

NGĀTI TAHU-NGĀTI WHAOA
RUNANGA

RISING ABOVE THE MIST - TE ARANGA AKE I TE TAIMAHATANGA
Ngāti Tahu-Ngāti Whaoa Iwi Environmental Management Plan



IMAGE CREDITS

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Ngāti Tahu- Ngāti Whaoa Iwi Environmental Management Plan

PART I : TIROHANGA WHĀNUI

Overview

PART II: NGA TAONGA O TAIAO

Treasured resources

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Mihi Composer, Uncle Dan

MIHI

Nō Ihowa te whenua, me ōna tini mea,
te ao, me ngā tāngata e noho ana i runga.

Nā, ka tango a Ihowa, te Atua, i te tangata,
a, whakanohoia ia ki te whenua,
hei ngaki, hei tiaki hoki i reira.

Ngā maumahara aroha,
mō ngā tini aituā kua wheturangitia.
Kua wehe atu rātou i tēnei ao hurihuri
ki te ao mārama.
No reira ngā mate huhua,
haere, haere, haere atu rā.

He mihi ki ngā mātāwaka, ngā mana,
ngā kaitiaki rawa taiao,
me ngā poutiria o Papatūānuku.
Tēnā koutou katoa.

*The earth is the LORD's, and the fullness
thereof: the world, and they that dwell therein.*

*Then the LORD God took man
and put him on the land,
to tend and keep it.*

*Loving memories,
of the many who have been immortalised.
They have departed this ever-changing world
to the world of light.
Therefore to the many departed,
thrice farewell.*

*Greetings to the tribes, authorities,
custodians of environmental resources,
and guardians of Mother Earth.
Acknowledgement to all.*



He tūroa te hononga matatau o te Māori ki te whenua, moana, me nga wai kaimata, mai rā nō. He hononga ngātahi ā wairua ā tinana hoki. I whakaratoa e Papatūānuku te kotahitanga me te ahurei ki tana iwi.

Kāhore he whakaarotanga o te Māori onamata mō te tino rangatiratanga o ngā whenua, kore rawa hoki te kotahi i whai whenua. Mā ngā rawa noa, ka manaakitia ai te oranga kotahitanga o te katoa. I mua i te paunga o ngā rawa, ka whakatakotoria he “rāhui” ki tēnā wāhi, tae noa ki te wā whai auroa ai anō.

Huri atu ki te whakaarotanga mō te whai wāhi tūranga. I te tirohanga aowhanui o te Māori, ko te nuinga o te koiora e rapu ana tētahi ki tōna tūranga me tōna wāhi i roto i tēnei ao.

I whakapuaki tikangatia mā roto i te hononga o te iwi ki ngā wāhi ake, pēnā ki te maunga, pae, awa, roto rānei.

Mā tēnei rongō ka whiwhi ai ngā iwi ā rohe i te ngākau mōhio mō te āhua takoto o ō tātou rawa, ā, me pēhea te whaihanga mō ngā raruraru kua ara ake. Mēnā kei te ora tonu te taiao, nā, me mau tonu ki tēnā āhuetanga.

Ka whai atu nei ngā mihi ki a rātou, nā rātou nei, i whakarato te mātauranga me te tautoko mō tēnei kaupapa.

Tēnā tātou katoa.
TH Fraser

Māori had an enduring and intimate association with the land, sea, and fresh waters since time immemorial. That connection is both physical and spiritual. Mother Earth provided unity and uniqueness to her people.

Early Māori society did not have a concept of absolute ownership of land, and certainly, no individual owned land. The natural resources were the means of sustaining the collective livelihood of all. Before depletion of a resource, a “ban” would be placed on that area until sustainability was again realised.

Then there is the concept of having one’s place to stand. In the Māori world view, much of life is about finding one’s foundation and position in the world.

This was traditionally expressed through a people’s relationship with particular places, such as a mountain, a range, a river, or a lake.

This report will give communities a better understanding of the state of our resources and how better to deal with problems that may have arisen. Where the environment is healthy, this then must be maintained.

Following below are the acknowledgements to those, the individuals, who have provided knowledge and support for this project.

*Greetings to all.
TH Fraser*



ACKNOWLEDGEMENTS

Many people and organisations have played a part in producing this Iwi Environmental Management Plan. Iwi members contributed their time, thoughts and creativity, both as participants and as ringawera at the series of hui held to gather iwi views. A special mihi goes to the tamariki and those who encouraged them through art and activities to express their ideas about the taonga of the iwi. We are grateful for the guidance of kaumātua and rūnanga members who provided input and feedback, including recollections from their own life experience. The staff of the Ngāti Tahu-Ngāti Whaoa Rūnanga Trust worked hard coordinating, organising, administering and participating in the process.

Funding for the project came through Te Arawa River Iwi Trust, whose staff also provided ongoing support and feedback. We acknowledge the input of staff from the Department of Conservation and Waikato Regional Council. Staff from these agencies attended hui to dialogue with the iwi, fed in useful information and reviewed a draft of the plan. Personnel from Hancock Forest Management, Tutukau East Z Trust and Tauhara North No 2 Trust also attended hui and/ or provided information for project case studies.

Waikato Regional Council made a further contribution through valuable GIS support, creating a series of maps for this document. Wildlands Consultants, Taupō District Council and Rotorua District Council provided information on Significant Natural Areas within the rohe. Specific image credits appear on the inside cover. Other photographs and diagrams were sourced from Te Arawa Lakes Trust, GNS Science, Wildlands Consultants, Orākei Kōrako, Wai-O-Tapu Thermal Wonderland and Waikato Regional Council. Graphic design and layout was done by Mau Creative.

Ki a koutou katoa i whakapau kaha ki te tutuki i ēnei mahi hei painga mō ngā uri whakatipu: he mihi aroha, he mihi mutunga kore ki a koutou. Tēnā koutou, tēnā koutou, tēnā koutou katoa.

STATEMENTS OF SUPPORT



**Department of
Conservation**
Te Papa Atawhai

The Department of Conservation (Department) was established under the Conservation Act 1987 (Act) and is charged with promoting and advocating for conservation with primary functions to manage all lands and other natural and historic resources held under the Act, and to preserve and protect so far as practicable all indigenous freshwater fisheries and habitats. The Rotorua Lakes Area office promotes these functions by developing enduring relationships within its community of interest including recognised iwi authorities.

The Rotorua Lakes Area office and Ngāti Tahu-Ngāti Whaoa Runanga Trust (Trust) have an ongoing working relationship based on shared values and want healthy and sustainable ecosystems and to see people enjoying the places under our management and generating opportunities for the people of Ngāti Tahu-Ngāti Whaoa. The Iwi Environmental Management

Plan (Plan) developed by the Trust is a living document and enhances our relationship and supports our shared values.

Department staff assisted towards the development of the Plan, which has a primary purpose of guiding the management of resources from an iwi perspective within the Ngāti Tahu-Ngāti Whaoa region, and will help to inform the work and planning the Department undertakes throughout the region.

The Department acknowledges the efforts of all involved towards developing the Plan and we look forward to continuing our relationship based on shared values.

A handwritten signature in black ink, appearing to read 'A. Baucke'.

Andrew Baucke / Area Manager / Tauranga/Rotorua Lakes



The Waikato Regional Council (WRC) is delighted to provide this response in relation to the Ngāti Tahu-Ngāti Whaoa Iwi Environmental Management Plan (Plan).

The guidance for how WRC will work with and recognise this Plan is found in a number of key sections and clauses in the Resource Management Act (RMA). It is important for all parties concerned that WRC has this guidance to rely on under the RMA to ensure the correct application and implementation of all iwi planning documents. WRC also has the ability to apply current best practice methods to work effectively and build enduring relationships with Ngāti Tahu-Ngāti Whaoa.

WRC recognises this Plan in the manner prescribed by the RMA as an “iwi prepared planning instrument”. Therefore, as a consent authority when considering an application for resource consent, WRC must have regard to the IEMP, if s104 RMA applies to the plan. Additionally, WRC must recognise the IEMP when preparing, reviewing or changing and RMA planning document in the manner required under the RMA. WRC accepts the Plan is not intended to replace existing communication avenues, but rather is an additional vital instrument in the communication and collaboration toolkit. It is certain that both organisations place a high value on one-to-one or “rangatira-ki-te-rangatira” engagements and wish to see those types of communications continue.

The benefits of iwi planning documents are potentially quite extensive and they can be regarded as useful tools for understanding the concerns of iwi as they relate to the Resource Management Act and WRC planning, setting out iwi priorities on environmental matters and outlining how iwi wish to participate in environmental matters with council.

WRC appreciates the effort Ngāti Tahu-Ngāti Whaoa have put into this Plan and acknowledges the desire to work more closely with WRC to strengthen relationships and promote better understanding between both organisations.

A handwritten signature in black ink, appearing to read 'Clare Crickett'.

Clare Crickett / Deputy Chief Executive / Waikato Regional Council

Toitū te whenua,
toitū te awa,
toitū te tangata

The land, the river, the people are everlasting.



FOREWORD



This is the first Iwi Environmental Management Plan prepared by Ngāti Tahu-Ngāti Whaoa. Our tūpuna needed no such document to instruct or guide them in ensuring the protection and conservation of Papatūānuku. The very survival of our people depended upon living as one with our natural resources; sustaining the mauri of a resource enabled that resource to sustain its people.

The Ngāti Tahu-Ngāti Whaoa Rūnanga Trust must, as the mandated iwi authority, honour those who have walked before us - not only our many tūpuna but our rangatira, our kaumātua who never gave up the fight to retain our lands, our treasured resources that were the backbone of our way of life.

To those who contributed to the early years of establishing Ngāti Tahu-Ngāti Whaoa Rūnanga Trust, your tireless work lives on in the legacy we leave for the generations to come.

To Rāwiri Te Whare, who led and served our iwi for many years, whether on the paepae with tangata whenua or with Crown during negotiations: you led your people with dignity and strength. Haere, haere, haere atu rā e te rangatira.

While this document is an environmental plan, let us remember the most powerful resource that we have been blessed with – he whānau, he iwi, he tangata:

Hutia te rito o te harakeke. Kei hea te kōmako e kō?

Kī mai ki ahau, “he aha te mea nui o tēnei ao?”

Māku e kī atu ... “he tangata, he tangata, he tangata”.

We cannot accomplish all that we need to do if we do not work together.

Our Iwi Environmental Management Plan takes the name “Rising above the mist”. Soft mists have always been a feature of our rohe, arising from the Waikato River and the rich wetlands that naturally occurred throughout our tribal lands. Our mountain ranges break through these mists and afford us a clear vantage point from which to see where we have been and where we might go next. “Rising above the mist” infers that by working together, we may surmount any confusion or trouble that we may find ourselves in at the present time, obtain an expansive view of our terrain, and chart our way forward to a bright and hopeful future.

Evelyn Forrest

Evelyn Forrest
Ngāti Tahu-Ngāti Whaoa Rūnanga Trust Trustee
Environmental Liaison Officer
Te Arawa River Iwi Trust Trustee.

WHAKATAKINGA – INTRODUCTION

An Iwi Environmental Management Plan is a living document developed by iwi, for iwi, and to inform others about things important to iwi. It provides a guide to how management and protection of the environment can be achieved based on cultural and spiritual values of tangata whenua.

The purpose of this plan is to identify environmental resources and issues within the Ngāti Tahu- Ngāti Whaoa rohe, and to guide the management of those resources from an iwi perspective. It is important because:

- **It provides a ‘road map’ for identifying our environmental issues and how we will make positive change**
- **It informs and transfers knowledge from an iwi perspective**
- **External parties will consider this plan when reviewing their own plans, planning developments and carrying out work in the rohe.**

This Iwi Environmental Management Plan is an iwi planning document recognised by an iwi authority, and as such it has weight under the Resource Management Act.

The plan covers all of the rohe (see below: Mana whenua - land and identity). It is an overarching plan that integrates across a number of relevant documents and pieces of legislation, including:

- **Resource Management Act 1991 and any subsequent reforms**
- **Local Government Act 2002**
- **Conservation Act 1987; Reserves Act 1977; Walking Access Act 2011**
- **Historic Places Act 1993**
- **Biosecurity Act 1993**
- **Fisheries Act 1996**
- **Forests Act 1949**
- **Soil conservation and drainage legislation**
- **Settlement legislation and statutory acknowledgements**
- **Other Accords.**

Te Tiriti o Waitangi is recognised as a foundational document underpinning this plan.

The scope of this plan includes cultural, economic, social and community issues which provide the context for managing natural and physical resources. Marae and significant sites are considered by iwi members to be part of their environment, and are included in this plan.

How this plan was developed

To develop this plan, a series of hui was held. This included a haerenga for kaumātua, to gather information on what the rohe was like in former times. An iwi bus tour followed this trip, and three other hui-ā-iwi were held on local marae to get input for the plan. One of these hui had a focus on native plants and animals, and DOC staff attended to give input. Special topic hui were also held on geothermal issues (at Ohaki Marae) and on land and water (at the Tutukau dog trial rooms). Trustees from several blocks attended this hui along with Waikato Regional Council staff. Topics included farming and water quality, forestry, and protection and restoration of native flora and fauna.

Further liaison also occurred with staff of the Te Arawa River Iwi Trust and with key organisations involved in environmental management, including the Department of Conservation, local government and forestry companies. Discussions occurred with those working for other iwi to prepare their plans.

Relevant documents were reviewed and regional environmental monitoring information was accessed.

Who should use this plan

This plan can be used by members of the iwi to inform practices that support kaitiakitanga of natural resources. The intention is that any iwi member can pick up this plan and use it.

This includes iwi bodies to which Ngāti Tahu-Ngāti Whaoa is affiliated, such as the Te Arawa River Iwi Trust (TARIT). It is envisaged this plan will inform other projects TARIT will develop to progress the protection and restoration of the Waikato River, such as their Iwi Environmental Management Plan, Fisheries Plan, Upper Waikato Integrated Management Plan, and State of the Environment reports and monitoring frameworks. It may also inform reviews of Joint Management Agreements and Accords which TARIT enters into with local and central government.

Lands within the rohe are administered by independent land Trusts. Marae also have their own Trusts and Committees. This plan is not intended to impinge in any way on the independence of these governing bodies. Rather, the hope is that information in this plan will be useful to Trustees and Committee members, and foster further collaboration between iwi structures.

The plan should also be actively used by statutory agencies. These include central government, local government (see Map 5) and co-management bodies such as the Waikato River Authority.

The Resource Management Act requires that Regional Policy Statements must state the management issues of significance to iwi authorities in the region. When writing Regional Policy Statements and Regional or District Plans, local government must take into account any relevant planning document recognised by an iwi authority (RMA S61, 66, 74). This plan is recognised by Ngāti Tahu-Ngāti Whaoa as a relevant planning document. Local government may also consider the contents of this plan in any decision to transfer powers to iwi authorities (S33) or make joint management agreements (S36b). The plan may also be considered as a relevant document when assessing resource consents.

Section 4 of the Conservation Act (1987) requires the Act to be interpreted and administered so as to give effect to the principles of the Treaty of Waitangi. Information in this plan will be helpful to staff of the Department of Conservation in carrying out this duty. This plan can also inform future reviews of the Memorandum of Understanding between the Department and the iwi regarding management of sites under DOC management where statutory acknowledgements have affirmed the interest of the iwi in those sites.

Parties involved in commercial activity will find useful information in this document, wherever that activity involves use of natural resources within the rohe of Ngāti Tahu-Ngāti Whaoa.

Reference to this plan in no way negates the need for proper consultation with the iwi, land Trusts and local whānau.

How this document is set out

This Iwi Environmental Management Plan is in two parts.

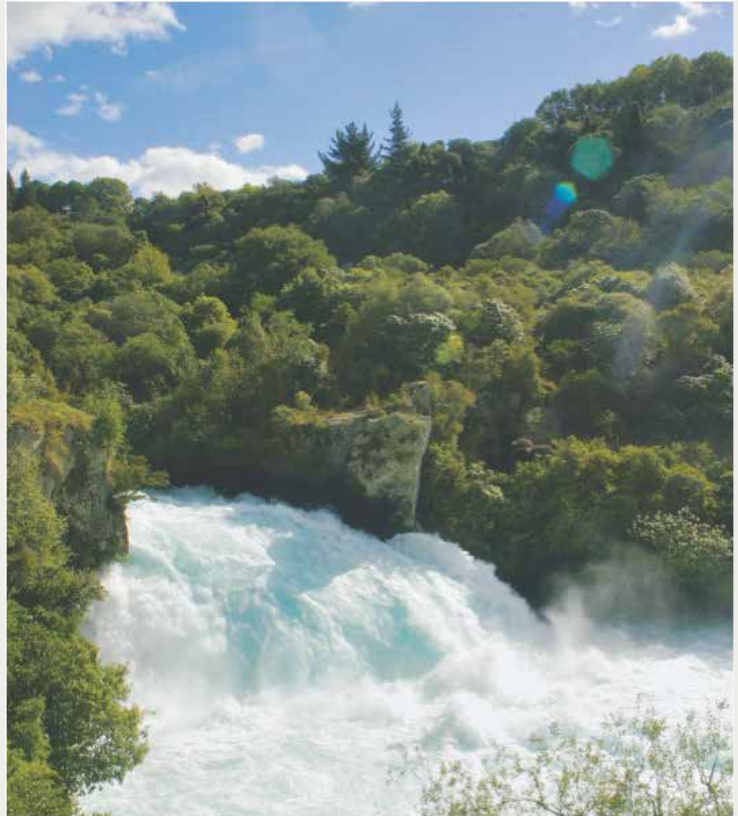
Part I is an overview of the rohe, its environmental features and their history.

Part II takes each taonga or resource within the environment and describes its historical and current state, pressures affecting it and opportunities to protect and restore it. Current actions and future actions are listed, along with a set of guiding principles for managing that resource. While each environmental resource is addressed in turn, in reality all are interconnected and the iwi encourages consideration of the environment as a whole.

MANA WHENUA – LAND: OUR AUTHORITY

This section outlines the traditional areas of Ngāti Tahu-Ngāti Whaoa, features of the rohe and historical information that identifies the iwi relationship with the natural environment.

Our rohe



Mai i te waiheke o Huka



Whakarāwhiti atu ki te Mānia o Kāingaroa



Te Tīhi o Maunga Kākaramēa



Putā atu ki te Pae Maunga o Paeroa



Ko Orākei Kōrako te Ūkaipō

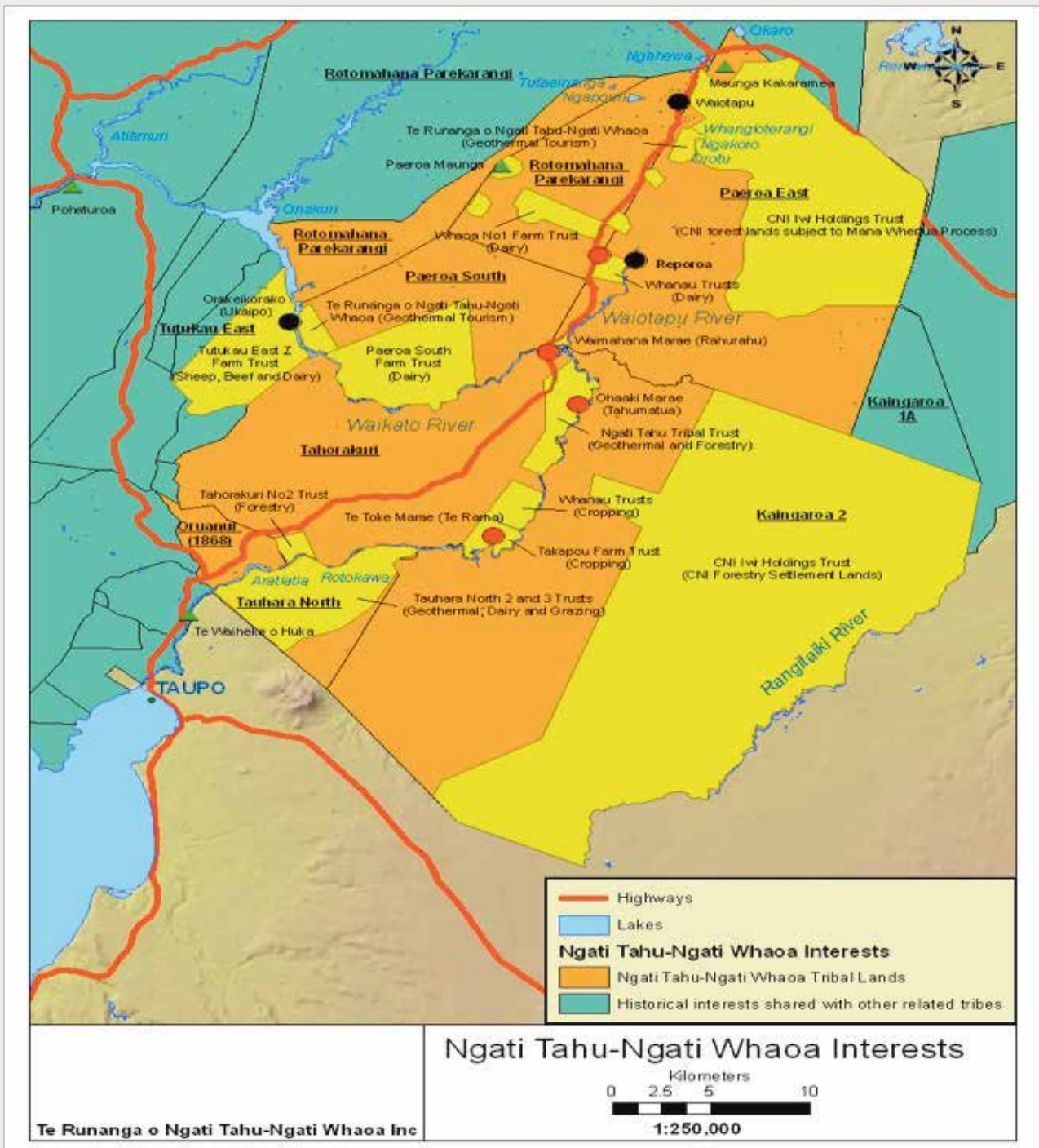


Tae rawa atu ki Pōhaturua

From Te Waiheke o Huka (Huka Falls) to the south, we extend east to our pouwhenua at Ngāpuketerua beyond the Rangitaiki River, then northward across the plains of Kāingaroa to Wairapukao and further on to Pekepeke. From here we extend to our northern pouwhenua at Maunga Kākaramea, turning west to the Paeroa Range and on to Orākei Kōrako on the banks of the Waikato River, the birth place and principal papakāinga of Ngāti Tahu-Ngāti Whaoa. From Orākei Kōrako we extend further west to Pōhaturoa, an ancient pā site.

These are the pouwhenua, the geographical marker points that describe the rohe in which Ngāti Tahu-Ngāti Whaoa is recognised as an iwi with mana whenua. Comprehensive background to the iwi assertions of mana whenua can be found in the Deeds of Settlement and settlement legislation. (See below: History of the iwi and resources.) Map 1 shows the iwi traditional tribal lands and current iwi landholdings.

Map 1. Ngāti Tahu-Ngāti Whaoa traditional lands and current iwi landholdings

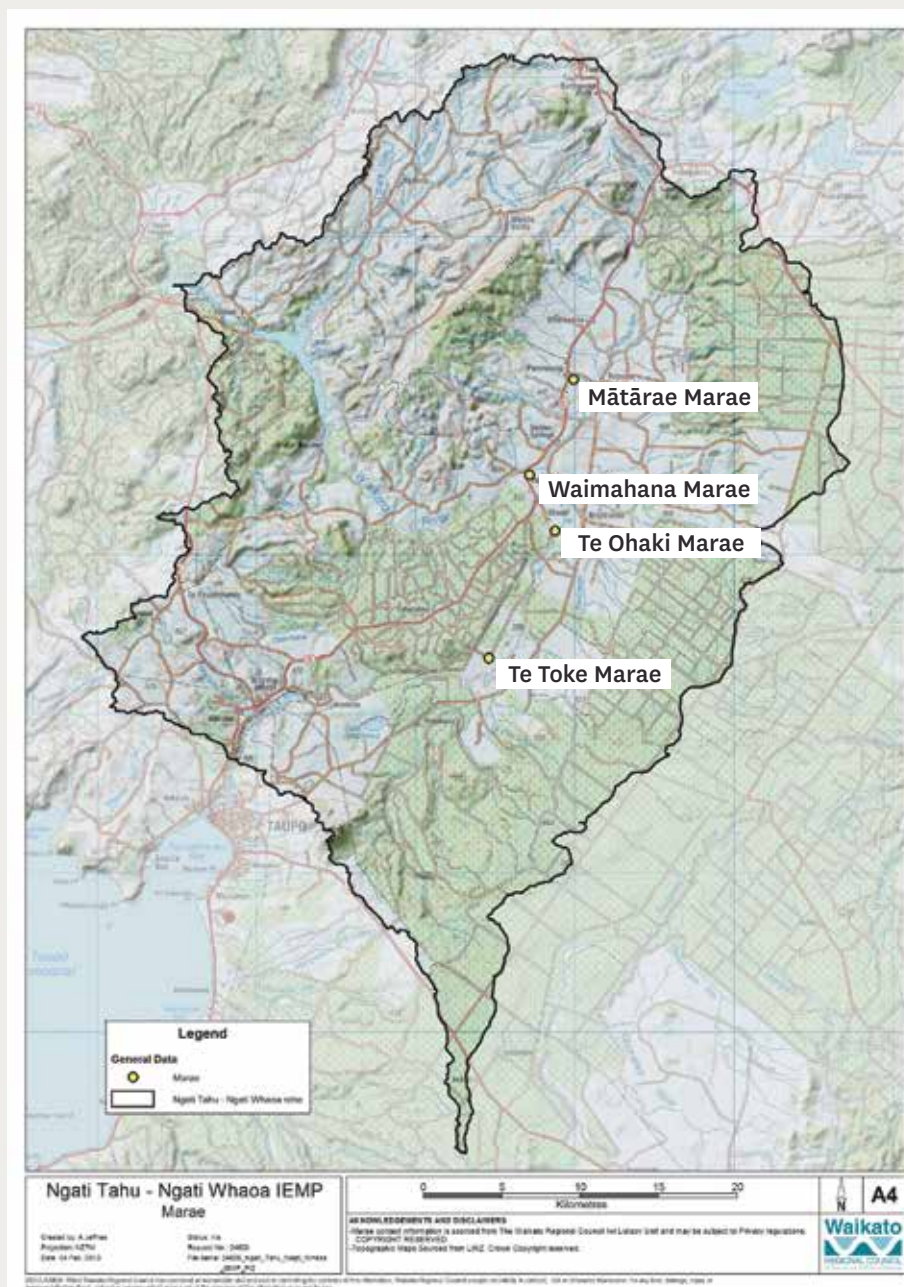


Overview of environmental features of our rohe

Central to our identity is Orākei Kōrako, the original settlement and ūkaipō of the iwi, a place of great significance to us. Here the iwi resided, alongside the ngāwhā, on the banks of the Waikato River – taonga that characterise the rohe of Ngāti Tahu – Ngāti Whaoa.

Ngāti Tahu-Ngāti Whaoa had many kāinga, cultivations and burial caves along the edges of the Waikato River and three of our four marae are situated along the Waikato River, the fourth marae being adjacent to Mangahōanga Stream (see Map 2). The pristine headwaters of the Waikato River and its extensive wetlands provided the iwi with all we needed – pure water, abundant kai, and diverse resources and materials for our use.

Map 2: Marae of the Ngāti Tahu – Ngāti Whaoa rohe





The Waikato River settlement legislation has recognised and affirmed the significance to Ngāti Tahu-Ngāti Whaoa Iwi of the Waikato River from Huka Falls to Pōhaturoa at Ātiamuri (see following box and Map 4). Through Treaty Settlements entered into as part of Te Pūmautanga o Te Arawa and the Central North Island Iwi Collective, Ngāti Tahu-Ngāti Whaoa has had customary lands returned. The iwi remains in negotiations over the Kāingaroa Forest.

Geothermal areas were favoured by our tūpuna for settlements, providing precious warmth and hot bathing, natural cooking and preserving, and sites for ritual purposes and healing. Our iwi traded unique materials of the rohe such as kōkōwai, the clay pigment generated by geothermal activity.

Ngāti Tahu-Ngāti Whaoa has an active role to play in kaitiakitanga over a number of geothermal fields within our rohe. Several iwi Trusts are landowners and joint venture partners in geothermal developments. Geothermal habitat also harbours some of the rarest plants in the country.

There are extensive forest areas in Tutukau and the Paeroa ranges that provide homes for plants and animals, healing rongoā, resources for cultural materials, and connections to the Waikato River. Our rohe was known for its freshwater resources, wetlands (repo), and birdlife associated with the water.

Wāhi tapu and historic sites of significance to the iwi are found throughout the rohe, alongside the river and waterways, on high hilltops and in areas of native forest and pine forestry.

All of these taonga and more have great cultural significance to our iwi and we want to see them prosper under our care.



Significance of the Waikato River

The Deed in Relation to a Co-Management Framework for the Waikato River, signed between Te Arawa River Iwi and the Crown, 9th March 2010, sets out the statement of significance of the Waikato River to the Te Arawa River Iwi.





Statement of Significance

The Waikato River flows from its source on the south side of Ruapehu to Te Pūaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, fisheries, vegetation, flood plains, wetlands, islands, springs, geothermal springs, water column, airspace, substratum and mauri.

The Waikato River and its catchment is a resource of great cultural, historical, traditional and spiritual significance to the people of Ngāti Tahu-Ngāti Whāoa, Ngāti Kearoa Ngāti Tuara and Tūhourangi Ngāti Wāhiao.

Our relationship with the Waikato River and its tributaries, and our respect for it, gives rise to our responsibilities to protect the River and all it encompasses, and to exercise our mana whakahaere in accordance with long established tikanga to ensure the wellbeing of the River.

We continue to exercise our mana, along with customary rights, and exert the rights and responsibilities of kaitiakitanga in relation to the Waikato Awa within our rohe.

History of the iwi and resources

The following historical description is from the Deed in Relation to a Co-Management Framework for the Waikato River, signed between Te Arawa River Iwi and the Crown, 9th March 2010.

“OUR HISTORY”

Our people have occupied these lands since the arrival of our Tupuna Ariki Tahu Matua. Tahu Matua arrived here in Aotearoa before the arrival of the seven waka from Hawaiki. Our Tupuna Whaoa is some generations younger. Whaoa descends from Tahu Matua on his mother’s side, Hinewai, and he descends from Atuatua on his father’s side, Paengatū.

As a tribe, we derive our name from our ancestors Tahu Matua and Whaoa. Through successive generations of inter-marriage with neighbouring iwi, our tribal members also trace descent from ancestors who arrived on the Arawa, Matātua and Tainui waka.

From the arrival of our Tupuna Ariki we have asserted and maintained mana whenua and mana whakahaere through continued ahi kāroa (occupation) and possession of our lands and taonga.

Prior to the arrival of European settlers to Aotearoa – New Zealand, Ngāti Tahu-Ngāti Whaoa was an autonomous, independent and self-governing confederation of hapū. These hapū included: Ngāti Tahu, Ngāti Karaka, Ngāti Maru, Ngāti Hinewai, Ngāti Whaoa, Ngāti Rahurahu, Ngāti Mātārae and Ngāti Te Rama.

As Ngāti Tahu-Ngāti Whaoa we exercised tino rangatiratanga over our traditional rohe. The historical hapū no longer form distinct communities within Ngāti Tahu-Ngāti Whaoa. In more recent times the descendants of our many tūpuna have operated as a single tribal grouping known today as Ngāti Tahu-Ngāti Whaoa.



