

# **CULTURAL ASSOCIATIONS AND THEIR FLOW & WATER MANAGEMENT IMPLICATIONS FOR THE WAIHAO / WAINONO CATCHMENT**



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*Uretane is the mountain*

*Waihao is the river*

*That flows to the sacred waters*

*of te Kai Hinaki a Rakihouia*

*All the sacred streams of*

*Ngati Hateatea the people*

## 1 – INTRODUCTION

### 1.1 Background

The focus of this report is the Waihao – Wainono catchment. The name “Waihao” refers to an important food resource (the hao eel) obtained from the waters (water) of the river that has its beginnings in the upland country behind the hills, Te Tari Te Kaumira. The hao eel, the lifestage of the short-fin eel was, and still is, a delicacy to families who gather mahinga kai from the Wainono Lagoon and the Waihao River (the kete of local Maori). There are no longer any commercial license holders on the river or lake and the supply of eels is once again plentiful. The Waihao River winds across the Waimate landscape before emptying into the sea near Morven.

Waihao also relates to early arrival of Waitaha and the travels of Rakaihautu with his son Rakihouia. Rakaihautu who was the captain of the canoe, Uruao, which brought the tribe, Waitaha, to New Zealand. Rakaihautu beached his canoe at Whakatu (Nelson). Rakaihautu journeyed southwards by an inland route, he used his famous ko (a tool similar to a spade) to dig the principal lakes of the South Island. His son travelled along the coast and while resident at Waihao fed of the hao eel.

Environment Canterbury (Environment Canterbury) have identified as two of its Kaitiaki Targets in the Canterbury Water Management Strategy (CWMS)

*From 2010:*

- *Formally recognise Te Runanga o Ngai Tahu Freshwater Policy and, in each zone, work towards resolving issues related to Ngai Tahu policies on:*
  - *environmental flows that afford protection to instream values*

*By 2015:*

- *A programme for identifying cultural preferences for river and stream flow agreed in each zone*

This report describes a participatory process currently being applied in the Waihao-Wainono Catchment where Te Runanga o Waihao representatives are in the process of assessing the river flows necessary to protect cultural interests. We will analyse their data to identify cultural flow preferences via application of Cultural Opportunity Mapping, Assessment and Responses (COMAR) (Tipa and Nelson 2008). The result will be the identification, by Tangata whenua, of their preferred flows, and specification of other management actions deemed necessary to recognise and provide for their cultural interests with respect to the freshwater resources of the Waihao-Wainono Catchment.

## 1.2 Project objectives and methodology

The overall objective of this project, which concludes at the end of 2012, is to determine the water management requirements of the Waihao – Wainono Catchment. More specifically, this investigation will:

- Identify the current and potential water dependant cultural values of the river(s) and lagoon;
- Gauge the perceived health and trajectory of current values;
- Identify the hydraulic characteristics that whanau believe will maintain, rehabilitate or restore their values;
- Recommend flow objectives to produce a catchment that meets the Kaitiakitanga standards in the Canterbury Water Management Strategy
- Recommend a flow regime to meet their objectives; and
- Analyse the degree to which the recommended management regime is consistent with current management regimes

The study comprises two reports – and Report and Final Report with Recommendations.

The objective of this report is to:

- 1) Introduce some publicly available cultural information pertaining to cultural interests associated with the Waihao-Wainono;
- 2) Identify the extent and/or location of their interests;
- 3) Identify flow related issues associated with these interests that are of concern to Manawhenua that need to be addressed by Environment Canterbury.

The principal sources of historical information were obtained from written records held by Ngai Tahu, while the initial sources of contemporary data are whanau hui and field visits. These data will be complemented by the field assessments being undertaken during 2011/2012. The Final Cultural Flow Preference Report (due at the end of 2012) will have a number of additional objectives:

1. Recommend flows required to maintain or enhance the environmental values of the system as determined by cultural outcomes sought;



2. Analyse the frequency at which whanau were satisfied that their values would be protected; and,
3. Undertake a risk assessment to assess if the recommended environmental flow regime will protect the cultural values of the catchment.

### 1.3 Terminology

This report is principally concerned with ensuring that decision makers determining the flow regime for the Waihao-Wainono recognise and provide for the values of Manawhenua. While Manawhenua is discussed more fully in Chapter 2 definitions for two key phrases used in this report are provided below:

Manawhenua	<p>The term used to describe the people who hold and exercise the rights of mana whenua. Manawhenua are committed to maintaining this relationship.</p> <ul style="list-style-type: none"> <li>• landowners in Maori freehold land (e.g. Waihao 903), and Maori Reserves;</li> <li>• owners of rights to the Fenton Reserves which were fishing easements allocated and confirmed from Kemps Purchase in 1848 (e.g. Waihao 906);</li> <li>• those with Fenton Entitlements which was an outcome of the Ngai Tahu Ancillary Claims Settlement (e.g. Pukatahi); and</li> <li>• as well as the owners of General Land.</li> </ul>
Ngai Tahu	<p>Section 9(a) of the Ngai Tahu Claims Settlement Act provides a definition of Ngai Tahu and Ngai Tahu whanui, stating that it is “the collective of individuals who descend from the primary hapu of Waitaha, and Ngati Mamoe and Ngai Tahu”. Te Runanga o Ngai Tahu Act 1996, defines the takiwa of the respective papatipu Runanga. The Waihao-Wainono Catchment is clearly wholly within the takiwa of Te Runanga o Waihao and Te Runanga o Arowhenua.</p>

### 1.4 Report structure

This report has been divided into a number of sections:

Section 1      Sets out the background and the aims of this assessment.

Section 2      Provides information pertaining to:

2.1      Te Runanga o Arowhenua and Te Runanga o Waihao and their takiwa in South Canterbury;

2.2      The Waihao-Wainono catchment.

- Section 3 Describes the methodology that is being applied by members of Te Runanga o Waihao to collect and analyse the data.
- Section 4 Introduces the qualitative data; specifically:
- 4.1 An overview of cultural values, beliefs and practices;
  - 4.2 Historic, traditional patterns of use of the Waihao-Wainono catchment; and
  - 4.3 Contemporary associations with Waihao-Wainono catchment and their implications for setting flow regimes.
- Section 5 Discusses how the cultural association described in section 4 contributes to a discussion of flow and water quality parameters.

## 2.1 Te Runanga o Waihao

## 2.2 Te Runanga o Arowhenua

**Figure 1: The takiwa of Te Runanga o Waihao and Te Runanga o Arowhenua (Canterbury Natural Resource Regional Plan).**



Pursuant to section 3 of that Act, “*the Act binds the Crown and every person (including any body politic or corporate) whose rights are affected by any provision of this Act*”. The members of Te Runanga o Ngai Tahu are the 18 papatipu Runanga, each of which is defined in the Act, as is the takiwa for each. Te Runanga o Waihao and Te Runanga o Arowhenua are two such Runanga. This

Act establishes who holds manawhenua rights over specific lands and waters within the rohe of Ngai Tahu.

Te Runanga o Waihao has its offices at the marae at Morven while Te Runanga o Arowhenua is based at Temuka. The Waihao-Wainono Catchment is wholly within the takiwa of Te Runanga o Arowhenua and Te Runanga o Waihao

## 2.4 Waihao-Wainono

Wainono Lagoon is a moderately sized coastal lagoon of approximately 325 hectares (Irwin 1975), separated from the sea by a gravel bar up to 8 m high. It receives inflow from both the Waituna Stream to the west, and the Hook River from the north. The water is brackish, and typically less than 1 m deep. When the water level increases from the normal 1.0 m above MSL to 1.5 m, the lagoon area increases to 420 ha (Graeme Crump, DoC. pers. comm.). The lagoon is drained by a 7 km canal which runs south to enter the estuary of the Waihao River.

Although classed as a regionally significant natural feature and a wetland of international importance, to manawhenua it is a taonga equivalent to Te Waihora and Wairewa. It provides important habitat for waterfowl, migratory birds, coastal birds, and native fish – many of which are taonga species. It features shallow water aquatic weedbeds; saline mudflats; shingle beach ridge; willow, grass and flax/harakeke swamp margins.

The main plant species include *Myriophyllum* sp., *Lilaeopsis novaezealandiae*, *Ruppia megacarpa*, *Ranunculus* sp.; spike rush (*Eleocharis acuta*); saltmarsh ribbonwood, gorse, shrub lupin; flax/harakeke, willow spp., *Festuca arundinacea* (introduced grass) while notable fauna include white heron/kotuku, royal spoonbill, wrybill/ngutupare, black swan, Canada goose, grey teal/tete, and pied stilt/poaka. To manawhenua the value of the Waihao – Wainono system as a home to taonga species and as a source of mahinga kai cannot be overstated.

The Waihao River itself runs 64 km from its origins in the Campbell and Hunter Hills - the middle sections of it normally dry up during summer, although the lower 5 km continue to flow. Historically, the mouth of the river was often closed by an extensive gravel bar, causing flooding of adjacent low-lying land.

To provide some control over this, a large breakwater, the "Waihao Box", was first constructed in the 1890's but was washed away in 1908. The present structure was installed in 1910, 1.5 km south of the original box. Costs of opening of the Waihao Box are borne by local farmers, and openings are at predetermined water levels. In addition to mechanical openings, conditions occasionally enable the lagoon to open by itself.



Although it is within metres of the Pacific Ocean, the Wainono Lagoon is fresh water and separated from the sea by a gravel berm. Tests have revealed that the level of the lagoon does not fluctuate with the tide and its level of salinity is low. Fresh water, however, seeps from the lagoon into the sea.

The location of some of the sub-catchments of the Waihao – Wainono Catchment is shown in Figure 2.

**Figure 2: The Subcatchments Comprising the Waihao and Wainono System**





## 3 – METHODS TO INCORPORATE CULTURAL PERSPECTIVES IN FLOW SETTING

### 3.1 An overview of the process

The process that is currently underway involves the identification of values and interests of Tangata whenua. This process is consistent with the flow setting framework proposed by the Ministry for Environment (1998) which requires the identification of instream values, determination of instream management objectives, application of technical methods, determination and application of the new flow regime, and monitoring of the effects of a changed regime on the instream values and objectives. The six stages of the process are summarised in Table 1.

**Table 1: A summary of the process to incorporate the cultural interests in flow regimes.**

STEP	OBJECTIVE OF STEP AND APPLICATION IN THE CASE	METHODS
<b>1. Initiating the project</b>	To identify the body representing Tangata whenua and secure mandates.	Meetings with whanau members.
<b>2. Documenting the association</b>	a. To identify the multiple dimensions that collectively represent cultural association with the study area. b. To identify the attributes used to assess whether environmental flows are sufficient to sustain cultural interests. c. To examine how their experiences are impacted by aquatic conditions, in particular river flow. d. To document perceptions of changes to flow patterns over time, and the impact of these changes on cultural values.	Focus groups  Semi structured interviews with key informants.
<b>3. Cultural Opportunity mapping</b>	a. To identify the cultural values associated with specific sites, together with the opportunities sought at each site given the values identified b. To formulate a catchment wide concept map that visually depicts water management issues (including flow) perceived by Tangata whenua as impacting their experiences at the sites identified. Interrelationships between issues are also mapped.	Focus groups. Semi structured interviews. Focus group to validate the data.
<b>4. Focusing the investigation</b>	a. To critically review the data collected and to focus on environmental flows and specific flow issues affecting the waterways being investigated. b. To distinguish between: 1) cultural values, opportunities, and issues to be evaluated as part of existing Environmental Flow Assessments (EFAs); 2), cultural values, opportunities, issues (and consequently flow attributes) that are place specific but could be addressed within an existing EFA; 3) those cultural values, opportunities, issues and flow attributes that were unlikely to be adequately addressed via existing EFA methods and are more appropriately addressed through a cultural assessment .	Focus group.
<b>5. Cultural Opportunity assessments</b>	a. To undertake assessments at sites to assess whether environmental flows sustain cultural values and provide the opportunities sought. b. To assess each site under different flow conditions using the attributes previously identified by Maori.	Mandated representatives undertaking field assessments.  Focus groups.
<b>6. Analysis to inform decision making</b>	Qualitative analysis and statistical analysis to identify flow thresholds, flow related issues, and management priorities.	Focus groups.  Statistical analyses.

Flow can also be manipulated to provide cultural opportunities. However, this process assumes that most Maori are capable of describing the opportunities they seek. The cultural opportunities sought are informed by traditional, historic and/or contemporary values, and may be akin to ecological, economic, recreational, aesthetic, and social opportunities sought by others, while some are distinctly

cultural. A range of techniques for assessing opportunities have emerged in the last twenty years including a Recreation Opportunity Spectrum (Clarke and Stankey 1979), Water Recreation Opportunity Spectrum, Tourism Opportunity Spectrum, and Forestry Opportunity Spectrum. Proposing an opportunity approach builds on this body of literature.

The cultural assessments that are currently underway are premised on sites identified by Maori as culturally significant being assessed in a process akin to Customer Satisfaction Assessments (CSAs) and environmental preference studies using attributes of flow previously identified by Maori. A series of interviews with Maori from across the South Island provided descriptions of river flows, how rivers are used, and the attributes that describe healthy vibrant flows that support cultural uses. From these descriptions nineteen “flow attributes” were extracted and listed on an assessment form.

The nineteen attributes of river flow are represented on an assessment form with Likert scales, and conclude with open ended questions. Ryan and Cessford (2003) argue for inclusion of a non-response option when developing an assessment form, which was adopted because it enables use of a generic list of flow attributes. Where an attribute is not relevant given the cultural values and cultural opportunities associated with a particular site, the non-response option is marked. In this way the assessment form should not need to be changed from site to site, or between catchments. The Cultural Flow Preferences (and importantly the critical thresholds) are calculated from the scores awarded for each of the attributes which are categorised into four themes: gathering of foods and other materials for Cultural Use (nine attributes); Wai Maori (freshwater) which has four attributes; Hauora (well being) with three attributes, and Cultural Landscapes, including uses of Maori lands, reserves, easements and so forth (three attributes). The form is included as Appendix 1.

### 3.2 Application of the six step participatory process in the Waihao-Wainono

The first five steps in the participatory process, as illustrated in Table 1, are now summarised below. Step 6, analyses to identify flow thresholds, flow related issues, and management priorities, is not included in this report but will be included at the conclusion of the fieldwork.

***Step 1: Initiating the project*** – Representatives of Te Runanga o Waihao confirmed support for the flow investigation in the Waihao-Wainono.

***Step 2: Defining the cultural association with the river*** – A range of secondary data sources were reviewed, to describe the diversity and complexity of cultural relationships with the Waihao-Wainono, and specifically how this may be affected by river flows.



**Step 3: Cultural mapping including cultural opportunity mapping** Sites of cultural significance had been mapped previously. There was a need to translate this into expectations of river condition in terms of water quality and quantity. There are four distinct areas of data that we are in the process of collecting and collating:

1. How the river was valued and used;
2. The hydrological characteristics that manawhenua believe essential to protecting the sites valued and used; and
3. How the current hydrological characteristics of the river impact cultural values, interests and uses.

Given the significance of freshwater species as a source of food and cultural materials, the flow related needs of valued species are a focus. This report provides an early opportunity to link with others undertaking EFAs and signal to Environment Canterbury the range of complementary investigations manawhenua want to see informing the planning process. In addition to its value in aiding environmental flow deliberations, the information collected can be used to guide other management decisions including restoration. The purpose of such restoration is likely to be restoration of the **eco-cultural** attributes that provide a range of opportunities for Te Runanga o Waihao to interact with valued environments thus sustaining practices essential to their cultural identity (Martinez 1995; Tudge 2006).

***Step 4: Focusing the investigation: discriminating the flow related issues identified –***

This report enables flow related issues to be signalled to Environment Canterbury at an early stage.

***Steps 5 and 6: Undertaking Cultural Assessments and analysis to identify Cultural Flow Preferences***

– Six sites in the Waihao-Wainono are in the process of being assessed regularly by the runanga team. These sites are:

- |   |                   |   |   |
|---|-------------------|---|---|
| 1 | Merry Stream      | 2 | Willowbridge/Buchanans Creek            |
| 3 | Lower Hook River  | 4 | Waihao River Bradshaw Bridge            |
| 5 | Dead Arm          | 6 | Waihao River South Branch at SH Bridge. |
| 7 | Sir Charles Creek |   |   |

The significance of each indicator at each site is being assessed. Secondly, for each indicator at each site during every visit, whanau are deciding if they are satisfied that the flow being observed sustains the attributes associated with the cultural values at that particular site.

### **3.3 The Team**

The assessments were taken by mandated representatives of Te Runanga o Waihao. As noted in the Hakatere and Orari Reports, the majority of the team have a lifetime of experience interacting with the wetlands, streams, rivers and coastline within their takiwa. They know their rivers and continue to source kai from multiple sites across the takiwa. It is this expertise that they bring to the assessment process.

## 4 – CULTURAL ASSOCIATIONS

### 4.1 Background

Within the CWMS specific kaitiakitanga targets are prescribed. Those relevant to this assessment are listed below:

From 2010:

- **Prevent further loss or degradation of Ngai Tahu nominated wāhi taonga**
- Increase understanding in each zone of the customary values and uses associated with specific waterbodies or parts of waterbodies

By 2015:

- **All degraded wāhi taonga and mahinga kai<sup>1</sup> waterways nominated by Ngai Tahu have an active restoration programme in place that responds to cultural priorities**
- A report on the health of all Ngai Tahu nominated waterbodies using Ngai Tahu Cultural Health Monitoring Tool
- Identified customary uses (current and potentially restored) for all waterways

By 2020:

- **Increased the abundance of, access to and use of mahinga kai.**
- All marae and associated papakāinga have access to high quality drinking water

By 2040:

- **Protection, in accordance with Ngai Tahu values and practises, of wāhi taonga and mahinga kai waterways**

There are wāhi taonga and wai tapu found throughout the Waihao - Wainono system. Many of these were included in Te Whakatau Kaupapa (1990) and the Cultural Values Report prepared in (2006). We have chosen to build on the 2006 report highlighting what the respective taonga in the catchment require by way of water management.

### 4.2 Wāhi Tapu / Taonga

Since 1999 Ngai Tahu has identified a range of wāhi tapu / wāhi taonga. Those found in the Waihao – Wainono system include:

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<sup>1</sup> Mahinga kai - traditional food and other resources and the areas that they are sourced from

- Ara tawhito (ancient trails)
- Umu ti (earth ovens associated with preparation of kauru)
- Kaika Nohoanga (occupation, settlement sites)
- Ikoa Tawhito (place names)
- Mahinga Kai (places where resources including food were/are procured)
- Wāhi kaitiaki (resource indicators from the environment)
- Mauka (important Mountains)
- Wahi kohatu (rock formations)
- Pa Tawhito (ancient pā sites)
- Wahi paripari (cliff areas)
- Tauranga Waka (canoe mooring sites)
- Wahi raranga (sources of weaving material)
- Tuahu (sites of importance to identity)
- Wahi taonga (treasured areas generally)
- Urupa (human burial sites)
- Wahi tohu (locators and their names within the landscape)
- Repo Raupo (wetlands and swamps) and Wai Maori (important freshwater areas)
- Wai tapu (sacred waters)
- Taniwha
- Reserves, easements, entitlements

#### WITH RESPECT TO FLOWS:

**Te Runanga o Waihao wants to ensure that there is no further loss of wahi taonga because of inappropriate water management.**

In the paragraphs that follow we describe many of these wahi taonga. Further, the Tables in Appendix 2 summarise how these taonga may be dependent on flows.

### 4.3. Spiritual significance of intergenerational links

The Waihao – Wainono system represents a very tangible link back to the first recorded arrival of the waka Uruao, and the exploratory journey of Rakaihautu through Te Waka O Aoraki which has been estimated as being around 850 AD. It was on this visit of the waka Uruao that the river was named Waihao by the wife of Rakaihautu in recognition of the sweetness of the hao eel, a significant species in the river. Rakaihautu is credited with carving many of the great southern lakes including those in the adjacent Waitaki catchment. The history of use and settlement of the Waihao – Wainono Catchment traces back to those early times.

Time does not diminish the cultural and spiritual importance of these values, rather, they are enhanced and maintained through the transmission of Whakapapa, Whakatauki (proverbs), Waiata (songs) and korero purakau (orally transmitted stories) from generation to generation.

#### WITH RESPECT TO FLOWS:

**Te Runanga o Waihao wants to restore the associations with the Waihao Catchment by restoring significant cultural landscape (e.g. Wainono, Punatarakao) that are dependent on sufficient quantities of high quality water. This will enable the re-establishment of cultural practices and uses.**

#### 4.4 Wai tapu

Specific freshwater sources are valued because of their status or usage. Values (both tangible and intangible) associated with specific freshwater resources include: the role of particular freshwater resources in creation stories; the role of those freshwater resources in historical accounts; the proximity of settlements and/or historical sites in or adjacent to specific freshwater resources; the value of freshwater resources as a source of tribal identity; mahinga kai; the use of freshwater resources as access routes or transport courses; and the continued capacity for future generations to access, use and treasure the resource (Ministry for Environment, 1998). Waters could be classed as Wai Tapu (sacred waters) or Wai Taonga (treasured waters). Expanding on this, Traditional water classifications, which draw on the classifications proposed by Douglas (1984, 1), Palmer and Goodall (1989) Rochford (2003), and Williams (2006), offer another understanding the distinctive characteristics and values associated with different waterbodies. The classifications, as summarised in Table 2, denote saltwater and freshwater categories, distinguish other waters on the basis of physical character or levels of degradation, and identify specific cultural uses of different types of water.

Table 2: Summary of Traditional Water Classifications

Classifications by geographic location <i>Ki uta ki tai</i>	Classifications by spiritual description	Classification by physical description	Classification by special uses
<i>Waimaori</i> freshwater	<i>Waimaori</i> <ul style="list-style-type: none"> <li>• becomes waimaori when it comes into unprotected contact with humans. .</li> <li>• has a mauri (which is generally benevolent) and which can be controlled by ritual.</li> </ul>	<i>Waimaori</i> - is the term used to describe water that is running freely or unrestrained, or to describe water which is clear or lucid	<i>Waimaori</i> - is normal, usual and ordinary
	<i>Waiora</i> <ul style="list-style-type: none"> <li>• Pure water is termed Te Waiora a Tane, and to the Maori it contains the source of life and wellbeing.</li> <li>• is the spiritual and physical expression of Rakinui the sky father, shedding tears at the loss of Papatuanuku, the earth. The rain is waiora</li> </ul>	<i>Waiora</i> - The purest form of water	<i>Waiora</i> <ul style="list-style-type: none"> <li>• is used to purify and heal.</li> <li>• can remain pure, as waiora, only if its contact with humans is protected by appropriate ritual prayers.</li> <li>• has the potential to give life, to sustain wellbeing, and to counteract evil</li> </ul>
	<i>Wai whakahaheke tupapaku</i> - Classed as wai tapu		<i>Wai whakahaheke tupapaku</i> <ul style="list-style-type: none"> <li>• are water burial sites<sup>2</sup></li> </ul>
	<i>Wai tohi</i> - Classed as wai tapu		<i>Wai tohi</i> <ul style="list-style-type: none"> <li>• used by a tohunga during initiation and baptism ceremonies.</li> </ul>
	<i>Waikino</i> - is water, which has been polluted or debased, spoilt or corrupted. In waikino, the mauri has been altered so that the supernatural forces are non-selective and can cause harm to anyone	<i>Waikino</i> - describes water, which is rushing rapidly through a gorge, or water where there are large boulders or submerged snags which give the potential to cause harm to humans.	
	<i>Waimate</i> <ul style="list-style-type: none"> <li>• has lost its mauri or life force</li> <li>• has the potential to cause ill fortune, contamination or distress to the mauri of other living things, including people, their kai moana or their agriculture. The subtle differences between waikino and waimate seem to be based on the continued existence of a mauri (albeit damaged) in the former, and its total loss in the latter</li> </ul>	<i>Waimate</i> <ul style="list-style-type: none"> <li>• is dead, damaged or polluted water which has lost its power to rejuvenate either itself or other living things.</li> <li>• has a geographical meaning; to denote sluggish water, a backwater to a main stream or tide, but in this sense the waimate retains its mauri.</li> </ul>	
<i>Waimataitai</i> - brackish water of estuarine areas; the interface of freshwater & sea.			.
<i>Waitai</i> - the sea, the surf or the tide, sea water	<i>Waitai</i> - has returned to Tangaroa in the natural process of generation, degradation and rejuvenation.	<i>Waitai</i> - Rough, angry or boisterous like the surf, or the surge of the tide.	

