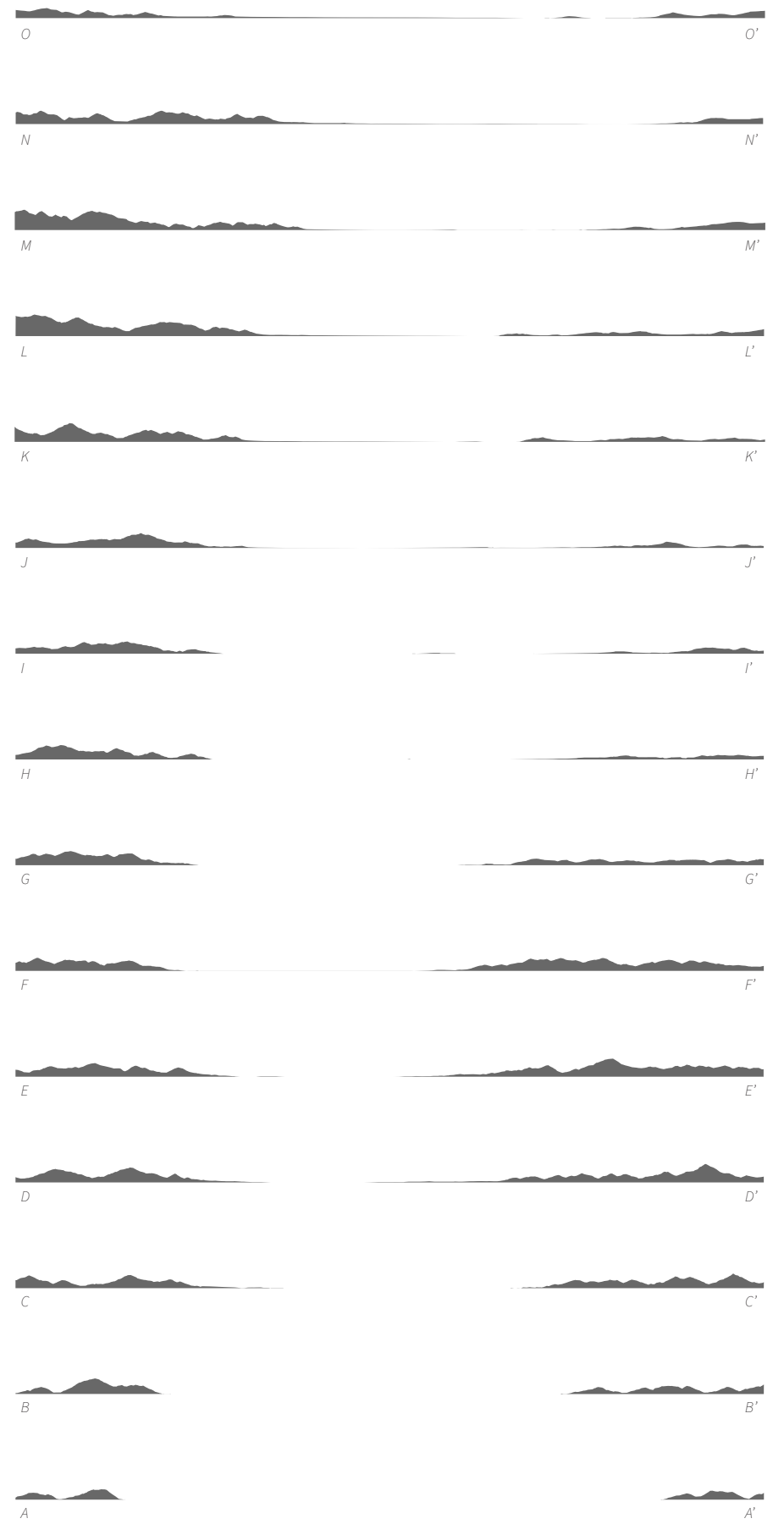
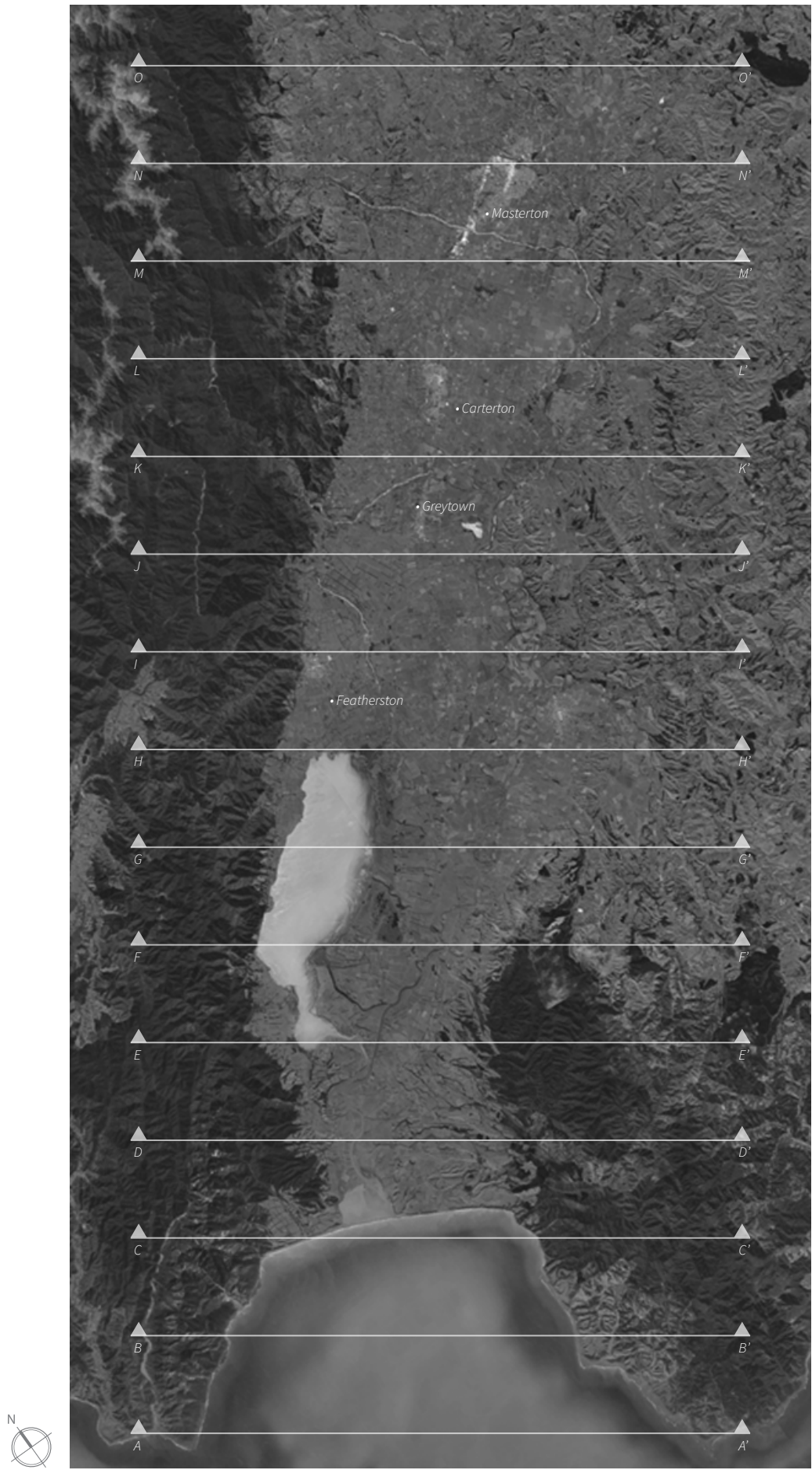


Fig. 7 | *The South Wairarapa, Segmented*

EVALUATION

The perception of lake Wairarapa has changed from an asset of the landscape to a nuisance. This change in the public’s attitude is largely due to the recurring flood issues that arise from the lake and their inability to access and appreciate the lake as its edge is now over 75% privatised land. Recent studies declare that the rivers and lakes that make up Wairarapa Moana are some of the dirtiest in the country, with alarmingly high levels of nitrates and algae, which is characteristic of waterways in pastoral landscapes (Beadel, Perfect and Rebergen). This information has given the public concerns of using the lake to drink from, fish from or even swim in.

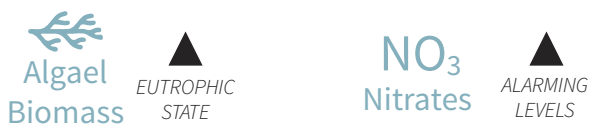
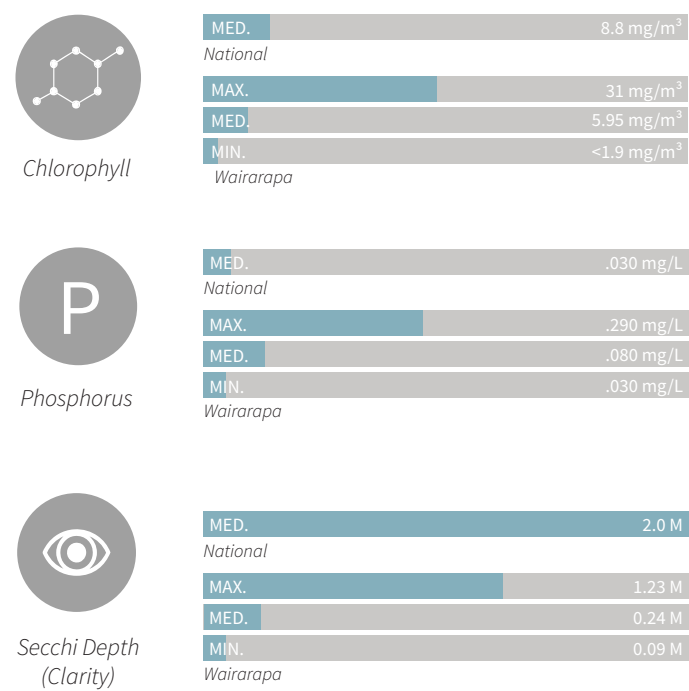


Fig. 8 | Wairarapa water quality issues

CAUSATION

There are a number of factors that have led to the decline in Wairarapa Moana’s quality which span as far back as the first settlers. The removal of the expansive freshwater wetlands has impeded its ability to filtrate water before it enters the lake. Poor planning at the regional scale has allowed farmland to back directly onto open waterways without proper riparian buffers to divert animal urine, and still today livestock are free to walk directly into rivers. Local factories have and in some cases still are releasing untreated waste directly into drains leading into the lake, as well as waste water from residential areas which is treated and released to nearby Abbotts Creek (Perrie and Milne). Forestry operations have contributed to the water degradation, as the disrupting earth works within the catchment have deposited soils into the waterways.

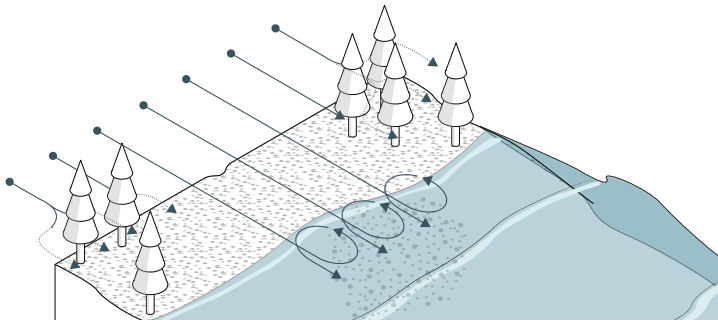


Fig. 9 | Wind effects on settled sediment

The Ruamahanga river diversion, completed in 1947, drastically reduced the size of lake Wairarapa in order to create 40,000 more hectares of farmland. The result sped up the process of draining floodwaters by channelling the rivers flow directly into lake Onoke. The diversion saw Lake Wairarapa become a “sink” for sediments, as the flow of water coming into the lake slowed, it allowed the sediment to settle on the lakebed which has, overtime, altered the depth of the lake. When combined with Wellington’s notorious northerly winds and a lack of sheltering flora, the sediment is stirred, ultimately leading to the clarity issues the region faces.

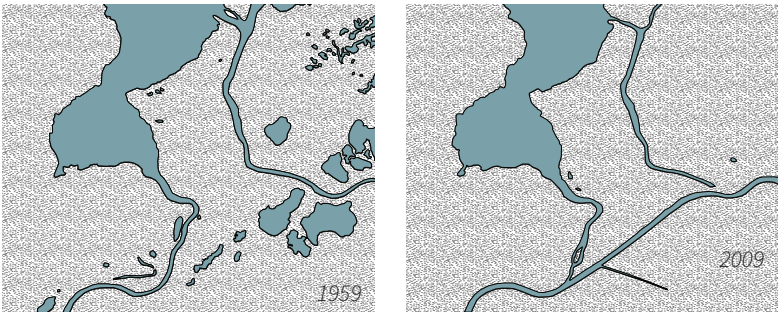


Fig. 10 | Hydrological changes due to diversion

SITUATION

As a result of these drastic changes in local ecosystems, there are number of endangered species of both flora and fauna in the region. Diminishing habitat, poor water quality and human exploitation has seen a number of these species dwindle to the point of critical endangerment or even extinction.



Fig. 11 | Reduction of Wairarapa wetlands

THREATENED BIRDS



Asiatic whimbrel | Australasian bittern | Banded dotterel | Black fronted tern | **Black stilt** | Caspian tern | Curlew sandpiper | Grey duck | Least golden plover | New Zealand dabchick | New Zealand falcon | New Zealand pigeon | Royal spoonbill | Sharp-tailed sandpiper | Variable oystercatcher | White-fronted tern | **White heron** | Wrybill | Yellow-crowned Parakeet

THREATENED VERTIBRATES



Common Gecko | Wellington green gecko | Common skink | Copper Skint | Forest gecko | **Speckled skink** | Spotted skink

THREATENED FISH



Banded kokopu | **Brown mudfish** | **Giant kokopu** | **Koaro** | **Lamprey** | Black Flounder | Blue gilled bully | Common smelt | Longfinned eel | Redfinned bully | Shortfinned eel

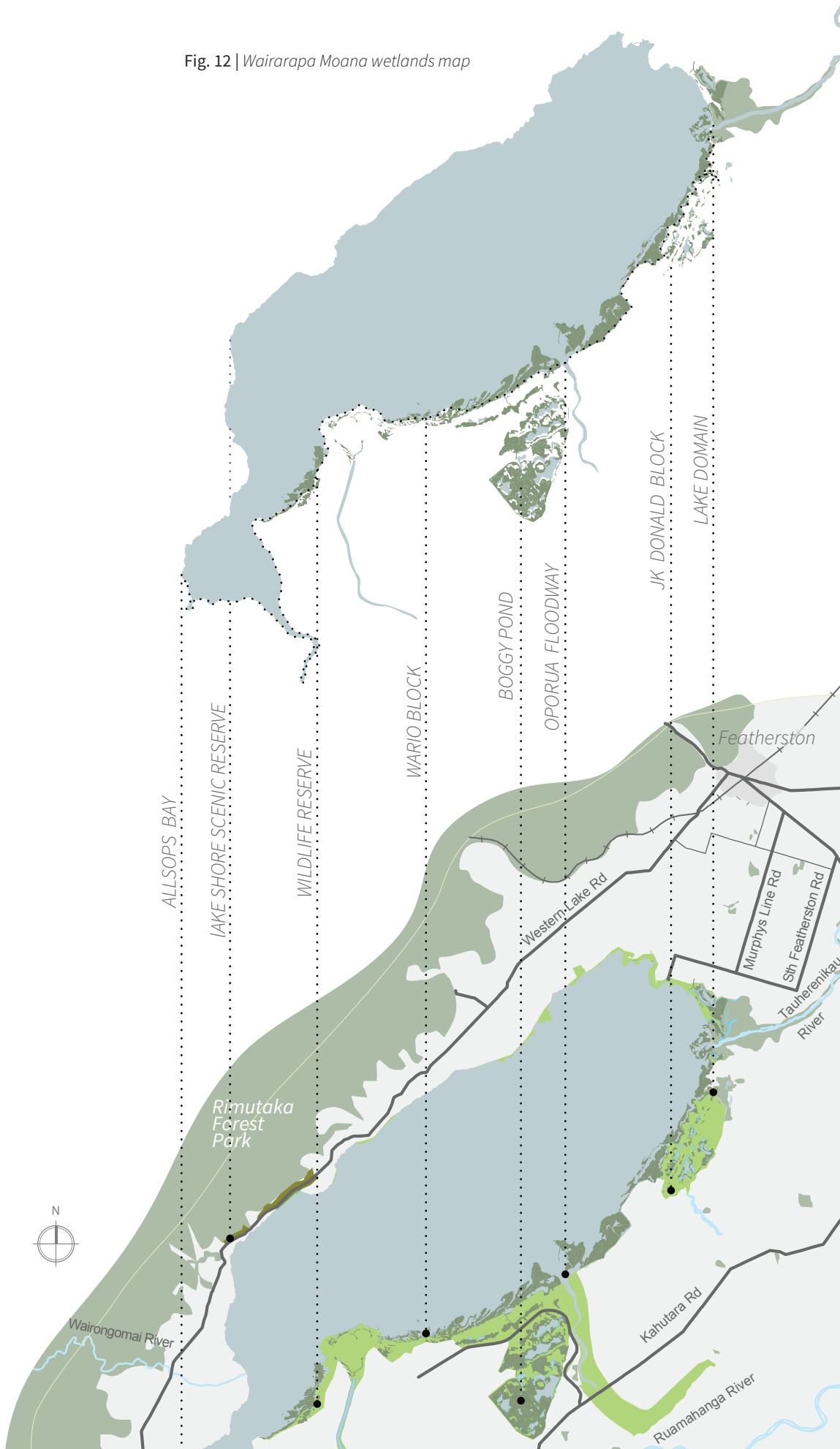
THREATENED FLORA



Coprosma sp. V | **Fissidens Berteroi** | **Pterostylis Micromega** | Coprosma wallii | Isolepsis basilaris | Lepidium oleraceum (Cooks scurvy grass) | Pittosporum obcordatum (heart-leafed kohuhu) | Tupeia antarctica (missle toe) | Urlica linearifolia (swamp nettle) | Mazus novazeelandiae (dwarf musk) | Teucrium parviflorum

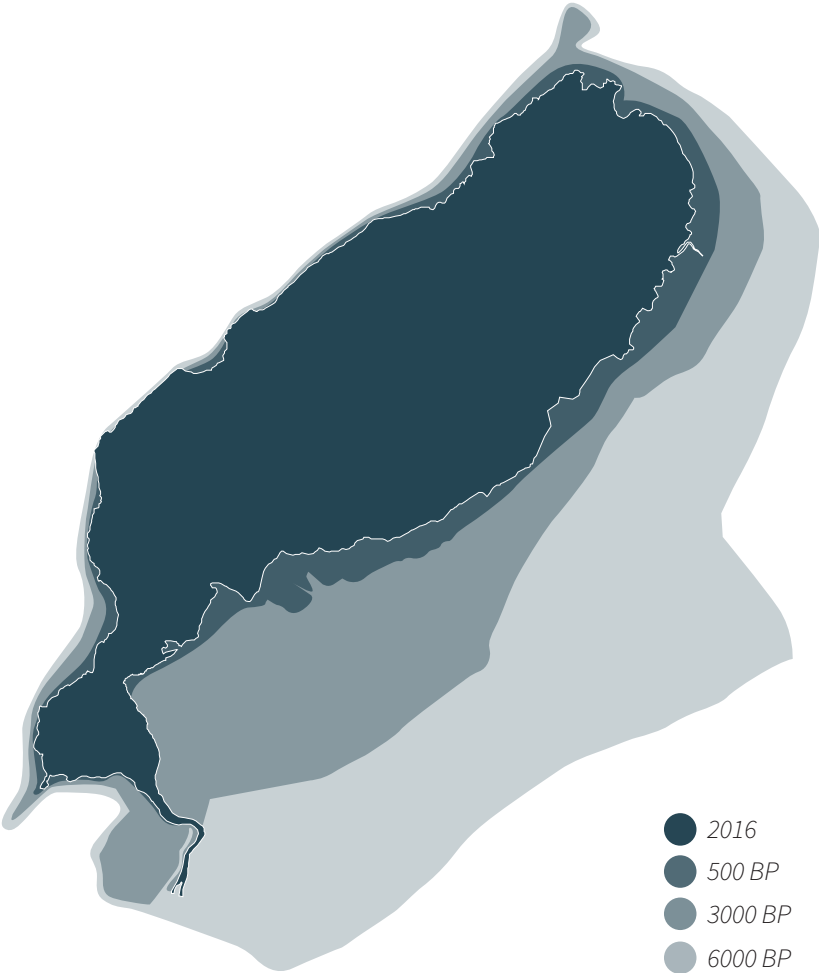
Critically Endangered | Regionally Endangered

Fig. 12 | Wairarapa Moana wetlands map



LAKE WAIRARAPA SHORELINE

The size of lake Wairarapa has changed drastically from both natural and man made influences. The diversion of the ruamahanga river means water bypasses the lake and is discharged directly into the sea.



1 : 150 000

Fig. 13 | Shoreline changes of Lake Wairarapa

SEDIMENT CHANGES

Sediment is being brought into the lake from surrounding land uses and settling in the north eastern edge of the lake. The diversion of the ruamahanga has led to the flow of water into the lake to reduce drastically allowing sediment time to settle.



1 : 130 000

Fig. 14 | *Sediment changes of Lake Wairarapa*

LAKE WAIRARAPA DEPTH CHANGE

Sediment deposits has led to the shallowing of the lake, this change has impacted the temperature of the water which removes vital habitat for a number of water dwelling species.

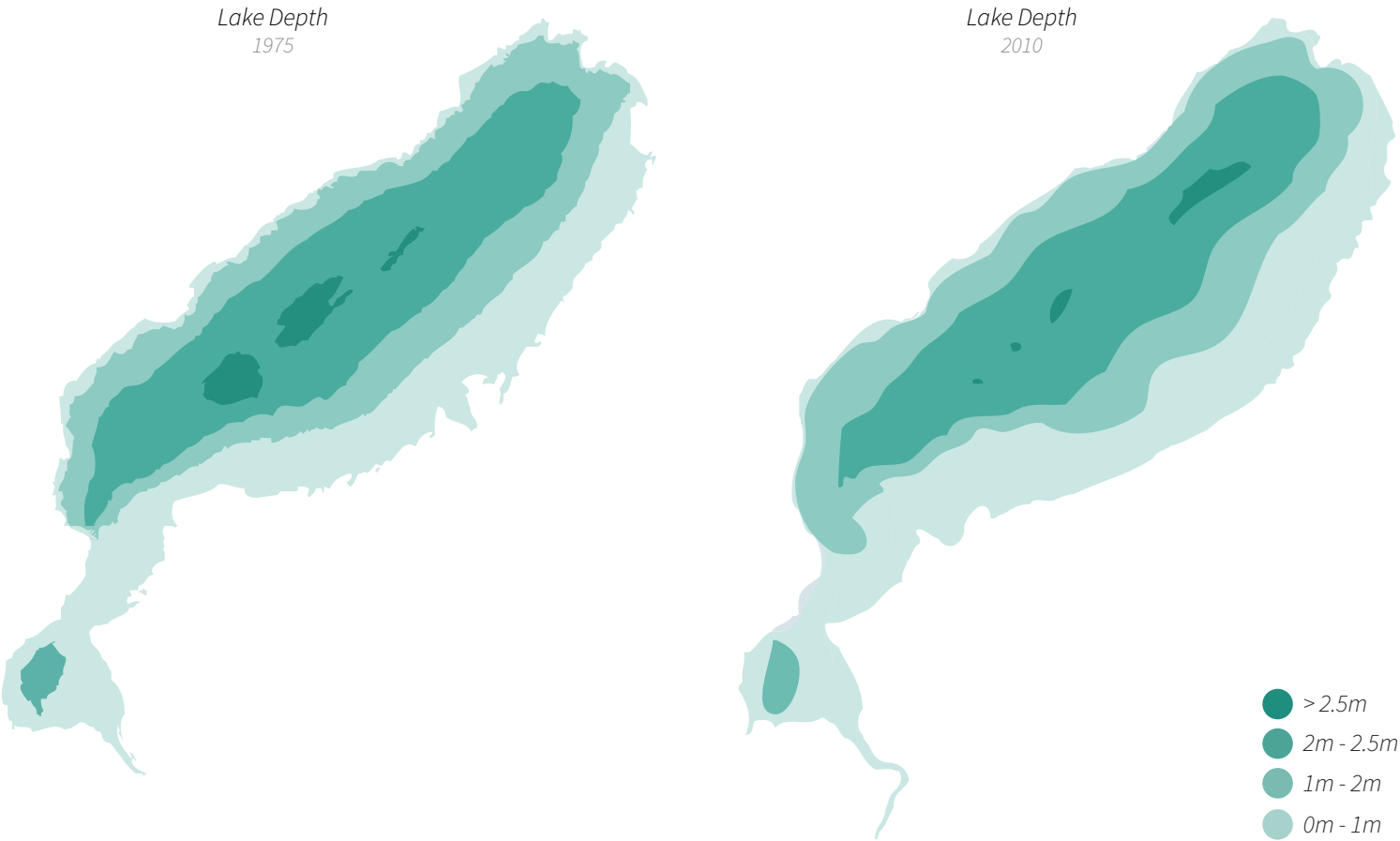


Fig. 15 | Depth changes of Lake Wairarapa

FLOODLINE CHANGES

The floodline of the lake has been reduced with the removal of the surrounding wetlands. This reduction has led to the severe flooding of farm land we see today as the regions natural buffer zone has been removed.