“OUR MARAE”

Today, three of our Marae (Ohaki – Tahu Matua, Waimahana – Rahurahu and Te Toke – Te Rama) are situated on the banks of the Waikato River with Mangahōanga Marae – Mātārae standing adjacent to the Mangahōanga stream. The Mangahōanga stream runs into the Waitapu River, a major tributary of the Waikato River. The tribe has acknowledged our ancestor Whaoa by giving his name to the whareniui which stands on the school grounds of Reporoa College.



“OUR LANDS”

Ngāti Tahu-Ngāti Whaoa lands and resources were held in customary tenure where tribal collective custodianship remained paramount. In the exercise of our rangitiratanga the tribe sought to ensure that very little land within the Ngāti Tahu-Ngāti Whaoa rohe was permanently alienated.

As a tribe, Ngāti Tahu – Ngāti Whaoa was actively engaged in commerce and trade. Our people had seasonal kāinga and cultivations spread throughout our traditional rohe capitalising on micro climates, diverse soils and winter and summer safe areas.

Ngāti Tahu-Ngāti Whaoa claim that prior to the establishment of the Native Land Court, we were essentially autonomous and economically prosperous. Our people produced and sold commodities such as cattle, pigs, duck, vegetables, wheat, oats, potatoes, flax and timber. Our people were also engaged in a range of commercial activities. Ngāti Tahu-Ngāti Whaoa used commodities such as red ochre, kererū, tuna, fish and minerals from our geothermal resources for customary trade with other iwi.



The Native Land Court was established under the Native Land Acts of 1862 and 1865 to determine the owners of Māori land “according to Native Custom” and to convert customary title into title derived from the Crown. The Crown’s pre-emptive right of land purchase was also set aside, enabling Māori to lease and sell their lands with few restrictions. As was often the case in the 1860s there was limited consultation concerning this legislation, and the Crown did not specifically consult Ngāti Tahu-Ngāti Whaoa.

The Native Land Court awarded Ngāti Tahu-Ngāti Whaoa approximately 150,000 hectares (370,000 acres) and 80% of these lands fall within the Waikato River catchment.

Land blocks awarded by the Native Land Court, vesting sole ownership to Ngāti Tahu-Ngāti Whaoa include:

Kāingaroa No.2 (October 1867), Paeroa South (September 1884), Tahorakurī (February 1887), Tauhara North (January 1869), Tutukau East (February 1886) and Rotomahana Parekārangi 3A (May 1882).

Land blocks awarded by the Native Land Court vesting dominant ownership to Ngāti Tahu-Ngāti Whaoa include:

Paeroa East (July 1881).

Land blocks awarded by the Native Land Court vesting shared ownership to Ngāti Tahu-Ngāti Whaoa along with other neighbouring tribes include:

Ōruanui (February 1878).

Land blocks that Ngāti Tahu-Ngāti Whaoa have a historical customary association with include:

Tutukau West, Tauri, Kāingaroa 1A, Hangihangi, part Kāingaroa No.1, part Rotomahana Parekārangi 6A, part Tātua West, and part Tātua East.

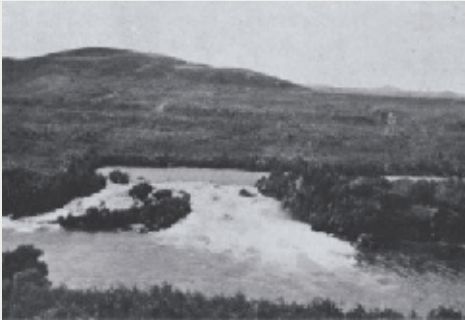
Subsequent fragmentation and alienation of Ngāti Tahu-Ngāti Whaoa Lands contributed to the erosion of our traditional tribal structures, our economic independence and the social fabric of our tribe. Land loss caused great pain and grief to our people and a sense of that grievance was illustrated in a letter submitted to the Crown by Kamariera Heretaunga and 54 others. It reads:

“Great is the pain and grief afflicted us by reason of the Crown. The reason for our pain is that we do not call this land earth, but the flesh and bones of our dead. Gone are the burial sites, gone are the settlements, gone are the cultivations. Sir, great is our pain and grief”. (Orākei Kōrako, 18 November 1895).

Ngāti Tahu-Ngāti Whaoa also lost land along the banks of the Waikato River due to takings under the Public Works Acts.

“OUR RESPONSIBILITY”

Ngāti Tahu-Ngāti Whaoa owns 4,500 hectares (11,000 acres) of land adjacent to the Waikato River between Te Waiheke o Huka and Pōhaturoa. Land use across these blocks include: dairying, dry stock, cropping, forestry and geothermal energy generation. These blocks are currently administered by: Ngāti Tahu Tribal Trust, Tauhara North Trusts,



Tahorakurī Forest Trust, Takapou Farm Trust, Paeroa South Farm Trust and Tutukau East Z Farm Trust.

Through the Treaty settlements entered into as part of Te Pūmautanga o Te Arawa and the Central North Island Iwi Collective, there is an opportunity for Ngāti Tahu-Ngāti Whaoa to have our customary lands returned making us one of the largest land owners in the Waikato River catchment.

Ngāti Tahu-Ngāti Whaoa is in a unique position of perpetual, inter-generational land ownership. Activities on the Waikato River and within its catchment continue to significantly impact on the health and wellbeing of the River. Ngāti Tahu-Ngāti Whaoa must play a leadership role in developing new initiatives focused on innovative land use techniques and technologies and River initiatives focused on cultural revitalisation.

“OUR GEOTHERMAL TAONGA”

Ngāti Tahu-Ngāti Whaoa has a historical, cultural and contemporary association with geothermal resources within our traditional rohe. Such resources were used for cooking, drinking, bathing and healing. Large kāinga and cultivations were often established around these taonga such as at Orākei Kōrako, Ohaki and Waiotapu.

With the passing of the Geothermal Energy Act 1953, Ngāti Tahu-Ngāti Whaoa lost control of and access to some of our geothermal taonga.

The geothermal fields within our traditional rohe include:

Rotokawa (Tauhara North), Broadlands (Kāingaroa No.2), Ohaki (Tahorakurī), Ngā Tamariki (Tahorakurī), Reporoa (Paeroa East), Waiotapu (Paeroa East), Waikite (Rotomahana Parekārangi), Te Kōpia (Rotomahana Parekārangi), Orākei Kōrako (Tutukau) and Ātiamuri (Tātua West).

“OUR AWA”

Ngāti Tahu-Ngāti Whaoa had many kāinga, cultivations and burial caves along the banks of the Waikato River. The River provided many benefits to our people and was often used to transport produce that was traded with other Iwi and early settlers.

Paramount to Ngāti Tahu-Ngāti Whaoa is our participation in a co-management regime that protects, preserves and where possible restores our wāhi tapu and taonga. From our perspective a co-management regime focused on the health and wellbeing of the Waikato River is one process by which to achieve our objective.

The close connection Ngāti Tahu-Ngāti Whaoa has with the Waikato River is illustrated by the significant number of places held sacred along the River from Te Waiheke o Huka to Pōhaturoa.

The Deed goes on to describe specific sites along the river. It also sets out some of the historical impacts on Te Arawa River Iwi due to the loss of land through the operation and impact of the native land laws, Crown and private purchasing of land, and alienations under Public Works legislation for a number of purposes, including electricity generation. The modification of the Waikato River and other impacts on it are described in the following box.

Ka ora te iwi Ka ora te tangata

Well-being for the tribe, well-being for the people.



Modification of the Waikato River and geothermal resources

From the 1920s, the Crown embarked on a series of major hydro-electricity developments that affected both the Waikato River, and the land adjacent to it. The first dam constructed by the Crown on the River was commissioned at Arapuni in 1929. In 1940 and 1941 control gates and a diversion channel were built at the Lake Taupō outlet in order to control and regulate the level of the lake. The periodic discharge of water through the control gates on the River caused flooding along the riverbanks downstream, and generated considerable public concern.

Following the construction of the Taupō control gates a series of major hydro-electric power stations were built over the next 30 years along the length of the Waikato River. The new stations were at Karapiro (built in 1940-47), Maraetai 1 (1946-52), Whakamaru (1949-56), Ātiāmuri (1953-58), Waipapa (1955-61), Ohakurī (1956-61), Aratiatia (1959-64), and Maraetai II (1959-61, 1967-70). The Upper Waikato River contains more dams than any other waterway in New Zealand.

As a result of the dam construction and associated flooding, many points of access and food-gathering places along the banks of the River were lost to the Te Arawa River Iwi. There was a significant loss of whare, pā, wāhi tapu, urupā, sites of significance and other important areas to the Te Arawa River Iwi through the flooding associated with the hydro-electric developments. For example, the Ngāwāpūrua pā (occupied by Ngāti Tahu-Ngāti Whāoa) was flooded when the Ohakurī Dam was built and Motutāhae (a pā located on an island in the Waikato River) is now submerged due to the construction of that dam.

The dams and control gates have impeded the natural flow of the Waikato River, which has affected the mauri of the River.

Specific geothermal sites around the Waikato River, which were of significance to the Te Arawa River Iwi, were also affected by the construction of electricity generation facilities along the Waikato River. Many of the geothermal sites that were once used in day-to-day life by Ngāti Tahu-Ngāti Whāoa were destroyed or adversely affected by the flooding associated with those facilities.

Orākei Kōrako and Ohaki are two of the sites that were adversely affected by the flooding of the area. Orākei Kōrako was a principal settlement of the Ngāti Tahu-Ngāti Whāoa people for centuries. Three quarters of the geysers and hot springs at Orākei Kōrako were flooded and road access cut off when the Ohakurī dam was completed in 1960, and when it was filled on January 1961. The last of the Ngāti Tahu-Ngāti Whāoa people living at Orākei Kōrako were moved from their homes to Taupō. Prior to moving, these families witnessed their homes being burnt to the ground to clear the area in readiness for flooding by the construction of the Ohakurī dam.

The commissioning of the Ohaki geothermal power station produced significant environmental effects, including subsidence leading to flooding. This continues to threaten many treasured taonga including the Ohaki Marae, urupā and wāhi tapu. The Ohaki Ngāwhā (hot pool) was at one time the largest natural boiling hot pool in the southern hemisphere. When development commenced, the extraction of geothermal fluid made the water level in the Ohaki Ngāwhā drop causing significant damage. The ngāwhā is now fed by geothermal bore water, which contains chemicals added to prevent silica depositing in the bore pipes. Most of the other flowing surface features at Ohaki have dried up because of the extraction of geothermal fluid.



Ohaki 1969



Ohaki 1995



These modifications to the Waikato River, loss of associated geothermal resources, and the displacement of people have caused considerable distress to the Te Arawa River Iwi.

Other impacts

There have been other significant alterations to the ecology of the Upper Waikato River. These impacts were caused by the establishment of major exotic forest plantations and associated processing plants; the clearance of native vegetation and the rapid expansion of the dairy industry; rural residential expansion; the draining of wetlands and discharges into waterways; domestic and industrial abstraction of water from the River; and, industrial development including the construction of geothermal power stations at Wairākei and Ohaki.

All of these activities have contributed to the pollution and deterioration of the health of the Waikato River, and have affected its mauri.

There is now little or no indigenous forest cover surviving along the banks of the Upper Waikato River. Wider environmental impacts including impacts on biodiversity and ecosystems, impacts on aquatic life, loss of species, and changes to the natural character of the River landscape have been significant.

Legislation (including the Resource Management Act 1991) provides local authorities with substantial functions and powers over natural resources, including the power to control resources through plans and to grant resource consents for the use of land, water and air space. Such functions and powers relate to the Waikato River. This legislation did not, however, provide for protection of the mana whakahaere of the Te Arawa River Iwi. Since the Resource Management Act came into effect, the Te Arawa River Iwi have been involved in many resource consent application hearings to seek conditions that would protect the Waikato River.

Through the historical changes to the natural environment, many taonga of the iwi have been alienated, destroyed or lost, or they have suffered a decline in condition or health. On the haerenga organised for kaumātua to prepare this Iwi Environmental Management Plan, kaumātua noted how things have changed. In the past they had never had concerns about where their kai came from, but now they worry about where they collect kai and how safe it is to eat.

Current land ownership

The 4,500 hectares (11,000 acres) of land owned by the iwi adjacent to the Waikato River represents 3% of the original landholdings awarded to Ngāti Tahu-Ngāti Whaoa by the Native Land Court.

These blocks (see Map 1) are currently administered by:

- Ngāti Tahu Tribal Trust
- Tahorakurī Forest Trust
- Takapou Farm Trust
- Tauhara North Trusts
- Paeroa South Farm Trust
- Tutukau East Z Farm Trust.



The iwi has also had lands returned through settlement of the claims of Te Pūmāutanga o Te Arawa. Areas of land returned to date are at Orākei Kōrako, Red Hills, two peaks of the Paeroa Ranges with parcels of land, Maunga Kākaramēa and Waiotapu. A Memorandum of Understanding with the Department of Conservation sets out how sites returned to the iwi will be looked after under DOC management, to reflect a partnership approach.

Further information on land and resources can be found with Part II of this plan, along with maps of important features.

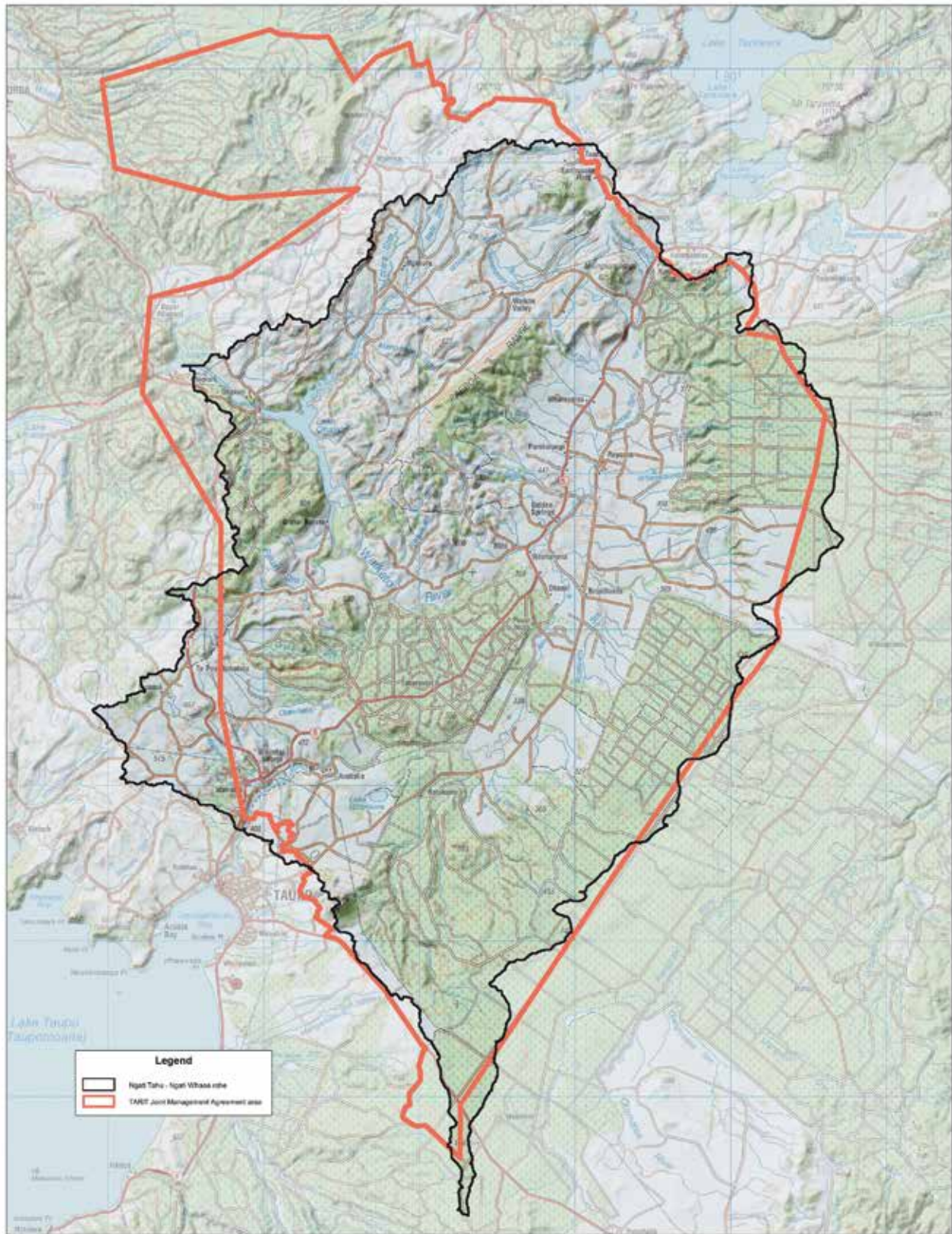
Co-management of the Waikato River

Ngāti Tahu – Ngāti Whaoa participate in co-management of the Waikato River through our affiliation to the Te Arawa River Iwi Trust (TARIT). Two other iwi are also affiliated to TARIT: Ngāti Kēroa Ngāti Tuara and Tūhourangi Ngāti Wāhiao. The area covered by TARIT is shown in Map 3, along with the boundaries of the Ngāti Tahu- Ngāti Whaoa rohe.

Te Arawa River Iwi Trust (TARIT) represents

- *Ngāti Tahu-Ngāti Whaoa, whose tribal boundaries lie between Te Waiheke o Huka (Huka Falls) and Pōhaturoa at Ātiamuri and extends to the Kāingaroa Plains*
- *Tūhourangi -Ngāti Wāhiao whose lands include the Rotomahana Parekārangi block and the Whirinaki Stream, which forms Lake Ohakurī*
- *Ngāti Kēroa Ngāti Tuara, whose traditional lands include Horohoro and their principal waterway is the Pokaitū stream just north of Pōhaturoa.*

Map 3: Te Arawa River Iwi Trust boundary and Ngāti Tahu – Ngāti Whāoa rohe



**Ngāti Tahu - Ngāti Whāoa IEMP
TARIT Joint Management Agreement Area**

Created by: A Jerries
 Projection: NZTM
 Date: 11 Feb 2013

Waikato Iwi
 Request No: 24820
 File name: 24820_Ngati_Tahu_Ngati_Whaoa
 IEMP_P2

ACKNOWLEDGEMENTS AND DISCLAIMERS

-TARIT Joint Management Agreement area agreed upon by Waikato Regional Council and Te Arawa River Iwi Trust (TARIT). The Joint Management Agreement was signed in 2012.
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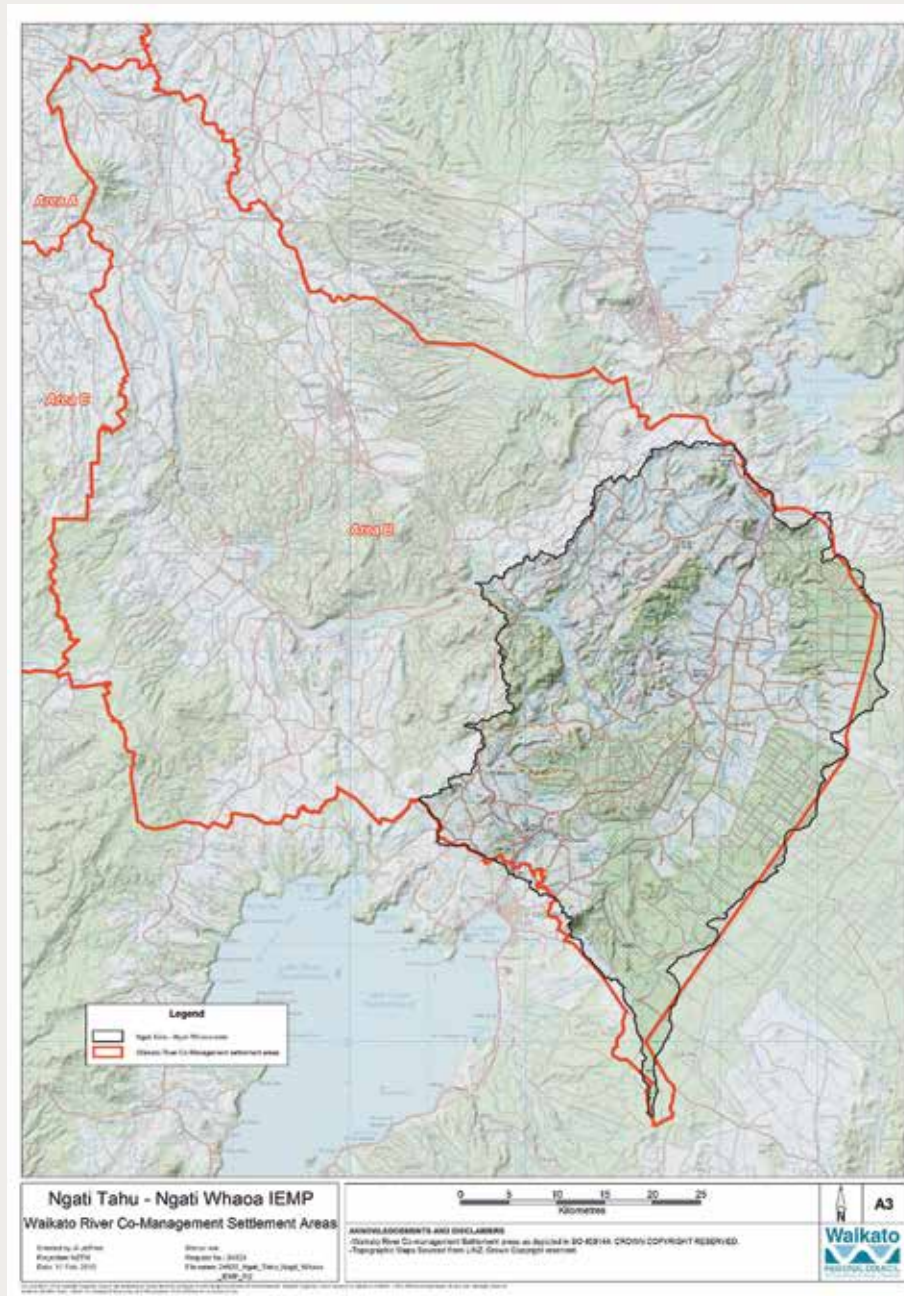
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Waikato
 REGIONAL COUNCIL
Te Arawa Te Aho o Te Kaitiaki

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The Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 recognises the iwi of the upper river in co-management arrangements for the Waikato River, in particular for Co-management Area B (see Map 4).

Map 4: Co-management areas under the settlement legislation for the Waikato River



In October 2010 the Ngāti Tuwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 was enacted to provide legislative recognition of the co-management deeds between the Upper Waikato River iwi and the Crown.

The Act sets in place processes for achieving the primary direction setting document for the Waikato River: the Vision and Strategy (Te Ture Whaimana o te Awa o Waikato). The Vision is as follows:

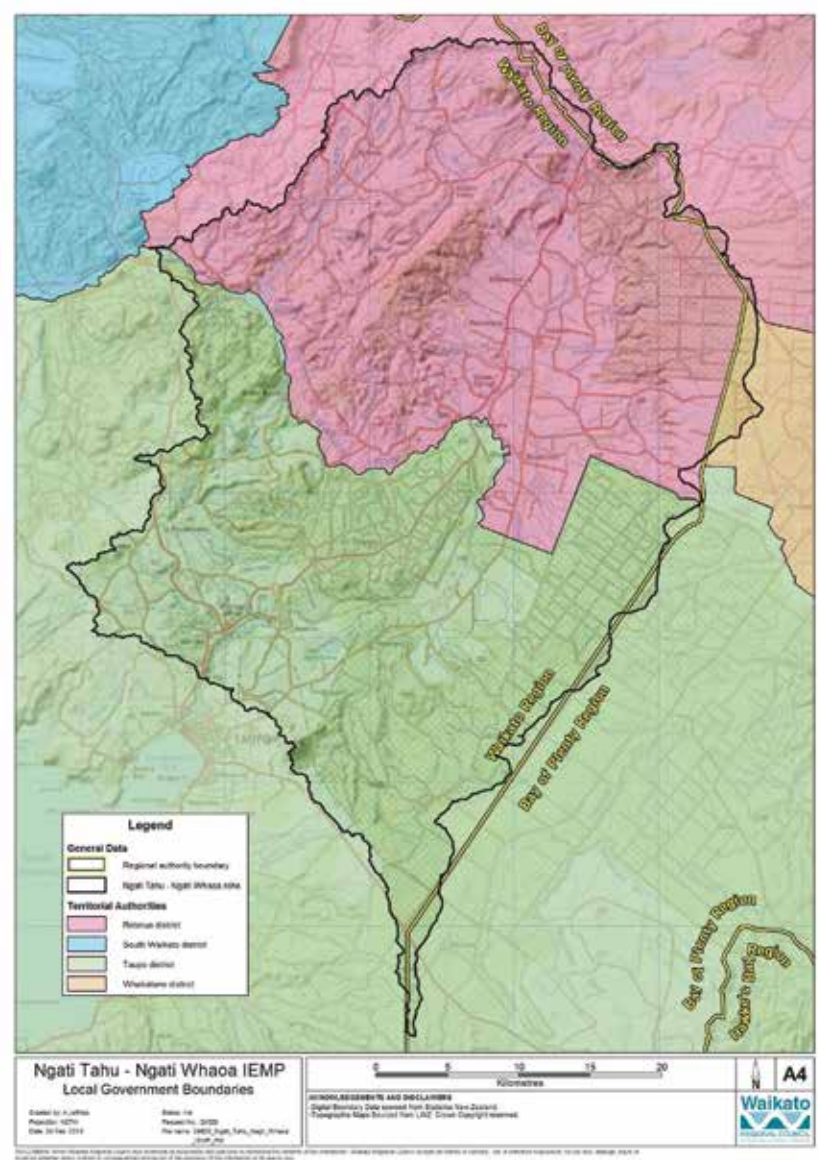
“Our vision is for a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come”.



The Vision and Strategy in its entirety is deemed to be part of the Waikato Regional Policy Statement, and will prevail over any inconsistent provision in the Waikato Regional Policy Statement, any National Policy Statement and any New Zealand Coastal Policy Statement.

The settlement legislation also requires that Joint Management Agreements (JMAs) be developed between each local authority and TARIT. Map 5 shows the current boundaries of local government within the iwi rohe. The JMAs provide for TARIT and local authorities to work together to plan for the river and its catchment, to consider resource consents, monitoring and enforcement, and to explore how customary activities can be conducted on the river.

Map 5: Ngāti Tahu – Ngāti Whaoa rohe and local government boundaries



PŪMANAWA, WHAKANGĀKAUTANGA, UARA - VISION, ASPIRATIONS, VALUES

This section outlines the vision for the Iwi Environmental Management Plan, aspirations for the care of our natural taonga, and values that underpin our management ethos for all the resources in our rohe.

Pūmanawa -Vision

Our vision is:

<i>Hauora:</i>	<i>Health, life and well-being:</i>
Taiao ora – Whānau ora – Mauri ora!	Flourishing nature - thriving families - the essence of vitality!

Whakangākautanga - Aspirations

The following are iwi aspirations regarding environmental management:

- **To begin the process of restoration:** to see no further harm done to the environment in our lifetime, and to leave our taonga in better condition than when we received them
- **To see resources managed in accordance with the tikanga of our iwi,** to protect the mana and the tapu of the natural world
- **To generate opportunities for the Ngāti Tahu-Ngāti Whaoa iwi,** without development causing detriment to the environment
- **To see the iwi fully involved** in caring for, learning about, and managing our taonga in an inter-generational way
- **To see people enjoying places under our management,** gaining insights into the relationship that Ngāti Tahu-Ngāti Whaoa have with the land and a better understanding of our history
- **To establish good working relationships with others,** where the mana of each party is respected, and the role of Ngāti Tahu-Ngāti Whaoa in terms of kaitiakitanga, rangatiratanga and mana whakahaere, is upheld and enacted.

Kaitiakitanga - Rangatiratanga – Mana whakahaere

Ngāti Tahu-Ngāti Whaoa have customary interests and rights over resources in the area, and also responsibilities to uphold kaitiakitanga over the natural taonga of the rohe.

Customary interests arise because our tūpuna managed and used these resources over centuries. These rights were not extinguished when European settlers arrived; indeed Te Tiriti o Waitangi acknowledges and guarantees tino rangatiratanga over our natural resources.

In applying rangatiratanga and kaitiakitanga, Ngāti Tahu-Ngāti Whaoa aims to manage resources with the approach of a respectful caregiver, so that they may continue to flourish and be available for future generations. This encompasses exerting our mana whakahaere – our authority to exercise our rights and responsibilities - to achieve environmental enhancement, appropriate use, and cultural health through practices guided by our tikanga. This is not an exploitative and exclusive form of leadership, but a responsible and inclusive one, so that all may benefit.

If commercial gain is to be made from natural resources, the customary rights and interest of iwi must be addressed. If management decisions are to be made about natural resources, iwi must part of the governance decisions about those resources.



Uara - Values

These are our values:

- **Mātauranga mō te katoa: Education for all**
- **Kotahitanga: Unity**
- **Tino rangatiratanga: Self-governance**
- **Whakapūmautanga: Sustainability**
- **Te matauria ki te whai whiwhi ki ngā rawa taiao: Knowing and accessing resources**
- **Me whai pānga te iwi ki ngā huarahi māhorahora: Open processes that involve the iwi**
- **Mā te taura te tauhoutanga me te manukuratanga: Innovation and leadership by example**

Mātauranga mō te katoa: Education for all

Education and knowledge are key to managing our resources well. We believe it is important for members of the iwi of all ages to share in this learning. By identifying job and training opportunities and building the capability of our tamariki/ rangatahi they will be well prepared for mahi in the future. This value also applies to sharing knowledge across agencies to identify how best to care for our environment together.

Kotahitanga: Unity

Kotahitanga is about all working together – men and women, young and old - for the benefit of the whole iwi, now and in the future. Through this tautoko and manaakitanga we strengthen our bonds of whanaungatanga and whakapapa, and can stand strong as tangata whenua of the rohe. Kotahitanga refers to the rūnanga working alongside the land Trusts to share and support best practices. It is also the way we want to work collectively with others beyond our iwi –building robust relationships to advance the protection of the environment and its many values. This could involve collaborative approaches and projects to minimise pollution and restore the environment, for example working with councils, landowners, schools and the whole community.

Tino rangatiratanga: Self-governance

Tino rangatiratanga refers to the iwi having and exercising authority over natural resources. Models and practices for managing resources will reflect who we are, and incorporate our tikanga. Our mana whenua will be upheld and respected. Our history and culture will be reflected with integrity.

Whakapūmautanga: Sustainability

A value we hold for our taonga is to see resources cared for, used and restored in a way that not only maintains them, but enhances them for future generations. We want to see expanding areas of native forest and wetlands, abundant kai and rongoā species, and flora and fauna in increasingly good health. For this to occur we need to have a holistic and long-term perspective, avoiding effects that will be irreversible and preserving opportunities for our mokopuna. We want to avoid the use of toxic substances where possible. We need to think and work in a way that recognises and reflects interconnections in the natural world, and respects the tapu and mauri of all beings and natural elements of the rohe.

Te matauria ki te whai whiwhi ki ngā rawa taiao: Knowing and accessing resources

We value having easy access to the resources of our rohe, so that we can make everyday use of our taonga tuku iho. We need to know what we have and what condition it is in. We want to be able to freely access and use our traditional ngāwhā, kai, rongoā and other resources. Development should not place any further constraints on iwi access to resources. We need flourishing and healthy mahinga kai so we can provide for our whānau, host manuwhiri and serve traditional kai at hākari. We need mobility so that we can reach our resources on land and on water. By direct involvement in using our resources and by taking part in projects and workshops, the iwi becomes reconnected to the whenua, with more awareness of our natural world and what it offers us as a people.