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2 Waiwhakeheketupapaku: Water burials took place in parts of the Waihao catchment. They are part of the Silent File system recorded in Te Whakatau Kaupapa.

#### WITH RESPECT TO FLOWS:

Wai tapu are found in the Waihao – Wainono catchment including *Wai whakaheke tupapaku* (water burials)<sup>3</sup>. In the context of this report, manawhenua are likely to seek the absolute protection of freshwater resources that are considered tapu, and seek the protection of the sufficient quantities of high quality waters of taonga value (Ministry for Environment, 1997).

#### 4.5 Placenames

Place names and histories provide cultural context. The naming of places by Ngai Tahu is testament to the long history of occupation and travel within the catchment. The placenames in the Table below confirm the presence of tupuna and their use of the resources in every part of the catchment. Important places include camping places enabling food gathering, those associated with creation traditions or tupuna, settlements, and sites renowned for the different foods that could be obtained. Names provide insights to whanau resource use and the heritage values of places in the catchment. Ngai Tahu are obligated to their past and future generations to ensure that their identity and connection to the land lives on.

*Ingoa Tawhito* (place names) associated with the Waihao-Wainono that are in the public domain are included in the Table where we also try to:

- identify other taonga values associated with the area/site; and
- identify the location - if known.

Table 3: Ingoa Tawhito in the Waihao Catchment<sup>4</sup>

Name	Wahi tapu / wahi taonga	Location
Hakataramea		Location between the Waihao river and the coast, north of Parikoau (Sinclairs Creek).
Huruhia kaiua	Wahi kohatu Ngahere	Waimate Gorge
Kaewaewa Te Raki	Mahinga kai	Northern end of the Wainono Lagoon. Food gathering eels.
Kaherehere	Nohoanga	Settlement at Waimate.

<sup>3</sup> See Tau et al (1990) Te Whakatau Kaupapa.

<sup>4</sup> This is a work in progress that will be refined over the course of the fieldwork.

Name	Wahi tapu / wahi taonga	Location
Kahui o Putariri		Junction of the north branch of the Waihao with the main river.
Kai a te atua	Kaika, Wharenuui	Wharenuui, Punatarakao [not the kainga as stated in Beattie]
Kaimatarau	Repo raupo	Swamp between the Dead Arm and the beach, Wainono.
Kakahi	Wai Maori Ngahere	Waihaorunga Creek, south branch of the Waihao River
Ka Pou tu a te rakihouia	Wahi tohu	Posts established by the chief Rakihouia, son of Te Rakaihautu, to mark places suitable for fishing during his exploration south
Kapua	Repo raupo	Swamp at Amo.
Kawa	Wai Maori Mahinga kai	Famous eeling Pool in the Waihao River on the north bank below the rock, Te Pohatu a kawa
Kirikiripohatu	Wai Maori	Tributary of Pirikoau [Sinclairs Ck.], not a creek on the south bank of the Waihao River east of the Main Rd.
Kohika Stream	Wai Maori	South of Makikihi River.
Ka Opiro	Wai Maori Nohoanga Mahinga kai	Food gathering - eels. (This more correctly should be Opiro)
Kotari ate Karara	Nohoanga Mahinga kai	A food gathering place - weka. A place where taramea is gathered for oil which is set on fire annually
Ko Teika Apuka	Kaika Nohoanga Mahinga kai	Habitation. Food gathering - whale.
Kotukarae o pito	Kaika Pa tawhito Mahinga kai	Habitation, a permanent settlement. Fortified. Food gathering - eels caught in a pond named Waihao?
Kotuku		[Tare Kotuku] South western end, Lake Wainono.
Marama Huakea	Wai Maori Nohoanga Mahinga kai	Creek entering the Waihao River on the north side below the railway bridge on Bruce's farm. Listed as a food gathering place on the north branch of the Waihao River on the Taiaroa Map
Marokura	Wai Maori	Foleys Creek (?) in the south west of Wainono
Mataraki	Wai Maori	Creek on the south side of the Waihao River between McCullochs bridge and Waihao Downs bridge.
Matatiki	Wai Maori Nohoanga Mahinga kai	Spring on the south side of the Waihao River, east of the Main road. Food gathering area - ducks.



Name	Wahi tapu / wahi taonga	Location
Matatiki	Wai Maori	Source of the south branch of the Waihao River.
Matataki	Kaika Mahinga kai Ngahere	Habitation and permanent settlement shown on the Taiaroa map on the north branch of the Waihao River. Food gathering - eels and whitebait.
Mate i raki	Wai Maori	Creek on the south side of the Waihao River near the Waihao Forks township.
Mihinui	Wai Maori Wahi kohatu	Small stream originating among the limestone columns on the north side of the Waihao River above McCullochs bridge.
Mihinui	Nohoanga Mahinga kai	A Plain, a food gathering place - kauru.
Ohari	Wai Maori Mahinga kai Kaika	[Ohare]Channel connecting Te Houiri and Wainono. Habitation and permanent settlement. Food gathering - eels and whitebait.
Opiro	Puna Wai Maori	Sir Charles Creek – highly valued for biodiversity including banded kokopu, kokopara (giant bully), hao eel, horohorowai (long fin), manu, aruhe, kakahi, trout, patiki, yellow eyed mullet.
Otahito	Wai Maori	Lagoon downstream from Punatarakao, on south side of river
Otakitu	Wai Maori	The first tributary up from the source the south branch of the Waihao River.
Otehau	Repo raupo	Swamp east of Bradshaws Bridge (drained).
Oterehua	Repo raupo Kaika Mahinga kai	Habitation and permanent settlement. Food gathering - eels and whitebait. Lower Hook River swamps, described by Beattie as a 'shallow lagoon west of the lake [Wainono] which was also made a reserve'
O Tuhaitara	Wai Maori	Creek on the south side of the Waihao River between McCullochs bridge and Waihao Downs bridge.
Parihaka	Kaika Nohoanga Mahinga kai	Habitation and permanent settlement, Waihao River system. Food gathering - eels and whitebait.
Patiki	Wai Maori	Waihao River creek seaward of Punatarakao.
Parikoau	Wai Maori	Sinclairs creek south of the Waihao River
Pou tu mokai	Kaika Wai Maori Ara tawhito	Settlement and the site of the eel weir in the Waihao River opposite the Dead Arm above Claridges ripple the natural weir used by people as a crossing.
Puhakati	Reserve	Reserve (M.R. 906?) created in 1868? in the northern swamps of Wainono lagoon in association with the lower Hook River.
Putariri	Wai Maori	North branch of the Waihao River.
Putetewiri	Wai Maori	South branch of the Waihao River.

Name	Wahi tapu / wahi taonga	Location
Punatarakao	Wai tapu Puna	Willowbridge stream, lower Waihao River.
Punatarakao	Kaika Mahinga kai Tauranga waka Taniwha Urupa	Hateatea's kainga (200 people), the meeting house of which as named Ko te Kaiatiatua. Kainga Rangatira at the time of the removal of the people to Raukawa were Kaikaia waro and Te Karara. Food gathering - fish, fernroot, purau (a vegetable) Listed on Taiaroa's Map as Puna tera but in the schedule as Punatorokao, a food gathering place for eels and whitebait
Puna te ra	Puna	Spring at Punatarakao
Rotopateke	Wai Maori	Lagoon between the north and south branches of the Waihao River. Named as Waipateke in Beattie.
Tahoro	Wai Maori	Creek on north side of Waihao River towards McCulloch's bridge.
Tahoro	Nohoanga Mahinga kai	A plain. Food gathering, food from a turnip cultivation. place where flax and kauru was obtained
Takapu a te atua	Puna	Spring at Punatarakao ~ may be the same place as Kapu ate atua and Rapu a te atua.
Takipo	Wai Maori Mahinga kai	Tributary of the north branch of the Waihao River. Food gathering fernroot.
Takiri tawa	Kaika	Settlement between the Dead Arm and the Waihao River. Food gathering (ducks)
Taramakau	Mahinga kai	Food gathering - eels and whitebait.
Taranui	Wai Maori	Tributary of the north branch of the Waihao River.
Te Ana a ru		Waihao River Forks
Te Awa a kiri kore	Wai Maori Nohoanga Mahinga kai	Tributary of the north branch of the Waihao River. Food gathering - weka
Te Awa a Titipa	Wai Maori	Tributary of the north branch of the Waihao River.
Te Hau	Wai Maori	Creek near McCullochs bridge, Waihao River.
Te Hironui	Mauka	Mt Harris, Marokura hills between Waihao River and Waitaki River
Te Houiri	Reserve	Maori Reserve 907 and the lagoon Te Houiri, Wainono.
Te Horo		Landslip on the north bank of the Waihao River in the vicinity of Kawa.
Te Kaha Pakeha	Kaika Mahinga kai	Habitation and permanent settlement. Food gathering - eels and whitebait.
Te Kakautaka Ahi [Kakou a Takaahi]	Nohoanga Mahinga kai	Food gathering - eels and whitebait.
Te Karae o pito [Kotukarae Opito]	Wai Maori	Mouth of the Waihao River.
Te Kiteroa	Mauka Ngahere	Hunters Hills.
Te Kotare O Waihou	Nohoanga Mahinga kai	Food gathering - eels, whitebait. Potato cultivation.

Name	Wahi tapu / wahi taonga	Location
Te Kutuawa	Wai Maori Mahinga kai Nohoanga	The mouth of the Waihao River. Food gathering place eel, patete (tree).
Te Marokura	Wai Maori Puna Mahinga kai Nohoanga	Tributary of the south branch, Waihao River. Food gathering [river and spring] _ eels.
Te Matatiki	Wai Maori Mahinga kai Nohoanga	Tributary of the north branch of the Waihao River. Food gathering - eels, whitebait, kakahi, fernroot.
Te Pari	Wahi kohatu	Steep cliffs above the Waihao River west of McCulloch's bridge.
Te Pariatakaiwaho	Mahinga kai	A place where turnips were obtained and eels caught from a sandbank.
Te Pou a te wera	Wahi tohu Mahinga kai Nohoanga	A post established by Te Wera to indicate that Wainono was a valued fishing location. Food gathering – eels
Te Putahi a kawa	Puke	Shearers hill.
Te Rae o Kaimatarau		Western side of Wainono north of Waikoura.
Te Rakau A Tane Hakaau	Kaika Mahinga kai	Habitation, a permanent settlement. Food gathering .Potato and turnip cultivation
Te Rangiwhaitiri	Kaika Mahinga kai	Habitation. Food gathering - eel, whitebait.
Te Rara a tau karere	Wai Maori	Tributary of the north branch of the Waihao River.
Te Rotopateke	Wai Maori	Dog Kennel Creek and the former swamp.
Te Rua a te unu	Wai Maori	Old channel between Lake Wainono and the original river mouth.
Te Rua koaro		
Te Rua koura	Wai Maori Mahinga kai	Hole in which Fresh water crayfish caught near Te Waikoura creek, Waihao River
Te Takapu a te atua	Puna	Spring at Punatarakao
Te Take a te karara	Wai Maori	Area on the northern side of Punatarakao Ck at its junction with the Waihao River
Te Whakauki	Kaika Mahinga kai Mara kai	[Teuwhakauki] Tributary of the north branch of the Waihao River. Habitation. Food gathering – fernroot (Kiripahori). A cultivation.
Te Wai a te Karuki	Puna	Spring of good drinking water.
Te Wai ki a Te Maiheraki	Wai Maori Ngahere	Kelcys Bush, Waimate Creek.
Te Waimakihikihi	Wai Maori	Makikihi River.
Te Waikoura	Wai Maori	Creek just below McCulloch's bridge, on south side of the Waihao River
Te Wai o te rnarakihi	Wai Maori Mahinga kai Nohoanga	Creek on south side of the Waihao River above the 'clay cliffs' beyond the railbridge. Food gathering place - Kauru, fernroot and eels.
Te Waimate mate	Mahinga kai Nohoanga	A seasonal birding camp of Punatarakao, the present Waimate. Also referred to as Kaherehere.
Te Whakahoki a Urihia		Chetnole Valley, Waihao Forks area??
Te Whitau a tauria	Puna	Spring that feeds Opiro (Sir Charles Creek).

Name	Wahi tapu / wahi taonga	Location
Titipa	Kaika	Habitation, a permanent settlement.
Toromikimiki	Kaika Mahinga kai Mara kai	Habitation. Occupied at the time of Mantell, when Huruhuru was their. Food gathering. Potato cultivation (named Te Parikoau).
Tuhau	Mahinga kai Nohoanga	Food gathering - fernroot and eels.
Turau	Wai Maori	Tributary of the north branch of the Waihao River.
Tutekawa	Kaika	Settlement at Point Bush in the 1840s?
Umtane	Puke	Hill near Waimate.
Waiariari	Mahinga kai Nohoanga Mara kai	Food gathering - turnips and eels. A plain where kauru obtained.
Waiariari	Wai Maori	Hook River – historically supporting kakahi, eels, wai koura. Today sustaining eels, cress, ducks.
Waihao	Wai Maori	Waihao River, the river of the hao eel.
Waikakahi	Ara tawhito	Southern section of the trail between the Waitaki River, Te Kapa's settlement at Arno above Te Kapa's swamp, and Te Waimatamate via Waikokopara Creek (Dry Creek) and the Waimate creek.
Waikawa	Puna	Spring of bitter salty water.
Waikokopara	Wai Maori	Deep Creek, Tributary of Waimate Creek,
Waikoura	Wai Maori	Stream on the western side of Wainono.
Waikoura	Wai Maori	Meyers Creek, south branch, Waihao River.
Wainono	Kai roto	Lake Wainono at the seaward end of the Waihao River system.
Waioriori	Wai Maori	Hook stream delta, Lake Wainono.
Waipatake	Wai Maori	Lagoon between the two branches of the Waihao River.
Waipohatu	Wai Maori	Stony creek, southern branch of the Waihao River.

#### WITH RESPECT TO FLOWS:

In section 4.3 we discussed the spiritual significance of environments to manawhenua. It is important to note that in addition to the taonga value of the placename itself, value also stems from knowing, being able to see the meaning of the placename when viewing the characteristics of the landscape, and being able to use sites as tupuna did.

#### 4.6 Mahinga Kai<sup>5</sup>

Historically Ngai Tahu led a highly mobile life, pursuing a seasonal round of hunting and food gathering over a large territory. Survival largely depended on hunting and gathering kai. Anderson (1998) described how the population dispersed during late spring to autumn to inland regions and retreated to long term settlements (typically nearer the coast) in winter and early spring. Various resources which were seasonably abundant, would be preserved and the food taken back to these more permanent settlements (Waitangi Tribunal 1991).

Historically the catchments of South and Mid Canterbury represented a highly prized landscape. Ngai Tahu fished extensively in the wetlands, streams, creeks and the many braids and backwaters of the main Canterbury rivers. Despite the development of farming following the arrival of settlers many Ngai Tahu continued to rely on their traditional resources for their existence. The value of mahinga kai from Waihao and Wainono specifically, has been well documented and significantly has been acknowledged by successive governments most recently in the Ngai Tahu Claims Settlement Act 1998 provisions. As Table 4 illustrates, 38 different foods and materials were gathered from across South and Mid Canterbury (between the Waitaki and the Rakaia and extending inland to the main divide). Table 5 presents the 10 most commonly gathered species.

**Table 4: Species traditionally gathered from across South and Mid Canterbury<sup>6</sup>.**

SPECIES				
Eels	Smelt	Flounder	Potato	Turnip
Rats	Seals	Whitebait	Whale	Aruhe
Sea nuts	Kanakana	Patete	Kauru	Flax honey
Flax	Panako	Kumara	Shark	Groper
Shellfish	Paua	Sea urchins	Tutu	Kōkopu
Koareare	Weka	Kahawai	Cabbage	Kokopara
Kanaka	Pakihi	Minnows	Taramea	Birds
Mullet	Puha	Watercress		

<sup>5</sup> This is a general description that will be included in all South Canterbury Flow Reports.

<sup>6</sup> This comes from analysis of the 1880 map and accompanying manuscript, commonly referred to as the "Taiaroa reports" by Ngai Tahu, represent a highly valued "cultural map" (Poole 2004). It was an initiative by kaumātua from neighbouring hapu and facilitated by H.K. Taiaroa, to map their collective territory, their mahinga kai interests and values associated with particular sites<sup>6</sup>. These records allow a more complete examination of the food gathering system within the Canterbury and Otago regions. Two thousand sites were listed.

Figure 3 Traditional place names across South Canterbury (Tipa and Nelson, 2011).

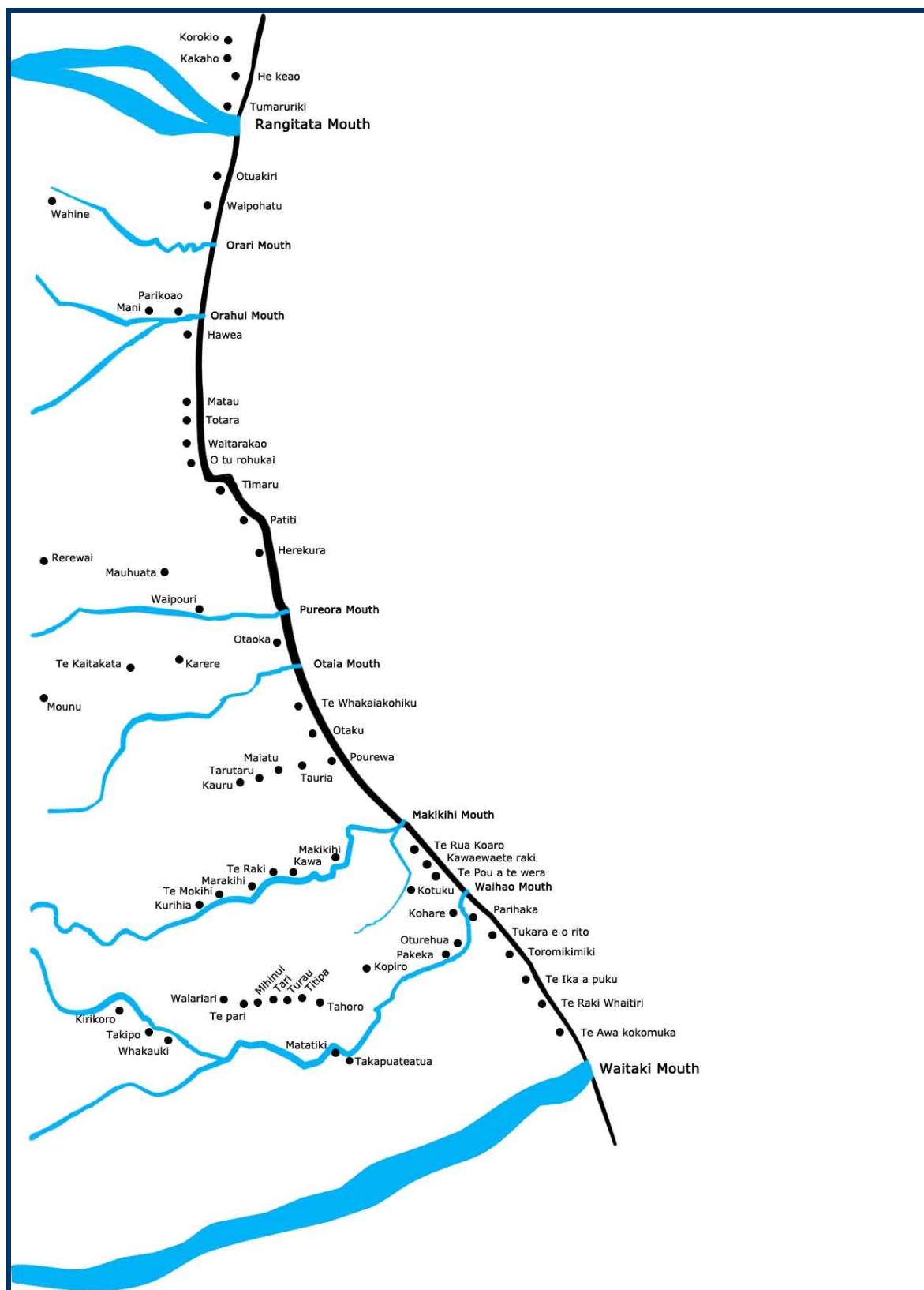
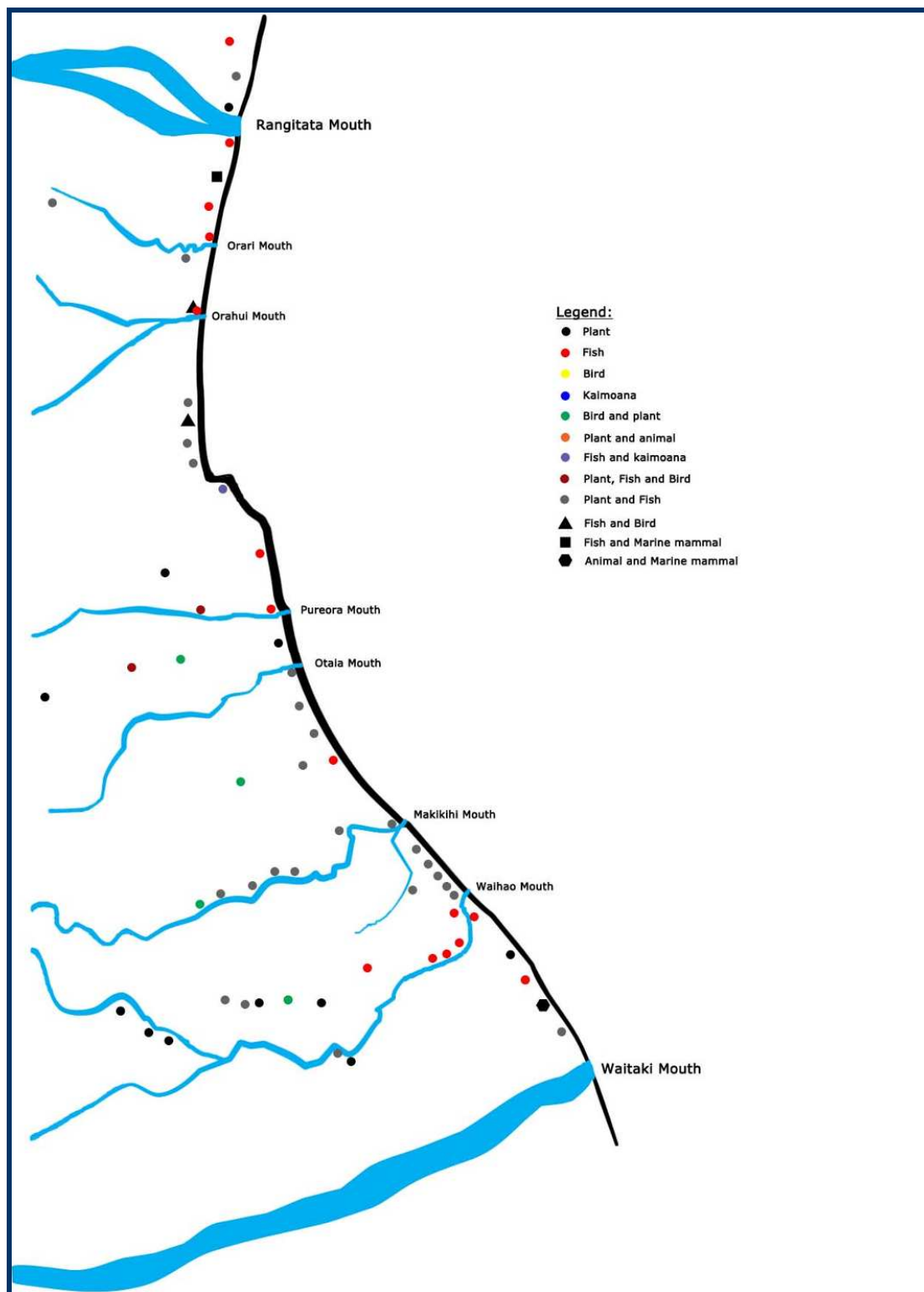


Figure 4 A few of the mahinga kai sites found across South Canterbury. (Please note that there were considerably more sites than those shown. To avoid congestion of the map and to preserve the location of some sites, the names and uses of selected sites have been withheld).