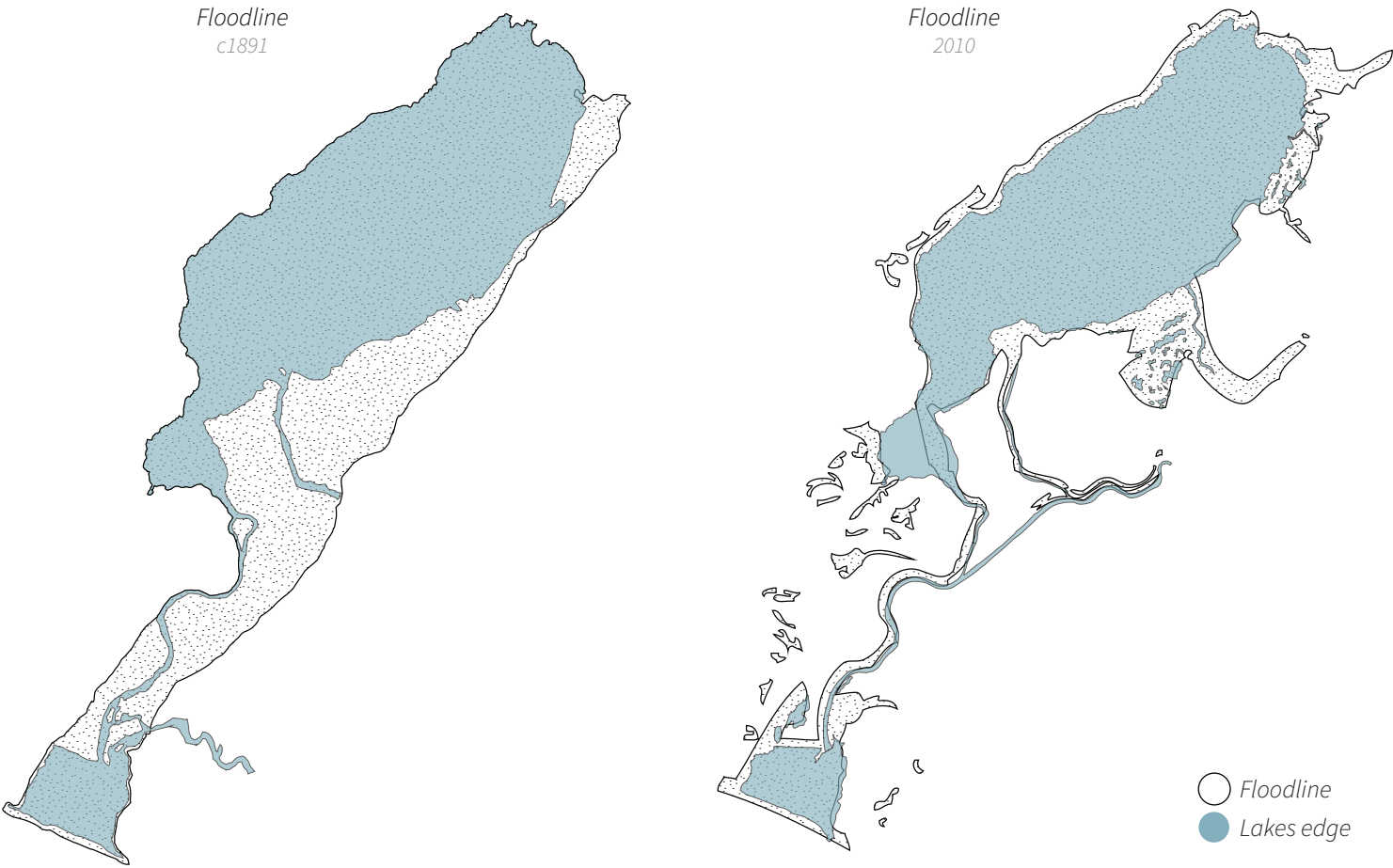
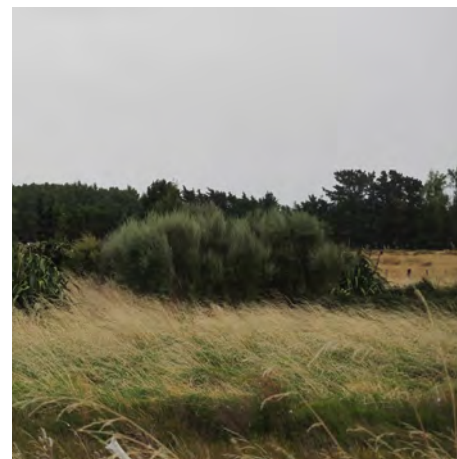
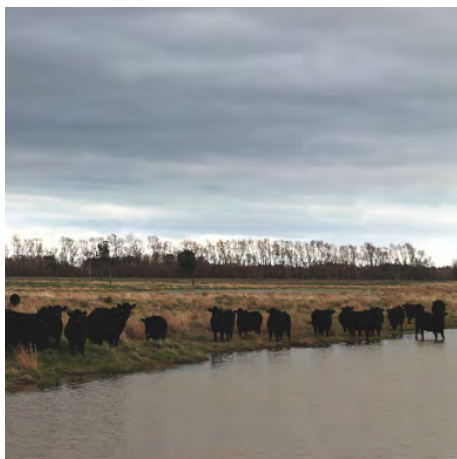


Fig. 16 | Floodline changes of Lake Wairarapa



Clockwise from top left

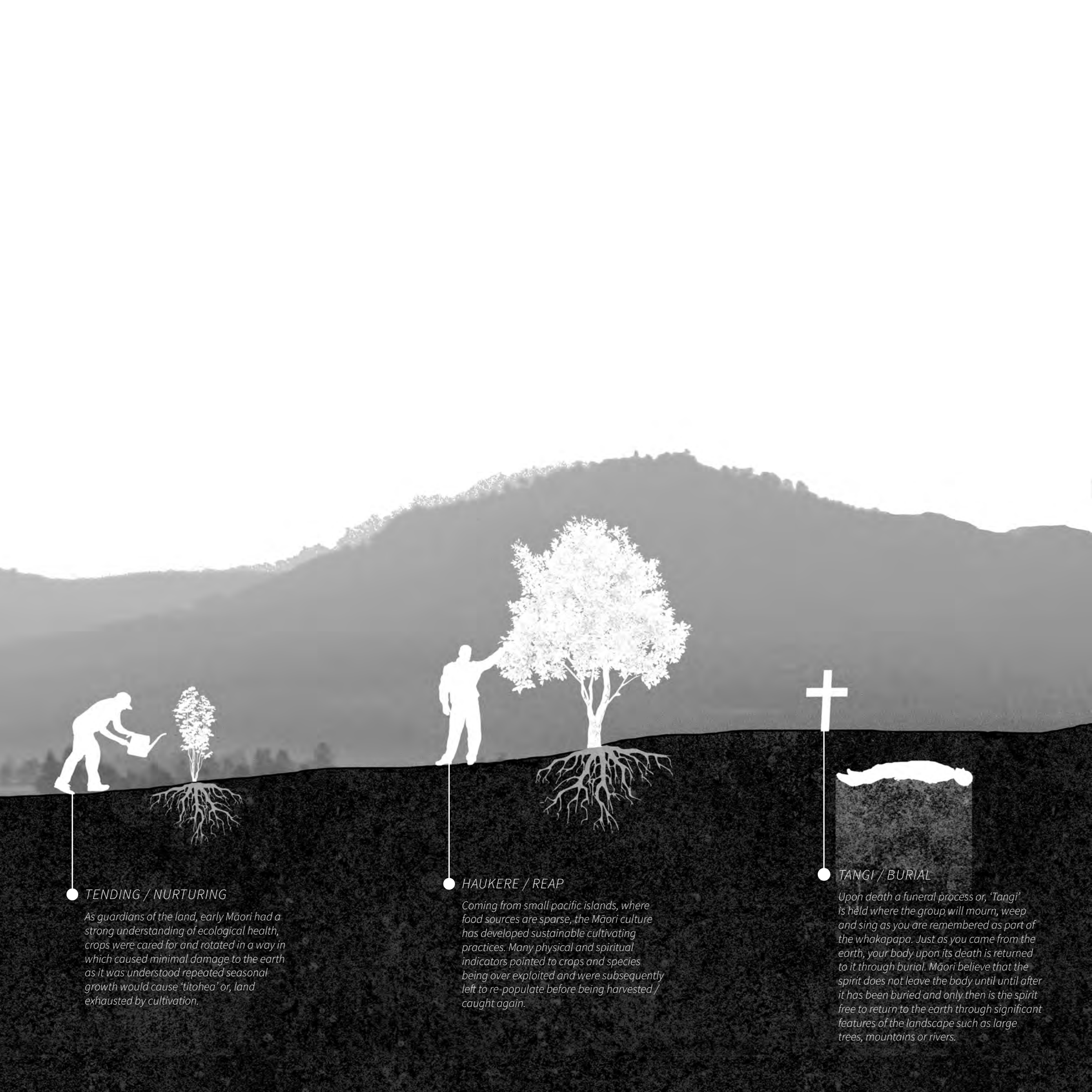
- Fig. 17 | Cows in waterways
- Fig. 18 | Local eel fisherman
- Fig. 19 | Wairarapa Moana wetlands
- Fig. 20 | Local dairy factory
- Fig. 21 | Water pollution in the Wairarapa
- Fig. 22 | Forestry operations

2.5 THE INDIGENOUS LANDSCAPE

Prior to European colonisation, the region was home to two iwi, the Ngāti Kahungunu ki Wairarapa and Rangitāne o Wairarapa. Indigenous Māori of the region had a strong understanding and appreciation for their landscape and its offerings. In Māori ideology, land was not a possession as it was understood they were not owners but stewards, responsible for maintaining the **Mauri** of their environment. Mauri, which is essentially the life force of a thing or person was its quality or vitality. A healthy landscape was one of flourishing bush, clean waters and bountiful harvests. In Māori culture the health of the environment is directly proportionate to the health of the people. We drink from the rivers, and eat from the oceans, and therefore it is important to protect the environment in which we rely on as to not ‘bite the hand that feeds’.



Fig. 23 | Māori life cycle



TENDING / NURTURING

As guardians of the land, early Māori had a strong understanding of ecological health, crops were cared for and rotated in a way in which caused minimal damage to the earth as it was understood repeated seasonal growth would cause 'titohea' or, land exhausted by cultivation.

HAUKERE / REAP

Coming from small pacific islands, where food sources are sparse, the Māori culture has developed sustainable cultivating practices. Many physical and spiritual indicators pointed to crops and species being over exploited and were subsequently left to re-populate before being harvested / caught again.

TANGI / BURIAL

Upon death a funeral process or, 'Tangi' is held where the group will mourn, weep and sing as you are remembered as part of the whakapapa. Just as you came from the earth, your body upon its death is returned to it through burial. Māori believe that the spirit does not leave the body until after it has been buried and only then is the spirit free to return to the earth through significant features of the landscape such as large trees, mountains or rivers.

2.6 A SUSTAINABLE CULTURE

Coming from small pacific islands, the settling Māori understood the importance of a sustainable and conscious lifestyle. The culture developed a seasonal migration pattern in which food sources from the air, earth, ocean and rivers were cultivated. Astrological events such as moon phases and star alignments were often used as indicators of when a crop would be best harvested or planted, or certain species were best to catch. This ritualistic behaviour allowed for the culture to develop a harmonious relationship with the diverse ecosystems of native New Zealand.

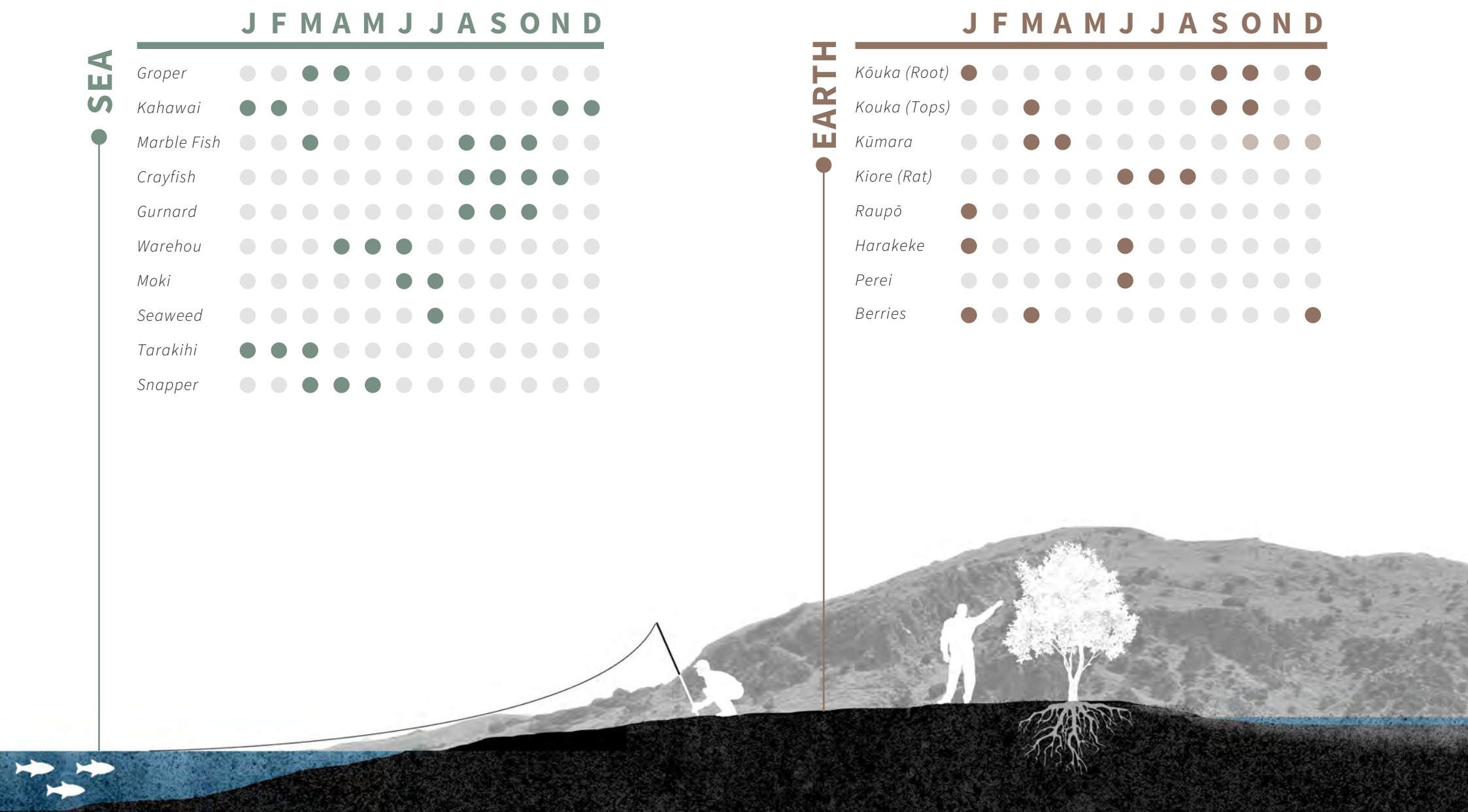
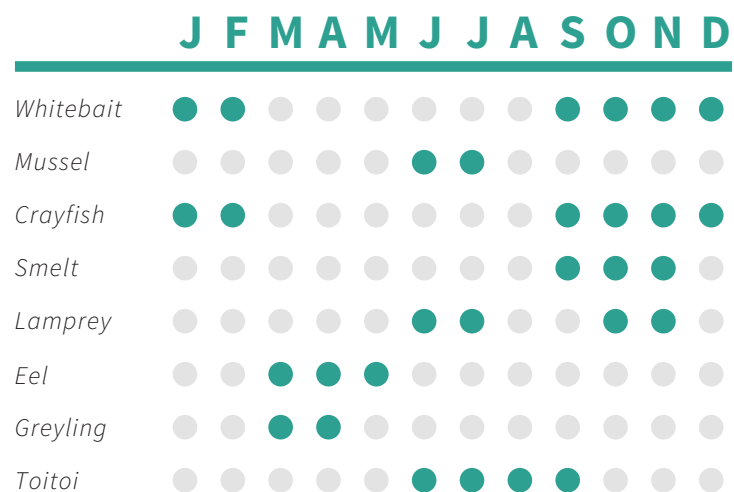
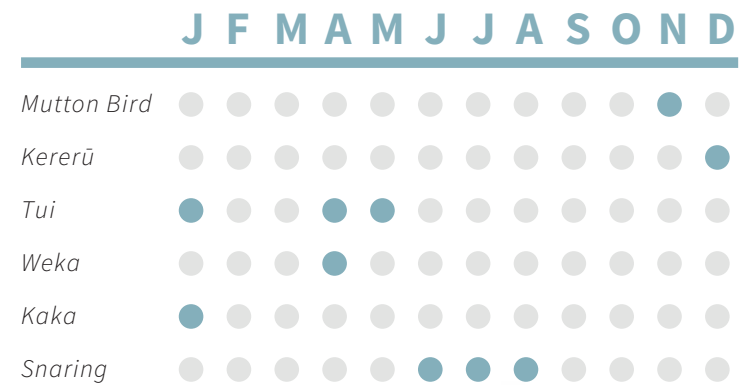


Fig. 24 | Māori harvesting seasons

FRESH WATER



SKY



Before the introduction of organised cultivation and intensive farming, indigenous Māori would move from one source of food to another as seasons changed. This ensured the crop had time to grow and re-populate as to not effect next years yield. Fish from the sea and freshwater eel were caught at specific times of the year where their nutrients were at their highest, which was common where Māori had a deep understanding of migratory patterns.



Clockwise from top left

Fig. 25 | *Māori woman and child, 1870c.*

Fig. 26 | *Young Māori girl at Te Ariki Pa, 1880c.*

Fig. 27 | *Eel Weir on the Whanganui River, 1924*

Fig. 28 | *Māori group on the Ruamahanga River*

Fig. 29 | *Hoani Te Whatahoro Jury*

Fig. 30 | *Rural Wairarapa, including rivers, wetlands and farmland*

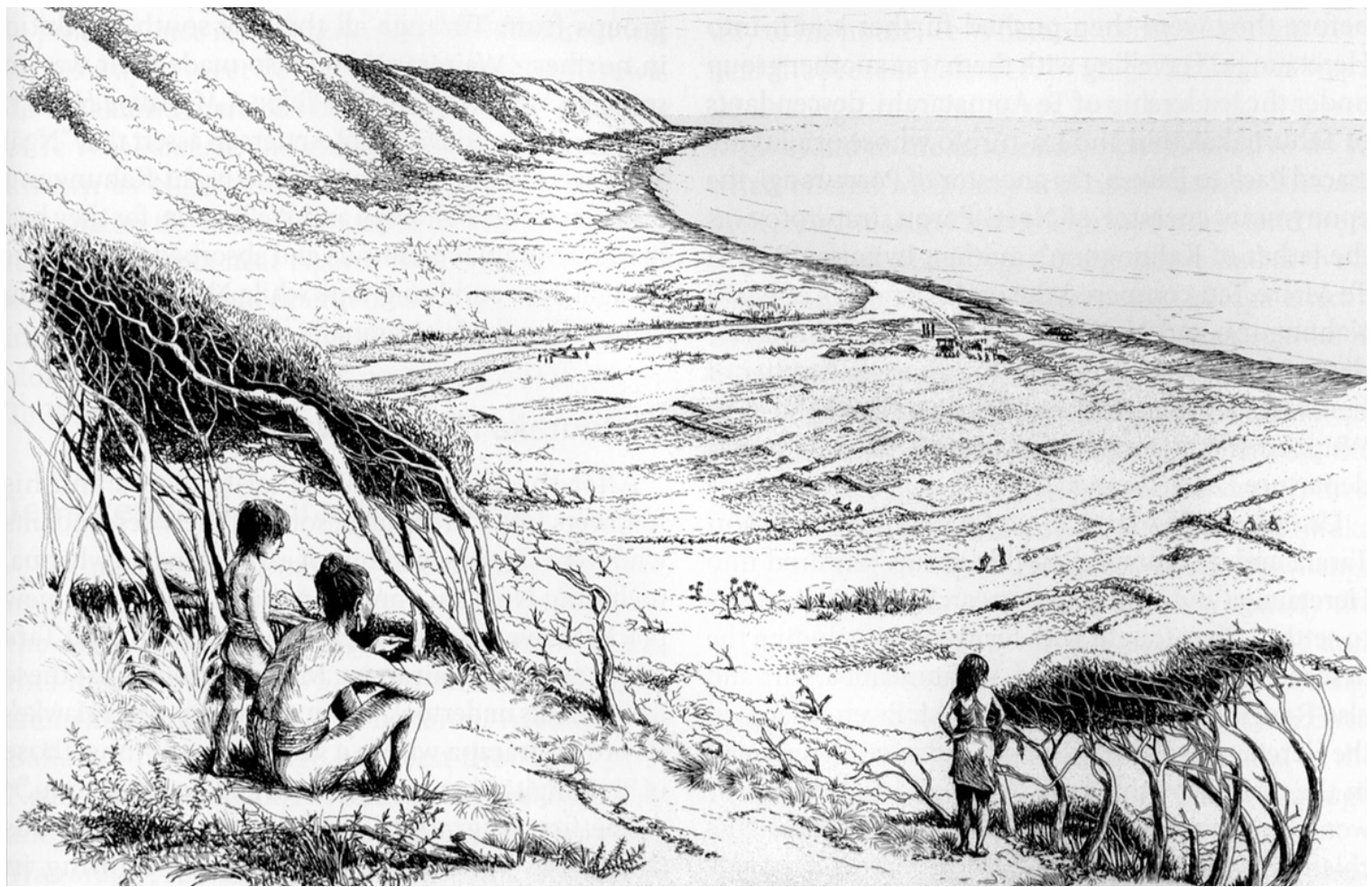


Fig. 31 | *Māori look upon confiscated land in the South Wairarapa, 1845*

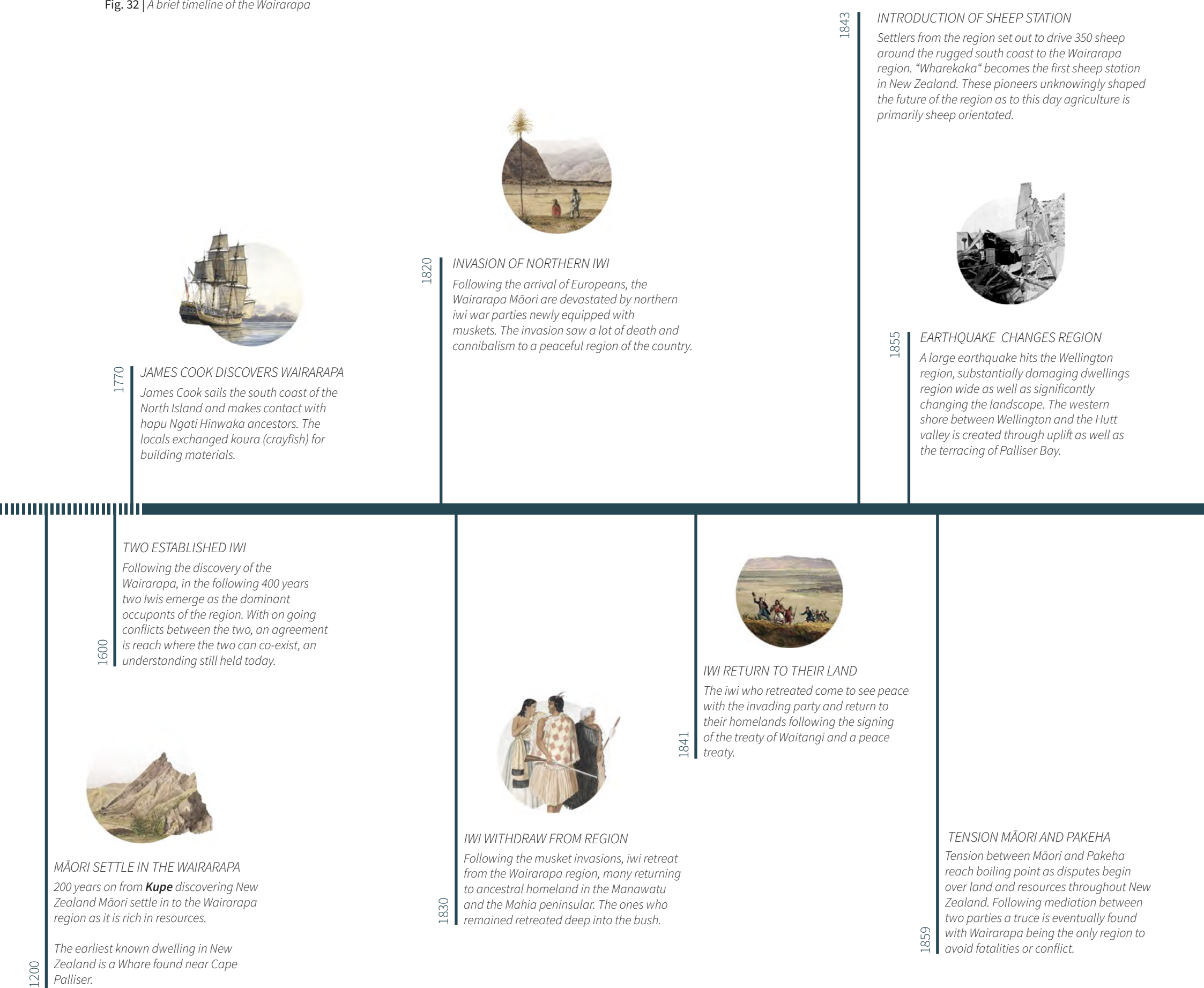
2.7 *DEFINING A CULTURAL RELATIONSHIP*

Following the colonisation of New Zealand, and the acquisition of large amounts of the Wairarapa regions pastoral land by the crown, Māori faced increasing restrictions to where they were able to harvest their resources. And were systematically evicted from their land as further sheep stations and cattle farms developed. Large infrastructural changes were undertaken to aid in intensifying the economic output of the region at the expense of local biodiversity. The following years saw the possession of most of the pastoral and arable land go to the crown. This ‘divide and conquer’ era began the divorce of the Māori culture and the Wairarapa landscape. European farming by this point was highly developed and in many cases intensively farmed, and like many endeavours of the time, was undertaken with complete negligence to the surrounding ecologies.

The events that shaped the region, the successes, failures, the innovations and stagnations are important, and should be recognised. It is these events which have, for both Māori and Europeans linked people to their place. Just as the Māori who shared stories and ideologies to younger generations, teaching fishing techniques and harvesting knowledge, farmers of today in a similar fashion pass on their land generationally, teaching their children.

The region has become a bicultural landscape, both cultures have been benefactors of its occupation and this design experimentation should reflect so. Its intent should aim to improve the relationship of all residents of the region and not only protect but enhance ones ability to interact and appreciate ones own environment.

Fig. 32 | A brief timeline of the Wairarapa



1878



RIMUTAKA INCLINE RAILWAY

The railway is opened and replaces coastal shipping as the main transportation of goods produced in the Wairarapa.

The railway played a large part in increasing the population of the region as commuting to Wellington city became far easier.

1888

OPENING OF LAKE FERRY

The river board unilaterally opens the lakes despite significant Māori protests.

1914



WWI FEATHERSTON CAMP

After Britain declares war on Germany, New Zealand's largest training camp is established in Featherston. At its peak it housed 7500 men. Over the four years, 35'000 soldiers moved through the camp before shipping overseas, many to never return.

1939

TRAINING CAMP REOPENS

The Featherston training camp is reopened during WWII to house Prisoners of War. American soldiers on leave are camped in memorial park as a means of relieving the public's worry about the war reaching our shores.

1955

KOREAN WAR WOOL BOOM

The Korean war sees the need for wool, meats and dairy exports. Returning soldiers are aided by local government onto "ballot farms" helping them re-adjust to life in New Zealand.

The tourism industry begins to gain traction with the establishment of a nine-hole golf course.



1990

FREEZING WORKS CLOSURE

The Waingawa freezing works, one of the biggest employers of the region, closes and has a huge impact on the economy of the Wairarapa which was already facing its demise following the 1987 market crash.

1900

ORCHARD ESTABLISHMENT

Vineyards are planted within the Wairarapa. The region's soils and climate produce world class wines. Fruit orchards are established and would make Greytown famous for its produce. The Skeet brothers create the world-famous Gala apple.

1929

SUGAR BAG YEARS

The establishment of the Waitangi Tribunal offered an opportunity for iwi of the region to reclaim land that was wrongfully taken from them or traded in a deal which was never met on the European side. Much of the lake that was once gifted to the crown was returned to local iwi.

1975

WAITANGI TRIBUNAL

Following the end of the war and the wall street crash, times are tough for locals as work diminishes. poverty sets in for locals of the region,

The straightening of the Waipoua river offers work to a lucky few.

1880



DEPRESSION SETS IN

As the depression begins to take its toll on the wool industry, the refrigerated meats business booms as exports to Britain become highly sought. This economic change gave birth to the many dairy farms in the region.

1908

THE PROHIBITION ERA

Just 8 years after the establishment of the vineyards, prohibition sees the ban on wines. The vineyards are ripped out which brings to an end several successful businesses and stunts the growth of what will become a leading tourism attraction to the region.

1949



AERIAL TOPDRESSING

Department of Agriculture begins top dressing areas of the region once unsuitable for agricultural purposes.

This sees a large expanse in the agricultural sector of the Wairarapa and the introduction of personal farm airstrips.