Me whai pānga te iwi ki ngā huarahi māhorahora: Open processes that involve the iwi

Transparent and open processes will create greater trust and understanding. We would like to model these processes and also see others do the same. This includes early consultation with us, in good faith, when changes or developments are first being considered. We ourselves want to make sure our rangatahi understand and become involved in managing resources, and we need to plan for succession in key roles in the iwi. We want to see cyclic processes where review feeds into further planning, and open communication and management processes create sustainable outcomes.

Mā te tauira te tauhoutanga me te manukuratanga: Innovation and leadership by example

This value reflects our desire to be leaders in environmental management. We want to innovate, and not be afraid to try new pathways. We value the leadership of our kaumātua. And we believe our young people, our rangatahi, are great innovators and we want to support their leadership also.

Kia kaha tātou mō ake ake ake!



HEI MAHI – ACTIONS

This section summarises current projects and partnerships, and looks at ways of working that are relevant across all taonga in the rohe.



Summary of resource condition and opportunities

This is a summary of the current condition of resources in the rohe, and some key opportunities for improvement. For more detailed information for each resource, see Part II of this plan.

Prized geothermal features of the iwi have been degraded by past developments for hydro- and geothermal generation that have exploited the resources of the rohe without benefit to the iwi. Iwi Trusts are now partners in new developments that seek to use the geothermal resources carefully, implementing best practice. There are opportunities to enhance iwi enjoyment of geothermal areas, provide greater protection for special geothermal features and habitats, and investigate a greater range of local uses for the geothermal resource.

The clear water of the Waikato River leaving Taupō becomes gradually greener as it flows through the rohe of Ngāti Tahu-Ngāti Whaoa, although it is still considered to have high water quality by regional standards. The decline in clarity is due to algae growing in the impounded waters of the hydro-dams, fed by nutrients lost from the surrounding pasture and flowing through groundwater. The dams form a disruption to migration, impacting on tuna populations. Tuna can only reach the upper catchment if they are physically transferred over the dams, and they cannot migrate downstream as adults. Less is known about what affects other kai species. The main Waikato River has low levels of faecal microbes, because they are destroyed by UV light in the shallow water of the hydro-lakes. Some tributaries have higher levels of faecal contaminants. Geothermal tributaries and the main river are affected by elevated levels of arsenic and mercury. These toxins contaminate the bed sediments and can accumulate in kai species.

According to the Waikato Regional Council's assessment of water availability, the Upper Waikato River has reached its maximum water allocation, and the Reporoa basin groundwater is approaching full allocation. The system does not currently allow for an iwi allocation.

The rohe has a number of lakes, including some that form part of special geothermal habitat areas. Other lakes shelter rare plants and wetland birds around their margins. However, their water quality is generally degraded by sediment and nutrients entering the water, and most lakes in the rohe have little native aquatic vegetation left.

In terms of opportunities for improving water resources, trying to find ways to restore a greater abundance of kai species and re-create migration pathways for tuna are challenges for the future. Key current opportunities to enhance the condition of waterways are to exclude stock and restore riparian vegetation using native species, including those with traditional cultural uses. Retiring headwaters, gullies and streambanks will also protect the sites most vulnerable to erosion in this pumice country, and this can allow for more intensive production on remaining land. However, further improvements to water quality will only come from managing nutrients carefully on farms and/or expanding the area of the catchment under tree cover.



Current iwi landholdings are around 3% of the tribal area originally recognised by the Māori Land Court. There is a mix of land use on iwi blocks, and across the rohe. Large areas of the Central North Island forests (Kāingaroa) are still under negotiation. Forests in the upper Waikato catchment are being cleared for dairying. There is a tension for the iwi as landowners, between converting further area from pine to pasture for economic gain, and retaining the pristine water of the upper Waikato River. Deforestation also has impacts for the emission of gases linked to global climate change.

On the land, there are opportunities to work with forestry companies, farmers and the Department of Conservation to ensure significant sites and wāhi tapu are managed in accordance with the tikanga of the iwi, and to enhance natural areas across the rohe. Further work can also take place to revive and share historical knowledge, strengthening iwi identity and enriching visitors' experiences. Marae can be centres for ongoing learning for the iwi, with fun and engaging activities for whānau. Enabling papakāinga development will allow for housing opportunities for those whānau who want to return.



The rohe only has about 7% of its original native vegetation left, and the health of flora and fauna is impacted by pest plants and animals. However, there are still extensive tracts of forest in the Paeroa Ranges and Tutukau/ Orākei Kōrako blocks. Some rare plants in the rohe include pua o te rēinga (Dactylanthus) and species that inhabit geothermal habitats. Further opportunities can be sought to replant more areas in native vegetation and to extend or re-create wetlands. There are also the possibilities of reviving traditional knowledge and gaining further access to species for cultural use. Information could be gathered on tracks used by the tūpuna, and traditional resource-gathering could be practised so that rangatahi can share in the natural and cultural heritage of the iwi. The condition of natural areas can be improved by controlling weeds (e.g. wilding pine and willow in forests and wetlands), and employment can be created by putting iwi skills in pest control to use.

**Kia mau ki te whenua
Whakamahia te whenua
Hei painga mō nga uri whakatipuranga**

Hold fast to your land
Make use of the land
For the future generations.

Current projects and partnerships

This is a summary of current projects. For more detailed information, see Part II of this plan.

CURRENT PROJECT AND DESCRIPTION	PARTNERS AND FUNDERS
Mahinga kai – to know more about, and restore traditional kai	
<ul style="list-style-type: none"> • Watercress testing <ul style="list-style-type: none"> ○ Testing for arsenic and E. coli to determine if watercress is fit for human consumption 	TARIT
<ul style="list-style-type: none"> • Tuna project <ul style="list-style-type: none"> ○ Understanding the eel life cycle and impacts of development (hydro-dams, farming) ○ Project on mortality rate of tuna in the hydro-dams ○ Workshops at the marae 	Mighty River Power NIWA
<ul style="list-style-type: none"> • Kōura project <ul style="list-style-type: none"> ○ Understanding what impacts on kōura ○ Restoration of natural habitat 	TARIT/ NIWA
State of the environment projects – to understand what is there and its condition	
<ul style="list-style-type: none"> • Biodiversity inventory <ul style="list-style-type: none"> ○ Wildlands Restoration Management Plan ○ Survey for bats, Dactylanthus, vegetation survey and restoration plan for the Tutukau Forest (686 ha) 	Biodiversity Advice Fund
<ul style="list-style-type: none"> • Nutrient testing <ul style="list-style-type: none"> ○ Testing monthly for phosphorus and nitrogen, including ammonia, from 7-9 streams over 8 months 	TARIT
Restoration/ planting projects – to enhance and extend natural areas	
<ul style="list-style-type: none"> • Tutukau/ Orākei Kōrako (including Tutukau Forest, Mangatoetoe and Tutukau Z North) Wilding Pine Project <ul style="list-style-type: none"> ○ Wilding pine and weed control in 850 ha of unique geothermal and indigenous tribal lands – contributing to the health of the Waikato catchment 	Biodiversity Condition Fund, WCEET, TARIT & Rūnanga Trust/ MRP Partnership, Waikato River Authority
<ul style="list-style-type: none"> • Te Toke Rd Enhancement Projects 1 and 2 <ul style="list-style-type: none"> ○ Restored one hectare; working on second hectare ○ Planting native species that can be used for rongōā ○ Maintaining weed control until canopy closure 	WCEET, TARIT, Honda Tree Fund, WRC, Landcorp, Contact Energy, Taupō DC, Fonterra, Te Toke Marae
<ul style="list-style-type: none"> • River Rd planting - 250 plants for river restoration 	DOC, TARIT

Heritage and enjoyment – to protect unique values so people can appreciate and enjoy them

• Wāhi tapu register and protocols for the iwi	TARIT
• Protocols for forestry companies around wāhi tapu	Hancock Forest Management
• Maunga Kākaramea Mountain Bike Trail (Te Tihi o Rūrū & Te Ranga)	DOC
• Waiotapu – Twin Streams management	DOC
○ Clean-up of rubbish	TARIT
○ Access and signage	
○ Planting	
• National Cycleway - Te Ara o Ahi	Rotorua DC





Ara: Approaches and actions to strengthen resource management across the rohe

Specific actions are identified for each resource in Part II of this plan. In this section, for the whole rohe, three key approaches are identified that apply across all resources. The approaches are:

1. **Recognition and representation** - reflecting mana whenua/ mana wai.
2. **Positive relationships** - proactive, collaborative and encouraging, characterised by listening and sharing information, regular communication and action (follow-up).
3. **Engaging rangatahi** - to strengthen connections and identity with the rohe, and to build skills so youth can take on active roles in managing resources.

The following tables set out recommended actions that reflect these approaches.

Approach: Recognition and representation

ACTION	BY WHOM
Recognition through any future negotiations on rights and interests in water (including geothermal fluid), land, forests and other taonga within the rohe.	Central government
Recognition from councils and government departments so that the iwi is consulted on plans and operational matters pertaining to the rohe including regional and district plans, policies, strategies, priorities, projects, work-plans, consents and compliance monitoring.	Central and local government
Identifying further opportunities for iwi members to be involved in enforcement action where there is environmental non-compliance.	Rūnanga with relevant authorities; TARIT (JMAs)
Recognition from major resource users operating in the rohe through consents, mitigation, and working parties (applies to geothermal, hydro, farming and agricultural processing, forestry and fertiliser industries, and any other developments in future).	Developers/ resource users Facilitated through councils
Consultation with both iwi if an activity is located on a boundary or where there are overlapping mana whenua claims.	Central and local government Developers/ resource users Neighbouring iwi
Representation (via TARIT) on co-management decision making pertaining to the Waikato River and the Vision and Strategy – 50:50 Crown: iwi or Council: iwi – as set out in settlement legislation and Joint Management Agreements.	Waikato Regional Council Waikato River Authority TARIT Rūnanga and iwi members
More iwi members undertaking Environmental Commissioner training so they can act on hearings committees.	TARIT Rūnanga and iwi members
Develop further iwi protocols and procedures to enhance the inclusion of iwi perspectives into resource management e.g. process and procedure manual, managing resource consents manual, wāhi tapu/ significant sites register.	Rūnanga

Approach: Positive relationships

ACTION	BY WHOM
Reinforce communication lines with TARIT, to be agreed and flowing freely at both staff-to-staff level and governance (Trustee) level – including a written protocol if appropriate.	Rūnanga TARIT
Work collaboratively and share information with other TARIT affiliates as appropriate, and support each other's independent work on specific matters for each rohe.	Rūnanga Tūhourangi Ngāti Wāhiao Ngāti Kearoa Ngāti Tuara
Identify issues within overlapping rohe with other iwi, e.g. for tributaries of the Waikato River - where applicable develop joint projects.	Other neighbouring iwi TARIT
Show respect towards each other and the unique relationship each iwi has with the environment.	
Develop rules of engagement and/or protocols.	
Strengthen relationships and communication between the Rūnanga and the independent land Trusts while respecting autonomy.	Rūnanga Land Trusts
Establish a Forum (or several) for sharing resource information and planning future projects as an iwi. These could be resource-specific e.g. geothermal, or land and water, or for general planning as an iwi.	Rūnanga with land Trusts and iwi members and support from relevant agencies

<p>Enact early consultation, and, where appropriate, active collaboration to ensure iwi are informed about, and benefit from local projects.</p> <p>Pre-consultation is encouraged before consent applications are lodged, to build trust and show transparency of intent. This may need to include local marae, land Trusts and whānau. Resourcing for iwi members' time and expertise should be considered.</p> <p>Note: consultation is not satisfied by an initial discussion; the views of the iwi should be included as the project is further developed.</p>	<p>Central and local government</p> <p>Developers/ applicants</p> <p>Non-government and community groups</p> <p>Scientists and researchers</p> <p>Rūnanga and land Trusts, whānau and iwi members</p> <p>TARIT</p>
<p>Build capacity by developing iwi members' skills to be involved in environmental projects in the rohe (such as researching, project planning and grant-seeking, restoration and conservation skills etc).</p>	<p>Rūnanga and iwi members</p> <p>Central and local government</p> <p>Training providers and science organisations</p> <p>TARIT</p>
<p>Continue to develop the working relationship with DOC in the rohe based on the current MOU – including input on an annual basis to work-plans in the rohe and a collaborative approach to major projects.</p>	<p>Rūnanga</p> <p>DOC</p>
<p>Create active involvement in state-of-the-environment monitoring to foster reconnection – including with TARIT through the JMA requirement for monitoring fisheries, flora, and fauna.</p>	<p>Rūnanga and iwi members</p> <p>TARIT</p> <p>Regional councils</p>
<p>Foster good relationships with other resource users, large forestry companies, and major agricultural operations in the rohe. Develop protocols or MOU where relevant.</p>	<p>Developers/ resource users</p> <p>Large forestry companies</p> <p>Agricultural operations</p>
<p>Foster good relationships with the local community to increase awareness and understanding, participation and partnership.</p>	<p>Rūnanga and iwi members</p> <p>Local community</p>

Approach: Engaging rangatahi

ACTION	BY WHOM
Continue rangatahi involvement in iwi projects e.g. tuna workshops, IEMP review hui.	Rūnanga with project partners
Continue building the relationship with Reporoa College, involving students in projects that will enhance their learning and grow leaders within the iwi, within the community.	Rūnanga with Reporoa College, local schools and other partners
Contribute to other programmes endorsed by schools.	
Hold camps, celebrations and activities to strengthen identity and connection for rangatahi e.g. cooking and bathing in ngāwhā, collecting customary kai and rongoā, learning traditional crafts.	Rūnanga and partner organisations
Look for opportunities for internships or working alongside experts.	Rūnanga and organisations with relevant expertise
Succession planning within iwi management bodies.	Rūnanga, land Trusts

The picture that follows shows how these approaches, along with the actions outlined in Part II of this plan, will uphold the values and help achieve the desired aspirations, and ultimately, the vision.

PŪMANAWA - VISION

HAUORA : TAI AO ORA - WHĀNAU ORA - MAURI ORA!
 Flourishing nature - thriving families - the essence of vitality!

Created by:
WHAKANGĀKAUTANGA - ASPIRATIONS

To see the iwi fully involved

To begin the process of restoration

To see people enjoy places under our management

To establish good working relationships with others

To generate opportunities for the Ngāti Tahu - Ngāti Whaoa iwi

To see resources managed in accordance with the tikanga of our iwi

Guided by:
UARA - VALUES

Mātauranga mō te katoa:
 Education for all

Ngā huarahi māhorahora: Open processes that involve the iwi

Mā te tauria te tauhoutanga me te manukuratanga: Innovation and leadership by example

Whakapūmautanga: Sustainability

Te whai whiwhi ki ngā rawa taiao: Knowing and accessing resources

Tino rangatiratanga: Self governance

Kotahitanga: Unity

Enacted through:

ARA - APPROACHES

Recognition and representation

+

Positive relationships

+

Engaging rangatahi

+

Actions from Part II of this plan to restore our taonga



TĀTARITANGA ME TE ĀTA MĀTAKI - REVIEW AND MONITORING FOR THIS PLAN

This section outlines how progress will be monitored, and how this plan will be reviewed.

Monitoring

Cultural Health Indicators (CHIs) are currently under development by Te Arawa River Iwi Trust (TARIT). These will be the principal means to monitor progress towards achieving the aims of this plan for natural resources and the environment (see Part II of this plan).

Part I of this plan can be monitored by recording successful instances of actions occurring under the three approaches:

- 1. Recognition and representation**
- 2. Positive relationships**
- 3. Engaging rangatahi**

This information, when combined with monitoring of actions from Part II, should provide evidence as to whether the aspirations are being advanced and the values of this plan upheld. Together, this will enable an assessment of progress towards the vision.



Review

Some of the information in this plan will have enduring relevance over time, and other parts will need to be refreshed. For this reason, the intention for review will be to refresh the plan every three years.

Review can include:

- **What has been achieved and current activity**
- **Gaps in the plan (to establish a continuous improvement process)**
- **Where to from here**

The context may change, for example due to legislative changes (e.g. Local Government reforms), progress with the Vision and Strategy for the Waikato River, and future negotiations and settlements.

At the same time, the development of other related documents will continue

- **Wāhi tapu register**
- **Resource consent process**
- **Protocols and procedures e.g. with forestry companies**
- **Integrated River Plan and Fisheries Plan for the Upper Waikato River, TARIT Iwi Environmental Management Plan and Joint Management Agreements.**

Cross-referencing can be included, and this plan can be updated to reflect these documents as needed.



WAIATA: NŌ RUNGA MĀTOU

Nō runga mātou te tihī ki Paeroa
Ko Ngāti Tahu e, ko Ngāti Whāoa
Kaua e te iwi e pā pōuri
He iti noa nei, te iti taku iti
Kei wareware kau ki ōku nei take
I takea mai rā e te iwi, i te ngaro o te ao kōhatu
Hei! Ha! Hei!
E kui e koro koutou
I te mate mārangaranga mai, hei kai tautoko
Ka tahuri ki te Raki ko Te Arawa
Ka tahuri ki te Uru ko Ngāti Raukawa
Kei te Rāwhiti rā ko Mātaatua
Ko Tūwharetoa kei te Hau Runga e
Ko te Awa Waikato e pōkare nei
Koia aku rohe!
Hei! Ha! Hei!

*We are from the heights of the summit of Paeroa
The tribes of Ngāti Tahu and Ngāti Whāoa
We are not a people predisposed to melancholy
Though seemingly insignificant and inconsequential
We may fail to remember our essence
Originating from a people, lost in the obscurity of the ages
Tis so! Absolutely! Tis so!
Aged women and men
From frailty please arise as supporters
Turning Northward tis the tribe of Te Arawa
To the West there is Ngāti Raukawa
Thence in an Easterly direction, at hand is Mātaatua
Whilst Tūwharetoa adjoin us to the South
The Waikato River ever ripples
These are my borders!
Tis so! Absolutely! Tis so!*



PART II: NGĀ TAONGA O TAI AO - TREASURED RESOURCES



WHAKATAKINGA - INTRODUCTION TO PART II

In this section, particular natural resources are examined in more detail, and the following information is provided:

- **Historical context/ what we used to have**
- **Existing state/ what we have now**
- **Pressures/ what impacts on this resource**
- **Opportunities/ how to preserve and restore the resource.**

In light of this information, tables then set out, for each resource:

- **Short-term goals**
- **Long-term goals**
- **Current actions**
- **Ideas for future actions**
- **Principles for managing this resource.**

Some case studies of current action are also included, as examples of best practice being undertaken within the rohe.

KOIORA - FLORA AND FAUNA – (PLANTS AND ANIMALS)

Historical context/ what we used to have

Iwi members recall that in the past there was an abundance of native plants and birds. Tī kōuka, mānuka, flax and raupō were very common plants. Native birds were all around and birds were an important food source, especially waterfowl. Native plants like tī kōuka were eaten, and many native species were used as rongoā, including kawakawa, koromiko and raureka (a large-leafed Coprosma; the yellow part below the bark was used as an eye medicine). The strongest rongoā were collected from where the sun shone directly on the leaves. Other rongoā were derived from wild herbs such as the leaf and root of dock (used as a skin poultice and a blood purifier), and dandelion (used for sores).

Ngāti Tahu-Ngāti Whaoa was an iwi known for weaving, with particular materials sourced from native plants for each of the woven products – for example, whāriki required a long flax fibre.

Tūpuna tracks allowed access to seasonal food sources and prized materials, and the iwi traditionally moved nomadically between food sources, providing a natural recovery period within this seasonal cycle.

Original vegetation cover of the rohe included podocarp forests, with tussock, manuka and monoao covering large areas where forest cover had been disturbed by eruptions and fires. Wetland plants and animals were common along the river, and pockets of geothermal vegetation were found in geothermally active areas.



Existing state: What we have now

Iwi members noted that while there is still plenty of harakeke around, these may not be the right types for different weaving purposes. Native plants and birds are generally less abundant, and drainage has reduced the extent of raupō. As farm land is developed, there are fewer opportunities to collect some of the wild rongoā and food species, and permission is required from DOC to collect native plants from public conservation land. Iwi members are concerned about the use of 1080 and effects it may have on birds and game species.

DOC recognises several species of conservation significance in the rohe including short-tail bats, long-tail bats, falcons (kārearea), Dactylanthus (pua o te rēinga/ wood rose), mistletoes and geothermal plants. A significant population of Dactylanthus taylorii occurs in the Te Kōpia reserve (Paeroa Ranges) and is under active management including caging for possum exclusion. The mistletoe Peraxilla tetrapetala is also found in the reserve with various plants monitored every two years for ongoing health.



Birds recorded from the area that are threatened or at risk include forest species like kōkako, kiwi, and long-tailed cuckoo, and wetland species such as weweia (dabchick), matuku (bittern), mātātā (fernbird) and pūeto (spotless crane). Mokokoko (lizards) include speckled skink and green gecko.

Geothermal vegetation is a nationally rare ecosystem type given the limited nature of geothermal fields and the development of many sites which has altered and reduced the vegetation extent. The geothermal areas of the rohe are home to several rare plants, including prostrate kānuka and a number of ferns, fern-like plants, mosses and club-mosses. For example, the fern *Christella* sp. 'thermal' is only known from 14 sites in New Zealand, many of which are in this rohe.

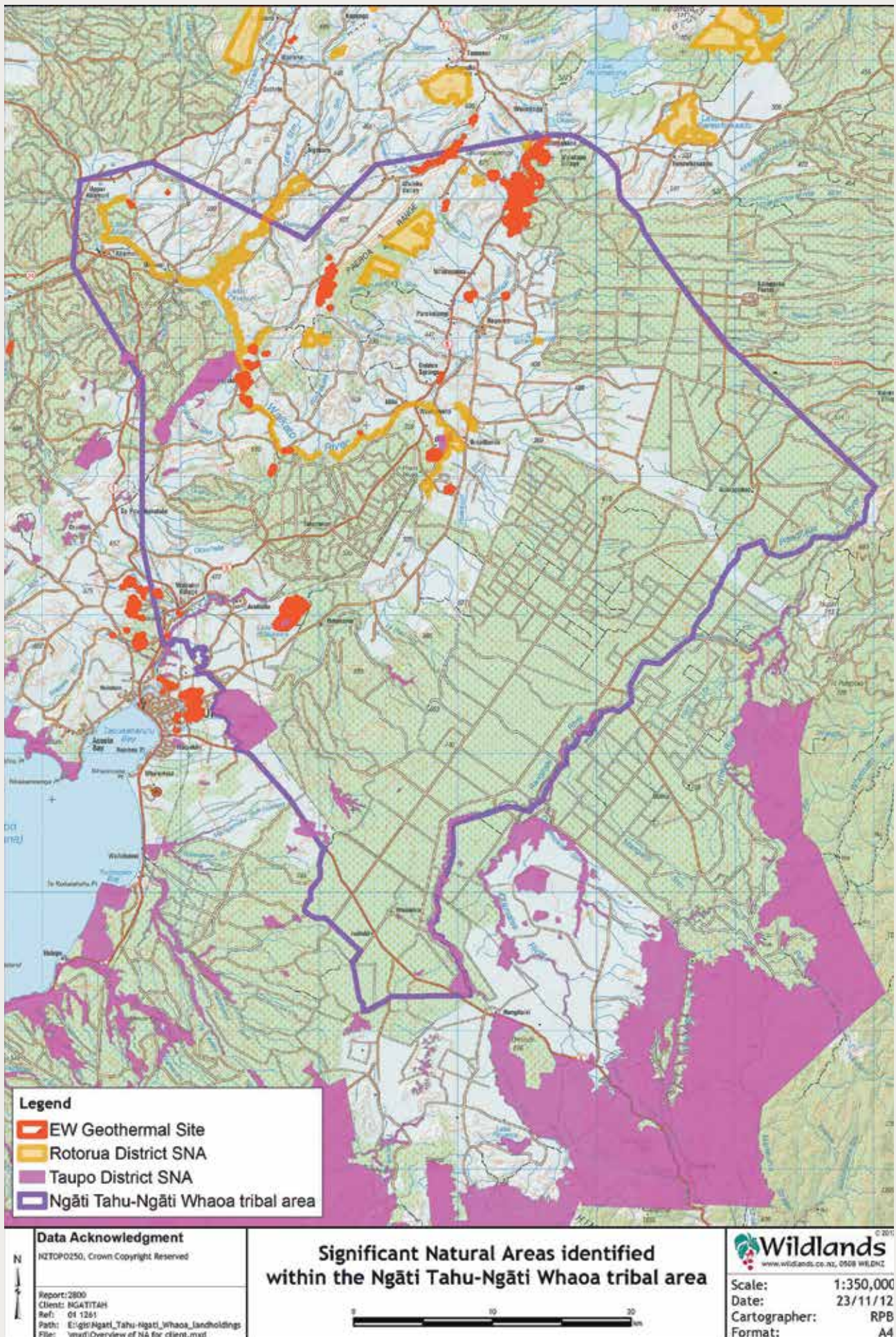
Biodiversity – the range of plant and animal life – is managed by a number of local and central government agencies, and several different ranking systems are used. Both the Department of Conservation (DOC) and Waikato Regional Council (WRC) have criteria and classification systems for vegetation and ecosystems of significance. Taupō District Council (TDC) and Rotorua District Council (RDC) have also identified Significant Natural Areas (SNAs), with 34 areas identified within the TDC part of the rohe and 24 areas identified within the RDC part of the rohe (see Map 6 on following page). These SNAs include wetlands, geothermal areas, indigenous forests, lakes, and riparian margins of rivers and streams. There is also one site (Iwitahi) which is a reserve for native orchids that are growing under exotic *Pinus nigra* pines.

Six unprotected areas within the Rotorua District are ranked as nationally significant:

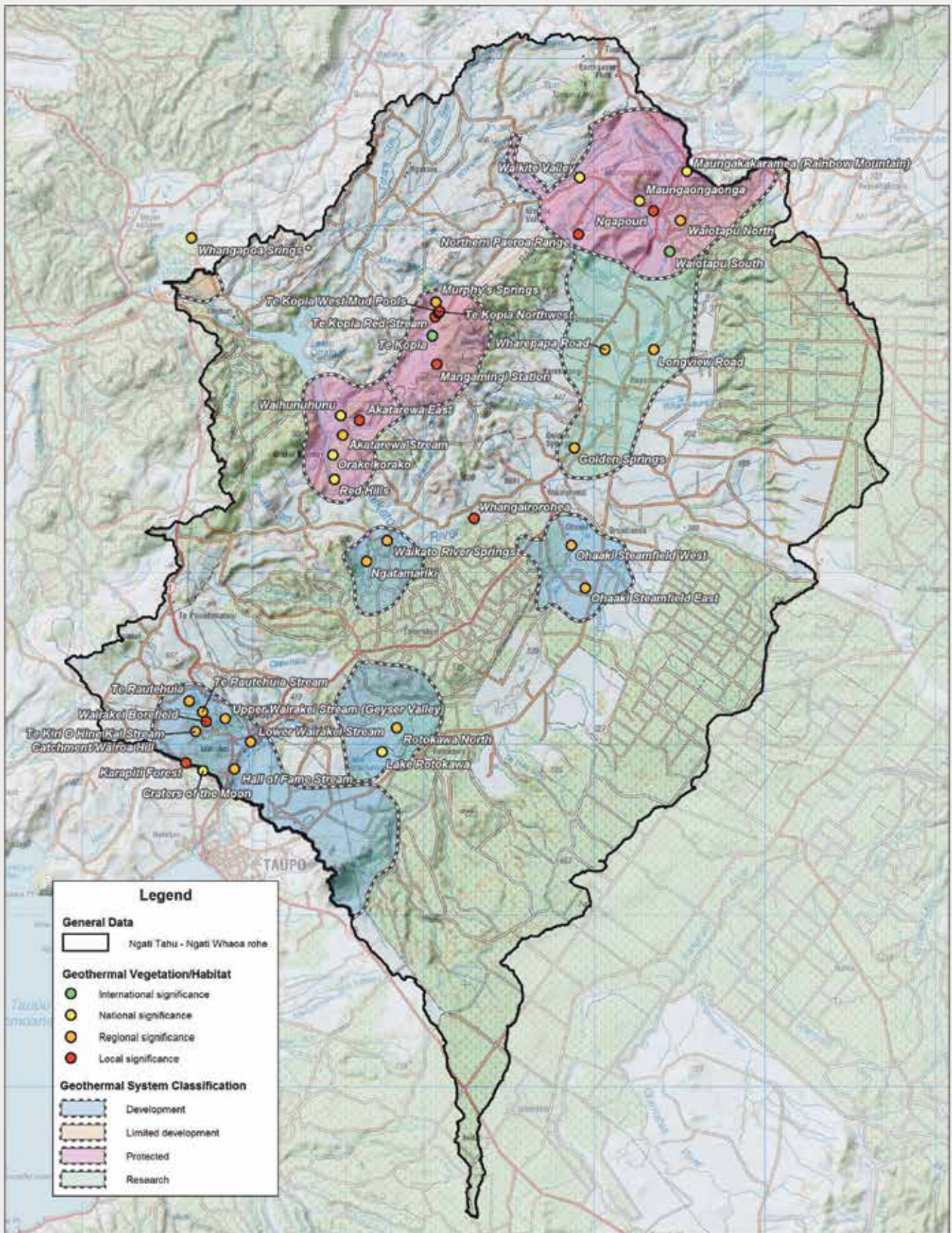
- **Lakes Ohakurī and Ngāhewa**
- **Geothermal areas at Red Hills, Orākei Kōrako, Waihunuhunu Stream, and Waikite Valley**

TDC does not differentiate between nationally, regionally and locally significant areas. Under the DOC system, two sites have national priority rating, due to their unique geothermal ecosystems. These are at Waikite (wet geothermal habitat) and Te Kōpia Scenic Reserve (wet and dry ecosystems). WRC have also rated the significance of geothermal vegetation/ habitat (see map). The sites ranked as internationally significant are at Te Kōpia and Waiotapu.

Map 6. Significant Natural Areas identified by district and regional councils within the Ngāti Tahu-Ngāti Whaoa rohe



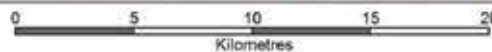
Map 7. Significant geothermal vegetation identified by Waikato Regional Council within the Ngāti Tahu-Ngāti Whaoa rohe



**Ngāti Tahu - Ngāti Whaoa IEMP
Geothermal - Map 1**

Created by: A. Jeffries
Projection: NZTM
Date: 04 Feb. 2013

Status: N/A
Request No.: 24820
File name: 24820_Ngati_Tahu_Ngati_Whaoa_IEMP_P1



N A4

ACKNOWLEDGEMENTS AND DISCLAIMERS

-Spatial data relating to significant geothermal features, geothermal vegetation / habitat and geothermal fields have been derived from the Waikato Regional Plan (WRP).
-Topographic Maps Sourced from LINZ. Crown Copyright reserved.

* Whangapoua Springs has been added to this map despite it falling outside of the rohe because of its significant influence on waterways that flow to the rohe.



