TREATY IMPACT ASSESSMENT

THE TEKAPO AND WAITAKI POWER SCHEMES




An assessment prepared on behalf of Te Rūnanga o Moeraki, Te Rūnanga o Waihao and Te Rūnanga o Arowhenua

for

Meridian Energy Ltd and Genesis Energy Ltd

July 2023

Cover photo acknowledgments

Looking north over Ōhau A Power Station at the end of the Pūkaki Canal. The Upper Ōhau River and head of Lake Ruataniwha are in the foreground. The photo is sourced from David Wall Photography.	Looking north across the Tekapo Canal towards Lake Pūkaki. The photo is sourced from David Wall Photography.
Pylons striding across the landscape. The photo is sourced from David Wall Photography.	The construction of the Pūkaki Control Structure. The photo is sourced from GNS

Nā Te Pō, Ko Te Ao	From eternity came the Universe
Nā Te Ao, ko Te Ao Marama	From the Universe, the bright clear light
Nā Te Ao Marama, ko Te Ao Tūroa	From the bright clear light, the enduring light
Nā Te Ao Tūroa, ko Te Kore Tē Whiwhia	From the enduring light, the void unattainable
Nā Te Kore Tē Whiwhia, ko Te Kore Tē Rawea	From the void unattainable, the void intangible
Nā Te Kore Tē Rawea, ko Te Kore Tē Tāmaua	From the void intangible, the void unstable
Nā Te Kore Tē Tāmaua, ko Te Kore Matua	From the void unstable, the void endowed with paternity
Nā Te Kore Matua, ko Te Mākū	From the void of paternity, came moisture
Nā Te Mākū, ka noho i a Mahora nui-ātea	From moisture, came limitless thought
Ka puta ki waho ko Raki	Then came the visible heavens
Nā Raki, ka noho i a Poko hārua te -pō	The visible heavens combined with the great abyss to produce the numberless sorceries and the ultimate calamity!!!
Ka puta ko Aoraki, ko Rakamamao, ko Tāwhirimatea	Thence to Aoraki and the winds and weather
Ko Tū Te Rakiwhanoa	To the creator of the land
Uira ki Te Mahānui a Maui	And the canoe of Māui
Ko Te Ao Takata	And finally to people
Tihei mauri ora!	I cough the breath of life!

Ko te kākahu o te mauka o Aoraki	To the cloak that covers the mountain,
Aoraki me tōna whanau o Rakirua, Rakiroa, Rārakiroa	To the family and brothers
Nā te mauka o Kakīroa me Horokoau	Over to Mt Sefton and Mt Tasman
Ko te whanau o Kā Tiritiri o Te Moana	And to the rest of the family of the Southern Alps
mai i te tane a Haupapa	To the male side of the Tasman Glacier
ki te taha wahine a Aroarokaehe	And to the female side and the Hooker Valley
Huri noa ki te awa tapu ki Kā Roimata o Aoraki	Then over to the source of the “Tears of Aoraki”
Nā te roto o Pūkaki, ko te roto tapu o Takapō	And on to the sacred lakes of Pūkaki and Takapō
Ko te roto o Ohou, ko Te Manahuna te whenua	And to Lake Ōhau and the valley of Te Manahuna
Ki kā huarahi ki te tihi o te mauka o Te Rua Taniwha	And travelling the ancient path to the mountain,
mai i Te Ruataniwha ki Te Ao Marama!	And then to the world of light, Te Ao Marama
Nā te wharenui o Te Whakaahua-a-raki nō Te Maiharoa	And on to the place of the whare of the chief,
Te Maiharoa Ko Te Poho o Rakitāmau,	And the burial mound on Māori Hummock
Mai i Te Kai Hikihiki, ki Ōtamatākou,	And on to Otematata
Ki Te Wharekuri, ki Te Awakino	And Te Wharekuri and Te Awakino
mai i Te Kohurau, ko Oteake	And the mountain Te Kohurau and the place, Oteake
mai i Ote kai ake, ko Te Maerewhenua	And Ote kai ake and Duntroon
mai i Te Awamoko, ki Te Puna o Maru	On to Te Awamoko and the settlement of Te Puna a Maru
ko Korotuaheka te kaika tūturu, i tū ai te whare Tapu o Matiti	And finally arriving at the Waitaki River mouth and the house Matiti

David Higgins (Upoko), Tewera King (Upoko)

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Executive Summary

Kāi Tahu has a long history of active engagement with the Waitaki catchment spanning over eight centuries. The Waitaki Catchment remains of paramount importance to Kāi Tahu. As Manawhenua, the members belonging to the three Papatipu Rūnanga, Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki have a responsibility to assess how the Tekapo and Waitaki Power Schemes (the Schemes) impact their rights, values and practices.

Ngāi Tahu is an amalgam, formed from three main lines of descent which flowed together to make the modern tribe. Te Rūnanga o Ngāi Tahu is recognised for all purposes as the representative of Kāi Tahu Whānui. Te Rūnanga operates according to tikaka, and on the shared understanding throughout Kāi Tahu that tino rangatiratanga rests with hapū and Rūnaka. In accordance with this tikaka, while Te Rūnanga o Ngāi Tahu has been involved throughout this process, it is the Waitaki Rūnaka that have led this process, consistent with their tino rangatiratanga.

The Crown recognised the significance of the Waitaki system in the Ngāi Tahu Claims Settlement Act 1998. Schedules 14 and 72 contain the Statutory Acknowledgements of Aoraki and the Waitaki River respectively, with separate statutory acknowledgements for Lake Ōhau, Lake Pūkaki, Mahi Tīkumu (Lake Aviemore), Takapō and Te Ao Mārama (Lake Benmore).

The Resource Management Act 1991 (RMA) requires comprehensive assessments of effects on the environment, including cultural effects. This document focuses on the impacts of the Waitaki and Tekapo Schemes, how the Generators propose to mitigate those impacts, and, as a result, the extent to which the consent applications are consistent with Manawhenua expectations, informed by Te Tiriti o Waitangi.

The purpose of this Treaty Impact Assessment (TIA) is to identify the effects of the Schemes on the cultural beliefs, values and practices of Kāi Tahu.

The Waitaki lies under the cloak of Manawhenua rangatiratanga and is cared for and managed by Manawhenua to the greatest extent possible, in a manner consistent with kaitiakitanga. The Waitaki Rūnaka wish to engage in a constructive relationship that furthers the practical recognition of their rights, responsibilities and obligations to wai māori. The approach that Manawhenua have taken to discussions with the Generators, and this TIA, reflects the desire of the Waitaki Rūnaka to fulfil obligations and responsibilities to freshwater to the extent currently possible given the existence of the power schemes and the modification of the catchment.

Before identifying the impacts associated with the schemes, a number of fundamental statements need to be stressed:

1. Kāi Tahu have one river that unites all 70,000 iwi members – Ko Waitaki te awa. Our tūpuna go back untold generations and many of our leaders are buried on lands within the catchment. Today's generation, their children's children and all the children of the generations to follow will mihi to Aoraki and the Waitaki River and will continue to identify with the importance of this particular catchment within the wider Kāi Tahu rohe.

2. The issues and impacts presented in this TIA are not concerned with maintaining the existing environment. Maintaining the current state of a highly modified catchment is not an option as the Kaitiaki Rūnaka firmly believe that the lands and waters of the Waitaki need to be restored, enhanced and protected. However, their concern is that a narrow focus on the rivers most affected by infrastructure and its operation to produce electricity, could result in many of the opportunities for Manawhenua and options for restoration and enhancement of mahika kai and Kai Tahu connections with whenua and wai in the catchment as a whole, being lost or limited.
3. When assessing the impacts of the Schemes on their rights beliefs and practices, Kāi Tahu cannot only focus on the impact of the Schemes on today's generation. Using mahika kai as an example; Kāi Tahu have the right to benefit from mahika kai sourced from the catchment as long as they protect forever the integrity of what makes the Waitaki a mahika kai. A key focus therefore had to be how to enable future generations to thrive in the catchment.

It is with these obligations in mind that the direct and indirect impacts of the Schemes have been identified.

Our whānau are concerned by the ongoing effects of the Schemes and for this reason support taking a catchment wide approach to restoration and enhancement and priority setting – as is their right as Rangatira and Kaitiaki. Kāi Tahu are of the view that the effects of the developments in the Upper and Mid Waitaki, and the resultant river flows, allocations and management regimes across the Waitaki have negatively affected Kāi Tahu rights and interests and have adversely affected experiences and opportunities for whānau in the catchment.

Particular effects in the Waitaki include:

- Wāhi tapu and wāhi taoka have been inundated and lost resulting in named and active associations being broken and Kāi Tahu relationship with areas and the taoka they are supposed to sustain being weakened and damaged – in some places irrevocably.
- Previously valuable mahika kai have been similarly destroyed and, in some instances, access to existing resources has also been adversely affected.
- Fish movement within river systems has been disrupted; both of juveniles into the system and of mature adults attempting to leave the system. The long-term effectiveness of recent attempts to mitigate these effects on fish passage – through trap and transfer - is still uncertain.
- Artificial lake systems are typically adopted enthusiastically by recreational users who then develop these areas as recreational fisheries and boating areas. This results in the further dilution of Kāi Tahu rights and interests in these areas.
- As with existing water allocation regimes in waters throughout the Kāi Tahu rohe, Kāi Tahu property interests in the ownership, management, usage and access to freshwater resources are not recognised or prioritised and are subordinate to economic interests, in particular agriculture and tourism. Mahinga kai is also often incorrectly interpreted as limited to 'instream' values.
- The natural character of the catchment is irrevocably altered.

- The “minimum” flows are not considered adequate for the maintenance of the mauri of rivers.
- Dam construction can have serious environmental implications and can damage fishery and other mahika kai interests, sometimes irrevocably[1].
- Dams have interrupted the continuity of water flow from the mountains to the sea, which conflicts with the Kāi Tahu philosophy of “Ki Uta, Ki Tai”.
- Dams trap sediment and coarser materials needed to replenish the eroding coastal environments, which are heavily used by whānau.

As a controlled activity, the Schemes will be reconsented. Within the consenting process, Kāi Tahu are committed to developing with Generators initiatives that contribute towards:

- protecting Aoraki and kā roimata o Aoraki
- supporting abundant mahika kai, particularly in important wetlands, side braids, backwaters, tributaries and the Waitaki River itself;
- protecting the quality of the waters of the Waitaki;
- conserving remaining rock art sites;
- protecting other wāhi tapu / wāhi taoka;
- protecting cultural landscapes;
- developing more appropriate flow regimes across the catchment;
- ensuring variability in river flows;
- providing a sufficient buffer, or safety margin, to mitigate against the adverse effects of changing land uses on the waters of the Waitaki;
- undertaking the restoration, enhancement and creation of wetland areas, to act both as flow moderators and kohaka for mahika kai species;
- enhancing access for cultural use throughout the river system;
- addressing issues relating to changing land uses in the catchment, in particular the increase in dairying; and
- protecting habitats in the lagoon.

Waitaki Rūnaka are particularly aware of the statutory imperatives set out in frameworks such as the National Policy Statement Freshwater 2020 (MFE, 2020) and the requirement to define Te Mana o te Wai. As Rangatira and Kaitiaki, Manawhenua are cognisant of their right and responsibility to define how Te Mana o te Wai is interpreted in the context of their rights and interests. Further, it is for Manawhenua to determine the timeframe and priorities for implementing the initiatives that they believe are necessary to give effect to the hierarchy and principles of Te Mana o te Wai. Chapter 6 – after the identification of impacts – discusses Te Mana o te Wai in the context of the unique Waitaki catchment.

In summary, the Waitaki Rūnaka have approached discussions with the Generators intending to set a pathway whereby, over time, adverse effects will be addressed. Waitaki Rūnaka believe that the consent conditions, the agreed package of interventions and the enhanced relationship negotiated with the Generators will enable an intergenerational response that will result in the following adverse effects being avoided, remedied or mitigated.

- any deterioration to the quality of water in the mainstem and the tributaries;

[1] Although dam removal is an option being explored internationally this is not seen as an option in the Waitaki at present.

- unnatural changes to the sediment flow and patterns of deposition in the main river channel and at the coastal area;
- any encroachment of adjacent land uses onto the Waitaki riverbed;
- the residual flow regime in the mainstem resulting in extended periods of low flows with limited flow fluctuations;
- residual flow regimes that fail to recognise the property interests of Kai Tahu;
- any further dewatering or loss of tributaries, wetlands, side braids, springs, backwaters, adjacent to or surrounding mahika kai throughout the lower catchment;
- any desecration of urupā within the valley;
- any further loss of rock art;
- any further loss of access to sites of significance, especially remaining mahika kai;
- any further loss of mahika kai in particular habitats essential for taoka species;
- any reductions in the size of the lagoon, and unnatural changes to the nature and composition of the river mouth;
- any loss of wāhi tapu and wāhi taoka;
- changes in water temperature at key mahika kai sites affecting mahika kai; and
- impacts on the lakes and tributaries of the Mid and Upper Waitaki

An additional outcome sought by Kāi Tahu, when the Schemes are reconsented, is the development and implementation, in conjunction with Kāi Tahu, of an agreed monitoring program. Kāi Tahu also expects that the Generators and their successors will undertake remedial action should monitoring show that an unanticipated adverse effect is being experienced.

Waitaki Rūnaka have recognised and balanced the significance of the waters of the Waitaki alongside the significance of the hydro electricity generation to the nation. Adopting an intergenerational approach to implementing Te Mana o te Wai recognises the scale of the challenge in the Waitaki and the need to start on a pathway. Waitaki Rūnaka have therefore worked collaboratively with the Generators during the pre-consenting process to develop a package that includes:

1. Conditions that are to be attached to the resource consents that:
    a. Address issues of concern to Waitaki Rūnaka;
    b. Monitor issues of concern to Waitaki Rūnaka; and
    c. Collect data needed to increase understanding of the operation of the scheme in order to make informed choice for future changes.
2. A package of initiatives that will run for the duration of the consent that will provide funding for rock art conservation and tuna management (including an expanded trap and transfer program).
3. An enhanced relationship agreement between the Generators and Waitaki Rūnaka; and
4. A funding package.

The four components of this package recognise that Te Mana o te Wai implementation requires time, capacity, commitment, collaboration and, importantly resourcing. Collectively, the components recognise that Waitaki Rūnaka are realistic in how far and how fast they can move towards implementing Te Mana o te Wai and realising their aspirations, without compromising on their long-

term vision for the Waitaki. The package agreed with Generators enables Waitaki Rūnaka to derive benefits, while the nation retains access to the use of freshwater for renewable electricity generation.

"Ko tā te Waitaki mahi he manaaki i te motu"

"The generosity of the Waitaki provides for the nation"

PART 1

Chapter 1

1.1 Introduction

Kāi Tahu has a long association and involvement with the Waitaki catchment, and it remains of paramount importance to the iwi. The Crown has recognised this significance in the Ngāi Tahu Claims Settlement Act 1998. Schedules 14 and 72 contain the Statutory Acknowledgements of Aoraki and the Waitaki River respectively. Other waterbodies in the Waitaki catchment recognised through statutory acknowledgements are Lake Ōhau (Schedule 32), Lake Pūkaki (Schedule 34), Mahi Tīkumu (Lake Aviemore) (Schedule 37), Takapō (Schedule 57) and Te Ao Mārama (Lake Benmore). As Manawhenua, the members belonging to the three Papatipu Rūnaka, Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki have a responsibility to assess how the Schemes impact their cultural, beliefs, values and practices.

In most parts of South Canterbury and North Otago water is a scarce resource. To a great extent the pattern of development within these two regions has followed the sources of water. The possession of water and the ability to use it has determined, in part, who thrives and who perishes. Kāi Tahu is not divorced from this fight as the tribal culture and ways of life are closely tied to the land and water.

The last hundred years have shown that the waters of the Waitaki Catchment are a resource that can be dammed, stored, diverted, directed and divided by physical structures. However, water management decisions involve more than just water itself; they involve the structures necessary to convey the water and put it to use. This Treaty Impact Assessment (TIA) is intended to inform the decision-making of the consent authority when it decides the terms and conditions upon which the Schemes are to be reconsented.

1.2 The 1990 consenting process.

This consenting process represents the first meaningful opportunity for Waitaki Rūnaka to voice their experience of losses and effects associated with the two hydro schemes. Although a participatory working party process was used in the 1990 consenting process, it must be recognised that Kāi Tahu whānau were heavily engaged in Waitangi Tribunal hearings and did not engage until late in that process. Having the opportunity to share these with the Boards and Senior Executives of both Generators was appreciated and an important part of the discussions.

1.3 A single Treaty Impact Assessment

Genesis Energy Ltd (GEL) and Meridian Energy Ltd (MEL) are distinct companies owning and operating the Tekapo Power Scheme and the Waitaki Power Scheme respectively. Each is managing the consenting process for their Scheme.

Waitaki Rūnaka, however, recognise the Waitaki as one river system, that has been profoundly impacted over successive generations through the construction of hydro electrical infrastructure. A single TIA has been prepared and forwarded to each of the Generators to recognise and emphasise that the Waitaki is one system.

1.4 Methodology used for Impact Identification

The methodology utilised to prepare this TIA was to:

(a) Undertake hīkoi to the catchment with Generators to familiarise Manawhenua and their advisers with the infrastructure and the range of consents needed.

(b) Work with members of the Waitaki Rūnaka to ensure that the significance of the Waitaki River to Kāi Tahu is conveyed to the Generators.

(c) Identify Manawhenua values associated with the Waitaki Catchment that have been impacted by the construction and ongoing operation of the Schemes.

(d) Review any environmental and cultural information on the Waitaki River to the extent that the information is relevant to the impact of the Schemes (e.g., previous CIAs, cultural monitoring reports, Iwi Management Plans).

(e) Prepare maps and photographs, as appropriate, that identify the extent and/or location of the values and impacts (accepting that some precaution may be needed to avoid the precise identification of the location of certain taoka).

(f) Assess whether the Schemes will have any negative or positive effects on Manawhenua values, and the significance of the effects.

(g) Collaborate with representatives of the Generators to discuss how the effects could be mitigated or remedied via a separate agreement, conditions to consents, or via an enhanced relationship agreement between the Generators and Waitaki Rūnaka.

The four principal sources of information were the written records held by Kāi Tahu, hīkoi to the catchment by Manawhenua, previous field surveys (mahika kai, cultural assessments[2]), and wānaka with members of Ngāi Tahu whānui. This information should be considered as valid and demanding of respect when considering the evidence of impacts. Sadly, over the years that hydro infrastructure has been in place in the valley, the living sources of information of the cultural impacts of hydro development in the form of kaumatua who possess the knowledge of the system, are passing away.

Working parties, comprising representatives of the Generators and Manawhenua, were invaluable for discussing specific issues. The range of methods utilised to identify both the beliefs, values and practices, and the potential effects, demonstrates good faith by Manawhenua to fully identify the impacts on the catchment.

1.5 Consultation timeline and Working Parties

The process to discuss the impact of the schemes and possible means of redress has followed a comprehensive process that has taken a number of years to finalise. Some (key) dates are:

[2] Tipa et al (2002), Tipa et al (2015).

- Native Fish Hui — 28 November 2018
  To discuss Native Fish Study[3]
- Waitaki Dam Elver Field Trip — 25 January 2020
- Hui to set up Joint Working Party Hui — 28 February 2020
- Hīkoi throughout the catchment — 27 & 28 October 2020
- Native Fish Hui — 22 November 2020
  To report back Native Fish Study
- Joint Working Party Hui — 12 August 2021
  (Rūnaka presentation of loss and effects)
- Rūnaka letter to Generators — 15 November 2021
- Generators letter to Rūnaka — 24 November 2021
- Generators first offer of package — 2 December 2021
- Genesis and Meridian Boards' Hui — 12 July 2022
- Rūnaka first comprehensive proposal Hui — 20 July 2022
- Generators letter to Rūnaka — 9 August 2022
- Rūnaka letter to Generators — 15 August 2022
- Rūnaka Chairs to Generators Chairs Hui — 28 April 2023

Between May and June 2023 communications accelerated as the Generators worked to finalise their consent applications and, with the Rūnaka, the suite of mitigations was agreed.

In addition to these Joint Working Party meetings and hīkoi there were a number of working groups discussing different aspects that were to form the basis of the agreement.

Partnership Working Group

The Working party met on three occasions in early 2022.

Manawhenua	Manawhenua Advisors	Generators
John Henry Justin Tipa Sara Severinsen Gail Tipa	Bruce Wattie Chris Ford Gabrielle Huria Kieran Robinson Rachel Robilliard Craig Armitage	Hamish Cuthbert Jeff Page Karen Sky Alice Barnett Angus Judge Ellie Watson (part)

Mahika Kai / Wāhi Taoka Working Group

The Working party met on six occasions in 2022.

Manawhenua	Manawhenua Advisors	Generators
Jennifer Thomas John Henry Tewera King Suzanne Eddington Sara Severinsen Gail Tipa	Amanda Symonds	Jeff Page Alice Barnett

[3] This forms part of the Meridian Energy Ltd AEE.

Consents Working Group

The Working party met on least 12 occasions 2022/23.

Manawhenua	Manawhenua Advisors	Generators
Sara Severinsen Gail Tipa	Rachel Robilliard Ben Williams Philippa Lynch Treena Davidson Lynda Murchison	Jeff Page Alice Barnett

Loss Working Group

The Working party met on a number of occasions.

Manawhenua	Manawhenua Advisors	Generators
Fiona Pimm Jennifer Thomas Sara Severinsen Gail Tipa	Barry Bragg Bruce Wattie Chris Ford Kieran Robinson Craig Armitage	Guy Waipara Nigel Clark Karen Sky Jeff Page

Peer Review

The Assessment of Environmental Effects is informed by many technical reports. An important step that assisted Waitaki Rūnaka with their understanding of the operation of the Schemes and their Impacts was a peer review process that was managed by Philippa Lynch, aided by Susan Aitken.

1.6 Structure of this assessment

There are three parts to this TIA.

Part 1 is the introductory section that explains the purpose and structure of the TIA.

Part 2 provides the legal and Treaty context for the consent discussions with the Generators. This part has been prepared with assistance from Chapman Tripp.

Part 3 provides a summary of impacts of the scheme on Manawhenua. It then proceeds to discuss these impacts within the context of Te Mana o te Wai. This part has been prepared by Gail Tipa from Tipa and Associates Ltd.

Having different authors, with differing professional backgrounds, drafting the respective sections of the TIA means that it is inevitable that writing styles differ.

Note that the Kāi Tahu dialect uses a ‘k’ interchangeably with ‘ng’, and this document reflects this approach.

PART 2

Chapter 2

2.1 Purpose of this Treaty Impact Assessment

This Treaty of Waitangi / Te Tiriti o Waitangi (Te Tiriti) assessment relates to the Waitaki and Tekapo Power Schemes operated by MEL and GEL (together, the Generators).

This assessment is a living document and will be updated as required to respond to changing circumstances. This part of the assessment addresses the relevance of Te Tiriti to the re-consenting proposal.

The Resource Management Act 1991 (RMA) requires comprehensive assessments of effects on the environment, including cultural effects. Instead of focusing on the cultural values, interests and associations with the Waitaki (which are well documented elsewhere), this document focuses on the impacts of the Waitaki and Tekapo Schemes, how the Generators propose to mitigate those impacts, and, as a result, the extent to which the consent applications are consistent with Manawhenua expectations, informed by Te Tiriti. This approach is both necessary and appropriate, given the context of the significant importance of the Waitaki to Kāi Tahu, and the direct relevance of Te Tiriti.

As an indigenous cultural assessment, this document reflects the aspirations of the Manawhenua side of the Treaty partnership and is intended to contribute to a Treaty-compliant resource management regime. The Waitangi Tribunal (2011) defined this as a regime that enables iwi/hapū to express tino rangatiranga in their traditional territories and is capable of delivering effective influence and appropriate priority to kaitiaki interests. That is the purpose of this assessment. Te Tiriti and, to an extent, the RMA, establish Manawhenua as partners in environmental decision-making (Ruckstuhl et al 2014). It is for this reason that this Treaty-based impact assessment model does not relegate Manawhenua to the status of stakeholder.

As a reflection of good practice (Jolly, 2016), this assessment:

- has been developed through a process that was on Manawhenua terms and led by Manawhenua;
- is Te Tiriti based, as the legal framework that requires that such an assessment be taken seriously (Ruckstuhl et al. 2014); and
- strictly avoids narrow definitions of cultural effects, to prevent the marginalisation of Manawhenua in this process.

This document should be given the weight and respect akin to a planning document recognised by Manawhenua, as a comprehensive assessment that reflects the perspective of those holding and exercising rangatiratanga in the Waitaki.

Chapter 3

3.1 Origins of Ngāi Tahu in Te Waipounamu

Kāi Tahu take their name from Tahupōtiki, a descendant of Paikea. