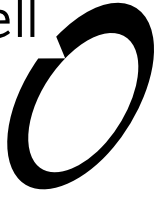


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# TE OHA HAUMANU O TE AWA ARAHURA




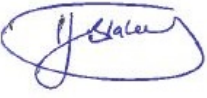
Arahura River Catchment Baseline Report  
Prepared for Te Papa Atawhai/Department of Conservation

17 November 2020





## Document Quality Assurance

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# NGĀ MIHI / Acknowledgements

Ka haruru te moana o Poutini

Tai timu, pari hoki ki te wāhi kuku mau toka o Arahura

Ka heke ngā tuna i te kahuru, ka hoki mai ngā mata i te mahana

Ka takataka te iwi i te whenua ia rā, ia rā

E kimi ana i ngā toanga o nehe, ka whai e ngā tapuwae o ngā tīpuna.

E rere ana te wai, mai i Whakarewa, mai i te wāhi moengaroa o Waitaiki,

E kirikiri ana i ngā tamariki o te hākuī o te taonga pounamu.

Ka hokia ki te Tai o Poutini, e rere ana ki a tātou e

Tīhei mauri ora!

Nei te mihi aroha ki ngā tini aitua, moe mai, moe mai, haere atu rā.

Rātou ki a rātou, tātou ki a tātou, koinā, tēnā koutou katoa.

Nei te mihi maioha e rau rangatira mā o te hau kāinga, o te hapū o Ngāti Waewae.

Nei te mihi hoki ki ngā kaimahi o Te Papa Atawhai,

Koutou rā, e mahi tiaki o tō tātou taonga awa.

Ānei te whakatakoto kōrero o Te Oha Haumanu o Te Awa Arahura.

Nō reira, tēnā koutou, tēnā koutou, tēnā tātou katoa.

Thank you for the opportunity to work on this project and to contribute to the future management and protection of the Arahura River.

It has been a privilege to work alongside the hapū of Ngāti Waewae, the shareholders of Mawhera Incorporation and the staff of the Department of Conservation on this report and to document options for the future restoration of the awa.

We acknowledge all of those who contributed information, attended hui and reviewed the work contained in this report and hope that it can help inform the next steps of the Ngā Awa project on the Arahura River.

**E tika ana tēnei kōrero o mua ki te mahi a te heke mai nei**

**He mahi kai hoanga, he mahi kai tangata**

**Nō reira, tēnā koutou, tēnā koutou, tēnā koutou.**

# WHAKARĀPOPOTO / Summary

## He aha te take o tēnei pūrongo? / What is the purpose of this report?

Te Oha Haumanu o Te Awa Arahura is a 'Baseline Report' that summarises key information available in relation to the cultural and ecological values of the Arahura River, and identifies significant threats to, as well as opportunities for, restoration of these values.

## Mo wai tēnei pūrongo? / Who is this report for?

This report was produced for the Department of Conservation, in conjunction with Ngāti Waewae and the Mawhera Incorporation, as part of the national Ngā Awa River Restoration Programme. It involved desktop research and analysis of available information, as well as a site visit and hui with representatives from the above partner organisations to prioritise and ground truth future actions.

## He aha ngā kaupapa kei roto? / What information does the report contain?

The report begins with an overview of manawhenua values, ownership, management and legislative frameworks, including an outline of key stakeholders who have both responsibilities and impacts on the river.

The report then provides a brief description of key geographic and physical features, including land cover and land use activities, as well as a brief history of the catchment. It also details the key plants and animals that are present in the catchment and their threat profile, including pest animals and weeds; water quality and the impacts of human activity are also discussed.

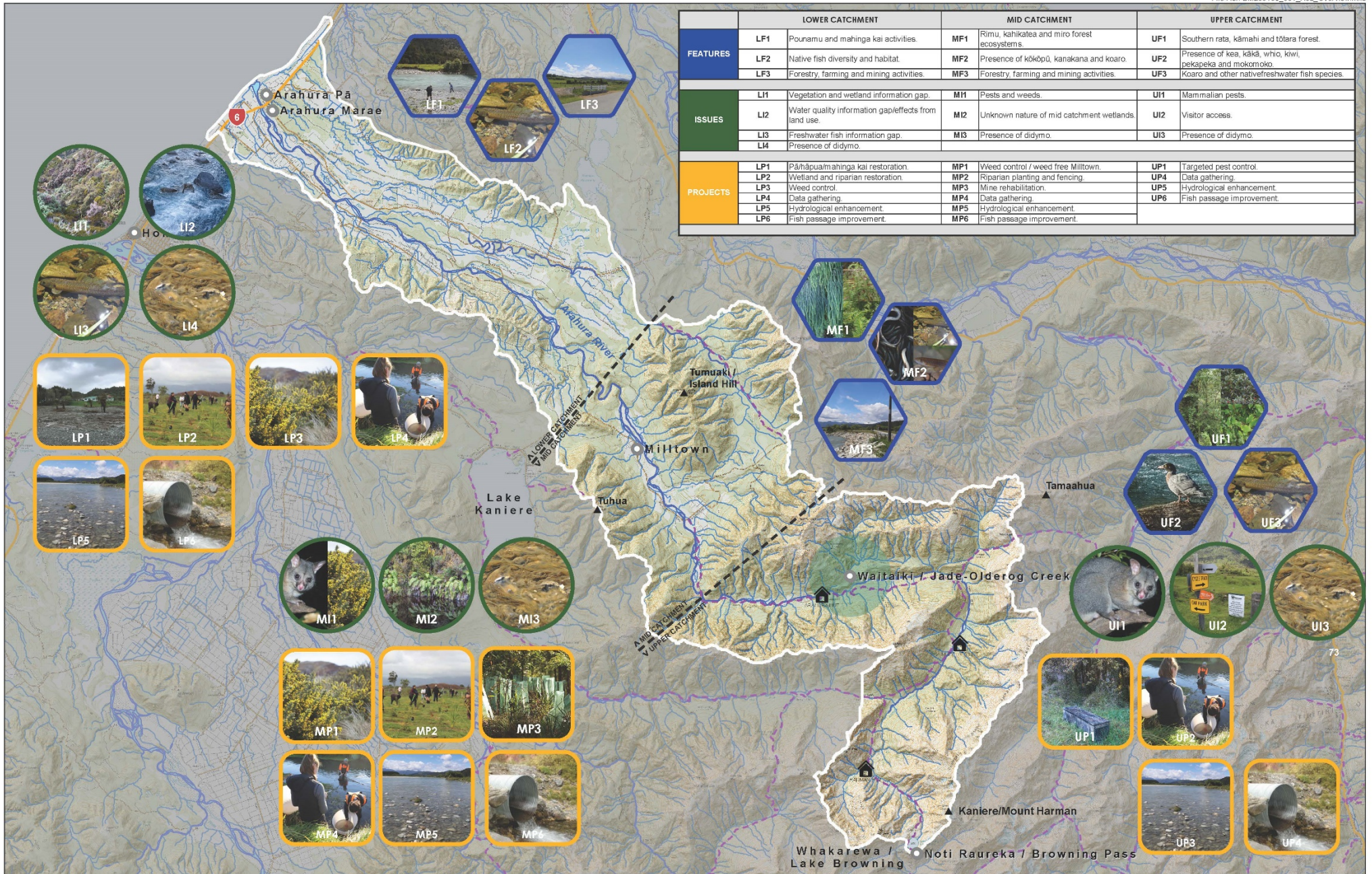
Finally, the report provides a range of opportunities for restoration actions based on the key features (values) and issues (threats) identified in the Upper, Mid and Lower parts of the catchment and outlines the priority projects identified at the hui between manawhenua and Te Papa Atawhai.

## Ngā Hua / Identified Features, Issues and Opportunities

The table below summarises the key features (values), issues (threats) and opportunities (actions / projects) identified within the report across the upper, mid and lower parts of the catchment. These features, issues and opportunities are also captured in the map on the following page.

	UPPER CATCHMENT	MID CATCHMENT	LOWER CATCHMENT
<b>FEATURES (Values)</b>	Significant southern rata, kāmahī and tōtara forest	Rimu, kahikatea and miro forest ecosystems	Pounamu and mahinga kai activities
	Presence of kea, kākā, whio, kiwi, pekapeka and mokomoko populations	Presence of kōkōpū, kanakana and kōaro populations	Native fish diversity and habitat including lowland streams & wetlands
	Kōaro and other native freshwater fish species	Forestry, farming and mining activities	
<b>ISSUES (Threats)</b>	Presence of didymo		
	Mammalian Pests e.g. stoats, rats, possums	Pest and Weed species e.g. gorse, blackberry	Vegetation and wetland information gap
	Visitor access	Unknown nature of mid catchment wetlands	Water quality information gap/effects from land use Freshwater fish information gap
<b>OPPORTUNITIES (Actions &amp; Projects)</b>	Data gathering, hydrological enhancement and fish passage improvement		
	Targeted pest control	Weed control (Weed Free Milltown)	Wetland and riparian protection and restoration
		Riparian planting and fencing	Pā / hāpua / mahinga kai restoration
		Mine rehabilitation	Weed control





	LOWER CATCHMENT	MID CATCHMENT	UPPER CATCHMENT
<b>FEATURES</b>	<b>LF1</b> Pounamu and mahinga kai activities.	<b>MF1</b> Rimu, kahikatea and miro forest ecosystems.	<b>UF1</b> Southern rata, kāmahi and tōlara forest.
	<b>LF2</b> Native fish diversity and habitat.	<b>MF2</b> Presence of kōkōpū, kanakana and koaro.	<b>UF2</b> Presence of kea, kākā, whio, kiwi, pekapeka and mokomoko.
	<b>LF3</b> Forestry, farming and mining activities.	<b>MF3</b> Forestry, farming and mining activities.	<b>UF3</b> Koaro and other native freshwater fish species.
<b>ISSUES</b>	<b>LI1</b> Vegetation and wetland information gap.	<b>MI1</b> Pests and weeds.	<b>UI1</b> Mammalian pests.
	<b>LI2</b> Water quality information gap/effects from land use.	<b>MI2</b> Unknown nature of mid catchment wetlands.	<b>UI2</b> Visitor access.
	<b>LI3</b> Freshwater fish information gap.	<b>MI3</b> Presence of didymo.	<b>UI3</b> Presence of didymo.
	<b>LI4</b> Presence of didymo.		
<b>PROJECTS</b>	<b>LP1</b> Pāhāpua/mahinga kai restoration.	<b>MP1</b> Weed control / weed free Milltown.	<b>UP1</b> Targeted pest control.
	<b>LP2</b> Wetland and riparian restoration.	<b>MP2</b> Riparian planting and fencing.	<b>UP4</b> Data gathering.
	<b>LP3</b> Weed control.	<b>MP3</b> Mine rehabilitation.	<b>UP5</b> Hydrological enhancement.
	<b>LP4</b> Data gathering.	<b>MP4</b> Data gathering.	<b>UP6</b> Fish passage improvement.
	<b>LP5</b> Hydrological enhancement.	<b>MP5</b> Hydrological enhancement.	
	<b>LP6</b> Fish passage improvement.	<b>MP6</b> Fish passage improvement.	



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# 1.0 HE KUPU WHAKATAKI / Introduction

## 1.1 Kaupapa / Purpose

The Arahura River on Te Tai Poutini / the West Coast is a waterway of local, regional and national significance, due to its unique and special cultural, ecological and historical values. It is home to numerous rare and threatened indigenous species, including the kōwhiwhio / blue duck. Its waters are renowned for their pristine quality, flow and colour, as well as being a desired destination for recreational users. It is also a place of considerable and long-standing industry, including agriculture, forestry, mining and electricity generation. Most significant however, are its heritage and cultural values, being the country's most famous source of pounamu, as well as a treasured mahinga kai and home for local manawhenua, Ngāti Waewae. Furthermore, the riverbed, the pounamu contained within its catchment, and the entire upper catchment is maintained in traditional ownership, being vested in the Mawhera Incorporation, to acknowledge the original agreement between Poutini Ngāi Tahu and the Crown to exclude the river from the 1860 Arahura Purchase of the West Coast.

In 2019, following a collaborative effort between Ngāti Waewae, the Mawhera Incorporation and Te Papa Atawhai / the Department of Conservation (DOC), the Arahura was identified as one of 14 priority river catchments as part of the national Ngā Awa River Restoration Programme, being administered by DOC. This programme focuses on the New Zealand Government's commitment and contribution to freshwater ecosystem restoration across Aotearoa.

In April 2020, Boffa Miskell Ltd was contracted to undertake a baseline report on the Arahura River and its catchment. This report starts with a brief introduction and background (Sections 1 & 2), then focuses on analysing existing ecological, water quality, land use and ownership data to identify key values, issues and pressures within the catchment (Section 3). Opportunities and actions that may best improve ecological and community outcomes for the river are also provided (Section 4), including the revival, use and retention of mātauranga Māori (traditional knowledge). To conclude, recommendations for future work to address issues and pressures, knowledge and information gaps, as well as monitoring and reporting, have been outlined (Section 5).

## 1.2 Ngā Kauneke / Methodology

- Researching, reading and reviewing relevant background documentation in relation to the river catchment, including:
  - District, Regional and National plans and policies;
  - Council consenting and monitoring data;
  - Available GIS data/layers supplied by Ngāti Waewae, Mawhera Inc. and DOC;
  - The New Zealand Freshwater Fish Database (NZFFD); and
  - Historical texts, maps, images and other information about the Arahura and the wider Te Tai Poutini area.
- Meetings and other discussions with staff of DOC and local government, as well as key manawhenua and community representatives, to discuss the draft baseline report and better understand the key issues and priority actions;
- A site visit, undertaken in September 2020, to better understand key issues; and
- Finalisation of a written report, that identifies key issues and pressures, priority actions, future work, monitoring and reporting ideas.



## 2.0 TĀHUHU KORERO / Background

### 2.1 Manawhenua

Manawhenua refers to the mana or 'authority' held by an iwi, hapū or whanau over the land or territory (and the associated natural resources) of a particular area. This authority is passed down through whakapapa (genealogy) and is based on occupation and continued use and control of natural resources within an area. Manawhenua is also used to describe the people who hold this authority, and who are also considered the kaitiaki of their particular area or takiwā.

#### 2.1.1 Ngāi Tahu Whānui

Ngāi Tahu Whānui are the iwi (tribe) who hold manawhenua over a large portion of Te Waipounamu/the South Island, from Te Pari-nui-o-Whiti (White Bluffs) on the East Coast and Kahuraki (Kahurangi Point) on the West Coast. The modern iwi originates from three main tribal strands; Waitaha, Ngāti Mamoe and Ngāi Tahu. Through intermarriage, warfare and alliances, these tribal groups migrated, settled, occupied, amalgamated and established manawhenua prior to European arrival. Specific hapū or sub-tribes, established control over distinct areas of the island and have maintained their mana over these territories to this day.

Te Rūnanga o Ngāi Tahu is the mandated iwi authority established by Ngāi Tahu Whānui under Section 6 of the Te Runanga o Ngai Tahu Act 1996 to protect the beneficial interests of all members of Ngāi Tahu, including the beneficial interests of the Papatipu Rūnanga of those members. Te Rūnanga o Ngāi Tahu is governed by elected representatives from each of the 18 Papatipu Rūnanga and has an administrative office as well as a number of commercial companies.

#### 2.1.2 Te Rūnanga o Ngāti Waewae

Papatipu Rūnanga are the administrative councils of traditional Ngāi Tahu hapū (sub-tribes) based around their respective kāinga/marae-based communities, Māori reserves, pā, urupā and mahinga kai areas. The takiwā (jurisdiction) of each Papatipu Rūnanga is set out in Schedule 1 of the Te Runanga o Ngai Tahu Act 1996.

Te Rūnanga o Ngāti Waewae is the modern-day representative structure of the hapū of Ngāti Waewae and the mandated representative of Ngāti Waewae under the Resource Management Act, Local Government Act and Conservation legislation.

The takiwā of Ngāti Waewae reflects the migration, occupation and settlement of their tūpuna from the East Coast, over Kā Tiritiri o Te Moana (the Southern Alps) and into Te Tai Poutini. The Te Rūnanga o Ngāi Tahu Act gives the takiwā of Te Rūnanga o Ngāti Waewae as being:

*"...centred on Arahura and Hokitika, and extends from the north bank of the Hokitika River to Kahuraki and inland to the Main Divide together with a shared interest with Te Rūnanga o Makaawhio between the Pouerua River and the south bank of the Hokitika River."*

#### 2.1.3 Mawhera Incorporation

The Mawhera Incorporation is a Māori Incorporation established by an Order in Council in 1976 to receive, use, manage and administer Māori reserve lands on Te Tai Poutini on behalf of traditional owners and their descendants. The mission of the incorporation is:

*"Kia whanakehia rangatira ai ko te whenua tūpuna, ko ngā maunga, ko ngā awa, hei oranga a hāpori whakakoakoa kaiwhaipanga heke iho ki o rātou uri whakaheke.*

*To prudently manage our ancestral lands, mountains and rivers for the economic and social benefit and enjoyment of our shareholders and their descendants."*

The Incorporation owns the Arahura Riverbed and the Waitaiki Historic Reserve and runs various activities including dairy farming, commercial and residential property development as well as providing economic, cultural, social and environmental programmes for their shareholders.

## 2.2 Te Horopaki / Catchment Overview

The Arahura River is 56 kilometres in length and flows east to west from its source at Whakarewa / Lake Browning located within Kā Tiritiri o Te Moana / the Southern Alps to Te Tai Poutini and into the Tasman Sea, eight kilometres north of Hokitika. Most of the catchment lies within the West Coast region, whilst a small area in the headwaters to the southeast lies within Canterbury.

The upper reaches of the river catchment are incised into steep sided mountains, which are heavily forested in parts, creating a narrow river valley with two deep gorges. The wider lower reaches flow through relatively flat farmland.

The Arahura River catchment has a relatively high rainfall and the mountains are covered in snow, in parts, all year round. The river is fed by more than 40 tributaries including the Harman River, and the Newton, Waitaiki / Jade-Olderog, Wainihinihi, Kawhaka and Palmer Creeks.