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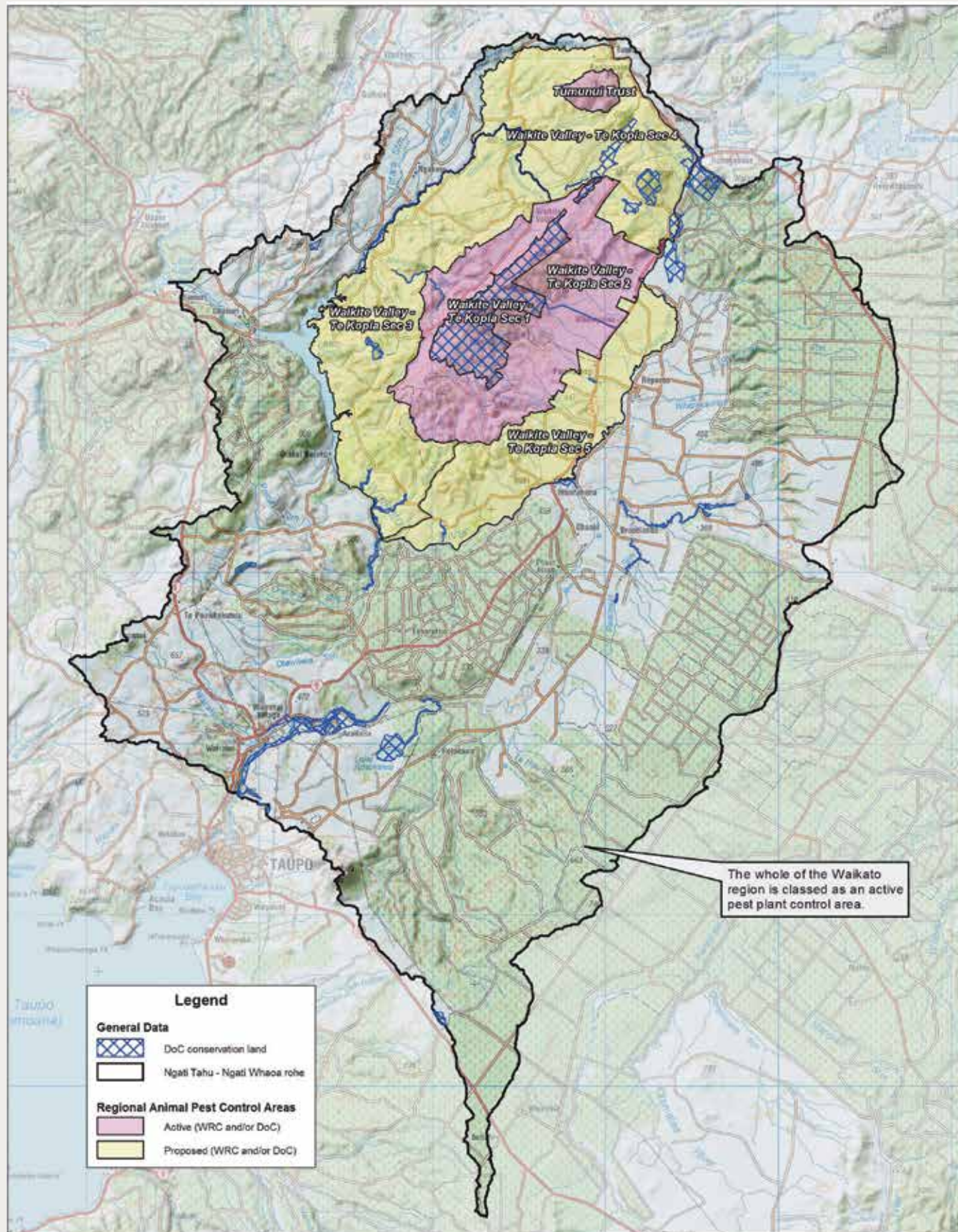
The geothermal vegetation at Te Kōpia (c56ha) comprises 10% of the remaining geothermal vegetation present in the Waikato Region and is second in size only to the Rotokawa site. A 2005 report to rate the values of DOC reserves in the Bay of Plenty ranked the Te Kōpia Scenic Reserve as one of the North Island's most important reserves with a Botanical Conservation Rank of exceptional. This is due to the following features of the reserve:

- **the range of vegetation types represented**
- **the substantial area of thermal vegetation present in an unmodified state**
- **the remnants of a historically extensive forest area which formed the transition between hardwood forests present to the north of Rotorua and the podocarp forests to the south in the Taupō area**
- **the relatively large size of the reserve for this area.**

Since the early 1900s, 93% of the indigenous vegetation has been cleared from the rohe, and introduced species have become pests and predators. Some native species have been lost from the forests of the rohe. Most of the northern rātā which were originally plentiful in the Paeroa Ranges have died, likely due to intensive possum browse in the past. According to DOC records, the last kiwi call was heard in the Paeroa Ranges in 2005. As populations decline, kiwi are less inclined to call.

DOC has carried out 1080 operations in the Paeroa Ranges (Te Kōpia Reserve) and instated a hunter's access track. The WRC also carries out pest control on surrounding private land. Current and proposed animal pest control areas are shown in the following, Map 8.

Map 8. Current and proposed areas for animal pest control by DOC and WRC in the Ngāti Tahu-Ngāti Whaoa rohe



Ngāti Tahu - Ngāti Whaoa IEMP
WRC and DoC Pest Control Areas

Created by: A Jeffries
 Projection: NZTM
 Date: 04 Feb. 2013

Status: nil
 Request No.: 24820
 File name: 24820_Ngati_Tahu_Ngati_Whaoa_IEMP_PD

0 5 10 15 20
 Kilometres

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Waikato
 REGIONAL COUNCIL

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Pressures: What impacts on this resource

Land clearance and wetland drainage reduce the extent of habitat for native plants and animals. Remaining habitat areas become fragmented and disconnected, and are more prone to the effects of wind, livestock grazing and pest plant invasion. Pressure to develop geothermal fields for commercial purposes threatens the unique and rare habitat that exists in geothermal areas. Restoration of riparian areas and wetlands along the Waikato River is constrained by the changes in water levels for hydro-power generation.

Specific threats to some of the rarer species include the following:

- **Pua o te rēinga (Dactyланthus) is threatened by possums, pigs and deer**
- **Threats to rare geothermal plants are changes to the geothermal heat (e.g. from geothermal development), disturbance by people and machinery, grazing, trampling and rooting, tree-fall from harvested or wilding pines and other effects of weeds, including shading and competition**
- **Threats to forest species like mistletoe and rātā are possum browse and vegetation clearance**
- **Threats to bird species are possums, rats, feral cats and mustelids**
- **Plant pests include wilding pines, and grey and crack willows in wetlands**
- **There is a potential threat of Dama wallabies invading from the Rotorua lakes area.**

DOC has limited resources for working in sites that are not ranked as priority areas, so partnerships with the community are important to increase the extent of work that is done.



Opportunities: How to preserve and restore the resource

Following the return of some significant sites to the iwi, a Memorandum of Understanding (MOU) is now in place between the iwi and DOC. This not only guides the management of areas returned to the iwi, it also allows discussion on an annual basis about DOC's work programmes across the area and how iwi members can be involved in this mahi. These discussions give the opportunity for iwi issues to be raised such as use of 1080, accessing resources, and ideas to reopen tracks the tūpuna would have used.

Iwi members would like to see a sanctuary for native birds within the rohe. A pest-free environment is very intensive to create and maintain, so a significant effort would be needed to see the return of birds like kiwi or kōkako to the rohe. However, planting along waterways that arise in the forest headwaters could help to bring native birds like tūi and kererū back in greater numbers around Ohaki and Mātārae marae.

Plantings at Te Toke are already restoring rongoā species. Further iwi research could identify plant types and sources for traditional weaving materials so that more plantings could be established for these purposes.

The iwi has had a report prepared by Wildlands Consultants to identify opportunities for ecological restoration in three iwi-owned blocks at Ohaki, Paeroa South and Tutukau. The Ohaki block has significant natural areas of geothermal habitat and wetlands near the Waikato River, adjacent to the large wetlands at Hardcastle and Rāwhiti Lagoons. These are valuable habitat areas but affected by river level fluctuations. The Tutukau and Paeroa South blocks feature geothermal areas (including Orākei Kōrako), headwater streams, and riparian and wetland areas. These offer plenty of scope to work with landowning iwi Trusts and neighbouring owners for restoration.

There is an opportunity during consultation about any proposals to develop geothermal resources to take a precautionary approach to preserving rare geothermal habitats. If the heat is lost from the ground, the habitat changes and rare geothermal plants may be overtaken by other species. Fencing and pest control in geothermal habitat areas can also protect the rare species that are found there. A 2006 WRC report outlines priority geothermal vegetation that would benefit from fencing and pest control (Priorities for pest plant and animal control, and fencing at geothermal sites in the Waikato Region. Environment Waikato Technical Report 2006/18). Many of the high priority sites in this report lie within the Ngāti Tahu-Ngāti Whaoa rohe at Waiotapu, Orākei Kōrako/ Red Hills, Te Kōpia, Waikite, Maungakākaramea, Rotokawa and Golden Springs.

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Vegetation surveyed and identified • Rare and unique vegetation protected • Knowledge of traditional plants increased and revived • Opportunities for a native plant nursery explored • Opportunities identified with DOC for work and skill-building for iwi, potential of iwi contribution seen • Improved access to natural areas • Gradual increase in extent and quality of native vegetation • Action taken on priority sites in Wildlands report, with appropriate partnerships and projects • Damage from pests reduced in a strategic way • Alternatives to 1080 and other toxins investigated and trialled 	<ul style="list-style-type: none"> • Tūpuna tracks reinstated • Sanctuary/ effective restoration • Tūi and kererū numbers increasing around Reporoa, Ohaki, Parekārangi areas • Kiwi heard again on Paeroa Ranges • Iwi fully skilled, working in this area to full potential, contributions recognised • Local plant production or iwi nursery producing native plants eco-sourced from the area • Traditional plant and animal uses active again – rongoā, weaving, feathers, etc • Alternatives to 1080 and other toxins found and used

MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Range of planting and restoration projects underway <ul style="list-style-type: none"> • Wilding pine removal at Tutukau and Orākei Kōrako • Plantings e.g. Te Toke rongoā plantings, Tutukau riparian areas, Ngā Awa Pūrua restoration project • Project to do vegetation survey/ bat survey in Tutukau • Iwi currently have skills in possum control • Discussions now occurring with DOC about opportunities for iwi to take part in work programmes • Workshops on track building, track maintenance • Growsafe training for weed control workers • Rūnanga presenting Wildlands assessment to Trusts to identify possibilities, supporting Trusts to fund and implement projects • DOC carrying out work in Waikite wetland (pest and weed control and sandbagging) and Te Kōpia Scenic Reserve (pest control with WRC working on private land); also wilding pines on Maungakākamea, willow control in Ngāhewa wetland and mistletoe protection around the lake. 	<ul style="list-style-type: none"> • Traditional plant use revival through wānanga and hands-on learning • Support establishment of local nursery • Investigate options for sanctuary/ restoring kiwi etc. • Planned corridor plantings and pest control to increase populations of tūi and kererū in Reporoa, Ohaki, Parekārangi areas • Regular dialogue with agencies like DOC, with follow-through, to allow iwi input into planning stages of work and ensure opportunities to engage iwi and use iwi expertise • Work with iwi members to put in proposals, tenders etc. • Projects to explore and reopen tūpuna tracks • Investigate options for commercial opportunities associated with natural areas e.g. as cycle track develops • Restoration over larger areas through partnerships including with regional and district councils, Fish and Game, schools and community groups.

TŪRANGA WHAKAHAERE - PRINCIPLES FOR MANAGEMENT OF THIS RESOURCE
<ul style="list-style-type: none"> • Iwi want to see alternatives to 1080 and other toxins wherever feasible and as soon as possible • Creating income – paid mahi – for iwi members is a priority • The iwi supports planting of local genetic-sourced natives, including species with cultural uses as well as those that support native fauna • For the iwi, harvest and use is important as well as protection and conservation • Pest control should be strategic and consider multiple pests so that removal of one pest does not create an increase in another species or new risks to native species due to prey-switching • Look after what is rare and special as well as generally increasing areas of native habitat • Talk to local whānau when work is planned around their area • On farm blocks, plant natives for environmental purposes and for future timber or other uses – the main thing is to plant • Work towards co-management and co-governance between Crown and iwi





Te Toke –before



Te Toke –after enhancement



Dactylanthus taylorii



Wilding pines for removal

Case study: Restoration projects

TE TOKE RD ENHANCEMENT PROJECTS 1 AND 2

The key objectives of this early restoration project were to stabilise a bank area, improve degraded land by planting the area with rongoā species, attract native birds, return land to its native state, restore cultural values and keep the area clean. The project was developed at a marae meeting in response to observations of dumping of rubbish and possum carcasses at the site.

One hectare of iwi land was cleaned and prepared. A community day to plant 2400 native plants attracted about 70 people, including groups from all local schools. This first stage was kindly funded and supported by the Waikato Catchment Ecological Enhancement Trust (WCEET), Honda Tree Fund, Waikato Regional Council, Landcorp, Contact Energy, Taupō District Council, Fonterra and Te Toke Marae. Stage 2 of this project on the next hectare of land is now underway, with funding from WCEET and TARIT.

REPORT ON BIODIVERSITY ENHANCEMENT AND RESTORATION OPPORTUNITIES

As part of its strategy to demonstrate and expand kaitiakitanga of land within the rohe, the Rūnanga commissioned Wildlands Consultants to complete a series of reports detailing biodiversity enhancement opportunities within the rohe. These reports have provided direction and guidance for some exciting new initiatives, described below.

VEGETATION SURVEY, BAT SURVEY AND DEVELOPING A RESTORATION PLAN FOR TUTUKAU FOREST

A detailed vegetation survey and bat survey, and the subsequent development of a restoration plan, were identified as initiatives for Tutukau Forest. This is a large tract of indigenous forest, with 686 ha within the property boundary of iwi Trust landholdings. A rare plant te pua o te rēinga or wood rose (*Dactylanthus taylorii*) had been recorded in the Tutukau Forest, and one focus for the current project is to determine its current extent. As short-tail bats (ranked as 'At Risk-Declining') are thought to be the pollinators of this plant, the project also includes a bat survey to determine their presence or absence within the forest. This project has received support from DOC through the Biodiversity Advice Fund.

WILDING PINE PROJECT

Wilding pines are a key threat to the habitat of rare geothermal plants. A project to undertake wilding pine control and weed control to protect these habitats has been initiated within Orākei Kōrako/Red Hills (c.120 ha), Tutukau Forest (c.686 ha), along the lower Mangatoetoe Stream and Waikato River margins (c.18 ha), and in a geothermal area adjoining Tutukau Forest. This work has gained support from the Biodiversity Condition Fund (DOC), WCEET, TARIT, Mighty River Power, and the Waikato Regional Authority.



Ohaki pool Jan 1963

NGĀWHĀ - GEOTHERMAL

Historical context: What we used to have

Geothermal resources are a special feature of this rohe and were prized by the tūpuna for their many uses. The iwi built pā and papakāinga near geothermal areas to cope with the notorious cold weather of this region. Different ngāwhā were dedicated to specific uses - cooking pools, bathing pools, healing mud for skin conditions and arthritis, and ngāwhā with mineral properties for dyeing and preserving wood.

The geothermal site Orākei Kōrako is the ūkaipō for Ngāti Tahu-Ngāti Whaoa – the first traditional settlement of Tahu Matua. This was the principal home for the tribe and from there the people dispersed across the rohe. The ‘Hidden Valley’ was one of the first geothermal tourist attractions of the region, with recorded visits from the mid 1800s.

Ohaki was another geothermal kāinga for the iwi. The large Ohaki ngāwhā with its clear, pale, turquoise-blue water and extensive white sinter terrace was described in 1939 by E.E. Vaile in the book *Pioneering the Pumice* as “the most handsome pool in the whole thermal area”.

Iwi members have many memories of traditional uses of the geothermal resources of the rohe. Whānau members know the locations of ngāwhā with healing properties. Orākei Kōrako had a bathing area in times gone by. Ngāwhā near Ohaki Marae fed flowing water to a bathing pool that could be emptied and cleaned out. The ngāwhā were also used by the cooks at Ohaki and Te Toke Marae - hot water would be fetched in buckets, and there was a pool for scalding pigs as well as steam-holes for cooking. Tāmomoe, an overnight scone cooked in the steam, was an iwi speciality. In more recent times, steam was piped into Ohaki Marae from the power station for use in the steamers over a ten-year period, but it proved difficult to maintain the pipes and gas is now used instead. Geothermal heat was also used historically for local glasshouses and lucerne drying there, and for mushroom growing at Te Kōpia.

The iwi has had to witness the destruction and degradation of geothermal features as the government undertook large-scale power developments. As the hydro-dam caused the raising of the river at Orākei Kōrako, most of the geysers and geothermal features were drowned by the rising water levels, along with many significant sites. The iwi were forced to move away from the papakāinga after watching their homes being burnt to the ground.

Geothermal fields themselves became a focus for power development. In New Zealand geothermal power generation began in the 1950's at Wairākei, which is still producing today. This was followed by Ohaki, which opened in 1989. The government of the time did not allow for Ngāti Tahu to participate in these developments. The geothermal power stations at Wairākei and Ohaki have resulted in severe impacts on the iwi. Natural geyser activity and springs have been irreparably damaged at Wairākei. As geothermal fluid was extracted at Ohaki, the steam holes and bathing areas at Te Toke and Ohaki Marae lost water and heat, and stopped functioning.

A sacred rock was flooded. Drilling rigs disturbed the ground in urupā areas and bones were exposed. Land subsidence and the rising river levels and associated bank erosion threaten the whare at Ohaki Marae. Discharges of geothermal fluid from Wairākei into the river caused elevated mercury and arsenic levels in kai species, and in sediment that has settled out behind the dams (see section on Wai).

The impacts of these early developments on the prized geothermal and river features were devastating for the iwi. Iwi members had to witness the destruction of treasured resources and sites, and received no benefit from the developments while others exploited and profited from them.

In more recent years the iwi has become a partner in developing geothermal resources, and has worked to reduce the impacts of those developments. Rotokawa Power Station was opened in 1997, now operated by Mighty River Power in partnership with landowners Tauhara North No2 Trust (TN2T). In 2010 Mighty River Power and TN2T opened a second power station called Ngā Awa Pūrua on the same Rotokawa field. On the Ngātamariki field Mighty River Power and TN2T have recently been developing a geothermal power station. The original wells at Ngātamariki were drilled by the Crown and returned to the iwi through claim settlements. Statutory acknowledgements through the Te Arawa Deed of Settlement signed in August 2006 acknowledged the historic association of the iwi with geothermal fields (termed the “Rotorua Region Geothermal System”).



Existing state: What we have now

The Ngāti Tahu-Ngāti Whaoa rohe is rich with geothermal reservoirs that form part of the Taupō Volcanic Zone – Rotokawa, Orākei Kōrako, Ohaki, Ngātamariki, Reporoa, Waiotapu, Waikite and Te Kōpia. Despite so much damage and destruction, the rohe is still home to some of the most special geothermal features in the country. Many are in a natural and unspoilt state, and support rare geothermal plants.

The Taupō Volcanic Zone (see Map 9) is considered a vast energy source, with up to 500 times the total gas potential of New Zealand. Geothermal power is a climate-friendly and constant form of electricity generation. The infrastructure to generate from this resource is expensive, but ongoing costs are lower than many other forms. Care must be taken to protect surface geothermal features.

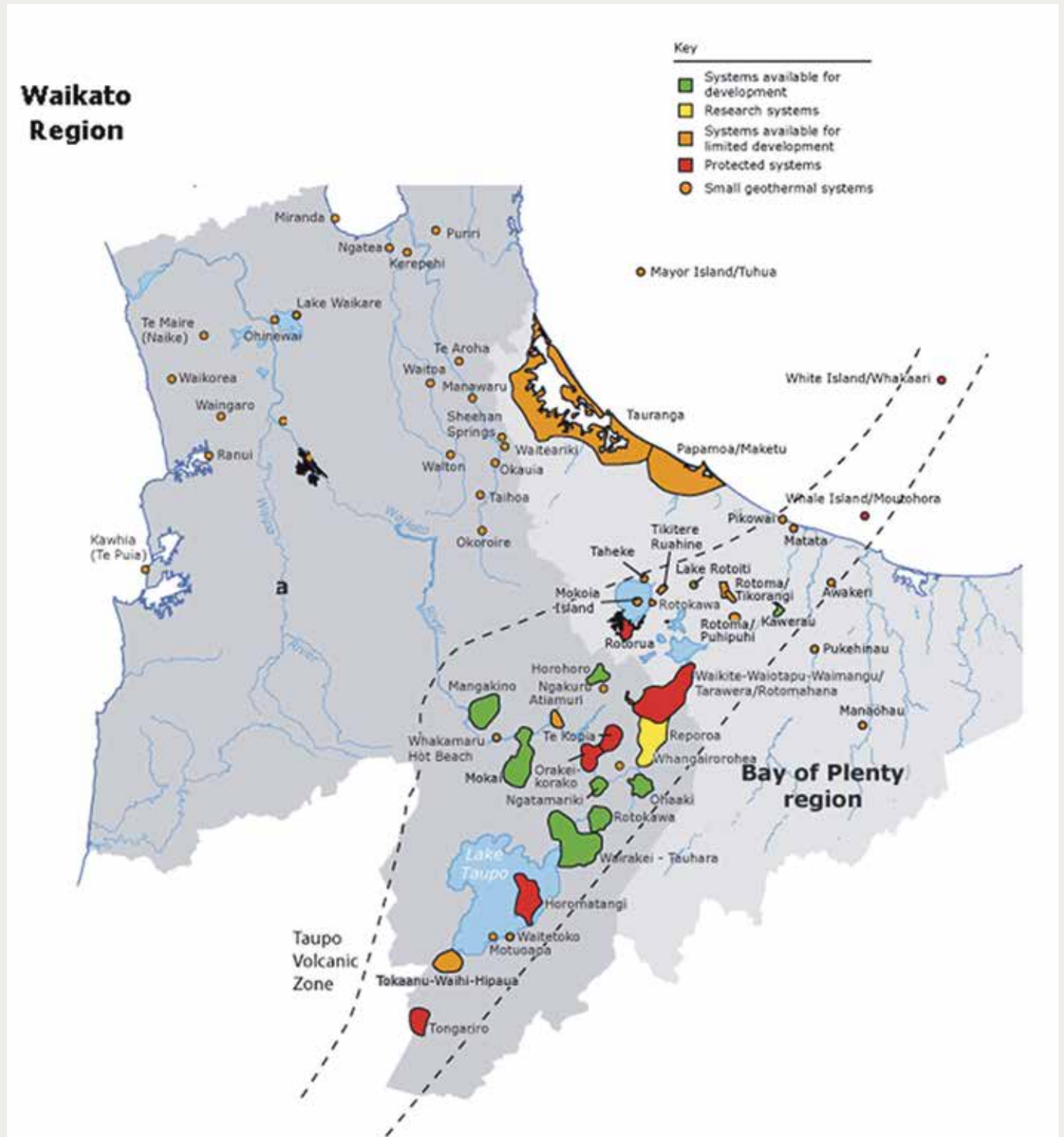
Current geothermal uses listed by the NZ Geothermal Association for this area (An Assessment of Geothermal Direct Heat Use in New Zealand 2006) include power generation, bathing, tourism, timber drying at Ohaki, spas and showers heated at Orākei Kōrako, and various uses at Arataki Honey (heating space, water and honey, rearing bees, domestic use). At Wairākei, power station steam is diverted to a greenhouse for orchids and a hotel. Separated water is used at a tourism park (to create silica terraces and a historical geothermal environment), and at the prawn farm. Ngāti Tahu-Ngāti Whaoa are partners in tourism at Orākei Kōrako and Waiotapu.

The rate of use of the resource has depleted the fields at the early power development sites. When the power station opened at Ohaki in 1988, it produced 108 megawatts of electricity. Because of cooling of the resource as a result of development, it now produces only 45 megawatts. The consent for Ohaki power station is now up for renewal and in recognition of past over-exploitation, the new proposal will reduce the station's output by about half. ReInjection of geothermal fluid is now standard in all new developments which will help avoid subsidence and water contamination. Reinjection occurs at Ohaki to a shallow depth; it is unclear how much geothermal fluid is entering the Waikato River via groundwater as a result. In other recently developed systems injection is into the deeper parts of the geothermal aquifer.

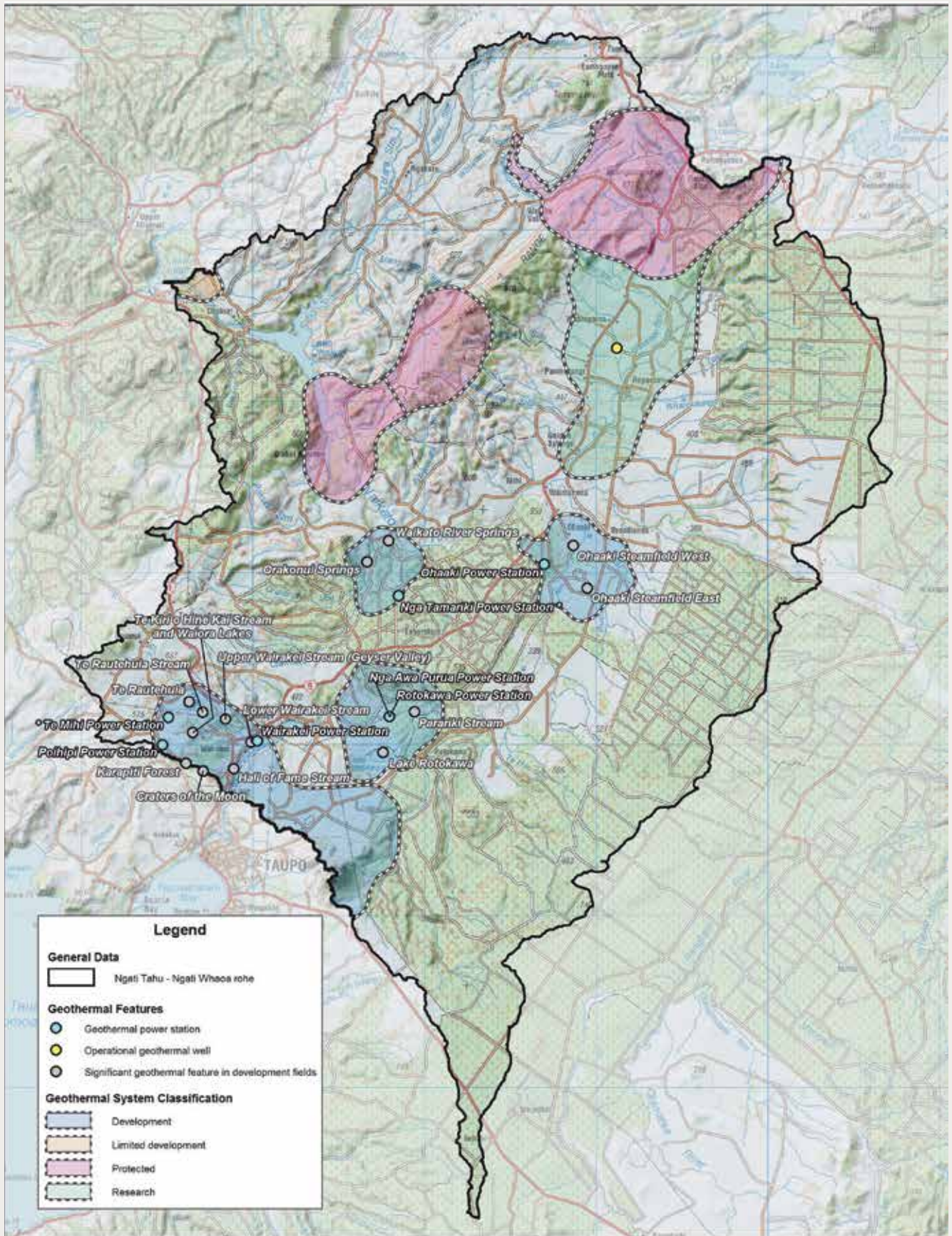
A variation to the Regional Policy Statement (RPS) and changes to the Waikato Regional Plan (WRP) have now classified the geothermal systems into the categories of: development, limited development, research, and protection (see Maps 9 and 10). In each of the development systems, significant geothermal features are identified in the WRP in order to avoid effects on those features. These named features in development systems are shown in Map 10.



Map 9: Geothermal systems in the Taupō Volcanic Zone



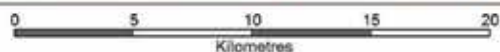
Map 10: Significant features in geothermal systems classified for development



Ngati Tahu - Ngati Whaoa IEMP
Geothermal - Map 2

Created by: A Jeffries
Projection: NZTM
Date: 04 Feb 2013

Status: n/a
Request No: 24820
File name: 24920_Ngati_Tahu_Ngati_Whaoa
IEMP P0



ACKNOWLEDGEMENTS AND DISCLAIMERS

-Spatial data relating to significant geothermal features, geothermal vegetation / habitat, and geothermal fields have been derived from the Waikato Regional Plan (WRP)
-Topographic Maps Sourced from LINZ. Crown Copyright reserved.

* Power station will become operational in 2013. All other power stations are currently operational.

The systems classified as 'protection' are to preserve the important surface features at Orākei Kōrako, Te Kōpia and Waiotapu–Waikite-Waimangu. The geothermal features of these areas are particularly important because the surrounding landscape is less modified than elsewhere. Te Kōpia has features of international significance such as the unique and long-active mud-geyser, the only one of its type in New Zealand and possibly the world. The Te Kōpia fumarole is also considered to be the most powerful geothermal fumarole currently remaining in New Zealand. Waiotapu is the most colourful thermal area in New Zealand. It has five geysers, hot springs, mud pools, fumaroles, craters, and steaming ground. Two of the springs are unique in New Zealand. The first, Champagne Pool, is large (30m wide), and is actively growing two hectares of sinter terrace. The second, Hākareteke Geyser, is the only sinter-depositing geyser with acidic waters in New Zealand. At Waikite, Manuroa spring is believed to have the largest volume of outflow of all sinter springs in New Zealand. The springs of the Waikite field are still depositing sinter, but sinter deposition has greatly reduced since the area has been developed for farming and much of the low lying ground has been drained. DOC is working to return the surrounding farmland to its natural state. Two springs are still depositing sinter, and the sinter now present around the Manuroa Spring site appears virtually identical to that shown in a photo taken in the 1890s. Land drainage for farming has also lowered the water table in the Reporoa field, affecting surface geothermal features. At Orākei Kōrako, 200 hot springs and 70 geysers were flooded by the hydro-dam. There are 35 active geysers and around 100 hot springs remaining. A concern was raised by iwi members that the 'golden fleece' at Orākei Kōrako appears to be losing its shining golden colour.





Development fields have fewer significant surface features than protection fields, or the historic features have been degraded. The Ngātamariki system is a highly dynamic area and since 1995 some springs have formed, others have dried up, and there has been a hydrothermal eruption. In late 1998, a new geyser appeared at Ngātamariki after a bank collapsed and blocked a natural upwelling of geothermal fluid. There are two large alkaline-chloride pools surrounded by bubbling acidic pools and numerous springs and pools. One spring has dense brilliant white calcite sinter two metres wide, for five metres along its outflow.

The main development fields now all have consented activity already operational or under development. There are some indications that Ngātamariki could be connected to Orākei Kōrako; for this reason sentinel wells are included in the development at Ngātamariki so that any effect will be seen early on. It is unclear whether Reporoa has connectivity with the Waiotapu field, so it has been classified as a research field, meaning that large-scale use will only be consented if it can be proven there will be no effect on the protected features to the north.

Iwi use of the geothermal resource is dependent on gaining consent from the regional council. Depending on what use is proposed and the potential effects, gaining consent may range from a non-notified process with limited cost through to a complex process involving extensive research and legal costs. Technical investigations are needed before a proposal is lodged.

Due to the historic developments described above, the current state of geothermal features at Ohaki is not what it once was. The delicate sinter edge of the Ohaki Ngāwhā has partially collapsed and the white silica formations have weathered to a dull dirty grey. The sinter terrace is cracking and has plants growing through it. The bathing pool is now fed by geothermal bore water, which contains chemicals added to prevent silica depositing in the bore pipes. Most of the other flowing surface features at Ohaki have dried up and the mud pools have cooled. Very few of these features now remain as anything other than dry hot ground. The area of steaming ground has expanded. An urupā now has steam rising through the graves, and the ground has opened up in places. Subsidence caused by geothermal development has caused a road to become flooded by the Waikato River, and Ohaki Marae is threatened, creating ongoing uncertainty and dissension around the relocation of the whareniui.