2012

CAMERON'S ORGANIC FARM

From 2012, James Cameron has purchased over 1500 hectares in a bid to replace harmful dairy farming with a more eco-conscious agricultural food production business.

A landscape photograph of a body of water, possibly a lake or a wide river, under a dramatic, cloudy sky. In the foreground, several weathered wooden posts are partially submerged in the water, with some dry reeds or grasses tangled around them. The water is calm with subtle ripples. In the background, a range of low mountains or hills is visible on the horizon. The overall color palette is muted, with purples, blues, and greys.

3.0

Theory + Case Studies

3.1 *THE VALUE OF INDIGENOUS KNOWLEDGE*

New Zealand, like other recently colonised nations has seen the eradication of indigenously governed resources. As the crown divided and sold land, Māori lost the ability to dictate the consumption of its resources, which has led to the environmental issues seen today. In recent years, there has been an international movement toward research into indigenous cultural knowledge to remedy environmental decline and to develop sustainable frameworks for the management and future use of natural resources.

It is difficult to define what sustainability means in regards to a productive landscape. Author Paul Hawken states that, “sustainability is about stabilising the currently disruptive relationship between earth’s two most complex systems – human culture and the living world”. This interpretation is pertinent to the situation we face in New Zealand. Agricultural operations rely heavily on resources from lakes, rivers and wetlands leading to their decline. This degradation has come largely at the expense of the indigenous people, causing imbalance between people and place and as a result are losing an intricate and holistic relationship with their surrounding environments.



Fig. 33 | Māori Urban Design Principles

Tāone Tupu Ora is a collaboration of essays from Architects, Urban planners, Economists and Iwi advisors who are working together to create a manifesto which encompasses the values of all Māori, and aims to document this into a cohesive framework which embodies indigenous knowledge and values in a legislative manner and used along side the RMA (Resource Management Act 1991).

The authors acknowledge the difficulty in defining the term 'indigenous knowledge', it is debated and contested to this day. For clarity, the author interprets Indigenous knowledge as "an accumulated understanding that a local community develops over many generations, it commonly encompasses values, skills and practices that guide long-term behaviour and actions of a group in its locality".

Recently, local councils, ministries, architects and planners have worked with iwi across New Zealand, to create policies which embody the values of local significant iwis, these values can differ slightly from place to place, but share some common foundational traits. The following nine principles are founded upon core values which have influenced how Māori relate to and inhabit their environment, they are strategically broad, allowing for the adaption to a more site specific response determined by individual iwi's and relevant stakeholders.

Tāone Tupu Ora focuses primarily on the benefits these design principles bring to the urban realm, where the loss of cultural identity has become all-to-common. This research intends to adapt and apply this theory to rural New Zealand and its currently growing large scale regional issues. Unlike the retrofitting of an urban centre, these principles will be used to facilitate growth of a currently or foreseeable urbanising landscape. All too often in this field of research, theorists focus on towns and cities as their case study of ecological decline. In order to make this theory applicable to the situation facing the South Wairarapa, this research seeks to include agricultural development within the realm of the 'built environment' where action of man has altered the natural state of the environment and its ecosystems.

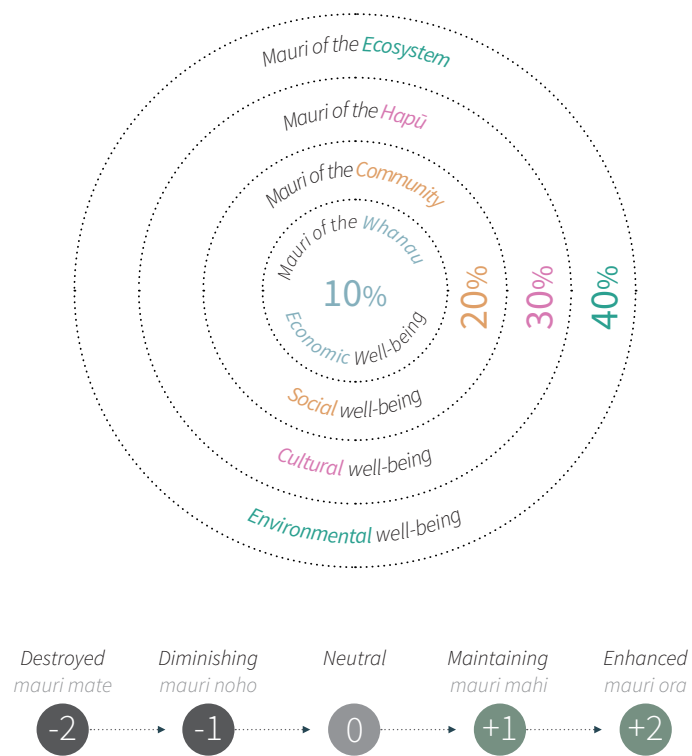


Fig. 34 | Decision making tool for assessing importance of Mauri

3.2 STEWARDSHIP, WELL-BEING AND MUTUAL PROSPERITY

The ability to govern and dictate the consumption of the landscapes resources is one of the foundations of Māori culture. **Kaitiakitanga**, or guardianship, is a term used to describe the conservation and protection of natural resources and is a valuable cultural sustainable mechanism to Māori culture (Rolleston). In Māori culture, the landscape was not an object, it was a living, breathing entity, an extension of an iwi's **Whakapapa**, (its genealogy). Each entity within an ecosystem, from a mountain range, river, tree or even something as insignificant as an insect were all connected genealogically. These 'entities', however small or insignificant held **Mauri**. Mauri, an entities 'life force', is a way in which indigenous Māori could monitor the quality of their living environments (Harmsworth and Awatere). For example, a river's mauri would be determined by its ability to maintain and support life, if the river was overfished it would typically mean it had been drained of mauri and allowing time for this ecosystem to replenish itself would in turn restore its ability to support life, and therefore its mauri.

This unique cultural knowledge mitigated the abuse and exploitation of resources by monitoring surrounding ecosystems and their health which would convey directly to the perceived well-being of the tribe. In a Māori perspective, **Orangatangata**, or well-being, emerges from the development and preservation of relationships which enhance Mauri, these relationships are not restricted to human and human relationships but also human to non-human kin (Reid, Barr and Lambert). This unique relationship further defines the importance of local ecosystems to an iwi's health.

This genealogical relationship between people and place means that there is a domino effect in the way the health is recognised. In order to improve the health of the people, we must address the rivers and fields we yield from. To fix these rivers and fields we must improve the local fauna, as a

natural filtration of pollutants, and in order to improve this fauna, we must reconsider land uses bordering or upstream of these ecosystems. This interdependency conveys itself as a reciprocal relationship comprising **manaaki whenua** (caring for the land) and **manaaki tangata** (caring for people) (Harmsworth and Awatere).

The challenge facing this symbiotic relationship is the way western culture determines value. When economic output outweighs the importance of ecological resilience both perceptively and legislatively, there is always going to be a diminishing relationship between ecosystems and economy. The following tool was developed to assist in decision making, allowing one to understand how different events and activities effect the balance of Mauri in ecosystems, and to establish the relationships between sustainability and the environment (Harmsworth and Awatere). The tool establishes a hierarchical order of importance of well-being outcomes. Environmental well-being is the primary concern allocating 40% importance, followed by cultural, then social and least essentially, economic well-being, taking just 10%.

The tool attempts to convey the way Māori see the health of ecosystems. Mauri is not measured in a fixed state, meaning for example a river's Mauri is never static. It is forever changing, due to the fluctuating impacts from social, ecological and economical impacts, the assessment tool was developed as a framework to assess changing Mauri, and works to classify Mauri with a numerical figure. The tool allows Mauri to be assessed scientifically rather than just perceptively.

The following case study examines a local example of sustainable design driven by indigenous knowledge and values. The design strikes a balance between economic and ecological prosperity while enhancing the mauri of a culturally significant landscape.



Fig. 35 | *Orongo station prior to development*

3.3 CASE STUDY I

Orongo Station Conservation Masterplan

Nelson Byrd Woltz Landscape Architects

Poverty Bay, New Zealand (2002 - 2012)

Prior to redevelopment, the Orongo station was a 3000 acre sheep farm on the east coast of New Zealand, just south of Gisborne. Through unregulated farming practices, the site, which was once home to a flourishing wetland system surrounded by hills covered in native bush, was beginning to show signs of resource depletion and ecological degradation including polluted waterways and with deforestation combined with the strong onshore winds, the surrounding hills were beginning to erode into the sea. The site still to this day is held very sacred to local iwi as it was a landing point of the first voyaging Māori, and is still host to a range of Māori earthworks including defence structures, food storage pits and an **urupa** (burial ground).

NBW, the firm responsible for the design of the Master plan for the farm proposed a radical change in land use. The surrounding hills, which were initially stripped for grazing land, were resigned to be replanted with native vegetation in efforts to not only stop erosion but to influence the return of some of New Zealand's endangered bird and vertebrate wildlife. The site was bordered by a predator-proof fence to promote nesting areas. 75 acres of wetland vegetation was reinstated within the valley separating the continuing sheep farming practices from the coast. The wetlands surround an implemented citrus fruit orchard, an effort to mitigate soil disruption, while still providing a profitable resource to the owners.

The overall scheme was to have an operational farm which not only worked around, but was influenced by its heritage. As a result, the entire scheme proved more financially successful than the preceding sheep farm, with the native vegetation providing nurseries, a thriving orchard and an arrangement of tourism locations within its borders, the station was able to prove successful and provide more employment opportunities.

The success of the station can be defined by comparing the weigh of the following design outcomes against the Mauri assessment tool, and the resulting mauri enhancement.

ECONOMICAL

- *resilience through new revenue streams*
- *Tourism opportunities*

SOCIAL

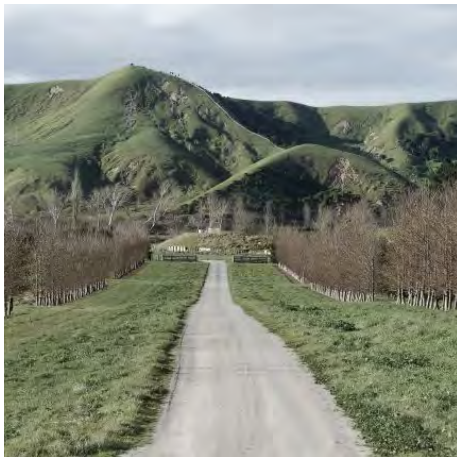
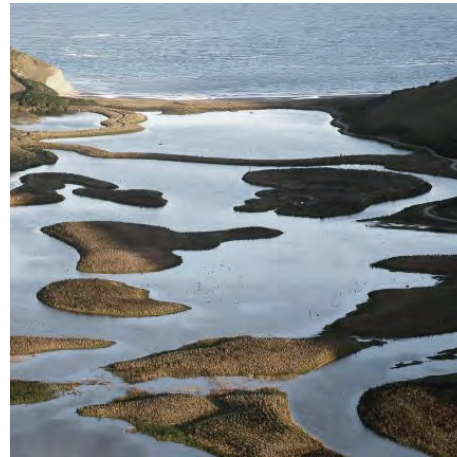
- *Publicly accessible*
- *Increased job opportunities*
- *Hosting workshops and other on site gatherings*

CULTURAL

- *Acknowledgement of heritage sites*
- *Inclusion of iwi in design process*

ENVIRONMENTAL

- *Re-planted vegetation in surrounding hills*
- *Thriving wetlands and shelter belts*
- *Less intrusive arable land use*
- *Removal of predators through perimeter fence*
- *Re-population of important native species*



Clockwise from top left

- Fig. 36 | *Reintroduction of native species*
- Fig. 37 | *Salt water wetland outlet*
- Fig. 38 | *Islands of vegetation amongst wetland*
- Fig. 39 | *Re-planting surrounding hills*
- Fig. 40 | *Citrus fruit orchard*
- Fig. 41 | *Road leading to on-site housing*



Fig. 42 | Orongo station Masterplan

The overall design was focused on becoming an exemplary model of successful farming management through balancing the values of ecology, economy and culture. The success of the master plan was a combined effort between the private stake holders, local iwi, the designers and local council.

Ecological restoration, agricultural output and cultural inclusion were all equally balanced in the overall redevelopment scheme, to produce what is now celebrated as one of the most successful sustainable farming models in New Zealand.

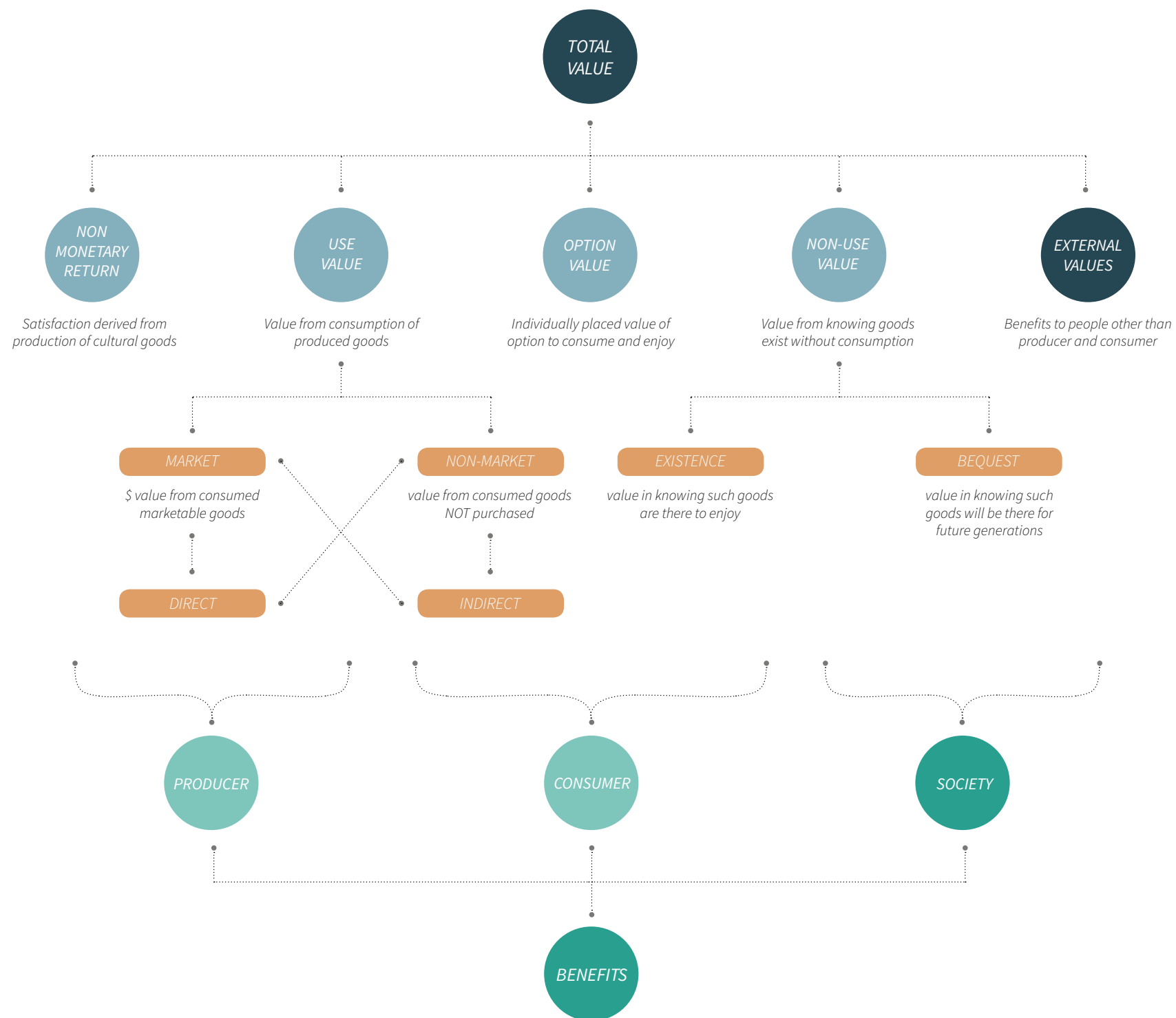


Fig. 43 | Total Value Diagram

3.4 THE ECONOMY OF HERITAGE

The Te Aranga strategy suggests we facilitate **Whanaungatanga**, or public participation in order to create a stronger connection between people and place, they offer the example of the use of civic spaces or communal gardens. Supporting such interactions with these environments is vital in creating a basic **Matauranga**, or understanding. As most traditions in Māori culture were passed down orally, most of their harvesting and cultivation techniques were taught by doing. With the ever expanding privatisation of local rivers, wetlands and fields, the ability to share traditions and lore's governing indigenous practices are lost, along with it, ones responsibility to maintain the health or Mauri of their surrounding environment.

The argument against the implementation of public reserves and civic spaces is the little to no financial return to the private stakeholders, who may inherently care for the preservation of the cultural landscape, but do not see any immediate economic return. This misconception is all too common in western civilisation, where value is measured only in a dollar value. The true value of cultural inclusion is difficult to measure, it does not come in the form of a monetary sum, but has far reaching benefits within both the community and the environment. In *Value and Culture: An Economic Framework*, the authors look to define the value which derives from the inclusion of culture and heritage. The total value is not confined to the financial return. It also includes the non monetary returns such as its value to society (Allan, Grimes and Kerr).

These external values, which include societal harmonies from a Bicultural landscape, reduced crime as a result of disadvantaged groups being involved in cultural activities, enhanced public engagement in cultural activities, and lastly, tourism.

New Zealand's second largest industry is tourism, which could benefit greatly from the enhancement of these cultural landscapes. In Māori culture, hospitality or **Manaakitanga** is an important cultural principle. The ability to provide for them themselves and also to visitors with food and medicines was central to Māori society.

In the South Wairarapa alone there is over 50 remnants of indigenous life, ranging from **urupa**, kilns and weirs. These sites are often contested between the owner, who requires the land for grazing, and the Tangata whenua, the descendants of the indigenous tribes, who wish to preserve these relics. This on-going dispute leads to a stalemate where the site is neither profitable or accessible for those culturally connected to it.

The following case study looks at an international heritage rich landscape which has been enhanced and restored to strike a balance between financial and cultural profitability by using similar evaluation tools to the Māori culture.



Clockwise from top left

- Fig. 44 | *The Heidendor (Pagans Gate)*
- Fig. 45 | *The Heidendor viewing area*
- Fig. 46 | *Aerial photo of the municipal amphitheatre*
- Fig. 47 | *Archaeological interpretation of an orthophoto*
- Fig. 48 | *Recreation of the Heidendor ruins*
- Fig. 49 | *The triumphal arch recreated on perspex (plastic)*

3.5 CASE STUDY II

Archaeological Park Carnuntum

Cook & Hawley Architects

Attenburg, Austria 1993

Located along the banks of the Danube river, The Archaeological Park Carnuntum (APC) sits upon the ruins of what was once an outpost of the Roman army and was the epicentre of fortifications lines along the Danube. The APC is made up of 5 locations and lies between today's villages of Petronell and Bad Deutsch-Altenburg. These locations consist of the reconstructions of a Roman city, civil amphitheatre, the Heidendor (pagans gate ruins), military amphitheatre and the museum Carnuntum. The entire complex spans over an area of roughly 12ha.

The APC faced many hurdles in its conception. The remnants of this Roman outpost had fallen victim to urban expansion and became privatised through the growth of farms in the surrounding peri-urban landscape. As the park stretched such large distances, issues arose from the need of access through privately owned land. An agreement was met, and under a unique contract the park was co-owned between local government and the affected farmers and growers.

The archaeological remnants cover only 0.5% of the required land, yet due to the distance between the park's components, a significant amount of farm land was to be reclaimed, land that was, too, the farmer far more profitable as an arable landscape. Using the 'total value' method of assessing the value which the APC park creates. The values that derive from the APC's creation can be defined in three categories, benefits to the owner, benefits to the consumer and lastly, benefits to society.

OWNERS

- The financial return on admissions and venue rental
- The satisfaction in being able to provide access to a cultural landscape

CONSUMER

- The satisfaction derived from visiting this cultural landscape
- The value derived from having the opportunity to visit and experience again
- The value in knowing the park exists even without having visited

SOCIETY

- Value in knowing the preserved heritage will be there for future generations
- Ecological improvements through reduced agricultural impact
- The financial value invested back into local economy
- Increased employment opportunities
- Value derived from improved public engagement and interaction
- The value in knowing the park exists even without having visited

The success of the Archaeological Park Carnuntum is largely due to the outcomes in which it desired to meet. uniquely, financial return was merely a subsequent interest. The primary outcome for the construction of the park was conservation and the ability to provide public access to these heritage sites.

The park is a self-proclaimed “open-air museum” which is defined by the Association of European Open-Air Museums (AEOM) as

“Museums that are scientifically planned and directed collections illustrating settlement, building, living and economic patterns, presented as entities in the open-air in a delimited part of the landscape which is declared to be museum ground. They are open to the public and serve conservation purposes as well as having individually defined scientific and educational aims”

There is much potential for a similar installation within the South Wairarapa to prove successful. The benefits that will arise from the identification and conservation of indigenous landscapes may not produce an overwhelming financial return, but will have far reaching benefits to both society and the environment.

3.6 BICULTURAL DESIGN AND SUSTAINABLE CO-MANAGEMENT

There is a general consensus among theorists that there are both sustainable and unsustainable indigenous practices (Livesey). Just as western society, Māori cultures harmonisation between people and place came through a process of trial and error. The cultural landscape of New Zealand has been shaped by both positive and negative forces from both Māori and European, and successful bicultural design reflects the positive impacts from both.

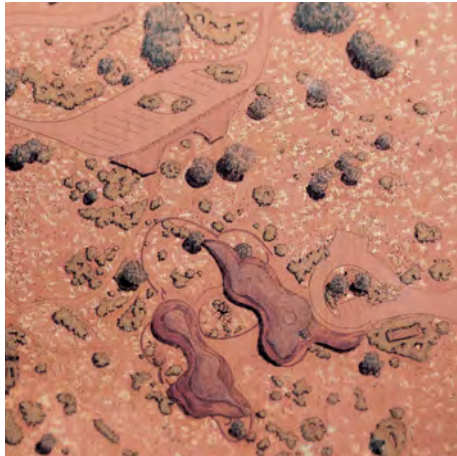
The process of designing a bicultural landscape scheme is a complex endeavour. Too often, western conservation efforts have strived to separate people and place. To the uninformed, the idea of a cultural New Zealand landscape is an ‘untouched and natural’ park, a pursuit to restore the landscape to its pre-colonised state, void of human intervention. This research argues against this notion, where human settlement and ecological influence is central to creating a cultural landscape. Although often claimed, New Zealand’s designed landscapes often fail to represent a bi-cultural nation. Author Bill McKay suggest there is little evidence in New Zealand of a “sharing or blending of two cultures on more or less equal terms”. New Zealand landscape design often falls short when it comes bi-cultural design. Too often we see the result as a westernised scheme superficially skinned, typically in the form of cliché symbolism and materiality. Theorists of culture have suggested that, landscape is not restricted to the artefacts and products of a culture, it is also an expression of cultural values (Allan and Smith). When design fails to delve deeper than the cosmetic cultural facade, the result is an unbalanced and far-from-equal landscape, usually the result of a lack of understanding designers have of these core values.

The Te Aranga principles suggest **Kotahitanga**, or collaboration, as a design response, a key component in creating a landscape which reflects values from both Māori and European influences. Kotahitanga, or cohesion / collaboration is effective in creating a design which reflects a bi-cultural response. There is an increasing recognition that there is no single profession that can deal with the complexity of change within cities, towns and landscapes (Awatere, Rolleston and Pauling). Unifying values of indigenous knowledge, urban design and resource management will be imperative in creating a bicultural landscape where prosperity will be received mutually. Sustainable growth and planning will require a cohesion between indigenous knowledge (cultural expertise) and local government knowledge (technical expertise) (Livesey).

Many current examples of resource management strategies which do take into account cultural values fail to acknowledge the complexity of indigenous ideologies. Successful resource management requires collaboration at the community level. The value placed on certain resources and environments are site specific. Some iwi may hold certain landscape features to a higher regard than others, therefore, creating a nationwide strategy would be misguided, as the design response needs to be site specific. This participation further expands an iwi's ability to identify important features of the landscape and their **Wairuatanga**, their embedded spirit.

There is a growing acknowledgement within New Zealand that the inclusion of Māori in the management of resources can prove financially, ecologically and socially beneficial. Co-management of resources helps strengthen indigenous self-governance (Wevers). Tribal structures and a deep rooted knowledge of the surround environment translates to a strong **Rangatiratanga**, or identity, within society.

There are many international examples of strong co-management, where indigenous people have given input to the way in which their land is governed. The following case study looks at a successful landscape design in Australia, which was the product of a collaboration between architects and the Anangu people.



Clockwise from top left

- Fig. 50 | *Traditional stonewalls*
- Fig. 51 | *The site from above*
- Fig. 52 | *Education signage*
- Fig. 53 | *Complex blended in with ecologies*
- Fig. 54 | *Passive occupation of the landscape*
- Fig. 55 | *Building reflective of context*

3.7 CASE STUDY III

Uluru-Kata-Tjuta National Park

Northern Territory, Australia

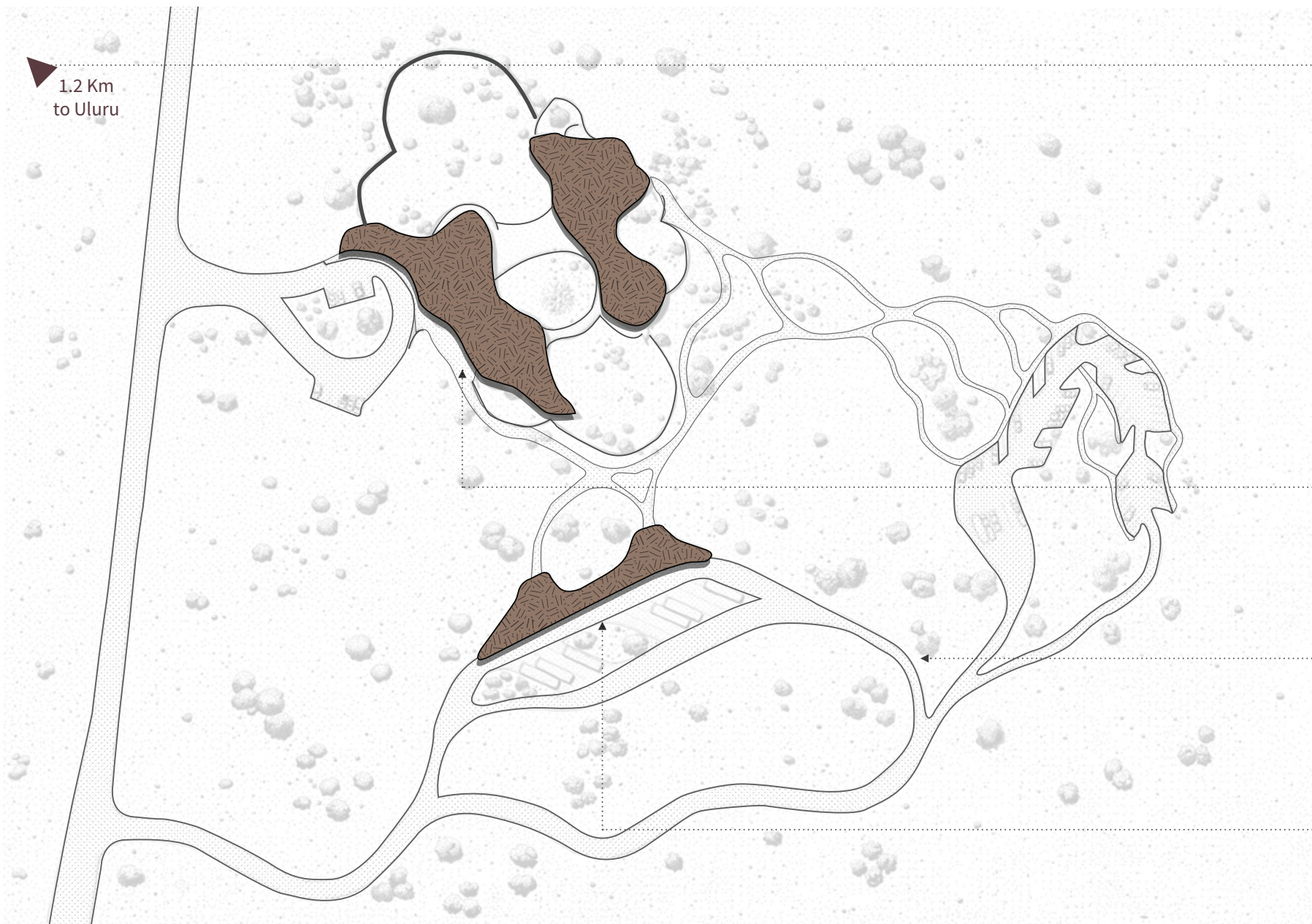
TAYLOR.CULLITY.LETHLEAN ARCHITECTS

Uluru-Kata Tjuta National Park is just one component of a wide spread aboriginal cultural landscape, which spans the entire Australian continent. The park embodies the work of both the Anangu (indigenous tribe of the area) and nature, over thousands of years. Central to the park is Uluru (Ayers rock), one of the most notable landscape features in Australia. The red rock has become an symbol of Australia's aboriginal landscape, and epitomises the profound spiritual and cultural importance of the landscape to the country's indigenous people.