## 2.3 Tuhinga-ā-ture / River Management and Legislation

The Resource Management Act, Ngāi Tahu Claims Settlement Act, and a number of other statutes, plans and policy documents are critical to the ongoing health of the Arahura River and in achieving the opportunities and actions outlined in this report. The key legislation and policy documents are listed in Table 1 below, with a summary of their relationship to restoration outcomes for the Arahura River.

*Table 1. Legislation and other statutory documents relevant to management and restoration of the Arahura River*

LEGISLATION	DESCRIPTION
<b>Mawhera Incorporation Order 1976</b>	Established the Mawhera Incorporation to receive, use, manage and administer land vested in it, including the Arahura Riverbed.
<b>Maori Purposes Act 1976</b>	Vests the Arahura Riverbed in Mawhera Incorporation (section 27).
<b>Te Ture Whenua Maori Act 1993</b>	Governs the management of Maori Land and Maori Incorporations (part 13).
<b>Ngai Tahu Pounamu Vesting Act 1997</b>	Vests natural occurring pounamu in Te Rūnanga o Ngāi Tahu, including all pounamu within the Arahura catchment to Mawhera Incorporation (section F).
<b>Ngāi Tahu Claims Settlement Act 1998 and Deed of Settlement 1997</b>	Vests Arahura Valley land and the Waitaiki Historic Reserve in Te Rūnanga o Ngāi Tahu (sections 323-326) and subsequent vesting in Mawhera Incorporation by deed of covenant (Attachment 13.3). Also includes conditions around the Reserves Act 1977 and Department of Conservation matters.
<b>Resource Management Act 1991</b>	Governs the sustainable management of natural and physical resources, including district and regional planning and consenting.
<b>Crown Minerals Act 1991</b>	Governs and manages the prospecting, exploration and mining of crown owned minerals.
<b>Conservation Act 1987</b>	Governs the conservation of New Zealand's natural and historic resources and established the Department of Conservation to manage these resources.
<b>West Coast Regional Policy Statement</b>	Provides an overview of resource management issues and objectives, policies and methods to achieve the RMA 1991.
<b>West Coast Regional Land and Water Plan</b>	Manages land and water resources within the region via objectives, policies and rules that control activities affecting water quality and quantity. Specifically provides for the involvement of Poutini Ngāi Tahu in decision making.
<b>Regional Pest Plant Management Strategy for the West Coast 2010</b>	Provides a framework for the management or eradication of specified plant pests, including broom and gorse, in the West Coast region under the Biosecurity Act 1993.
<b>Westland District Plan 2002</b>	Manages the use, development and subdivision of land via objectives, policies and rules, including determining when resource consents are required. It specifically protects the



	road/rail corridor over the Arahura River by way of designation and enables maintenance and upgrade.
<b>National Policy Statement for Freshwater Management 2014</b>	Sets out objectives and policies that direct local government to manage water in an integrated and sustainable way, including requirements for tangata whenua involvement.
<b>West Coast Conservation Management Strategy</b>	Sets out how DOC intends to manage the public conservation lands on Te Tai Poutini and contains numerous objectives and policies in relation to working in partnership with Poutini Ngāi Tahu.
<b>Fish and Game Sports Fish and Game Management Plan</b>	Aims to manage and improve fish and game resources in the West Coast region and includes goals and objectives, including recognition of a positive working relationship with Ngāi Tahu.

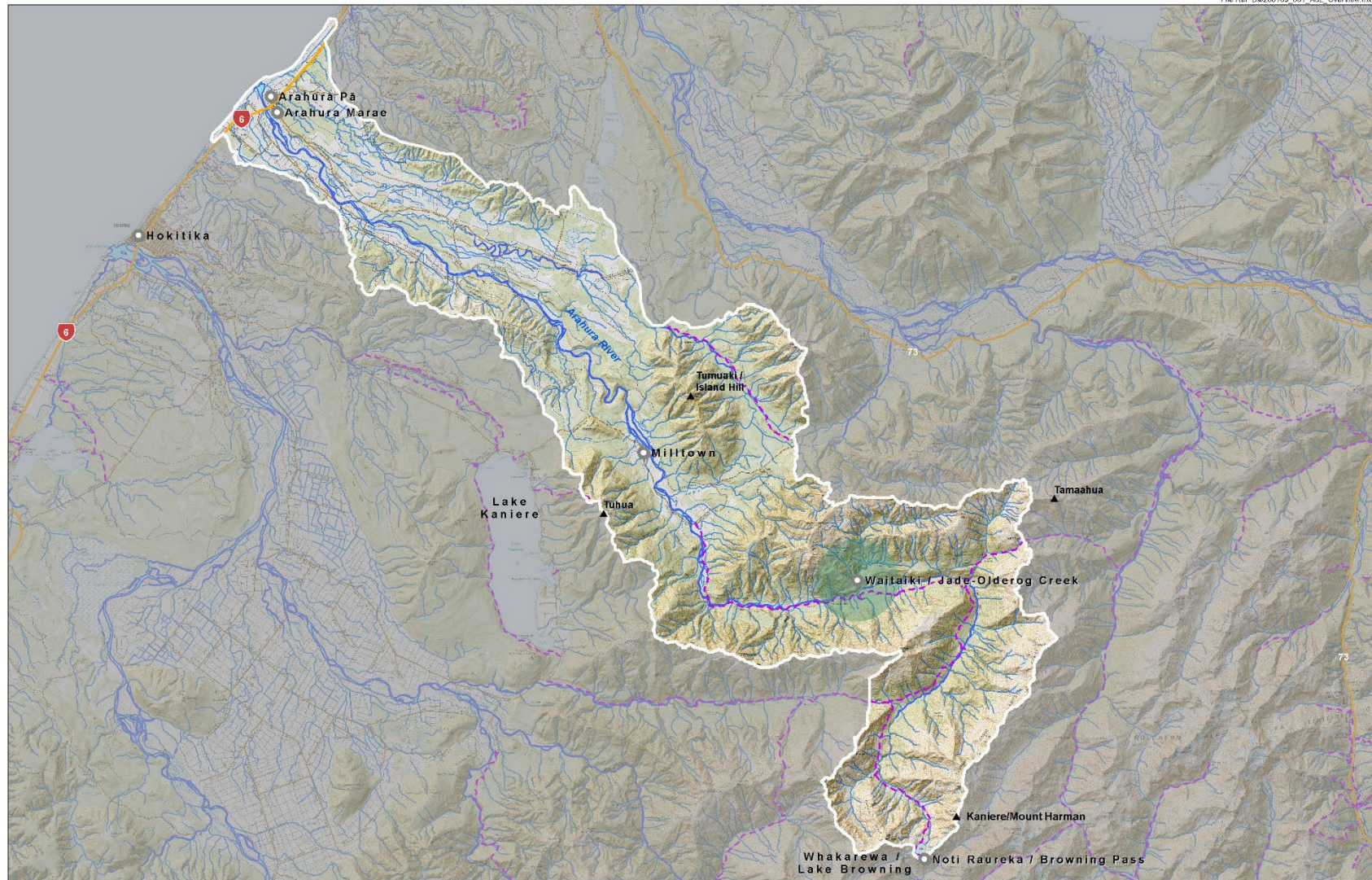
## 2.4 Stakeholders

*Table 2. National and local entities with an interest in the management of the Arahura River*

ORGANISATION	ROLE/RESPONSIBILITIES
<b>Mawhera Incorporation</b>	<p>Responsible to Mawhera shareholders for the prudent management of lands and assets and providing access for cultural activities. Critical advocacy role for the health of the river and its catchment. Extensive land-holdings in the lower river valley are farmed for dairy.</p> <p>Primary role in the management of its land including the bed of the Arahura River and providing approvals and access for all activities.</p> <p>Responsibility for structures on the bed of the river that Mawhera owns, but not those constructed, owned and operated by others i.e. NZTA, Councils.</p>
<b>Te Rūnanga o Ngāti Waewae</b>	Key role in administering and representing the hapū of Ngāti Waewae, including under the RMA, LGA and Conservation Legislation.
<b>Te Rūnanga o Ngāi Tahu (TRoNT)</b>	Administers land and responsibilities under the Te Runanga o Ngai Tahu Act and Ngāi Tahu Claims Settlement Act on behalf of Ngāi Tahu Whānui.
<b>Ngāi Tahu Forestry (NTF)</b>	Manage afforestation and deforestation of its forested areas within the Arahura catchment including all resultant effects, such as runoff of sediment into the river after harvesting.
<b>West Coast Regional Council (WCRC)</b>	<p>Management of fresh and coastal water quality and quantity i.e. issues permit for water takes, discharges to water and structures on the bed of the Arahura River.</p> <p>Responsible for its structures and must take some responsibility for the on-going liability for consented activities through monitoring and enforcement i.e. water quality monitoring.</p>
<b>Westland District Council (WDC)</b>	<p>Management of land-based activities such as mining, earthworks, built development and activities on the surface of waterbodies.</p> <p>Liability for its own infrastructure and structures and must take some responsibility for the on-going liability for consented activities through monitoring and enforcement.</p>
<b>Te Papa Atawhai/Department of Conservation (DOC)</b>	<p>Management of protected species and ecosystems including kōwhiowhio.</p> <p>Responsible for its structures, huts and tracks and maintaining and providing public access and huts within the Waitaiki Reserve.</p>
<b>Fish and Game (F&amp;G)</b>	Maintenance, management and enhancement of sports fishing opportunities and access arrangements for permits with Mawhera.

<b>Land Information New Zealand (LINZ)</b>	Manages the bed of the tributaries and critical to future catchment management in conjunction with Mawhera Incorporation. Responsible for its own structures and activities.
<b>New Zealand Transport Authority (NZTA)</b>	Responsible and liable for State Highway 6 and any associated protection and maintenance works including those related to flood mitigation structures in the River corridor.
<b>KiwiRail</b>	Responsible and liable for the railway line and any associated protection and maintenance works including those related to flood mitigation structures in the River corridor.
<b>New Zealand Petroleum and Minerals</b>	Grants access to New Zealand's oil, gas and Crown owned minerals but this does not override the need to obtain regional council permits, district council consents, concessions from DOC and access arrangements from private landowners.
<b>Trustpower</b>	Owns and operators a hydro-electricity scheme. Responsible and liable for ensuring the scheme is operated in accordance with a number of consents to dam water, take and use water, disturb the bed of several creeks, install structures in the bed of waterways and construct rock protection works.
<b>Private Landowners and Resource Users</b>	Responsible for the management of their properties and issues affecting the river. Key landowners and resource users include: <b>Upper:</b> Ridgeline 3 Investments; Ardmore Trust; Copland; Trustpower <b>Middle:</b> Cranley Farms; Kawhaka Station; Xinxin Mining; Hawkins; Ngāi Tahu Forests; and West Coast Development Trust <b>Lower:</b> AM Bradley; AR Bradley; G&T Bradley; Milk It; Whyte Gold; Pacific Wide Ltd; L& M Mining, Red Jack and Koura Mining; Westland Milk
<b>River Users / Public</b>	The public is responsible for securing access to the river and seeking necessary permits / agreements from Mawhera Incorporation before undertaking any activities. This includes recreational and commercial activities such as fishing, kayaking and swimming.  Public access to the Waitaiki Historic Reserve is provided under a separate plan but does not provide approval to utilise or access the river, except where marked walking tracks are located.





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Data Sources:  
 Topo map sourced from LINZ Topo 50 map series;  
 Catchment boundary sourced from NZ REC2  
 Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

State Highway



ARAHURA CATCHMENT BASELINE REPORT

Arahura Catchment

Date: 07 October 2020 | Revision: 0

Plan prepared for Department of Conservation by Boffa Miskell Limited

Project Manager: craig.pauling@boffamiskell.co.nz | Drawn: BMC | Checked: JMO

Figure 1. Map of the Arahura River Catchment



## 3.0 NGĀ UARA ME NGĀ TAKE / Key Values, Issues and Pressures

### 3.1 Whakapapa / Cultural Heritage and Identity

The Arahura River has a rich history and holds significant cultural and heritage values for Ngāti Waewae, Poutini Ngāi Tahu, and the local community. Its central significance revolves around the river being the most renowned source of pounamu in New Zealand; it is pounamu that provides the basis for the relationship of manawhenua to the river, connecting them to the earliest creation traditions, through to the subsequent migration, settlement, occupation and utilisation of the area, which continues to this day.

When Ngāi Tahu first encountered pounamu, they immediately recognised its properties and superiority to other stones, particularly in hardness and durability. It was soon fashioned into toki (adzes), ripi (knives), mere, and hei tiki; later pounamu was utilised to establish a valuable economy based on the collection, manufacture and trading of the stone from pā at Arahura, Taramakau and Mawhera (Greymouth).

All naturally occurring pounamu within the catchment of the Arahura River was vested in the Mawhera Incorporation through the Ngāi Tahu Pounamu Vesting Act 1997. Pounamu has always been important to the economy of Te Tai Poutini/the West Coast and, today, trade in the stone and associated tourism are vital to the region.

The long-standing use of pounamu within the Arahura catchment, the associated trails, trade routes, and traditional settlements and sites, as well as the return of the riverbed and pounamu to Ngāi Tahu ownership, all form part of the river's unique history.

Also, of critical importance to manawhenua are the mahinga kai resources the Arahura River provides. This includes the wide variety of native freshwater fish and kaimoana (seafood) available near the river mouth, the native waterfowl and forest birds present, and the wetland and forest plants and rongoā (traditional Māori medicine). In particular, īnaka (whitebait) are a treasured resource caught each year throughout late spring and early summer.

### 3.2 Habitats and Fauna

The Arahura River catchment lies within two Ecological Districts (ED). The upper catchment is in the Whitcombe ED, roughly separated from the lower catchment (Hokitika ED) by the Alpine Fault at Milltown, near an area of the river called the Cesspool where the underlying geology changes from the Pacific plate to the Indo-Australian plate. The upper catchment is cloaked in indigenous forest, subalpine and alpine vegetation types. The habitat types of the lower catchment range from lowland indigenous forest, wetlands, productive plantation forestry and improved pasture used for dairy farming.

Based on the Threatened Environments Classification (Walker et al. 2015), the terrestrial habitats present in the Arahura River catchment are well-represented nationwide in terms of the relative level of indigenous vegetation cover and level of statutory protection. Most of the catchment is on land environments where >30% remains in indigenous cover nationwide, and >20% is under some form of protection. Land environments of the sort that includes the alluvial flat areas at Milltown have somewhat less indigenous cover remaining nationwide but are still reasonably well represented (20-30%).

The following section describes the flora (plants) and fauna (animals) inhabiting the Arahura River catchment. In general, the locally appropriate Te Reo Māori name is used but where these names (or an English common name) are ambiguous, scientific names are used.



### 3.2.1 Terrestrial Habitats and Wetlands

The Arahura Valley begins at Noti Raureka / Browning Pass, in a landscape of alpine tussocklands and herbfields, which cover the slopes beneath the screefields and snowy peaks of Kā Tiritiri o te Moana / the Southern Alps. The species in these tussocklands and herbfields, including snowgrass, Mount Cook buttercup, taramea, and shrubs (largely hebes and *Dracophyllum* spp.), are typical of the high-altitude areas (>1000 m) of the Arahura River catchment and surrounding mountains.

Below the tussocks of the alpine areas, subalpine scrub or shrublands in the Arahura River typically contain mountain tree daisies, mountain neinei, Tnaka, *Archeria traversii*, and pink pine. Less frequent but distinctive high altitude/high rainfall shrub species include lancewood tree daisy and *Pseudopanax linearis*. Some shrubland areas dominated by pink pine occur on an outcrop of ultramafic rock in Waitaiki (Jade / Olderog Creeks); such areas represent a naturally uncommon ecosystem (Williams et al. 2007) and this geologic feature is the source of pounamu for which the Arahura River catchment is prized.

Montane forests, dominated by southern rātā with occasional kaikawaka emergent in the canopy, are present on the lower slopes. Southern rātā – kamahi forest is the prevailing forest cover type on the slopes of the upper Arahura River, with occasional Hall's tōtara and fast-growing tāwheowheo also reaching canopy height. This forest type includes scattered rimu and miro at lower elevations, and haumakōroa, kāpuka, horoeka, *Coprosma* shrubs, mountain horopito, various ferns and bush rice grass frequenting the lower vegetation tiers in the forest understory. Disturbed or shady hill slopes contain tree tutu, kaikōmako, koromiko, putaputawētā, kōtukutuku, and mountain hoheria. Shrublands on alluvial surfaces are dominated by common tree daisy and *Coprosma*, with occasional scented broom.

The Arahura River lies within the “beech gap”, an area where tawhai species failed to colonise following the last Ice Age.

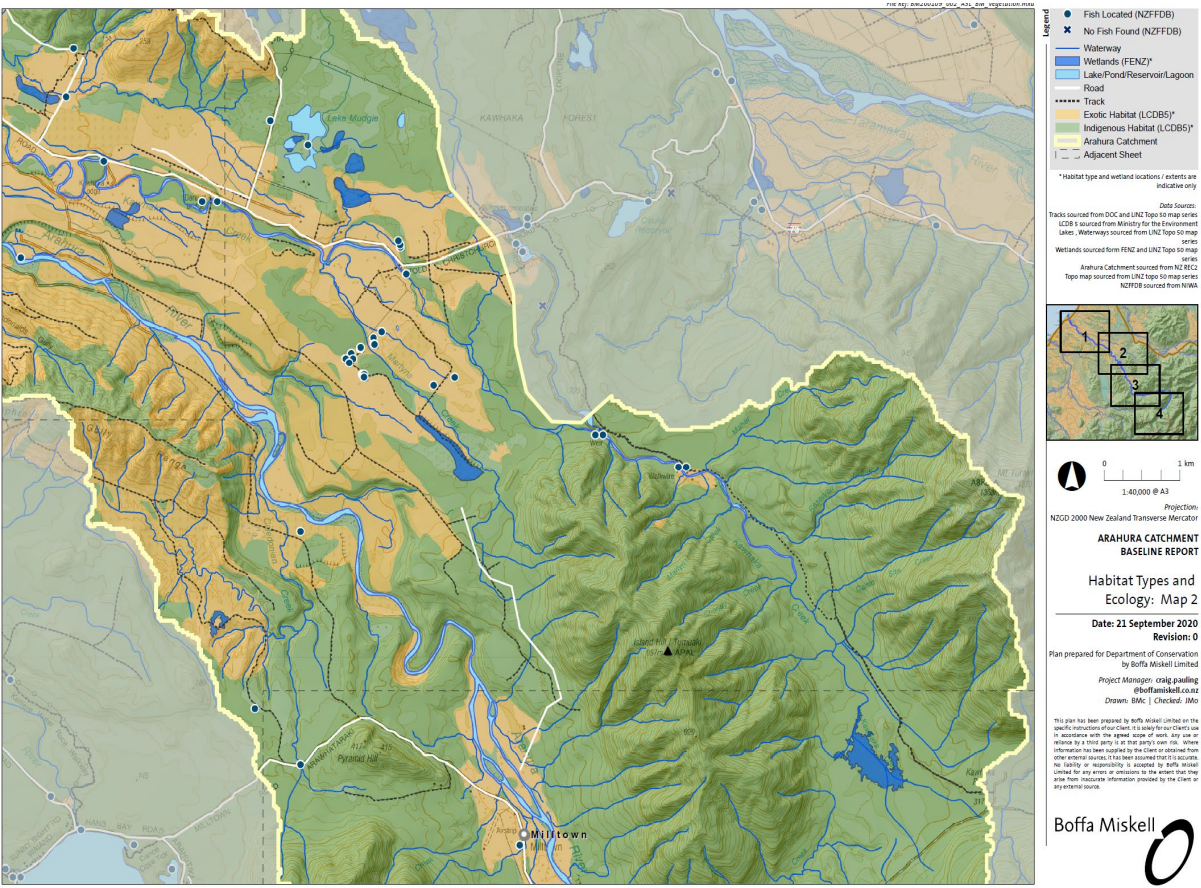
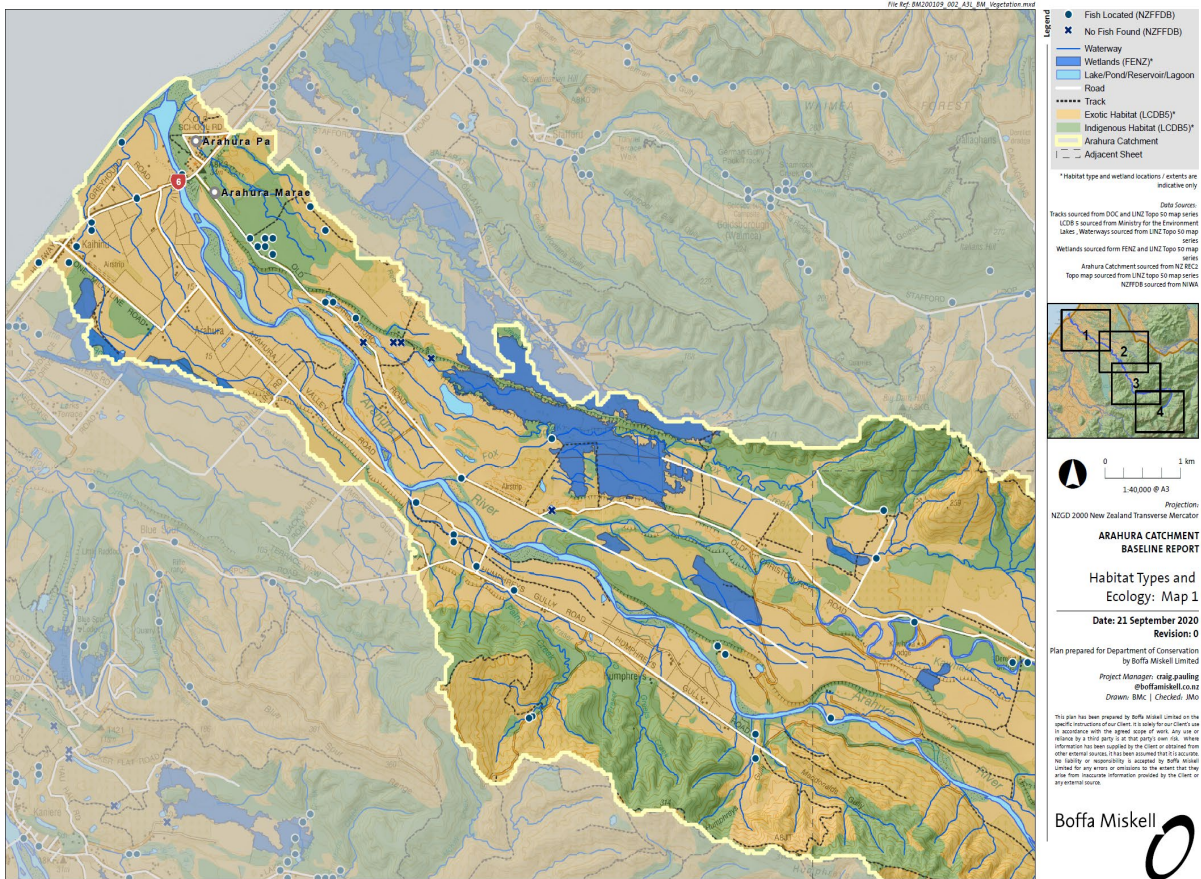
Almost no nationally Threatened or At-Risk plants (de Lange et al. 2018) are known in the Arahura River catchment; although drooping greenhood orchid (At Risk – Naturally Uncommon) has been recorded near Pyramid Hill.

Below the Cesspool at Milltown, an area of alluvial flats contains farmland with occasional large kahikatea in paddocks; secondary indigenous forest occurs in places, and primary forest with podocarps occur in places on alluvial surfaces. On higher terraces of glacial deposits, mixed podocarp – hardwood forest (generally rātā – kamahi forest with frequent rimu and occasional kahikatea and miro) is extensive, with podocarps less frequent on the hill slopes of Tumuaki / Island Hill to the north and Tuhua to Pyramid Hill to the south.

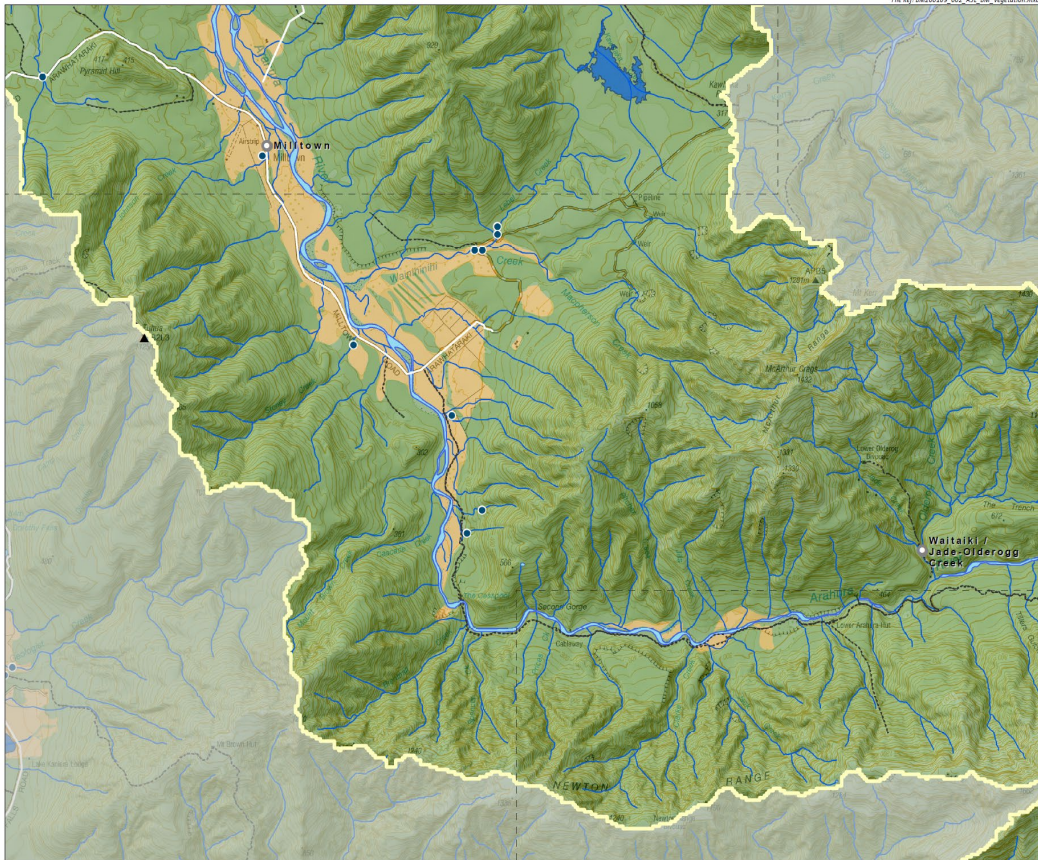
Podocarp forest persists in the vicinity of the Arahura River gorge downstream of Milltown. The river emerges onto a generally fertile area of improved pasture on river deposits now farmed for dairy. On low-hill slopes, terrace scarps and terraces, vegetation cover in the lower catchment ranges from secondary indigenous forest, to plantation forest, ‘hump and hollow’ pasture, scrub or shrublands with gorse, and areas of wetland. Wetlands below the Cesspool appear to be largely pakihi, occupying nutrient-poor areas with characteristic plant species including mānuka, manaoa, rimu, tangle fern, restiad rushes and sphagnum moss. Gorse and flax also occur throughout these wetlands, about which specific information is lacking for the Arahura River catchment.

Overview maps of habitat types in the catchment and selected ecological information are provided on pages 9 & 10.

Figures 2, 3, 4 & 5. Habitat Types and Ecology in the Arahura River Catchment









### 3.2.2 Terrestrial Fauna

The Arahura River catchment supports a wide range of indigenous forest and alpine manu (birds) in the upper catchment, including Threatened and At-Risk species such as small numbers of kea and kākā. Notably, the Arahura River is managed by DOC as a kōwhiowhio ‘security site,’ and mustelid trap networks intended primarily for the protection of this species are maintained in the Arahura River above Milltown. The trap network is checked monthly, and the Arahura River currently supports 9 pairs of kōwhiowhio with a further 7 pairs in the Kawhaka Stream catchment that feeds into the Arahura River (A Wahlberg, DOC, 2020 *pers. comm.*).

Kākā have been recorded recently in the area by contractors, but this species does not receive conservation management (A Wahlberg DOC 2020 *pers. comm.*). It is not known whether Threatened roroa/great spotted kiwi are present in the Arahura River area, but populations of this taonga species are present in nearby catchments (T Shaw, DOC, 2020 *pers. comm.*).

Below Milltown, widespread and common (i.e. Not Threatened) forest bird species, and those adapted to riverine and open country habitats, are present. Species likely to be present within the Arahura River Catchment permanently, seasonally or sporadically are listed below in Table 3.

Pekapeka (long-tailed bat) is a Threatened – Nationally Critical species that may be present in the upper Arahura River catchment. Pekapeka have been recorded in the vicinity of Mudflats Hut (noted in Mawhera Incorporation 2019) but have likely declined substantially in numbers in the past decades (O’Donnell 2000). It is unclear based on the information that could be obtained for this study if a population of pekapeka remains in the catchment and we understand that no conservation management for pekapeka has been undertaken in recent years (A Wahlberg, DOC, 2020 *pers. comm.*).

No specific information on herpetofauna (mokomoko/lizards and frogs) present in the catchment was located during this study. The introduced brown tree frog was observed near Milltown in June 2020. (J Morris, Boffa Miskell 2020 *pers. comm.*). Indigenous frog species are not known from the South Island mainland. There is little specific information about herpetofauna and indigenous invertebrates (e.g. ngata / land snails and wētā) available for large areas of the West Coast, including the Arahura River. Mokomoko (skink and gecko) species, which could possibly be present in the catchment based on their known distribution patterns (van Winkel et al. 2019), are listed in Table 4.

**Table 3. Manu / Bird species of the Arahura catchment (modified from Mawhera Incorporation 2019)**

INDIGENOUS BIRD SPECIES	INTRODUCED BIRD SPECIES
Kāhu / Australasian harrier - <i>Circus approximans</i> * ~	Australian magpie - <i>Gymnorhina tibicen</i> ~
<b>Kākā</b> / NZ bush parrot - <i>Nestor meridionalis</i> *	Blackbird - <i>Turdus merula</i> ~
Kākāriki / yellow crowned parakeet - <i>Cyanoramphus auriceps</i> *	Canada goose - <i>Branta Canadensis</i> ~
<b>Kārearea</b> / New Zealand falcon - <i>Falco novaeseelandiae</i> * ~	Chaffinch - <i>Fringilla coelebs</i>
Karoro / southern black backed gull - <i>Larus dominicanus</i> * ~	Goldfinch - <i>Carduelis carduelis</i>
<b>Kea</b> / NZ mountain parrot - <i>Nestor notabilis</i> * ~	Hedge sparrow - <i>Prunella modularis</i>
Kererū / NZ pigeon - <i>Hemiphaga novaeseelandiae</i> ~	House sparrow - <i>Passer domesticus</i>
<b>Kōau</b> / black shag - <i>Phalacrocorax carbo novaehollandiae</i> *	Redpoll - <i>Carduelis flammea</i>
<b>Koekoeā</b> / long tailed cuckoo - <i>Eudynamis taitensis</i> *	Skylark - <i>Alauda arvensis</i>
Kōparapara / bellbird - <i>Anthornis melanura</i> * ~	Songthrush - <i>Turdus philomelos</i>
Kōtare / NZ kingfisher - <i>Halcyon sancta</i> *	Starling - <i>Sturnus vulgaris</i>
<b>Kōwhiowhio</b> / kōwhiowhio / blue duck - <i>Hymenolaimus malacorhynchos</i> * ~	Yellowhammer - <i>Emberzia citronella</i>
<b>Kātuhī</b> / rock wren - <i>Xenicus gilviventris</i>	



INDIGENOUS BIRD SPECIES	INTRODUCED BIRD SPECIES
Miomiro / South Island tomtit - <i>Petroica macrocephala</i> * ~	
Pākura / swamp hen, pūkeko - <i>Porphyrio porphyrio</i> * ~	
<b><u>Pārerā</u></b> / grey duck - <i>Anas superciliosa</i> *	
<b>Pīoioi</b> / New Zealand pipit - <i>Anthus novaeseelandiae</i> * ~	
Pīpipi / brown creeper - <i>Mohoua novaeseelandiae</i> ~	
Pīpīwhararua / shining cuckoo - <i>Chrysococcyx lucidus</i> *	
Piwakawaka / South Island fantail - <i>Rhipidura fuliginosa</i> * ~	
Pūtakitaki / paradise shelduck - <i>Tadorna variegata</i> * ~	
Riroriro / grey warbler - <i>Gerygone igata</i> * ~	
Ruru koukou / morepork - <i>Ninox novaeseelandiae</i> * ~	
Tauhou / silvereye - <i>Zosterops lateralis</i> ~	
Spur winged plover - <i>Vanellus miles novaehollandiae</i> ~	
Tītipounamu / rifleman - <i>Acanthisitta chloris</i> *	
<b>Torea</b> / South Island pied oystercatcher - <i>Haematopus ostralegus</i> *	
Tūi, kōkō bird - <i>Prosthemadera novaeseelandiae</i> * ~	
<b><u>Turiwhati</u></b> / banded dotterel - <i>Charadrius bicinctus</i> *	
Weka / western weka - <i>Gallirallus australis</i> ~	
White ibis / <i>Threskiornis Molucca</i>	

Note: Species in bold and underlined are classified as nationally Threatened, and species in bold only are nationally At Risk (Robertson et al. 2017). \* Indicates a Ngāi Tahu Taonga Species as listed in Schedule 97 of the Ngāi Tahu Claims Settlement Act. ~ Indicates species incidentally observed in the catchment by a report author in June 2020.

**Table 4. Indigenous mokomoko / lizard species which may be present in the Arahura River Catchment**

COMMON NAME	SCIENTIFIC NAME
<b><u>West Coast green gecko</u></b>	<i>Nautilinus tuberculatus</i>
<b>Forest gecko</b>	<i>Mokopirirakau granulatus</i>
Northern grass skink	<i>Oligosoma polychroma</i>
<b>Canterbury grass skink</b>	<i>Oligosoma</i> aff. <i>polychroma</i> Clade 4
<b>Speckled skink</b>	<i>Oligosoma infrapunctatum</i>
Hokitika skink*	<i>Oligosoma</i> aff. <i>infrapunctatum</i> "Hokitika"

Note: Species in bold and underlined are classified as nationally Threatened, and species in bold only are nationally At Risk (Hitchmough et al. 2016). \* Classified as 'Data Deficient' i.e. there is insufficient knowledge of this species to provide a threat classification.

### 3.2.3 Aquatic Habitats

As described previously (see Section 2.1), the Arahura River is approximately 56 km long and drains a catchment of approximately 319 km<sup>2</sup>.

Major tributaries upstream of the Cesspool include the Harman River, Newton Creek and Waitaiki (Jade / Olderog Creek). Downstream of the Cesspool, Wainihinihi, Kawheka, Fox and Caledonian Creeks are the main tributaries. A water race and hydroelectric scheme operated by Trustpower diverts some water from the Wainihinihi and Kawheka Creeks into the Dillmanstown Power Scheme.

The Arahura River's bed largely consists of boulders and large cobbles, with some gravel beaches and a narrow floodplain; the river is not braided in any part of its length, unlike some reaches of the nearby Taramakau River. Flows are generally swift with very few slow-moving areas, and deep pools and backwaters are rare along the river; there are five river gorges. Flood events can overtop the riverbanks and frequently flush woody debris, transporting boulders and scouring the riverbed. Tributary streams, particularly in the upper and mid-reaches of the catchment, generally arise from steep catchments also prone to flooding. Some areas of open water (small lakes) habitat occurs at the base of terraces below the Old Christchurch Road west of Fox Creek. The lower reaches of the catchment are likely to provide important spawning habitat for a number of indigenous freshwater fish species, including tūnaka.