**Table 5: Percentage of sites from which species gathered in South & Mid Canterbury.**

SPECIES	PERCENTAGE OF SITES (%)
Eels	72
Kauru (extract from the cabbage tree)	24
Minnows	19
Aruhe (bracken fern)	19
Turnip / potato	13
Whitebait	11
Flax	11
Koareare (root of the bulrush)	9
Weka	8
Kōkopu / kokopara	8

**Long fin eels are a taonga – a highly prized taonga associated with South Canterbury**



It must be acknowledged that traditionally rights had to be maintained through continual usage. Through an annual cycle of fishing, gathering and hunting, whanau and hapu “kept the fires burning” in many locations across a large tract of the South Island. Inter-marriage between hapu and subsequent rights of inheritance and succession mean that for many Ngai Tahu today they now hold rights to lands across much of the southern region.



### **The Continuing Importance of mahinga kai resources**

Changing landuses over the last century, in particular the intensification of farming activity, resulted in mahinga kai losses. Despite these changes, it is important to emphasize that the cultural values and traditional mahinga kai behaviours have survived. Mahinga kai remains a cornerstone of Ngai Tahu culture and identity.

### **The special significance of eels**

South Canterbury was known for its tuna resources. As Table 5 shows of the hundreds of South Canterbury sites marked on the Taiaroa map, more than two thirds were sites from which eels were taken. In this paragraph we highlight some characteristics of the eel fishery. We draw from three documents:

1. South Canterbury Waitaki Eel Management Plan (Ministry Fisheries 1996)
2. The study of the eel fishery by Jellyman and Sykes (1997)
3. The second study of the eel fishery by Jellyman and Sykes (2011).

In the South Canterbury Waitaki Eel Management Plan (Ministry Fisheries 1996) the following observations were made:

- The fishery is best in flood events;
- The fishery could sustain a harvest of 4 tonne;
- There are few long fins in the lower catchment; and
- There is a prolific short fin fishery in Waihao Lagoon and lower tributaries.

They also note the following problems:

- excessive extraction;
- excessive pollution;
- the mouth could be closed at crucial times; and
- the flood banks have impacted the lower system.

Jellyman and Sykes (1998) concluded:

- Waihao Lagoon itself (excluding the Hook Swamp Drain) is now recognised as a non-commercial fishery (Te Waka a Maui me ona Toka Mahi Tuna 1996).
- The population of the lagoon (in 1998) was almost completely shortfins (99%). Being a species preferring flowing water, more longfins were found in both the canal and the Waihao River, although they still comprised only 13% of all eels from these areas.
- Catches from Wainono Lagoon are approximately a third of those from Lake Waahi (chosen by Jellyman as a comparable lake), indicating a relatively low density of eels in the lagoon. The density of eels recorded from the Waihao River was considered low.
- The eel densities from the Waihao River fall within the range for other lowland rivers, and are consequently regarded as "average".
- Compared with growth rates elsewhere in New Zealand (Jellyman 1997), growth from the lagoon, canal and, to a lesser extent, the Waihao River, were considered to be rapid.

Jellyman (1998) noted his concern at the relative lack of early year-classes from the river and proceeded to discuss recruitment and fish passage. He noted recruitment of glass-eels during autumn will be dependant upon their arrival coinciding with a mouth opening – the whitebait fishery has a similar dependency. The peak period for recruitment of shortfin glass eels in Canterbury is October-November (NIWA unpublished data). Should there be no mouth opening over part of this time, then it is probable that whole year-classes will be poorly represented.

Jellyman in his 1997 report concluded that overall, the Wainono Lagoon eels stocks are in a healthy state. This result is in general agreement with the opinion of Te Waka a Maui me ona Toka Mahi Tuna (1996) who considered that the status of shortfin stocks in the Pareora/Wainono catchment was "good", although they described the extent of the customary harvest as "excellent" in past years, but "poor" at that time; which he attributed to the customary take probably being considerably lower than prior to commercial fishing, but this is offset to some extent by rapid growth.

Jellyman (2011) concluded:

- The Hook River was the only one where a reasonable sample of eels was dominated by longfins (75%) which contrasted markedly with nearby catches in the Waihao catchment, where the Dead Arm and Hook Drain catches were dominated by shortfins.
- Shortfins are usually the dominant species in estuaries and river mouths. In river reaches above estuaries, longfins dominated with the exception of the upper Waihao where shortfins dominated (74%). The upper Waihao was slow-flowing with a high proportion of fine substrates, habitat features well-suited to shortfins. The large mean size of shortfins from here probably represents the denial of access to commercial fishers by the local farmer who has not allowed commercial fishing in this area for the past 14 years.
- The northern tributaries to Wainono Lagoon (Hook River and Hook Drain) produced contrasting species proportions, again consistent with the habitats present – thus the muddy and slow-flowing drain and Dead Arm were dominated by shortfins. In contrast, the lower Hook River, was dominated by longfins. These associations are consistent with the preferred habitats of each species (McDowall 1990; Jellyman et al. 2003).
- Two rivers stood out as having particularly large eels, the Hook River and upper Waihao; the Hook is part of the non-commercial area of Wainono Lagoon that has been a reserve for several years, while the reach sampled in the upper Waihao had not been commercially fished for 14 years.
- Growth of shortfins is comparatively low, with only three South Island rivers (Waiau, Hurunui, and Grey Rivers) having growth rates less than the Waihao. In contrast, average growth of longfins in the Waihao River is comparatively good, being less than only three (Mataura, Waitaki, and Rakaia Rivers). The slow growth experienced by shortfins was unexpected, but may be in part a reflection that these rivers are ephemeral (Waihao) and suffer from low summer flows. Diminishing flows could impose some thermal stress as water temperatures increase, plus any eels within such areas would need to relocate to permanent water; either mechanism could potentially reduce growth rates.
- Small eels were only being caught in modest numbers. The relative lack of small eels raises concern about the regularity and adequacy of annual recruitment. The percentage of small longfins is of more particular concern, as this species dominates the adult populations yet levels of recruitment seem particularly low.
- From an earlier survey of the eel stocks of Wainono Lagoon (Jellyman and Sykes 1998), the average size and growth rate of shortfins have both increased over the past 13 years.

Jellyman final conclusions were

- The species composition was dominated by shortfins, although the abundance of this species declined away from the coast;
- The abundance of small eels of both species was lower than expected, especially for longfins;
- The size of eels varied considerably between rivers; there were signs of significant depletions of larger shortfins from areas commercially fished, but the sizes of longfins were typical of those from other commercially fished rivers;
- Growth rates of larger shortfins were below averages of other South Island rivers, but rates for longfins were above average; and
- the low recruitment of juvenile eels. River mouth closures during spring would compound this issue, although the lack of juvenile longfins is symptomatic of a more widespread issue for this species.

#### The Dead Arm



#### Overall summary of mahinga kai

- Ngai Tahu have always asserted that the term “mahinga kai” means a place where food is gathered;
- For hundreds of years mahinga kai has been a necessity of life to Ngai Tahu.
- Settlement has destroyed, and affected access to, mahinga kai.
- Mahinga kai still has immense cultural significance and underpin core cultural values of whanaungatanga, manaakitanga, and kaihaukai.
- There is still a need not only for food resources, but for natural dyes and fibres, wood for carving, plants for rongoa; and

- The fresh water and sea fisheries continue to be of great importance.
- The closure of parts of the catchment from commercial eel fishing represents and opportunity to enhance the mahinga kai values of this catchment.

**WITH RESPECT TO FLOWS:**

**Te Runanga o Waihao wants to ensure that flows and water quality standards meet the needs of valued mahinga kai species, especially the tuna fishery. Whanau members repeatedly stressed the need for adequate fish passage throughout the system.**

#### **4.7 Reserves and Easements**

There are a number of reserves, easements and entitlements in the Waihao-Wainono catchment. Many of the reserves and fishing easements can be traced back to Crown Grants to Ngai Tahu whanui which stem from the Southern Purchase Deeds negotiated between 1844 and 1857. Directly as a result of the Crown's failure to set aside sufficient reserves under the Kemp deed in 1848 and, in particular fishery reserves, the Native Land Court in 1868 was directed to determine what reserves should have been made. Chief Judge Fenton proceeded to make a number of orders. For lands that were granted to enable the continuation of a food gathering lifestyle, certain guarantees were provided with respect to the nature of natural resources that were to sustain this lifestyle.

Understanding these Crown Grants is fundamental to understanding the concept of Manawhenua.

**Table 6: Some of the native reserves in the province of Canterbury<sup>7</sup>**

<b>Reserve Name</b>	<b>Size (acres)</b>	<b>Interest</b>
Waimatamate	40	Reserved by the Canterbury Association
Waimatamate	500	Award of the NLC, 1868, in fulfilment of Kemps Deed of June 1848
Waimatamate	30	Award of the NLC, 1868, in fulfilment of Kemps Deed of June 1848
Waimatamate	10	Award of the NLC, 1868, in fulfilment of Kemps Deed of June 1848
Waimatamate	20	Award of the NLC, 1868, in fulfilment of Kemps Deed of June 1848

The focus of this report is freshwater. The rights of Manawhenua are perhaps best understood in relation to their rights to fish and the more recent debate about the rights to water. Manawhenua continue to hold in high value their time honoured inherent rights to fish. Although Ngai Tahu thought they had protected their mahinga kai in the sales agreements of the nineteenth century (most notably Kemps Purchase), they were denied

<sup>7</sup> Alexander Mackay (1872) A Compendium of Official Documents relative to Native Affairs in the South Island, Memorandum on the origination and management of native reserves in the Southern Island Pages 338 and 339 of Volume 2

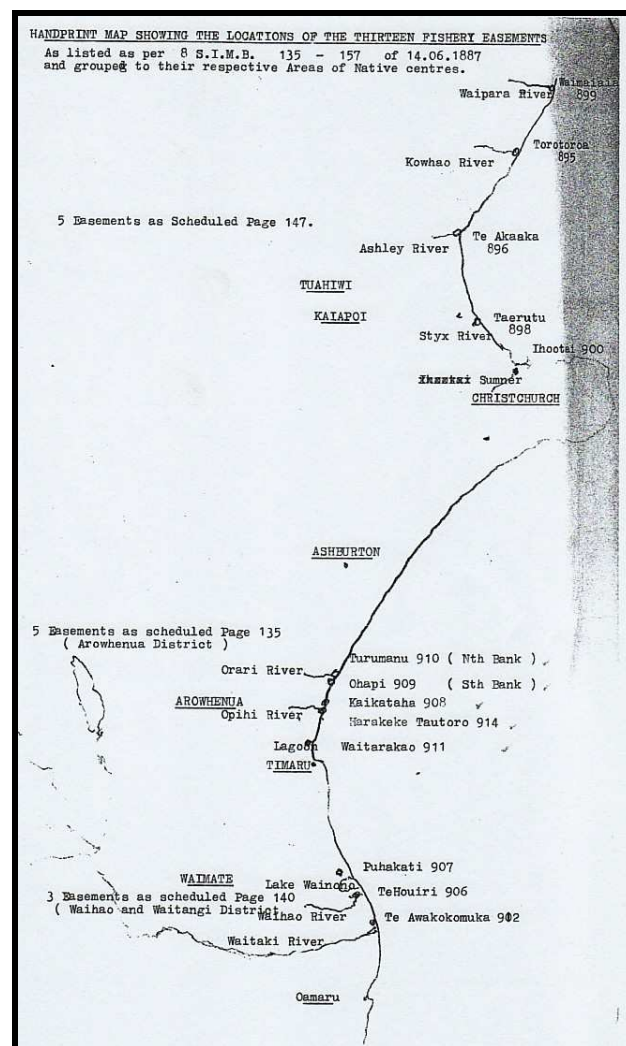
access and the right to self manage and were forced to fight for recognition of their rights in legal forums resulting in the Crown Grants. Table 7 therefore extracts from the tables in the previous section the reserves that relate to Fenton Orders of 1868 and highlights their relationship to the waters of Canterbury.

**Table 7: Fenton Orders of 1868 resulting from Kemps Deed of 18488**

Location	Association with water
10 acres Waitangi District – near Wainono (Te Houiri Maori reserve)	Fishing easement - Near Wainono Lagoon. Bounded on the westward by a small lagoon.
20 acres Waitangi District (Puhakati Maori Reserve)	Fishing easement

Figure 5 illustrates the location of the fishing easements in Canterbury<sup>9</sup>.

**Figure 5 Location of fishing easements in Canterbury**



<sup>8</sup> This information was sourced from Taylor (1959) and from descriptions found in a report titled *Research into Maori Fishing Reserves: Establishment of Rights – Objections and Complaints from 1840*. The writer was given a copy of the report by Kelly Davis.

<sup>9</sup> The excerpts from the Maori Land Court minute book referred to on the map (are pages 135 to 157)

As Figure 3 shows, Pukatahi, or Puhakati, and Te Houriri were two fishing reserves situated near Wainono Lagoon that were set aside by the Native Land Court in 1868 at Ngai Tahu's request. At the out of court meeting with Ngai Tahu on 2 May 1868, Horomona Pohio, on behalf of the people of Arowhenua, Waimatamate, and Waitaki, requested 14 reserves for the people of these areas. Two such requests were:

- 10 acres at mouth of River Hook on a lagoon, at Northern end.
- Waimatamate. 2 Reserves at Waihau on sea Coast near burial ground say 20 acres altogether. (P11:309)

A number of Pohio's requests were turned down, and in most cases the acreages were diminished. Twenty acres, however, were set aside as a fishing reserve on the north-western side of Wainono Lagoon, adjoining the Hook River. It is referred to in the Maori Land Court today as Puhakati MR 907. Ten acres were also awarded at an eel weir at what was then a small lagoon just south of Wainono Lagoon. This reserve is known as Te Houriri MR 906. An 1878 survey plan shows the area as 10 acres 3 roods 15 perches (O6A:50).

The Fenton Reserves on Wainono Lagoon, granted in the 19th century and formalised in the Settlement, are essentially fishing easements, where the customary rights were vested in particular people, and their descendants continue to exercise those exclusive rights today.

Ngai Tahu continued to assert their rights during intense Treaty negotiations with the Government resulting in a range of redress in the Ngai Tahu Claims Settlement Act 1998. They continue to hold that stance now as the debate enters other natural resource forums, such as the CWMS discussions. The Tribunal believed that the Crown had a special duty to protect these fishery reserves so that Ngai Tahu could continue to enjoy them. The evidence presented to the Tribunal in respect of not only the Canterbury fishery reserves but also other Ngai Tahu fishery reserves shows that this duty was not performed. As a result Ngai Tahu was left bereft of a major food resource. The 1868 fishery reserves created by the Native Land Court were of special importance to Ngai Tahu.

The Tribunal concluded that Pukatahi and Te Houriri were two further cases in which areas set aside for fishing purposes have been rendered worthless for this as a result of land drainage. The Tribunal concluded that the deterioration of the Pukatahi and Te Houriri fisheries constitutes a failure on the part of the Crown to protect Ngai Tahu's mahinga kai. Such failure was deemed to be a breach of article 2 of the Treaty. The

Tribunal supported the development of the lagoon as a fishery for manawhenua. Such development by the Crown, in partnership with manawhenua, would provide real and meaningful reparation for the loss that Ngai Tahu of south Canterbury have suffered in the destruction of mahinga kai such as Te Houriri and Pukatahi.

**WITH RESPECT TO FLOWS:**

**Manawhenua want to ensure that the health of the river system enables them to occupy and use the reserves and easements to which they are entitled. An entitlement that has been acknowledged by the Crown as early as 1868 and as recently as The Ngai Tahu Claims Settlement.**

#### **4.8 Contemporary Associations**

The Crown's settlement of the Ngai Tahu claim contained a number of components<sup>10</sup> specifically:

- An apology;
- Aoraki – recognition of Ngai Tahu mana;
- Economic redress;
- Cultural redress; and
- Non-tribal redress.

Cultural redress was intended to recognize the cultural and spiritual relationship of Ngai Tahu with the natural environment. The redress was aimed at “restoring Ngai Tahu’s ability to give practical effect to its kaitiaki responsibilities” (Ngai Tahu Publications, 1997). A summary of the range of mechanisms is included in Table 8. While the range of new legislative provisions is extensive, they are seen to complement the Crown Grants of the nineteenth century.

<sup>10</sup> See Te Karaka Special Edition from Ngai Tahu Publications in 1997, which set out the Crown Settlement offer.



**Table 8: A summary of mechanisms resulting from the Ngai Tahu Claims Settlement<sup>11</sup>**

Type of recognition	Mechanism	Description
Ownership and control	Pounamu	
	High country stations	
	Four specific sites	<ul style="list-style-type: none"> <li>Arahura Valley</li> <li>Rarotoka</li> <li>Whenua Hou</li> <li>Crown Titi Islands</li> </ul>
	Wahi taonga	<ul style="list-style-type: none"> <li>Return of Tutaepatu Lagoon</li> <li>Ownership and/or control of a further 41 sites</li> <li>Title to three lakebeds</li> </ul>
Mana Recognition	Statutory Acknowledgments	For 64 areas
	Deeds of recognition	For the same 64 areas
	Topuni	14 topuni created.
	Dual placenames	88 names to be changed.
Mahinga kai	Nohoanga	72 temporary campsites created
	Customary fisheries management	8 elements included
	Taonga species management	A schedule in the Act recognizes 49 birds, 54 plants, 6 marine species.
	Coastal space	Provisions are included that relate to coastal tendering.
Management input	DOC protocols to be formulated	
	Dedicated membership of selected Boards and Committees.	
	Statutory Advisory roles to Ministers	
	RMA implementation	
	Heritage Protection Review	
Non tribal redress	Ancillary claims	<ul style="list-style-type: none"> <li>Fenton entitlements – descendants can occupy for up to 210 days per year: Taerutu, Waimaiaia, Torotoroa, Te Aka Aka, Pukatahi, Te Houriri</li> <li>Fishing reserves: Te Ihutai, Ahuriri, Wainono, Hawea, Tatawai</li> <li>Land based – Arahura, Otakou, Kaikoura, Murihiku</li> </ul>
	Silna	5 specific claims upheld.

**WITH RESPECT TO FLOWS:**

**Te Runanga o Waihao wants to ensure that the mechanisms negotiated in good faith during the Claim Settlement process are not undermined because of inappropriate water management.**

<sup>11</sup> The specifics of any of these instruments can be sourced from the Ngai Tahu Claims Settlement Act 1998.

#### 4.8 The Location of Ngai Tahu's Values within the Waihao-Wainono Catchment

No detailed maps have been produced in the context of this report. It should be noted however that culturally sensitive information supporting the statements in this report are available and would be presented orally by members of Te Runanga o Waihao. They do not want to disclose sensitive information in an report.

We have used the concept of Ki Uta Ki Tai to structure this part of the report. This concept comes from the traditions, and values of Ngāi Tahu in relation to the natural environment, and in particular from the custom of mahinga kai. However, this conceptualisation of a catchment confirms a deeper understanding acknowledging that rivers connect the entire landscapes from the mountains to the sea, and conversely that rivers are linked to their catchments. As a result of Ngai Tahu's holistic view of river systems from a 'Ki Uta, Ki Tai' (mountains to the sea) perspective, the cultural values identified for the system are presented using the zonal approach.

##### Ki uta kai - different geographic zones

Each part of the system has distinct characteristics and these in turn can be affected differently by development and river management. The values within the catchment, and the impacts on those values of past and current resource management practices, are considered across four broad geographic zones.

- 1 the many creeks and streams flowing from the foothills;
- 2 the mid-catchment – seen as being upstream of State Highway 1;
- 3 the lower floodplain below State Highway 1; and
- 4 Wainono Lagoon.

Streams of traditional significance within this part of the catchment include

**A: Headwaters** the following.

Sub-catchment	Ingoa tawhito	Location
<b>Waihaorunga</b>	Kakahi	Waihaorunga Creek, south branch of the Waihao River
<b>South Branch Waihao</b>	Matatiki	Source of the south branch of the Waihao River.
	Otakitu	The first tributary up from the source the south branch of the Waihao River.
	Putetewiri	South branch of the Waihao River.
<b>North Branch</b>	Putariri	North branch of the Waihao River.
<b>Waimate Creek</b>	Waikokopara	Deep Creek, Tributary of Waimate Creek,
	Huruhia kaiua	Waimate Gorge
	Te Wai ki a Te Maiheraki	Kelcys Bush, Waimate Creek.
	Waikakahi	Southern section of the trail between the Waitaki River, Te Kapa's settlement at Arno above Te Kapa's swamp, and Te

		Waimatamate via Waikokopara Creek (Dry Creek) and the Waimate Creek.
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## B: Mid-Catchment

Streams of traditional significance within this part of the catchment include the many creeks that flow into the two branches of the Waihao.

Sub-catchment	Ingoa tawhito	Location
<b>Creeks in vicinity of McCulloch's Bridge</b>	Mataraki	Creek on the south side of the Waihao River between McCullochs bridge and Waihao Downs bridge.
	Mihinui	Small stream originating among the limestone columns on the north side of the Waihao River above McCullochs bridge.
	O Tuhaitara	Creek on the south side of the Waihao River between McCullochs bridge and Waihao Downs bridge.
	Tahoro	Creek on north side of Waihao River towards McCulloch's bridge.
	Te Hau	Creek near McCullochs Bridge, Waihao River.
	Te Waikoura	Creek just below McCulloch's bridge, on south side of the Waihao River
Waihao River		

## C: Lower Floodplain

Streams of traditional significance within this part of the catchment include the following.