In addition to these impacts, iwi members have concerns about the overgrown and dirty state of some local ngāwhā. In some sites rare geothermal plants have been impacted by attempts of landowners to alter the natural drainage and vegetation around the ngāwhā.

Pressures: What impacts on this resource

Tapping the geothermal resource at too great a rate causes rapid depletion of the pressure, land subsidence and loss of surface features, as described above. New developments are planned and designed to minimise these effects. However, even with current technology, large-scale development such as power generation will eventually mine the heat from the system. It is likely that this would replenish if use ceased; however this might take hundreds of years and not enough is known to be able to predict this accurately.

Power station discharges can cause contamination. Discharges to the Waikato River from Wairākei cause elevated mercury and arsenic in the river. Reinjection occurs at Ohaki; however it is at a relatively shallow depth and may result in fluid travelling via groundwater into the river. The bathing pool at Ohaki fed by geothermal fluid outflow from the power station contains anti-scalant chemicals to keep pipes free from silica.

Land use can damage features. Land drainage can lower the water table and affect surface activity and sinter deposits. Land drainage around Reporoa is ongoing, and could further damage springs. Sulphur mining has damaged extensive areas of altered ground on the Rotokawa geothermal system, destroying natural contours and geothermal vegetation in the vicinity, which have since been rehabilitated. Unstable banks and future pine harvesting are potential threats to springs and surface features at Ngātamariki.

Geothermal vegetation can be affected by:

- **loss of steam and heat altering the geothermal habitat**
- **pest animal browsing or rooting**
- **pest plant invasion**
- **human activity.**

Care is required that clearing weeds like blackberry does not afford stock easier access and put the sinter at risk of crushing. Tourist foot traffic may damaged the ground at popular sites such as Waiotapu. The North Gully Springs at Waikite are located below the road, so the springs are vulnerable to gravel and litter from passing traffic, and to damage from road works.

Opportunities: How to preserve and restore the resource

Mapping the features that exist in the rohe and also the traditional uses in different sites would provide a sound knowledge base from which to plan use, protection and restoration activities.

Opportunities could be identified to better maintain existing sites for iwi uses such as bathing and cooking, and to plan further development that is sensitive to the natural values of the ngāwhā and the unique geothermal vegetation of these sites. Strategies for enhancement include fences for safety, shelters, cold water tanks for bathing, and putting in more steam boxes for cooking.

Features that attract tourists or public use can be protected from impacts by building boardwalks, barriers and signage.



The effects of land use on geothermal features can also be addressed e.g. at Waikite DOC is restoring the large geothermal wetland and addressing land drainage. Similar work could be done by working with landowners surrounding Reporoa springs that are affected by drainage. Where stock can access geothermal areas, fencing would be beneficial.

The iwi now has the opportunity to be involved in resource consent renewal for existing power stations. At Ohaki, a reduced rate of output and deeper reinjection of fluids would be desirable as part of the re-consenting process. The iwi could also look at the issue of anti-scalants in the water feeding the bathing pool at Ohaki Marae. Current consent conditions (100987) require that:

“The anti-scalants and any other contaminants added by the consent holder to the discharge and the concentrations at which they occur in the discharge shall be such that they have no adverse effect on downstream bathers.”

Alternative uses of the geothermal resource are many (see Figure 1) and there is an opportunity to research these and find out what is feasible. Some possible uses to investigate include heating buildings or hot water, and utilising heat for greenhouses or other thermal uses. Where no wells exist, and due to the expense in drilling wells, other uses may have to be coupled with power generation to generate a rapid return. A constant flow of fluid is needed to avoid damage to infrastructure, so one option is to generate power at peak times while using the fluid for other purposes that may generate more employment at other times. An example exists at Mōkai of multiple uses from a development generating employment for the iwi there.

There is an existing well owned by the Crown at Reporoa. Waikato Regional Plan rules for this system, classified for research, limit takes for non-research needs to 2000 tonnes per day. This is not sufficient for electricity generation, but could provide heating for local homes or small scale industrial use (for example the Waitapu Arataki Honey operation has a consent to use 98 t/day). Use potential is dependent on the discharge capacity from the well, which would need to be researched. The iwi could have further discussions with the Crown and regional council to investigate opportunities for low-impact heat uses to benefit iwi members.

The government (Ministry for Business Innovation and Employment) is currently funding researchers to engage with iwi and regional councils and answers the question “How can we better understand and model multiple geothermal systems, the interactions between them and their sustainability through the use of geophysical, geochemical and numerical modelling tools”. This may provide for a more collaborative and integrated approach, and less costly ways of understanding and developing the potential for use of the geothermal resource.

Other possible values may arise in the future, such as mineral extraction from geothermal fluid (e.g. lithium) and use of thermophilic microbes that live in heated water.

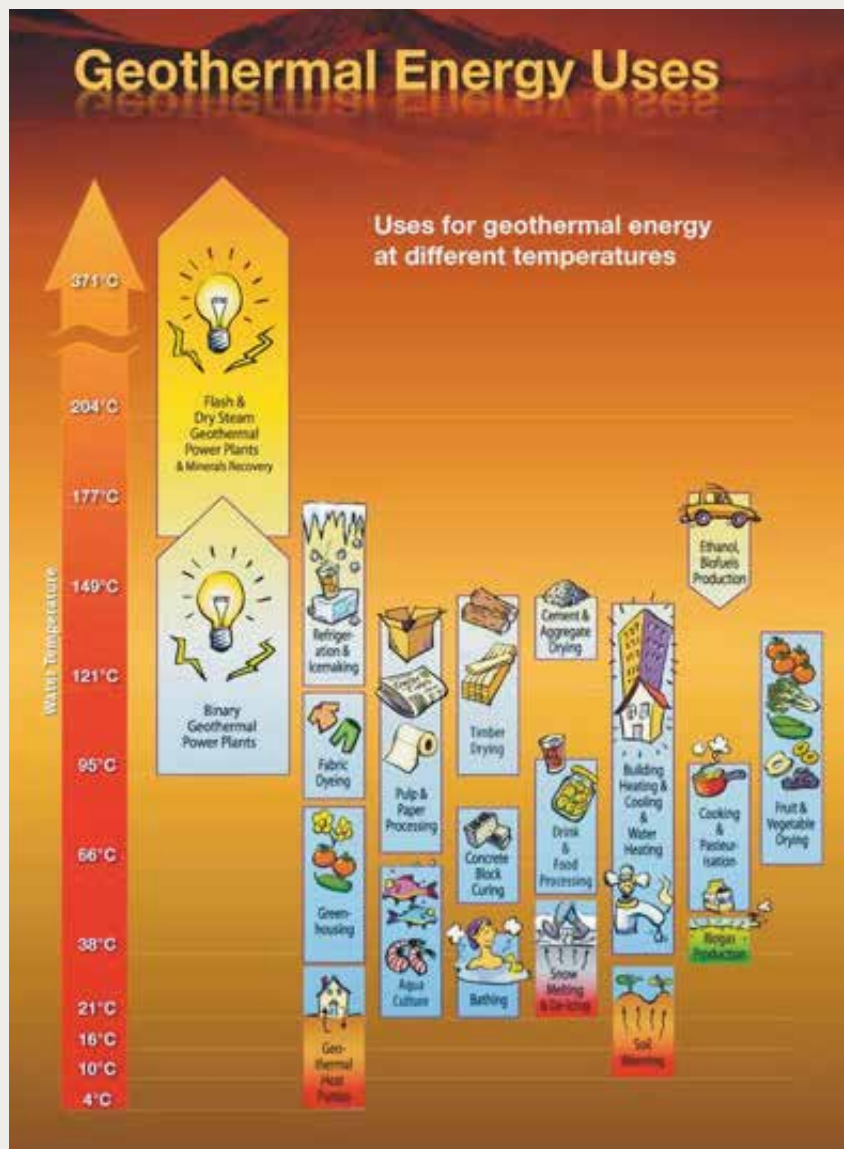


Figure 1: Geothermal energy uses at different temperatures (picture courtesy of GNS Science).

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Unique geothermal surface features and plants known by the iwi - mapped and prioritised for use, protection or restoration • Best practice in geothermal developments • Reduction of arsenic and mercury in Waikato river from Wairākei (direct discharge) and Ohaki (shallow reinjection) • Full compliance with statutory requirements for involving iwi and landowner Trusts in consenting and re-consenting, with best practice followed (early engagement etc.) • Open information sharing, iwi informed and involved • Some cooking areas, bathing areas restored and suitable facilities in place • History/ impacts of development documented and acknowledged • Operators working in good faith – best practice, monitoring of effects, sharing information, benefits for iwi members 	<ul style="list-style-type: none"> • More local use by iwi of geothermal resource – cultural, domestic and economic uses • All unique geothermal features and vegetation protected and restored where possible • Arsenic and mercury in Waikato river returned to natural levels • Geothermal development is as sustainable as possible • Subsidence is avoided (minor, minimal and localised only) • Minimal effects on surface features, no effects on significant features, mitigation on other features as an option when appropriate – contribution by all Joint Venture partners

MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Tourism ventures – e.g. Orākei Kōrako (Ngāti Tahu-Ngāti Whaoa Rūnanga), Waiotapu (Landowners: Ngāti Tahu-Ngāti Whaoa Rūnanga, business owner: Te Pūmautanga o Te Arawa) • Power generation – Ohaki (Landowner: Ngāti Tahu Tribal Trust), Rotokawa, Ngā Awa Pūrua and Ngātamariki (joint ventures including Tauhara North No2 Trust); land-owning Trusts are engaged in joint venture developments with system management plans, distributing benefits through programmes for iwi beneficiaries • Conservation and protection – Waiotapu (Rūnanga), Orākei Kōrako (Landowners: Tutukau East Z Trust, Rūnanga, business owner); geothermal vegetation covered in Wildlands report and ongoing work underway to apply for funding for projects to enhance and protect these habitats; wilding pine removal occurring in some geothermal vegetation areas • Research activity - Waikite, Te Kōpia (GNS, Rūnanga), Reporoa field • Geothermal areas in Waikato Region currently categorised and managed for protection, research, development or limited development; significant geothermal vegetation identified and geothermal features in development fields legally protected 	<ul style="list-style-type: none"> • Establish a Geothermal Forum to enact the key principles on behalf of the iwi and to share information • Map surface geothermal features and plan for use/ protection • Further restoration or enhancement projects for geothermal vegetation/ habitat and features • Project to inform iwi members about the geothermal taonga of the rohe and involve iwi/ rangatahi in restoration projects and activity to engage with the resource <ul style="list-style-type: none"> • Field trips • Traditional uses - cooking, bathing, healing, dying, etc • Restoration projects • Research and restore or develop cultural, domestic and economic use opportunities: bathing, cooking, thermal use/ heat exchange for marae/ homes, etc, parallel or cascading use from developments, industrial/ chemical extraction uses and tourism <ul style="list-style-type: none"> • Research uses at Mōkai • Investigate new technologies and uses • Work to streamline consenting for low-level use • Work on documentation of the impacts of development and acknowledgement by developers, with restoration where feasible or appropriate mitigation.

Tūranga whakahaere - Principles for management of this resource

“Manage resources well, maximise opportunities, minimise risks”.

- These are taonga tuku iho; Ngāti Tahu-Ngāti Whaoa retain and continue to assert rights and customary ownership of water, geothermal fluid and all taonga associated with these resources (e.g. bacteria and microbes found in geothermal areas)
- Identify what is there – (geothermal fields, surface features and unique vegetation) – and plan for appropriate care and use
- Preserve remaining valuable surface features across all geothermal fields and avoid effects on significant sites in the traditional geothermal areas of the rohe: Orakei-Korako, Ohaki, Ngātamariki, Rotokawa, Reporoa, Te Kōpia, Waiotapu-Waikite-Waimangu, Waimahana and Ātiamuri.
- Manage geothermal development carefully
 - Manage in an integrated way e.g. system management plan, consistency across regional council boundaries
 - Deep reinjection of fluid to avoid waterway contamination, subsidence and fluid depletion in the geothermal system
 - Monitor the effects of extraction – adopt a staged approach
- Restore cultural use of geothermal resources (suitable to today’s context)
- Development should be as sustainable as possible; with the iwi participating in, and benefiting from, considered development of the resource using the best technology and practices available
- Development should ideally include multiple uses, efficient uses and uses that can be sustained over a long time period to bring maximum benefits to the iwi and future generations
- Land Trusts have autonomy in developing the resource below their lands; the Rūnanga has a role providing a philosophical/protective overview
- The role of the Rūnanga and land Trusts in kaitiakitanga of the geothermal resource should be acknowledged by developers and councils – through proactive approaches, open dialogue, listening to views, informing and involving
- Share information openly (landowner Trusts, Rūnanga, developers, councils, Crown) – so iwi can be informed and involved at all levels

Waiotapu

Ngāti Tahu-Ngāti Whaoa is a small local iwi located within the central North Island of New Zealand.

Our History

Our people have occupied these lands since the arrival of our Tupuna Ariki Tahu Matua. Tahu Matua arrived here in Aotearoa before the arrival of the seven waka from Hawaiki. Our Tupuna Whaoa is some generations younger. Whaoa is thought to have settled in the Waiotapu area.

Ngāti Tahu-Ngāti Whaoa has a historical, cultural and contemporary association with geothermal resources within our traditional rohe. Such resources were used for cooking, drinking, bathing and healing. Large kainga and cultivations were often established around these taonga such as Orakei Korako, Ohaki and Waiotapu.

The Ngāti Tahu people have a nomadic history, which is a common feature of early Māori. Our people moved with the seasons to ensure the survival of the iwi and as a conservation measure for their resources (geothermal, river, forests, minerals, flora/fauna.) Many early settlements were established near water resources and in the close proximity to food gathering areas.

The Waiotapu and Maunga Kākaramea area was used as a place of refuge for our people. The Ngāti Tahu people living at Waiotapu joined with Te Arawa war parties.

Respect taonga

It is a privilege to have such a special place to visit – remember to treat this area with respect. Help us to look after this unique taonga (gift) by using the following guidelines:

- Do not dig into the bank to source the mud, this is causing a large overhang and the resource is depleting.
- Certain areas have been isolated for re-vegetation purposes so that future generations may enjoy the area too.
- Please take your litter and empty drink containers with you. Do not throw them into the pool or smash them on the road.

Any person caught damaging the property and/or vegetation will be prosecuted – some vegetation growing here is unique to geothermal areas and is nationally threatened.

Case study: Enhancing a geothermal area:

WAIOTAPU – TWIN STREAMS

Waiotapu - Twin Streams is a very popular bathing spot used by the public and tourists. It is a geothermal pool fed by both a hot and a cold stream, with healing mud and unique flora associated with it.

Working together, DOC and Rūnanga staff developed a management plan for this site, and identified roles and responsibilities for its enhancement. TARIT is also supporting this initiative.

DOC has taken responsibility for the remedial work on the damaged banks, including fences and construction of paths to prevent further impact from foot traffic.

The Rūnanga is responsible for the signage, including information on the area’s history, and guidelines on how to manage and respect the site.

Reporoa College students have assisted by removing rubbish from the site and taking part in a planting day. The College has indicated the site clean-up will become an annual event.



NGĀTI TAHU-NGĀTI WHAOA
RŪNANGA TRUST



Toitū he kāinga, whatungarongaro he tangata

The land remains when the people
have disappeared.



NGĀ MARAE ME NGĀ WĀHI HIRANGA – MARAE, SIGNIFICANT SITES AND WĀHI TAPU

Historical context: What we used to have

Marae, significant sites and wāhi tapu are an intrinsic part of the history and identity of the people. In the past, many of these sites were occupied or visited regularly, and the knowledge of events and people was kept alive through oral traditions.

The river was a significant feature for the iwi and there were many burial areas, pā sites and associated cultivations alongside the river and on islands in the river. Orākei Kōrako was one of these settlements, recognised as the birthplace of the iwi.

Existing state: What we have now

As the land was alienated from the iwi, the close relationship with many significant sites has been weakened. In some cases the knowledge about the sites and their history is not retained, or only a few people have this knowledge. However, there are some valuable reports that have collected historical knowledge, and some areas have been thoroughly mapped with historic sites registered. The Rūnanga is also creating a wāhi tapu register to hold this knowledge.



There has been some damage to significant sites through earthworks. Many significant sites for the iwi have been impacted by the raising of the river level for hydro-generation; these include burial caves and island pā.

There are four marae in the rohe (see Map 2). Hui and activities are held on these marae that bring iwi members together, including tangihanga, wānanga, workshops and whānau celebrations. The name Whaoa has also been given to the whare at Reporoa College.

Some significant sites have been returned to iwi ownership, including areas at Orākei Kōrako/ Red Hills, Maungakākamea and Waiotapu, and two peaks in the Paeroa ranges. The iwi works with DOC on management of sites within public conservation land.

Mighty River Power's consent requires a peer review panel to track the impacts of its activity including effects on customary Māori interests and cultural effects.

Pressures: What impacts on this resource

A continuing challenge is to retain the knowledge of significant sites, and the history associated with these places, as those who have this knowledge pass on. Sites that are not marked and recognised may be destroyed or disturbed by land use.

Geothermal and hydro-electricity developments have taken place in a way that has jeopardised the relationship of Ngāti Tahu-Ngāti Whaoa with our ancestral land and sites of significance to us. Sacred sites remain submerged under water held up by the dams, and fluctuating river levels may threaten further sites along the current river edge with flooding or erosion. At Ohaki, ngāwhā and sacred sites around the marae have been ruined by geothermal over-exploitation and the bathing pool water now has anti-scalant chemicals in it. The whare itself is also threatened by land subsidence and flooding of the river. This has created division amongst the iwi as the question of whether to relocate the wharehui Tahumatua is debated.

Marae become less sustainable if there are too few iwi members to look after them and take on roles in hosting and manaakitanga. The following excerpt comes from the book *Ohaki: A Power Station on Māori Land* by Evelyn Stokes:



“A marae is the focus of community life but it needs people to “keep warm”, a Māori concept known as ahi kā. The mauri or soul of the people is placed in the meeting house and it is there that the people gather on important occasions to discuss matters of tribal importance, for tangihanga and other gatherings. The marae at Ohaki is still used but its functions are restricted by the lack of people living at the marae. This lack of residents at Ohaki should not be interpreted to mean that the marae is no longer important. It retains its status in Māori terms despite the fact that residents have had to move away in the last few decades to find jobs because local employment opportunities are very limited. A nucleus of families around the marae is desired to provide the warmth and care required to promote the fuller use of this marae for the benefit of Ngāti Tahu who wish to return periodically for special occasions, or spend holiday periods with their kin away from the pressures of urban life. It would also provide a place where the young of Ngāti Tahu may learn from their elders in a traditional environment.”

In addition to poor employment prospects, inappropriate planning provisions can impede iwi members moving home (for example, no allowance for papakāinga development).

Opportunities: How to preserve and restore the resource

It is essential that knowledge of history and identity is kept alive as part of continuing cultural existence. Opportunities lie in resurfacing and sharing the knowledge of significant sites, ensuring iwi members can access these sites and making time and space to learn the kōrero about them.

Marae provide one opportunity to maintain tribal traditions, as they form central meeting places that are symbolic of iwi identity. By creating a range of opportunities for people to gather and interact, marae can be the centre of iwi activity as well as a key place to experience reo and tikanga and pass on history. Marae can also reflect kaitiakitanga principles by demonstrating sustainable environmental practices. Keeping the marae alive with a sustainable local population of whānau relies on employment opportunities (for example in forestry, farming, tourism, conservation work or through geothermal industries) and working with councils to ensure planning provisions allow for homes to be built.

The iwi can work with land managers (forestry/ DOC/ farmers) so they know that they have sites on the land under their management, and understand how the iwi would like those sites to be looked after. For councils and resource users, the development of the significant sites/ wāhi tapu register by the Rūnanga will assist in knowing when there is a site they need to protect.

The iwi could seek opportunities at Orākei Kōrako for iwi members to reconnect with the significant history there, and possibly restore traditional activity for the iwi such as bathing. The potential to lower the river level again to uncover geothermal features could also be investigated. Opportunities to restore a suitable bathing pool at Ohaki Marae could be investigated as part of the re-consenting of the power station.

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Eco-friendly practices in place in some marae • More fun activity on marae • Wāhi tapu identified and historical information collected • Place names and historical knowledge integrated in public signage and educational/ interpretation information • No further loss or degradation of wāhi tapu or significant sites • Papakāinga development options included in district plans 	<ul style="list-style-type: none"> • Wāhi tapu and their history are known by the iwi • All wāhi tapu are appropriately managed • Historical knowledge of significant sites retained, widely known and appreciated • Significant sites to the iwi restored where feasible • Facilities and activities at all marae attracting whānau and iwi members, including rangatahi • Eco-friendly practices, māra kai and plantings at all marae • Papakāinga land developments established and thriving

MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Wānanga held on marae to learn Te Reo, tikanga • Practical workshops at marae (e.g. tuna workshop) • Kōhanga reo on one marae • Register of significant sites and wāhi tapu being developed • Work underway with DOC and forestry companies on identification, protocols and management of wāhi tapu and significant sites, including annual work planning with DOC under the existing MOU • Signage established in some sites conveying historical information e.g. Waiotapu. 	<ul style="list-style-type: none"> • Further work on identifying wāhi tapu and significant sites • Work with roading and transport authorities to reinstate original names on roads and bridges • Further work with DOC on managing significant sites, reinstating and sharing history of sites • Work with local farm and forest managers to fence off wāhi tapu and where appropriate mark sites e.g. by planting another species • Pou whenua project to mark sites where marae once stood • Where sites are landlocked, work with landowners to provide access • Investigate a river trail for the public, or work with the existing river trail projects, to provide more signage about the history of sites • Create a 'reconnection trail' for the iwi, with history retained and a guide for whānau who come home to go to different sites, experience them and learn about them • Upgrade marae facilities, including possibility of further use of geothermal resource for heating, small-scale industry etc. • Connect broadband at marae, use marae as homework clubs/ hubs, more kōhanga reo/ wānanga opportunities • Conduct further wānanga to revive historical knowledge e.g. learning mōteatea • Hold more fun and engaging whānau and youth events at marae, including activities focused on the natural taonga of the area • Advocate for papakāinga development options on Māori land • Establish Para Kore (Zero Waste), recycling/ compost systems, māra kai and use of eco-friendly cleaning products at all marae • Further planting of local plants on marae grounds, including rongoā and bird-friendly plants as part of bringing birds down from ranges • Investigate opportunities for restoration of geothermal features at Ohaki and Orākei Kōrako, and traditional uses such as bathing

Tūranga whakahaere - Principles for management of this resource

- Wāhi tapu are not appropriate sites for development or commercial use
- There should be no further loss or degradation of wāhi tapu, marae and significant sites through flooding, land subsidence, earthworks or development
- It is not always appropriate for knowledge of wāhi tapu to be publicly available, but resource users and councils need enough information so that wāhi tapu are not degraded or lost
- Significant sites for the iwi should be co-managed, or managed by the iwi
- Knowing the significant sites, using traditional place names and reviving historical knowledge is integral to the cultural heritage and identity of the iwi, and can also bring the landscape alive for other residents and visitors
- Access to significant sites is part of continuing cultural existence
- Orākei Kōrako is the birthplace of the iwi – it is imperative to preserve what remains, minimise further impact, and restore opportunities for iwi to use the site
- Marae are hubs for the iwi, places of learning, and sites for the retention of tikanga, kawa and reo
- Marae should be examples of environmentally friendly practice
- Options for papakāinga development and sustainable local employment support iwi members coming home and strengthen marae and other iwi structures



WHENUA – LAND AND LAND USE

Historical context: What we used to have

The customary lands of Ngāti Tahu-Ngāti Whaoa are represented by the rohe boundary. In the past, native vegetation would have covered a much larger area, with cultivations and papakāinga located strategically to take advantage of micro-climates and geothermal resources. Kai would have been sourced from these māra as well as from the native bush, wetlands and waterways.

The statements in the Deeds of Settlement outline the effects of land alienation on the iwi (see Part I).

The soils of the rohe are of volcanic origin. Bush sickness limited the expansion of livestock farming in the past, until 1935 when the cause was found to be cobalt deficiency. Large areas of forestry were established during the depression years on the Kāingaroa plains in the east of the rohe.

Settlement blocks around Reporoa were balloted to returned soldiers, and ballots continued under the Lands and Survey Department through to the 1970s. As farming established, erosion of the light pumice soils accelerated. A series of soil conservation schemes was put in place to remediate the gully in the area. Over time, \$15 million was spent on this work in the Upper Waikato catchment.

Existing state: What we have now

Current iwi land holdings represent 3% of the original Ngāti Tahu-Ngāti Whaoa blocks described by the Native Land Court (see Map 1). There is a mix of land uses in the rohe; land use as of 2008 is shown on the graph and map (Map on following pages, Map 11). In 2008 forestry covered 42% of the rohe, with pastoral land split fairly evenly between dairy (24%) and dry stock (19%). Less than 7% of the rohe is in indigenous forest. There has been an expansion of dairying with 1300 ha of exotic forestry cleared between 2006 and 2008; further conversion is currently underway.

The soils of the rohe are light and free-draining. Because of this, the soils tend not to hold water so slips on hills are not common, but gullyng is a concern. For this reason, much of the rohe is classed as having a severe risk of erosion (Map on following pages, Map 12). Soil conservation works such as fencing and planting have been established to protect gully heads and stream-banks.

The free-draining soils produce little overland flow except under heavy rainfall, so there is minimal direct run-off to waterways, but nutrients applied to the land can travel through the soil to reach groundwater and then move underground to reach surface waterways.

Iwi members have expressed concern about erosion, deforestation, use of sprays and stock in waterways. Dumping or burying of rubbish and car bodies is another issue affecting the land. Also of concern is the restricted access over private land to get to hunting blocks or to gather resources like watercress.

Soil conservation plantings in the past made extensive use of old varieties of exotic willow which have spread freely and become a pest plant in wetlands and small waterways. Iwi members are concerned there is still an over-reliance on exotic trees for erosion.

There are increasing levels of the toxic substance cadmium in pastoral soils across the region. This is a trace element in phosphate fertiliser that is present in the natural phosphate rock. The cadmium enters the soil as fertiliser is applied and is retained there, slowly accumulating. Over time, cadmium levels have been rising and this is a concern for the future (see Figure 2).

Figure 2: Cadmium accumulation in Waikato agricultural soils

Source: *The condition of rural water and soil in the Waikato region 2010*





Pressures: What impacts on this resource

The light soils of the rohe are prone to forming gullies and tomos in heavy rainfall. Land is most vulnerable where stock have access and there are no trees stabilising the soil.

The rapid and frequent raising and lowering of the river for hydro-generation contributes to bank erosion and limits the potential for stabilisation plantings along the river edge. It also causes periodic flooding of land beside the river, and pooling of stagnant water.

Potential future energy generation projects such as wind power could have landscape effects and disturb wāhi tapu, since many pā sites are on high points where the most reliable winds occur. The iwi would also have concern over any future proposal for nuclear development or disposal of toxic wastes on land in the rohe.

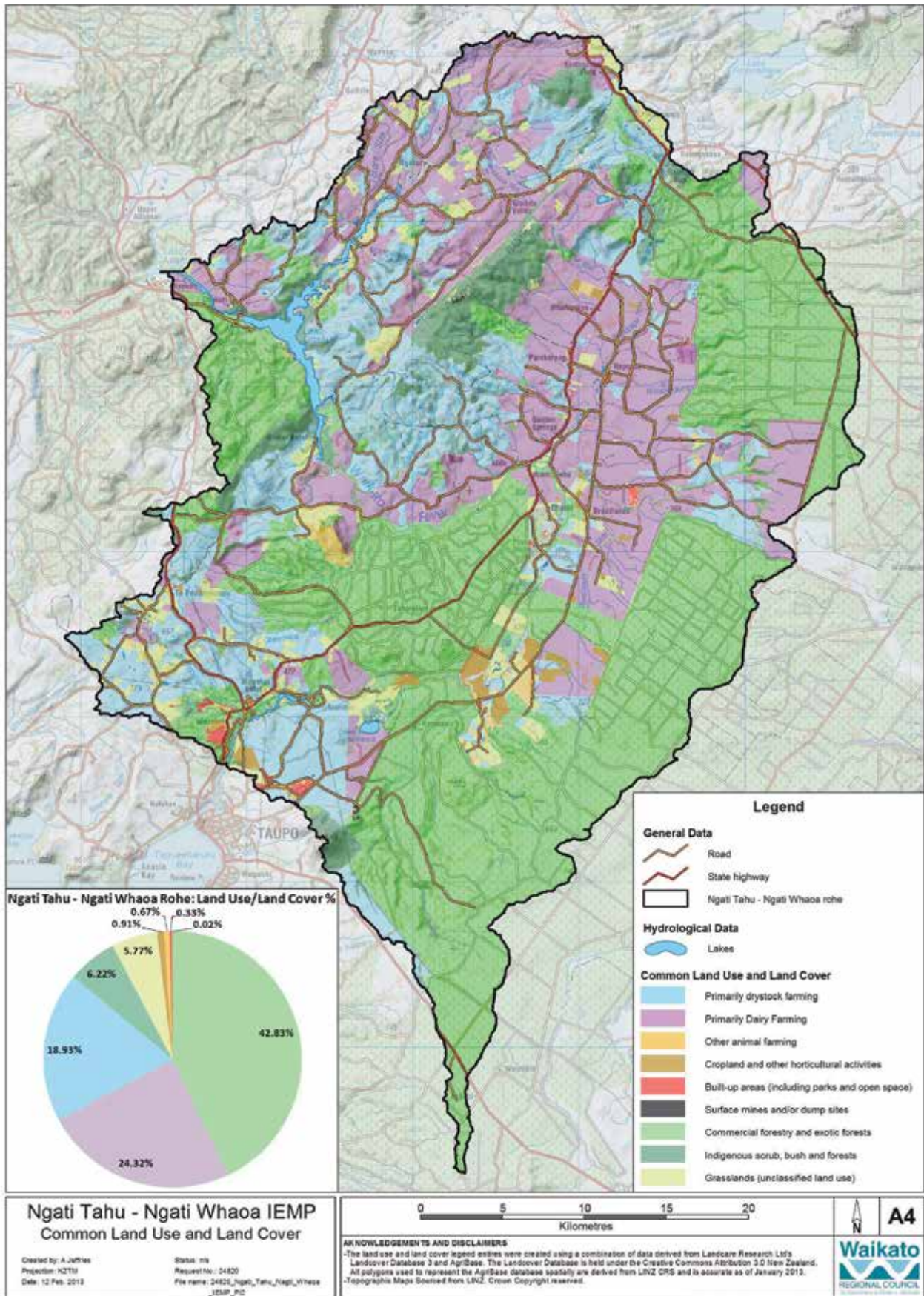
Mining and quarrying can have impacts if not managed carefully. Past sulphur mining has damaged areas around Rotokawa lake.

Toxic chemicals and hazardous substances applied to the land are a potential health risk. Cadmium accumulation is caused by the use of phosphate fertilisers. Different sources for the raw material contain varying amounts of cadmium, and formulations of phosphate fertiliser have different quantities of cadmium in them, e.g. reactive phosphate rock (RPR) has lower cadmium levels than superphosphate. Other current chemical use is mostly for weed management, although toxins are also employed for pest animal control. Currently there are no genetically modified organisms grown in the rohe.

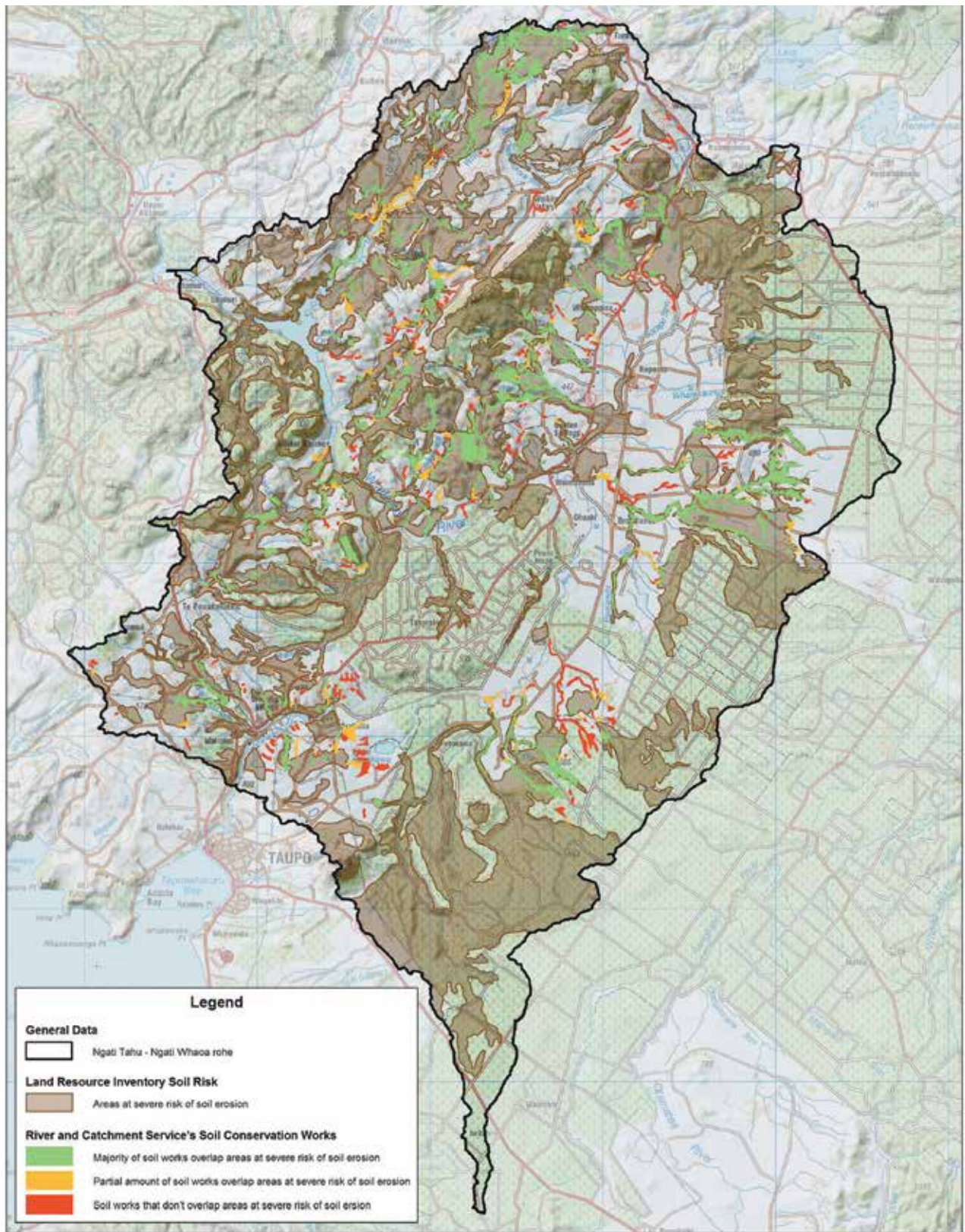
Conversion from pine to pasture results in soil compaction and therefore faster run-off. This may contribute to short-term flood peaks and localised flooding damage. Large-scale conversion to pasture also has effects on water quality and greenhouse gas emissions (see sections on Wai and Rangī).

Much of the land that is being returned to the iwi through settlements comes with conservation restrictions or liabilities for forest clearance under the Emissions Trading Scheme. The iwi opportunity to make use of land as papakāinga to house people coming back may also be restricted by planning rules.

Map 11: Land use within the Ngāti Tahu-Ngāti Whaoa rohe (as of 2008)



Map 12: Soil erosion classification and soil conservation works within the Ngāti Tahu-Ngāti Whaoa rohe



**Ngāti Tahu - Ngāti Whaoa IEMP
Areas at Severe Risk of Soil Erosion**

Created by: A Jeffries
Projection: NZTM
Date: 14 Feb. 2013

Status: r/s
Request No: 24820
File name: 24820_Ngati_Tahu_Ngati_Whaoa_IEMP_P12

ACKNOWLEDGEMENTS AND DISCLAIMERS

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Opportunities: How to preserve and restore the resource

There are opportunities for land Trusts to identify further areas of land they wish to protect, either because they have wāhi tapu or because they are unproductive or vulnerable to erosion. There are opportunities to retire less productive land and re-establish tree cover on it, and then concentrate farm inputs on the more productive land without losing profit.

Extending the area of native tree cover would provide more habitat for native species, and could also offer potential for honey production or future timber harvest.

There is an opportunity to establish a nursery to grow native species for planting buffer areas beside waterways or in retired areas.

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Nursery options investigated • Iwi blocks have farm environmental plans in place (future road map) • Iwi blocks managed using best practice • Waterways fenced • Farm rubbish and chemicals well managed • Rate of toxic chemical accumulation in the soil slowed (e.g. cadmium from fertilisers) 	<ul style="list-style-type: none"> • More land returned to iwi ownership • Land providing resources, income and wellbeing for the iwi and others, without environmental degradation • Zoning of land allowing for papakāinga development • All land, all waste and all hazardous chemicals in the rohe managed according to best practice; no accumulation of toxic chemicals in the soil • Nursery growing trees for replanting • Less land clearance, more areas in native vegetation • Improved access for iwi to kai resources and to significant sites/ wāhi tapu

MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Riparian, unproductive and eroding areas are being fenced and retired (WRC and Nga Whenua Rahui assisting) • Mix of land use – forestry, stock, native vegetation • Farm Trusts are expanding and improving production • Farms have some plans in place <ul style="list-style-type: none"> • Health and Safety plans • Product register for meat companies • Managers with chemical licenses • Dairy industry looking to create nutrient plans for all dairy farms in this catchment • Healthy Farms: Healthy Rivers project (Waikato Regional Council) offering farm plans to Upper Waikato farmers with sheep, beef and deer units • Hunters’ access track established at SW section of Paeroa Ranges 	<ul style="list-style-type: none"> • Work with the dairy industry to do nutrient management planning for iwi dairy blocks • Engage consultant to work with iwi dry stock farms on farm environmental planning and nutrient management and look into alternative crops or income streams <ul style="list-style-type: none"> • Use visual information for all farm plans • Support iwi farm blocks to implement plans • Advocate for other farms to also do environmental plans and implementation • Identify how/ where access can be improved and negotiate access with landowners • Work with district councils on land zoning for papakāinga development, avoiding development in natural hazard areas and wāhi tapu, effective waste reduction programmes and appropriate siting of renewable energy developments such as wind farms • Work with regional councils to reduce the rate of land clearance and minimise effects of mining and quarrying • Advocate for reducing cadmium in phosphate fertiliser • Advocate to keep the rohe free from the release of genetically modified organisms

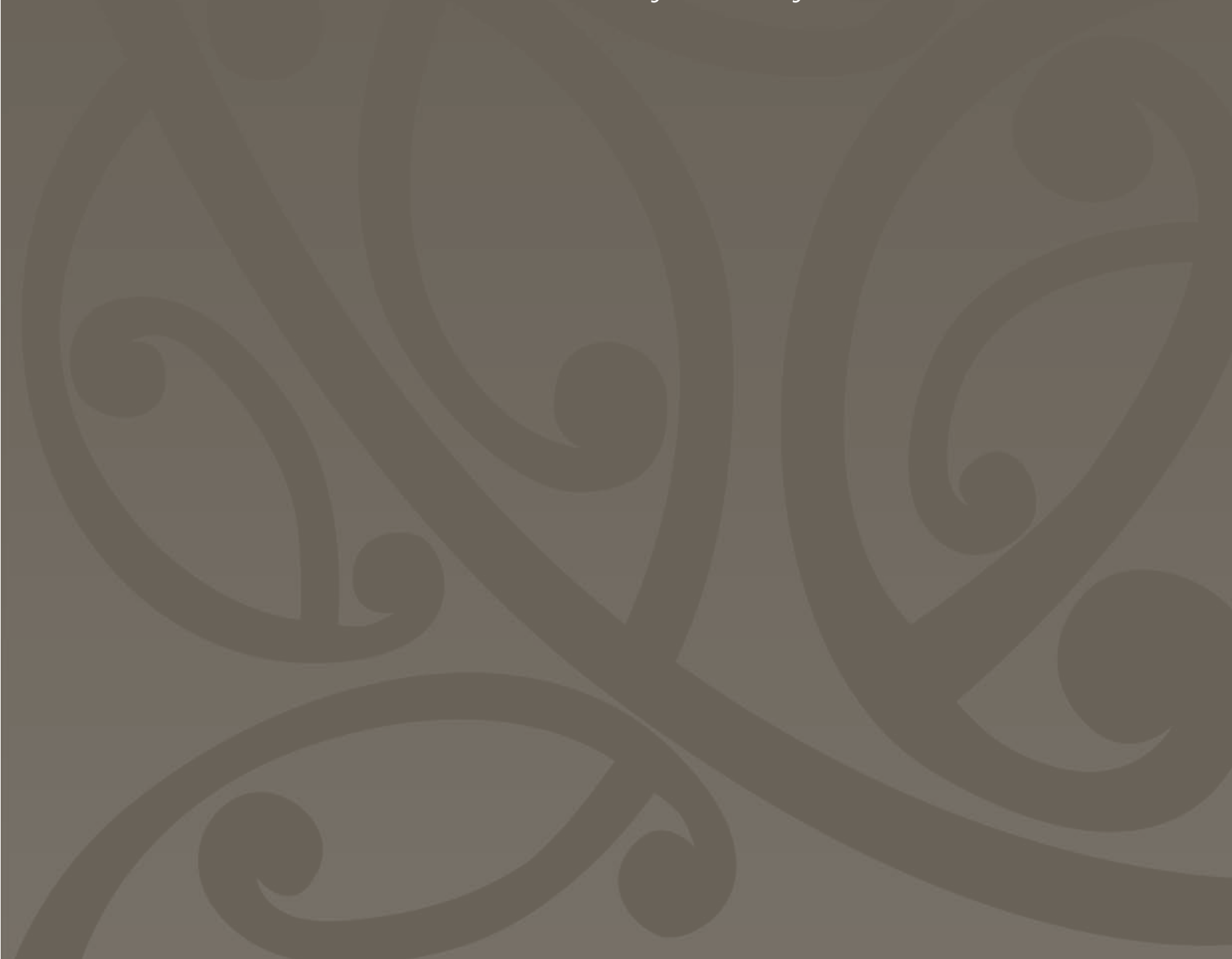
TŪRANGA WHAKAHAERE - PRINCIPLES FOR MANAGEMENT OF THIS RESOURCE

- The iwi has dual goals in production and kaitiakitanga – we want to be responsible stewards leading by example in good management, and produce benefits for the iwi
- We need to stay informed and understand the resource and changing context, keeping shareholders informed
- Take an intergenerational view of planting indigenous trees on the land – one generation plants, another harvests
- Tree cover is preferable on erosion-prone land and headwaters, to reduce sediment and flooding
- Tree cover also has benefits for the climate; this should be recognised through appropriate economic incentives for trees
- Building on land in natural hazard areas should be avoided where possible, rather than trying to mitigate or adapt later
- Siting of wind farms and other infrastructure should avoid wāhi tapu and significant sites to the iwi
- Irreversible effects to the soil should be avoided, including accumulation of toxic chemicals like cadmium
- Genetic engineering represents interference with whakapapa and an unacceptable risk; it should be avoided to preserve intrinsic values of life-forms and to protect New Zealand's competitive advantage in producing pure products
- Land to water linkages are important – keep headwaters of streams protected under native bush, all waterways fenced/ stock excluded
- We need to recognise the special areas on our properties: wetlands, native areas, geothermal features, wāhi tapu/ sites of significance – initiate the projects and get them off the ground, to enhance and give back to the land
- Good environmental management should be reflected in premium prices – iwi voices should be heard in industry bodies e.g. levy bodies, meat companies
- Land management should aim for productivity, sustainability, continuity – a viable proposition. This means:
 - Taking the long-term view
 - Sustainable, environmentally-friendly farming that does not degrade resources
 - Knowing/ understanding what we have – connections, risks, opportunities, productive potential
 - Being able to develop efficiently and effectively on an ongoing basis
 - Productivity not necessarily from more animals, but better quality, better lambing percentages, heavier animals – achieving top dollar for the product
 - Using nitrogen efficiently
 - Getting best use of each piece of land, focusing on better land for production
 - Relying on our own resources where possible



He waka eke noa

A canoe on which everyone may embark.





MAHI NGAHERE – FORESTRY

Historical context: What we used to have

In the past, the milling of native timber was an important local industry, providing whānau with employment. There are reports that at one point in time, the milling settlement at Tutukau was bigger than Taupō township. E.E. Vaile wrote in *Pioneering the Pumice* in 1939: "When I first went to Broadlands the totara forests were vast plains, and the great towering trees, many of them up to seven feet in diameter, stood so close together that they seemed to present an impenetrable wall. Gradually, fires made most serious incursions on these wonderful resources... Now streams of heavy lorries day by day and at all hours of the day and night convey the timber to Hawkes Bay and Rotorua, the Waikato, and Auckland."



The beginnings of the Kāingaroa forest were planted at Waiotapu in 1901 and large-scale pine planting began in 1913, with prisoners working as planters between 1900 and 1920. Planting of the pumice country continued through the 1920s and 1930s. Much of the total 189,000 ha Kāingaroa forest (the largest forest in the North Island) is now growing its third crop of trees. The Kāingaroa State Forest was owned as a state asset until the 1980s, when the government sought to sell the forests to private interests. Several iwi went to Court to prevent the sale of the land. It took twenty years to reach settlement of those claims and to see the lands returned to iwi owners. On 1 July 2009, the land passed to a group of iwi in partial settlement of their claims, however due to further cross-claims, there are ongoing negotiations over these Central North Island (CNI) forests.

Forestry came under the Emissions Trading Scheme on 1 January 2008. It was the first sector to enter, because of the importance of forestry to New Zealand's ability to meet its international obligations for greenhouse gas emissions. There was a rapid rate of deforestation leading up to this date. After January 2008, conversion to pasture slowed down substantially until the price of carbon dropped sharply in recent times. Conversion of forest to pasture is now underway again.

Existing state: What we have now

The negotiations over the Central North Island forests continue. The actual trees of the Kāingaroa forest are owned by a private company (Kāingaroa Timberlands Ltd), which holds a forestry licence over the land. There are also other companies in the rohe involved in forestry operations. Some forestry companies operate under Forest Stewardship Council (FSC) certification, a voluntary process for verifying responsible forest practices. To gain and maintain this certification, forest managers must prove their operations:

- **are environmentally sustainable**
- **enhance the social and economic well-being of workers and local communities**
- **identify and uphold indigenous people's legal and customary rights of ownership, use and management of land, territories and resources affected by management activities.**

There are many wāhi tapu in forest areas but they may not be known by forest companies or their contractors. Forest blocks also have biodiversity values.

Forests now have limitations on conversion to different land uses due to the Emissions Trading Scheme (ETS). Owners of forests planted pre-1990 face obligations under the scheme if they deforest. Owners of these forests can receive a one-off allocation of credits to help offset the decrease in land value and land-use flexibility. Old-growth indigenous forest that remains in forest is not subject to the rules of the ETS. New forests that are registered under the scheme to earn carbon credits will have to remain in forest cover or pay the emissions cost of conversion back to pasture.

Pine forestry as a land use creates less erosion and sediment run-off, and much less nitrogen leaching, than pasture. However, when forestry is harvested there is a surge in sediment loss that returns to base level over about two years as trees re-establish. Over the entire life cycle of a pine forest, research shows that forestry produces 1.5 to 5 times less sediment loss to waterways than pasture.

Recreational hunting and fishing in forest blocks requires a permit, and access is closed during high risk fire periods. Iwi members are concerned about access to areas of native forest and planted forest, and also maintaining access once forests are converted to pasture (for example to waterways to collect kai). Iwi members were also interested in being involved in patrolling forest areas.

Other concerns for iwi members are around the impacts of forest harvest on run-off and erosion, management of wāhi tapu, and whether there is sufficient area of native forest. There is also a desire for forestry to provide local employment.

Pressures: What impacts on this resource

The price of carbon is currently low, meaning deforestation incurs a lower cost under the ETS. Under this scenario the comparative profitability of other land uses makes pine-to-pasture conversion attractive.

The amount of actual sediment loss during pine harvest is dependent on weather conditions at and shortly after harvest, and the techniques used. Important practices include siting tracks and earthworks away from waterways and on stable ground, hauling trees up the slope rather than pushing them downwards, and leaving riparian strips of undisturbed vegetation next to waterways and wetlands.

Indigenous habitat within pine forests, including geothermal areas and wetlands is affected by animal pests, wilding pine incursion and earthworks and harvest impact. Significant sites and wāhi tapu may also be disturbed by earthworks and harvest activity.

Opportunities: How to preserve and restore the resource

The CNI negotiations represent an opportunity for return of forest assets to Ngāti Tahu-Ngāti Whaoa.

There are opportunities to work with forestry companies to achieve best management practices, especially where those companies hold FSC certification. These could include leaving unplanted riparian buffers by waterways, low-impact harvest practices, siting

of earthworks, and protocols around wāhi tapu identification, mapping, and management, including procedures for accidental discovery. Wāhi tapu sites could be cleaned up carefully and planted with a marker species that would signal to workers on the ground that these areas should not be disturbed.

The iwi could also work with the forest managers on identifying employment and training opportunities and on access and patrolling opportunities for iwi members.

More areas of native forestry could be included on iwi blocks. If these are intended for future harvest of logs, the plantings should be registered with the local district council as a planted forest for timber purposes, to reduce the risk that planning regulations will prevent them from being harvested in future. If carbon prices increase over time, carbon farming could provide an alternative income from native forests (where ETS credits are earned for the carbon that the trees capture from the air).

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Interests in Central North Island forests recognised • Improved access to forest blocks to kai sources and to significant sites • All forestry operators using best practice for tracking, planting and harvesting operations • MOU in place with all major forest operators in the rohe, wāhi tapu identified and recognised by those companies 	<ul style="list-style-type: none"> • Iwi managing, gaining employment and benefit from forest assets • Larger areas of native forest cover established • Wāhi tapu in forest areas marked and managed sensitively by forestry companies and their contractors, with full involvement of the iwi

MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Iwi engaged in negotiations for Central North Island forests • Currently formulating protocols with a large local forest manager (Hancock Forest Management) for the management of wāhi tapu • Extensive native tree plantings to expand areas of native forest (e.g. Ngā Awa Pūrua and Te Toke restoration projects) 	<ul style="list-style-type: none"> • Establish protocols with other forest managers • Ensure wāhi tapu are registered both on iwi system and on systems used by forestry companies and their contractors • Initiate, in partnership with forest managers, projects to identify, mark/ fence, clean up and restore wāhi tapu in forests • Negotiate access for iwi to mahinga kai and significant sites within forest blocks • Investigate options for iwi involvement in monitoring of forest blocks and their management • Investigate options for carbon farming

TŪRANGA WHAKAHAERE - PRINCIPLES FOR MANAGEMENT OF THIS RESOURCE
<ul style="list-style-type: none"> • Access is important for iwi to reach kai sources and for hunting • Wāhi tapu should be set aside with no commercial forestry planting or harvesting of these areas • Shared information and understanding between parties is critical to enhance management of cultural sites in forests • Best management practice should ensure the impacts of forestry tracking and harvest are minimised, to get the environmental gains of forestry as a lower-impact land use than pasture. Light pumice soils are prone to gullyng, so soil conservation measures and tracking and harvesting plans should be prepared, implemented and monitored • Iwi should be consulted for major consented works in forestry areas that may disturb sites e.g. earthworks and tracking • Forest areas can be habitat for native species and should be managed for biodiversity as well as economic purposes • Iwi want to participate in economic development opportunities from forests returned under settlements • Forests can and should be managed to provide environmental, cultural, economic and social outcomes, which are recognised under forest stewardship schemes – iwi involvement should be a central basis to gain and maintain this certification.

Case study: Hancock Forest Management / Ngāti Tahu – Ngāti Whaoa

Hancock Forest Management NZ Ltd manages Kinleith Forest in the Central North Island, part of which falls within the rohe of Ngāti Tahu-Ngāti Whaoa. Hancock Forest Management staff have worked with representatives of Ngāti Tahu-Ngāti Whaoa over many years, particularly in relation to the identification and protection of historic sites.

Management of historic sites is part of the routine operations of a forestry company, to ensure sites are protected as far as possible during harvesting, and managed appropriately after harvest. The involvement of Ngāti Tahu-Ngāti Whaoa Rūnanga Trust has been a very constructive process, establishing a collaborative working relationship with the Trust who have a direct connection to the people who historically inhabited the sites. At a practical level it has helped us as land managers to ensure that sites of value are well protected and managed in accordance with iwi wishes, by establishing good processes and protocols for managing sites through harvest, and guidance on the ongoing management of sites. Input of Ngāti Tahu-Ngāti Whaoa representatives also helps our staff to develop a broader understanding of the context and values of the sites, beyond just the physical features and archaeologists' site records. This is invaluable in educating staff and contractors of the importance of treating historic sites and wāhi tapu with respect and encouraging proactive reporting of any new unrecorded features that are found during operations.

Sally Strang

Environmental Manager

Hancock Forest Management (NZ) Ltd



Old urupā sites protected from disturbance during pine harvest

RANGI – AIR AND ATMOSPHERE

Historical context: What we used to have

Air has always been clean in the rohe, although geothermal activity would have created localised natural discharges in the past.

Existing state: What we have now

Air quality in the rohe is still presumed to be high although it is not monitored. Air quality monitoring is in place in nearby cities (Rotorua, Taupō, Tokoroa), all of which have air quality issues at times in winter. However this is not considered a risk to the air quality within the rohe. There are consents to discharge to air associated with industrial sites in the rohe such as the geothermal power stations and agricultural and timber processing.

Climate change is of concern globally, with rising levels of carbon dioxide in the atmosphere and the risk of more severe and destabilised weather patterns.

Pressures: What impacts on this resource

Air quality may be impacted by industrial discharges and by residential burning for domestic heating. The low density of both of these in the rohe means there is little current pressure on air quality.

Natural geothermal activity can release poisonous gases such as hydrogen sulphide.

Human-induced climate change is driven by accumulation of gases that create a warming effect in the atmosphere. These include carbon dioxide, nitrous oxide and methane. Carbon dioxide is released from burning fossil fuels and deforestation. Nitrous oxide is released by soil processes and affected by nitrogen fertiliser and effluent practices. Methane is produced by ruminant animals and from landfills, and also from natural wetland reactions.

Opportunities: How to preserve and restore the resource

While New Zealand is a small emitter of greenhouse gases, iwi land managers can consider strategies to reduce local emissions of these gases. This might include retaining forested areas and expanding plantings, and exploring bio-fuel tree crops (which are considered carbon neutral as they trap carbon while growing and then release it when they are burnt for fuel). The iwi can advocate for an Emissions Trading Scheme that rewards forest owners.

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Local reduction in emissions • Effective advocacy for equitable climate change policy • Clean air retained in the rohe 	<ul style="list-style-type: none"> • Climate stable for future generations – CO₂ below 350 ppm • Clean air supporting health of iwi members
MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Bio-fuels are being researched and trialled locally (e.g. in Taupō) • Discharges to air in the rohe are controlled by consents • The Emissions Trading Scheme deters deforestation, except when the price of carbon is low 	<ul style="list-style-type: none"> • Advocate for effective emissions control measures that reward forest owners • Investigate bio-fuels, especially from trees as alternative crops because trees have low environmental impact in terms of discharge to water, protection of land and emissions • Monitor opportunities for carbon farming as an income stream and take these opportunities if they become viable
TŪRANGA WHAKAHAERE - PRINCIPLES FOR MANAGEMENT OF THIS RESOURCE	
<ul style="list-style-type: none"> • Climate change must be taken seriously as it will cause an increase in climate extremes (drought and storm intensity) • Emissions control measures should reward, rather than penalise forest owners, as forest cover has multiple benefits for land, water, air and biodiversity • Bio-fuels show promise as a carbon neutral land use that can reduce emissions from fossil fuels • Clean air is basic for human health; the current clean air in the rohe should be protected 	



Aratiatia Rapids 25025; Hocken Collections, Uare Taoka o Hākena, University of Otago. Copy negative No. c/nE6143/26.

WAI – LAKES, RIVERS, STREAMS, WETLANDS AND AQUATIC LIFE

Historical context: What we used to have

The Waikato River has always been a taonga to the iwi, its pristine water a source of physical and spiritual well-being. The river and its tributaries traditionally provided important kai resources such as tuna, kōura, and kākahi (freshwater mussels). Historically, the Maungatautari Falls (now submerged under Lake Ōtiamuri) created a major natural barrier to fish movement up the Waikato River. However, there are accounts of fish species such as pīharau (lamprey), kōaro and inanga making their way to the upper river before the hydro-dams were built, and tuna were found up as far as Huka Falls. By 1939, when E.E. Vaile wrote *Pioneering the Pumice*, the native fish were already scarce: "It is said that the native kōkopu and inanga used to abound, but they have disappeared. Doubtless they have been reincarnated as trout." Iwi members recall tuna being more abundant previously, and also remember introduced kai such as trout and watercress being easier to find in the past, in local streams like Mangahōanga.

The construction of the hydro-dams caused massive changes to the river (see Part I of this plan, *Modifications to the Waikato River*). Over time, exotic species of fish and water plants have also changed natural aquatic ecosystems significantly.

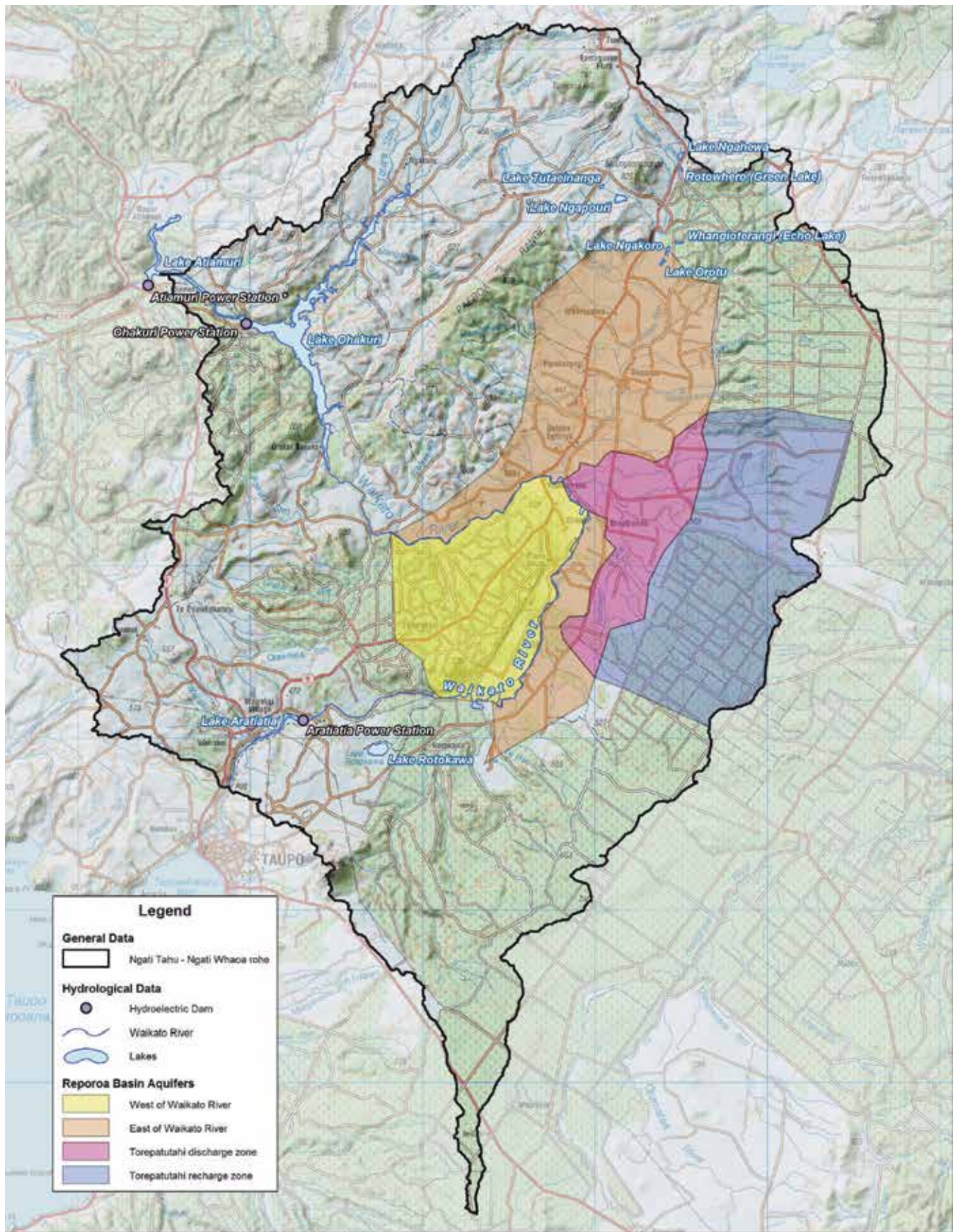
In the past, repo (wetlands) were found all along the Waikato River from Reporoa to Te Toke. The name 'Reporoa' gives an indication of the prominence of wetlands in the landscape. There was a flax mill in Reporoa in former days, producing rope.

The rich wetland habitats supported ducks and other waterbirds, and native fish like kōkopu and tuna, all of which were important food sources for the iwi. Other cultural resources were also obtained from local wetlands including flax, raupō and a black paru (mud) used for dyeing. Wetlands in an undisturbed state played a key role in the landscape as filters and purifiers – the 'kidneys' of Papatūānuku. Wetlands also regulated flood peaks and summer dry flows.

Existing state: What we have now

The following information covers the existing condition of different water resources: rivers and streams, wetlands and lakes, and groundwater. Map 13 shows some water resources of the rohe. Principal tributaries to the Waikato River within the iwi rohe are the Awapiripiri, Kahuki, Kirihineki, Kōpaki, Makawe, Mangahōanga, Mangatoetoe, Orakonui, Paetarataramoa, Parikāwau, Parariki, Pātiki, Peikikaikōura, Pouaru, Taratahi, Te Kōkōwai, Te Wai o Kereua, Waiehu, Waiotapu, Wairākei, Waitakahi, Whakapanake, Whangairorohea, and Wharekahakaha.

Map 13: Water resources within the Ngāti Tahu-Ngāti Whaoa rohe



Legend

General Data

- Ngāti Tahu - Ngāti Whaoa rohe

Hydrological Data

- Hydroelectric Dam
- Waikato River
- Lakes

Reporoa Basin Aquifers

- West of Waikato River
- East of Waikato River
- Torepatutahi discharge zone
- Torepatutahi recharge zone

Ngāti Tahu - Ngāti Whaoa IEMP Hydrology

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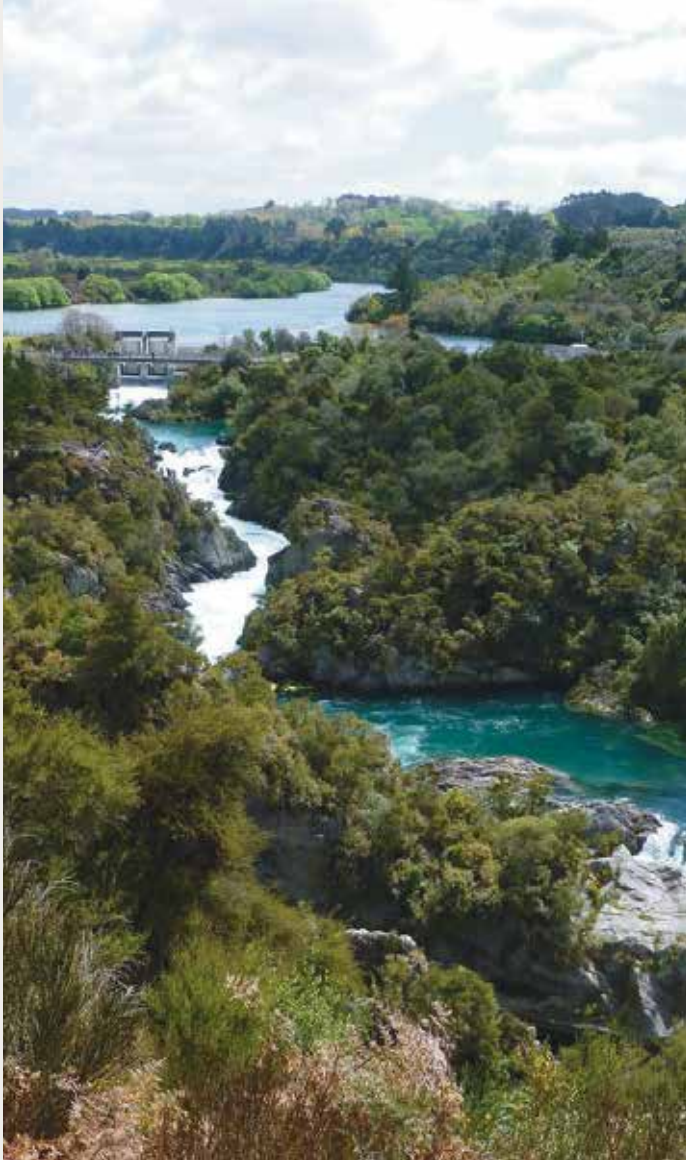
ACKNOWLEDGEMENTS AND DISCLAIMERS

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- Aquifers derived from Variation 6 of the WRP.
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* Atamuri Power Station has been added to this map despite it being outside of the rohe because of its significant influence on Lake Atamuri.

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Waikato
 REGIONAL COUNCIL
Te Kaitiaki Take Kōwhiri o Te Waikato



Rivers and streams

Native and exotic aquatic life

Iwi members report a decline in kai availability from local waterways. Tuna, kōura and kākahi are now more difficult to find in the river, and trout are less common in the tributaries. Watercress is still present in patches, but people are concerned over how safe it is to eat. The recent study carried out by the iwi and partners, however, found that all of the watercress sampled from local sites was safe for human consumption.

Native fish species found in the rohe include kōaro, pōrohe (smelt), common bullies, and tuna (although tuna are dependent on catch and release programmes to move past the Karāpiro dam). Lamprey (pīharau) are no longer found in the main Waikato River, but still exist in the Waipā). In recent years throughout New Zealand there has been a reduction in the size and abundance of both long-fin and short-fin tuna, with long-fin now listed as a threatened species. The abundance of commercial-sized eels has generally declined in the past two decades, along with the proportion of long-fin eels. Across New Zealand, the runs of young glass eels are estimated to be less than 25% of those recorded in the 1970s. About 25 million elvers (juvenile tuna) have been caught at Karāpiro dam and transferred upstream since 1994-95. After young elvers migrating upstream are transferred over the dam at Karāpiro, they can grow very fast in the hydro-lakes (e.g. some eels reach legal size of 0.22-4 kg in 2-3 years compared with 20-25 years in the South Island).

Of the exotic fish present in the rohe, goldfish, catfish and trout were introduced in the 1800s, gambausia were probably brought in the 1930s, while rudd and guppies arrived in the 1970s. Trout, catfish and goldfish are introduced species in the Aratiatia, Ohakurī and Ātiamuri hydrolakes, coming down-river from Lake Taupō. Rudd is known in Ātiamuri, but not the two upper hydrolakes. Guppies released from fish tanks have been found in the geothermally-heated Waiotapu and Waihunuhunu Streams, which flow into Lake Ohakurī. Gambausia extend up the river. So far there are no koi carp in the upper river. This bottom-feeding species has invaded the lower Waikato, reaching large sizes and degrading water quality by disturbing bed sediments.

There are also introduced water weeds in the hydro-lakes such as hornwort and oxygen weeds. Invasive aquatic plants can out-compete native plants and may block pumps and water intakes.

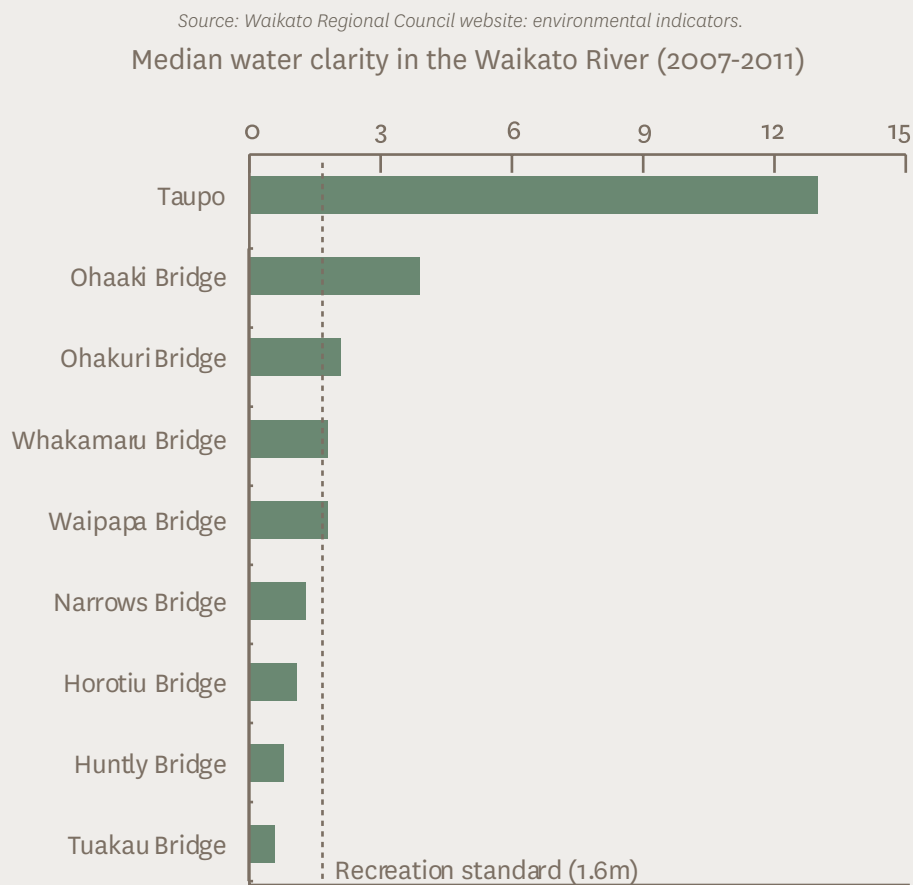
River level fluctuations

Riverside areas are still affected by flooding and stagnant ponding as the river level is raised and lowered for hydro-generation purposes. There are ongoing concerns about flooding of urupā along the river and erosion of the banks, and the threat to Ohaki marae. The current consent held by Mighty River Power (MRP) was issued in 2006 for a period of 35 years. It specifies minimum and maximum levels and normal operating ranges (see Appendix 1), and also requires that the Aratiatia spillway gates be opened several times a day to replenish the Aratiatia Rapids for tourist viewing purposes. A peer review panel must report to the Waikato Regional Council annually as part of the MRP consent. Its scope includes ecological effects and the effects that operation of the Waikato Hydro System is having on customary Māori interests, both ecological and cultural, in the Waikato catchment.

Water quality in the Waikato River

Current water clarity throughout the upper river is considered high by regional environmental standards, as the water leaves Lake Taupō in very good condition (see Figure 3). Water clarity declines, however, as the water travels down through the various hydro-dams (see graph). Before the dams were built, it took six days for a drop of water from Lake Taupō to reach the sea. Now it takes a month. The increased time that water is held back by the dams allows the growth of free-floating algal cells (called phytoplankton). Phytoplankton changes the colour and appearance of the water, making it greener and murkier. There are low algal cell counts in the water leaving Lake Taupō, and the short residence time of water behind the Aratiatia dam does not promote algal growth. However in Ohakuri, the largest hydro-lake, water has a residence time of 9 days, creating the opportunity for algae to grow. Here water clarity shows a decline, getting progressively worse as the river flows downstream.

Figure 3: Water clarity in the Waikato River

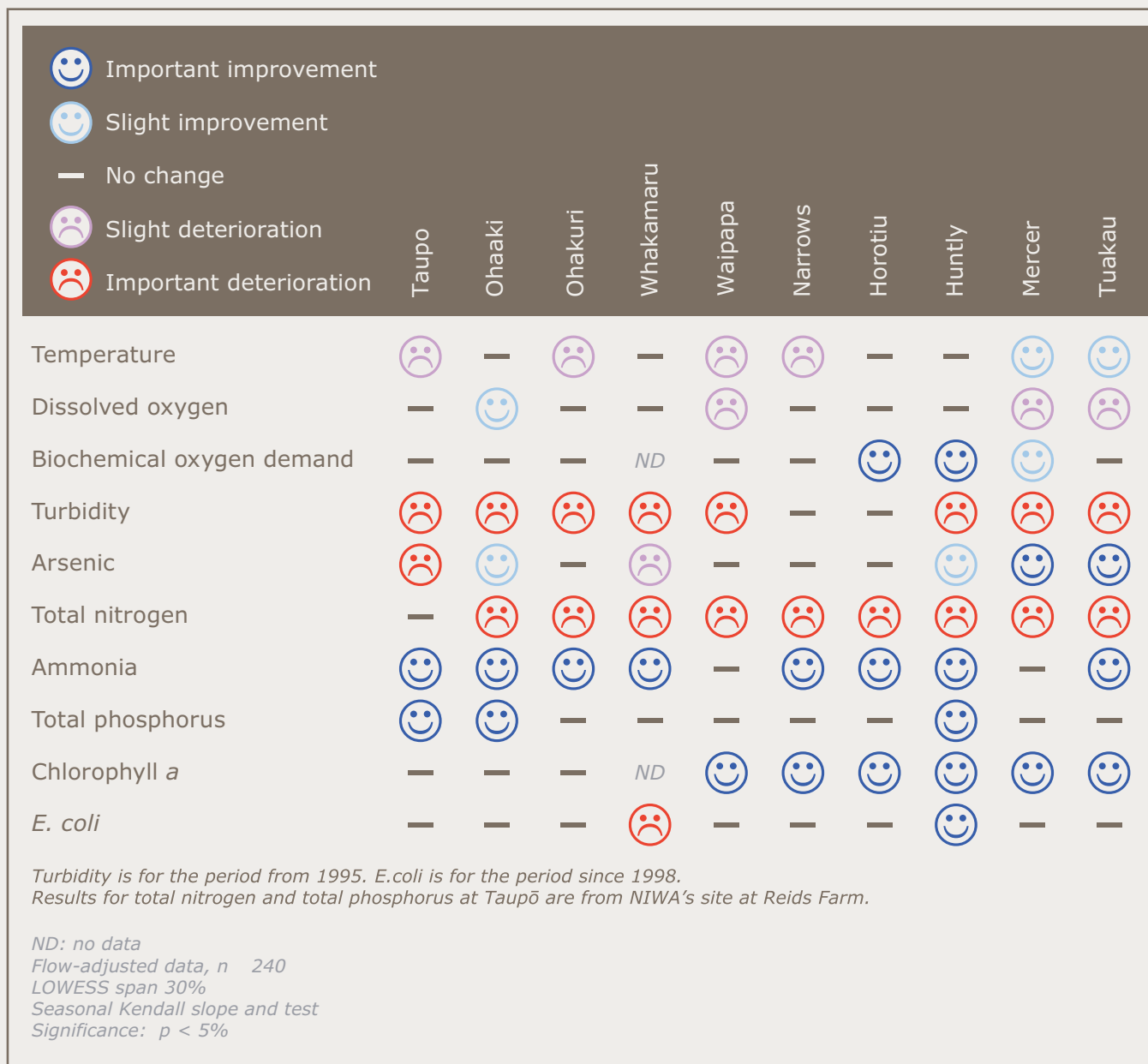


Most algae present in waterways are harmless, but blue-green algae in large numbers ('blooms') may produce toxins. There are occasional toxic blooms in the Whirinaki Arm of Lake Ohakuri. This arm has low flow and limited exchange with the main lake, meaning water stays in the Whirinaki Arm for several weeks. Warm temperatures and elevated nutrient levels here also support algal growth. In most years, algal blooms are confined to these still backwaters, but in 2003 during dry, hot conditions there was a bloom across the upper hydro-lakes of a new invasive species called *Anabaena planktonica*. Subsequent years with similar weather conditions did not result in blooms. Possible reasons for this were the reduced dominance of this species, the arrival of a new zooplankton that grazed the bloom-forming species, and reduced nutrient levels in the river water because of a lack of rainfall throughout the catchment (meaning a higher proportion of clean water in the river coming from Lake Taupō). There has been little change in the past 3-4 decades in total density of phytoplankton through the entire river. There is some suggestion of a higher percentage of blue-green algae in recent years; however, there is not enough evidence to say definitively that blue-green algae are on the increase. MRP consents require regular monitoring of algal blooms (see Appendix 1). Over recent years the monitoring samples have been taken from the tailraces of the dams, rather than the shoreline, and this will tend to show lower algal counts.

Because there is a lag of 10-150 years as groundwater moves through the ground to reach the river, the effects on the river from recent intensification and land conversion remain to be seen. Even so, trends show a rise in turbidity and nitrogen in the upper river (see Figure 4).

Figure 4: Trends in water quality at Waikato River sampling sites 1993-2012

Source: Waikato Regional Council website: environmental indicators.



One of the indicators currently exceeding health standards is the level of arsenic in the river (see Figure 5). The width of the worm-like band in the picture represents the arsenic level. Arsenic is a heavy metal that is toxic to humans. For water to be safe to drink, it should contain less than 0.01 grams of arsenic per cubic metre. Since the Wairākei Power Station was built in the late 1950s, the amount of arsenic in the Waikato River has more than doubled. Arsenic levels throughout the river now exceed drinking water standards. Lake Ohakuri has the highest concentration of arsenic in sediment of all the hydro-lakes, exceeding guidelines to protect ecological health by eight times. Watercress accumulates arsenic and it is not recommended to harvest watercress from the main river along Lake Ohakuri. Another substance associated with geothermal activity is mercury. Fish in the hydro-lakes, including trout and tuna, show elevated mercury levels and only occasional harvest would be recommended.

Figure 5: Arsenic concentrations in the Waikato River (g/m^3)

Source: Waikato Regional Council website: environmental indicators.

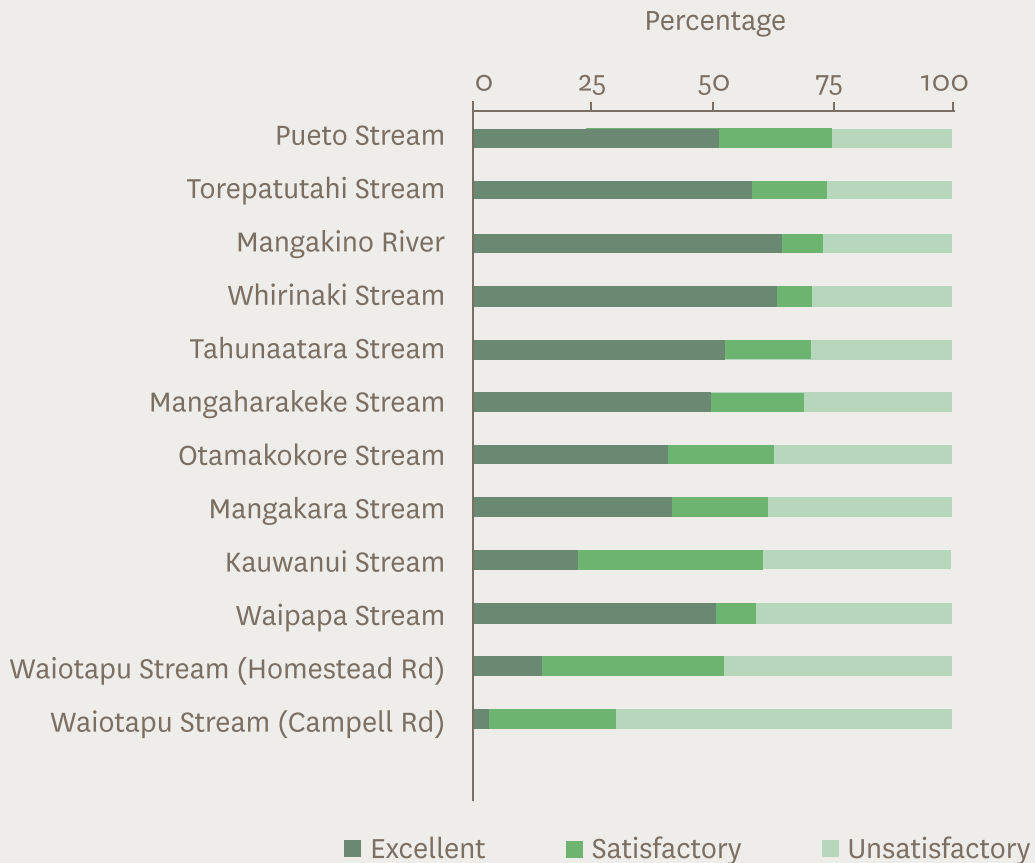


Water quality in tributary streams

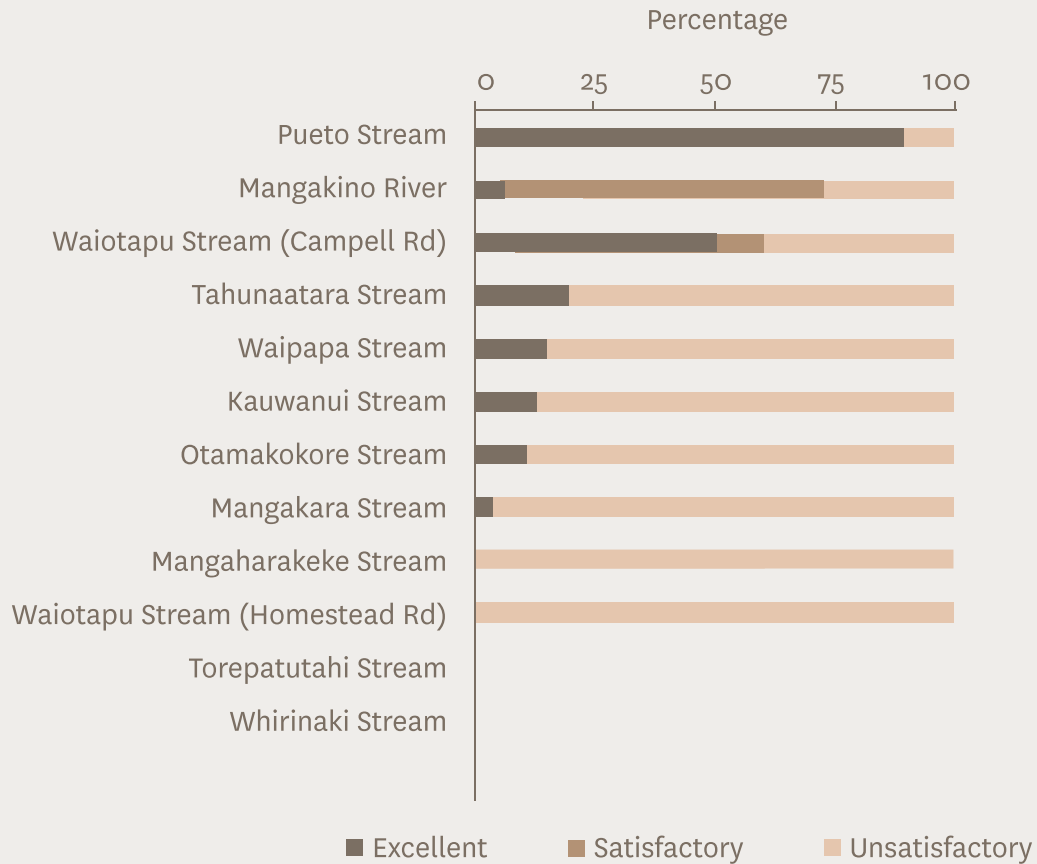
The tributaries to the Waikato River are monitored at 12 sites in the Upper Waikato, including 9 sites within the Ngāti Tahu-Ngāti Whaoa rohe (see map in Appendix 1 for site locations). Water quality is assessed for its suitability for ecological health, and for contact recreation. The graphs in Figure 6 summarise the results for the Upper Waikato sites. Note that the monitoring sites on the Mangaharakeke and Tahunaātara streams and the Mangakino River are outside the boundaries of the rohe.

Figure 6: Water quality results relating to ecological suitability (current page) and contact recreation (following page) for Upper Waikato monitoring sites

Source: Waikato Regional Council website: environmental indicators.



Source: Waikato Regional Council website: environmental indicators.



In general, the monitored streams are satisfactory for ecological health half to three-quarters of the time. The reasons for unsatisfactory results are mostly excessive nutrients, and less often turbidity (murkiness) and high temperature, which may be due to geothermal activity in some cases (e.g. Waiotapu stream). Apart from the Pūeto stream and upper Waiotapu, the monitored streams are generally unsatisfactory for contact recreation. Clarity and faecal microbe indicators can both give unsatisfactory results. Clarity is often unsatisfactory in water samples within the rohe from Waiotapu, Ōtamakokore, Mangakara, and Kauwānui. These sites are all also unsatisfactory for faecal microbes, except Waiotapu at Campbell Rd. Streams at Torepatutahi and Whirinaki are not tested for recreational water quality factors. Regional ecological monitoring of streams (sampling the stream life) shows that 50% of sites sampled in the Upper Waikato are 'excellent' or 'good' and another 25% rate as 'fair' habitats.

Wetlands

Wetlands have been drained for farming and this has greatly reduced the extent of remaining wetlands. The bog around Reporoa is indicative of the basin formation that would naturally support wetlands, but extensive drainage for farming has caused a dramatic decline in wetlands. Around 92% of the pre-European wetland area in the Waikato River catchment has been lost. As wetlands are lost, the cultural use of wetland resources also diminishes. Iwi members noted that the knowledge of where to find natural dyes from wetland plants, and how to use them, is no longer widely held.

Wetland areas remain around lakes Ngāhewa and Ohakurī, on Waikato River bends near Ohaki (Hardcastle lagoon and Rāwhiti wetlands), and within some forestry areas (e.g. at Te Toke). Important wetlands associated with geothermal areas are at Waiotapu, Maungakākaramea, Orākei Kōrako, Te Kōpia and Waikite. There are riparian wetlands along the Rangitāiki River in the south of the rohe, and at Reporoa the Torepatutahi stream has riparian wetlands that are rated by the Rotorua District Council as locally significant. There is a constructed wetland at Ohaki to allow manipulation of the water management regime, including full drainage when required. The area is managed by Fish and Game to encourage water fowl for hunting.

Lakes

Natural lakes in the rohe include:

- **Ngāhewa**
- **Whangioterangi**
- **Tutaeinanga**
- **Ngākoro**
- **Ngāpōuri/ Opōuri**
- **Orotu**
- **Rotowhero**
- **Rotokawa**

Hydro-lakes in the rohe are formed by the dams on the Waikato River at Aratiatia, Ohakurī and Ātiāmuri.

Te Arawa Lakes Trust owns the beds of lakes Ngāhewa, Tutaeinanga, and Ngāpōuri, under the Te Arawa Lakes Settlement Act 2006. Fisheries regulations developed by Te Arawa Lakes Trust apply to these lakes.

The lakes listed above fall within the region of Waikato Regional Council. Table 1 shows information from the ranking of lakes in the Waikato Region rated as part of the regional assessment of Significant Natural Areas. This ranking should be treated with a degree of caution, as there is incomplete information on all of the lakes.

Table 1. Regional ranking of lakes in the Ngāti Tahu-Ngāti Whāoa rohe as Significant Natural Areas

LAKE	RANKING AMONGST ALL LAKES IN WAIKATO REGION
Ngākoro	6th equal
Whangioterangi	13th
Orotu	14th
Ngāhewa	19th equal
Rotowhero	21st
Rotokawa	24th equal
Opōuri	27th
Ohakurī	31st equal
Tutaeinanga	65th

The top-ranked three lakes in the rohe are part of the internationally significant geothermal wetland complex at Waiotapu. As the water is geothermal, they do not support the same freshwater life as other lakes, but they are valued as a rare ecosystem.

Ngākoro ranks highly because of this, having a rare terrestrial ecosystem type on its margins (scrub or shrubland on heated ground). Its natural connectivity is intact. It has a good proportion of native vegetation in the catchment (36%), with some pine present but a wide buffer around the wetland. It covers 12 ha and is 20 m deep.

Nearby Orotu has 30% native vegetation in its catchment and its margins are home to the largest known population in the region of the naturally rare geothermal fern *Cyclosorus interruptus*. It is smaller than Ngākoro and has nutrient inputs from the farmland to the south. It is a Wildlife Management Reserve/ Scenic Reserve.

Whangioterangi has less indigenous vegetation in the catchment (6%) and a relatively narrow riparian buffer. It is 5 ha in size and 25 m deep.

Rotowhero is a small (2.6 ha) geothermal lake with 7% indigenous vegetation in its catchment and a small but intact riparian buffer. It supports geothermal vegetation on its margins. It is fed by acid sulphate chloride springs. Algae are the only plants recorded from this lake and the acid conditions are not conducive to fish life. It is a scenic reserve, managed by DOC.

To the south, Rotokawa is a more extensive geothermal lake. It is home to a unique leech which can survive in the very acidic water (pH2). This is the only site in NZ where this species is recorded, but it is not known if this leech is in fact native or was introduced. The lake is large (62 ha) but has low diversity of native vegetation around it, and only 8% native vegetation in its catchment. Most of the catchment is farmed, but there is no stock access to the lake. Rotokawa is part Māori-owned and part managed by DOC.

The geothermal lakes are naturally acidic and unlikely to have ever supported a diversity of fish life. However, they provide habitat for native waterbirds and wetland birds like mātātā (fernbird), pūeto (spotless crane), kawau tūi (little shag), kawau tuawhenua (black shag) and weweia (dabchick).



Rotokawa



Ngāhewa

Sulphur mining between the 1960s-1980s damaged Rotokawa's natural features. The mining operation stripped large areas of hot ground, destroying natural contours and geothermal vegetation. The vegetation is now regenerating on the hot ground.

Outside of these geothermal areas are three freshwater lakes: Ngāhewa, Ngāpōuri/ Opōuri, and Tutaeinanga.

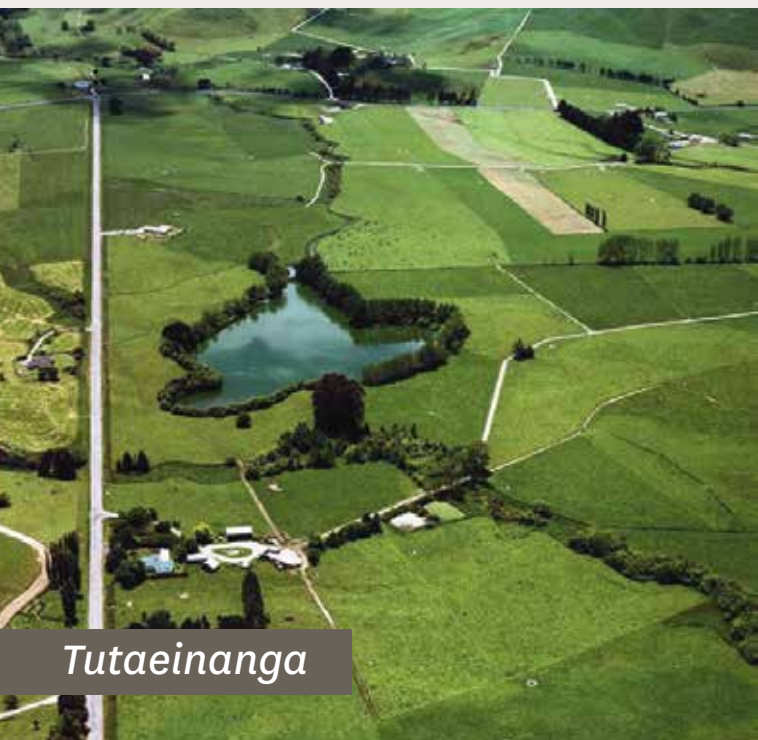
Lying to the north of the Waiotapu thermal area is Ngāhewa. It is shallow (5.5 m) and 8.4 ha in area, with associated wetlands 40 ha in area. It has 5% native vegetation in its 746 ha catchment, which is otherwise used for dry-stock farming and forestry. The lake is well buffered with no stock access, water levels are maintained and there are connections to nearby lakes and wetlands. Its water quality has declined and is now considered poor due to sediment and nutrient inputs. In 1973 it was free of exotic plants, but by 1989 exotic plants dominated. Aquatic vegetation collapsed in 2000, leaving it essentially devegetated. It has shown some improvement since and some native plants exist, but exotic plant species still dominate. Native fish populations



Ngāpōuri/ Opōuri

are naturally low due to downstream dams and geothermal activity. Species present include common bullies and kōura. Rainbow trout are released into the lake annually. Birds present include mātātā (fernbird), weweia (dabchick) and pūeto (spotless crane). The lake lies within a recreational reserve. Mistletoe plants (*Ileostylus micranthus*) occur in the reserve, and protective bands have been placed on host trees to prevent possum browsing. DOC has done willow control and restoration plantings in the wetland, which extends into Bay of Plenty Region. Some re-fencing is occurring assisted by funds from WRC, realigning fences to match the legal boundary.

Opōuri/ Ngāpōuri formed in a volcanic explosion crater 25 m deep, covering 26 ha. There is in-flow to the lake from Tutaeinanga, while out-flow is to the Opōuri stream which feeds the Waiotapu. It has less than 2% of its catchment in native cover, with a partial riparian buffer and no stock access to the lake. It has poor water quality and high sediment inputs. Fish kills in the lake have been attributed to deoxygenation. The lake vegetation is considered unstable, and may also be subject to root death during times of low oxygenation in the water. There are still some indigenous aquatic plant communities but these are vulnerable to further deterioration. The lake is in a Crown land reserve administered by Fish and Game. It has boat access, and rainbow trout are released into the lake annually.



Tutaeinanga

Tutaeinanga is smaller (3 ha) and shallower (11 m) than Opōuri. The lake margin is a 2.4 ha Wildlife Management Reserve administered by Fish and Game. The lake is a moulting site for pūtangitangi (paradise ducks). Although stock are excluded from the lake, the fences do not follow the legal boundary and much of the reserve is grazed. Its minimal riparian margin is dominated by exotic species. Virtually the entire 500 ha catchment has been cleared of native vegetation and dairying is the main land use. Water leaves via a drain to Opōuri. Tutaeinanga now has little or no submerged vegetation, although native aquatic plants were present as recently as 2004 when it scored well on the lake vegetation index.

All of these shallow lakes show the effects of the surrounding agricultural land use. Exotic plants and pest animals are present around their margins.

Groundwater

Groundwater quality of the Reporoa basin has been investigated to assess the impacts of land use, particularly nitrogen inputs (Waikato Regional Council 2005 Groundwater resources of the Reporoa Basin TR 2005/57). Groundwater was sampled from 32 sites. There was some evidence of elevated nitrogen concentrations in several bores. There was also elevated arsenic in 20% of the wells.

Mean groundwater residence time in the aquifer was found to be between 11 and 73 years, with one spring of the Torepatutahi Stream having a mean residence time of 150 years. More information is being collected about Upper Waikato groundwater resources and modelling studies are underway.

Water allocation

Water takes of more than 15m³/ day require resource consent. Variation 6 to the Waikato Regional Plan deals with water allocation, and creates processes to determine when a water resource is reaching its maximum allocation. Under this system, the Upper Waikato River is fully allocated and the Reporoa basin groundwater reserves are also approaching full allocation. Iwi members are concerned that the current water allocation system makes no allowance for iwi, and that over-irrigation may be wasting water resources. Under the Resource Management Act, there is legally no provision for prioritising water use and water is allocated on a 'first in, first served' basis. When the water allocation for Mighty River Power was reduced by 2% under the Variation, this water was quickly reallocated under consent applications for water takes to support a large-scale conversion of pine to pasture. Now that full allocation has been reached again, new consent applications in the Upper Waikato are put on hold.

Iwi representatives are involved in discussions over iwi rights and interests in water. Various pieces of legislation have ruled on ownership of river and lake beds, but debate continues about rights to the water itself. Iwi members have said they would also like to play a more active role in monitoring pollution and to be involved in reporting or enforcement.

Pressures: What impacts on this resource

The iwi is involved in researching what is affecting kai species such as tuna, kōura and kākahi. Kōura and kākahi are likely to be affected by the quality of the stream bed as well as the water column. Kākahi are filter feeders and as such they purify the water. Little is known about why they have become less abundant. Kōura are sensitive to pollutants such as heavy metals or toxic blooms. Kōura in lakes can be affected by periods with no oxygen in the bottom waters. Kōura densities are lower in pasture streams than in native forest streams, and while they may grow faster in pasture streams, they live longer in the cooler water of native forest streams. Kōura have an animal-based diet including snails and mayflies/ mayfly larvae, and they prefer the still water of pools. Habitat cover is critical to minimise predation, including from introduced fish species.

Tuna are more able to withstand conditions in pastoral streams, and can even grow faster and larger there due to warmer temperatures, greater in-stream production and access to pasture invertebrates as food sources. The types of habitat loss likely to affect tuna are wetland drainage, channel straightening, loss of riparian cover, and stop-banking of floodplains in the lower river. In addition to habitat effects, tuna are impacted by disruptions to their life cycle, reducing recruitment of juvenile tuna (elvers). Likely causes are:

- **over-fishing of adults**
- **mortality and delays in migration due to obstructions in the waterway (e.g. dams, flood gates, pumps and turbines)**
- **changes in ocean currents as part of global climate disruption.**

In the Upper Waikato, tuna are clearly impacted by barriers to migration created by the dams. Only those elvers that are assisted can get over the hydro-dams to populate the upper catchment. Once in the upper catchment, any tuna that are not harvested are blocked from travelling to sea to breed and complete their life cycle, as hydro-turbines kill virtually all eels attempting to pass. Trap-and-transfer systems for downstream migrating eels have not been established in the Waikato River because commercial fishing has reduced the number of migrants reaching maturity and needing to migrate downstream from the upper catchment. This level of commercial harvest may reduce availability of tuna locally for the iwi. Nationally, regulations have been put in place to control commercial fishing and significant reductions have been achieved. The Ministry for Primary Industries collects data on commercial fishing. The total catch above Karāpiro dam fluctuates, with 17 tonne taken in 2009 and 2010, a jump to 28 tonne in 2011 and then a decline to 11 tonne in 2012. Around 10 tonnes are taken annually from the three hydro-lakes in the rohe where 3-4 commercial eel fishers operate. Throughout New Zealand, the average size of tuna being taken by commercial fishers has decreased over time, indicating over-fishing that could further affect recruitment of juvenile tuna in the future.

There is little specific information on the ecosystem effects of introduced fish, but they may eat native species or compete with native fish for food. Kōaro in Lake Taupō went into decline after the introduction of rainbow trout and then smelt. Kōura are eaten by trout and catfish. An observed decline of kōura in Lake Maraetai coincided with the introduction of catfish at around that time, although increased stocking of eels may also have contributed to the decline. Bottom-feeding fish such as goldfish and catfish disturb bed sediments and deplete food sources for native species like eels. Rudd have a clear grazing preference for native aquatic plants, and can cause aquatic vegetation in lakes to collapse.

Other habitat pressures on native aquatic species are caused by additional barriers to migration (e.g. hanging culverts), draining of wetlands, straightening and clearing of streams, and clearing riparian margins. Invasive aquatic weeds can out-compete native plants and affect oxygen levels in the water. Invasive terrestrial weeds can reduce the ecosystem health of wetlands and lake and river margins. Wetlands are also threatened by drainage and stock access, and wetland birds are threatened by predators. Water level fluctuations affect wetlands and riparian areas associated with the Waikato River. A threat to the geothermal lakes is that any development of the geothermal field that resulted in a loss of heat could also change the nature of the lakes and the surrounding habitat. This is because the lakes and wetlands are a surface expression of the field below.

Pressures may come from what is taken from the water resource as well as what is put into it. The increasing intensification of dairying has created greater demand for water, especially for irrigation. If irrigation is inefficient, this creates further pressure on the water resource.

There are around 1000 live consents in Area B of the Waikato River catchment (the area covered by Te Arawa River Iwi Trust). Among the main consented activities are the hydro-dams, and discharges to water covering the geothermal power stations, bathing pools, Arataki honey and stormwater from landfill and quarrying operations. Mighty River Power holds a consent to return shredded aquatic weed matter from the hydro-lakes back into the river. There are also numerous consents for surface water and groundwater takes. Not all of these consents can be monitored, so monitoring is prioritised (see Appendix 1). There are also 62 Permitted Activities in the Waikato Regional Plan (which do not need consent), including irrigating dairy effluent under standard conditions. While consented activities are indicative of some pressures (particularly arsenic and mercury discharges), overall it is the diffuse effects of land use that have a greater impact on water quality and are more difficult to monitor and control.

Intensification of land use increases the loss of nutrients to water. The nutrients of concern are nitrogen and phosphorus, because they act as fertilisers in the water and encourage aquatic plants to grow. This includes pest plants like water net, algal species that make water green and harmful blooms that release toxins. Lakes and slow-moving water are particularly susceptible to algal growth. Nutrients that feed the algae get to the lakes and rivers by flowing over the land (phosphorus) or seeping underground through groundwater (nitrogen and some phosphorus). Cattle urine passing through the ground is the main source of nitrogen; excluding stock from waterways does not deal with this problem. Nitrogen losses increase where there are more cows grazing, or cows are being fed more. Dairy land use leaches more nitrogen than dry stock or forestry (see Table 2). Sediment and dung are the main sources of phosphorus. Phosphorus losses increase in steeper country where there is more run-off and more erosion, especially near waterways. For this reason, dry stock farming has greater P losses than dairying, unless dairy effluent is poorly managed. Stock access to waterways increases phosphorus in the water due to sediment disturbance and dung going straight into the water. Phosphorus levels are naturally high in the rohe because



phosphorus is plentiful in the parent rock material. Nutrient levels immediately downstream of Taupō are low, as the lake acts as a settling pond, cleaning up water from the upper catchment before it enters the Waikato River. Nutrient levels in the river progressively rise as the water moves down the catchment. Variation 5 to the Waikato Regional Plan has placed controls on nitrogen emissions from land in the Taupō catchment to protect the clarity of the lake. Outside Lake Taupō catchment there are currently no targets and limits set for nutrient loss.

Table 2. Comparative nutrient losses for different land uses - mean values from a range of New Zealand studies and from Upper Waikato

LAND USE	MEAN PHOSPHORUS LOSS (KG/HA)		MEAN NITROGEN LOSS (KG/HA)	
	National studies	Upper Waikato	National studies	Upper Waikato
No stock (exotic or native forest)	0.2		2	3
Sheep	0.6		3	
Mixed dry stock	1.3	1-6	11	12-15
Deer	1.5		8	
Dairy	1.9	0.5-3	27	36-39 (Reporoa area)

Sources: National studies from McDowell, R.; and Wilcock, R. 2008. Water quality and the effects of different pastoral animals. NZ Veterinary Journal 56(6) 289-296. Upper Waikato data from local studies (courtesy of Waikato Regional Council)

A study in Reporoa was carried out on an irrigated dairy farm to understand the factors contributing to nitrogen in groundwater (Waikato Regional Council 2003 Reporoa nitrogen leaching trial 1998-2002, TR2003/15). These results indicated that inefficient use of high rates of nitrogen fertiliser posed more risk than irrigation. In fact, irrigating water can possibly reduce nitrogen leaching because it maintains constant pasture growth and the growing plants take up nitrogen. However, irrigating effluent is still a high-risk activity. The effluent-sprayed treatment showed the greatest nitrogen leaching losses in this trial. In the final year of the trial there was a substantial increase in nitrogen fertiliser inputs which did not result in an increase in pasture growth. This produced higher nitrogen leaching than the previous three years of the trial. This shows that excessive nitrogen application at times when pasture is not growing is costly for the farm business as well as an environmental risk.

Algal growth does not automatically rise with nutrient levels as the ecology of algae (phytoplankton) is complex. These floating plants are affected by physical and chemical factors (e.g. flow, nutrients, and temperature), and biological factors (e.g. predation by zooplankton). Invasive fish species can further change the ecological balance e.g. by eating the zooplankton that graze on the phytoplankton. Climate change may have an increasing effect in future on the weather and flow conditions that promote algal growth.

The river in this rohe is dammed at three points: Aratiatia, Ohakurī and Ātiamuri. The dams have several effects:

- **Migrating river species like tuna have their natural life cycles interrupted by the dams and cannot reach the sea to breed**
- **Water flow is slowed down, allowing time for algae to grow in the hydro-lakes – meaning nutrient losses to the river have a higher risk of turning the river green, and causing toxic blooms**
- **Management of the river for hydro-generation creates fluctuations in the water levels that cause flooding, bank erosion and can further threaten significant sites along the river**
- **Sediment settles out as the water is slowed down by the dams. This allows arsenic and mercury from geothermal discharges to accumulate and form a contaminated lake bed. If low dissolved oxygen levels occur in the bottom of the hydro-lakes this can cause mobilisation of metals from the sediments that can then accumulate in aquatic kai species**
- **A positive effect of the hydro-lakes is that faecal microbe levels are very low in the upper river because these microbes are killed by UV light in the shallow hydro-lakes.**



Opportunities: How to preserve and restore the resource

The settlement legislation has given legal standing to Te Ture Whaimana/ the Vision and Strategy for the Waikato River (see Appendix 2). Councils and central government are required to work with river iwi and communities to protect and restore the health and well-being of the river, and the iwi has a key role in monitoring progress towards this. The Vision and Strategy state (among other things) that the Waikato River should not be expected to absorb any further degradation, and that the water quality of the river should be safe for people to swim in and take food from over its entire length. The settlement has also provided financial resources for achieving the Vision and Strategy. This enables greater involvement of the iwi in both governance and action to restore the river.

There is an opportunity to work with local farmers to achieve waterway fencing and riparian margin restoration. Keeping stock well back from waterways, including small headwater tributaries, is a cost-effective first step to improving water quality. Because the soils of the rohe are formed from hard geology rather than soft muddy rock, local waterways have the potential for high water clarity if animals are excluded. Stock exclusion will stop manure from going directly into the water and prevent gully formation and disturbance of the banks and beds. Planting retired areas helps restore habitat for water life; using native species with traditional cultural uses also makes these plants available again to the iwi. Fencing off all remaining repo will allow them to remain un-compacted to enhance their cleansing and filtering functions. If a nursery were established, trees could be supplied as a way to achieve canopy closure and minimise weed issues in fenced areas. River clean-up funding might be accessed for this purpose. For the lakes, further realignment of fences back onto the true boundaries would allow the riparian margins to be extended. Pest control for these areas (e.g. along the fence-lines) would be beneficial. A wide riparian buffer can trap and filter overland run-off and this will reduce some contaminants from reaching waterways (such as sediment, phosphorus and faecal matter). It is more difficult to reduce nitrogen loss from pasture, but there are opportunities to publicise the knowledge gained from best practice nutrient management trials being conducted in Reporoa.

Wetlands and riparian areas are among the sites identified as opportunities for restoration in the Wildland Consultants report on three blocks of iwi landholdings. Restoration projects at these sites could be progressed with partner organisations. The iwi could also approach forestry management companies (Carter Holt Harvey, Fletcher Challenge, Olsen) to look at protection of wetlands in their forest blocks that have been identified as Significant Natural Areas. Another project could be to revive traditional knowledge of the use of paru from wetlands as a dye for weaving materials.

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There is an opportunity through current projects to find out more about traditional kai and how to restore these species. Options to provide safe downstream passage for sexually mature tuna include:

- **ceasing power generation during migration events and actively spilling water down a safe spillway**
- **deterrents and protective measures at intakes along with safe permanent by-passes**
- **trap and transfer.**

Iwi involvement in monitoring waterways is an opportunity, either by using the information collected by consent-holders like Mighty River Power, by reviewing data from regional environmental monitoring sites (see Appendix 1), or by the iwi collecting information about culturally relevant indicators. TARIT is preparing a plan for this type of monitoring.

TARIT is also currently working with Ngāti Tūwharetoa and Raukawa to prepare fisheries regulations that will be administered by the Ministry for Primary Industries. The regulations will cover species such as tuna, kōura, shellfish and adult whitebait found in the Upper Waikato catchment. They will provide for iwi customary use, including taking fish for hui and marae events such as tangihanga, and keeping live fisheries in pātaka and pā tuna, where a permit is given by a 'customary authoriser' appointed by the iwi Trust. The iwi can also suggest by-laws that, if approved, will apply to all users of the fisheries.

The Waikato Regional Council is preparing a management plan for shallow lakes of the region, due for release shortly. This will cover Ngākoro, Ngāhewa and Tutaeinanga. In other districts (Waipā, Waikato), accords have been signed between the regional and district councils, Fish and Game, DOC and iwi to enhance the management of shallow lakes and secure funding for lake restoration projects. This sort of approach could be pursued for the lakes in this part of the region also. Initial conversations have been held about Ngāhewa, Opōuri and Tutaeinanga. The waterways on private land upstream from Ngāhewa extend into the Bay of Plenty region, so a coordinated approach to further riparian work up the catchment of this lake/ wetland would be beneficial. The wetland at Ngāhewa has easy public access and is close to Maungakākamea, so could be a good site to showcase a healthy wetland.

WHĀINGA WĀ POTO - SHORT-TERM GOALS	WHĀINGA WĀ ROA - LONG-TERM GOALS
<ul style="list-style-type: none"> • Nutrients in river held at current levels (requires measures to reduce intensity on current farmland and to limit the scale of further land clearance) • Reduction in arsenic and mercury in Waikato River • Reduction in faecal contamination in tributary streams • Restoration of lake margins and associated wetlands • No further reduction in wetlands • Researching traditional knowledge of wetland resources • More understanding about what impacts on kai species • Safe places known for collecting watercress and other kai • Iwi farm blocks excluding all stock from waterways and replanting with natives • Iwi involved in fisheries regulations and monitoring 	<ul style="list-style-type: none"> • Iwi rights to water acknowledged and enacted • Kai sources restored, including opportunities for migration • Stock excluded from all waterways in the rohe and river/ stream-banks/ lake edges fully restored with natives • Lower contaminant loads in waterways, including nutrients • Arsenic and mercury return to natural levels • More wetland areas reinstated • Native species associated with wetlands abundant • Fewer exotic plant and animal pests in wetland areas • Traditional practices associated with wetlands revived • Fluctuation of river levels reduced • Restoration of lake water quality- reduction in nutrients and sediment entering lakes

MAHI WĀ TŪ – CURRENT ACTIONS	MAHI WĀ HEKE – ACTION IDEAS FOR FUTURE
<ul style="list-style-type: none"> • Iwi farms and other farmers fencing waterways and some wetlands • Extensive restoration of some streams e.g. Mangatoetoe • Iwi testing nutrients in water and watercress and researching other kai species • Wairākei consent requires reduction in arsenic and mercury • Iwi participating in discussions over rights to water • Iwi engaged in Waikato River Vision and Strategy and policy development through TARIT, including fisheries regulations • Waikato River Authority distributing funding for river clean-up projects; iwi accessing funds for projects • Iwi participating in Upper Waikato Primary Sector Water Partnership • Dairy industry looking to create nutrient management plans for all (700+) dairy units in the Upper Waikato • Tomorrow's Farms Today (25 farms in Reporoa) trialling best management practices for nutrients • DOC enhancing wetlands around Ngāhewa (re-fencing, willow control); mistletoe protection in place • DOC working in the geothermal wetland at Waikite to restore natural drainage patterns, fence and plant; a land exchange has occurred with Landcorp to better protect geothermal features • Hardcastle lagoon wetland replanting by Fish and Game • Constructed wetlands (managed by Fish and Game) opposite Ohaki Marae have been planted by Contact Energy and are being returned to the iwi 	<ul style="list-style-type: none"> • Advocate for policy to reduce conversion of forests to pasture, without creating undue economic penalties on the iwi as forest lands are returned • More projects to plant and restore riparian areas by waterways • Investigate opportunities for further lake restoration and water quality enhancement (with Te Arawa Lakes Trust, DOC and other partners) • Work with iwi land Trusts, other farmers, DOC, and regional councils to find opportunities for enhancing existing wetlands – stock exclusion, planting with traditional species, plant and animal pest control • Work with iwi land Trusts and other farmers to find opportunities to reinstate or extend wetland areas • Work with MRP to look at what can be done about river level fluctuations and migration barriers • Projects to restore kai species and reinstate migration • Hold wānanga on dying and weaving with traditional wetland resources and harvesting of traditional kai species • Nutrient management planning and implementation for iwi blocks; advocacy for this on all pastoral land in the rohe • Measure/ monitor farm water use • Investigate options for water storage on iwi farm blocks • Investigate options for iwi to be involved in issuing fishing permits and monitoring/ enforcement • Work with TARIT on investigating options for purchase of an iwi boat to access the river and carry out monitoring

TŪRANGA WHAKAHAERE - PRINCIPLES FOR MANAGEMENT OF THIS RESOURCE

- Iwi have rights to/ over water including groundwater, rivers, lakes, tributaries and beds of waterways – as set out in the Statement of Significance in the Deed of Settlement for the Waikato River
- The Waikato River should not be expected to absorb any further degradation
- The river should be swimmable and support healthy kai along its whole length
- Waterways should be protected, but the iwi should not have to bear the economic cost of returning them to health (e.g. through development restrictions on returned tribal land in forest cover)
- Ensure iwi involvement in monitoring, consents, plans and restoration projects, including rangatahi wherever possible
- Management should be integrated and reflect the holistic, spiritual and inter-generational Māori world view
 - Protect headwaters (e.g. Tutukau Forest is important as a source for Mangatoetoe stream)
 - Strengthen linkages to the Waikato river (e.g. fenced waterways to create corridors)
 - See the whole picture – reinstate ecosystems and natural processes, protect sites of significance and traditional activity as well as enhancing water quality
 - Waterways each have their own mauri and should not be mixed; human sewage should not enter waterways
- Vegetated riparian margins should be reinstated as they have multiple positive benefits for cooling the water, reducing sediment, returning birdlife and fish, and reinstating original plants; planting should use native species wherever possible, including those with traditional cultural uses. Riparian management is a necessary but insufficient step towards restoring waterways – other actions are also required to address nutrients and other contaminants
- Wetlands are precious and need to be protected and reinstated. Stock should be kept out of wetlands
- Access and harvesting rights are important to enable iwi to make use of wetland and freshwater resources
- The iwi must be involved in managing commercial fishing and customary takes, to ensure sustainable kai resources are available
- Water storage can make more water available for use without affecting low flows, but care is required to maintain aquatic ecological connections (e.g. migratory pathways)



Case study: Watercress testing – a Rūnanga project in conjunction with TARIT

Following media coverage on the dangers of arsenic levels arising from natural geothermal activity, a project was undertaken to determine if local watercress was fit for human consumption. There were also a number of concerns from kaumātua and locals around the effects of land use on our kai sources, especially with the increase of dairy farming within the rohe. For this reason, it was decided to test watercress for both arsenic and E. coli (a microbe that indicates where there may have been contamination by faeces/ animal manure).

Sites were chosen at Handcock Rd, Ōtaketake, Te Kōpia Rd, Te Toke, Torepatutahi Stream (the Canyon), Sangro Rd, and the Moke Homestead.

Aseptic samples were taken, packaged and stored at Fonterra and then dispatched to Hill Laboratory, Hamilton. The results were then sent to NIWA and a report was delivered to the Rūnanga at Reporoa College.

Test results from all sites confirmed the watercress was fit for human consumption although results varied. Te Toke was the site of greatest concern, requiring follow-up testing. There was also a request to test watercress at Ohaki – Piripiri Rd.





Case study: Tuna project

The Ngāti Tahu-Ngāti Whaoa Rūnanga Trust combined forces with Mighty River Power and NIWA in a partnership to look at enhancing tuna (eel) populations.

The project is based on a comprehensive study of the tuna life-cycle, understanding the current status of tuna and identifying the impacts of land use and development on its life-cycle and reproduction.

A tuna workshop was held at Ohaki Marae, with a presentation of science information to share knowledge with iwi members. Environmental issues and current hazards affecting tuna were discussed, and options were identified for iwi to assist with monitoring tuna. Restocking methods are now being used to help tuna get above the hydro-dams, as the dams form a barrier to the young tuna completing their migration from the sea to the upper river.

However, more work is needed to work out how adult tuna can be assisted to migrate downstream to reach the sea to breed.

APPENDIX 1 – CONSENTS AND MONITORING

Excerpts from Mighty River Power consent

“Should monitoring of blue-green algae within the Waikato hydro system identify more than one bloom (defined as greater than 15,000 cells/ml and which lasts more than 1 week) of blue-green algae within any single one of the Waikato river hydro reservoirs within any three year period, Waikato Regional Council may, within six months of receipt of that information and following service of notice on the consent holder, commence a review of the conditions of this consent pursuant to section 128(1), with the intention of reviewing any linkage between the operation of the Waikato hydro scheme and the impact of any such bloom on other uses of the Waikato River. That review shall take into account all available information relating to the causes and effects of such blooms.”

River level minimum, maximum and normal operating range:

HYDRO RESERVOIR	MINIMUM CONTROL LEVEL MASL	MAXIMUM CONTROL LEVEL MASL	NORMAL OPERATING RANGE MASL
Aratiatia	335.99	337.82	336.40 – 337.82
Ohakuri	285.10	287.53	285.70 – 287.20
Ātiamuri	249.07	253.09	251.00 – 252.90

Waikato Regional Council monitoring policy for consents

There are around 1000 live consents in Area B of the Waikato River catchment (the area covered by Te Arawa River Iwi Trust).

Monitoring is prioritised:

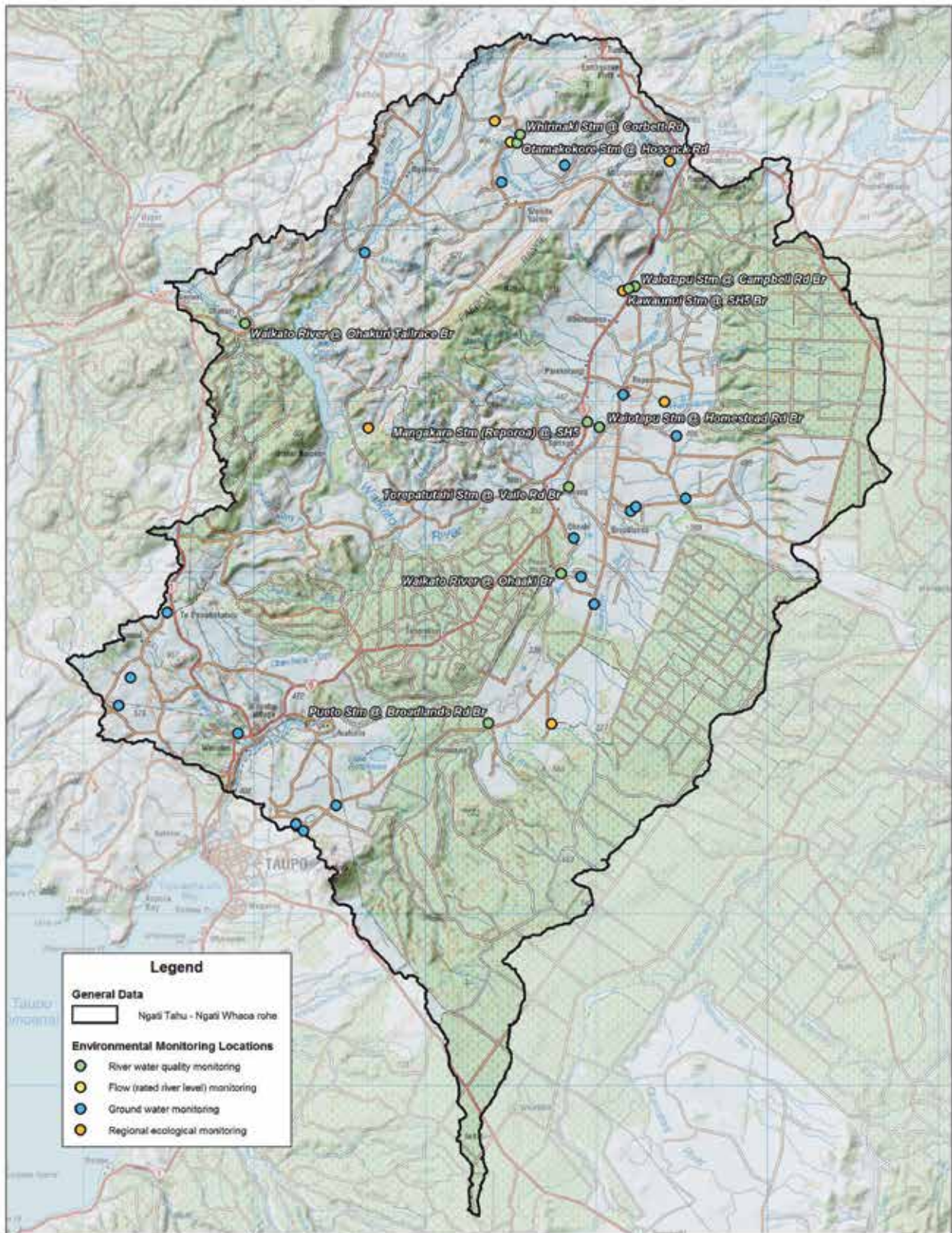
- **P1 sites (important sites or activities) – 100% monitored annually**
- **P2 sites (moderately important) – 75% monitored annually**
- **P3 sites (low priority) – 25% monitored annually**
- **P4 sites (background) – inspected on completion and thereafter only if there is a complaint**

Monitoring may include desktop methods (reviewing data supplied), site inspections or audits.

There are also 62 Permitted Activities in the Waikato Regional Plan (which do not need consent), including irrigating dairy effluent as long as it meets certain standards. Some of these activities are monitored (sediment and earthworks, and dairy effluent irrigation); others will not be monitored unless there is a complaint. Across the region, 100 farms are viewed in five at-risk areas by helicopter each year to look for signs of poor effluent application.

Waikato Regional Council water monitoring sites

The map on the following page, shows the sites where WRC monitors regularly for groundwater quality, surface water quality and ecological stream life (invertebrates). Stream sampling sites are named.



Legend

General Data

Ngati Tahu - Ngati Whaoa rohe

Environmental Monitoring Locations

- River water quality monitoring
- Flow (rated river level) monitoring
- Ground water monitoring
- Regional ecological monitoring

Ngati Tahu - Ngati Whaoa IEMP
Environmental Monitoring Locations

Created by: A. Jeffries
 Projection: NZTM
 Date: 11 Feb. 2013

Status: N/A
 Request No.: D4620
 File name: 34620_Ngati_Tahu_Ngati_Whaoa_IEMP_2012

0 5 10 15 20
 Kilometres

ACKNOWLEDGEMENTS AND DISCLAIMERS
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Waikato
 REGIONAL COUNCIL

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APPENDIX 2 – VISION AND STRATEGY FOR THE WAIKATO RIVER/ TE TURE WHAIMANA

1 Vision

- (1) Toku awa koiora me ona pikonga he kura tangihia o te matamuri. The river of life, each curve more beautiful than the last.
- (2) Our vision is for a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.
- (3) In order to realise the vision, the following objectives will be pursued:
 - (a) the restoration and protection of the health and wellbeing of the Waikato River:
 - (b) the restoration and protection of the relationships of Waikato-Tainui with the Waikato River, including their economic, social, cultural, and spiritual relationships:
 - (c) the restoration and protection of the relationships of Waikato River Iwi according to their tikanga and kawa with the Waikato River, including their economic, social, cultural, and spiritual relationships:
 - (d) the restoration and protection of the relationships of the Waikato Region's communities with the Waikato River, including their economic, social, cultural, and spiritual relationships:
 - (e) the integrated, holistic, and co-ordinated approach to management of the natural, physical, cultural, and historic resources of the Waikato River:
 - (f) the adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River and, in particular, those effects that threaten serious or irreversible damage to the Waikato River:
 - (g) the recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within the catchment on the health and wellbeing of the Waikato River:
 - (h) the recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities:
 - (i) the protection and enhancement of significant sites, fisheries, flora, and fauna:
 - (j) the recognition that the strategic importance of the Waikato River to New Zealand's social, cultural, environmental, and economic wellbeing requires the restoration and protection of the health and wellbeing of the Waikato River:
 - (k) the restoration of water quality within the Waikato River so that it is safe for people to swim in and take food from over its entire length:
 - (l) the promotion of improved access to the Waikato River to better enable sporting, recreational, and cultural opportunities:
 - (m) the application to the above of both matauranga Māori and the latest available scientific methods.

2 Strategy

To achieve the vision, the following strategies will be followed:

- (a) ensure that the highest level of recognition is given to the restoration and protection of the Waikato River:
- (b) establish what the current health status of the Waikato River is by utilising matauranga Māori and the latest available scientific methods:
- (c) develop targets for improving the health and wellbeing of the Waikato River by utilising matauranga Māori and the latest available scientific methods:
- (d) develop and implement a programme of action to achieve the targets for improving the health and wellbeing of the Waikato River:
- (e) develop and share local, national, and international expertise, including indigenous expertise, on rivers and activities within their catchments that may be applied to the restoration and protection of the health and wellbeing of the Waikato River:
- (f) recognise and protect wahi tapu and sites of significance to Waikato-Tainui and other Waikato River iwi (where they do decide) to promote their cultural, spiritual, and historic relationship with the Waikato River:
- (g) recognise and protect appropriate sites associated with the Waikato River that are of significance to the Waikato regional community:
- (h) actively promote and foster public knowledge and understanding of the health and wellbeing of the Waikato River among all sectors of the Waikato regional community:
- (i) encourage and foster a “whole of river” approach to the restoration and protection of the Waikato River, including the development, recognition, and promotion of best practice methods for restoring and protecting the health and wellbeing of the Waikato River:
- (j) establish new, and enhance existing, relationships between Waikato-Tainui, other Waikato River iwi (where they so decide), and stakeholders with an interest in advancing, restoring, and protecting the health and wellbeing of the Waikato River:
- (k) ensure that cumulative adverse effects on the Waikato River of activities are appropriately managed in statutory planning documents at the time of their review:
- (l) ensure appropriate public access to the Waikato River while protecting and enhancing the health and wellbeing of the Waikato River.

Charles Blomfield. *Orakei Korako on the Waikato*
1885. Museum of New Zealand Te Papa Tongarewa.
Registration No 1994-0012-1