As a result of the attraction to such a significant landmark, the site was met with increased tourism. This spike meant that the sparse desert landscape was at risk of degradation with the influx of visitors, who, without intention, were imposing on cultural land and in turn negatively effecting the indigenous peoples management of their landscape.

The park is owned by the Uluru-Kata-Tjuta Aboriginal Land Trust and spans 1325 sq. km. The park is co-managed between the Australian Government and the Anangu people, who govern the landscape under traditional Anangu Law, the Tjukurpa. These indigenous laws shares many common traits with Māori culture. Like Māori culture, the Anangu believe that the landscape was created by ancestral beings. As descendants of these beings they are responsible for the protection and sustainable management of their land, and its resources. The traditions, lore's and ideologies have been passed down from generation to generation through the Tjukurpa.

Tjukurpa establishes the nature of relationships between those responsible for the maintenance and enforcement of Tjukurpa, and their correlating landscape, their obligations and the obligations of those visiting their land. Integrity, respect, honesty, trust, sharing and learning are all important integral values in indigenous landscape management.



1 : 50 000

Fig. 56 | *Uluru Kata-Tjuta National Park Cultural Centre*

In the heart of the park is the Uluru–Kata Tjuta Cultural Centre. A complex which hosts a large amount of the tourism traffic in the region and is the information hub for Uluru. The building was completed in 1995 and was a collaboration between traditional architects and the Anangu people. The complex was designed in conjunction with Tjukurpa law and obeys and emphasises the passive and sustainable occupation of the landscape. Every part of the design, from the site down to the materials was guided by the Anangu and the Tjukurpa.

• *Location*

The centre is located over a kilometre away from Uluru, their was a stressed importance that the viewing of Uluru was not to damage the artworks and stone engravings which decorate the base of the rock, as well as the numerous inhabitation sites.

• *Structures*

The buildings forms are inspired by the stories of creation from the Anangu people. The two main structures represent the Kuniya (woman python) and the Liru (poisonous snake). The inspiration for the building was to celebrate the culture and the returning of ownership to the indigenous people. Its goal is to educate visitors through art, music and other digital media.

• *Forms*

The sweeping paths and winding driveways have a passive position in the landscape. Not only are they reflective of aboriginal artworks, they are abiding by laws to not harm or alter the landscape. Rather than removing trees or rocks to make way for the structure, the entire complex was designed around existing vegetation. The goal was to be as unobtrusive as possible.

• *Materiality*

The materials used in the construction of the complex were made and influenced by the Anangu people. To adhere to the Tjukurpa law, materials were locally sources and chosen to create a building which blended into the landscape, as to not diminish the wider landscape.

The Uluru Kata-Tjuta National Park is a testament to the positive outcomes co-managed landscapes can provide. As a result of the collaboration between the indigenous people (cultural experts) and local government (technical expertise), The park stands as a strong example of successful bicultural design, it strikes a balance between ecological, economical and social well-being.

3.8 *DEVELOPING A DESIGN RESPONSE STRATEGY*

In order to address the issues identified in both the site and cultural analysis, a design response must achieve a balance between ecology, economy and culture. Adhering to a bicultural approach to management, the values of the **‘client’** are to be met through three *design elements*:

‘Society’ through *Restoration*

The re-introduction of native vegetation, re-populated wildlife, increased access, improved water conditions and reduce weather impacts.

‘Iwi’ through *Identification*

Acknowledging heritage and associative landscapes and allowing public access to previously privatised resources.

‘Stakeholders’ through *Cultivation*

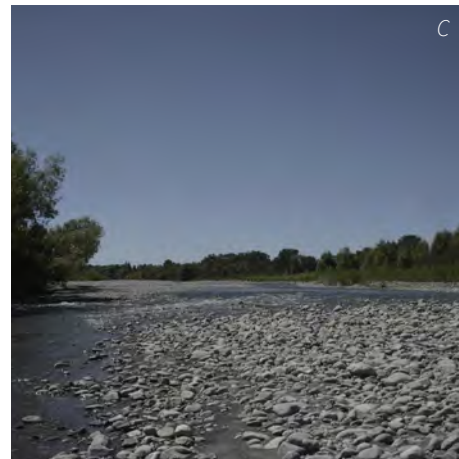
The continued and strengthened production of both natural and agricultural resources, through more sustainable practices.

The weighting of desired outcomes of design will aim to benefit, firstly, the environment, then culture then society and lastly the economy.

A landscape photograph showing a wide body of water in the middle ground, with a range of mountains in the background under a blue sky with scattered clouds. The foreground is a rocky, pebbly shore with some shallow, winding pools of water. The text '4.0' is overlaid in a large, white, serif font in the upper center of the image.

4.0

Design (Micro)



Clockwise from top left

- Fig. 57** | *Site A*
- Fig. 58** | *Site B*
- Fig. 59** | *Site C*
- Fig. 60** | *Site D*
- Fig. 61** | *Site E*
- Fig. 62** | *Site F*

4.1 THE TAUHERENIKAU RIVER

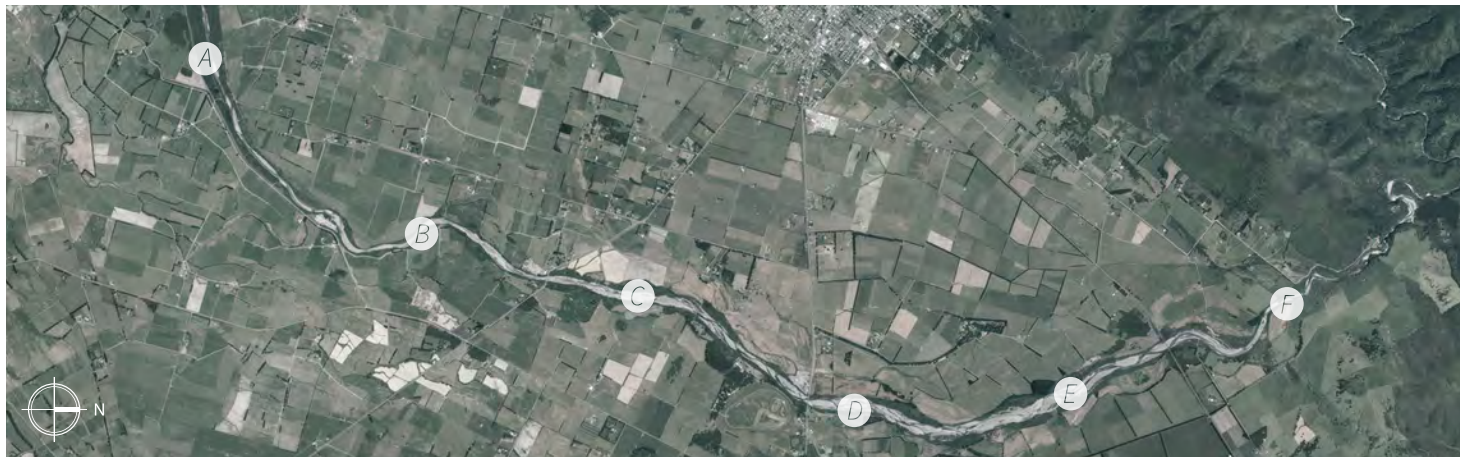


Fig. 63 | *The Tauherenikau River*

In order to address the issues facing lake Wairarapa, change is needed further north. The sediment flow corrupting the region's water quality is being delivered through its rivers. For this reason, the preliminary design will focus on Tauherenikau river, which enters lake Wairarapa at the most northern point. If Lake Wairarapa is said to be the heart of the region, then the rivers would almost certainly be the veins. Rivers offer a way of passage, ample food and drinking water and are the embodiment of ancestral beings to local iwi, they have sustained life to in the region for centuries.

The Tauherenikau river was once, prior to colonisation, populated with scattered huts along the lengths of its banks (Royal). The waterways accessibility was vital to the regions inhabitants, and to this day still is. Through privatisation the river is barely accessible to the public, with only a small

number of entry points, and its water is being diverted into irrigation schemes on nearby farms. The immediate surrounding landscape of the river plays host to a range of uses. As a result, the impact on the rivers water quality varies widely. In times of extreme weather, flooding in the region has severe effects on these surrounding fields, bringing with it the settled sediment from nearby farms and factories[FIG].

The banks of the Tauherenikau are under pressure from the surrounding fields to filtrate run-off. An engineering response would be to strengthen it through the planting of riparian buffers along the length of its banks, But this research seeks to use a bicultural method to address these issues therefore the site will be assessed through both a technological and experiential approach.



Fig. 64 | The Tauherenikau River & surrounding farms

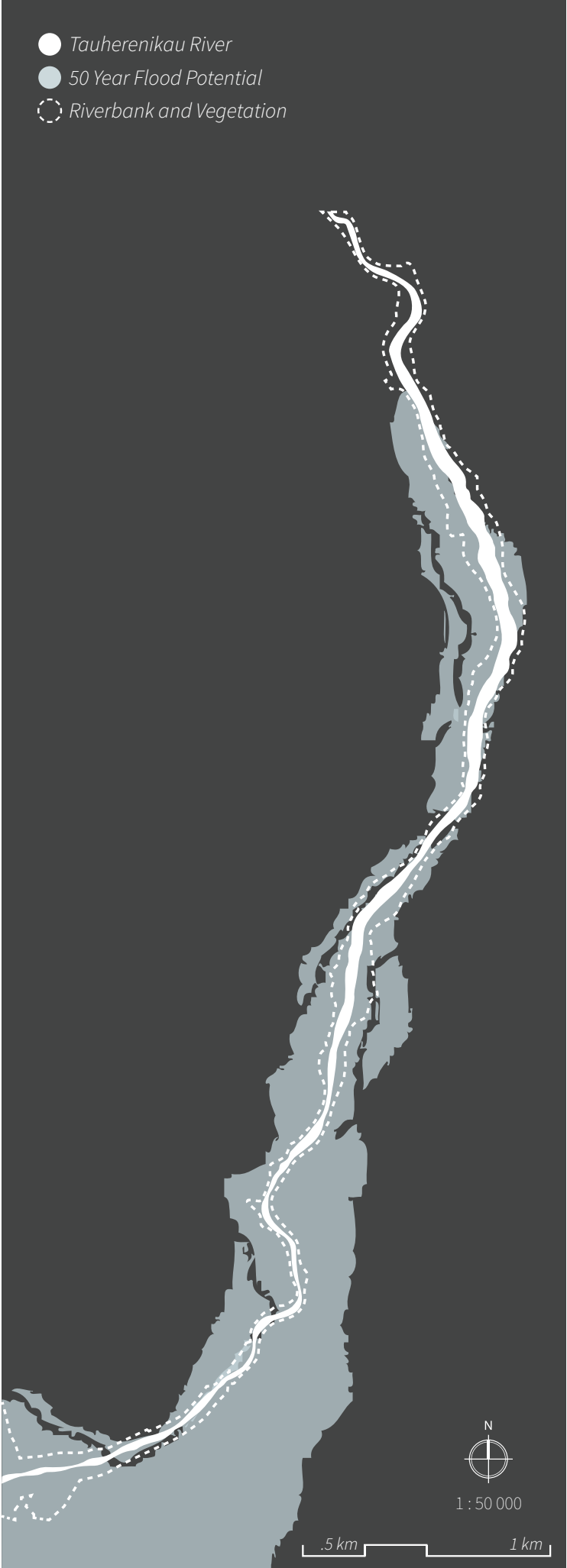


Fig. 65 | Flood potential of the Tauherenikau river

Fig. 66 | SECTION A-A' : UPPER RIVER

The upper river is relatively low in sediment levels and has small exposure to surface flooding. There is a lack of river side vegetation at the northern end.

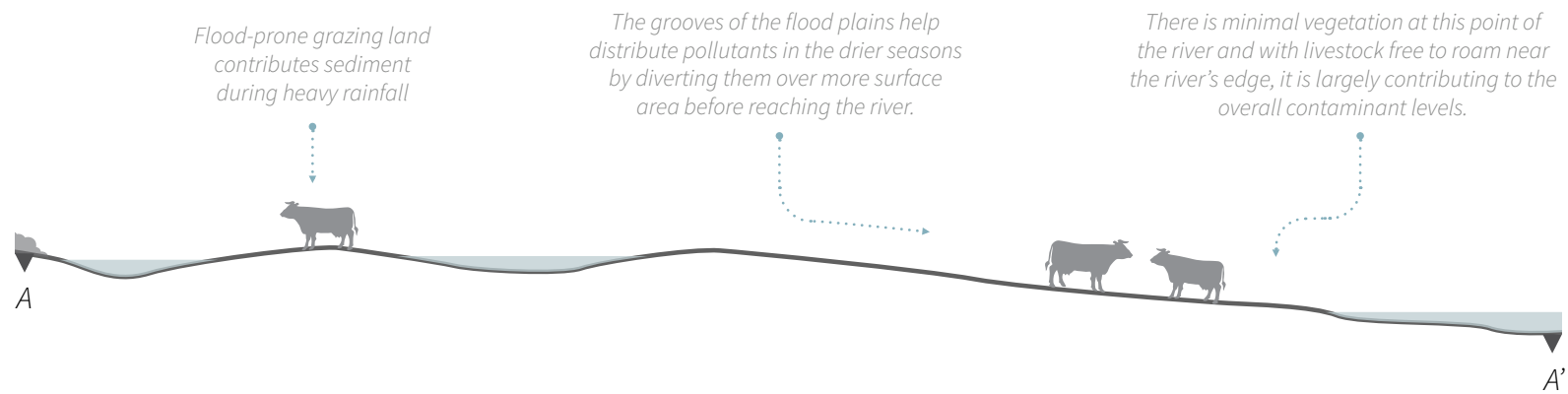


Fig. 67 | SECTION B-B' : MID RIVER

the river is much more susceptible to flooding which combined with dairy farming either side has little ecological benefits. The riparian buffer is wider at this point, but flooding can surpass this.

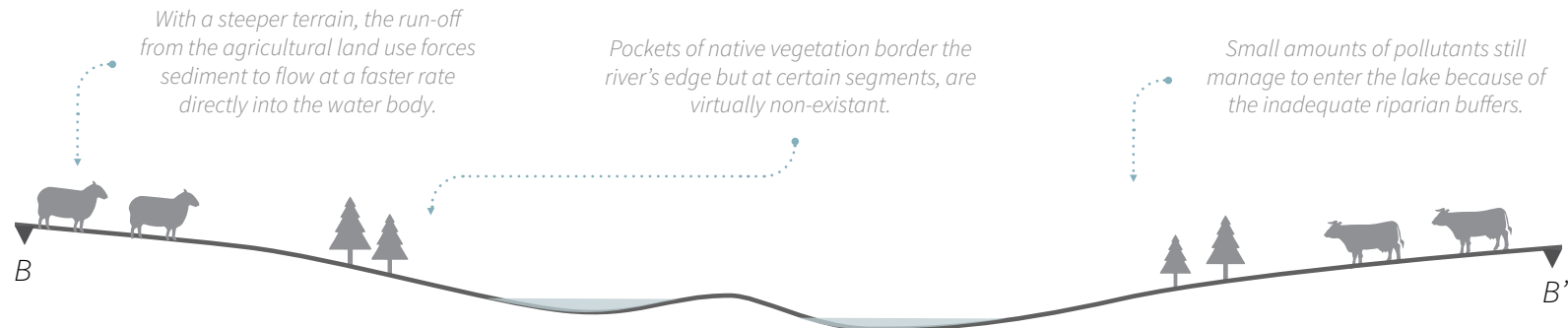
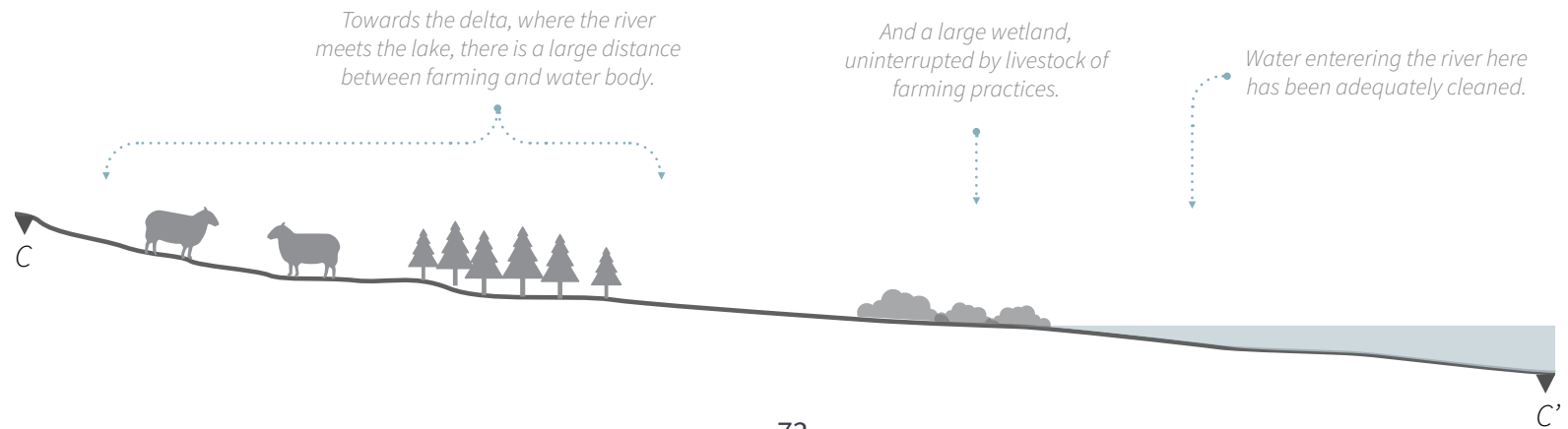


Fig. 68 | SECTION C-C' : LAKES EDGE

Currently, there is a significant wetland at the opening of the river which at present can not manage treatment



ASSESSING PRIORITY THROUGH DATA

Assessing the site through GIS data and aerial imagery, the river’s influences can be mapped to the surrounding ecologies and the external agricultural operations. To determine where design intervention is best suited, land is first categorized by its use[Fig. 69]. Secondly, determining how those uses are directly effecting the river[Fig. 70], and lastly dictate a scheme in which would first address the most severely affected areas [Fig. 71].

SURROUNDING LAND USE

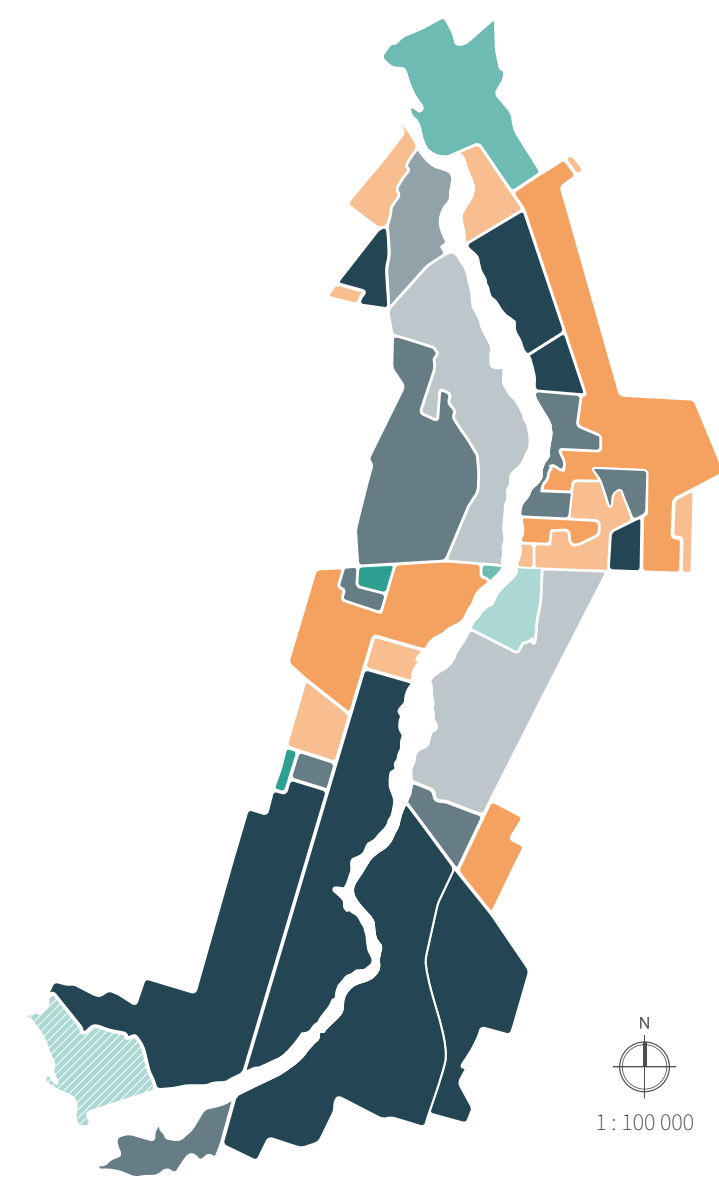


Fig. 69 | The Tauherenikau rivers surrounding land uses

- | | | |
|--------------|---------------|---------------|
| Horticulture | Dairy Support | Dairy |
| Vegetation | Lifestyle | Beef / Sheep |
| Recreation | Industrial | Finishing |
| | | Mixed Farming |

POLLUTANT CONTRIBUTION

LAND DEVELOPMENT PRIORITY

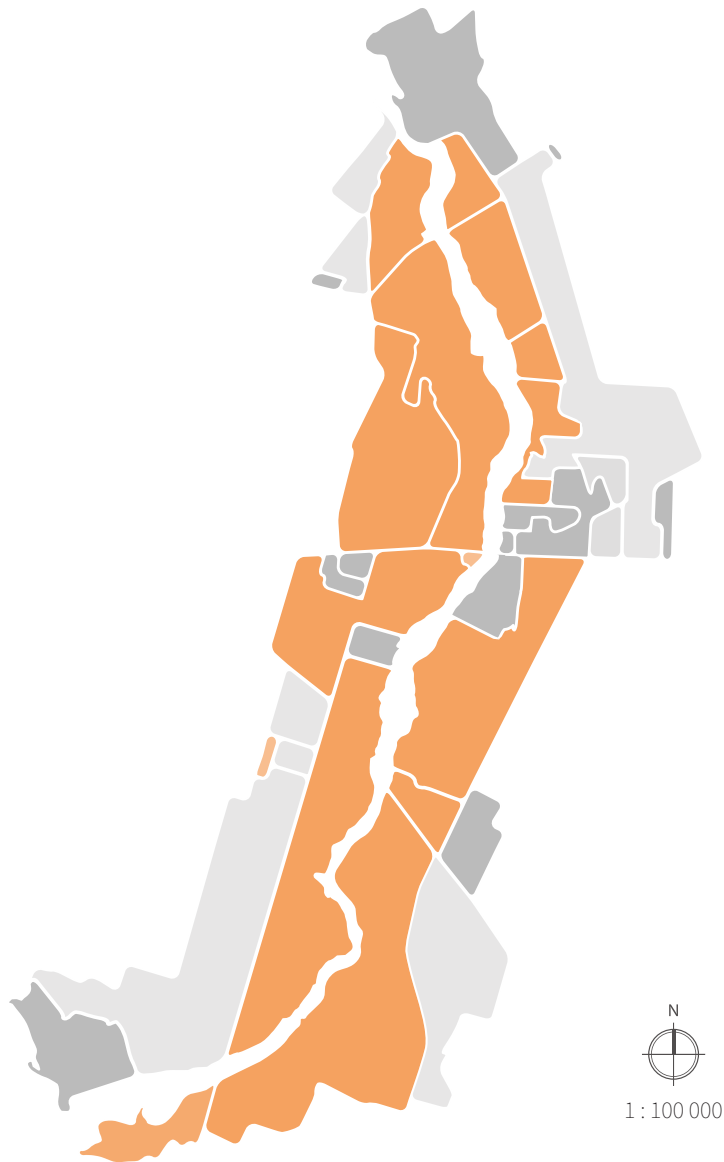


Fig. 70 | The land uses categorised by contribution to sediment levels

- Heavy
- Moderate
- Light

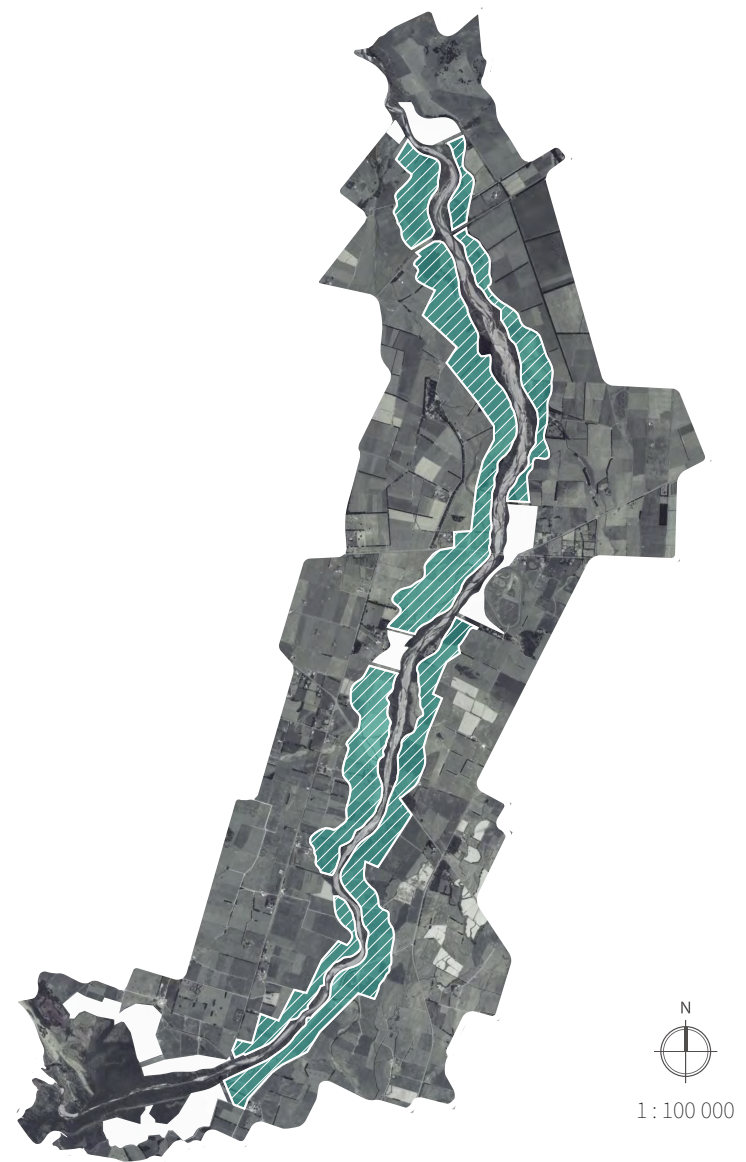


Fig. 71 | Development scheme dictated by pollutant levels

- First
- Second

ASSESSING PRIORITY THROUGH EXPERIENCE

Analysing the river through an experiential site visit yields different results to traditional digital analysis. To gain insight into the cultural relationships between people and place, research was undertaken through an initial site visit where the entire length of the river was walked under the guidance of members of local iwi.