Sub-catchment	Ingoa tawhito	Location
<b>Punatarakao (Willowbridge Creek, Buchanans Creek)</b>	Kai a te atua	Wharenuui, Punatarakao [not the kainga as stated in Beattie]
	Punatarakao	Willowbridge stream, lower Waihao River.
	Punatarakao	Hateatea's kainga (200 people), the meeting house of which as named Ko te Kaiatitua. Kainga Rangatira at the time of the removal of the people to Raukawa were Kaikaia waro and Te Karara. Food gathering - fish, fernroot, purau (a vegetable) Listed on Taiaroa's Map as Puna tera but in the schedule as Punatorokao, a food gathering place for eels and whitebait
	Puna te ra	Spring at Punatarakao
	Takapu a te atua	Spring at Punatarakao ~ may be the same place as Kapu ate atua and Rapu a te atua.
	Te Takapu a te atua	Spring at Punatarakao
	Te Take a te karara	Area on the northern side of Punatarakao Ck at its junction with the Waihao River

Sub-catchment	Ingoa tawhito	Location
<b>Dead Arm</b>	Kaimatarau	Swamp between the Dead Arm and the beach.
	Pou tu mokai	Settlement and the site of the eel weir in the Waihao River opposite the Dead Arm above Claridges ripple the natural weir used by people as a crossing.
	Takiri tawa	Settlement between the Dead Arm and the Waihao River. Food gathering (ducks)
<b>Lower Hook River</b>	Waiairi	Hook River
	Waiaiori	Hook stream delta, Lake Wainono.
	Oterehua	Habitation and permanent settlement. Food gathering - eels and whitebait. Lower Hook River swamps, described by Beattie as a 'shallow lagoon west of the lake [Wainono] which was also made a reserve'
	Oterehua	Habitation and permanent settlement. Food gathering - eels and whitebait. Lower Hook River swamps, described by Beattie as a 'shallow lagoon west of the lake [Wainono] which was also made a reserve'
<b>Sir Charles Creek</b>	Ka Opiro	Food gathering - eels. (This more correctly should be Opiro)
	Opiro	Sir Charles Creek.
	Te Whitau a tauria	Spring that feeds Opiro (Sir Charles Creek).
<b>Dog Kennel Creek</b>	Te Rotopateke	Dog Kennel Creek and the former swamp.
<b>Waihao River</b>	Kahui o Putariri	Junction of the north branch of the Waihao with the main river.
	Te Houiri	Maori Reserve 907 and the lagoon Te Houiri, Wainono.
	Te Karae o pito [Kotukarae Opito]	Mouth of the Waihao River.
	Patiki	Waihao River creek seaward of Punatarakao.
	Hakataramea	Location between the Waihao river and the coast, north of Parikoau (Sinclairs Creek).
	Marama Huakea	Creek entering the Waihao River on the north side below the railway bridge on Bruce's farm. Listed as a food gathering place on the north branch of the Waihao River on the Taiaroa Map
	Matatiki	Spring on the south side of the Waihao River, east of the Main Road. Food gathering area - ducks.
	Patiki	Waihao River creek seaward of Punatarakao.
	Parikoau	Sinclairs creek south of the Waihao River
	Pou tu mokai	Settlement and the site of the eel weir in the Waihao River opposite the Dead Arm above Claridges ripple the natural weir used by people as a crossing.
	Te Houiri	Maori Reserve 907 and the lagoon Te Houiri, Wainono.
	Te Karae o pito [Kotukarae Opito]	Mouth of the Waihao River.
	Te Kutuawa	The mouth of the Waihao River. Food gathering place eel, patete (tree).
	Te Rotopateke	Dog Kennel Creek and the former swamp.
	Te Kutuawa	The mouth of the Waihao River. Food gathering place eel, patete (tree).

Three significant cultural landscapes in this lower catchment are described below before we conclude with discussion of two settlement mechanisms.

### **Punatarakao**

Punatarakao, the old pa site near the current river mouth at the Waihao Box, was the principal kainga of Te Hapu O Ngati Hateatea. This was the place at which the 1848 census was taken and Hateatea is one of the 3 hapu that the current members of Ngai Tahu whanui at Waihao represent. This census is the principal record that identifies those who have a Whakapapa (genealogical) link to the area and who are entitled to affiliate to Te Runanga o Waihao Inc.

The settlement of Punatarakao, on the south side of the river near the Fletcher's recording site, recorded over 200 persons present during the census of 1848, a large number for that time. It was the mahinga kai of the Punatarakao wetland area which made it attractive as an occupation site. With the sale of the land in Kemp's Purchase came the decision for the significant buildings to be dismantled and their carvings hidden before the people had to leave for Raukawa, the land now known as Waihao 903 on the Maori Road.

### **Buchanans Creek**





One of the principal traditions relating to the area tells that it is guarded by the taniwha, Tu Te Rakiwhanoa, who was said to appear as a sign of death. Punatarakao was also famous for its Whare Wananga, where tohunga went to learn. There are a number of urupa and wahi tapu in the area.

### **Waihao Box**

The area called 'Te Kutuawa', or 'the box', where the lagoon waters merge with the Waihao River is a flood control arrangement eight kilometres south of the lagoon, by which the water flow and lagoon levels are regulated. An abundance of fish such as tuna, kanakana, mata, inaka, and patiki can still be caught there. The lower reaches of the river is still heavily used by whanau.

**Te Kutuawa – the Waihao Box being constructed**



### Te Kutuawa today



### Fenton Reserve

At the place where the Waiariari meets Wainono is Puhakati MR 907, one of the original 1868 Fenton Allocations. These Fenton's were fishing reserves and were for the exclusive use of the beneficial owners. This was to ensure the ongoing access to mahinga kai. This was further recognised by the additional allocation of Fenton Entitlements as part of the settlement of the Ngai Tahu Ancillary Claim. The Fenton Entitlement (1998) is Pukatahi. Enabling use of reserves, easements and entitlements is imperative.

### Wainono Lagoon

Wainono Lagoon itself has always been of special importance to Ngai Tahu, being the equivalent to Wairewa and Waihora (Lakes Forsyth and Ellesmere; Tau *et al.* 1990). This hapua or coastal lagoon was known as Te Kai Hinaki O Rakihouia (the food basket of Rakihouia) in celebration of the bountiful food supply that was available from within the lagoon and from the ocean beside it. These were not only fish but also manu and raranga (weaving) materials. The hapua was a spawning ground for inanga of all kinds and a wading bird nesting site.

Streams and sites of traditional significance within this part of the catchment include:

Ingoa tawhito	Location
<b>Wainono Lagoon &amp; surrounds</b>	Northern end of the Wainono Lagoon. Food gathering eels.
	[Tare Kotuku] South western end, Lake Wainono.
	Foleys Creek (?) in the south west of Wainono
	Reserve (M.R. 906) created in 1868 in the northern swamps of Wainono lagoon in association with the lower Hook River.
	Western side of Wainono north of Waikoura.
	Old channel between Lake Wainono and the original river mouth.
	Stream on the western side of Wainono.
	Lagoon between the two branches of the Waihao River.

**Wainono Lagoon has traditionally been a significant mahinga kai not only for eels and fish, but also for waterfowl, water cress, and swan and duck eggs<sup>12</sup>.**



<sup>12</sup> Statement by Kelly Davis and Rangi Te Maiharoa to the Waitangi Tribunal.



## Nohoanga

The two nohoanga in the Waihao catchment on the Waihao River are located at:

Waihao River (No 1)	1 hectare, approximately, being Part Waihao Riverbed. Subject to survey, as shown hatched on Allocation Plan MN 467 (SO 19881).	No domestic animals.
Waihao River (No 2)	1 hectare, approximately, being Part Rural Sections 41962 (SO 16307) and Part Waihao Riverbed. Part in part Gazette Notice 553820/1. Subject to survey, as shown on Allocation Plan MN 84 (SO 19847).	Nohoanga may be terminated in order for site to be used for the purpose for which it was reserved (flood protection). No domestic animals.

## Customary Fishing Entitlements

The customary fishing entitlements, as described in Schedule 115 of the Ngai Tahu Claims Settlement Act 1998<sup>13</sup> are located at:

### (a) Pukatahi Reserve

All that part of the Waihao River situated in Canterbury Land District, Waimate District, adjoining the Pukatahi Fenton Entitlement being 100 metres in length and extending from the true left bank to the midstream of that Waterway. Subject to survey, as shown marked "Customary Fishing Entitlement" on Allocation Plan A 495 (SO 19888).

### (b) Te Houriri Reserve

All that part of the lagoon situated in Canterbury Land District, Waimate District, adjoining the Te Houriri Fenton Entitlement being 100 metres in length. Subject to survey, as shown marked "Customary Entitlement Fishing" on Allocation Plan A 425 (SO 19875).

To understand the significance of these entitlements it is necessary to understand their purpose:

### 3 CREATION OF ENTITLEMENT

- The Crown hereby creates and grants in favour of the Holders an entitlement to occupy temporarily and exclusively the entitlement land for the purposes of permitting the Holders to have access to the Waterway for lawful fishing and gathering of other natural resources, on the terms and conditions set out in this Entitlement.*

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<sup>13</sup> Maps are provided in Appendix 3.

#### 4 TERMS OF ENTITLEMENT

- 4.1 Length of Entitlement  
*Unless suspended pursuant to clause 5, this Entitlement shall be perpetual.*
- 4.2 Entitlement period
- *The Holders may occupy the entitlement land to the exclusion of any other person (other than agents of the Crown or other persons empowered by statute undertaking their normal functions in relation to the entitlement land) for up to 210 days in any calendar year (such days to exclude any day on and from 1 May to 15 August).*

At the place where the Waiairiari meets Wainono is Puhakati MR 907, one of the original 1868 Fenton Allocations. These Fenton's were fishing reserves and were for the exclusive use of the beneficial owners. This was to ensure the ongoing access to mahinga kai. This was further recognised by the additional allocation of Fenton Entitlements as part of the settlement of the Ngai Tahu Ancillary Claim. The Fenton Entitlement (1998) is Pukatahi.

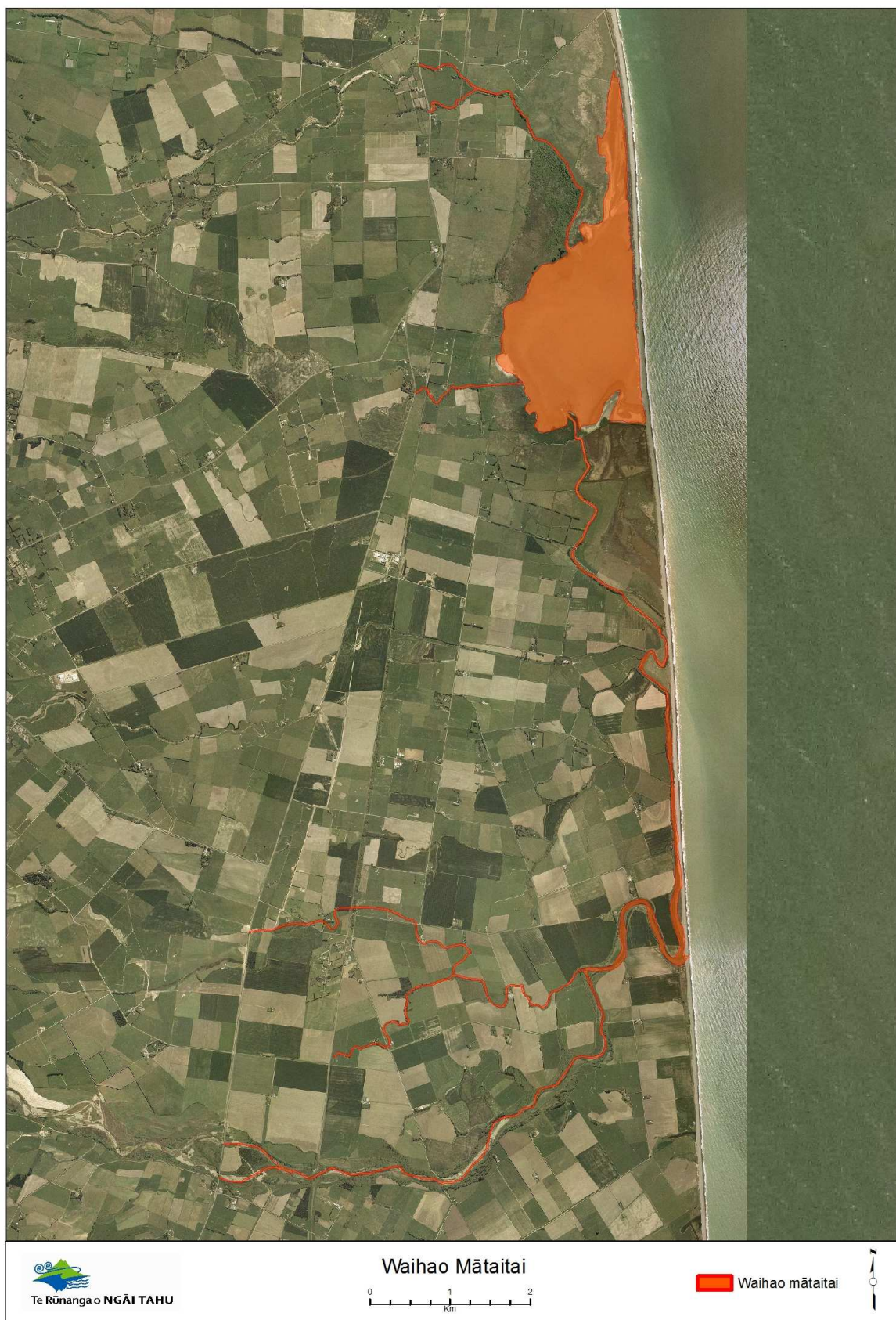
#### WITH RESPECT TO FLOWS

**Flows, levels and quality standards that enable use of reserves, easements and entitlements are imperative.**

#### 4.9 Mātaitai

On the 16th August 2012 the Ministry for Primary Industries today announced the approval of five new mātaītai reserves that came into effect on 13 September 2012. The approved Waihao Mātaitai Reserve is located north-east of the Waimate township, South Canterbury. This Reserve includes the Wainono Lagoon, and that portion of the Waihao River catchment, Waituna Stream and Hook River east of State Highway 1. The areas covered by this Reserve are already closed to commercial eel fishing by regulations.

Mātaitai reserves can be established over traditional fishing grounds of special importance to local Māori. Establishing a mātaītai reserve does not prevent recreational fishing, access to reserves, beaches or rivers, and does not change existing arrangements for access to private land. Only commercial fishing is prohibited in a mātaītai reserve. A mātaītai reserve only applies to species managed under the Fisheries Act 1996, which excludes whitebait and sports fish. The boundaries of the mātaītai are shown in the aerial that follows.



#### 4.10 Overall Comment on Contemporary Use of the Catchment

Observations with respect to whanau use of the river can be summarized as follows:

- 1 **Whanau overall impressions of the river vary greatly by what parts they can still access and use.** Those interacting with Waihao - Wainono generally had a high regard for the river, especially the downstream reaches on the lower floodplains that are heavily used. Those who felt positively about the river repeatedly mentioned the history, reserves, the importance of the old pa site (Punatarakao) in the cultural landscape of the lower Waihao, and the continuing role of mahinga kai in sustaining whanau and hapu. The Lower Waihao and especially Willowbridge, provide important benefits to the wellbeing of whanau, including a visible link to their cultural heritage. Whanau mentioned low flows, excessive extraction and deteriorating water quality as concerns.
- 2 **The river's functional characteristics are important to whanau when interacting with the river.** Whanau value the indigenous vegetation, the variety of habitats and the mahinga kai present. These features remain the major attraction even in what some may perceive as compromised reaches downstream reaches, where agricultural landuses dominated. Whanau emphasise the continuing significance of Wainono as a mahinga kai equal in significance to Waihora and Wairewa.
- 3 **Water quality condition is one of the chief concerns.** Whanau felt there were serious water pollution problems in the catchment. Whanau will see the presence of abundant and healthy taonga species in all reaches of the system as an indicator that the health of the system is improving.
- 4 **Fish passage –** Whanau want to see fish with unimpeded passage (both upstream and downstream) through the Waihao Wainono system.
- 5 **Springs -** The spring head of many of the lowland streams need to be protected. For example, Sir Charles Creek is a highly valued stream that is located in the lower catchment which is rich in biodiversity. Tangata whenua want to see stringent management standards set to protect both the springs and its water quality. This may be at odds with the provisions of the Land and Water Plan given that some deterioration is expected (and hence lower standards) are set for downstream lowland



reaches. Whanau, expect springs such as Sir Charles Creek and Buchanans Creek to be afforded a high level of protection.

**Sir Charles Creek showing the aquatic macrophytes**



## **6 Flows are crucial for sustaining the river and mahinga kai**

Whanau are concerned at the low flows observed in the river and their duration. Talk with both Arowhenua and Waihao about minimum flows leads to an observation that the minimum once set becomes the maximum and that there is then no flow variability. Whanau are aware that spring fed streams should provide a consistent flow throughout the year and are therefore concerned when extraction causes flows to be held too low for too long. Whanau were adamant that with respect to the Waihao River that mid range freshes were needed. Floods still occur but it is the freshes that are necessary to flush out, clean and reset the system. The persistent low flows are a concern especially given the dependence of some mahinga kai species on migrations through the river system.

#### 4.11 Going forward

##### WITH RESPECT TO FLOWS

Whanau want to see increased populations of mahinga kai with fish species (in particular eels) having free passage throughout the system at all stages of their life cycle. All species will be fit for use, and the river system will be desirable for whanau to access and use. The health of mahinga kai will be the ultimate indicator of the health of the system

This statement captures the need for -

- an ecologically healthy river to function as a river (ideally and where feasible in a manner the same as it did prior to European settlement);
- the functioning system would be able to sustain the cultural uses and values of manawhenua into the future;
- flow regimes, water quality standards and channel characteristics are to all be managed to protect cultural uses, (especially mahinga kai), which are a section 6(e) matter of national importance;
- protection of native biodiversity in the river and riparian zone;
- major habitat features to be represented and maintained over time;
- native riparian vegetation communities to be re-established throughout the catchment;
- native fish and other fauna to be able to move and migrate up and down throughout the system;
- linkages between streams and rivers and their floodplains and associated wetlands to maintain ecological processes;
- linkages with the sea to be maintained;
- the associated lagoon system to be protected as a productive ecosystem sustaining many taonga species; and
- maintaining the elements of a river system that collectively comprise valued cultural landscapes.

Whanau ideas about the future potential of the river to deliver a range of cultural opportunities summarized below in Table 5

**Table 5: Summary of Current and Future Cultural Opportunities for Streams and Reaches of Significance in the Waihao-Wainono**

Zone name and important streams	Opportunities Sought
<b>A: Headwaters</b>	<ul style="list-style-type: none"> <li>• Protecting the existing source waters (the source of both the water and mauri<sup>14</sup>)</li> <li>• Protecting existing spring heads:             <ul style="list-style-type: none"> <li>○ protecting the water quality;</li> <li>○ protecting the quantity;</li> <li>○ permitting no alteration of the hydrology at the source (via proposals to inundate, divert or drain).</li> <li>○ protecting the spring via shading by indigenous species.</li> </ul> </li> <li>• Abundant populations of taonga species, especially abundant mahinga kai (most notably eel fishery) restored to their historic range – this requires             <ul style="list-style-type: none"> <li>○ Access to traditional sites restored</li> <li>○ Ability to camp and gather and use resources in close proximity to traditional sites</li> <li>○ Protect existing wetlands</li> </ul> </li> <li>• Water quality standards and flows in this reach do not prevent whanau use of the reserves and easements in the lower catchment.</li> <li>• Where feasible restore wetlands using historic distribution as a reference.</li> <li>• Prioritise maintaining and or restoring connections and river flow ki uta ki tai</li> <li>• No further hydrological alteration to streams in the headwaters</li> <li>• Retain existing indigenous vegetation – riparian and terrestrial</li> <li>• Retain landscape features that are largely unmodified e.g.             <ul style="list-style-type: none"> <li>○ gorges - no impoundments in the course of traditionally significant streams and reaches</li> <li>○ indigenous vegetation</li> </ul> </li> </ul>

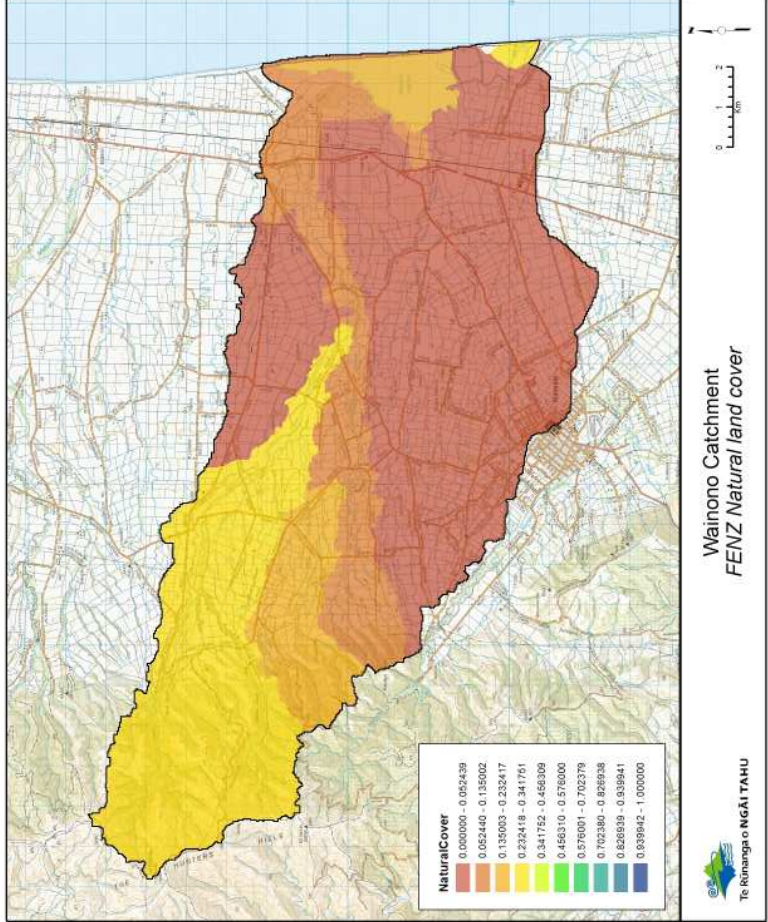
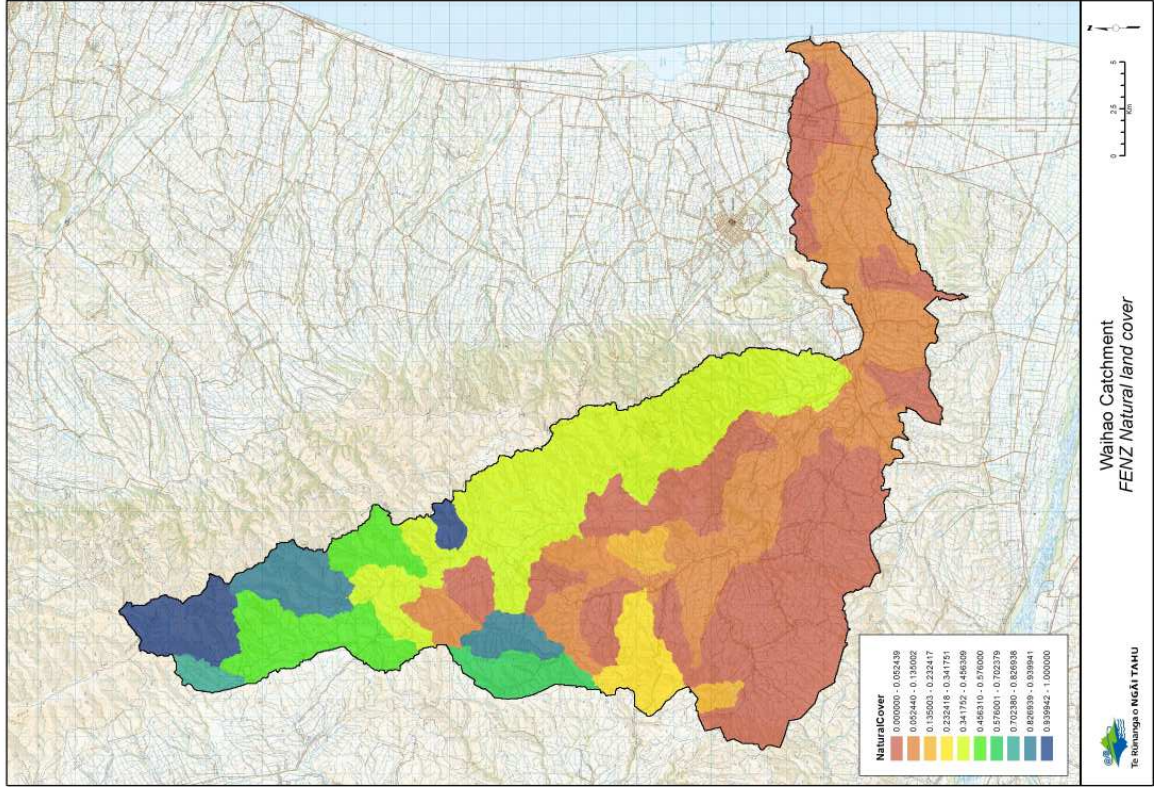
#### Waihao River at McCullochs



<sup>14</sup> Statement by kaumatua resident in Christchurch to the writer (pers comm.).



Figure 6: The Extent of Natural Cover in the Waihao-Wainono (source FENZ) – Protection of Indigenous Forests, Tussock lands and Native Bush is a Priority. Areas of concern are highlighted

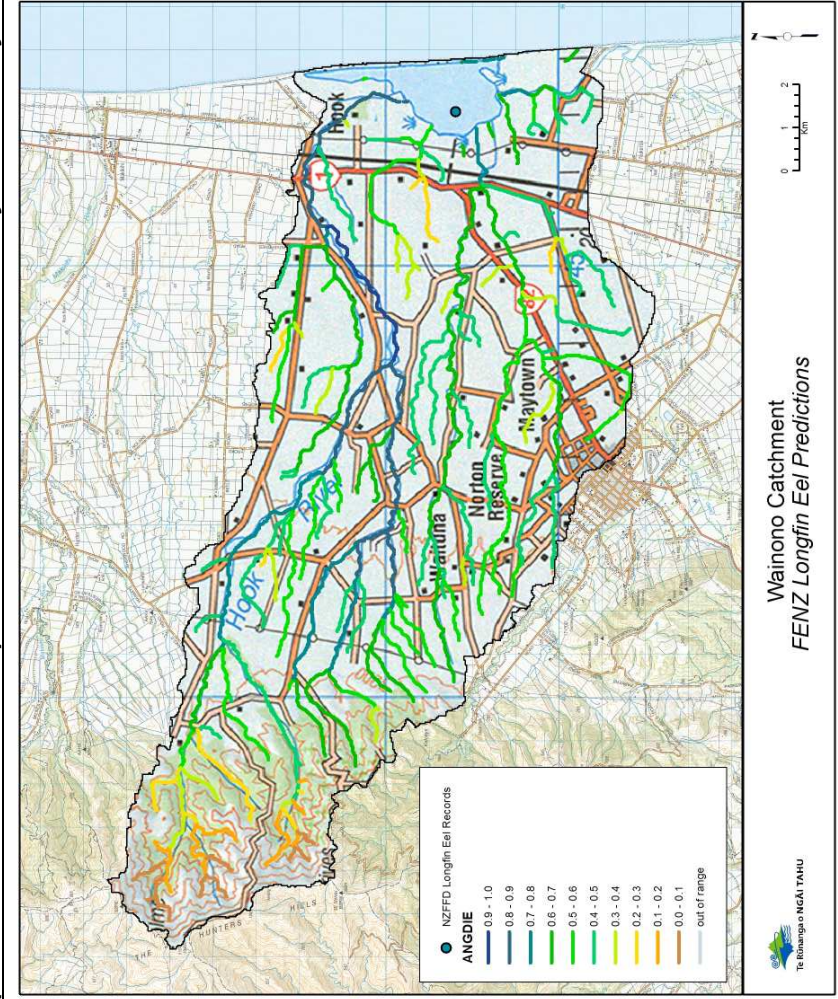
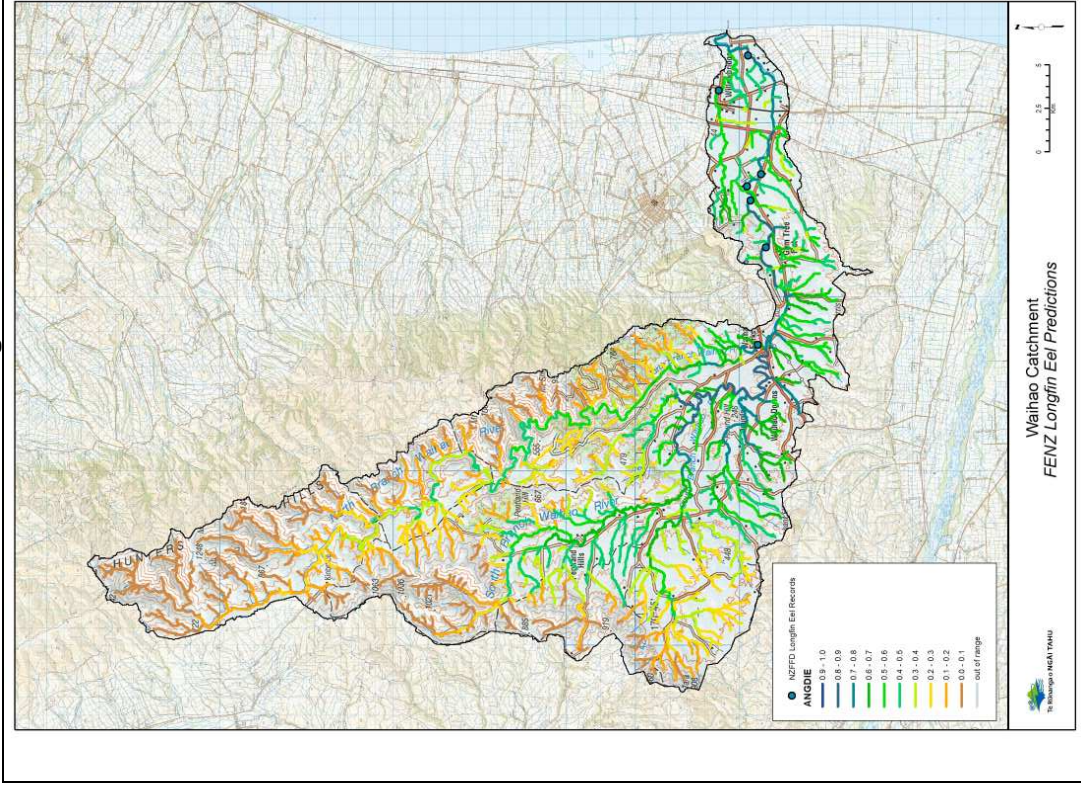




Zone name and important streams	Opportunities Sought
<b>Mid Catchment</b>	<ul style="list-style-type: none"> <li>• Abundant populations of taonga species, especially abundant mahinga kai (most notably eels) restored to their historic range</li> <li>• Access to gather kai and natural resources restored</li> <li>• Reestablishment of indigenous vegetation on riparian margins throughout the catchment.</li> <li>• Flow variability introduced to             <ul style="list-style-type: none"> <li>○ prevent issues of extended low flows and “flatlining” the river</li> <li>○ ensure flows at the right times to trigger crucial life cycle stages</li> </ul> </li> <li>• Protect flows ki uta ki tai</li> <li>• Depth sufficient to enable passage so that species can reach habitats in headwaters and <u>adult eels</u> can move to the sea to spawn is maintained.</li> <li>• Indigenous vegetation is protected (e.g. Hook Catchment).</li> <li>• Water quality standards and flows in this reach do not prevent whanau use of the reserves and easements in the lower catchment.</li> </ul>
<b>Lower Floodplain</b>	<ul style="list-style-type: none"> <li>• Abundant mahinga kai populations, especially eel fishery</li> <li>• Cultural landscapes are recognised and provided for:             <ul style="list-style-type: none"> <li>○ Whanau are able to utilise reserves, easements and entitlements in the lower catchment. Associations and connections are restored.</li> </ul> </li> <li>• Protecting existing spring heads:             <ul style="list-style-type: none"> <li>○ protecting the water quality;</li> <li>○ protecting the quantity;</li> <li>○ permitting no alteration of the hydrology at the source (via proposals to inundate, divert or drain).</li> <li>○ protecting the spring via shading by indigenous species.</li> <li>○ Willowbridge and Sir Charles Creeks are protected as priorities.</li> </ul> </li> <li>• Access to traditional sites to gather kai and natural resources             <ul style="list-style-type: none"> <li>○ Wetlands restored consistent with historic records. The priority is restoring associations with the reserves and easements in the Lower Reaches of the Waihao.</li> <li>○ Water quality improvements enable safe use and kai safe to eat.</li> <li>○ Environmental flows are in place where                 <ul style="list-style-type: none"> <li>– the river is not “flat lined”.</li> <li>– variable flows trigger crucial life cycle stages</li> </ul> </li> <li>○ Drains managed as mahinga kai habitats with flows and quality standards set</li> <li>○ Connections restored (culverts etc all examined to ensure passage not impeded) – all of upper catchment “opened up” as habitat</li> </ul> </li> <li>• Reestablishment of lost wetlands – using historic distributions as a reference</li> <li>• Enhance the water quality to make it a desirable place to visit, gather from, and for whanau to swim and enjoy</li> <li>• Monitoring and compliance to ensure that customary fishery is enhanced.</li> <li>• The tributaries feeding Wainono (including the Hook, the Merry and Waituna) are supplying year round consistent flows of good quality water and contributing to the improved health of the lagoon,</li> </ul>

Zone name and important streams	Opportunities Sought
Lagoon	<ul style="list-style-type: none"> <li>• Enhance the water quality to make it a desirable place to visit and gather from</li> <li>• That levels in the lagoon enable whanau to use of adjacent reserves by whanau.</li> <li>• That levels in the lagoon enable species to move to and from the river system for critical life stages               <ul style="list-style-type: none"> <li>○ spawning around the lake is enhanced.</li> </ul> </li> <li>• Flow management ensures that the Waihao Box is open at crucial times               <ul style="list-style-type: none"> <li>○ for the ingress and egress of tuna.</li> </ul> </li> </ul>

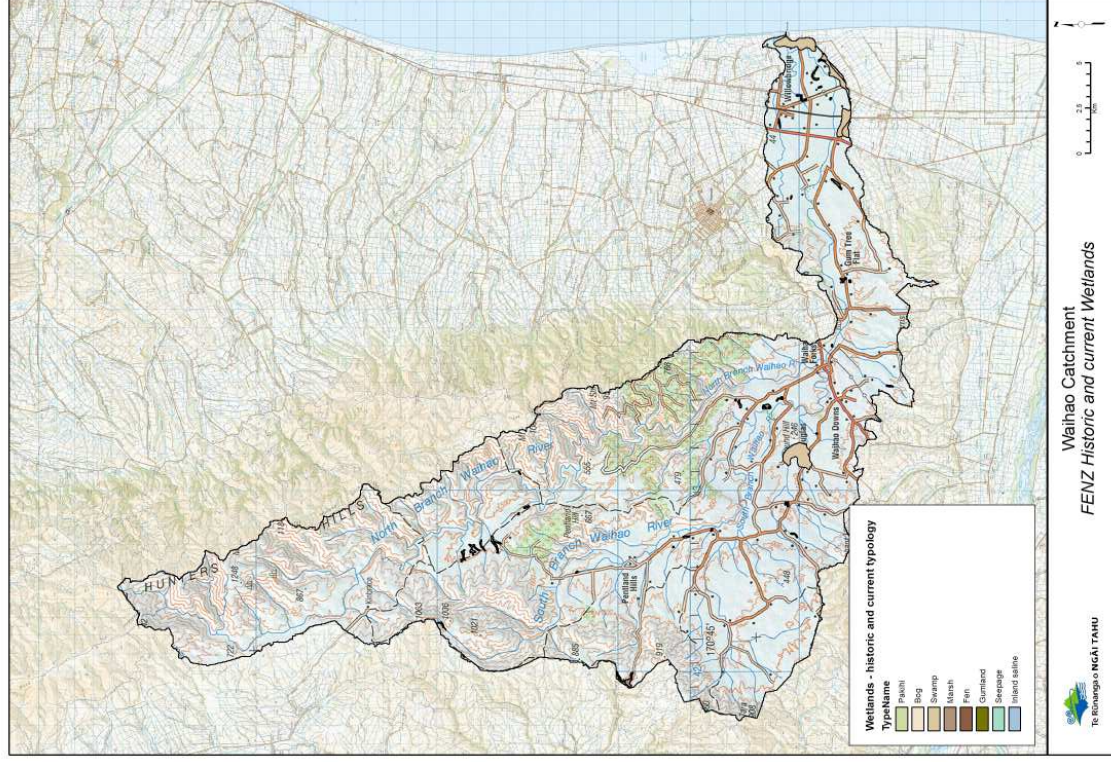
Figure 7: This figure shows the predicted distribution of long fin eels in the Waihao-Wainono while the dots that overlay it show some of the sites where long fin have been electric fished (source FENZ and NZFFD). Restoration of the Eel Fishery is a Priority<sup>15</sup>



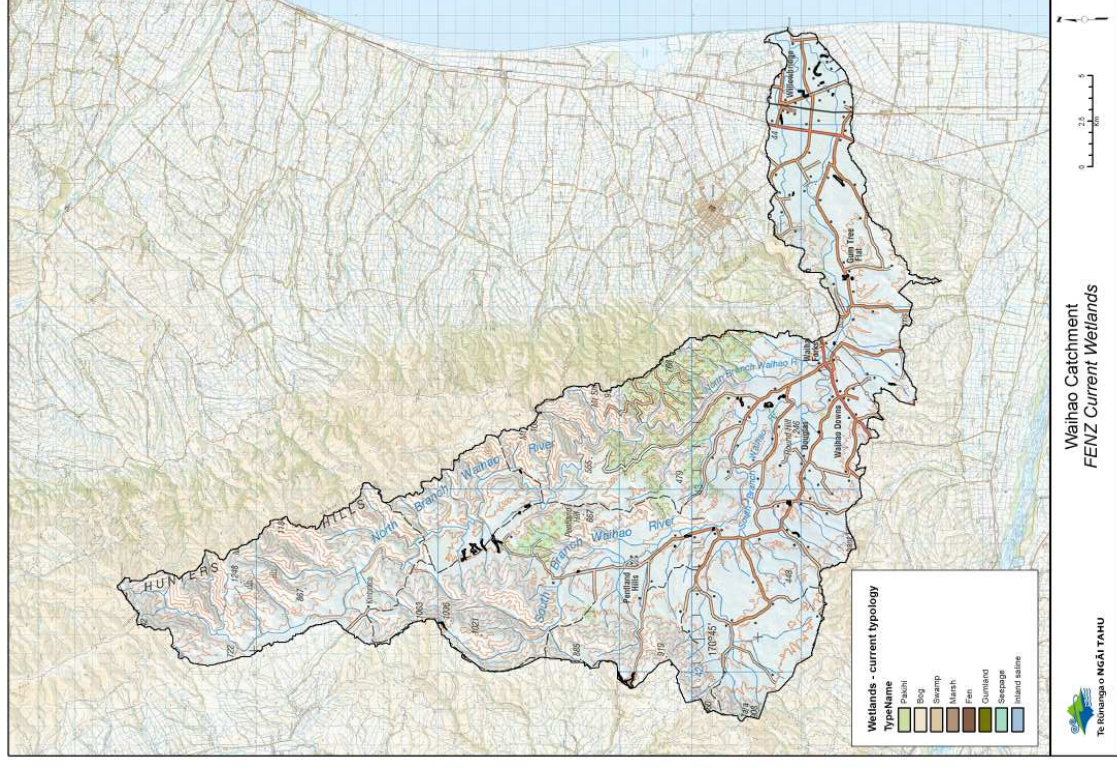
15 Maps specific to other taonga species are included in the Appendices.



## Historic Wetlands in the Waihao Catchment



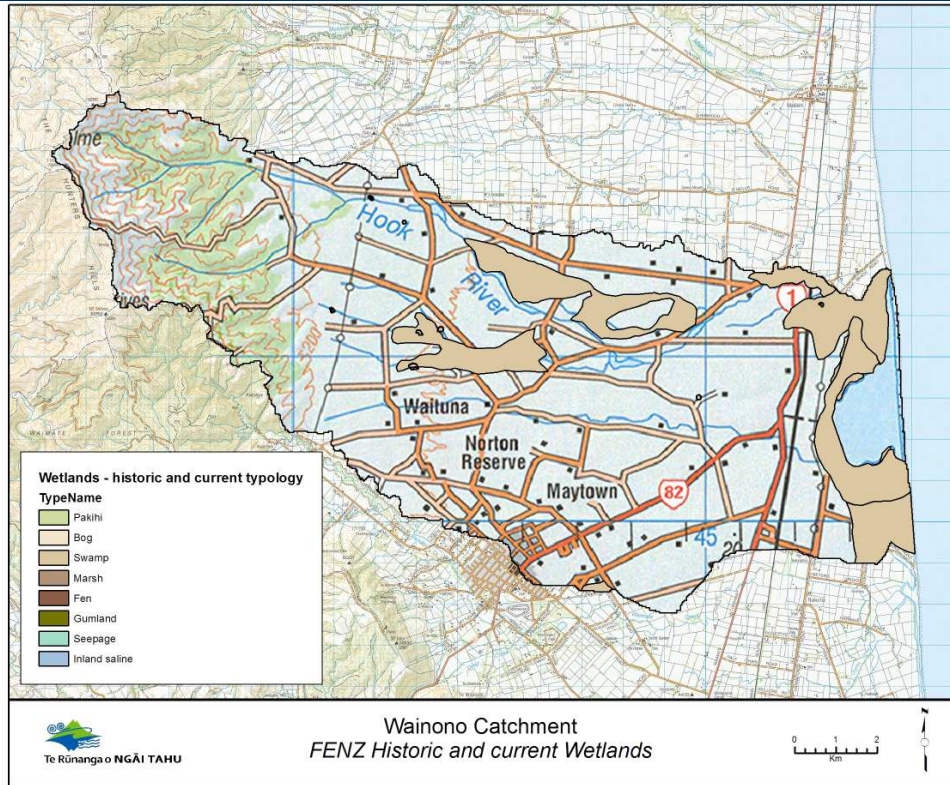
## Contemporary Wetlands in the Waihao Catchment



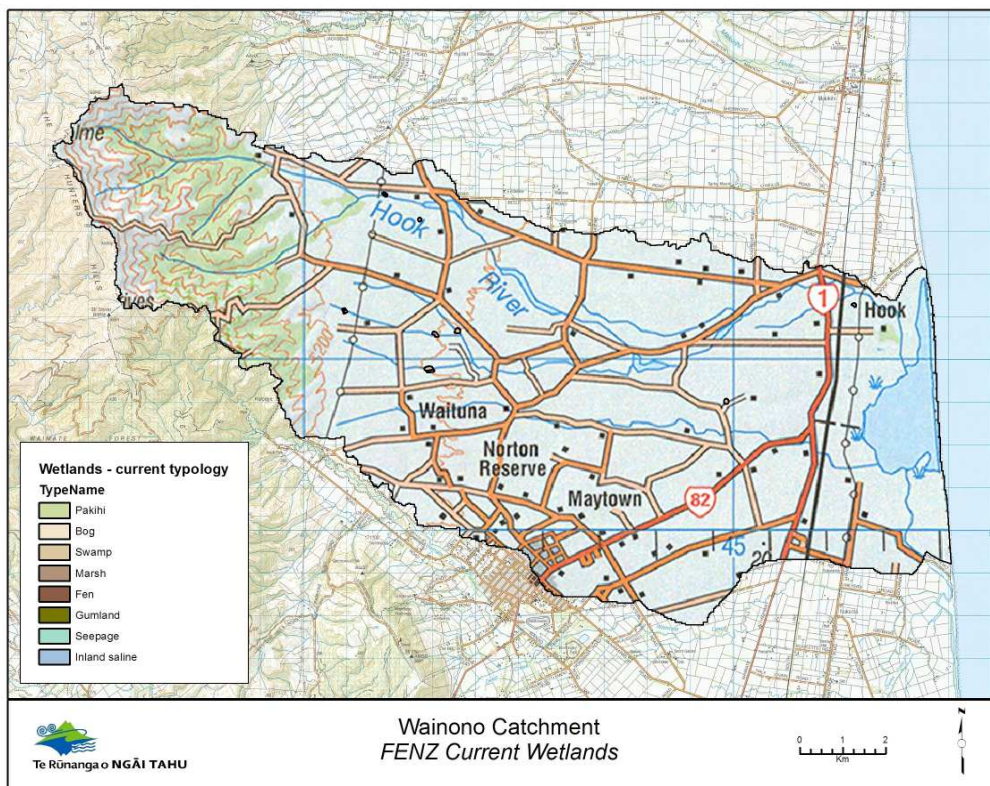
**Figure 8: This is a record of historic wetlands (left) which can be compared today's wetlands (right): source FENZ. Restoration of wetlands is a priority.**



## Historic Wetlands in the Wainono Catchment



## Contemporary Wetlands in the Wainono Catchment



**Figure 9: This is a record of historic wetlands (left) which can be compared today's wetlands (right): source FENZ. Restoration of wetlands is a priority.**

The comparison of current and historic wetlands has been included as a guide to future restoration. Rather than creating new habitats Te Runanga o Waihao have chosen to re-establish past habitats that over the years have been modified and / or neglected, for example the restoration of Punatarakao Wetland. A summary of key themes across all zones are as follows:

- 1 **Restoration of mahinga kai** – As noted above mahinga kai is the ultimate test of a river's health. This report started by explaining the origins of the name "Waihao". Its significance was recognised by the Crown in 1848, 1868, the Ngai Tahu Claim Settlement Act 1998, and by MFish in setting aside part of the catchment as a non-commercial fishery. Restoration of the eel fishery is a priority. Flows and water quality standards are to support the enhancement of the eel fishery as a matter of priority.
- 2 **Protection of largely unmodified spring heads** - Whanau described the diversity found in the lower catchment around the springs (and the spring heads in particular). The diversity needs to be protected. Flows, quality of water, depth of water, temperature of water and its clarity are also important characteristics that are to be protected. Springs at the head of Willowbridge and Sir Charles Creek are particular priorities.
- 3 **Clean water is a key factor that will decide the future of the river for cultural use.** Whanau recognize that the lower reaches of rivers are used intensively. Further they know that substantial improvement in water quality in the lower catchment is needed. Good water quality is important for direct, water-based recreational activities which is concentrated in the lower reaches of the Waihao. This creates a contradiction. The lowland reaches are those most heavily used by whanau and yet these are the areas where Ecan is likely to accept greater deterioration and set lower standards. Whanau have been forced to accept less-than-healthy and less-than-safe conditions. However, as a priority they want to see the lowland streams enhanced.
- 4 **Fish passage** is a matter of priority to enable unimpeded passage through the system consistent with historic ranges. In Table 10 (on the following page) we identify the migration times of the respective species.
- 5 **Native Biodiversity Prioritised** Whanau do not want to see aquatic habitats restored solely for introduced species. The priority has to be indigenous biodiversity, especially the taonga for which South Canterbury was renown such as tuna.

Table 10: Key migration periods for selected New Zealand indigenous freshwater fish species (↑ = upstream, ↓ = downstream).

FRESHWATER FISH			SUMMER			AUTUMN			WINTER			SPRING		
COMMON NAME	SPECIES	LIFE STAGE	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV
Tuna / Eels	<i>Anguilla australis</i> & <i>A. dieffenbachii</i>	Juvenile	↑	↑	↑	↑								↑
Short fin	<i>A. australis</i>	Adult		↓	↓	↓	↓							
Long fin	<i>A. dieffenbachii</i>	Adult		↓	↓	↓	↓	↓				↓	↓	
Common smelt (riverine)	<i>Retropinna retropinna</i>	Juvenile	↑	↑	↑	↓	↓	↓	↓			↓↑	↓↑	↓↑
		Adult	↑	↑	↑	↓	↓	↓						↑
Īnanga	<i>Galaxias maculatus</i>	Larvae	↑	↑	↓	↓	↓				↑	↑	↑	↑
		Adult	↑	↑	↓	↓	↓	↓↑	↑	↑	↑	↑	↑	↑
Kōaro	<i>G. brevipinnis</i>	Juvenile					↓	↓	↓		↑	↑	↑	↑
		Adult <sup>a</sup>					↑↓	↓↑	↓↑	↓↑				
Common bully	<i>Gobiomorphus cotianus</i>	Juvenile	↑	↑	↑	↓	↓	↓	↓		↓	↓	↓↑	↓↑
Torrentfish	<i>Cheimarrichthys fosteri</i>	Larvae	↑	↑	↑↓	↓	↓	↓						↑
		Adult <sup>a</sup>	↑↓				↓↓	↓↑	↓↑	↑	↑	↑		↓

<sup>a</sup> , More research is needed to confirm the migration period.





## 5 – PERCEIVED WATER MANAGEMENT ISSUES IN THE WAIHAO-WAINONO CATCHMENT

### 5.1 Background

The 2006 report stated that:

*It was the opinion of the mana whenua spoken to during this project that the current water low flow management is set too low, The ideal for mana whenua would be that the flow from the rivers that feed into Wainono should continue year round, This would help to ensure that the spawning areas and habitat for juvenile and adult inanga and tuna (eel) are sufficient in size and variety to enhance the numbers of fish in the rivers and lagoon. This is particularly important to the endangered fish species found in the catchment such as tuna (especially the long fin horohorowai (*Anguilla dieffenbachii*)), waikaka (Canterbury mudfish), waihirere (torrent fish) and inanga (*galaxid sp*).*

### 5.2 Summary of issues

Zone name and important streams	Perceived Issues
<b>A: Headwaters</b>	<ul style="list-style-type: none"> <li>• Diversions and redirections of water flows in the headwaters,</li> <li>• Loss of streams</li> <li>• Restrictions on ability to camp in the area during mahinga kai harvesting times</li> <li>• Poor water quality (e.g. Waimate Creek)</li> <li>• Invasive plants a threat to hydrology e.g. willows</li> <li>• Riparian areas at risk through incremental vegetation clearance</li> <li>• Pests impact taonga bird species</li> <li>• Excessive extraction (e.g. Hook, Waimare Creek)</li> <li>• Flows too low (Waimate Creek) for too long (Waimate Creek)</li> <li>• Fish passage issues (source waters of Hook)</li> </ul>

Zone name and important streams	Perceived Issues
<b>Mid Catchment</b>	<ul style="list-style-type: none"> <li>• Tributaries and mainstem Waihao often run dry (or carries flood flows only)</li> <li>• Excessive extraction (McCullochs) yet system also under increasing pressure to extract water</li> <li>• Increasing pressure to store water in tributary catchments or to bring more water north from the Waitaki system</li> <li>• River character has changed</li> <li>• Agricultural contaminants entering system</li> <li>• Mahinga kai habitats have been lost</li> <li>• Reduced numbers of mahinga kai species</li> <li>• Reduced habitats in tributaries</li> <li>• Removal of wetland areas</li> <li>• Concern at risks of pollution from further land intensification (e.g. dairy farms)</li> <li>• Duration of low flows (river being flatlined by excessive extraction)</li> <li>• Connections – ki uta ki tai - at risk through culverts, drains, diversions, extractions, and dewatering</li> </ul>
<b>Lower Floodplain</b>	<ul style="list-style-type: none"> <li>• Concern at risks of pollution from increased land intensification (e.g. dairy farms)</li> <li>• Allocation too high (Buchanans Creek, Waihao at Bradshaws)</li> <li>• Flows too low (Buchanans Creek)</li> <li>• Groundwater extraction putting springs at risk (Buchanans Creek)</li> <li>• Mahinga kai habitats have been lost and others are under pressure</li> <li>• Reduced numbers of mahinga kai species</li> <li>• Reduced habitats in tributaries</li> <li>• Connections – ki uta ki tai - at risk. Nohoanga, reserves, easements unable to be fully utilised because dislocated from waterway (through low flows or low levels) and poor water quality making use unsafe.</li> <li>• Increased periphyton growth creating nuisance and making sites unattractive for users.</li> <li>• Increasingly unsafe water quality as move downstream inhibits use.</li> <li>• Excessive macrophyte growth e.g. Sir Charles Creek attributed to high nutrients.</li> <li>• Whanau stop using the river which creates pressures in other river systems and breaks cultural connections with Waihao / Wainono</li> <li>• Loss of use leads to loss of practice, loss of tikanga associated with the practice and over time matauranga.</li> <li>• The restoration efforts of whanau might be at risk if deterioration is allowed to continue.</li> </ul>

### Waihao River at Bradshaw Bridge

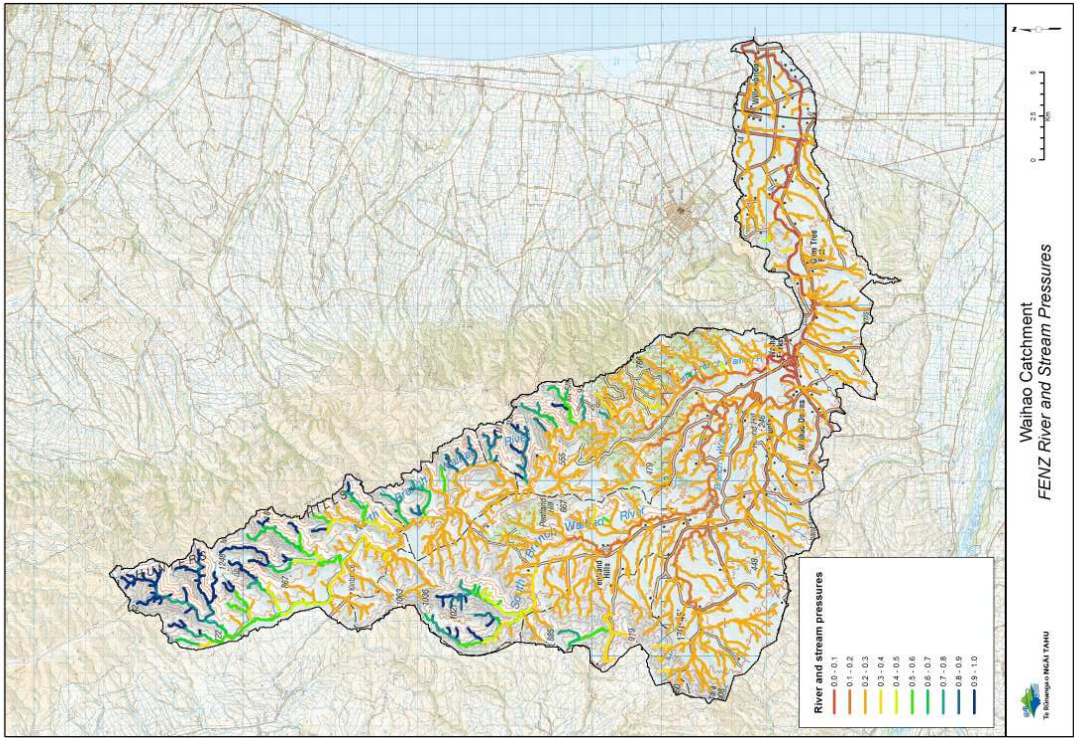


Zone name and important streams	Perceived Issues
<b>Lagoon</b>	<ul style="list-style-type: none"> <li>• The size of the lagoon has reduced</li> <li>• Concern also at risks of pollution from farms</li> <li>• Lagoon character has changed</li> <li>• Mouth closes and if at the wrong time could impacting migration and recruitment of migrating species especially eels</li> <li>• Mahinga kai habitats have been lost</li> <li>• Reduced numbers of mahinga kai species</li> <li>• Loss of use leads to loss of practice, loss of tikanga associated with the practice and over time matauranga.</li> </ul>

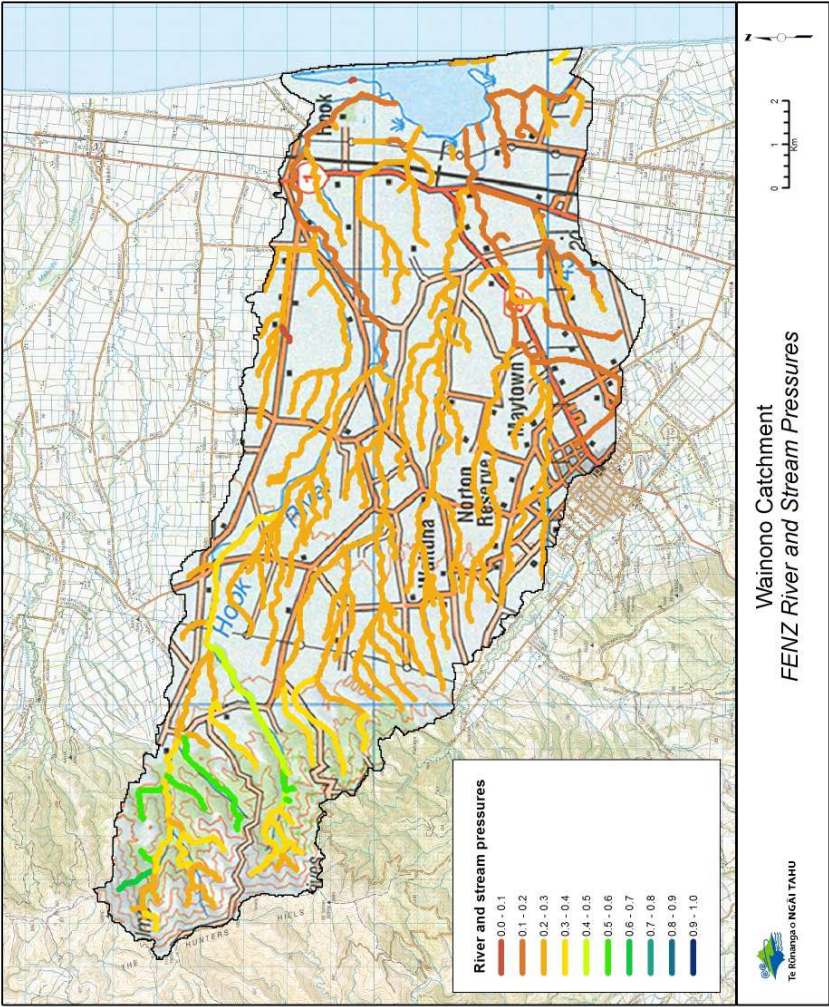


Figure 10: This is an Assessment of Stream Pressures (source FENZ). Areas of concern are highlighted.

Pressures in the Waihao Catchment



Pressures in the Wainono Catchment



### 5.3 What general recommendations can be made for improving the system?

Many of the suggestions of whanau apply to the whole system. These issues are itemized below.

- Plan to restore mahinga kai in the catchment – align water quality and environmental flows to the needs to taonga species, especially mahinga kai and eels in particular.
- Protect the indigenous vegetation: replanting is to be encouraged and facilitated.
- Protect the features of the river such as morphology, quality and quantity for their contribution to valued cultural landscapes.
- Provide data to whanau about the level of hydrological alteration in the different zones. Whanau perceive minimal disruption in the upper reaches but are interested to understand the extent of alterations through the different parts of the system including frequency of freshes; duration of low flows; and changes to minimums over time.
- Investigate river mouth dynamics, specifically river mouth closures and how these coincide with the life cycle stages of mahinga kai species is also needed. Table 10 identifies the migratory phases of different species which should be used as a guide for when flows are needed to ensure an open river mouth.
- Protect the spring heads and recognise those although located in the lowland areas where lower standards could be expected, that springs require a higher standard of protection e.g. Sir Charles Creek and Willowbridge.

### 5.4 Perceived flow related needs in the Waihao-Wainono

#### McCullochs Bridge

In 1996 Te Runanga o Waihao recommended a flow regime for McCulloch's Bridge. They stated that this site is significant in the whole ecology of the river system. The river is home to both long fin and short fin eels, In the past both species were able to inhabit the whole of the Waihao - Wainono system, In recent times only the long fin has continued to reside in the upper reaches of the river.

The flow regime that they suggested was linked to the needs to the long fin eel. Te Runanga o Waihao representatives observed that the ingress and egress migration of the long fin eel had been halted because there were not sufficient flows for the process to occur. This was why it was seen as important to create a flow greater than is currently the norm, Observation over the years was fewer migrating eels of any size arriving at the Waihao Box. The only time that there is a migration is during

the odd flood event. The long fin migration inland had been affected by the disconnected flow. It was therefore important that the flow identified was able to support the ingress migration of eels. With recent management changes in the commercial eel fishery which has made the river a, non commercial fishery, there is greater need to improve the connectivity of the flow in order for eels migrate beyond the lower littoral zone and the areas available currently. It was the belief of Te Runanga o Waihao representatives, that a much higher flow level at McCulloch's Bridge should be applied with a correspondingly higher abstraction cut off. Likewise, a ramped return was recommended for abstraction to recommence to allow for some recharge rather than abstraction commencing as soon as the agreed flow was reached. A decision was made to identify

- *The minimum flow shall be 1300 /s*
- *A 50% restriction is to be triggered when the river is at 1500 /s*
- *At 1400 l/s all extraction is to cease.*
- *Extraction can progress to a full return after one week of sustained flow at 1500 l/s..*

#### WITH RESPECT TO FLOWS

It is noted that substantial investigation has been undertaken since the 1996 study by whanau members and more hydrological and ecological data is available to inform the decisions of whanau. In the Table that follows we note the recommendations of Te Runanga o Waihao in the 1996 report but summarise how these relate to subsequent investigations and the proposals in the Variation 9. The 2006 recommendations will be reassessed once all fieldwork for the Cultural Flow Study is complete. However whanau are able at this early stage to identify what they perceive to be flow needs.



Table 11: Summary of earlier study results

Site	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Management needs in 2012
Waihaorunga Stream- site is upstream of Waihaorunga water	At a flow 16l/s stop abstraction  16 l/s is consistent with Variation 9 which sets 16 l/s but less than MALF7d (47 l/s)	Ensure allocation limits are within ecological limits.
Waihao River (Waihaorunga) - site is immediately below the	At a flow of 90l/s, stop abstraction  90 l/s is consistent with Variation 9 and NRRP and the NES (90%) figure of 89 l/s. But less than MALF7d (101 l/s)	<ul style="list-style-type: none"> <li>• Flows and quality sufficient to maintain mahinga kai values</li> <li>• Connectivity is essential</li> <li>• Need to ensure allocation limits are within ecological limits.</li> </ul>
South Branch Waihao River (Coal Pit Bridge)	At a flow of 100 l/s, stop abstraction  100 l/s is consistent with Variation 9 (summer flow) but less than the NES (90%) figure of 127 l/s. It is also less than MALF7d (144 l/s). A higher flow in winter is noted.	
Waihao River McCullough's Bridge	<p>A 50% restriction is to be triggered when the river is at 1500 litres per second.</p> <p>At 1400l/s all extraction is to cease.</p> <p>Extraction can be fully returned after one week of flow at 1500 l/s.</p> <p>This regime is significantly different to Variation 9, MALF7d and the NES (90%) flows.</p>	<ul style="list-style-type: none"> <li>• Flows and quality sufficient to maintain mahinga kai values</li> <li>• Connectivity is essential</li> <li>• Address overallocation. Ensure allocation limits are within ecological limits.</li> <li>• Provide sufficient quantity to ensure depth of water for fish passage. <ul style="list-style-type: none"> <li>◦ depth for adult migration is to be measured at the <u>shallowest riffle</u> present (from October to May). A depth of 300mm is based on a standard calculation of 1.5 X the greatest body depth. The figure of 1.5 x the body depth is the minimum depth required for safe passage of fish (to keep them submerged and minimise bow wave pressure). A depth of 300mm recognises that a big longfin is at least 200 mm in diameter.</li> <li>◦ for upstream migrants the flows need to be sufficient to keep an open channel (i.e. free of emergent macrophytes) (for the period November through to March).</li> </ul> </li> </ul>

Site	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Emerging needs in 2012
Hook River immediately above intake	<p>Minimum Flow at 50 l/s, consent holders reduce to 50% of take</p> <p>50 l/s is consistent with summer flow in Variation 9 and above MALF7d (of 37 l/s). Higher flow in winter of 200 l/s noted.</p>	<p>Minimum Flow at 50 l/s, consent holders reduce to 50% of take</p> <p>50 l/s is consistent with summer flow in Variation 9 and above MALF7d (of 37 l/s). Higher flow in winter of 200 l/s noted.</p>
South Branch Hook River- Upper Hook Road Bridge	<p>Current Minimum Flow at 13 l/s, At this level extraction is to stop</p> <p>Note that the current minimum is less than Variation 9 figure of 20 l/s and the NES (90%) figure of 19 l/s. Higher flow in winter of 100 l/s noted.</p>	<p>Address overallocation. Ensure allocation limits are within ecological limits</p>
Waimate Creek immediately below intake	<p>At 15 l/s, extraction is to stop</p> <p>15 l/s is consistent with summer flow in Variation 9 and the NRRP. It is noted this is less than MELF7d (36 l/s) and NES (905) which is 32 l/s.</p>	<p>Address overallocation. Ensure allocation limits are within ecological limits</p>
Waituna creek		<ul style="list-style-type: none"> <li>• Ensure allocation limits are within ecological limits.</li> <li>• Flow regime, allocation limit and water quality standards need to recognise that this stream is one of the contributors of water to Wainono.</li> </ul>



## 6. FLOW RECOMMENDATIONS BASED ON WHANAU ASSESSMENTS

### Waihao River - Bradshaws Bridge

Management priority and needs	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Flow & allocation preferences of whanau	Monitoring
<p>Prioritise management for its mahinga kai values.</p> <p>Management needs</p> <ul style="list-style-type: none"> <li>• Address overallocation.</li> <li>• Provide sufficient quantity to ensure depth of water for fish passage.</li> <li>• depth for adult migration is to be measured at the shallowest riffle present (from October to May). A depth of 300mm is based on a standard calculation of 1.5 X the greatest body depth. The figure of 1.5 x the body depth is the minimum depth required for safe passage of fish (to keep them submerged and minimise bow wave pressure). A depth of 300mm recognises that a big longfin is at least 200 mm in diameter.</li> <li>• for upstream migrants the flows need to be sufficient to keep an open channel (i.e. free of emergent macrophytes) for the period November through to March.</li> </ul>	<p>At a flow of 100 l/s, extraction is to stop</p> <p>100 l/s is significantly less than the Variation 9 (summer flow) of 200l/s. It is less than the NES (90%) figure of 460 l/s. It is also less than MALF7d (460 l/s). A proposed higher flow in winter is noted.</p>	<p>Allocation</p> <ul style="list-style-type: none"> <li>• Address overallocation.</li> <li>• Ensure allocation limits are within ecological limits.</li> <li>• Whanau support the allocation limit proposed in the NES.</li> </ul> <p>Surface Flows</p> <ul style="list-style-type: none"> <li>• Whanau want a minimum flow of 425 l/s rather than the 200l/s proposed.</li> <li>• Whanau support the winter flow of 600l/s</li> </ul> <p>This is the reach of the river that is most heavily used by whanau. The flow at this site is augmented by irrigation bywash upstream. Further, a flow of 425 l/s is consistent with the recommendation of NES.</p> <p>Whanau fear that the river will stagnate at flows less than 425 l/s.</p>	<ul style="list-style-type: none"> <li>• Monitor the effect of the augmentation from the irrigation that is returned to the Waihao above Bradshaws Bridge. Whanau want to know the percentage of flow that is from irrigation (and hence the Waitaki) compared to waters sourced from in the Waihao catchment.</li> <li>• Monitor to ensure that flows and quality standards enable use of the reserves, easements and entitlements and nohoanga by whanau.</li> </ul>
<p>In the Flow Preference Study the indicators that were of greatest concern when flows were low were the loss of connections in the river, concern at the effect on low flows on riparian habitats, the risk of weed and algal growth, and the duration of low flows.</p>			

### Buchanan's Creek - Fletcher's Bridge

Management priority and needs	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Flow & allocation preferences of whanau	Monitoring
<p>Prioritise protection of the source of springs.</p> <ul style="list-style-type: none"> <li>Land around the springs needs to be retired</li> <li>Provide a policy framework that enables restoration initiatives</li> <li>Manage the sub-catchment as a significant cultural landscape.</li> <li>Water quality standards need to recognise that this is a significant cultural landscape with wai tapu and wahi tapu in the vicinity.</li> <li>Require riparian planting and promote a buffer zone to protect spring from adjacent landuses</li> </ul>	<p>At a flow of 100 l/s, extraction is to stop</p> <p>100 l/s is less than the Variation 9 (summer flow) of 112 l/s. It is less than the NES (90%) figure of 198 l/s. It is also less than MALF7d (174 l/s).</p>	<p>Allocation</p> <ul style="list-style-type: none"> <li>Address overallocation.</li> <li>Ensure allocation limits are within ecological limits.</li> <li>Whanau support the allocation limit proposed in the NES.</li> </ul> <p>Groundwater</p> <ul style="list-style-type: none"> <li>Manage ground water takes to ensure that the springs do supply a consistent year round flow typical of spring fed streams.</li> </ul> <p>Flows</p> <ul style="list-style-type: none"> <li>Whanau want a flow of 200l/s.</li> </ul> <p>Historically springs in this area were wai tapu. This area remains one of the most significant cultural landscapes in the entire Waihao Wainono catchment. The protection of the springs and the flows sourced from them is a priority for whanau. The flow sought by whanau is consistent with the NES recommendation.</p>	<ul style="list-style-type: none"> <li>Monitor to ensure that flows and quality standards enable use of the reserves, easements and entitlements by whanau.</li> </ul>
<p>In the Flow Preference Study -</p> <ul style="list-style-type: none"> <li>Flows of 200 l/s were satisfactory to protect at least one of the themes.</li> <li>Flows in excess of 240l/s were need to obtain a satisfactory score across all four themes.</li> <li>The indicators that were of greatest concern when flows were low were the presence of algae and weed.</li> </ul>			

### Sir Charles Creek - Hayman's Road Bridge

Management priority and needs	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Flow & allocation preferences of whanau	Monitoring
<p>Prioritise protection of the source of springs, and protection of the indigenous biodiversity including many taonga species</p> <ul style="list-style-type: none"> <li>Water quality standards need to consider cumulative effects and recognise that this streams flows into is a highly productive stream in terms of its customary fisheries values (the Dead Arm) which is part of a significant cultural landscape</li> </ul>	<p>At 100 l/s, extraction is to stop</p> <p>The depth is to be at or below 0.75m or 0.85m</p> <p>Flow affected by the tide,</p> <p>100 l/s is consistent with Variation 9</p>	<p>Allocation</p> <ul style="list-style-type: none"> <li>Address overallocation.</li> <li>Ensure allocation limits are within ecological limits.</li> <li>Whanau support the allocation limit proposed in the NES.</li> </ul> <p>Groundwater</p> <ul style="list-style-type: none"> <li>Manage ground water takes to ensure that the springs do supply a consistent year round flow typical of spring fed streams.</li> </ul> <p>Flows</p> <ul style="list-style-type: none"> <li>Whanau support the level of 100l/s.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor levels in the length of the creek to see levels suitable for spawning.</li> </ul>
<p>In the Flow Preference Study</p> <ul style="list-style-type: none"> <li>A flow in excess of 90l/s was satisfactory across all four themes</li> <li>The indicators that were of greatest concern when flows were low were those relating to weed and algae.</li> <li>It was noted that although weed management is needed in this stream, it is also a contributor to the rich biodiversity present.</li> </ul>			

### Merry Stream - SH1 Bridge

Management priority and needs	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Flow & allocation preferences of whanau	Monitoring
Prioritise protection of the source of springs.	Water level no less than 250mm. When reaches 250mm extraction is to stop 250mm is consistent with summer flow in Variation 9. MALF7d (of 44 l/s) and NES (90%) of 39 l/s are noted. Higher level in winter of 300 l/s noted.	<p>Allocation</p> <ul style="list-style-type: none"> <li>• Address overallocation.</li> <li>• Ensure allocation limits are within ecological limits.</li> <li>• Whanau support the allocation limit proposed in the NES.</li> </ul> <p>Groundwater</p> <ul style="list-style-type: none"> <li>• Manage ground water takes to ensure that the springs do supply a consistent year round flow typical of spring fed streams.</li> <li>• Flow regime and allocation limit need to consider <u>cumulative effects</u> and recognise that this stream flows into the Lower Hook which is one of the main contributors of flows to Wainono. Low flow and overallocation issues in the Lower Hook will be compounded by overallocation and low flow issues in the Merry.</li> </ul> <p>Surface water flows</p> <ul style="list-style-type: none"> <li>• Flows in excess of 25l/s are preferred by whanau</li> <li>• Accordingly, whanau support the recommended flows of 30l/s.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor the incidence of algal blooms</li> <li>• Monitor flows ensure that there is sufficient depth to enable fish passage including downstream movement of adult eels. Provide sufficient quantity to ensure depth of water for fish passage. <ul style="list-style-type: none"> <li>◦ depth for adult migration is to be measured at the <u>shallowest riffle present (from October to May)</u>. A depth of 300mm is based on a standard calculation of 1.5 X the greatest body depth. The figure of 1.5 x the body depth is the minimum depth required for safe passage of fish (to keep them submerged and minimise bow wave pressure). A depth of 300mm recognises that a big longfin is at least 200 mm in diameter.</li> <li>◦ for upstream migrants the flows need to be sufficient to keep an open channel (i.e. free of emergent macrophytes) for the period <u>November through to March</u>.</li> </ul> </li> </ul>
<p>In the Flow Preference Study</p> <ul style="list-style-type: none"> <li>• A flow in excess of 20l/s was satisfactory across all four themes</li> </ul>			

### Wainono Dead Arm - Poindestres Road

Management priority and needs	2006 Recommendations (are in black) Comments from Variation 9 and Ecan reports are in red)	Flow & allocation preferences of whanau	Monitoring
<p>Prioritise its values as a mahinga kai and the use of adjacent lands.</p> <ul style="list-style-type: none"> <li>Water quality standards and flows need to recognise that this is a highly productive part of the Waihao – Wainono system in terms of its customary fisheries values which is part of a significant cultural landscape.</li> <li>Riparian planting to be promoted and a buffer zone established</li> </ul>	<p>The water level is to exceed 1.50m</p> <p>It is noted that this contrasts with the level in Variation 9 (which is 1.30m)</p>	<p>Surface water level</p> <p>Whanau want a minimum flow of 1.50m. They do not support flows below this level.</p> <p>Whanau realise that this is a contrast to a prescribed level that is not to be exceeded.</p> <p>They are prepared to discuss options to addressing the discrepancy which could include engineered solutions.</p>	<ul style="list-style-type: none"> <li>Monitor to ensure that river flows, lake levels and quality standards enable linkages and use of adjacent lands especially, the reserves, easements and entitlements by whanau.</li> </ul>
<p>In the Flow Preference Study</p> <ul style="list-style-type: none"> <li>At no stage was a flow less than 1490 classed as being satisfactory across any of the four themes</li> </ul>			

## Lower Hook

Management priority and needs	Flow & allocation preferences of whanau	Monitoring
<p>Prioritise the protection of springheads, the biodiversity present and the contribution of flows from this creek to the health and wellbeing of Wainono</p> <ul style="list-style-type: none"> <li>Flow regime and allocation limit need to consider cumulative effects and recognise that this streams flows into the Lower Hook which is one of the main contributors of flows to Wainono. Low flow and overallocation issues in the Lower Hook will be compounded by overallocation and low flow issues in the Merry.</li> <li>Riparian planting to be promoted and a buffer zone established</li> </ul>	<p><b>Allocation</b></p> <ul style="list-style-type: none"> <li>Address overallocation.</li> <li>Ensure allocation limits are within ecological limits.</li> <li>Whanau support the allocation limit proposed in the NES.</li> </ul> <p><b>Groundwater</b></p> <ul style="list-style-type: none"> <li>Manage ground water takes to ensure that the springs do supply a consistent year round flow typical of spring fed streams.</li> </ul> <p><b>Surface water flows</b></p> <ul style="list-style-type: none"> <li>Provide sufficient quantity to ensure depth of water for fish passage. depth for adult migration is to be measured at the shallowest riffle present (from <u>October to May</u>). A depth of 300mm is based on a standard calculation of 1.5 X the greatest body depth. The figure of 1.5 x the body depth is the minimum depth required for safe passage of fish (to keep them submerged and minimise bow wave pressure). A depth of 300mm recognises that a big longfin is at least 200 mm in diameter for upstream migrants the flows need to be sufficient to keep an open channel (i.e. free of emergent macrophytes) for the period <u>November through to March</u>.</li> </ul>	<ul style="list-style-type: none"> <li>Manage ground water takes to ensure that the springs do supply a consistent year round flow typical of spring fed streams.</li> <li>Address overallocation. Ensure allocation limits are within ecological limits             <ul style="list-style-type: none"> <li>Monitor flows ensure that there is sufficient depth to enable fish passage including downstream movement of adult eels.</li> </ul> </li> <li>Monitor to ensure that flows and quality standards enable use of the reserves, easements and entitlements by whanau.</li> <li>Monitor to ensure that flows are sufficient to prevent weed and algae growth</li> </ul>
<p>At this stage we have not analysed the raw data from the preference study as the flow recorder is a considerable distance upstream. There are probably a number of intervening variables that could distort the results.</p>		



### Flow variability

While it is noted that there should not be much variability in the flows in spring fed streams, whanau have raised concerns about the variability of flows in a number of the streams. They noted that some streams have a defined winter and summer flow. However they want to be advised annually of the variability in flows – specifically the incidence of freshes and floods – that are crucial for “cleaning the system”.

### Summary

There are three sites where whanau flow preferences are markedly different to what is proposed by Ecan, specifically:

- Deadman’s Arm – the level sought is in excess of 1500 which contrasts with Ecan’s position of not in excess of 1300
- Buchanan’s Creek – the flow sought is 200 l/s which contrasts with Ecan’s proposition of 100l/s
- Bradshaws Bridge where whanau want flows of 425l/s and 600l/s which contrasts with Ecan’s proposition of 200 l/s and 600 l/s.

With respect to both Bradshaw’s Bridge and Buchanan’s Creek, it is noted that the flows sought by whanau are consistent with what the flows would be if the NES was applied.



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## APPENDIX 1 – RECORDING FORM

NAME: \_\_\_\_\_

DATE &amp; TIME: \_\_\_\_\_

SITE NAME: \_\_\_\_\_

For each attribute listed below you are to decide whether or not you are satisfied that today's flow is sufficient to protect that attribute. You are to assign a 1 -7 rating

KEY:									
1 Little or no satisfaction 4 Moderate satisfaction	7 Very satisfied 0 Not applicable to this site / not used in assessment								
ATTRIBUTE		SATISFACTION THAT OBSERVED FLOW PROTECTS THE ATTRIBUTE							
Flow enables use of the <b>site as a mahinga kai</b>	0	1	2	3	4	5	6	7	
Flow keeps the <b>riverbank vegetation</b> watered	0	1	2	3	4	5	6	7	
Flow keeps the river free of <b>weed / algae</b>	0	1	2	3	4	5	6	7	
Flow provides a <b>range of habitats instream and along riverbank</b>	0	1	2	3	4	5	6	7	
Flow <b>protects mahinga kai species in and around this site</b>	0	1	2	3	4	5	6	7	
Flow enables <b>fish to move throughout the catchment</b>	0	1	2	3	4	5	6	7	
Flow enables <b>gathering at this site (i.e. is accessible, safe)</b>	0	1	2	3	4	5	6	7	
Flow enables a <b>range of recreational uses</b>	0	1	2	3	4	5	6	7	
Flow keeps this site <b>free of unnatural gravel buildups</b>	0	1	2	3	4	5	6	7	
Flow keeps <b>riparian wetlands, springs, and/or tributaries connected to mainstem</b>	0	1	2	3	4	5	6	7	
Flow enables <b>cultural use of connected wetlands, springs &amp; tributaries</b>	0	1	2	3	4	5	6	7	
Flow appears to have been <b>higher recently</b> - evidence is present	0	1	2	3	4	5	6	7	
Flow enables <b>use of the river for health and wellbeing purposes</b>	0	1	2	3	4	5	6	7	
Flow contributes to a <b>good feeling about this site</b>	0	1	2	3	4	5	6	7	
Flow enables <b>whanau to be proud of this site</b>	0	1	2	3	4	5	6	7	
Flow protects <b>valued features at this site</b>	0	1	2	3	4	5	6	7	
Flow enables <b>development and use of Maori lands / reserves / easements</b>	0	1	2	3	4	5	6	7	
Flow maintains <b>links between this site and other culturally significant sites in the catchment</b>	0	1	2	3	4	5	6	7	
Flow protects features <b>important to placenames, and important in tribal stories, , whakapapa, waiata etc</b>	0	1	2	3	4	5	6	7	

### OVERALL ASSESSMENT

Are you satisfied that today's river flow protects cultural values **overall** at this site?

1 2 3 4 5 6 7



Would you return and use this site again in the future at the current flow?

1 2 3 4 5 6 7

What actions would you like to see taken at this site

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What attributes not listed on page one of this assessment form did you use to assess whether or not you are satisfied that the flow protects the cultural values at this site?

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Any other comments

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## WATER QUALITY

SITE NAME	
Date sampled	
Time sampled	
When did it last rain at your site?	<input type="checkbox"/> – within 24 hours <input type="checkbox"/> – 1-7 days ago <input type="checkbox"/> – more than 7 days ago
If it has rained in the last week, how heavy was the rainfall?	<input type="checkbox"/> – light <input type="checkbox"/> – medium <input type="checkbox"/> – heavy
<b>CHI assessment</b>	
<b>Surface of water</b>  Notes:	<div style="display: flex; align-items: center;"> <div style="width: 30px; text-align: center; margin-right: 10px;">5</div> <div>Good (clean &amp; natural looking)</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">4</div> <div></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">3</div> <div>OK (some surface scum or foam, no need to call Ecan / ORC)</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">2</div> <div></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">1</div> <div>Very bad (appears polluted, oily sheen, globs, slime, scum, foam or algal bloom)</div> </div>
<b>Water</b>  Notes:	<div style="display: flex; align-items: center;"> <div style="width: 30px; text-align: center; margin-right: 10px;">5</div> <div>Very Good (water is clear)</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">4</div> <div></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">3</div> <div>OK (slightly murky, not completely clear, some algae)</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">2</div> <div></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">1</div> <div>Very bad (heavily discoloured)</div> </div>
<b><i>Obstructions or litter</i></b>  Notes:	<div style="display: flex; align-items: center;"> <div style="width: 30px; text-align: center; margin-right: 10px;">5</div> <div>Very good (natural debris, not blocking flow)</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">4</div> <div></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">3</div> <div>OK (some litter caught on debris, likely to slow or block flow)</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">2</div> <div></div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="width: 30px; text-align: center; margin-right: 10px;">1</div> <div>Bad (major obstruction to flow, large items of rubbish/log jam)</div> </div>

OVERALL ASSESSMENT				
<b>Are you satisfied that the present health of the river protects cultural values at this site?</b>				
1. No	2	3	4	5. Yes
<b>How would you describe the overall health of the river at this site?</b>				
1. Very unhealthy	2	3	4.	5. Very healthy
<b>Does this site sustain the cultural uses associated with this site?</b>				
1. NO			5. YES.	
<b>Would you return to this site in the future?</b>				
1. NO			5. YES.	

## APPENDIX 2 – DEPENDENCIES OF WAHI TAONGA ON FLOWS

WAHI TAONGA CLASS	WATER DEPENDENCIES	FLOW RELATED DEPENDENCIES
<p>1. Mahinga kai</p> <p>Mahinga kai (places where foods are procured and or produced). “Kai awa” and “kai roto” refers to the foods and resources sourced from rivers and lakes respectively.</p>	<ul style="list-style-type: none"> <li>• Oxygen – fish get this from water</li> <li>• Food – for plants, birds and fish               <ul style="list-style-type: none"> <li>◦ Fish eat algae, invertebrates, worms</li> <li>◦ birds eat fish, invertebrates, worms, seeds etc from riparian plants</li> <li>◦ plants need nutrients</li> </ul> </li> <li>• Habitat (a place to live) – riparian, channel structure, patterns and quantity of sediments, contaminants, interactions between fish and invertebrates, competition with predators (fish, birds, plants, invertebrates etc)</li> <li>• Temperature of water</li> <li>• Cover in aquatic ecosystems – protects species from predators, high temperatures, high turbulence</li> <li>• Life cycle stages triggered by flows</li> <li>• Gathering methods dependent on flows</li> <li>• Transportation – if access dependent on boating etc</li> <li>• Turbidity – linked to oxygen concentrations. Suspended matter affects growth rates, movements etc, affects streambed</li> </ul>	<ul style="list-style-type: none"> <li>• Oxygen – fish species are sensitive to interruptions in water supply (pools V flow). Higher flows help oxygenate deeper water. Colder waters hold oxygen. Links to temperature.</li> <li>• Food – flow dislodges material that drifts and is available as food.</li> <li>• Habitat (a place to live) – habitat varies by species and life stage (spawning, incubation, rearing, living).</li> <li>• Temperature – species have optimal temperature ranges for survival. Links to riparian vegetation etc (and shade). Temperatures are inversely proportional to flows e.g. high flows low temperature, low flows high temperatures.</li> <li>• Cover – affected by debris in stream; ratio of sands, gravels, cobbles; vegetation in and adjacent to stream; pools and overhang banks etc; stream depth and turbulence</li> <li>• Life cycle stages – triggered by freshes, but need to consider sequence, scale and timing of freshes – for all, but inter species variations. Migration, freshes because flow has to be sufficient to cover instream structures etc. high flows enable fish to cover vast distances in short period of time.</li> <li>• Gathering – methods change with flows; affects fishing experience, flows can change catch rates</li> <li>• Transportation - affect boatability, access,</li> <li>• Turbidity - amount of sediment in water column is dependent on velocity and turbulence. Flows affect aggradation</li> </ul> <p>A lot of focus has been on fish but they are only one part of the kai gathered.</p>

WAHI TAONGA CLASS	WATER DEPENDENCIES	FLOW RELATED DEPENDENCIES
2. Taonga species	<ul style="list-style-type: none"> <li>• Food</li> <li>• Habitat (a place to live)</li> <li>• Cover</li> <li>• Life cycle stages</li> <li>• Movement corridors</li> </ul>	<ul style="list-style-type: none"> <li>• Food – links to Box 1 (food for all parts of the food chain)</li> <li>• Habitat (a place to live) – riparian habitats important – i.e. habitats on riverbed and floodplain. Flows create conditions for growth; keep water tables high; supplies nutrients etc; variation establishes site specific conditions e.g. high flows move seeds etc. Flows work channels, banks, alter soil moisture etc</li> <li>• Cover – flows provide protection especially for riverbed bird species, clear weeds etc.</li> <li>• Riparian vegetation provides woody debris to rivers, intercept sediments &amp; nutrients etc. Vegetation lessen velocities helps reduce flood peaks by facilitating infiltration to groundwater into the ground during high flows and releasing back to the channel as flows subside.</li> <li>• Life cycle stages</li> <li>• Movement corridors – free movement for life cycle stages or to move to better habitats. Reduces risk of getting stranded.</li> </ul>
3. Wahi tapuketia – buried taonga	Water levels and flows determine risk of exposure	Low levels and flows increase the risk of exposure
4. Wahi ana – important cave areas	<ul style="list-style-type: none"> <li>• Ground water</li> <li>• Freshes and floods</li> </ul>	<ul style="list-style-type: none"> <li>• Ground water infiltration</li> <li>• Ground water levels</li> <li>• Freshes and floods affect shapes</li> </ul>



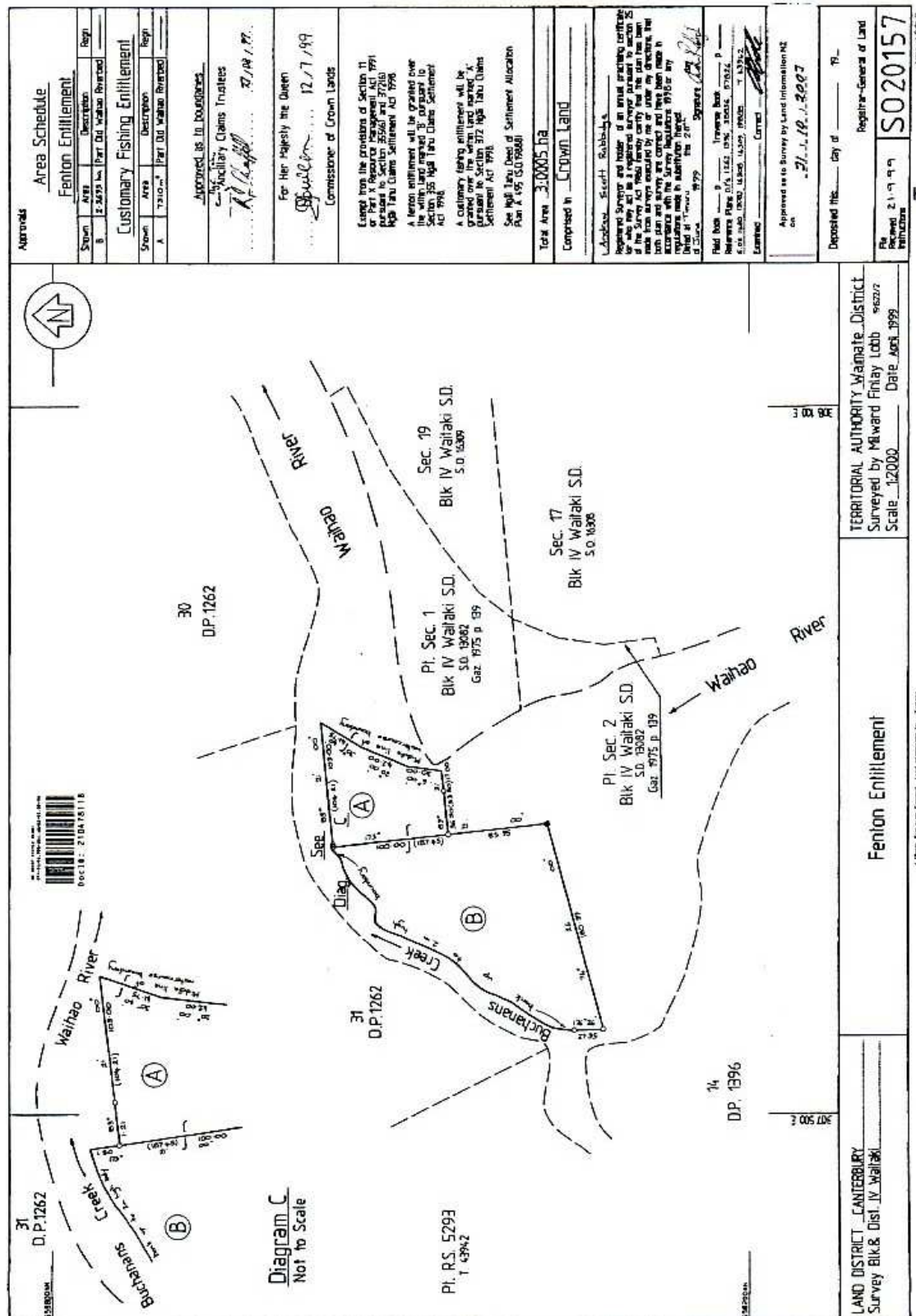
WAHI TAONGA CLASS	WATER DEPENDENCIES	FLOW RELATED DEPENDENCIES
5. Tuhituhi nehera – rock drawing areas	<ul style="list-style-type: none"> <li>Ground water</li> <li>Freshes and floods</li> </ul>	<ul style="list-style-type: none"> <li>Ground water infiltration</li> <li>Ground water levels</li> <li>Infrastructure can create micro climates</li> </ul>
6. Wahi tohu – locators and their names within landscapes	<ul style="list-style-type: none"> <li>Can be water related</li> <li>Can describe character of waterway</li> </ul>	Changing flows can cause a river to lose its identity – boulders etc high and dry, islands gone, river not dominant feature / the shore is.
7. Wahi paripari – cliff areas	Channel shaping flow regimes	Flows change erosion, deposition, aggradation
8. Tuahu – sacred place for spiritual purposes	Linked to water quality and character	Can be water related <ul style="list-style-type: none"> <li>Can be dependent on character of waterway – flow and quality</li> <li>Can describe use</li> </ul>
9. Wahi rakau – area of important trees	See earlier notes water and riparian area	See earlier notes water and riparian area
10. Pa tawhito – ancient pa sites	Links directly to mahinga kai and water quality	Links directly to mahinga kai and water quality <ul style="list-style-type: none"> <li>Mahinga kai – could only reside because resources were available to sustain whanau</li> <li>There was a potable water supply</li> </ul>
11. Wahi raranga – sources of weaving materials	See earlier notes water and riparian area	See earlier notes water and riparian area
12. Maunga	Flows make connections – maunga to the sea	Flows make and maintain connections
13. Wahi kaitiaki – resource indicators from the environment	<ul style="list-style-type: none"> <li>Can be water related</li> <li>Can describe character of waterway</li> </ul>	Changing flows can cause a river to lose its identity – boulders etc high and dry, islands gone, river not dominant feature / the shore is.
14. Wahi kohatu – rock formations	Channel shaping flow regimes	<ul style="list-style-type: none"> <li>Dominant river in relation to cliffs or rock formations can be dislocated when river at low flows.</li> <li>Flows changes erosion, deposition, aggradation patterns</li> <li>Can get bath tub ring effects</li> </ul>

WAHI TAONGA CLASS	WATER DEPENDENCIES	FLOW RELATED DEPENDENCIES
15. Tauranga waka	Water based activity	Location dependent on specific water characteristics <ul style="list-style-type: none"> <li>• Traditional tauranga waka</li> <li>• Contemporary boat ramps</li> </ul>
16. Ara tawhito	Land and water based trails link to water	Links to boatability, access, connections, mahinga kai
17. Wai Maori	See all of above	<ul style="list-style-type: none"> <li>• Specific waterbodies may be valued for combination of flow related characteristics e.g. bathing dependent on vortex, swimming related on depth and velocity in relation to access</li> <li>• Streams have a shape, a channel, a floodplain, and a flow.</li> <li>• Movement of sediment linked to stream energy (velocity, turbulence, slope and flow).</li> <li>• Water quality - Flows influence dilution capacity, AND Flows impact the saltwater / freshwater interface</li> </ul>
18. Repo raupo	See all of above	Specific waterbodies may be valued for combination of level related characteristics Wetlands support a range of taonga species and a range of mahinga kai values
19. Cultural use	Turbidity Features	<ul style="list-style-type: none"> <li>• High flows may make water turbid and scare people from using</li> <li>• Flows may leave features “high and dry”</li> </ul>
20. Wahi ingoa	<ul style="list-style-type: none"> <li>• May be water relate</li> <li>• Can become dislocated</li> </ul>	<ul style="list-style-type: none"> <li>• Names for the waterway, reaches of waterways, and/or physical characteristics of waterway</li> <li>• Names for flow dependent features within the catchment – wetlands, puna, rocks, cliffs,</li> </ul>
22. Taniwha	Taniwha reflect an indepth ecological knowledge of waterbodies and flows	<ul style="list-style-type: none"> <li>• Dwelling place of taniwha in and around waterway</li> <li>• Role of taniwha to protect certain features of the river - shape e.g. bends in river, rapids, headwaters</li> <li>• May have a history of moving throughout the catchment</li> <li>• May be protecting a wahi tapu</li> <li>• Taniwha describe the creation of and interrelationships between landforms comprising a cultural landscape</li> </ul>

# FENTON ENTITLEMENT - TE HOURI

Area Schedule		
Fenton Enfranchisement		
Span	Area	Description
B	1264.5 ha	Crown Land
<b>Customary Fishing Entitlement</b>		
Span	Area	Description
A	1264.5 ha	Crown Land
Autonomous as its boundaries.		
For Ancillary Claims Trustees A.P.M. 27/08/99		
For Her Majesty the Queen Buckley 12/7/99		
Commissioner of Crown Lands		
Enacted from the provisions of Section 11 or Part X Resource Management Act 1991 pursuant to Section 27(1) and 27(2) Highways Act 1980 and 27(1) Highways Act 1980		
A fishing entitlement will be granted over Section 355 Ngā Tahu Claims Settlement Act 1998		
A customary fishing entitlement will be granted over the whole land named "A" pursuant to Section 27(1) Ngā Tahu Claims Settlement Act 1998		
See Ngā Tahu deed of Settlement Allocation Plan K 425 Q3/99/95		
Total Area 1264.5 ha		
Comprised in Crown Land		
Address South Suburb		
Registered Surveyor and holder of a survey practice certificate under the Survey Act 1980 hereby certify that the plan has been made from surveys conducted by me or under my direction. The plan and survey are correct and have been made in accordance with the regulations made in pursuance of the Regulations made in pursuance of the Survey Act 1980.		
Signed at Timaru this 1st day of August 1999		
Field Book P 1264.5 ha		
Reference Plans S.O. 3346, S.O. 3347, S.O. 3348, S.O. 3349, S.O. 3350, S.O. 3351, S.O. 3352, S.O. 3353, S.O. 3354, S.O. 3355, S.O. 3356, S.O. 3357, S.O. 3358, S.O. 3359, S.O. 3360, S.O. 3361, S.O. 3362, S.O. 3363, S.O. 3364, S.O. 3365, S.O. 3366, S.O. 3367, S.O. 3368, S.O. 3369, S.O. 3370, S.O. 3371, S.O. 3372, S.O. 3373, S.O. 3374, S.O. 3375, S.O. 3376, S.O. 3377, S.O. 3378, S.O. 3379, S.O. 3380, S.O. 3381, S.O. 3382, S.O. 3383, S.O. 3384, S.O. 3385, S.O. 3386, S.O. 3387, S.O. 3388, S.O. 3389, S.O. 3390, S.O. 3391, S.O. 3392, S.O. 3393, S.O. 3394, S.O. 3395, S.O. 3396, S.O. 3397, S.O. 3398, S.O. 3399, S.O. 3400, S.O. 3401, S.O. 3402, S.O. 3403, S.O. 3404, S.O. 3405, S.O. 3406, S.O. 3407, S.O. 3408, S.O. 3409, S.O. 3410, S.O. 3411, S.O. 3412, S.O. 3413, S.O. 3414, S.O. 3415, S.O. 3416, S.O. 3417, S.O. 3418, S.O. 3419, S.O. 3420, S.O. 3421, S.O. 3422, S.O. 3423, S.O. 3424, S.O. 3425, S.O. 3426, S.O. 3427, S.O. 3428, S.O. 3429, S.O. 3430, S.O. 3431, S.O. 3432, S.O. 3433, S.O. 3434, S.O. 3435, S.O. 3436, S.O. 3437, S.O. 3438, S.O. 3439, S.O. 3440, S.O. 3441, S.O. 3442, S.O. 3443, S.O. 3444, S.O. 3445, S.O. 3446, S.O. 3447, S.O. 3448, S.O. 3449, S.O. 3450, S.O. 3451, S.O. 3452, S.O. 3453, S.O. 3454, S.O. 3455, S.O. 3456, S.O. 3457, S.O. 3458, S.O. 3459, S.O. 3460, S.O. 3461, S.O. 3462, S.O. 3463, S.O. 3464, S.O. 3465, S.O. 3466, S.O. 3467, S.O. 3468, S.O. 3469, S.O. 3470, S.O. 3471, S.O. 3472, S.O. 3473, S.O. 3474, S.O. 3475, S.O. 3476, S.O. 3477, S.O. 3478, S.O. 3479, S.O. 3480, S.O. 3481, S.O. 3482, S.O. 3483, S.O. 3484, S.O. 3485, S.O. 3486, S.O. 3487, S.O. 3488, S.O. 3489, S.O. 3490, S.O. 3491, S.O. 3492, S.O. 3493, S.O. 3494, S.O. 3495, S.O. 3496, S.O. 3497, S.O. 3498, S.O. 3499, S.O. 3500, S.O. 3501, S.O. 3502, S.O. 3503, S.O. 3504, S.O. 3505, S.O. 3506, S.O. 3507, S.O. 3508, S.O. 3509, S.O. 3510, S.O. 3511, S.O. 3512, S.O. 3513, S.O. 3514, S.O. 3515, S.O. 3516, S.O. 3517, S.O. 3518, S.O. 3519, S.O. 3520, S.O. 3521, S.O. 3522, S.O. 3523, S.O. 3524, S.O. 3525, S.O. 3526, S.O. 3527, S.O. 3528, S.O. 3529, S.O. 3530, S.O. 3531, S.O. 3532, S.O. 3533, S.O. 3534, S.O. 3535, S.O. 3536, S.O. 3537, S.O. 3538, S.O. 3539, S.O. 3540, S.O. 3541, S.O. 3542, S.O. 3543, S.O. 3544, S.O. 3545, S.O. 3546, S.O. 3547, S.O. 3548, S.O. 3549, S.O. 3550, S.O. 3551, S.O. 3552, S.O. 3553, S.O. 3554, S.O. 3555, S.O. 3556, S.O. 3557, S.O. 3558, S.O. 3559, S.O. 3560, S.O. 3561, S.O. 3562, S.O. 3563, S.O. 3564, S.O. 3565, S.O. 3566, S.O. 3567, S.O. 3568, S.O. 3569, S.O. 3570, S.O. 3571, S.O. 3572, S.O. 3573, S.O. 3574, S.O. 3575, S.O. 3576, S.O. 3577, S.O. 3578, S.O. 3579, S.O. 3580, S.O. 3581, S.O. 3582, S.O. 3583, S.O. 3584, S.O. 3585, S.O. 3586, S.O. 3587, S.O. 3588, S.O. 3589, S.O. 3590, S.O. 3591, S.O. 3592, S.O. 3593, S.O. 3594, S.O. 3595, S.O. 3596, S.O. 3597, S.O. 3598, S.O. 3599, S.O. 3600, S.O. 3601, S.O. 3602, S.O. 3603, S.O. 3604, S.O. 3605, S.O. 3606, S.O. 3607, S.O. 3608, S.O. 3609, S.O. 3610, S.O. 3611, S.O. 3612, S.O. 3613, S.O. 3614, S.O. 3615, S.O. 3616, S.O. 3617, S.O. 3618, S.O. 3619, S.O. 3620, S.O. 3621, S.O. 3622, S.O. 3623, S.O. 3624, S.O. 3625, S.O. 3626, S.O. 3627, S.O. 3628, S.O. 3629, S.O. 3630, S.O. 3631, S.O. 3632, S.O. 3633, S.O. 3634, S.O. 3635, S.O. 3636, S.O. 3637, S.O. 3638, S.O. 3639, S.O. 3640, S.O. 3641, S.O. 3642, S.O. 3643, S.O. 3644, S.O. 3645, S.O. 3646, S.O. 3647, S.O. 3648, S.O. 3649, S.O. 3650, S.O. 3651, S.O. 3652, S.O. 3653, S.O. 3654, S.O. 3655, S.O. 3656, S.O. 3657, S.O. 3658, S.O. 3659, S.O. 3660, S.O. 3661, S.O. 3662, S.O. 3663, S.O. 3664, S.O. 3665, S.O. 3666, S.O. 3667, S.O. 3668, S.O. 3669, S.O. 3670, S.O. 3671, S.O. 3672, S.O. 3673, S.O. 3674, S.O. 3675, S.O. 3676, S.O. 3677, S.O. 3678, S.O. 3679, S.O. 3680, S.O. 3681, S.O. 3682, S.O. 3683, S.O. 3684, S.O. 3685, S.O. 3686, S.O. 3687, S.O. 3688, S.O. 3689, S.O. 3690, S.O. 3691, S.O. 3692, S.O. 3693, S.O. 3694, S.O. 3695, S.O. 3696, S.O. 3697, S.O. 3698, S.O. 3699, S.O. 3700, S.O. 3701, S.O. 3702, S.O. 3703, S.O. 3704, S.O. 3705, S.O. 3706, S.O. 3707, S.O. 3708, S.O. 3709, S.O. 3710, S.O. 3711, S.O. 3712, S.O. 3713, S.O. 3714, S.O.		

# FENTON ENTITLEMENT



# NOHOANGA ENTITLEMENT – WAIHAO RIVER

**Lot 14  
DP 1396**

**Approved as to Boundaries**  
For Te Rūnanga o Ngāi Tahu:

*[Signature]* 2/12/11  
Te Rūnanga o Ngāi Tahu

For Her Majesty the Queen:

*[Signature]* 24/11/11  
Commissioner of Crown Lands

Area Schedule			
Nohoanga Entitlement			
Shown	Area	Description	Title Reference
A	10853m <sup>2</sup>	Part Waihao Riverbed	Crown Land

Exempt from the provisions of Section 11 or Part X Resource Management Act 1991 pursuant to Section 256(7) Ngāi Tahu Claims Settlement Act 1990.

A nohoanga entitlement will be granted over the within land pursuant to Section 256 Ngāi Tahu Claims Settlement Act 1990. See Ngāi Tahu Deed of Settlement Allocation Plan MN 487 (SD 1888).

**Total Area: 10853 ha**

**Comprised in: Crown Land**

1. Crown Minerals Rights  
Applicant's Survey and holder of an annual panning privilege for new gold may act as a registered miner pursuant to section 25 of the Survey Act 1980, provided that the plan area does not include any land reserved for the Crown. The holder of the privilege must comply with the provisions of the Survey Act 1980 and the Regulations made in pursuance of the Survey Act 1980 in any regulations made in substitution thereof.

2. Crown Minerals Rights  
Applicant's Survey and holder of an annual panning privilege for new gold may act as a registered miner pursuant to section 25 of the Survey Act 1980, provided that the plan area does not include any land reserved for the Crown. The holder of the privilege must comply with the provisions of the Survey Act 1980 and the Regulations made in pursuance of the Survey Act 1980 in any regulations made in substitution thereof.

**Field Book** A  
Reference: Plan DP 1396, 2010, & 2012

**Created** *[Signature]*  
Corrected *[Signature]*

**Approved as to Survey**  
14/5/11  
Agent's Chief Surveyor

**Deposited this** day of 10...

**Disposal Land Registrar**  
14/5/11  
S0 19998

**TERRITORIAL AUTHORITY: Waimate District**  
Surveyed by **TERRALINK NZ LTD**  
Scale 1:2000  
Date August 1999

**Nohoanga Entitlement**

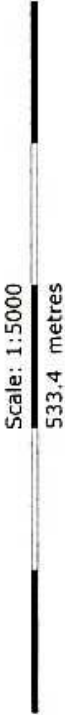
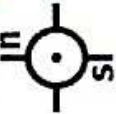
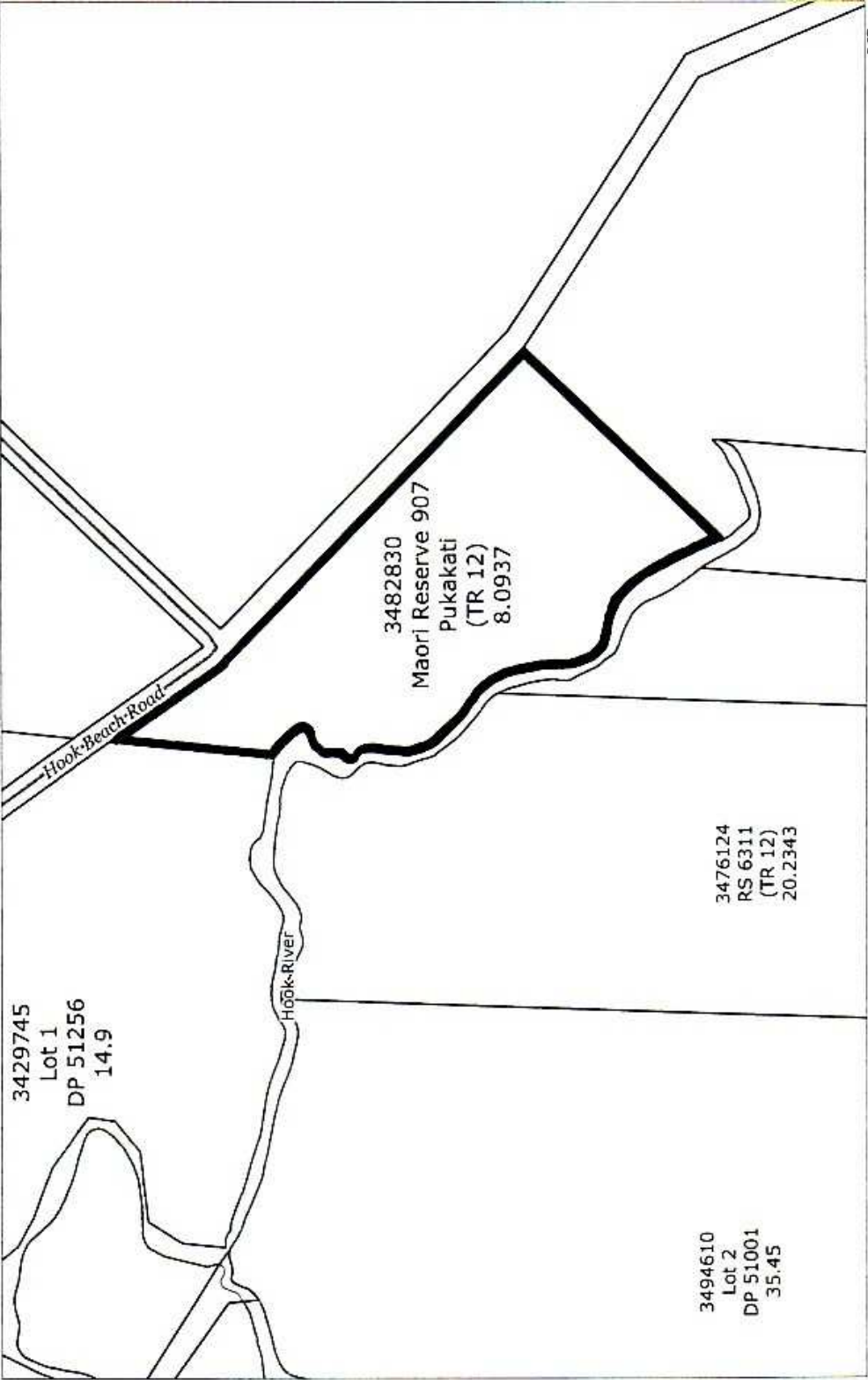
**LAND DISTRICT: CANTERBURY**  
Survey Bk. & Dist.: IV Waiaki

A. J. BROWN, SURVEYOR GENERAL, LAND INFORMATION NEW ZEALAND

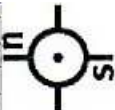
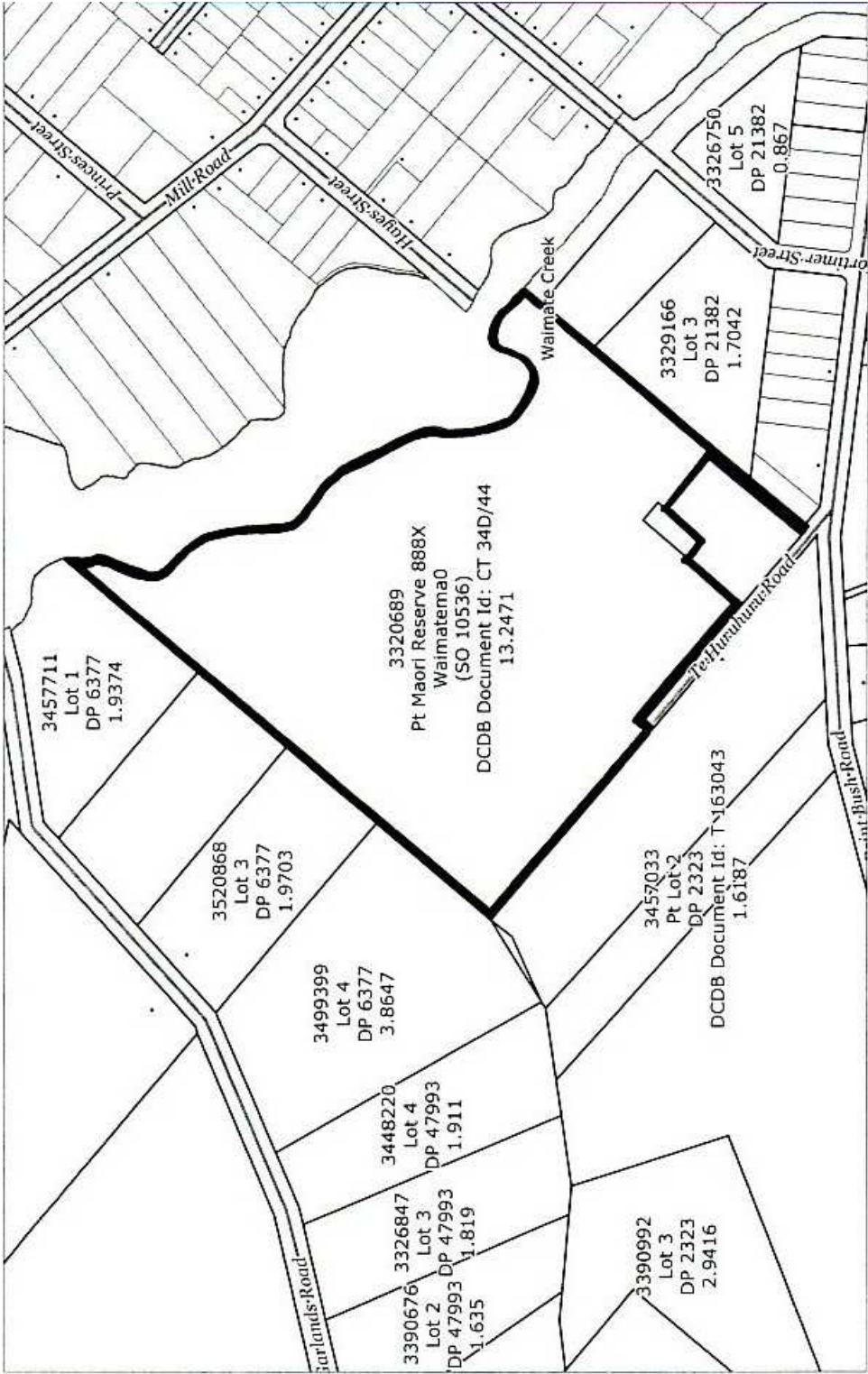


[illegible]

MAORI RESERVE LANDS – PUKAKATI



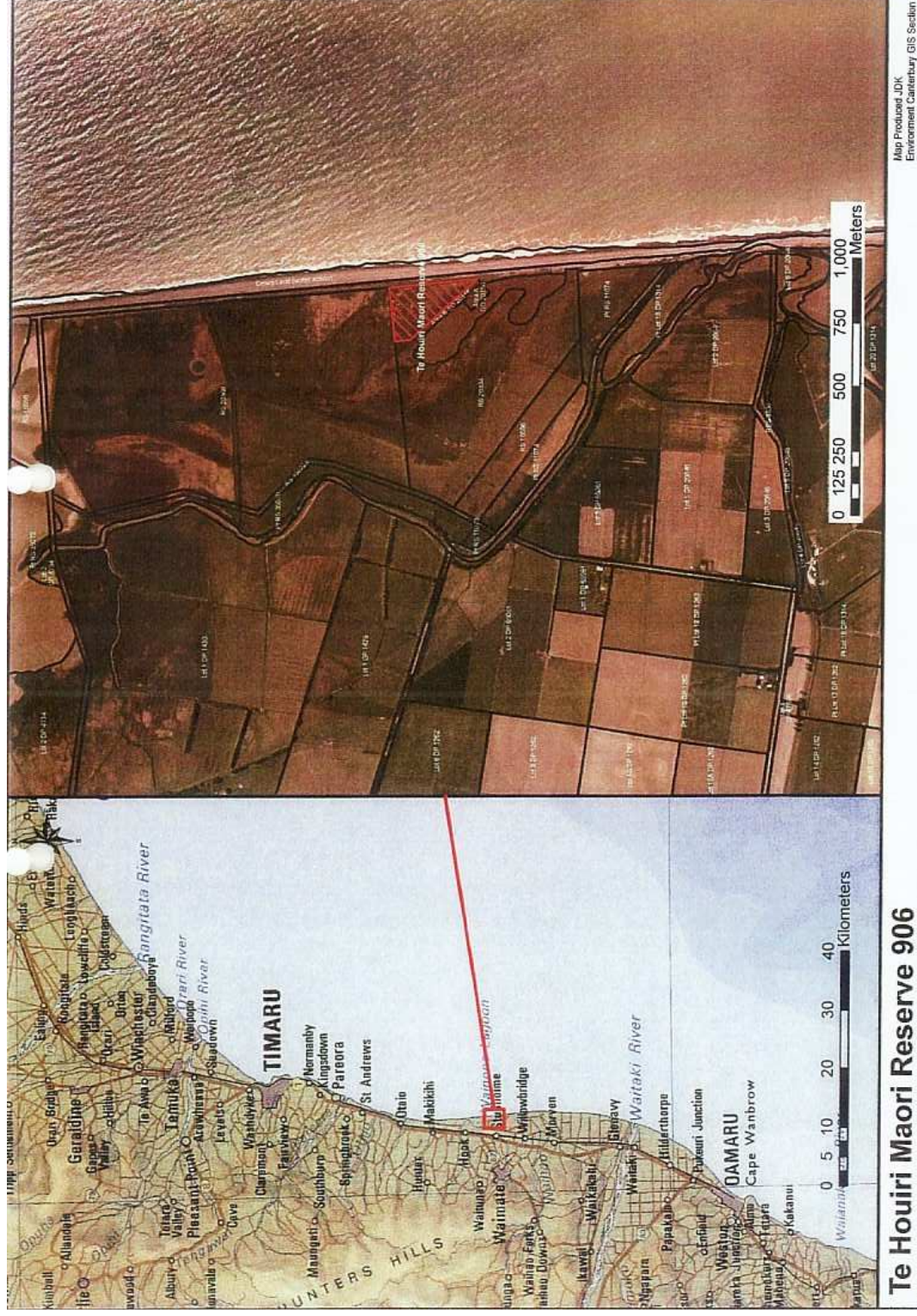
MAORI RESERVE LANDS – WAIMATEMATE



Scale: 1:4775  
509.4 metres



## MAORI RESERVE LANDS – TE HOUIRI



## MAORI RESERVE LANDS – TE HOUIRI