No information about the presence of macrophytes (aquatic plants) in the Arahura River and its tributaries was located during this study, but the fast-flowing bouldery main riverbed (and frequent flood regime) does not offer good macrophyte habitat. River tributaries and springheads may support macrophyte communities, including potentially for customary harvest of watercress.

### 3.2.4 Water Quality

Water quality has been monitored at the SH6 Bridge since 2016 by West Coast Regional Council (WCRC), but no regular flow monitoring data or gauging is available. Data is collected biweekly in the summer months to monitor *Escherichia coli*, periphyton and turbidity for recreational swimming purposes. Nitrogen and phosphorus testing occurs annually in January and February. While the water quality of the Arahura River catchment is considered generally swimmable (J Horrox WCRC 2020 *pers. comm.*, LAWA 2021), occasional single high *E.coli* readings do occur, including those recorded in November 2016 (1000), January 2017 (380), and January 2018 (600) (See Appendix 1).

Aside from summertime reporting of the river's recreational swimming status, detailed monitoring results are not publicly available (September 2020), and no sites at the Arahura River are included in the most recent available WCRC State of the Environment reports available online (West Coast Surface Water Quality 2015, Groundwater Quality and Quantity State and Trends 2018<sup>2</sup>). As such, this report is unable to present detailed information on water flows, levels, and quality for the Arahura River or its major tributaries, other than the WCRC data included in Appendix 1.

In addition to the above, manawhenua living at Arahura have raised concerns about a number of factors affecting the water quality of the river over the years. This includes specific concerns about faecal contamination of the Arahura Mussel Beds which resulted in studies being undertaken in 2001-2002, 2009, 2012 and 2016-2017. All studies found bacterial contamination that exceeds the microbiological quality guidelines for shellfish gathering and consumption which often renders the kūtai (mussels) unsafe for human consumption. Norovirus was also found at times, and microbial source tracking identified human, ruminant and gull sources for the contamination. Potential sites of contamination have not been confirmed but include the Hokitika oxidation ponds (HOP); agricultural runoff from land into the Hokitika or Arahura Rivers or pastoral streams to that discharge to the coast; seepage from septic tanks at Arahura Pa and/or Kaihinu, and/or direct deposition by seabird populations resident in the area (Coxon 2017; Horox, Chaney & Gilpin 2010; and James, 2002).

In such a dynamic river catchment, the value of once or twice annual nutrient monitoring is uncertain. In order to better understand the water quality of the Arahura River, nutrient/water quality monitoring at a greater number of sites within major tributaries will help to better understand the impacts of human activities and land use. Nutrient/sediment inputs into the Arahura River may arise from activities including dairy farming and surface mining. Notably, Mawhera Incorporation has recently committed to a large riparian planting programme in its farmland along many river tributaries to the south, particularly near SH6, which may improve water quality and in-stream habitat conditions in these areas. Further investigation into mussel bed contamination is also important, and could be incorporated into future water quality and/or cultural health assessment programmes.

<sup>1</sup> <https://www.lawa.org.nz/explore-data/west-coast-region/swimming/arapura-rv-sh6/swimsite> (accessed 17/09/2020)

<sup>2</sup> <https://www.wcrc.govt.nz/publications/state-of-the-environment> (accessed 17/09/2020)

### 3.2.5 Aquatic Fauna

The macroinvertebrate communities of the Arahura River and its tributaries are likely to be dominated by ‘clean-water’ taxa including piriwai (mayflies), caddisflies, stoneflies, two-winged flies and beetles, similar to other rivers on Te Tai Poutini. Although no rare freshwater macroinvertebrates are known to be present (noted in Mawhera Incorporation 2019), no specific reports or survey data for macroinvertebrates were located during this study, and little is known about the threat statuses of some of New Zealand’s macroinvertebrates. Kōuraura (freshwater shrimp) and kēkēwai (freshwater crayfish) have been recorded in some tributaries, such as near the Arahura pā, and in Palmer Creek (NZFFD).

Seventeen indigenous freshwater fish species have been recorded from the Arahura River catchment, including both migratory and non-migratory species. The diversity of fish species in the lower reaches of the catchment is reportedly high compared to similar Te Waipounamu rivers (Mawhera Incorporation 2019). Of the freshwater fish known to occur in the catchment, fifteen of these are endemic (found only in New Zealand). Introduced brown trout, rainbow trout and Chinook salmon are also present.

In terms of specific locations of fish species, the records in the NZFFD (accessed 05 June 2020) show that the Threatened – Nationally Vulnerable migratory species shortjaw kōkopu has been recorded in Palmer Creek, on the south side of the Arahura River, along with the Threatened – Nationally Vulnerable and At Risk - Declining migratory species kanakana and giant kōkopu, respectively. The At Risk - Declining non-migratory species dwarf galaxias and kōwaro (brown mudfish), and kanakana, have been recorded in Kawhaka Creek on the north side of the main Arahura River. The migratory species tuna (longfin eel), kōaro, pirihipōhatu (torrentfish), and bluegill bully (all At Risk – Declining) have been recorded in Little Wainihinihi and Lebel Creeks to the north, and in Stoney Creek to the south. These, and other, species are likely to be present in other tributaries within the catchment and may reside in, or may migrate through, the main river.

Records of fish in the main Arahura River are particularly sparse; īnaka and kōkopu (giant bully) have been recorded near the river mouth (the river mouth is used for whitebait fishing, the catch being likely to comprise of īnaka along with other migratory galaxiids). Tuna (longfin and shortfin eel) have also been recorded in, and are likely to inhabit much of, the lower river. However, many of the NZFFD records referred to above are decades old with contemporary records (since 2010) showing predominantly kōwaro. Recent observations by Waterlink Ltd. (Orchard 2019) in the Arahura River lagoon and in some lower tributaries (e.g. Flowery Creek) suggest that the area is likely to support a sizeable īnaka population, and that both suitable spawning habitat and good habitat for adult īnaka is available (Orchard 2019).

There are no records of fish surveys above the Cesspool in the NZFFD. However, the migratory galaxiid kōaro (which is one of New Zealand’s five whitebait species) has been sighted in a side stream near Harman Hut (noted in Mawhera Incorporation 2019).

With five gorges in the upper catchment, it is likely that fish passage through upper reaches of the Arahura River may be limited to climbing species such as kōaro and longfin eels, and non-migratory freshwater fish species.

Overview maps indicating the known locations of fish surveys (NZFFD records) are provided on pages 9 & 10.

**Table 5. Freshwater fish species (and large macroinvertebrates) that have been recorded in the New Zealand Freshwater Fish Database, which may be present in the Arahura River and its tributaries**

INDIGENOUS FISH SPECIES	INTRODUCED FISH SPECIES
Aua / yelloweye mullet - <i>Aldrichetta forsteri</i>	Brown trout - <i>Salmo trutta</i> *
Tuna / longfin eel - <i>Anguilla dieffenbachia</i>	Chinook salmon - <i>Oncorhynchus tshawytscha</i>
Tuna / shortfin eel - <i>Anguilla australis</i>	Rainbow trout - <i>Oncorhynchus mykiss</i> *
Pirihipōhatu / torrentfish - <i>Cheimarrichthys fosteri</i> ~	



INDIGENOUS FISH SPECIES	INTRODUCED FISH SPECIES
<b>Dwarf galaxias (West Coast) - <i>Galaxias divergens</i> *</b>	
Banded kokopu - <i>Galaxias fasciatus</i>	
<b>Giant kōkopu - <i>Galaxias argenteus</i> ~</b>	
Īnaka - <i>Galaxias maculatus</i>	
<b>Kōaro - <i>Galaxias brevipinnis</i></b>	
<b><u>Shortjaw kokopu</u> - <i>Galaxias postvectis</i></b>	
<b>Kōwaro / brown mudfish - <i>Neochanna apoda</i> *</b>	
<b><u>Kanakana / lamprey eel</u> - <i>Geotria australis</i></b>	
<b>Bluegill bully - <i>Gobiomorphus hubbsi</i></b>	
Common bully - <i>Gobiomorphus cotidianus</i>	
<b>Kōkopu / giant bully - <i>Gobiomorphus gobioides</i> ~</b>	
Redfin bully - <i>Gobiomorphus huttoni</i>	
Upland bully (West Coast South Island) - <i>Gobiomorphus aff. Breviceps</i> *	
<b>Macroinvertebrates</b>	
Kōuraura / Freshwater shrimp	<i>Paratya curvirostris</i>
Kēkēwai / freshwater crayfish	<i>Paranephrops planifrons</i>

Note: Species in bold and underlined are classified as nationally Threatened, and species in bold only are nationally At Risk (Dunn et al. 2018). \* Non-migratory species. ~ Indicates a Ngāi Tahu Taonga Species as listed in Schedule 98 of the Ngāi Tahu Claims Settlement Act.

### 3.2.6 Pest Animals and Weeds

#### Pest Animals

Pest animals, such as red deer, stoats, other mustelids, possums and rodents are likely present throughout the catchment, and goats and pigs may be present most likely in areas around or downstream of Milltown. Stoats and possums, present throughout the catchment, are subject to formal and informal management (by DOC and private trappers) in the upper catchment. The upper catchment area is in the northern exclusion zone for Himalayan tahr and is subject to aerial surveillance/control from time to time. Chamois are almost certainly present in the upper catchment.

The catchment has not been subject to aerial 1080 application in recent years, but hand-baiting of 1080 and cyanide baits is underway as of June 2020 in some places near Wainihinihi Creek, as part of TB control works by OSPRI. Aerial 1080 has been applied for conservation purposes historically and in nearby tributaries.

In places in the upper Arahura, dieback of southern rātā, Hall's tōtara and kaikawaka is visually prominent high on the hill slopes; this phenomenon also occurs in nearby valleys (e.g. Kokatahi River). This was historically blamed solely on possums, which certainly occur in the catchment in reasonable numbers and likely contribute to the problem. However, it is now believed that dieback in montane Westland forests is a complex process largely associated with the natural death of stands of similarly aged mature trees that established typically following large disturbance events e.g. alpine fault earthquakes (Bellingham and Lee 2006). Possums are certainly an issue in the catchment, as elsewhere in indigenous forests, but are a general threat rather than the sole cause of dieback.

#### Weeds

The upper catchment above the Cesspool is largely free of plant pests, except for occasional California thistle, exotic grasses and foxglove alongside tracks and on disturbed ground. Such weeds are impractical to control and not of major conservation concern.

An opportunity exists to protect the pastures and indigenous forests at Milltown, which are also largely weed-free at present. A handful of gorse plants were observed incidentally in June 2020, in a paddock immediately below the Cesspool. While gorse was not noted elsewhere at Milltown, it is present nearby along a Transpower water race road near Kawheka Pass and also alongside the Milltown Road in the vicinity of Granite Creek. Eradicating gorse from much, or all, of the Milltown area appears to be a practical possibility and a worthy objective.

Blackberry appears to be better established at Milltown but is not particularly extensive. Montbretia is common along the Milltown Road but was not observed at Milltown itself, and the occasional thistles, ragwort, and foxglove in this area are not of particular conservation concern.

Below Milltown, areas of willow, gorse, broom, blackberry and other woody weeds are extensive and impractical to control. Such species will likely persist particularly near the river floodplain owing to their ready establishment on disturbed surfaces. These species may gradually disappear from any areas left to regenerate into indigenous forest. Preventing the establishment of new weed species, such as Russell lupin, and monitoring other species that are present in gardens and hedgerows nearby, which could potentially become riparian weeds (e.g. bamboo), is a priority in the lower catchment. Weed incursions from Lake Kaniere are a concern and dumping of garden waste and general spread of weeds (pampas grass and *Tradescantia*) on Milltown Road has occurred in the past (T Shaw, DOC, 2020 *pers. comm.*).

A community group at Lake Kaniere is active in local weed control and could be engaged as part of restoration/protection efforts in the nearby Milltown area. DOC has undertaken control works for yellow flag iris and exotic *Gunnera* at the river mouth / Flowery Creek area, but we are not aware of any other weed control in the catchment (D Magner, DOC, 2020 *pers. comm.*).

Didymo is present in the Arahura River<sup>3</sup>, but it is likely that regular floods and the largely mobile riverbed mean that didymo is unable to form large mats (as can occur in slower, more stable rivers). However, any prolonged flood-free periods could lead to the development of problematic amounts of biomass (i.e. quantities that affect fish habitat, cultural use of the river, and sports fishing activities).

### 3.3 Land Use and Ownership

The wider Arahura River catchment contains a mixture of private land, historic reserve and public conservation land. Both land ownership and consenting activity provides an indication of the wide range of land uses in the catchment – with notable owners and activities described in the following sub-sections and summarised below.

The Mawhera Incorporation and DOC are the largest landowners in the catchment, while approximately 40 other landowners own over 40 hectares of land each. There are over 120 active resource consents within the catchment including 52 Landuse consents, 43 Discharge consents, 26 Water permits and 2 Coastal permits. The majority of these are related to Dairying, Forestry, Mining and Hydro-electricity generation.

An overview of land status, including ownership and/or legal status is provided in the maps on pages 18 and 19, along with the location of active resource consents. A full list of the consents is also included in Appendix 2.

#### 3.3.1 Farming, Forestry and Mining

Farmland dominates the lower catchment including the two Mawhera Farms on the southern banks, and numerous private farms on the northern banks, including the large Cranley Farm.

At the western end of the lower gorge, a large gold mine is operated by Xinxin Mining, which transitions into forestry land – including a large area owned by Ridgeline 3 Investments – and private farmland owned by the Copland and Milne families right up to and around Milltown.

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<sup>3</sup> Hon Damien O'Connor MP, 16 January 2008 press release. Accessed 06/07/2020 at <https://www.scoop.co.nz/stories/PA0801/S00111/didymo-in-arapura-river-disappointing-oconnor.htm>

These land use activities are likely to lead to runoff into the river, including dairy effluent and sediment. Active sediment runoff and discoloration of the main Arahura River in the vicinity of mining operations at Humphreys Gully is visually apparent in recent aerial imagery of the site.

### 3.3.2 Other

#### **Hydroelectricity**

Trustpower Ltd. operates the Dillmanstown Power Scheme that diverts some water from Wainihinihi Creek and Kawheka Stream into storage lakes (Kumara and Kapitia Reservoirs). Around 2.2 cumecs is able to be diverted from the Wainihinihi into this scheme and minimum required flows from this tributary into the Arahura River are much lower (0.014 cumecs). As part of these diversions, Trustpower maintains culverts, water races, intake and other structures; the effects of these structures, and any in-river works by Trustpower, on fish passage is currently unknown. Trustpower also maintain an access road from Milltown.

#### **Cycle Trail**

The West Coast Wilderness Trail is a cycling trail that opened in 2013. A section of the trail passes through the Arahura Catchment using the Trustpower water race access road and sections of specifically constructed track, including a new a bridge over Macpherson Creek. The trail then follows Arawhataraki Road and Milltown Road to Lake Kaniere and represents a major recent increase in tourism in upper parts of the catchment, with between 7000-10000 people using the overall cycle trail per year. Weed issues that arose following construction of the trail have been effectively managed and eliminated (D Magner, DOC, 2020 pers. comm.).

#### **Cowboy Paradise Ltd**

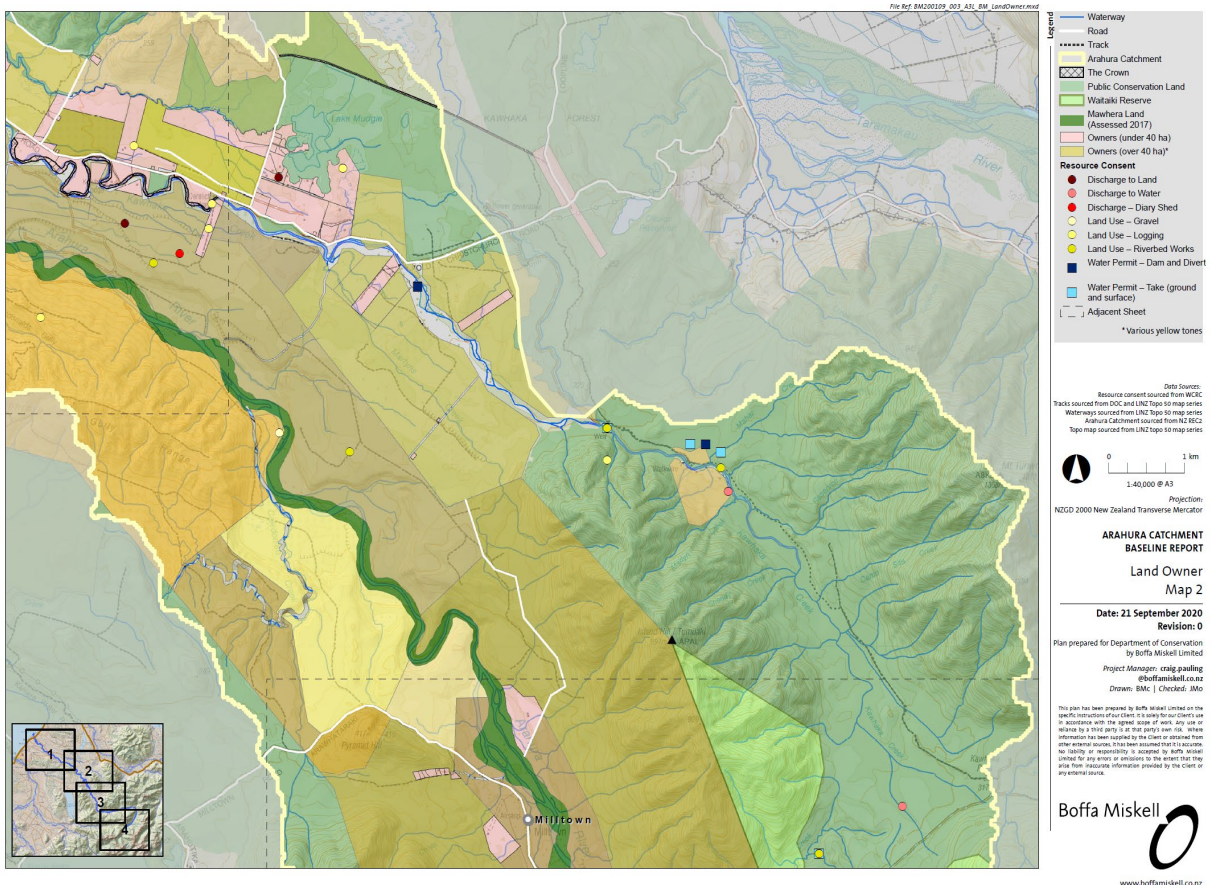
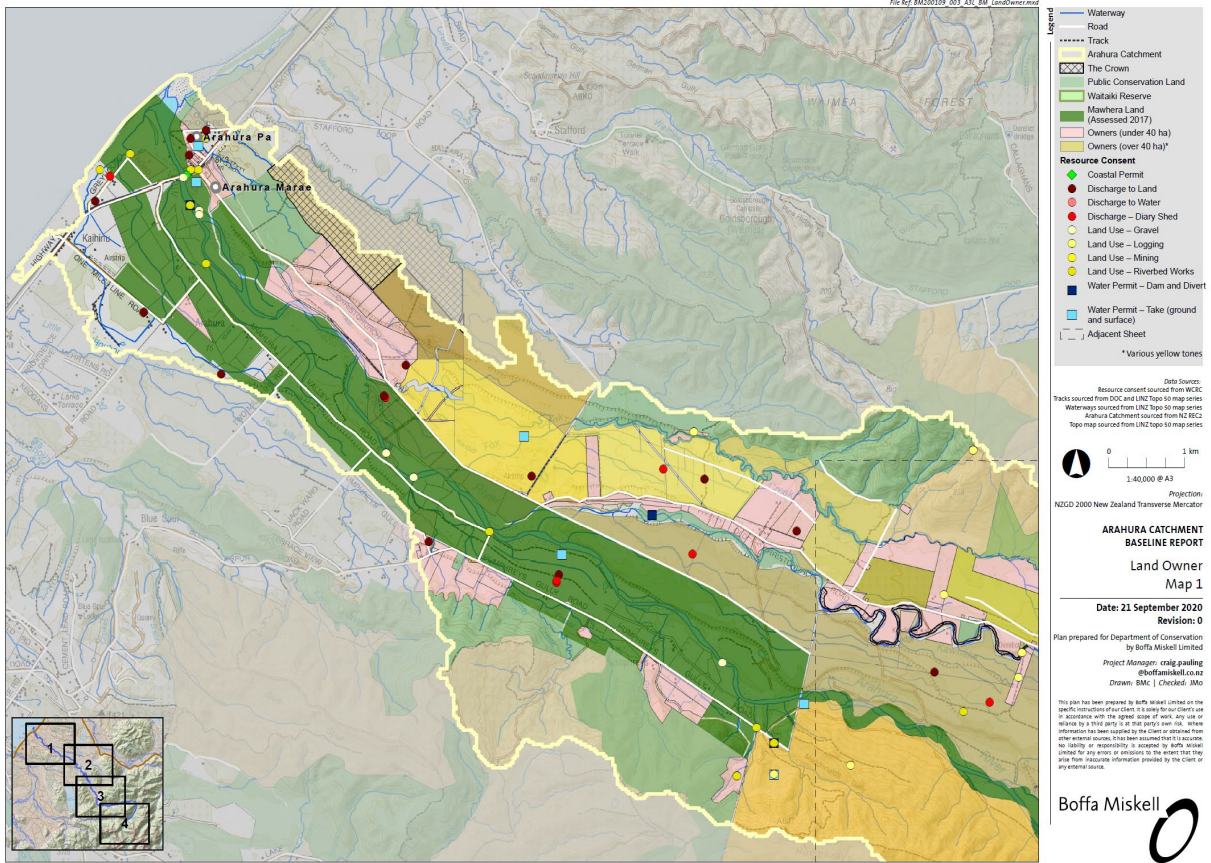
A 'replica wild west town' built at Milltown provides a small tourism attraction and accommodation for visitors using the cycle trail. As part of construction and development of this attraction, Cowboy Paradise Ltd. holds consents to construct septic tank/waste infrastructure and to also undertake vegetation clearance – large recent cuts through regenerating bush in a minor tributary of the Arahura River alongside the Arawhataraki Road were noted in June 2020. These may be intended to allow for improved stock access across the property but present a short-term concern for weed establishment.

#### **Waitaiki Historic Reserve**

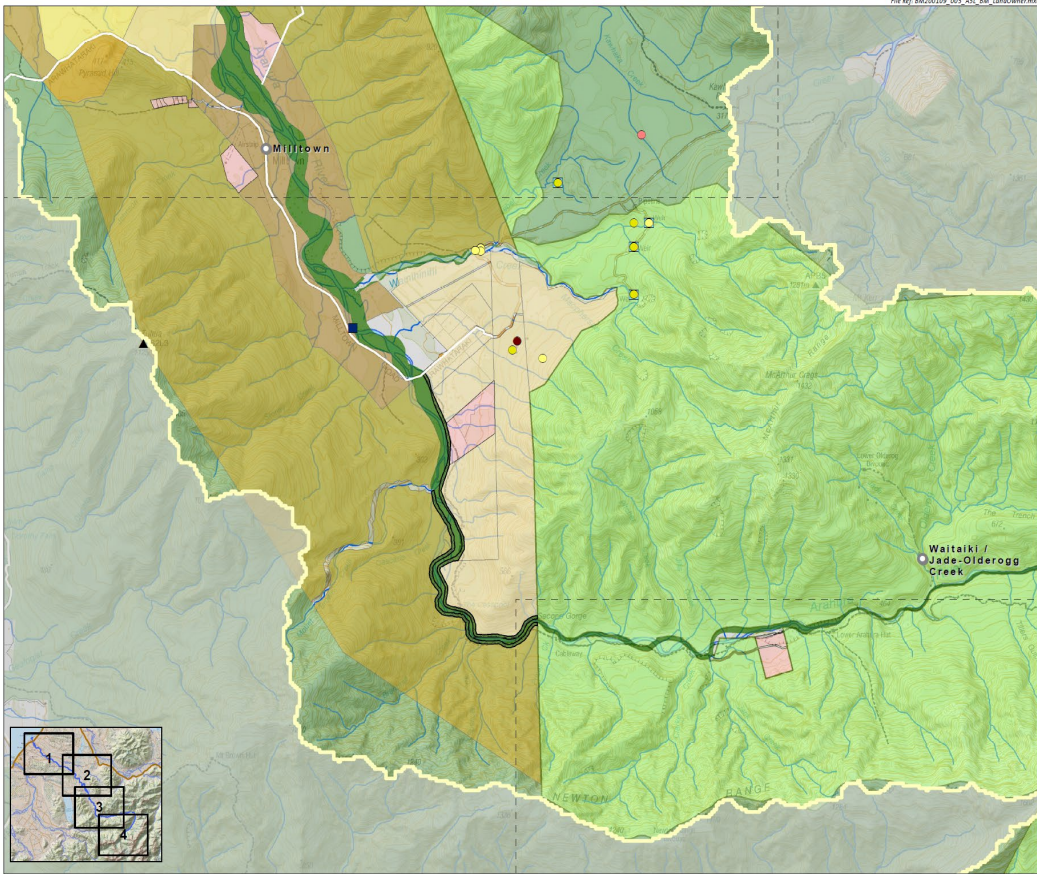
The upper catchment, beyond Milltown, is part of the Waitaiki Historic Reserve owned by Mawhera Incorporation. This includes several tramping huts, tracks and bridges administered and maintained by DOC, or by agreement with community groups (e.g. Permolat), as well as a small piece of private land (RS 801) near the Lower Arahura Hut. The Waitaiki Historic Reserve is managed under its own management plan and is subject to the Reserves Act 1971. The riverbed within Waitaiki Historic Reserve is in a separate title, being freehold Māori land owned by the Mawhera Incorporation, from the outlet of Whakarewa all the way to the sea.



Figures 6, 7, 8 & 9. Land Status and Resource Consents in the Arahura River Catchment







**Legend**

- Waterway
- Road
- Track
- Arahura Catchment
- The Crown
- Public Conservation Land
- Waitaki Reserve
- Mawhera Land (Assessed 2017)
- Owners (under 40 ha)
- Owners (over 40 ha)\*

**Resource Consent**

- Discharge to Land
- Discharge to Water
- Land Use - Gravel
- Land Use - Logging
- Land Use - Riverbed Works
- Water Permit - Dam and Divert
- Water Permit - Take (ground and surface)
- Adjacent Sheet

\* Various yellow tones

**Data Source:**  
 Resource consent sourced from WDC  
 Tracks sourced from DOC and LINZ Topo 50 map series  
 Waterways sourced from LINZ Topo 50 map series  
 Arahura Catchment sourced from NZECZ  
 Topo map sourced from LINZ Topo 50 map series

0 1 km  
 1:40,000 @ A3  
 Projection:  
 NZGD 2000 New Zealand Transverse Mercator

**ARAHURA CATCHMENT  
 BASELINE REPORT**

**Land Owner  
 Map 3**

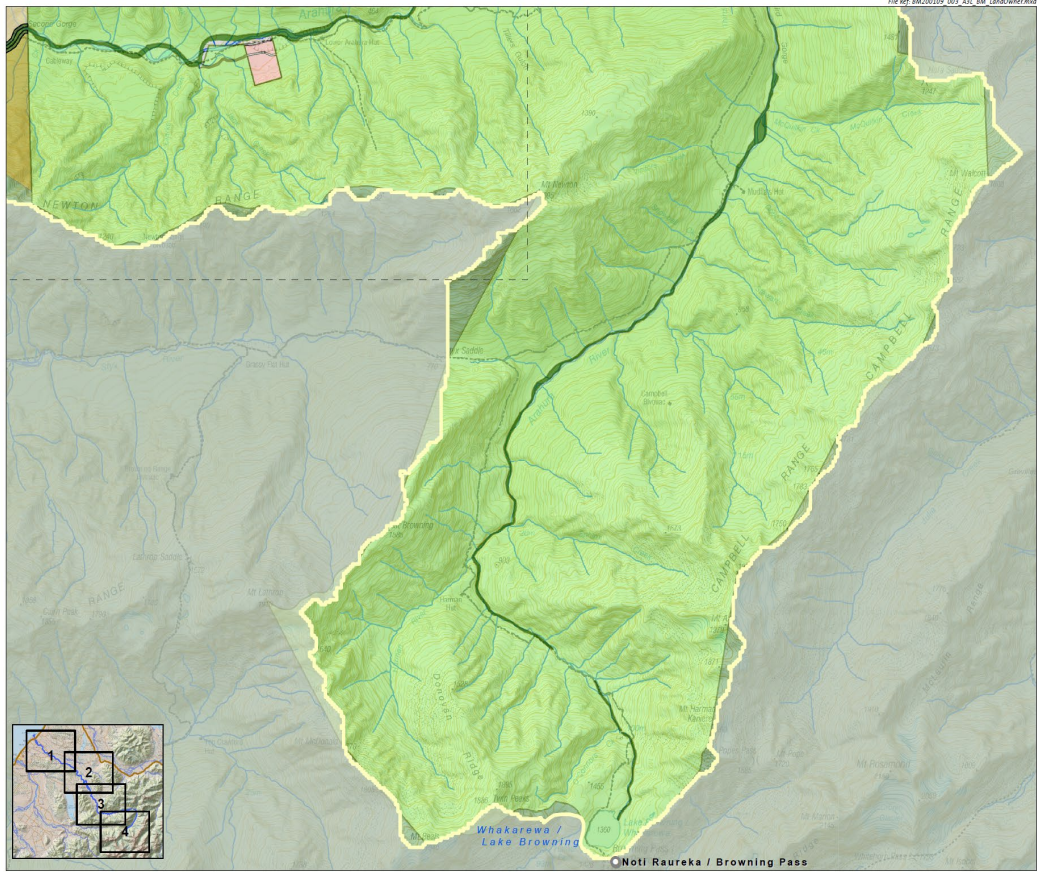
**Date: 21 September 2020  
 Revision: 0**

Plan prepared for Department of Conservation  
 by Boffa Miskell Limited

Project Manager: [craig.paulling@boffamiskell.co.nz](mailto:craig.paulling@boffamiskell.co.nz)  
 Drawn: BMC | Checked: JMO

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**Legend**

- Waterway
- Road
- Track
- Arahura Catchment
- The Crown
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0 1 km  
 1:40,000 @ A3  
 Projection:  
 NZGD 2000 New Zealand Transverse Mercator

**ARAHURA CATCHMENT  
 BASELINE REPORT**

**Land Owner  
 Map 4**

**Date: 21 September 2020  
 Revision: 0**

Plan prepared for Department of Conservation  
 by Boffa Miskell Limited

Project Manager: [craig.paulling@boffamiskell.co.nz](mailto:craig.paulling@boffamiskell.co.nz)  
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## 4.0 NGĀ KŌWHIRINGA ME NGĀ TUKANGA / Opportunities and Actions

### 4.1 Restoration Principles

#### ➤ *Giving effect to Te Mana o te Wai*

In this report, we have largely presented a division between the description of an ‘upper’ Arahura River and a ‘lower’ river, which has convenient advantages as it reflects to a large extent the underlying land use, ownership, geology, and level of environmental modification. However, neither half of the river exists in isolation, and the holistic health and well-being of the awa is dependent on an integrated ki uta ki tai (from the mountains to sea) approach. In order to give effect to Te Mana o te Wai, future decisions around restoration of the river catchment and its habitats should reflect a desire to maintain the full range of environmental, social, cultural and economic values held by manawhenua and the community, from the upper catchment in Kā Tiritiri o Te Moana / the Southern Alps, all the way to the sea.

#### ➤ *Enhancing biodiversity through enhanced data*

Knowledge of the biodiversity of the Arahura River catchment is fragmented and often based on decades-old information. In order to maintain and protect indigenous biodiversity, both freshwater and terrestrial, future decisions must be based upon an up-to-date understanding of what species are currently present (and where), and an improved understanding of the specific threats to those species in the catchment.

#### ➤ *Understanding and dealing with threats, hand in hand with restoration*

Indigenous terrestrial species inhabiting the catchment, particularly forest birds, kōwhiowhio, and kea are likely to be limited in terms of population size and extent principally due to mammalian pests. Maintaining existing predator control is a priority for the protection of kōwhiowhio, but likely provides little benefit for other species that may already have critically threatened local populations, or which may even have disappeared from the catchment (e.g. pekapeka). Expansion of predator control and population monitoring of rare taxa (whose population fluctuations may be indicative of wider trends) should encompass a broader range of species including mokomoko near the coast and pekapeka in the upper catchment.

#### ➤ *Recognising the dynamic natural processes shaping the environment*

The Arahura River catchment is a dynamic environment with dramatic landforms that reflect large rain events and floods, plate tectonics and alpine fault earthquakes, and erosion processes that are of traditional importance for revealing pounamu and releasing it into the river. These processes also contribute to ecosystem health and functioning by providing recruitment opportunities for forest trees, maintaining areas of seral vegetation, and flushing the riverbed of accumulated sediments or nutrients. Accordingly, developments and land use in the catchment must anticipate and be resilient to extreme events, particularly taking into account river movement and landslides, and ideally would not artificially obstruct these natural processes. While extreme events in the catchment can be valued for providing pounamu, it is inappropriate to exploit these processes as an opportunity to further extractive processes (e.g. harvesting of windfall trees) that provide only short-term economic benefit at the expense of forest regeneration processes and biodiversity.

### 4.2 Mātauranga Māori

#### 4.2.1 Mahinga Kai Restoration Projects

As a practical expression of the joint commitment to the long-term protection of the Arahura River for future generations, a collaborative effort between DOC, Ngāti Waewae and the Mawhera Incorporation to identify and implement mahinga kai restoration projects is critical.



The identification and implementation of these projects not only builds the mātauranga Māori (traditional knowledge) held in regard to the Arahura River, but it provides an opportunity for Ngāti Waewae to engage closely with their taonga and enhance the mauri of this outstanding natural landscape.

➤ **Recommendation 1: Manawhenua Mahinga Enhancement**

- Work with manawhenua to identify projects that focus on the protection and enhancement of mahinga kai and pounamu gathering. Examples of projects worthy of consideration include:
  - Identifying īnaka spawning areas and habitat improvement;
  - Kūtai bed protection and improvement;
  - Hāpua/lagoon assessment and enhancements;
  - Weed and pest control and indigenous restoration;
  - Tuna habitat enhancement; and
  - Pounamu bed protection via hydrological assessment.

## 4.2.2 Cultural Health Assessment

Through centuries of observation and the continued practice of mahinga kai customs, manawhenua have built a unique body of experience and knowledge that is important for understanding and managing the natural environment, its resources and indigenous flora, fauna and their habitats. This knowledge is critical in maintaining the ongoing health and wellbeing of the environment, and in guiding restoration, enhancement and conservation efforts.

According to the Māori worldview, all living creatures and natural resources are infused with their own mauri (life essence). When the mauri is degraded, its maintenance and enhancement is critical in ensuring the ongoing relationship between people and the natural world. Developing tools and frameworks to measure, assess and express mauri has been a major endeavour for iwi and hapū. As a result, a range of mātauranga monitoring tools have been created and are being used throughout the country.

Undertaking a cultural health assessment of the catchment, utilising the State of the Takiwā and/or Cultural Health Index tools is an important way to include manawhenua and kaitiaki (guardians) in assessing the health of the catchment and identifying key issues, pressures and responses based on mātauranga Māori.

➤ **Recommendation 2: Catchment Cultural Health Assessment**

- Work with manawhenua to design a mātauranga Māori monitoring programme to assess the state of the environment, identify and evaluate restoration efforts and monitor changes over time in relation to cultural values and aspirations.

## 4.3 Catchment-wide Enhancement Actions

### 4.3.1 Riparian Protection and Restoration Planting

Many tributaries on land owned and farmed by Mawhera Incorporation already have significant fencing setbacks from waterways to protect freshwater habitats. To make best use of this setback, a large riparian planting strategy in the tributaries of the lower river has been developed by Mawhera Incorporation. This riparian strategy is currently being developed for implementation but would benefit from additional support from DOC, as well as extending this to other landowners, tributaries and land uses.

➤ **Recommendations 3, 4 & 5: Riparian Protection and Restoration**

- Support the implementation of the riparian strategy developed by Mawhera Incorporation to fence and plant key lowland tributaries, waipuna (freshwater springs) and wetlands (see 4.3.2 for detailed wetland restoration recommendations).

- Extend riparian fencing and planting on other tributaries, particularly on the north side of the catchment and in the upper basin around Milltown, by working with landowners to identify needs, and plan and support fencing and planting activities.
- Support the development of a nursery to support Arahura riparian planting needs.

#### 4.3.2 Terrestrial Vegetation

In general, the terrestrial habitats of the Arahura River catchment are typical of the wider area, rather than exceptional, meaning that the lack of information about the presence of Threatened and At Risk plant taxa may not be of particular surprise or concern. While it is now several decades old, detailed forest plot data held by the National Vegetation Survey databank (NVS; Arahura Forest 1982 survey) is available for the upper catchment and the vegetation is likely essentially unchanged. It is possible that the ultramafic boulderfields of Waitaiki host rare and specialised plant taxa (as do other areas of similar geology elsewhere in New Zealand), but the extent of this habitat type is limited, and specialised surveys of these remote areas would be required. Identifying and dealing with key weed incursions is also critical.

##### ➤ **Recommendations 6, 7, 8 & 9: Vegetation Surveys, Weed Control and Restoration**

- Consider vegetation surveys for Threatened and At Risk plant species in the catchment, prioritising rarer habitat types such as ultramafics in Waitaiki and the wetlands in the lower river.
- Eradicate gorse, blackberry, and any other ecological weeds from Milltown and implement surveillance and management to prevent new weed incursions in this area.
- Enhance habitats and prevent new weed incursions in the lower river by working with landowners to identify problem weed species, locations and sources, and implement control actions (for example, eradicating willows).
- Facilitate revegetation of degraded terrestrial habitats (e.g. former mine sites) with targeted indigenous plantings (if required) to ensure that a suitable seedbank exists for otherwise natural regeneration processes. Some areas may be dominated by seral vegetation (including weeds such as gorse and broom) for some time – any weed control should be targeted to those species that exclude establishment of native species (e.g. dense conifers, willows).

#### 4.3.3 Wetlands

The extent and nature of wetland habitats in the Arahura River is largely unknown. Brief analysis of the Freshwater Environments of New Zealand database (FENZ; Ausseil et al. 2008), Topo50 data, Westland Regional Council scheduled wetlands, and Boffa Miskell (2005) data provide an indication of the presence and extent of some wetlands but nothing of their type, condition, or ecological values. Recent notification of the National Policy Statement and National Environmental Standards for Freshwater set requirements for Regional Councils to identify and monitor wetland habitats within their jurisdiction as soon as reasonably practicable.

Some wetland areas indicated by these data sources appear, based on aerial imagery, not to be wetlands (possibly because they have recently been cleared), and other areas of apparent wetland are not listed in these data sources. For example, a wetland area indicated by FENZ and Topo50 maps near Fox Creek below Big Dam Hill has recently been cleared for hump and hollow pasture, and an apparent wetland area near Martyns Creek and Old Christchurch Road is not listed in the above data sources. Part of Lake Mudgie is listed as a 'Schedule 2' wetland in the West Coast Regional Council Land and Water Plan.

A desktop survey followed by a ground and/or drone survey of wetlands in the catchment would fill this knowledge gap and allow for appropriate management and protection of such habitats. These wetland habitats are likely to support species such as kōwaro and kēkēwai in wetland pools or areas of open water.

##### ➤ **Recommendation 10, 11 & 12: Wetland Mapping, Assessment, Protection & Restoration**

- Undertake a mapping exercise, verified by ground and/or drone survey, of wetland extent and wetland ecological values in the Arahura River catchment.
- Where wetland areas on private land are identified these should be fenced and set aside from grazing in discussion with landowners and WCRC.
- Undertake enhancement planting and/or pest and weed control to improve key wetlands.

#### 4.3.4 Terrestrial Fauna

There is little contemporary data on the presence of pekapeka in the catchment and surveys to determine whether this species persists is needed, preferably alongside efforts to estimate population size (if any). It is also unknown if roroa/great spotted kiwi are present in the catchment. Populations of these species found are likely to be extremely vulnerable to ongoing predation and would likely benefit from, or even be dependent on, ongoing pest control efforts.

The mokomoko fauna of the catchment, as described in Table 4, is largely unknown but potentially diverse and probably includes species adapted to a wide range of habitats including grassland, forest, and alpine areas. Determining which species are present in the overall catchment would be a laborious and complex process, and it may be most practical to follow-up on any incidental observations by the public or land managers (noting that many species are cryptic and seldom observed) to identify and protect any populations of species of concern.

However, the Arahura / Hokitika area appears to represent the southern or western limit for some Threatened and At-Risk species (van Winkel et al. 2019) and any resources available to investigate the herpetofauna of the catchment would be of benefit to the knowledge and conservation of these indigenous mokomoko (e.g. the speckled / Chesterfield / Hokitika skink species complex).

#### ➤ **Recommendations 13, 14, 15 & 16: Threatened Species Assessment and Protection**

- Deploy recorders (e.g. bat detectors) in areas of suitable habitat for pekapeka and roroa in the upper catchment (e.g. Mudflats Hut) to determine whether these species are present in the Arahura River area.
- Engage with landowners and local groups to encourage reporting of incidental encounters with mokomoko and follow up on sightings where there is potential for new species / population discoveries.
- Respond to new discoveries of Threatened and At Risk flora and fauna as required to ensure ongoing sustainability of those populations.
- Maintain, and ideally expand predator control efforts above Milltown and in the Wainihinihi to protect kōwhiwhio habitat and improve populations of other fauna.

#### 4.3.5 Freshwater Fauna

Relatively few surveys for indigenous fish have occurred in recent years, and none appear to have occurred at all in the upper catchment. Surveys for indigenous freshwater fish is a specialised task requiring the application of a variety of methodologies (electric fishing, night spotlighting, trapping and netting, etc.). While some land use activities require fish surveys as part of consenting processes (assessments of effects), and results are usually recorded in the NZFFD, such works are sporadic and usually site specific. These results are also not always sufficient to provide an understanding of the total fish fauna and population dynamics in the wider catchment.

As suggested by Orchard (2019), establishing the composition of whitebait catch or sampling adult fish at a number of monitoring sites in the catchment would provide information on the migratory galaxiid species, and would assist with identifying issues and informing restoration activities for this group of freshwater fish. Involving manawhenua and landowners in research and monitoring provides an opportunity for hands-on involvement and engagements between parties. In addition to further investigations of the migratory galaxiids, it would be useful to better understand the freshwater fish fauna of the Arahura River catchment generally. Records in the NZFFD suggest that the fish fauna is



relatively diverse, and the catchment supports numerous Threatened, At Risk and taonga species, as well as both migratory and non-migratory species.

Given the dynamic nature of the river and presence of migratory species, which require free access between rivers and the sea, migration routes and passage throughout the Arahura River catchment is essential to maintain for indigenous fish species and populations. A survey of culverts and other in-stream structures in the catchment to assess fish passage, followed by a process of working with landowners/land managers to remedy any structures that pose barriers to fish would be of benefit to the freshwater fauna of the area. This process has the potential to be a constructive and collaborative process between stakeholders and landowners.

As discussed in section 4.2.2, a large riparian planting programme in tributaries of the lower river is underway on land owned by Mawhera Incorporation. This programme will likely expand and enhance habitat for īnaka (spawning and adult habitat) in particular, but the opportunity exists to identify areas for restoration of habitat for other species (kōwaro, kēkēwai, tuna). This may have the effect of creating wetland habitat or enhancing existing wetland habitat (see section 4.3.3).

➤ **Recommendations 17, 18 & 19: Freshwater Fish Assessment and Habitat Restoration**

- Work with landowners and manawhenua to undertake surveys of freshwater fish species in both the Arahura River and key tributaries and establish a number of monitoring sites.
- Carry out a catchment-wide inventory of potential fish passage barriers using the national Fish Passage Assessment Tool, and work with relevant land managers to implement any necessary improvements.
- Where opportunities arise, provide expertise and resources to facilitate riparian restoration projects in the lower river in order to improve outcomes for water quality.

#### 4.3.6 Water Quality and Quantity

Currently, the Arahura River receives minimal monitoring in terms of water quality, levels, and flow. While excess water abstraction is fortunately not an issue in this catchment, land use such as mining and dairy farming are likely to adversely affect water quality. Expansion of monitoring would likely be undertaken by, or in conjunction with, WCRC and would allow stakeholders to assess issues, changes, and trends, particularly those that arise from restoration activities or land-use intensification.

The need for other monitoring programmes (e.g. for threatened species populations or animal and plant pests) is likely to arise as research, restoration and enhancement actions for biodiversity are undertaken (see section 4.3). Currently, there is a lack of baseline information in a number of areas (see section 3.2) and addressing this gap is an immediate priority over implementation of long term monitoring programmes.

➤ **Recommendations 20 & 21: Water Quality and Quantity Assessment**

- Work with WCRC and other stakeholders to expand water quality monitoring programmes in the Arahura River at a range of sites to ensure that ongoing or emerging pressures on water quality (sediment/nutrient runoff) are understood and can be responded to.
- Facilitate, instigate and/or support hydrological research in the Arahura River in terms of understanding base flows, floods, riverbed movement, and areas that may buffer drought (wetlands).
- Work with landowners to adapt land management practices in response to findings to ensure that land use (stocking rates, land cover) in flood / erosion prone areas are appropriate for current and future (climate change) scenarios.

## 5.0 HUI WHAKAAROTAU / *Prioritisation Meeting with Manawhenua*

A hui was held on Monday 28 September 2020 at Tuhuru Marae between representatives of Ngāti Waewae, Mawhera Incorporation and Te Papa Atawhai, with support from Boffa Miskell.

Appendix 4 provides full meeting notes from this hui and Table 6 on the following pages outlines the agreed priority projects. A summary of the key outcomes of the hui are shown in the images below:

### HIGHLIGHT OF THE HUI?



### WHAT OTHER INFORMATION SHOULD WE GATHER/KNOW?



### WHAT SHOULD WE DO NEXT?

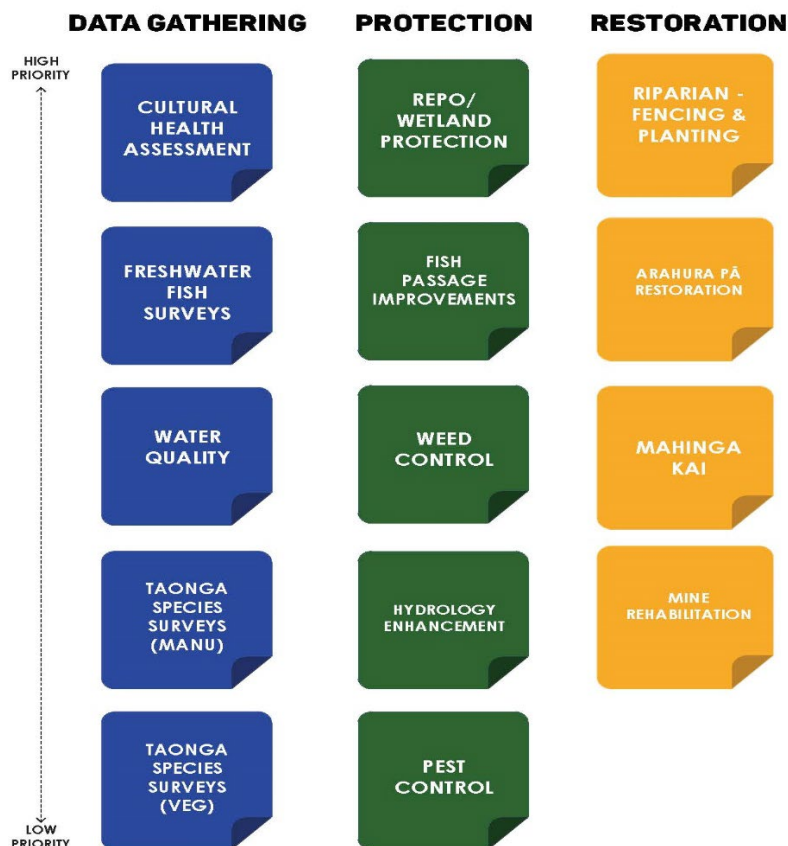


Table 6: Record of priority actions and responsibilities captured during hui with manawhenua.

DATA GATHERING		
Action	Responsibility	Notes:
<b>Cultural Health Assessment</b>	DOC	Contractor along with whanau (2R, 2B).
<b>Freshwater Fish Surveys</b>	DOC	Contractor and freshwater specialist required. Supported by whanau. Aligned with Cultural Health Assessment (2R, 2B).
<b>Water Quality Programme</b>	DOC	Contractor and freshwater specialist required. Supported by whanau. Aligned with Cultural Health Assessment (2R, 1B).
PROTECTION		
<b>Repo / Wetlands Protection</b>	DOC	ID & propose protection / work with landowners / utilise Philippe contact (4B)
<b>Fish Passage Improvements</b>	DOC	Undertake survey / ID issues / undertake Work (1R, 2B)
<b>Ecological Weed Control</b>	DOC	Develop weed plan / ID & propose work <ul style="list-style-type: none"> <li>• Consider weed free Milltown project</li> <li>• Lower catchment willow control (1R, 1B)</li> </ul>
<b>Hydrological Enhancement</b>	Mawhera	Complete initial study and extend with living history / drone survey / barrier assessment / future work (1R)
RESTORATION		
<b>Riparian Fencing and Planting</b>	Mawhera	Deliver PGF project / gain additional funding for: <ul style="list-style-type: none"> <li>• Mawhera land / other large farms</li> <li>• Nursery (5R, 2B)</li> </ul>
<b>Pā Restoration</b>	DOC with NZTA/Transit & Rūnanga	Develop master restoration plan <ul style="list-style-type: none"> <li>• Tainui Block / Mawhera strip / heritage site / railway corner</li> <li>• Planting / pest control / education (involve Mātauranga Kōmiti) (4R, 4B)</li> </ul>
<b>Mahinga Kai / Hāpua Restoration</b>	DOC & Rūnanga	Develop mahinga kai strategy <ul style="list-style-type: none"> <li>• Inaka / kūtai / tuna / kanakana (4R, 3B)</li> </ul>
LOW PRIORITY / NO IMMEDIATE ACTION		
<b>Pest Control</b>	N/A	<ul style="list-style-type: none"> <li>• Waitaiki / Milltown / Farms / Pā (2R, 1B)</li> </ul>
<b>Taonga Species Surveys</b>	N/A	<ul style="list-style-type: none"> <li>• Manu / Pekapeka (2R, 1B)</li> </ul>
<b>Taonga Species Surveys</b>	N/A	<ul style="list-style-type: none"> <li>• Rakau / Vegetation (2R)</li> </ul>
<b>Mine Rehabilitation</b>	N/A	(1R, 1B)



## 6.0 KUPU WHAKAMUTUNGA / Conclusion

This report was produced for the Department of Conservation, in conjunction with Ngāti Waewae and the Mawhera Incorporation as part of the national Ngā Awa River Restoration Programme.

The report summarises key information available in relation to the cultural and ecological values of the Arahura River, and identifies significant threats to, as well as opportunities for restoration of, these values. It involved desktop research and analysis of available information, as well as a site visit and hui with representatives from the above partner organisations to prioritise and ground truth future actions.

### 6.1 Ngā Tūtohu / Recommendations

The following table summarises the recommendations made in Section 4.0, and presents them in order of priority across three broad categories:

- Data gathering – recommendations for research and study that are required to enact or monitor the success of protection and restoration actions;
- Protection – recommendations for immediate actions to safeguard existing ecological values that may otherwise be lost; and
- Restoration – recommendations for future actions to restore and enhance modified or degraded areas in order to increase the resilience and ecological integrity of the river catchment.

The table also provides the following suggested implementation timeframes:

- Immediate: begin action within 1 year of publication of this report;
- Medium term: within 3 years;
- Long term: within 5-10 years.

Many actions, regardless of initial timeframe, may require ongoing commitment over many years.

DATA GATHERING			
Action	Timeframe	Organisations Involved / Possible Funding Sources	Description / Rationale
i. Cultural Health Assessment of the River	Immediate	DOC, Ngati Waewae / Mawhera Incorporation, cultural liaison / coordinator	Work with manawhenua to design a mātauranga Māori monitoring programme to assess the state of the environment, evaluate restoration efforts undertaken at Arahura and monitor changes over time in relation to cultural values and aspirations.
ii. Freshwater Fish Survey and Monitoring	Immediate	DOC / contractors, WCRC, other agencies (e.g. Fish and Game)	Undertake surveys of freshwater fish species in both the Arahura River and key tributaries and establish monitoring sites.
iii. Water Quality Monitoring	Immediate	DOC / contractors, WCRC, other agencies (e.g. NIWA)	Work with WCRC and other stakeholders to expand water quality monitoring programmes in the Arahura River at a range of sites to ensure that ongoing or emerging pressures on water quality (sediment/nutrient runoff) are understood and can be responded to.
iv. Surveys for rare fauna (pekapeka and manu)	Medium – Long term	DOC / contractors, Mawhera Incorporation, other private landowners	Deploy recorders (e.g. bat detectors) in areas of suitable habitat for pekapeka and roroa in the upper catchment to determine whether these species are present in the Arahura River area.

			Engage with landowners and local groups to encourage reporting of incidental encounters with mokomoko and follow up on sightings where there is potential for new species / population discoveries.
v. Surveys for rare flora	Long term-	DOC / contractors	Conduct vegetation surveys for Threatened and At Risk plant species in the catchment, prioritising rarer habitat types such as ultramafics in Waitaiki and wetlands in the lower river.

## PROTECTION

Action	Timeframe	Organisations Involved / Possible Funding Sources	Description / Rationale
i. Conduct wetland survey and take immediate steps to fence / protect wetland areas identified	Immediate	WCRC, Mawhera Incorporation, other private landowners, other agencies (e.g. Nature Heritage Fund, Fish and Game)	Undertake a mapping exercise, verified by ground and/or drone survey, of wetland extent and wetland ecological values in the Arahura River catchment. Where wetland areas on private land are identified these should be fenced and set aside from grazing in discussion with landowners and WCRC.
ii. Undertake catchment-wide inventory of potential fish passage barriers	Immediate	DOC / contractors, Mawhera Incorporation, other private landowners	Carry out a catchment-wide inventory of potential fish passage barriers using the national Fish Passage Assessment Tool, and work with relevant land managers to implement any necessary improvements.
iii. Weed-free Milltown, targeted weed surveillance and control in the lower river	Immediate	DOC / contractors / Jobs for Nature, WCRC, Mawhera Incorporation, other private landowners	Eradicate gorse, blackberry, and any other ecological weeds from Milltown and implement surveillance and management to prevent new weed incursions in this area.  Enhance habitats and prevent new weed incursions in the lower river by working with landowners to identify problem weed species, locations and sources, and implement control actions (for example, eradicating willows).
iv. Hydrological research and adaptive land management	Immediate to long term	Contractors / researchers, WDC, WCRC, Mawhera Incorporation, other private landowners	Facilitate or instigate hydrological research in the Arahura River in terms of understanding base flows, floods, riverbed movement, and areas that may buffer drought (wetlands).  Adapt land management in response to findings to ensure that land use (stocking rates, land cover) in flood / erosion prone areas are appropriate for current and future (climate change) scenarios.
v. Pest Control	Immediate to long term	DOC / contractors (e.g. OSPRI), Trustpower	Maintain, and ideally expand predator control efforts above Milltown and in the Wainihinihi to protect kōwhiowhio habitat and improve populations of other fauna.

## RESTORATION

Action	Timeframe	Organisations Involved / Possible Funding Sources	Description / Rationale
i. Riparian planting and wetland restoration	Immediate to long term	DOC / Jobs for Nature, WCRC, Mawhera Incorporation, other private landowners	Support the implementation of the riparian strategy developed by Mawhera Incorporation to fence and plant key lowland tributaries, waipuna (freshwater springs) and wetlands.  Where opportunities arise, provide expertise and resources to facilitate riparian restoration projects in the lower river in order to improve outcomes for water quality.

<p>ii. Enable enhanced customary practices (mahinga kai, pounamu gathering)</p>	<p>Immediate to long term</p>	<p>DOC, Mawhera Incorporation, Ngati Waewae / Te Runanga o Ngai Tahu</p>	<p>Work with manawhenua to identify projects that focus on the protection and enhancement of mahinga kai and pounamu gathering. Examples of projects worthy of consideration include:</p> <ul style="list-style-type: none"> <li>• Identifying Inaka spawning areas and habitat improvement;</li> <li>• Kūtai bed protection and improvement;</li> <li>• Hāpua/lagoon assessment and enhancements;</li> <li>• Tuna habitat enhancement; and</li> <li>• Pounamu bed protection via hydrological assessment and maintenance of key access sites.</li> </ul>
<p>iii. Restoration of former mine sites and other degraded areas</p>	<p>Long term</p>	<p>DOC / Jobs for Nature, WDC, Mawhera Incorporation, other private landowners, community groups (e.g. Forest and Bird)</p>	<p>Facilitate revegetation of degraded terrestrial habitats (e.g. former mine sites) with targeted indigenous plantings (if required) to ensure that a suitable seedbank exists for otherwise natural regeneration processes. Some areas may be dominated by seral vegetation (including weeds such as gorse and broom) for some time – any weed control in these locations should be targeted to those species that exclude establishment of native species (e.g. dense conifers, willows).</p>



## 7.0 KOHIKA KŌRERO / References

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## Appendix 1: Arahura River Water Quality Data from WCRC (2014-2018)

Site Name	Date	Ammonia-N	Dissolved Reactive Phosphorus	E.coli (Mem Filtration)	Enterococci (Mem Filt)	Faecal Coliforms (Mem Filt)	Nitrate + Nitrite	Nitrate-N	Nitrite	Nitrogen (Total)	Nitrogen Kjeldahl	Periphyton	Phosphorous (Total)	Water Clarity (Black Disc)	Water Clarity (Clarity Tube)	Water Temp.	Water Temp. Daily Average
Unit		(g/m3)	(mg/L)					(g/m3)								(deg C)	
Standard			> 0.03									< 5		< 0.8		> 20 C	
Arahura Rv @ SH6	16/02/2007													1.32			
Arahura Rv @ SH6	5/01/2016											9.12					
Arahura Rv @ SH6	7/11/2016	0.005	0.0028	1000		1100	0.026	0.025	0.001	0.14	0.12	8.33	0.014	1.39		10	
Arahura Rv @ SH6	23/11/2016				10									2.95			
Arahura Rv @ SH6	6/12/2016			70		70						9.9		2.7			
Arahura Rv @ SH6	16/12/2016			150		190						9.65		0.66			
Arahura Rv @ SH6	5/01/2017			20		30						9.23		1.34			
Arahura Rv @ SH6	30/01/2017	0.005	0.0011	380		380	0.062	0.061	0.001	0.22	0.16	9.3	0.007	0.84			
Arahura Rv @ SH6	16/02/2017			20		20						9.75		1.32			
Arahura Rv @ SH6	27/02/2017			20		20						8.74		7.61			
Arahura Rv @ SH6	8/03/2017			120		130						8.92		7.98			
Arahura Rv @ SH6	14/03/2017			80		80						6.14		5.06			
Arahura Rv @ SH6	7/11/2017			50		50						9.22		1.88		8.8	8.8
Arahura Rv @ SH6	22/11/2017			90		100						8.22		8.74			
Arahura Rv @ SH6	6/12/2017			30		50						6.3		9.3		16.7	16.7
Arahura Rv @ SH6	21/12/2017			70		80						6.83		7.98		15.3	15.3
Arahura Rv @ SH6	12/01/2018			600		600								0.22			
Arahura Rv @ SH6	25/01/2018			70		70						7.77		8.48		15.3	15.3
Arahura Rv @ SH6	9/02/2018	0.005	0.0023	18		24	0.044	0.043	0.001	0.11	0.1	8.91	0.004	4.98			15.3
Arahura Rv @ SH6	21/02/2018			190		190								0.62		12.6	
Arahura Rv @ SH6	5/03/2018			250		290											
Arahura Rv @ SH6	20/03/2018			180		200								6.4			

## Appendix 2: Summary Water Quality Data from Death & Fuller (2020)

	Reaches	DRP	Nitrate	Ecoli	MCI	Sediment	Fish OE
	Criteria	> 0.006	> 0.24	> 130	< 120	> 30%	< 0.8
Waipoua	259	234	6	37	80	37	92
as percent		90	2	14	31	14	36
Hoteo	783	783	404	661	756	670	513
as percent		100	52	84	97	86	66
Mahurangi	215	215	67	171	211	188	145
as percent		100	31	80	98	87	67
Whanganui	17435	16874	4524	4910	8377	5590	3403
as percent		97	26	28	48	32	20
Waikanae	359	319	76	84	118	78	139
as percent		89	21	23	33	22	39
Pelorous	2011	1237	63	66	178	139	701
as percent		62	3	3	9	7	35
Arahura	664	49	15	16	31	24	30
as percent		7	2	2	5	4	5
Lower Waitaki	2505	770	339	424	2330	1062	860
as percent		31	14	17	93	42	34

Nitrogen concentration of reaches in each of the priority catchments.

Criteria breaches in reaches of priority river catchments. Blue shading indicates high values.

0.449301 - 2.161980



## Appendix 3: Active Resource Consents in the Arahura River Catchment

Consent Number	Consent Holder	Description	Activity Type	Primary Industry
RC-2015-0041-01		To discharge sewage wastewater to land at Lot 1 DP 2885 ARAHURA, 137 Arahura Pa Road.	Discharge Permit.	
RCN98031-1	KiwiRail	To place up to 150 tonnes of rock at the Arahura rail bridge abutment to prevent the main bridge approach being washed away and to maintain the works.	Land Use Consent.	
RCN98011-1	Regional Council	Repair maintain existing groynes on the Arahura River, upstream of the road/rail bridge.	Works in or on Beds of Rivers and Lakes.	E4122 Non-Building Construction.
RC07132-1		To occupy space in the Coastal Marine Area for a bridge and guide bank at the Arahura River.	Occupying the beach or seabed – coastal.	E4121 Road and Bridge Construction.
RC07132-4		To disturb the bed of the Arahura River for the purpose of removing gravel, depositing gravel and clearing vegetation to maintain the maximum flood flow capacity of the Arahura River.	Land Use Consent	E4121 Road and Bridge Construction
RC07132-5		To disturb and deposit material within the Coastal Marine Area adjacent to a bridge for the purpose of maintaining the maximum flood flow capacity of the Arahura River.	Coastal Permit	E4121 Road and Bridge Construction
CC08003-1		Earthworks.	Gravel extraction.	E4121 Road and Bridge Construction.
RC10010-2		To divert water from a structure (spurs) in the Arahura River.	Water Permit.	E4122 Non-Building Construction.
RC-2017-0074-01		To disturb the dry bed of the Arahura River for the purpose of removing gravel.	Land Use Consent.	B1411 Gravel and Sand Quarrying.
RC-2017-0075-01		To disturb the bed of the Arahura River for the purpose of removing gravel.	Land Use Consent.	B1411 Gravel and Sand Quarrying.
RC00148-1		Rock protection works over 1.2km on the true left bank of the Arahura River.	Land Use Consent.	E4122 Non-Building Construction.
RC12067-1		To discharge milk and milk products to land where they may enter water, various locations.	Discharge Permit.	A0130 Dairy Cattle Farming
RC-2015-0035-01	G & T Bradley Farms Limited.	To discharge treated dairy effluent to land from a dairy shed (DS) where it may enter surface water (Fox Creek) and groundwater near DS310, Arahura Valley.	Discharge Permit.	A0130 Dairy Cattle Farming.
DS310	G & T Bradley Farms Limited.	Dairy Shed, Arahura Valley.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC-2017-0075-01		To disturb the bed of the Arahura River for the purpose of removing gravel.	Land Use Consent.	B1411 Gravel and Sand Quarrying.
CC10003-1		Reconstruction of culvert in Fox Creek.	Water Permit.	E4122 Non-Building Construction.

RCN98325-1		To discharge copper oxychloride for Dothistroma control.	Discharge Permit.	A0301 Forestry.
RC13003-1		To disturb the bed and banks of the Arahura River to undertake river protection works.	Land Use Consent.	E4122 Non-Building Construction.
RC09128-1		To discharge treated domestic sewage effluent to land at 4 Humphreys Gully West from a sewage treatment and disposal system.	Discharge Permit.	D3702 Sewerage and Drainage Services.
DS302	Mawhera Incorporation	Dairy Shed, Arahura.	Discharge Permit.	A0130 Dairy Cattle Farming.
DS305	Mawhera Incorporation	Dairy Shed, Arahura.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC11006-1		To discharge dairy effluent to land, groundwater (via seepage) and surface water (the Arahura River) near DS302, Arahura.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC11006-2		To take groundwater adjacent to the Arahura River.	Water Permit.	A0130 Dairy Cattle Farming.
RC07108-3		To divert water through diversion channels, Kawhaka Creek.	Water Permit.	E4122 Non-Building Construction.
DS312		Dairy Shed, Stafford.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC07226-1		To discharge dairy effluent to land where it may enter water (Fox Creek) at Kawhaka.	Discharge Permit.	A0130 Dairy Cattle Farming.
DS309	Cranley Farms Limited	Dairy Shed, Stafford.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC-2017-0074-01		To disturb the dry bed of the Arahura River for the purpose of removing gravel.	Land Use Consent.	B1411 Gravel and Sand Quarrying.
RCN95439-1		Aerial application of copper oxychloride for the control of Dothistroma needle blight over approximately 8 hectares of land adjacent to the Old Christchurch Road, Kawhaka.	Discharge Permit.	A0301 Forestry.
RC09177-1		To excavate a pond in the bed of the Arahura River associated with a surface water take.	Water Permit	B1314 Gold Ore Mining.
RC09177-2		To take and use surface water from the Arahura River for alluvial gold mining activities, Arahura.	Water Permit.	B1314 Gold Ore Mining.
RC10278-2		To divert the flow of MacDonalds Creek.	Water Permit.	B1314 Gold Ore Mining.
RC02126-1		To construction weir in the bed of Humphreys Gully Creek and associated disturbance.	Land Use Consent.	E4122 Non-Building Construction.
RC09084-V4		To increase maximum disturbed area and bond value, Humphreys Gully	Land Use Consent.	B1314 Gold Ore Mining
RC09084-1		To undertake earthworks at Humphreys Gully associated with alluvial gold mining activities	Land Use Consent.	B1314 Gold Ore Mining
RC09084-2		To take and use surface water from MacDonalds Creek, Humphreys Gully, and unnamed creeks at Humphreys Gully associated with alluvial gold mining activities.	Water Permit	B1314 Gold Ore Mining

RC09084-3		To discharge sediment-laden water to land where it may enter water either via seepage or overland flow at Humphreys Gully (including MacDonalds Creek).	Discharge Permit.	B1314 Gold Ore Mining.
RCN98114-3		A land use consent to disturb the bed of an un-named creek in removing logs.	Land Use Consent.	E4121 Road and Bridge Construction.
RC12067-1		To discharge milk and milk products to land where they may enter water, various locations.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC03286-3		To construct four culverts in the beds of unnamed tributaries of the Arahura River.	Land Use Consent.	E4122 Non-Building Construction.
DS313	Cranley Farms Limited	Dairy Shed, Stafford.	Discharge Permit.	A0130 Dairy Cattle Farming.
RC-2016-0134-01		To discharge treated onsite sewage wastewater from a domestic dwelling to land at Lot 1 DP 3094, Duffers Creek Road, Kawhaka.	Discharge Permit.	D3702 Sewerage and Drainage Services.
RCN97288-1		Discharge permits to discharge fertilisers and herbicides to the Pinus Radiata Crop at Foxes Creek and Lake Mudgie, Kawhaka.	Discharge Permit.	A0301 Forestry.
RC-2017-0075-01		To disturb the bed of the Arahura River for the purpose of removing gravel.	Land Use Consent.	B1411 Gravel and Sand Quarrying.
RC03286-3		To construct four culverts in the beds of unnamed tributaries of the Arahura River.	Land Use Consent.	E4122 Non-Building Construction.
RC94111-26		From Duffers tail race.	Discharge Permit.	D3610 Electricity Supply.
RCN98056-1		Spraying dothistroma needle blight.	Discharge Permit.	A0303 Services to Forestry.
RC94111-25		From race spillway around DFS PS to Loopline Reservoir.	Discharge Permit.	D3610 Electricity Supply.
RC00413-2		Widening and upgrading of road and construction of culverts.	Land Use Consent.	E4121 Road and Bridge Construction.
RC94111-4		Short dam, Kapitea Reservoir.	Water Permit.	D3610 Electricity Supply.
RC04038-3		To divert water in Kawhaka Creek in association with the protection works and creek re-alignment.	Water Permit.	E4122 Non-Building Construction.
RC94111-11	Trustpower	At Kawhaka weir – take surface water.	Water Permit.	D3610 Electricity Supply.
RC94111-17		From race spillway into Big Wainihinihi River	Discharge Permit	D3610 Electricity Supply.
RC94111-24		From settling basin at Kawhaka Weir	Discharge Permit	D3610 Electricity Supply.
RC94111-41		To clear gravel from streams and to maintain existing protection works - Kawhaka Race	Land Use Consent	D3610 Electricity Supply.
RC94111-35		To clear gravel from streams and to maintain existing protection works - upstream of Kawhaka Weir	Land Use Consent	D3610 Electricity Supply.
RC94111-62	Trustpower	To maintain existing structures - Kawhaka Race intake.	Land Use Consent.	D3610 Electricity Supply.
RC10141-2		To disturb the bed of Maher Creek and unnamed tributary of Kawhaka Creek to construct intake structures for a hydro electricity generation scheme.	Land Use Consent.	E4122 Non-Building Construction.



RC10141-6		To dam water on land near Kawhaka Creek for a hydro electricity generation scheme.	Water Permit.	E4122 Non-Building Construction.
RC11182-6		To construct rock protection works on the bed and banks of Kawhaka Creek.	Land Use Consent.	E4122 Non-Building Construction.
RC10141-3		To disturb the bed of Kawhaka Creek to construct an outfall structure for a hydro electricity generation scheme.	Land Use Consent	E4122 Non-Building Construction.
RC10141-7		To discharge water from a hydro electricity generation scheme to water (Kawhaka Creek).	Discharge Permit.	E4122 Non-Building Construction.
RC-2016-0027-01	Peter Robert Wilson	To take and use ground water for the purpose of exploratory alluvial gold mining at Milltown.	Water Permit.	B1314 Gold Ore Mining.
RC11004-1		To install rock protection and a "spur groyne" on the bed and banks of the Arahura River.	Land Use Consent	E4122 Non-Building Construction.
RC11004-2		To divert water in the Arahura River.	Water Permit.	E4122 Non-Building Construction.
RC01088-2		To disturb the beds of 2 un-named creeks associated with the construction of a hydroelectric power scheme.	Land Use Consent.	E4113 Non-Residential Building Construction.
RC01088-1		To undertake land disturbance and earthworks associated with the construction of a tourist development.	Land Use Consent.	E4113 Non-Residential Building Construction.
RC-2017-0126-01	Michael Kevin Milne / Cowboy Paradise Limited	To discharge treated onsite sewage wastewater to land from accommodation units at Lot 2 DP 312542, 1140 Milltown Road.	Discharge Permit.	P9330 Other Recreation Services.
RC94111-8	Trustpower	AW1.	Water Permit.	D3610 Electricity Supply.
RC94111-9		AW3.	Water Permit.	D3610 Electricity Supply.
RC94111-38		To clear gravel from streams and to maintain existing protection works - upstream and downstream of AW3.	Land Use Consent.	D3610 Electricity Supply.
CC08005-1		Installation of structures.	Land Use Consent.	E4122 Non-Building Construction.
RC01088-2		To disturb the beds of 2 un-named creeks associated with the construction of a hydro-electric power scheme.	Land Use Consent.	E4113 Non-Residential Building Construction.
RC01088-3		To take water from an unnamed creek associated with a hydroelectric power scheme	Water Permit	D3610 Electricity Supply.
RC01088-4		To take surface water from an unnamed creek for the purpose of hydroelectric power generation	Water Permit	D3610 Electricity Supply.
RC01088-5	Michael Kevin Milne/Cowboy Paradise Limited	To discharge septic tank treated effluent to land form a tourist development at Milltown	Discharge Permit	D3610 Electricity Supply.
RC94111-23	Trustpower	Race discharge to kawhaka catchment.	Discharge Permit.	D3610 Electricity Supply.
RC94111-7		BW3.	Water Permit.	D3610 Electricity Supply.
RC94111-39		To clear gravel from streams and to maintain existing protection works - upstream and downstream of BW3.	Land Use Consent.	D3610 Electricity Supply.

RC94111-6		BW2.	Water Permit.	D3610 Electricity Supply.
RC94111-5		BW1.	Water Permit.	D3610 Electricity Supply.
RC94111-44		To maintain access roads, formations and stormwater channels and drains at or associated sites - Wainihinihi Access road from north side of Arahura river to the road end.	Land Use Consent.	D3610 Electricity Supply.
RC94111-45		To maintain access roads, formations and stormwater channels and drains at or associated sites - Repairs to Access walkways and tracks to Big Wainihinihi Race.	Land Use Consent.	D3610 Electricity Supply.
RC94111-56		To maintain existing structures - BW1.	Land Use Consent.	D3610 Electricity Supply.
RC94111-14		From sediment flushing Adit into Big Wainihinihi River.	Discharge Permit.	D3610 Electricity Supply.
RC06002-1		Earthworks	Land Use Consent.	E4121 Road and Bridge Construction.
RC94111-59		To maintain existing structures - AW1	Land Use Consent.	D3610 Electricity Supply.
RC94111-16		From sediment flushing basin in Arahura Wainihinihi River	Discharge Permit.	D3610 Electricity Supply.
RC94111-18		From race spillway	Discharge Permit.	D3610 Electricity Supply.
RC94111-36		To clear gravel from streams and to maintain existing protection works - upstream and downstream of AW1	Land Use Consent.	D3610 Electricity Supply.
RC94111-8		Take surface water	Water Permit	D3610 Electricity Supply.

## Appendix 4: Hui Notes – 28 September 2020

### Arahura River Baseline Report Hui

Tuhuru Marae, Arahura

Monday, 28<sup>th</sup> September 2020

<b>Attendees:</b>	<b>NGĀTI WAEWAE/MAWHERA:</b> <ul style="list-style-type: none"> <li>- Janyne Morrison (JEM)</li> <li>- Matiu (Matthew) Sollis (MS)</li> <li>- Hamiria Hutana (HH)</li> <li>- Meihana Tainui (MT)</li> <li>- Shane Lang (SL)</li> <li>- Kim McPherson (KM)</li> <li>- Kristyn Lang (KL)</li> </ul> <b>RANGATAHI</b> <ul style="list-style-type: none"> <li>- Zakkaia Waipouri (ZM)</li> <li>- Raven Joseph (RJ)</li> </ul>	<b>TE PAPA ATAWHAI (DOC):</b> <ul style="list-style-type: none"> <li>➤ Debra Magner (DM)</li> <li>➤ Philippe Gerbeaux (PG)</li> <li>➤ Tim Shaw (TS)</li> <li>➤ Jane Marshall (JM)</li> <li>➤ Tihou Messenger Weepu (TMW)</li> <li>➤ Nicole Kunzmann (NK)</li> </ul> <b>BOFFA MISKELL:</b> <ul style="list-style-type: none"> <li>- Craig Pauling (CP)</li> <li>- Mapihi Martin-Paul (MMP)</li> <li>- Tanya Blakely (TB)</li> <li>- Jaz Morris (JM)</li> </ul>
<b>Distribute to all above, plus:</b>	<b>NGĀTI WAEWAE/MAWHERA:</b> <ul style="list-style-type: none"> <li>- Marie-Louise Tacon</li> <li>- Courtney Sargent</li> </ul>	<b>TE PAPA ATAWHAI (DOC):</b> <ul style="list-style-type: none"> <li>➤ Rosemary Millar</li> <li>➤ Sue Clearwater</li> </ul>

#### Te Whakatūwhera

Roopu were welcomed onto Arahura Marae followed by morning tea.

Hui opened with karakia by Tihou Messenger Weepu at 10:00am.

### 1. Whakawhanaungatanga

Tihou Messenger Weepu facilitated a round of introductions and asked the hui participants to talk to their role/interest in this project. A summary, by order of introduction, is provided below:

*\*Denotes manawhenua representative/member of Ngāti Waewae.*

- ❖ **\*Janyne Morrison:** Through her position on the Community Steering Group, and the committee of Mawhera Incorporation, Janyne is driven by protecting the rights and interest of Ngāti Waewae whanau and ensuring the ability to maintain their relationship with the awa (river) is upheld. This project is an example of where the deep spiritual connection to the awa and western science culminates. Janyne is interested in providing a whanau voice and in hearing the historical memories associated with the Arahura River.
- ❖ **\*Matiu Sollis:** He tino maha te mātauranga kua kohatia mai te whanau ki āia. Ko tōna wawata, kei te hoki mai ki [Arahura] ki te mahi tahi kei waenganui i tōna whanau. Ko Miriam Mason tōna Taua; she blessed a kōhatu that sits at the hill of the whare. Matiu carries the mana of his Taua with him and she had big dreams and aspirations for this place that he wishes to fulfil. Matiu considers how he can pragmatically protect the awa and has a particular interest in the lower catchment.
- ❖ **\*Kristyn Lang:** Through her role she supports the mahi (work) of TMW and is interested in this project to learn how she can better Tihou in his work.
- ❖ **Zakkaia Waipouri:** As a rangatahi (youth) she grew up on Te Tai Poutini and loves the awa. Interested in this project and to be mentored and build her knowledge in order to pass it on to her peers. Is from Ngāti Kuri up North.
- ❖ **Raven Joseph:** Attended this hui as a rangatahi, to learn and have the ability to share knowledge of the awa with other rangatahi. Is from Tainui and Ngāti Ira.
- ❖ **\*Shane Lang:** Acknowledged other whanau (family) both in the room, and beyond, that have contributed to the life and health of the awa. Shane is keen to get involved in this mahi to bring him home and immerse himself back into Ngāti Waewae's vision and work.
- ❖ **Kim McPherson:** Attended this hui to support her husband Shane; has worked alongside Tim Shaw over the course of 11 years looking after native fish and birds. Kim has a personal connection to Te Tai Poutini through her father being born here and now has a connection to the awa through Shane; excited to input into this project and support manawhenua's vision.
- ❖ **\*Hamiria Hutana:** Hamiria grew up in Arahura and spent a lot of time on the awa; has memories of swimming near the new bridge and jumping off the old bridge. Whitebaiting in her dad's whitebait channel was a regular occurrence; has noticed the change in the water over time and keen to know how that can be repaired.



- ❖ **Debra Magner:** Shares the role of River Ranger with TMW and has been farming and living on the awa for the past 17 years. Through this project, she is keen to identify the top priority actions that DOC can progress with moving forward.
- ❖ **Philippe Gerbeaux:** Philippe lived in Hokitika for 11 years and is connected to Ngāti Waewae through his work with Maika Mason and Jimmy Russell. Feels strongly connected to the valley and the awa and is motivated to increase his mātauranga Māori and exploring how that merges with western science.
- ❖ **Tim Shaw:** Tim is a part of the local DOC team and has experience in working closely with gold miners and farmers.
- ❖ **Jane Marshall:** Jane has lived in Hokitika for some time and works in the 'putiputi (flowers) and ngahere (forest)' space for DOC.
- ❖ **\*Meihana Tainui:** Keen to see some progress and ready to support the project and priority actions in any way he can.
- ❖ **\*Tihou Messenger Weepu:** Tihou spoke to the visioning sheet [see images below] from an initial hui held in October 2019, this was then revisited again with other whanau a couple of months later. This visioning document will be helpful in remembering where the whanau want to get too and to not get too caught up in the current data.



Appendix 4: Hui Notes – 28 September 2020

## 2. Whakapapa / Draft Report Discussion

Tihou lead the second session and started by providing an overview of the purpose and background to the baseline report. He reminded the roopu of the vision for the Arahura River, being:

- **“Restoring and protecting the health and wellbeing of the Arahura River and its people.”**

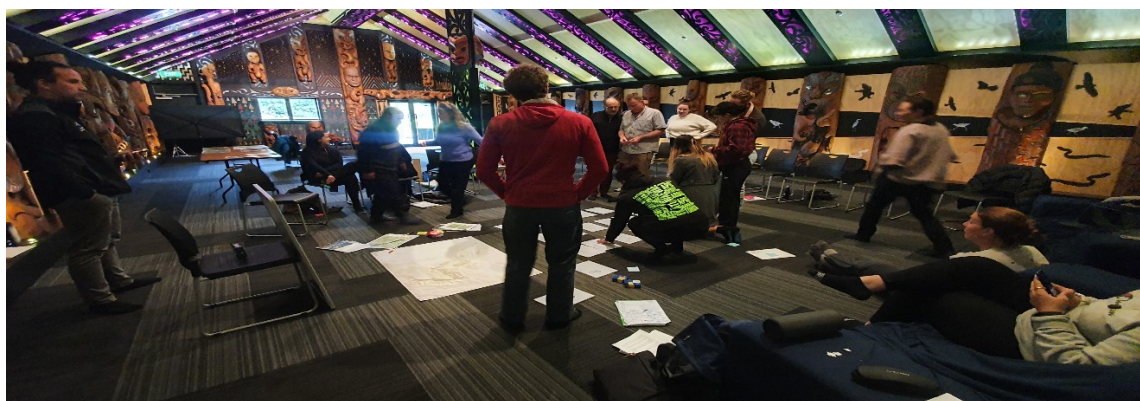
Jaz from Boffa Miskell then provided a summary of the draft baseline report.

Key messages included:

- Significantly high diversity of native freshwater fresh species.
- Quite a few threatened species such as whio and kea live in the catchment.
- There is a significant lack of knowledge/data on some areas such as hydrology, water quality.
- Working towards a weed free Milltown would be significant.
- Riparian planting work already being undertaken on Mawhera Incorporation farms.

### Kōrero/Discussion:

- A key piece of feedback was had around the significance of Milltown being weed free. It was discussed that there isn't a lot of land where farming occurs in a weed free environment. Being weed free helps to protect the surrounding native plant areas and provides a buffer zone between native and farming systems. Weeds have major implications on the way an ecosystem functions; introduced species don't breathe the same level of mauri back into Papatūānuku as native species do.
- Meihana was concerned with ensuring any planting restoration work is protected from flood events and heavy rains regularly occurring on Te Tai Poutini.
- Craig briefly discussed the importance of Bob Bower's (of WGA Consulting) work with Mawhera Incorporation where he is trying to better understand the movement patterns of the Arahura River, historically and presently.
  - It was acknowledged that whanau/locals will hold a lot of traditional knowledge – in particular around the hāpua – and that interviews with key whanau members could assist in gathering this information. MS spoke to the significance of the hāpua to him as that area is highly interacted with by whanau; he finds it hard to fathom what is happening at the headwaters of the awa because it seems so far removed and not highly interacted with.
- Kim challenged the definition of 'weed' and its misalignment with the traditional concept of rongoā (practise of Māori medicine). It was acknowledged that Tihou's mother carries a lot of traditional information on this area. It was confirmed that we are not intending to remove any type of resource important to whanau.
- A group discussion was had as to the resistance towards the use of 1080 for pest control. It was confirmed that trapping or non-chemical methods of pest control is preferred as well as building rūnanga's knowledge of its effects.
- More information on the presence/abundance of kiwi and kea was requested.
- Janyne provided overview of Mawhera committee's current kaupapa: Successful in \$2.8m of PGF funding, undergoing past work of Boffa Miskell in terms of restoration work/mapping/generational plan, the vision is to plant the Arahura River so it looks entirely different for the next generation. Another issue of concern to Mawhera is the movement of the river – it was confirmed that Mawhera have not committed any funds to rock work but it was acknowledged that whatever is happening at the head waters of the awa cannot reap any consequences on the lower catchment. It was discussed that getting Bob Bower back to talk with whanau about the awa's dynamic system and the state of the hāpua would be beneficial.
- Flooding of the awa was referred by Shane as "...not scary. It's a natural system, its cleansing, it turns over taonga and washes tñaka to the sea."





### 3. Prioritisation Exercise

Following the site visits and afternoon tea, the participants returned to the whare where two prioritisation sessions were undertaken.

The first was lead by Tihou and focussed on the identification and prioritisation of:

- Highlights of the hui?
- What other information should we gather/know?
- What should we do next?

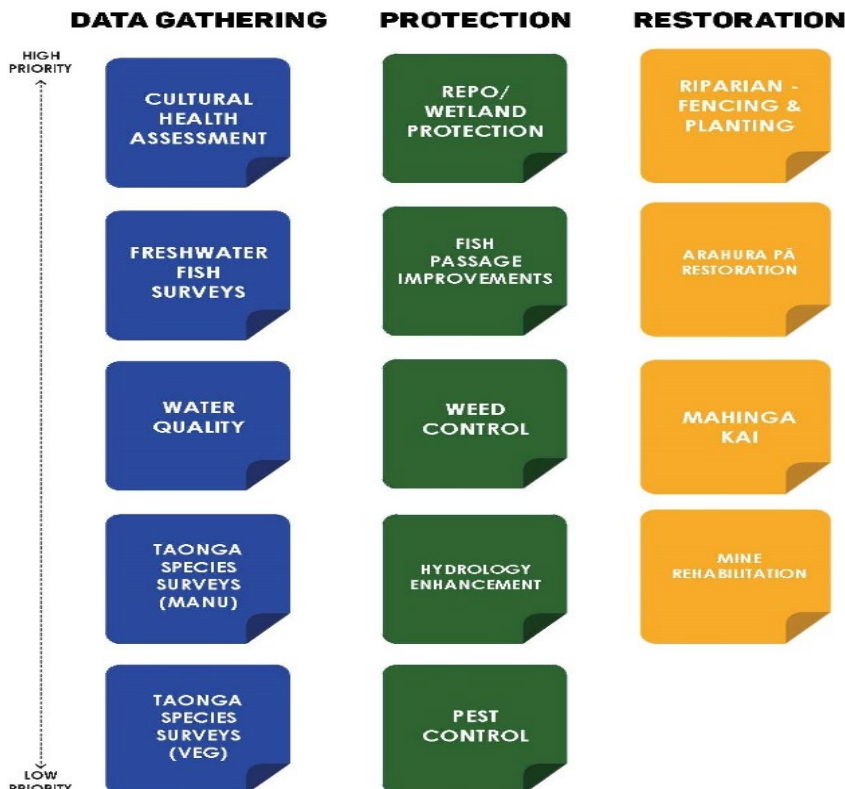
The image below summarises the results of this exercise (with the highest priorities from left to right):



The second session was lead by Craig and focussed on prioritising the key projects and opportunities identified within the report, and at the hui – grouped into three categories:

- Data Gathering;
- Protection;
- Restoration.

The image below summarises the results of this exercise:





#### 4. Site Visits

Following lunch, a site visit was undertaken to visit three key sites in the lower catchment, these included:

- Arahura Pā Restoration Site
- Mawhera Tuatahi Riparian Planting Site
- Mawhera Wetland Site near German Road

This provided a good opportunity to further understand priority issues and discuss appropriate actions and opportunities.



Mawhera Tuatahi Planting Site showing debris line of a recent flood

#### 5. Whakamutunga / Wrap up

At the conclusion of the site visits and hui, the roopu were asked to recap the highlight of the hui and provide any final comments. A summary of manawhenua and rangatahi comments are below:

- ❖ **Hamiria:** Particularly liked seeing the mayflies on the rocks with Tanya and getting to share the dreams and aspirations for the pā site and awa.
- ❖ **Matiu:** Nice to make some connections – new and old; looking forward to seeing the exciting mahi come to fruition and hear more traditional stories, memories and narratives.
- ❖ **Shane:** Thankful to be able to reconnect with whanau over this kaupapa, for some it has been a lifetime of work. Uplifting to see tangata whenua, the department and consultants come together for a collective effort in protecting a taonga for generations to come.
- ❖ **Raven:** Thankful to hear the combination of Western Science and Mātauranga Māori being utilised and proposed.
- ❖ **Zakkaia:** Great to absorb the knowledge shared today and looking forward to passing that on to other rangatahi and getting them involved.

**Te Whakamutunga**  
Hui concluded with karakia at 4:00pm

### **About Boffa Miskell**

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Auckland, Hamilton, Tauranga, Wellington, Christchurch, Dunedin and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural heritage, graphics and mapping. Over the past four decades we have built a reputation for professionalism, innovation and excellence. During this time we have been associated with a significant number of projects that have shaped New Zealand's environment.

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