Reference to the wider landscape was a common theme throughout the journey, rather than focus on the river and its banks, there was continuous mention of the outer region and the stories that had been created around a significant monuments

amongst the expansive floodplains. The affected areas said to have diminished state of Mauri, were not just those altered by pollutants, but those that were inaccessible and were not directly visible to one's line of sight. The analysis through experience added a third dimension to how this landscape was to be designed and managed, it was to not only correct ecological impacts but to reconnect itself to the wider area, acknowledging external forces and narratives that have informed how resources were made and consumed.



Fig. 72 | *Site response: Public markets (participation), Educational signposts (acknowledgement).*



Fig. 73 | *Site response: Habitat well-being, elevating to a higher point of view.*

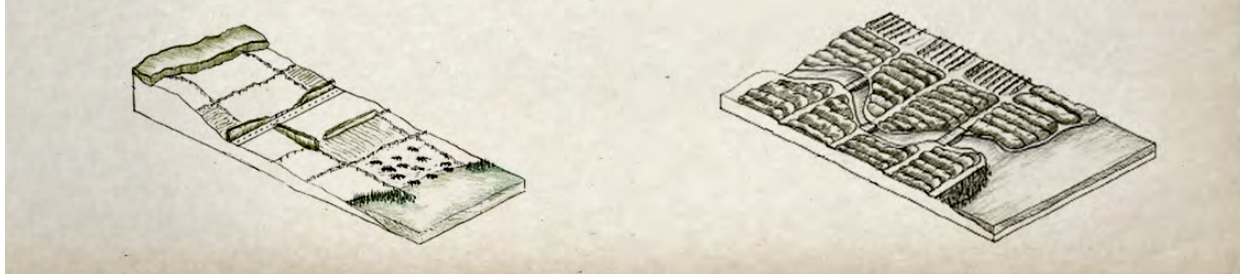


Fig. 74 | *Site response: reconfigured farmland*

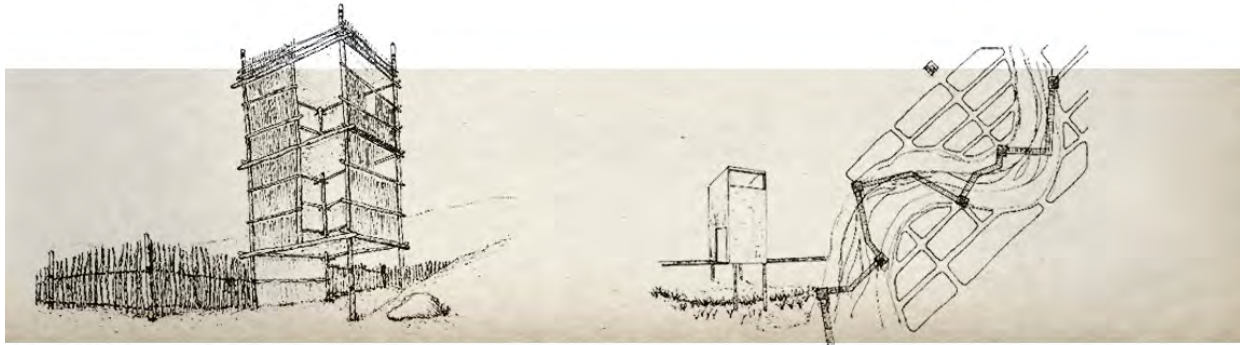


Fig. 75 | *Site response: line of sight, traditional forms for passage and navigation*



Fig. 76 | *Site response: Elevated walkways, removing human impact from ecosystems*

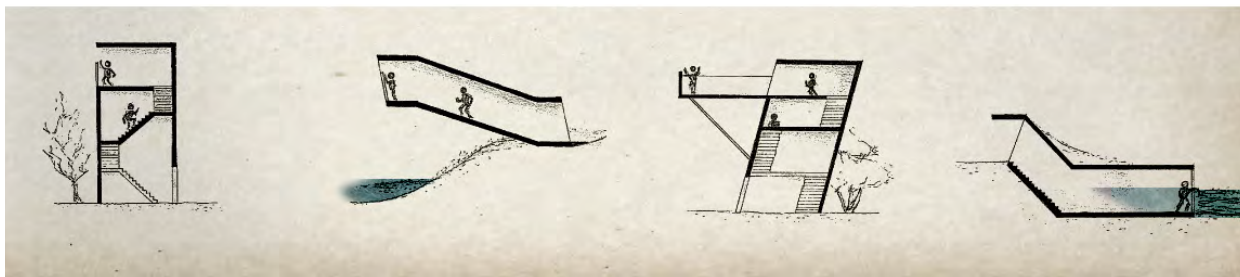


Fig. 77 | *Site response: Determined focal points, directional forms*

4.2 PRELIMINARY STRATEGY

The initial design response focuses on a site on the western edge of the Tauherenikau. the site is relatively flat, with little to no riparian buffer between farm land and river. The area is currently occupied by an industrial quarry and dairy farm. Susceptibility to flooding has lead to a higher than average pollutant output. The design proposes a radical change to the structure of the existing farms which currently occupy the site. The paddocks of the farm will be segmented into a cellular like structure, allowing wetlands and swales to run between paddocks, capturing agricultural run-off and other sediment. The area will be publicly accessible, accommodating visitors through walkways amongst the replenished vegetation as well as neighbouring farms, using strategically placed structures to both aid in navigation and to elevate the user, allowing a visual connection to the wider landscape.

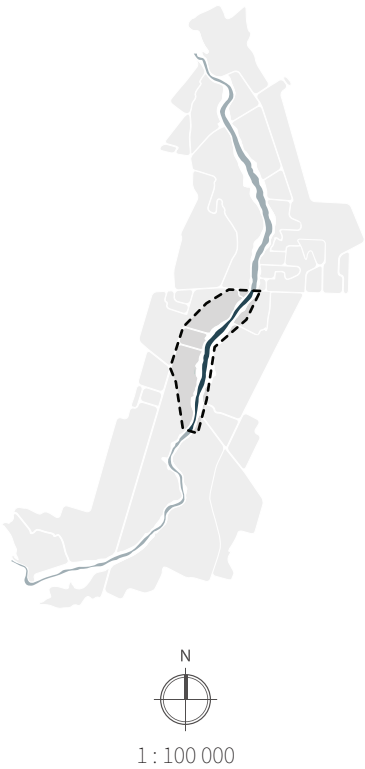


Fig. 78 | *Context Plan*

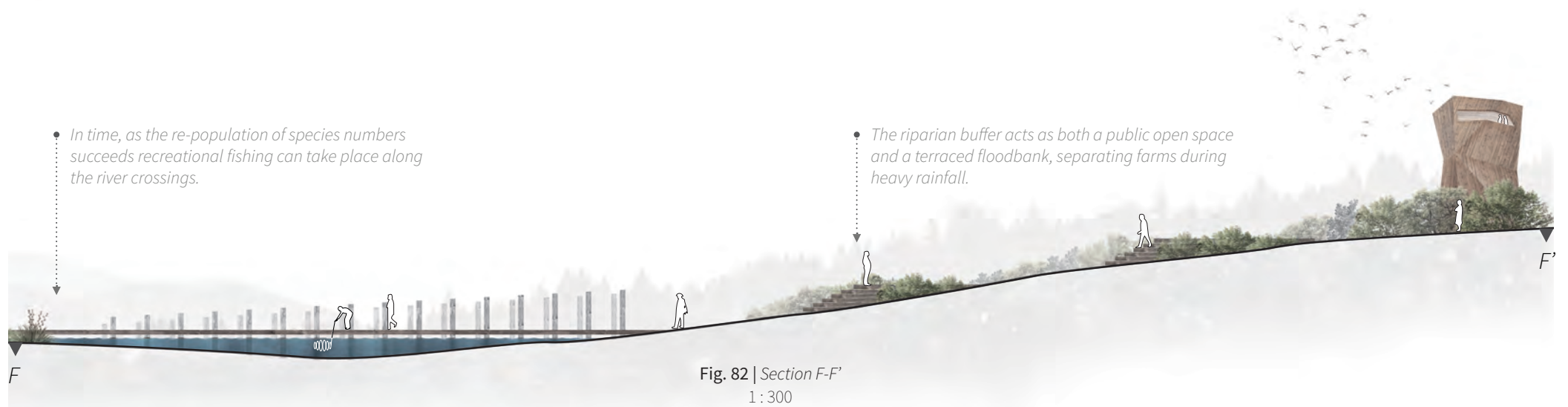
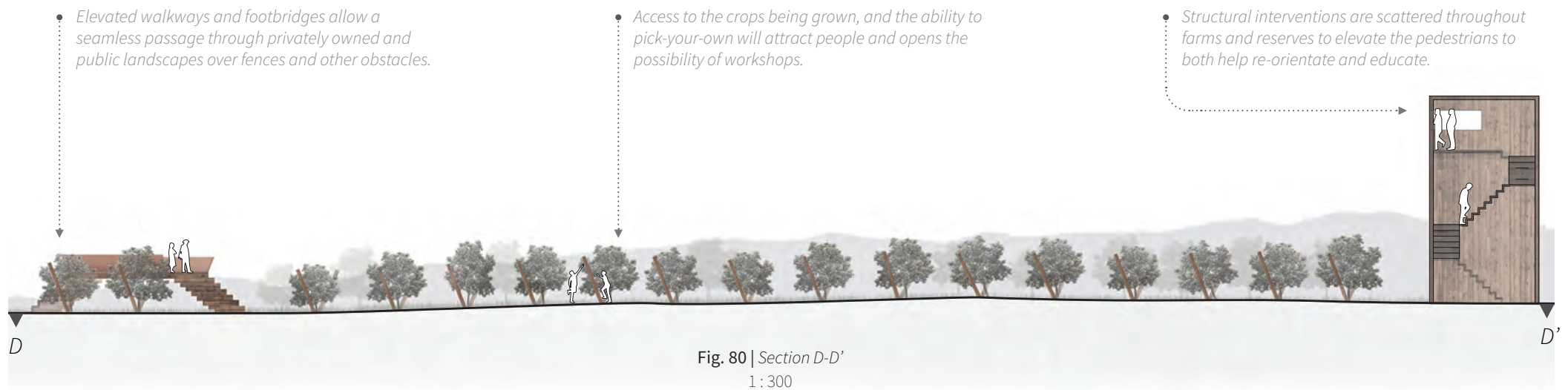


1 : 100 000

Fig. 79 | Master Plan

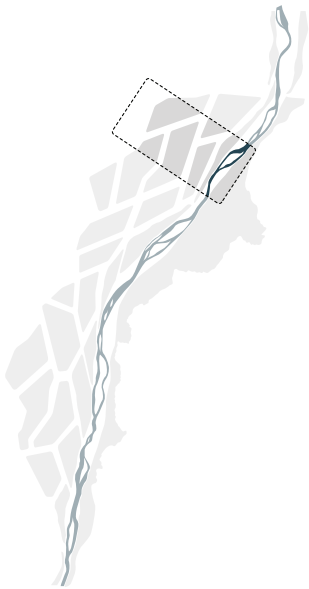
PUBLIC / PRIVATE PARTNERSHIP

The designed pathways cross over both private and public land, allowing farming operations to continue, while simultaneously allowing public passage. The paths will run along side the Tauherenikau, offering numerous access points along the way.



FUNCTIONALITY BY PROXIMITY

The design proposes a drastic change to the functionality of the surrounding farms and land uses will be dictated by their proximity to the river . This change of program will ensure that harmful land uses such as dairy and forestry are practiced far enough away that the wetlands and river overflows can adequately manage run-off and sediment movement.



1 : 100 000

Fig. 83 | *Context Plan*



PASTURE LAND

Land outside of the design perimeter will operate as usual as run-off will be filtrated through the design naturally due to the slope of the region.

;Sheep, Beef, Dairy, Finishing



ZONE C

Accommodates a rotation of hay making, pastoral and arable land uses. The seasonal changes ensures higher soil fertility and reduces the amount of sediment loss.

;Hay, Dairy Support, Root Vegetables



ZONE B

To be used as a mix of root crop cultivating, stone fruit orchards. Being further from the water body ensures any sediment movement will be adequately filtered.

;Root Vegetables, Stonefruits, Hay



ZONE A

To be used for strictly unobtrusive crop cultivation such as stone fruit, orchards and Vineyards. The lack of livestock and deep rooted crop reduces the amount of run-off and soil sediment being disrupted and displaced.

;Stonefruits, Vines



RIPARIAN BUFFER

Native vegetation will line the banks of the river and act as a separation of farm land and waterway. It allows a network of reserve land to be used for nature walks / recreational activities.

Native Species, Habitat, Recreation;



WATER SYSTEM

The network of run-off channels and river overflow will direct water through as much native planting filtration as possible before returning to the Tauherenikau river.

;Grasses, Sedges, Flaxes

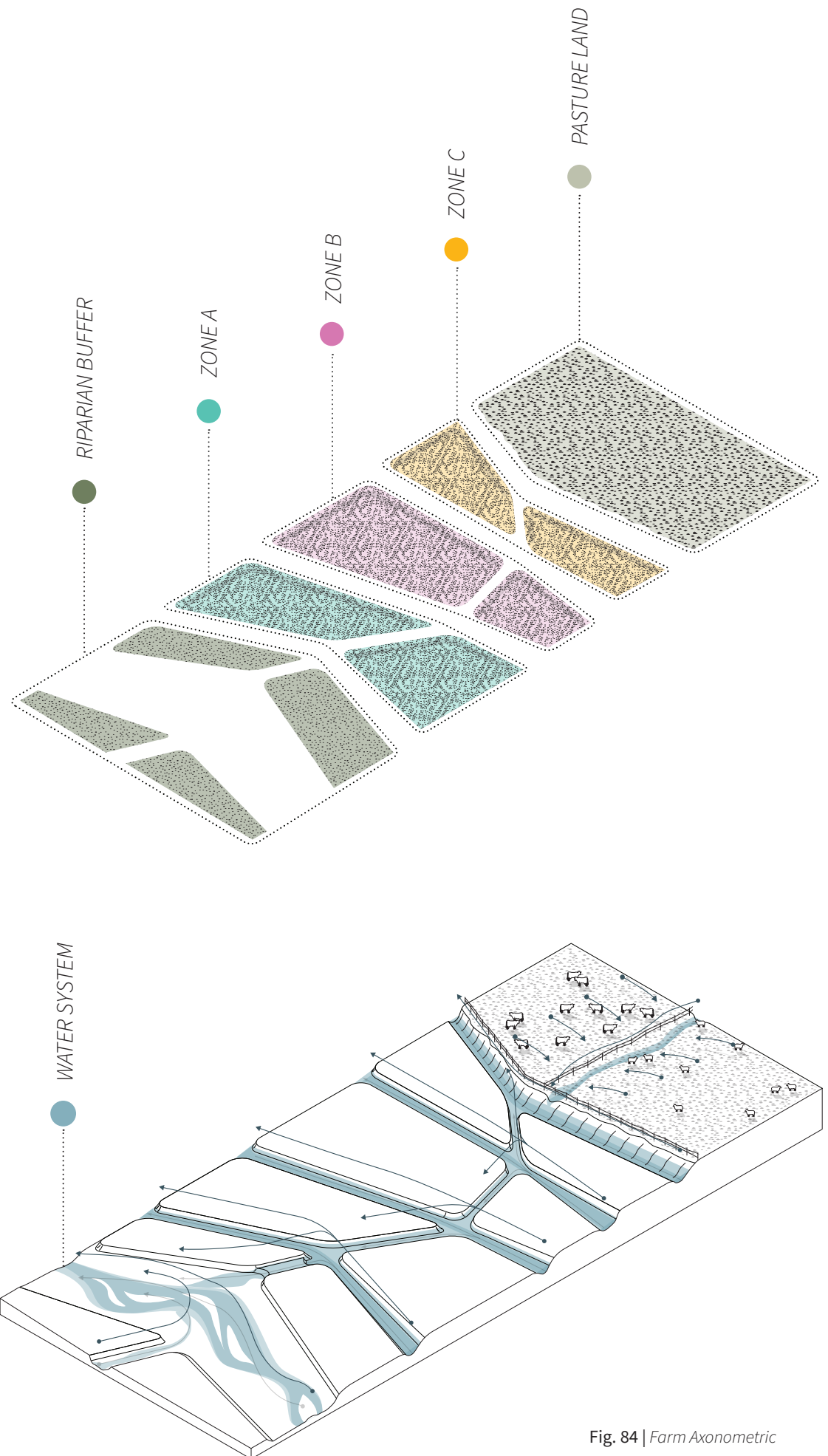
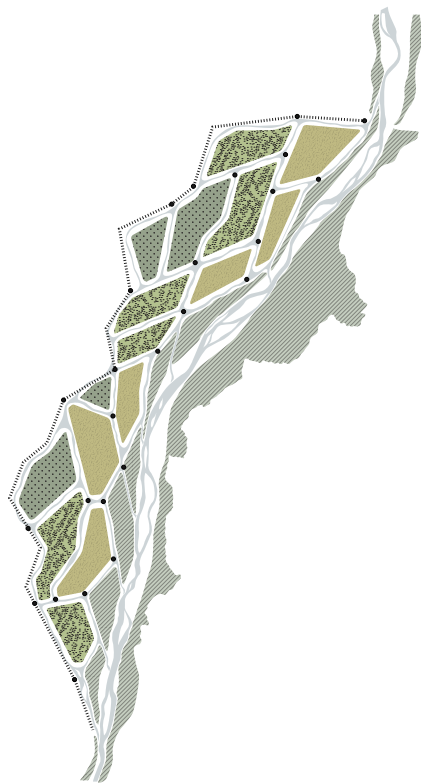


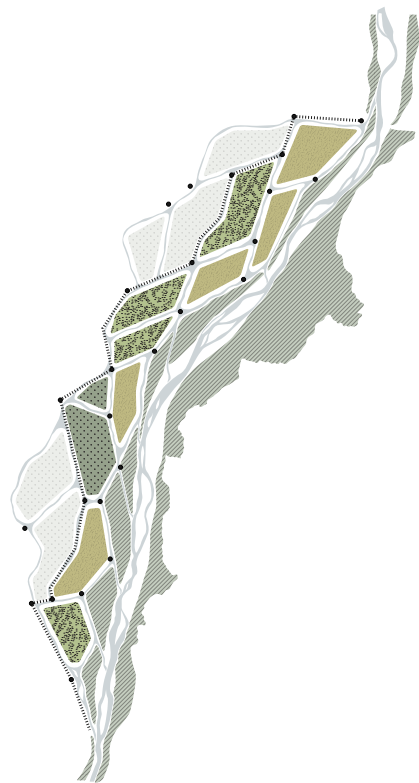
Fig. 84 | Farm Axonometric

ACCESSIBILITY

In order to allow the design to remain accessible to the public while facilitating agricultural production, the design will accommodate the change in private / public access. With calving and hay production requiring little disturbance, the local farmers will have the ability to close off sections of the design as needed, a network of pathways will allow visitors to still traverse the river in an ever changing format.



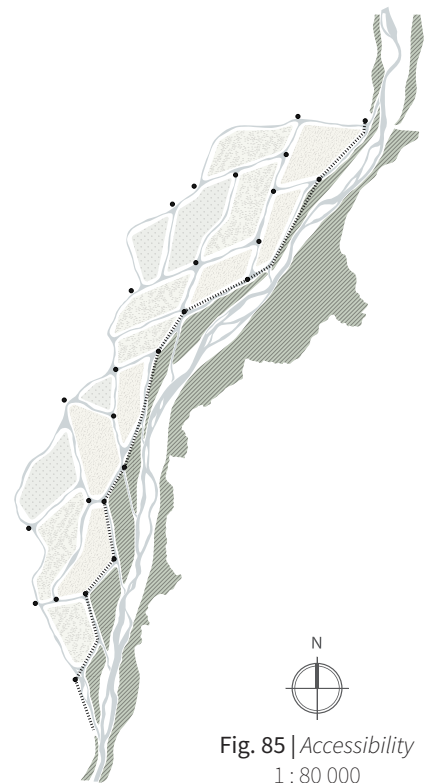
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Fig. 85 | Accessibility
1 : 80 000

ADAPTABILITY

The current site is prone to flooding during heavy storms. The design's intention of the cellular structure is to mitigate the effects of a rise in water level. The design not only filtrates farm run-off but allows the swelling of Lake Wairarapa, to distribute through the farms without causing damage. The water ways are designed to keep floodwaters and run-off out of the main arterial river for as long as possible to maximise pollutant removal, but has spillways in order to stop damage to sensitive crops.

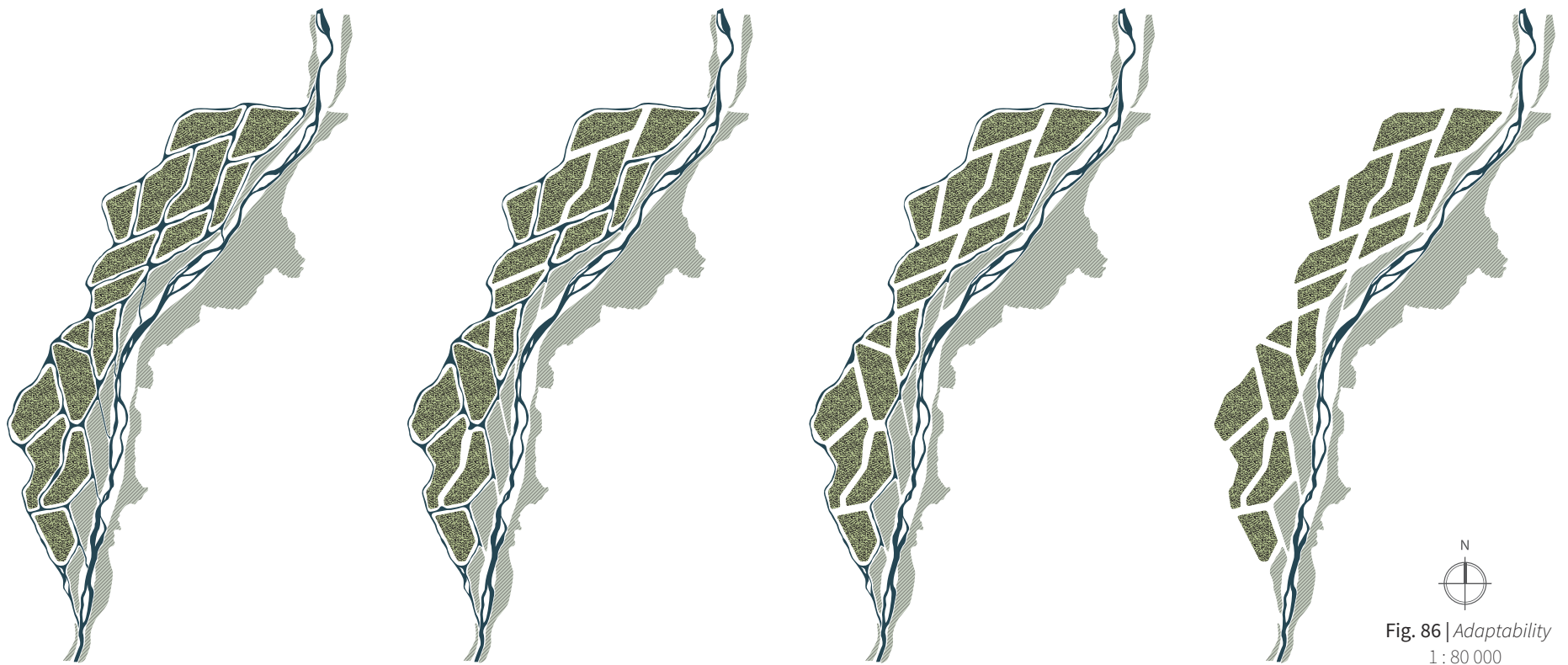


Fig. 86 | *Adaptability*
1 : 80 000

4.3 *RETURN ON INVESTMENT*

The ambitious design seeks to reclaim a large amount of current pastoral land. In order for the design to prove successful, the outcomes have to achieve a balance of benefits to all invested partners, the following section look at the values the design response offers, to the ‘client’.

RESTORATION

The land immediately bordering the river's will be re-planted with native vegetation, this will not only improve the population numbers of local species through habitat revival. Simultaneously, it acts as a buffer for sediment movement from nearby farms. The flourishing bush will act as a reserve and host a range of recreational activities, allowing the public easier access to the river.



Fig. 87 | Explorative Vegetation

IDENTIFICATION

The design identifies significant landscapes and heritage sites that lie along the lengths of the river. The pathways that run both next to the river and through the neighbouring farms will have signage which not only acknowledges the historical importance of a site but will educate visitors on local practices and beliefs similar to an open-air museum. The educational factor will allow cultural narratives to be passed down generationally, and allows the wider audience to learn of indigenous uses of traditional materials and resources grown within the design.



Fig. 88 | Informational walkway

CULTIVATION

The design re-programs the surrounding landscape by dictating where certain crops can be grown or livestock can be reared. The result of these changes, leads to cleaner waterways and a stronger sense of responsibility to the farm owners. By reducing the effects of flooding, the design allows the soils of nearby farms to host a wider variety of crops by reducing the chances of weather related growth issues. Farms within the design are to seasonally rotated to allow soils to replenish, ensuring the ongoing fertility of the landscape. This re-programming gives the land owners new opportunities to expand into new revenue streams while simultaneously and enhancing **mauri**.



Fig. 89 | *Public / private landscape*

4.4 ASSESSING THE MICRO TO INFORM THE MACRO

The preliminary design response is a small scale iteration which is a result of consultation by specific stakeholders, informed by their concerns and values. In order to evaluate whether the design has the ability to be applied to the region as a whole, it must first be tested against the initial fundamentals of successful bicultural design.

How does the preliminary design respond to the ‘Māori Urban Design Strategy’?

The chart to the right shows the outcomes of the design and maps them to the relative Māori design principle. The success of the design is shown in the way outcomes interlace and overlap, where one design complements another. In order for the design to work as a framework, it must be tested against a larger area, where the wider landscape is taken into account.

The following chapter looks at how the region responds to the design being applied at the macro scale.

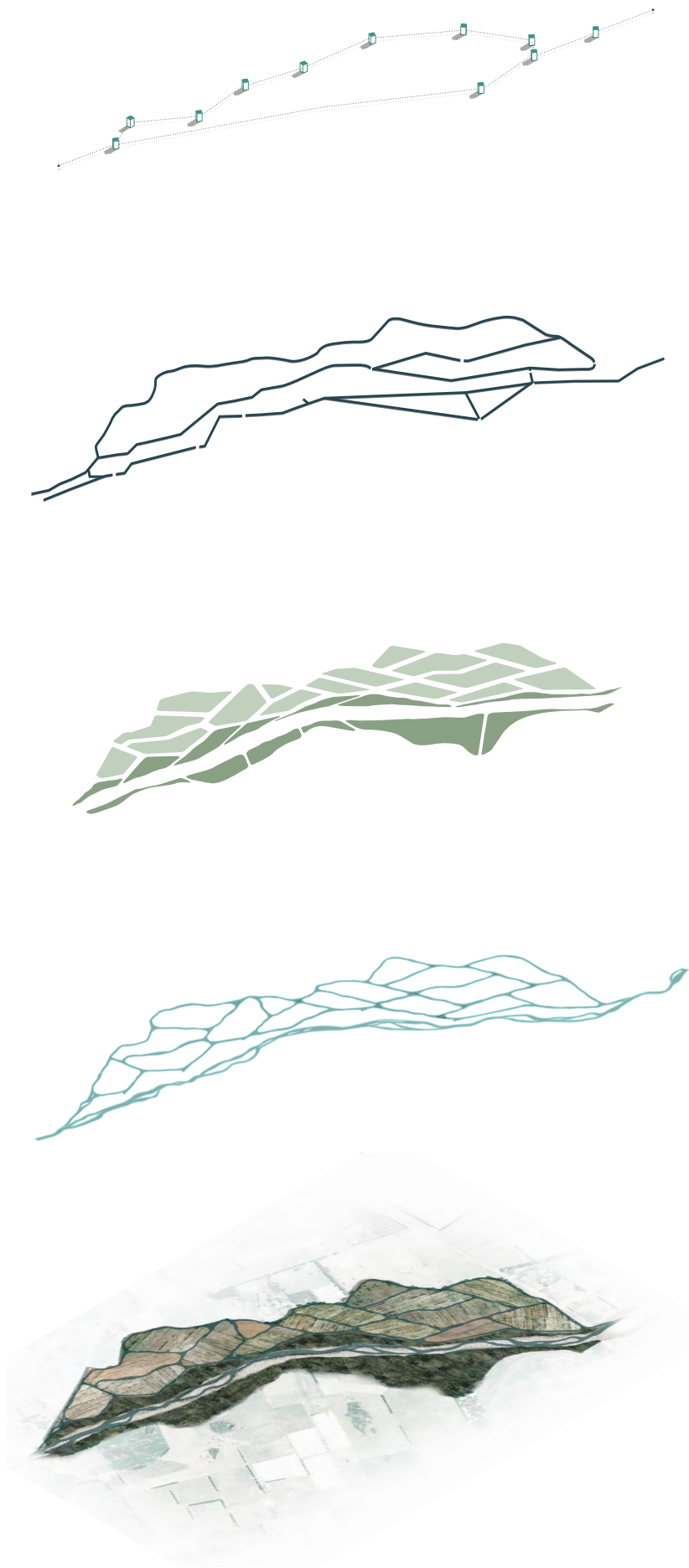


Fig. 90 | Exploded Axonometric

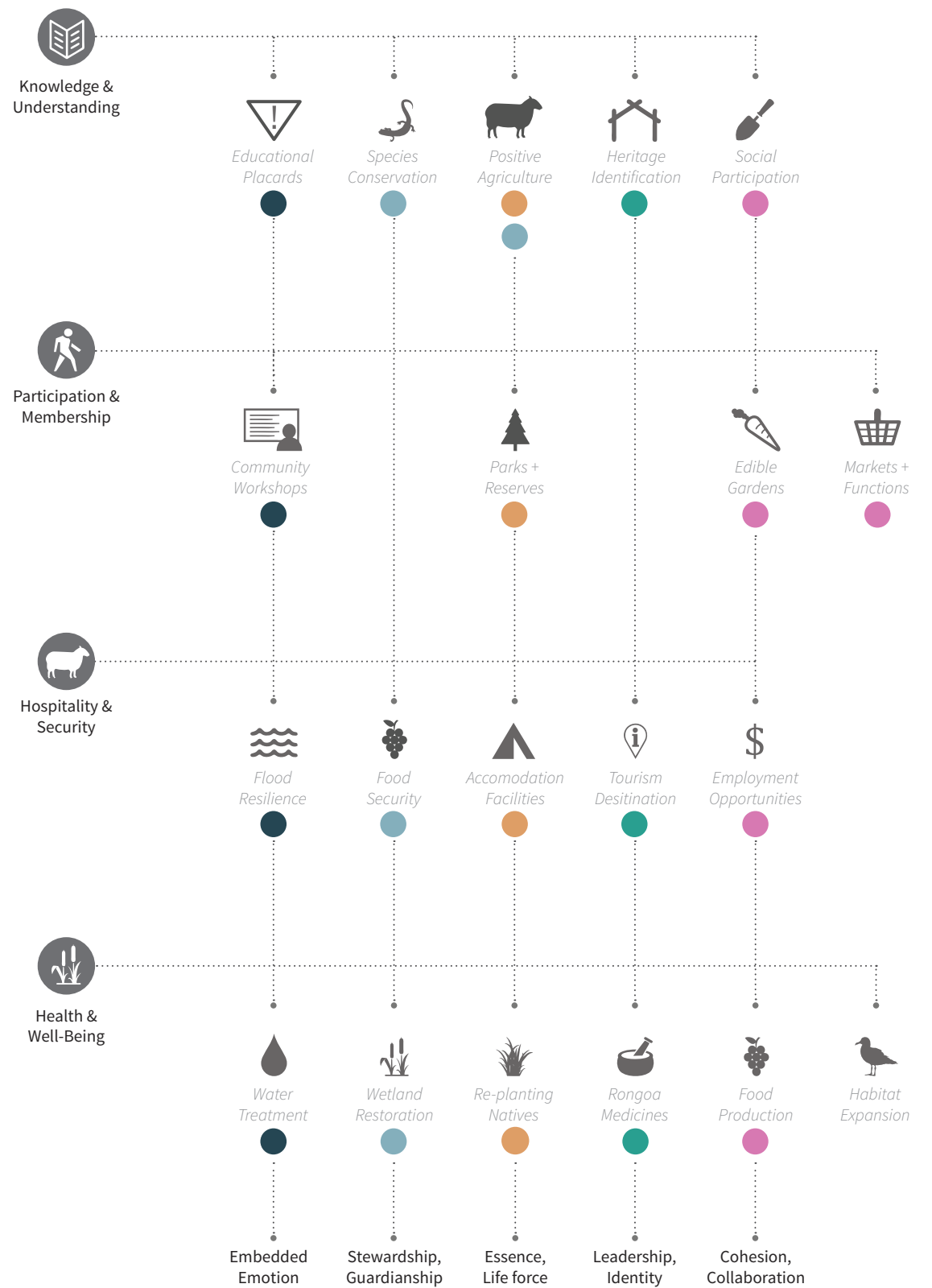


Fig. 91 | Micro Outcomes



5.0

Design (Macro)

5.1 *THE REGIONAL SCALE*

One of the main hurdles of reinstating an indigenous landscape is the issues that arise from the reclamation of private land. The application of the design framework needs to identify and enhance cultural landscapes, but in order to do so, there is a need for the blurring of property boundaries and a freedom to roam. The following chapter looks at how the wider region can adapt to accommodate sustainable design which converges on both public and private land.



Addenda Shipwreck

Pounui Lagoon

Battery Hui Pa

Lake Onoke

Okorewa Kainga

Oven Stones

Pa Site (terraced)

Indigenous Pits / Terraces

Indigenous Oven

Urupa (burial ground)

Pits (terraced)

Indigenous Oven

Pits (terraced)

Pa Site

Pits (terraced)

Pa Site

Raho Ruru Pa

Pa Site

Pits (terraced)

Burnside Church

Kohunui Marae

Kainga (settlement)

Barrage Gates

Indigenous Oven

Indigenous Oven

Indigenous Oven

Indigenous Oven

Indigenous Oven

Waiororongomai Church

Lake Shore Scenic Reserve

Wairio Block

Matthews Wildlife Reserve

Boggy Pond

Oporua Floodway

Native Forest Remnants

Tukitara Trail

Pits (terraced)

Indigenous Oven

Pa Site

Pits (terraced)

Dam, Water Race

Kainga (settlement)

Pits (terraced)

Urupas, Ovens

Otarua Homestead

Pa Site

Urupa (burial ground)

Ruamahanga River

Ovens

Kahutara Trail

Indigenous Artefact

Pits (terraced)

Indigenous Artefact

Indigenous

Kainga (settlement)

N

1 : 80 000

Archaeological Site

Landscape Feature

Historical Interest

0.8 km1.6 km



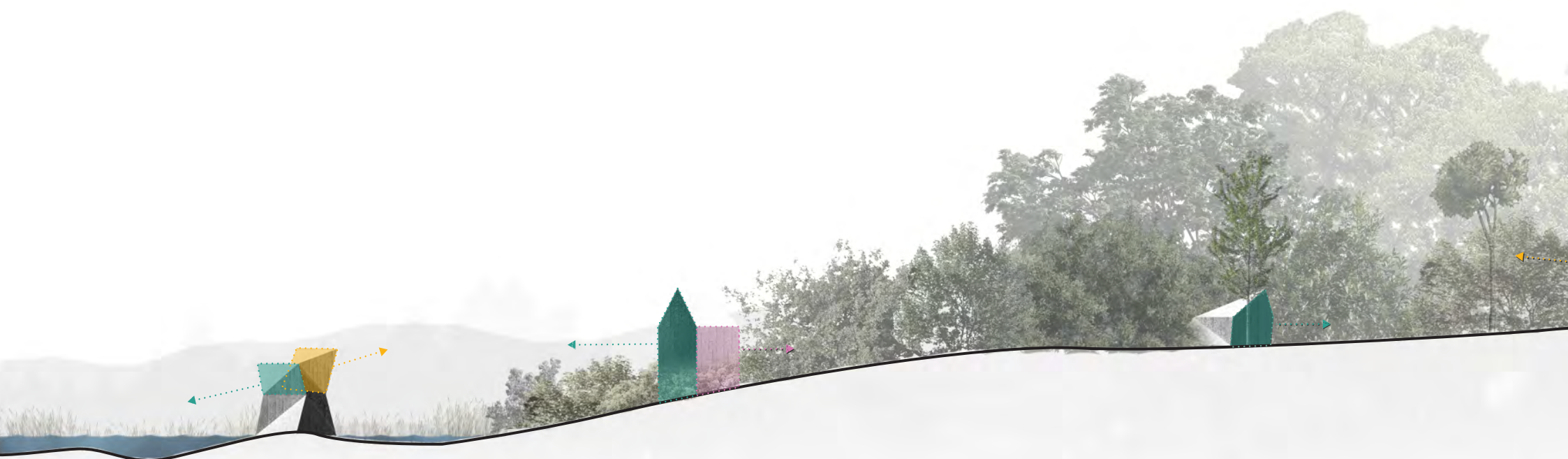
5.2 MAPPING A CULTURAL LANDSCAPE

There are more than fifty discovered archaeological remnants, 20 significant landscape features and numerous historical places of interest scattered across the South Wairarapa. Co-management design that enhances the features within a dense cultural landscape needs to address the issues of connecting these sites and making them available and interactive.

Fig. 92 | Cultural landscape map

5.3 THE 'PUHARA' NODES

Similar to the Māori **Puhara** (watch tower), the structural element of the design works to both create an artistic installation within the landscape but also works to elevate, orientate and navigate the occupants. The 'towers' respond to both their immediate surroundings as well as the wider landscape. Their shape, height and orientation focuses the inhabitant toward the next tower, creating an unbroken visual link that elevates and leads explorers through the geographically flat South Wairarapa landscape. The structures act as both connecting nodes for the network of walkways and work as gathering points and educational viewing platforms.



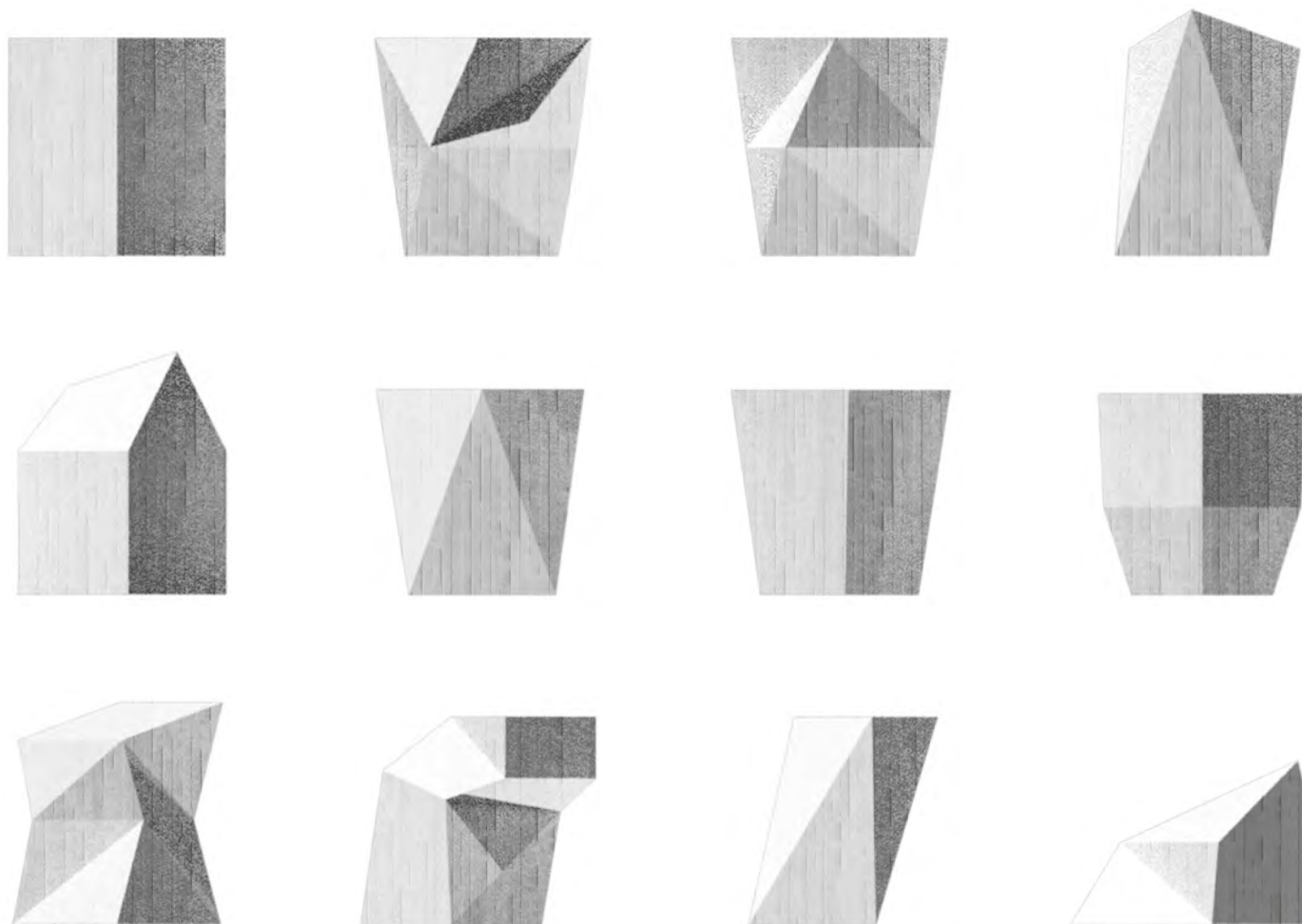


Fig. 93 | *Structural interventions*

- *Archaeological Site*
- *Landscape Feature*
- *Historical Interest*

Fig. 94 | Tower Section

The structures passively occupy the landscape they sit in. Floating above the surround ecology the orientation and elevation of the viewing platforms allow for occupants to appreciate the native ecosystems without harmfully treading on them.

Educational signage responds to its surrounding environment and offers a way of local indigenous knowledge to be documented and shared for both tourism purposes as well as to enhance the protection of sensitive ecosystems.

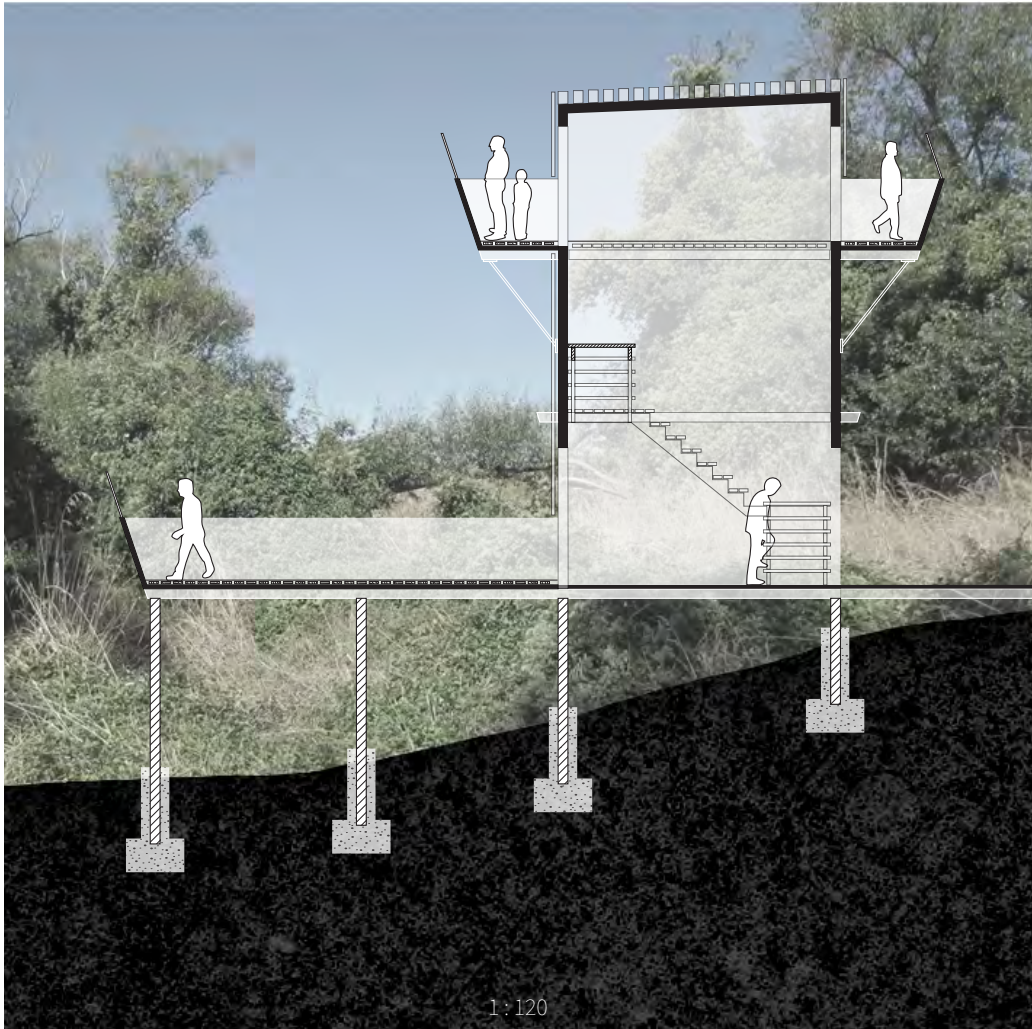


Fig. 95 | *Extended platform plan*

Fig. 96 | Handtrail section G-G'

Fig. 97 | *Exploded handrail detail*

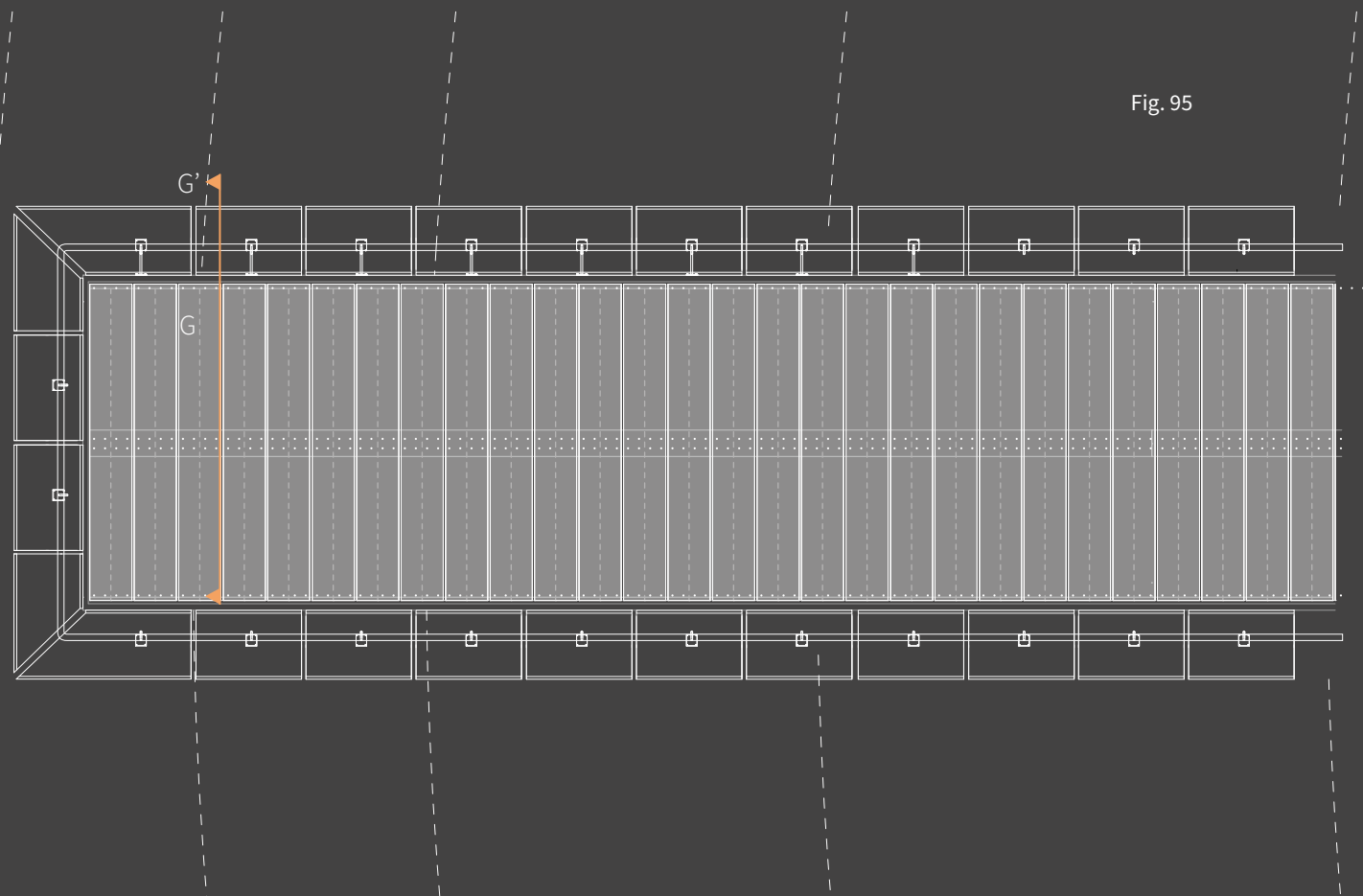


Fig. 96

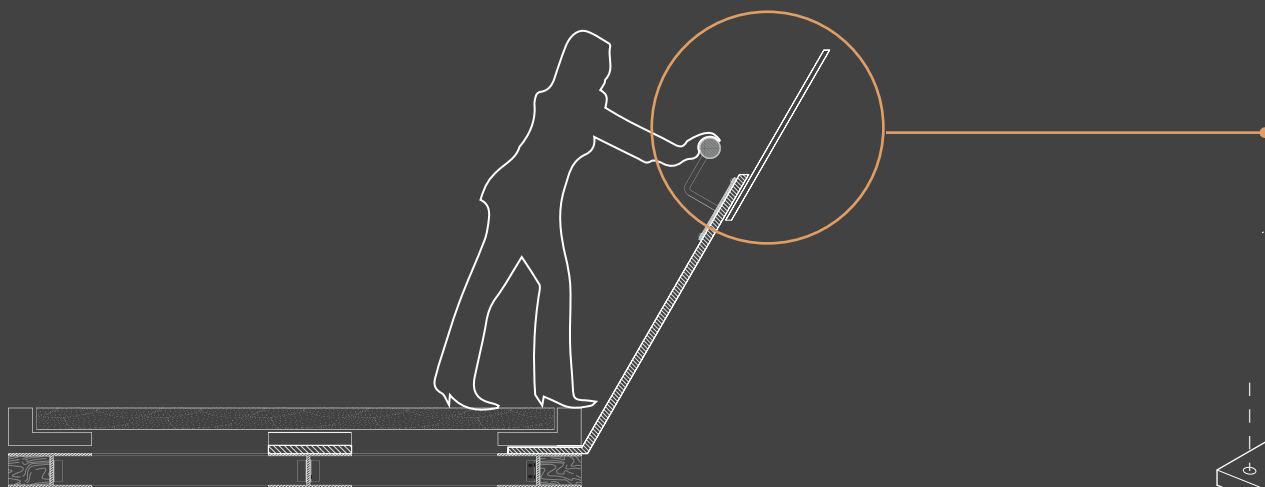


Fig. 97

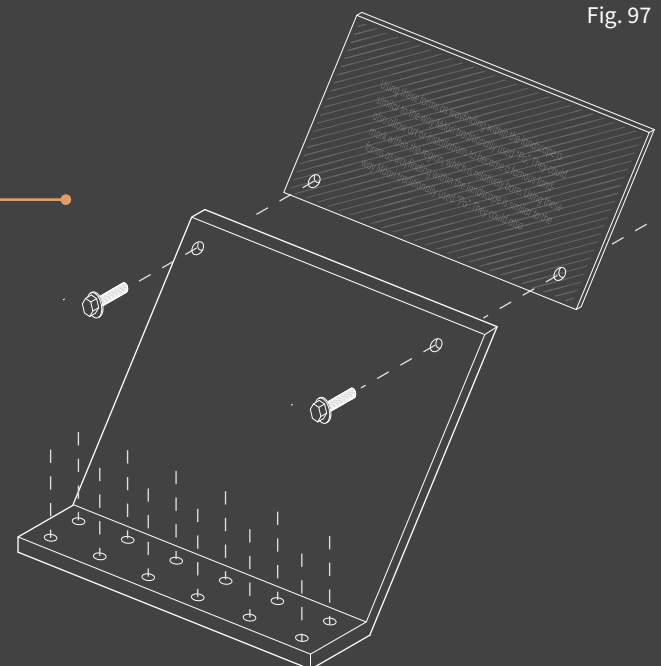


Fig. X | Shoreline changes of Lake Wairarapa

Fig. 98 | Structure within vineyard

structures located within private farms or orchards work to educate visitors on the positive farming practices and the seasonal rotation of crops and the ecological benefits in doing so. The public access offers opportunities for pick-you-own markets and other interactive activities.

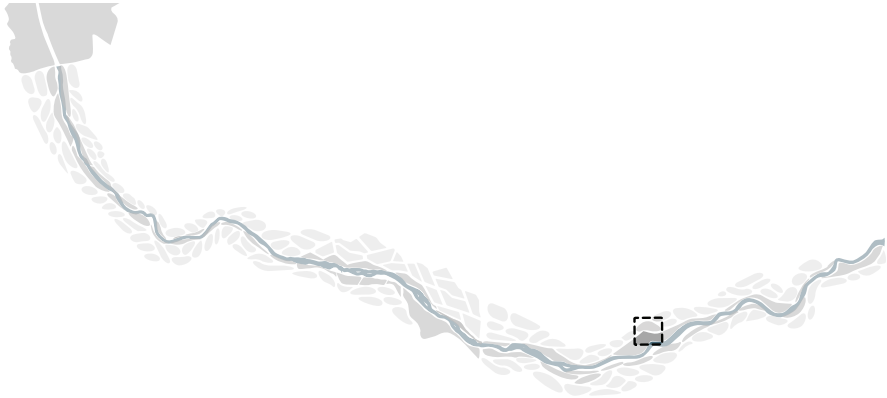


Fig. 99 | *Intervention within vineyard*



Fig. 100 | Structure within wetland

Pathways and platforms located amongst wetlands allow complete navigation through sensitive habitats and educate users on some of the vegetation uses and values within the marshland.

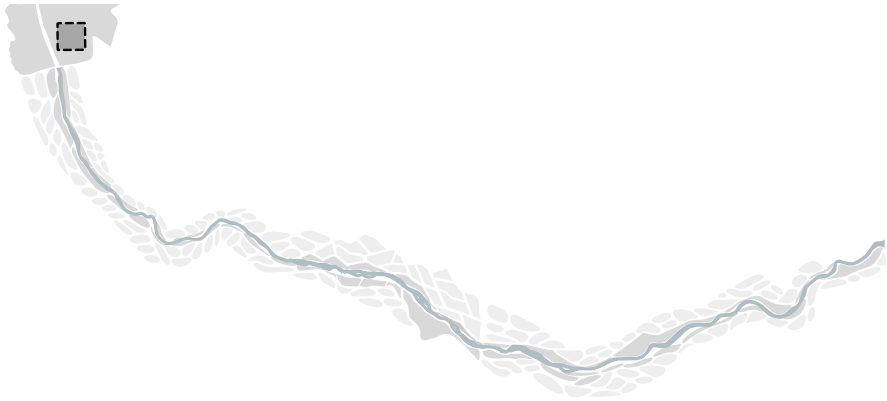


Fig. 101 | *Intervention within wetland*



Fig. 102 | Structure on river's edge

Structures neighbouring the water's edge act as a gateway for public access to the waterway.
Educational signage informs the users on sustainable fishing methods and practices.

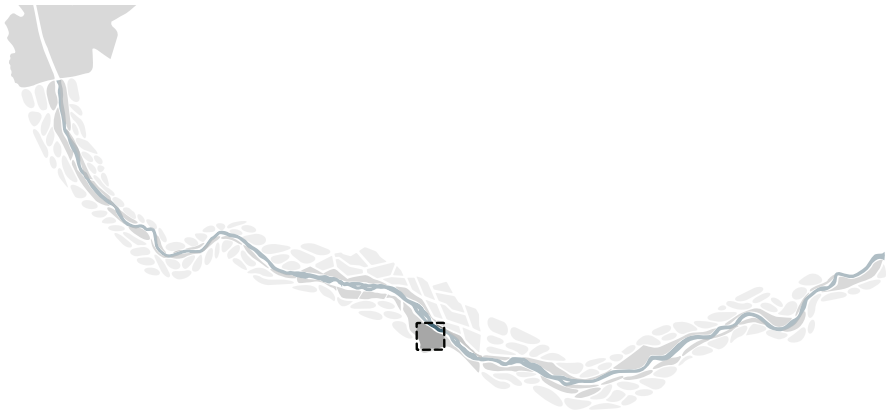
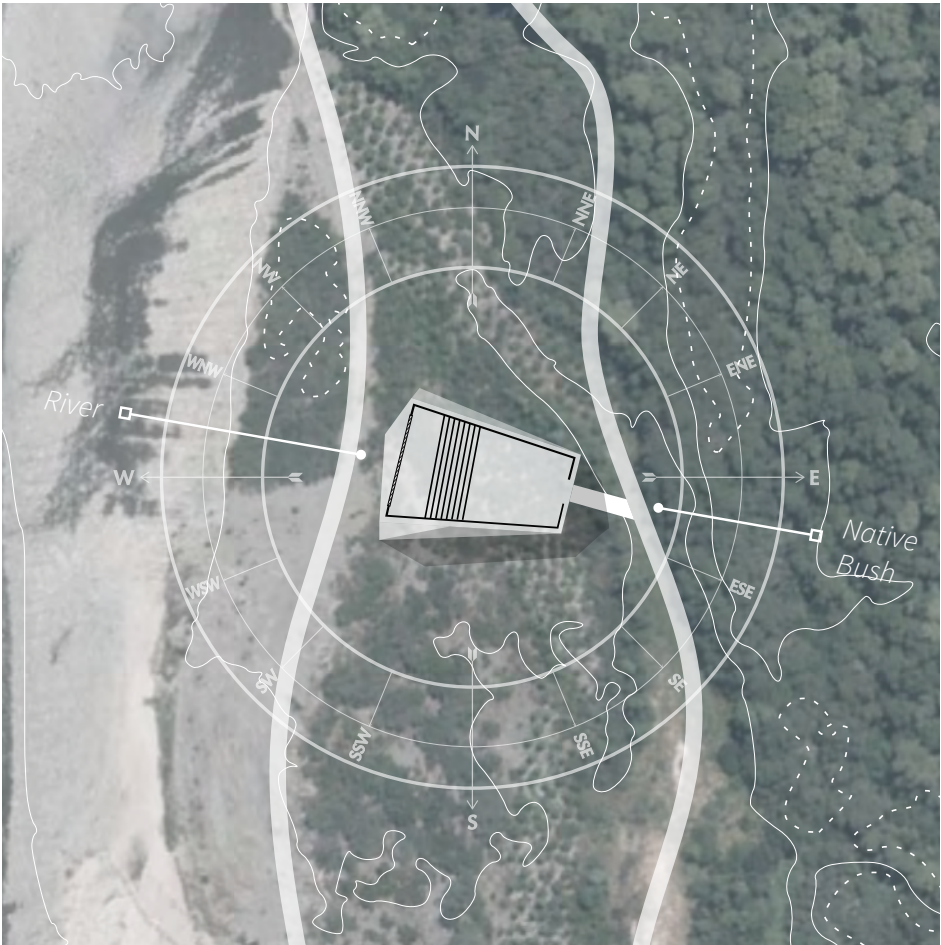


Fig. 103 | *Intervention on river*



5.4 THE BRAIDED RIVER

The design proposes a re-development of farms in a 'braiding' pattern. The form allows the re-distribution of flood waters and the containment of sediment without the needs for drastic engineering intervention, in a measure to maintain the Mauri of the culturally significant river.

Mapping the locations of significant water body entry points influences how the design will re-program surrounding farms. Locations with a large influx of farm run-off requires a larger filtration. Through the shaping of the braids and ground level changes water can be deterred away from the arterial river for a longer distance.

Fig. 104 | Tauherenikau water sources



- Rivers, streams and other catchments
- ✕ External water source entry points
- Areas for wetland expansion



CROP DISTRIBUTION AND FLOOD RESILIENCE

As the effects of global warming continue to influence weather extremes, the distribution of crops and suitability will be dictated by the lands proximity to both the lake and the river's floodline, and its soil composition.

In fitting with the Māori culture, the design will use an indigenous ground assessment to best dictate what land will be best used for. This co-management of agricultural activity will ensure that the fertility of the soil is maintained through seasonal crop rotation.

Soil qualities of the region are taken from a Land Information New Zealand survey (Appendices C, D, E and F).

Fig. 105 | Flood Events of the Tauherenikau River

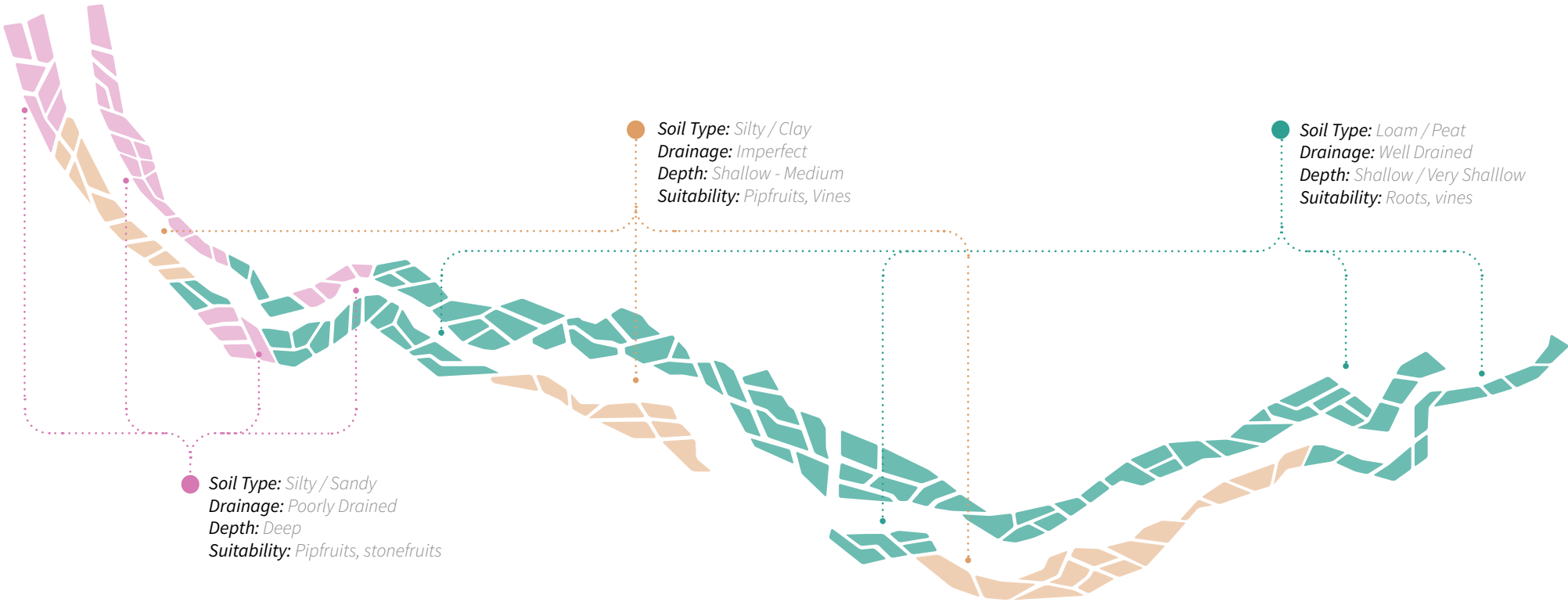
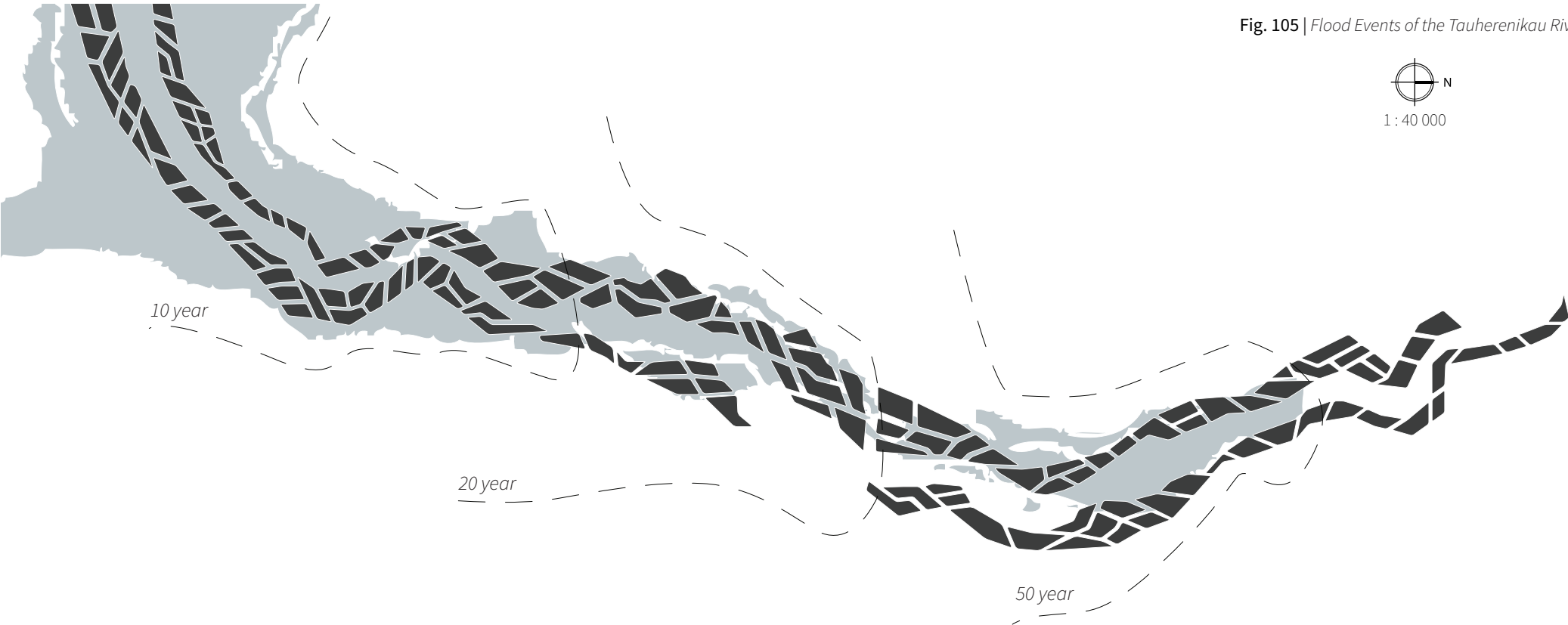
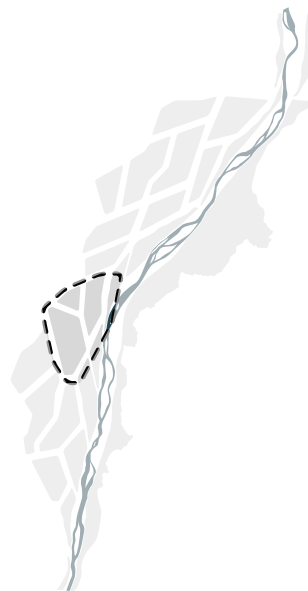


Fig. 106 | Crop distribution

FLOOD PROTECTION

In order for sensitive crops to be grown near the rivers edge, a place typically exposed to severe flooding and soil disruption, the network of water channels will have an overflow which will redirect water back into the arterial river when a certain height is reached.

Sedimentation of agricultural works that occur within the design are free to flow into the network of water channels and are directed through sediment basins, which adequately cleanse run-off before entering lake Wairarapa.



1 : 100 000

Fig. 107 | *Context Plan*

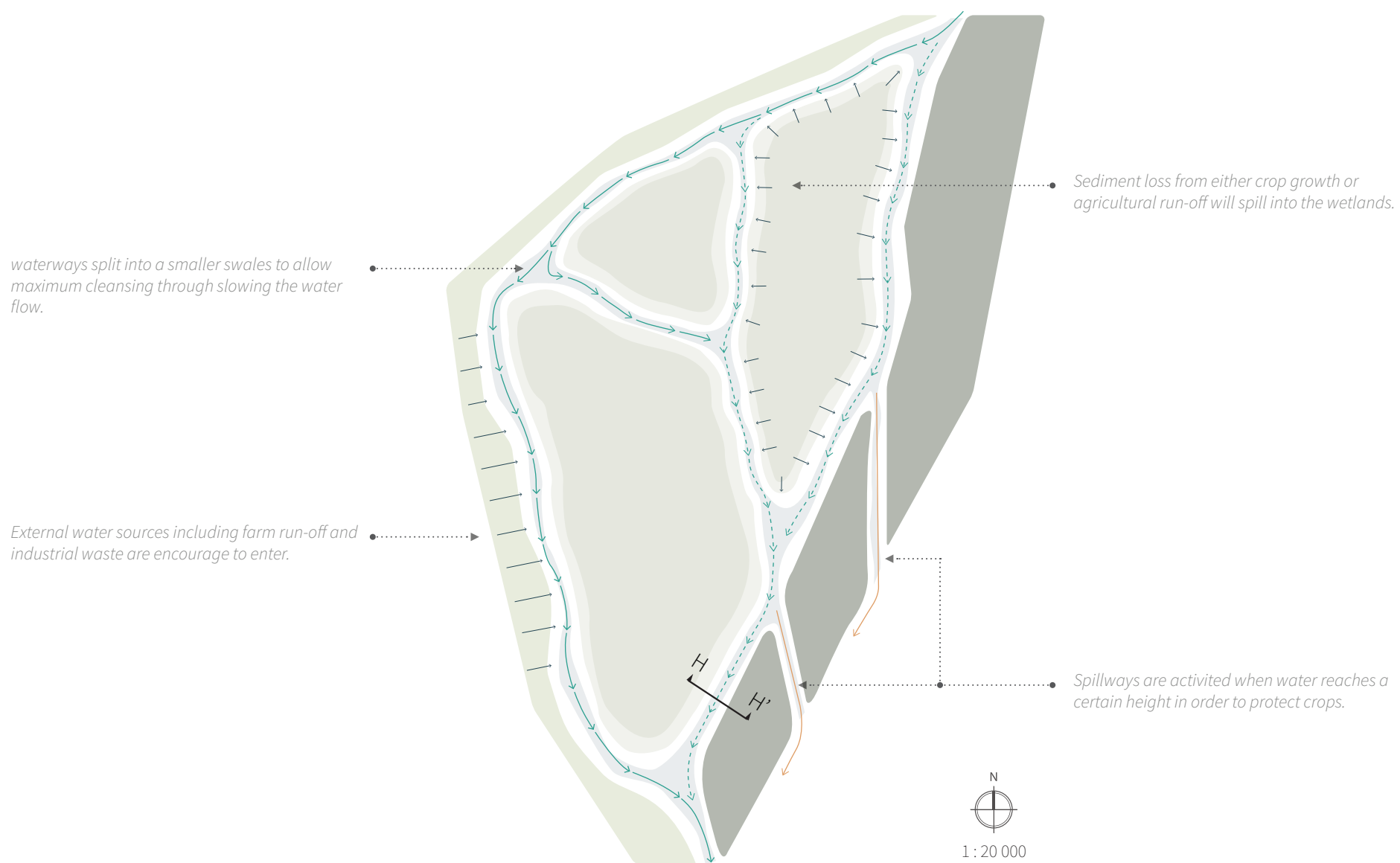
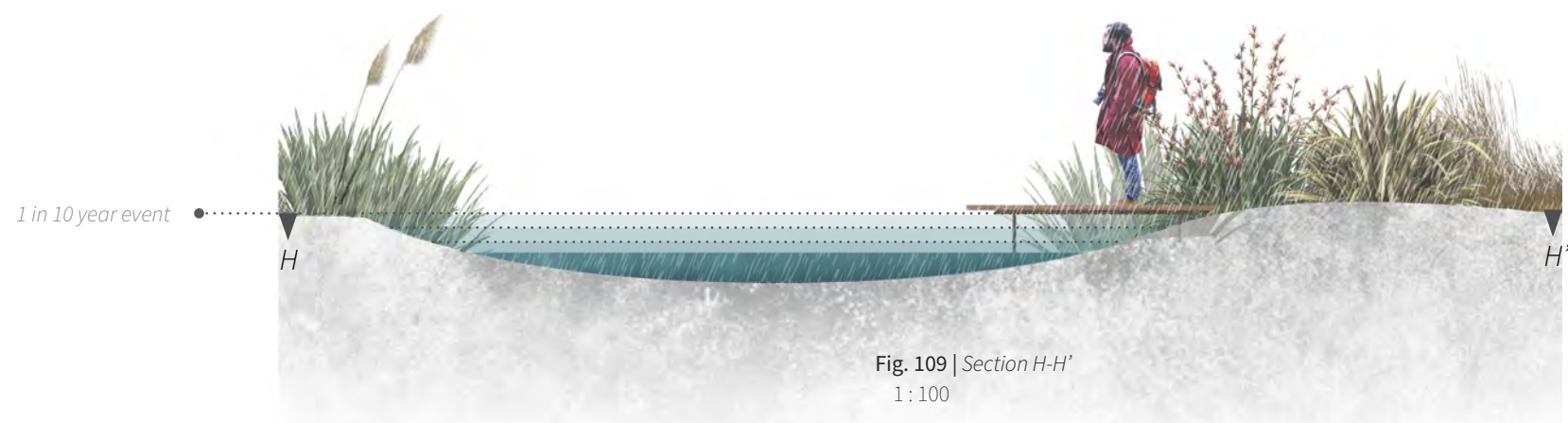


Fig. 108 | Water network & Spillway

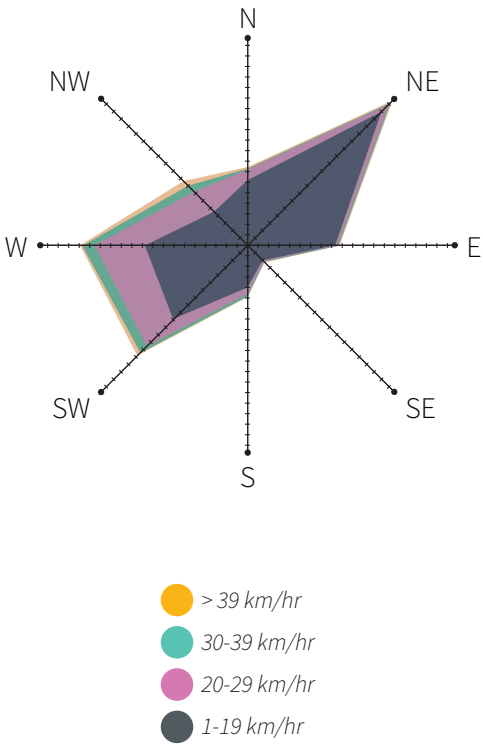


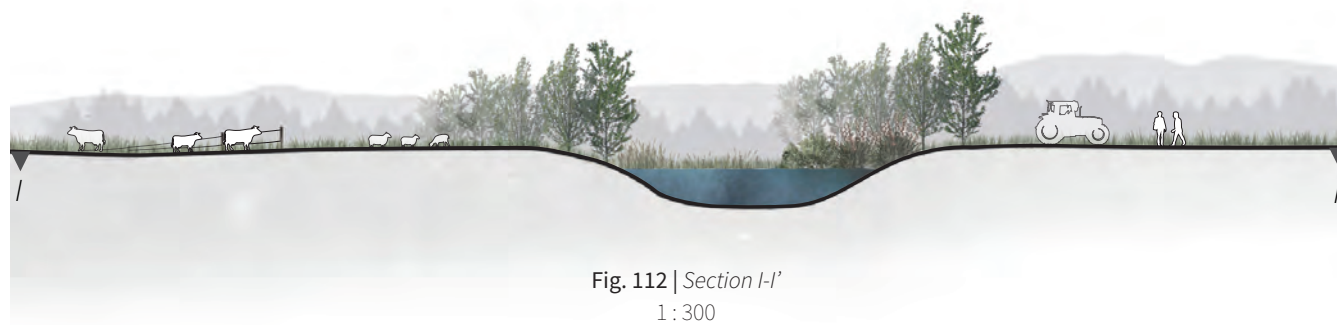
SHELTER BELTS

The braided structure of the design will be exposed to severe north easterly winds. In order for sensitive crops to be grown, each island within the braid will be planted with a native shelter belt.

This belt of native species not only works as protection from wind but also is a first line of filtration from incoming sediment and strengthens the banks of the islands from the flowing water, encouraging native species to return through an expansion of habitat.

Fig. 110 | Wind Rose for Wairarapa region

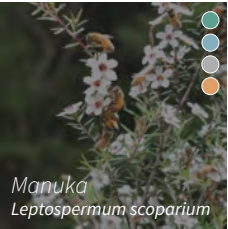


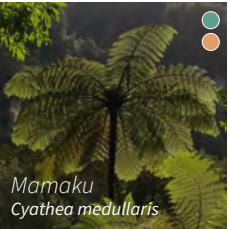
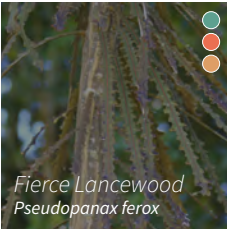
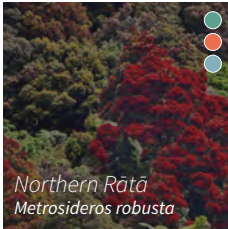

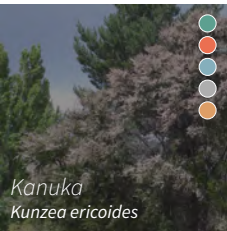
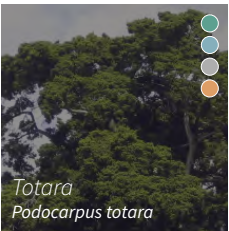
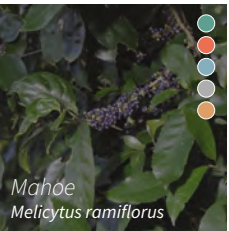

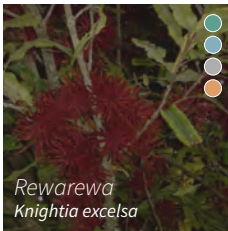


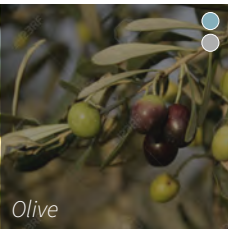
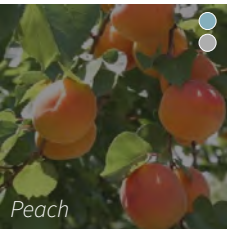
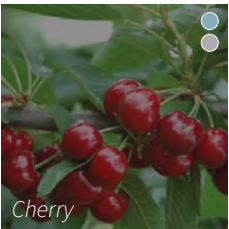
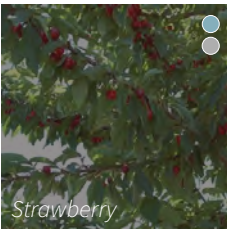
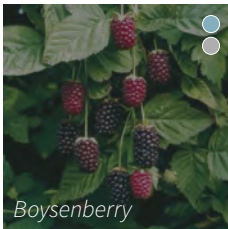
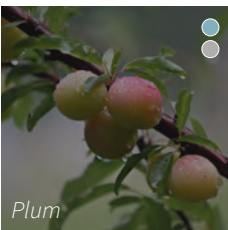
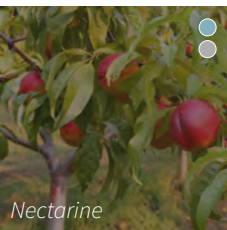
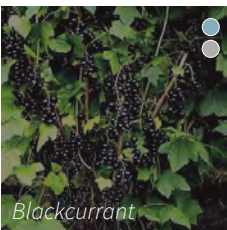
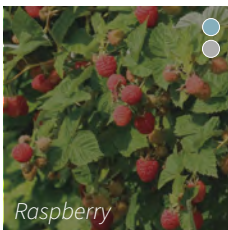


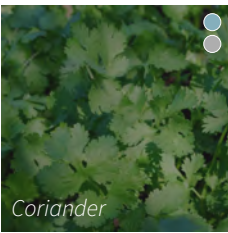
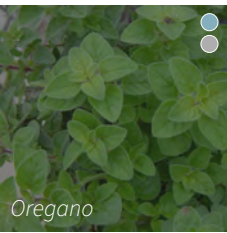
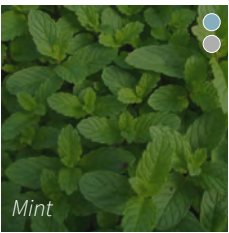
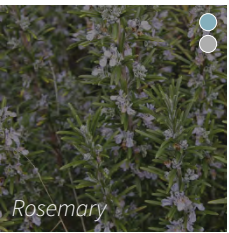
5.5 THE VALUE OF VEGETATION

The regeneration of native bush and fresh water wetland requires a large reclamation of privately owned pastoral or arable land. By regenerating a native landscape, the species of planting is to balance ecological and economic output. Some of the benefits that derive from the regeneration are the re-population of native flora species, the expansion of sensitive habitats, profitable by-products and lastly uses in Māori Rongoa (traditional medicines).

The following table identifies species to be used in the design and their respective qualities.

Trees	 <div>Manuka <i>Leptospermum scoparium</i></div>	 <div>Hemp <i>Cannabis sativa</i></div>	 <div>Radiata Pine <i>Pinus radiata</i></div>	 <div>Mamaku <i>Cyathea medullaris</i></div>	 <div>Fierce Lancewood <i>Pseudopanax ferox</i></div>	 <div>Northern Rātā <i>Metrosideros robusta</i></div>	<i>Native tree species to be used within the riparian buffers and shelter belts. Large root bases also minimise soil erosion.</i>
	 <div>Cabbage Tree <i>Cordyline australis</i></div>	 <div>Kanuka <i>Kunzea ericoides</i></div>	 <div>Totara <i>Podocarpus totara</i></div>	 <div>Mahoe <i>Melicytus ramiflorus</i></div>	 <div>Nikau Palm <i>Rhopalostylis sapida</i></div>	 <div>Rewarewa <i>Knightia excelsa</i></div>	

Stone fruits	 <div>Olive</div>	 <div>Peach</div>	 <div>Cherry</div>	Berries	 <div>Strawberry</div>	 <div>Boysenberry</div>
	 <div>Plum</div>	 <div>Nectarine</div>	<i>Less intensive growing such as orchards allow fertile soils to be utilised while minimising the amount of soil disruption.</i>		 <div>Blackcurrent</div>	 <div>Raspberry</div>

Herbs	 <div>Coriander</div>	 <div>Oregano</div>	 <div>Mint</div>	 <div>Rosemary</div>

Conditions of the region are perfect for the growth of herbs, and with a community involvement way provide a revenue stream in terms of exports and markets. The introduction of specialty crops and foreign delicacies could also prove valuable in terms of exports and tourism.

Shrubs | Vines

Harakeke Flax
Phormium tenax

Koromiko
Hebe stricta

Kawakawa
Macropiper excelsum

Karamu
Coprosma robusta

Kumarahou
Pomaderris kumaraho

Makomako
Aristotelia serrata

Tupakihi
Coriaria arborea

There are an abundance of shrubs that provide fruits and berries for local bird life and some provide ingredients for herbal medicines.

Grasses | Sedges | Rushes

Raupo
Typha angustifolia

Toetoe
Cortaderia Richardii

Oioi
Apodasmia similis

Wiwi
Juncus edgariae

Wetland grasses are an important part of Eel and Koura habitats. While providing the shade needed for inhabitation, the roots of the grasses work to stabilise the banks during periods of heavy rain and filter nitrates.

Pipfruit

Apple

Kiwifruit

Pear

Orange

Grape

Root | Vegetable

Potato

Pumpkin

Kumara

Carrot

Onion

Asparagus

The design occupies land which is well drained and perfect conditions for the growth of root vegetables.

Changing seasonal rotation will ensure that soils have an adequate time to recover, minimising the sediment movement into nearby waterways.

By-products

Honey

Medicines

Fabrics

Building products

Through the regeneration of native bush and wetland opportunities, by-products hold the potential for a large profit, making the land use changes more incentivised.

Fig. 113 | Planting Palette

- Native
- Threatened
- Profitable
- Inhabitable
- Rongoa

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RECONNECTING A REGION

At present the region is segmented and disconnected. The design offers an opportunity for the existing walking and cycling trails to expand and connect people from the Rimutaka hills to the lake's edge, utilising the already existing wetland spaces. Currently, the cycling trail either shares the road or runs parallel, the establishment of a separate and designated trail will improve safety and allow users peace of mind by instead being led through a dynamic changing ecological environment.

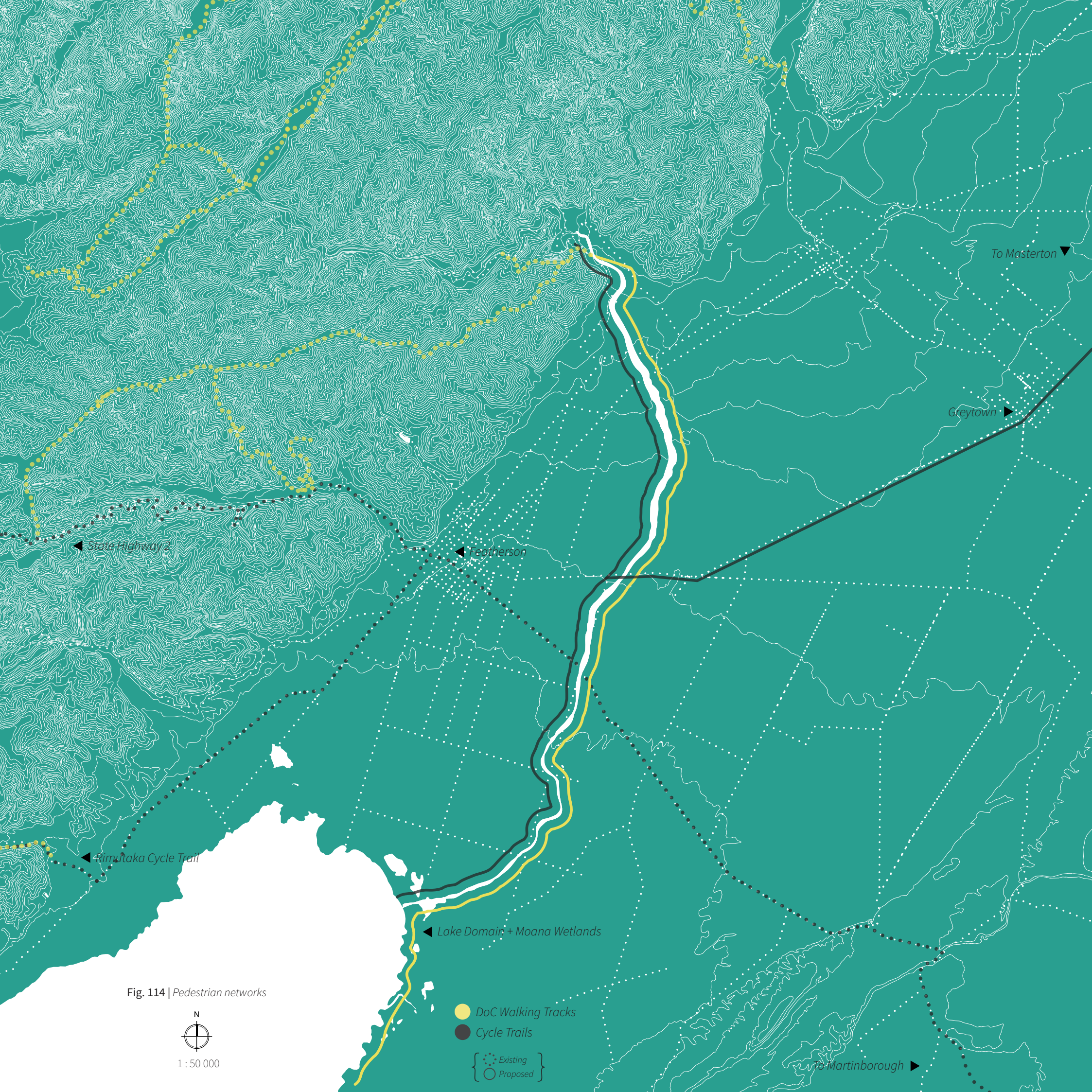


Fig. 114 | Pedestrian networks



1 : 50 000

● DoC Walking Tracks

● Cycle Trails

{ Existing
Proposed }

5.6 THE MODERN CULTURAL LANDSCAPE

In order to reinvigorate the cultural landscape, the ability to utilise and appreciate its resources will be imperative. The improvement of local ecosystems will expand the recreational opportunities of the region, allowing for the development of a modernised, co-managed cultural landscape.

Clockwise from top left

- Fig. 115 | *Festivals*
- Fig. 116 | *Camping facilities*
- Fig. 117 | *Kayaking*
- Fig. 118 | *Cycling*
- Fig. 119 | *Hiking*
- Fig. 120 | *Swimming*
- Fig. 121 | *Boating*
- Fig. 122 | *Markets*
- Fig. 123 | *Fishing*



Festivals



Camping



Kayaking



Markets



Fishing



Cycling



Boating



Swimming



Hiking

A photograph of a gravel path leading through a field of tall grass under a teal sky. The path is made of light-colored gravel and leads from the bottom center towards the horizon. The grass is tall and green, flanking the path on both sides. The sky is a solid teal color. The text '6.0' is centered in the upper half of the image, with a horizontal line below it and the text 'Critical Reflection' below the line.

6.0

Critical Reflection

6.1 REFRAMING THE INHERENT ISSUES

The degradation of the rural landscape is a very real and growing concern in New Zealand. With the expansion and intensification of agricultural production, we as a country have seen the decline and removal of vital wetland ecosystems at the hands of these farming endeavours. The continuing privatisation of our rural landscape has seen a disconnection between people and place, and with that, ones responsibility to maintain and protect our natural assets. There is a growing recognition that the use of indigenous knowledge in resource management can provide unique understandings and a deeper rooted knowledge on a regions environmental health. This research confronts the issues that derive from the intensification of resource use by offering a site specific bi-cultural design response. The strategy is focused on striking a balance between the ecological, economical and social impacts on the rural New Zealand landscape.

6.2 THE OUTCOMES OF BICULTURAL DESIGN

The South Wairarapa holds great potential for the application of this design strategy. The region is rich in cultural history, is facing heavy ecological decline and is reliant on the output of large scale agriculture. The people of the region are consciously aware of the factors leading to this degradation and are open to change in order to preserve their cultural landscape and natural heritage.

Too often in land-use legislation, the inclusion of indigenous cultural values is condensed, vague, and fails to address the complexity and variety of values that come from tribal cultures. The adaptation of indigenous knowledge into design is backed up with a growing number of theorists and both international and local case studies, including Orongo station in Gisborne, NZ and the Uluru–Kata Tjuta National Park in Australia. The strategy challenges the status-quo where value is measured solely in a monetary figure and expands to the values derived from social and cultural inclusion as well as enhancement of natural resources.

The initial design explores a site specific approach where individual values of local stakeholders are considered and balanced, in order to create a relevant and concise strategy, a method not currently existent in resource management and urban planning. The research provides a framework which when applied to the macro scale, can facilitate the inclusion of indigenous values not only in the South Wairarapa but nation wide.

The success of the overall strategy can be assessed through the opportunities it provides to the ‘client’ and the relevant cultural, environmental, economical and social outcomes. The strategy allows mutual prosperity from a revised land use and the improvement of public access to the regions landscapes.

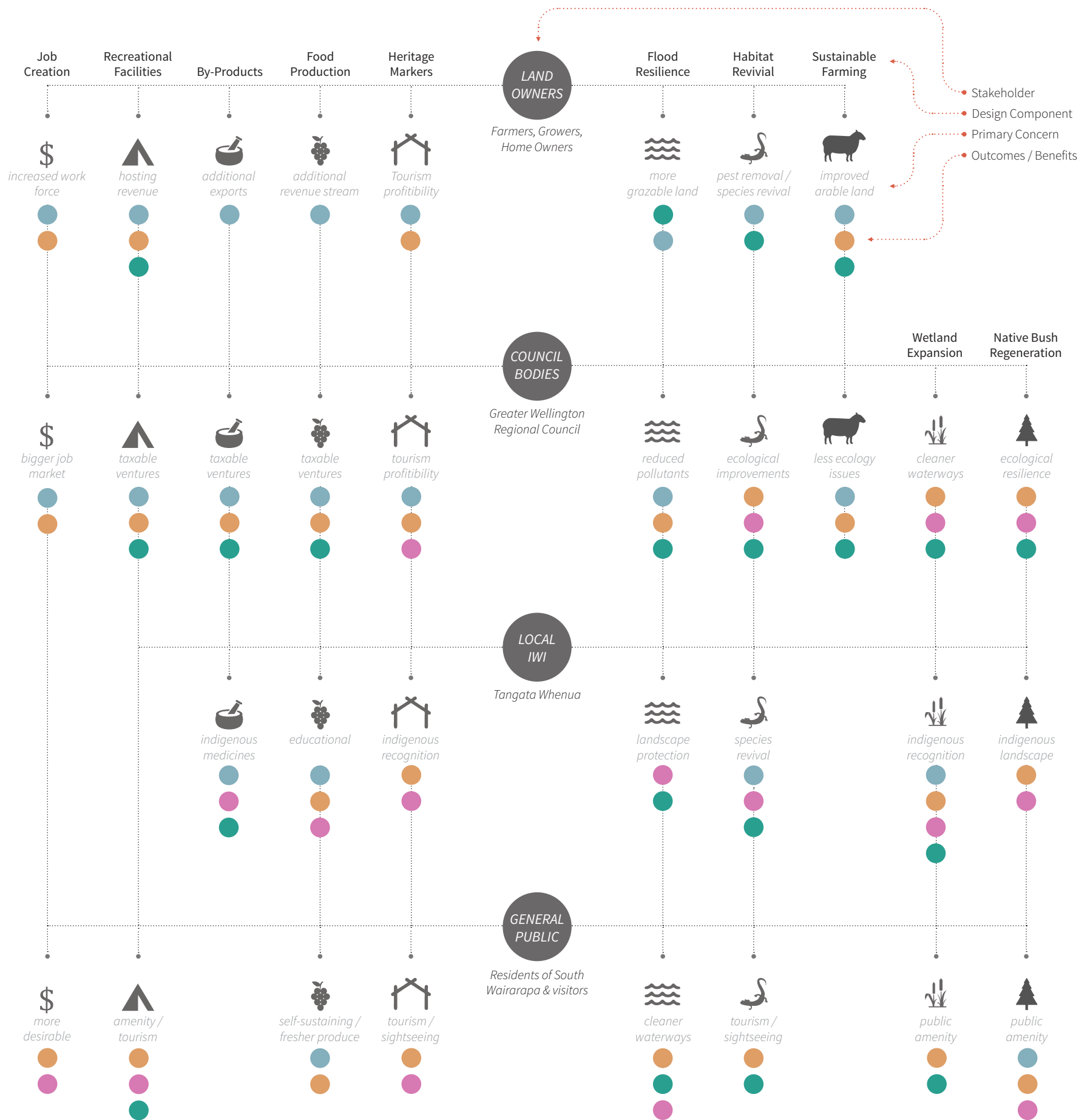


Fig. 124 | 'Components and outcomes' chart

6.3 PROJECTING THE FUTURE OF THE REGION

As the effects of human occupation on the planet continue to alter the state of our natural ecosystems, the demand for sustainable resource management will continue to grow. Without intervention, the rural landscape of New Zealand is going to continue to face severe weather fluctuations and with it, further ecological decline, cementing the divorce of people and place.

In the next fifty years, existing engineered infrastructure will no longer be able to manage the influx of weather extremes. The region is going to rely more and more on natural systems to mitigate flooding. The design strategy offers the region resilience through the expansion of wetlands and native vegetation. The reconfiguration process of such a large area will take years to successfully develop. As sea levels and agricultural demands rise, the design can be phased in through first addressing land effected by 1-in-10 year events, then 1-in-20 and lastly, the 1-in-50. The expansion of the design overtime not only benefits ecological resilience but offers an opportunity for the expansion of publicly accessible rivers and lakes, creating a corridor of native vegetation, capable of reintroducing native species and connecting the population of the South Wairarapa from the Rimutaka foothills to the coast. Through the blurring of boundaries within the privatised landscape of the South Wairarapa the design establishes a freedom to roam, an opportunity for the reconnection of people and place.



The first phase will be focused on reconfiguring the land directly bordering the region's rivers and lakes. This land allows the water bodies to swell without directly effecting farm operations.



Fig. 126 | 20 Year Expansion

The second phase will address low lying areas prone to becoming flood basins during extreme weather spikes. These areas are further from water bodies yet become completely submerged during rainfall.



Fig. 127 | 50 Year Expansion

The final phase will fill in the remaining undeveloped areas which when complete will create an ecological corridor running through the Wairarapa valley.

6.4 CONCLUSION

As urban planners, economists, conservationists and other industries, we begin to harness and acknowledge the success and importance of indigenous knowledge. This thesis bridges Landscape Architecture to this growing movement by using design as a tool to not only create a more interactive and accessible landscape but also one that facilitates the needs and desires of all concerned stakeholders. As both the economic and atmospheric climate changes, Landscape Architecture will prove essential by offering a unique approach to mitigating the effects by integrating a new, more culturally sensitive approach to land-use legislation.

This research successfully achieves its initial aims of creating a more resilient landscape. Focused within the parameters of the South Wairarapa, the resulting design is site specific. Through design experimentation and critique by relevant stakeholders, this research proves that in order to successfully revitalise a cultural landscape, a uniform strategy cannot be applied at a national scale but instead it should focus on the macro scale, adhering to the specific desires of the immediate surroundings.

Through the expansion of wetlands and native bush, and the diversification of agricultural land use, design offers a strategy which creates a resilient economic and ecological landscape. The re-introduction of native species and the re-configuration of private and public land not only improves the conditions of the region's resources but will change the public's perception. It instils a responsibility in ourselves to maintain and care for the future of the rivers, lakes and forests. The protection of these assets will be vital in preserving this flourishing landscape, this land of milk and honey.



7.0

Appendices

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‘OF MILK AND HONEY.

A design strategy for the economical, ecological and ideological resilience of a cultural landscape and its people.

Participant Consent Form

LAND 591: Master’s Thesis Research

Findlay Sloane
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Student #300202835

Bruno Marques
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I consent to the researcher collecting data, information, stories or opinions from me

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered to my satisfaction.

I consent to data, information, stories or opinions which I have given being attributed to me in any reports on this research.

I understand I can be given, if requested, a summary of any interviews with me.

I understand that I will have an opportunity to check the summaries of the interview and the text of the research before publication and that I will be consulted for my feedback on any resulting designs

I will not be photographed or used in any imagery within this research

I understand that all written material will be kept in a locked file with access restricted to investigator. I understand that all electronic information will be password protected and access restricted to the investigator. Any audio recording will be returned to participants, if requested and/or electronically wiped.

I understand that, if this interview is audio recorded, the recording and transcripts of the interviews will be erased within 2 years after the conclusion of the project. Furthermore, I will have an opportunity to check the transcripts of the interview.

I understand that at any time I can withdraw from the research project

- ☐ Please tick the box if you would like to check the interview summary and provide your details on where you would like it to be sent to below
- ☐ Please tick if you wish for the information given to be anonymous
- ☐ I agree to take part in this research.

Signed:

Name of participant:

Date:

APX. B PARTICIPANT INFORMATION



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A design strategy for the economical, ecological and ideological resilience of a cultural landscape and its people.

Participants Information Sheet

This information sheet is for all participants who have been invited to be a part of this students master thesis research paper. If any points are unclear in this information sheet, please feel free to contact either the student/researcher or students supervisors with the contact details provided.

How can agricultural land use within the Wairarapa region be re-configured to enhance cultural relationships and reduce our negative impact on the wetland ecology?

Wetlands are one of New Zealand’s most important freshwater ecosystems. They are low-lying waterlogged areas bordering rivers and streams, and forming quiet edges of lakes, rivers, low-lying floodplains estuaries and harbours. In the last 150 years more than 90% of New Zealand’s wetlands have been destroyed or severely impacted by agricultural developments.

The South Wairarapa region, in the lower part of the North Island, covers 2,485 km² and is characterised by its expanses of lowland plains and lakes, surrounded by mountainous ranges. Once its wetlands provided important ecosystem services filtering nutrients and controlling floodwaters but they are now under pressure from agricultural land use, including drainage, grazing, nutrient runoff, and the impacts of pest animals and plants.

For the indigenous Māori culture of New Zealand, wetlands are often regarded as equivalent to organs that cleanse the body (tinana) such as the kidneys (nga whatumanawa) and the liver (te ate), and therefore represent important sites for purifying and cleaning, by filtering or reducing nutrients, chemicals, and suspended sediment before it reaches the Lake Wairarapa. Many wetlands have historical and cultural importance as well as are regarded as source of food (mahinga kai) for the Māori tribes, providing important habitats for a range of culturally important food sources such as eel or important flora for carving such as flax, bulrush, tall grasses and bamboo spike sedges. Māori people perceive their own health as directly linked to the condition of their environments.

This study examines how we can re-purpose / re-configure land use within the region to a more ecologically conscious industry, finding a balance between the existing farming and agricultural practices that the region relies on and a recognition to the cultural practices of the Māori people and its importance to healthy communities and resourceful environments. The scope of this research will focus on three main components: Agriculture, Community and Ecology

How the participant can help with the research study

You are invited to be a knowledgeable person of contact for information and feedback regarding this case study topic. You would be willing to be available for one on one interviews that will take about an hour each time. With ongoing feedback to keep the study on the correct track over the year, ending in February 2017. These will be electronically recorded unless requested otherwise by the participant. All data collected from these sessions will be stored on password protected devices that the student will have access to. The use of this information and feedback is to be included in the ongoing process of the study period and in the thesis itself.

As a participant you will be willing for the student to contact you through email regarding information, questions and/or feedback when needed.

As my study involves oral narratives, this idea will be discussed if the participant may know and are willing to share narratives attached to the area. Narratives in which the student/researcher cannot gain access through the means of the internet or book information.

Other contact will be the search of technical information that might be at the participant's disposal e.g. Contour information, flood data, people interactions with the sites, for feedback to if the proposed design would be plausible in their knowledge. All data collection will be under the consent of the participants and if by any means this data cannot be published in the final document or shared with anyone this will need to be stated by the participant.

This is a voluntary participation to help my study grow where the participant can chose to be involved or not. The participant also has the right to withdraw by the 30th August and will not have to justify a reason with no questions to be asked. Contact will be stopped upon the participants wishes. Withdrawal will be accepted through a written email or letter to the student/researcher of the project.

All information passed between participant and researcher/student will only be used in the study case.

The result of this research will be published in book form both online and within the School of Architecture library.

A consent form is attached for further information into the role of co-ordinating with the student.

An application of the project stated above has been sent and approved by the Humans Ethics Committee (HEC) of Victoria University.

For more information contact:

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Human Ethics Committee information

If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC
Convener: Associate Professor Susan Corbett.

Susan.Corbett@myvuw.ac.nz or # 04 463 5480



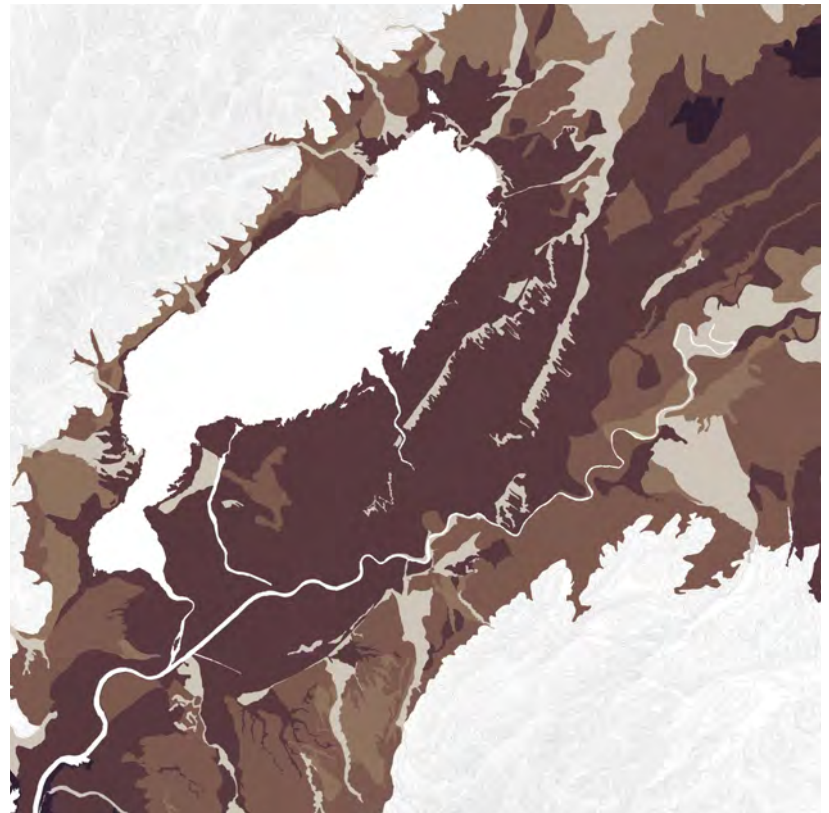
APX. C SITE ANALYSIS: SOIL TEXTURE



- Peat over skeletal
- Loam
- Clay over silt
- Silty
- Loam over sand
- Sandy
- Silt over sand
- Loam over clay
- Silt over clay
- Clay



APX. D SITE ANALYSIS: SOIL DRAINAGE



- Well drained
- Moderately well drained
- Imperfectly drained
- Poorly
- Very poorly



APX. E SITE ANALYSIS: SOIL DEPTH



- Very shallow
- Shallow
- Medium depth
- Deep



APX. F SITE ANALYSIS: FLOOD POTENTIAL



- Current water level
- 50 Year event potential
- 100 Year event potential

7.3 Glossary

AHUWHENUA
The art of science of cultivating the ground

KAITIAKITANGA
Guardianship, wtewardship, protection

KAWANATANGA
Governance and government

KOTAHITANGA
Cohesion and collaboration

MAHINGA KAI
Food source

MANA
Strength

MANAAKITANGA
Hospitality and security

MĀTAURANGA
Knowledge and understanding

MAURI
Life force / essence

NGĀTI KAHUNGUNU KI WAIRARAPA
A local tribe of the Wairarapa

NGA WHATUMANAWA
The kidneys

ORANGATANGA
Health and well-being

RANGATIRATANGA
Leadership, identity and self-determination

RANGITĀNE O WAIRARAPA
A local tribe of the Wairarapa

RONGOĀ
Traditional Māori medicine

TANGATA WHENUA
People of the land

TANGIHANGA (Noun)
Weeping, crying, funeral, rites for the dead, obsequies

TAONGA
Treasure of prized possession

TAUNAHA WHENUA
A custom where land is claimed through naming it after a body part

TIKANGA
Customary use or usual accepted practice

TINANA
Body, anatomy, person

TE ATE
The liver

TOHI (Noun)
A baptism ritual / ceremony of a child in flowing water

TŪRANGAWAEWAE
A place to stand

TINO RANGATIRATANGA
Political independence of a people

WAHI MANAAKITANGA
Supporting safe and healthy environments

WAIRUATANGA
Embedded emotion and spirituality

WHAIRAWA
Equitable access to and distribution of resources

WHAKAPAPA
Genealogy, lineage, descent

WHANAUNGATANGA
A relationship through shared experiences and working together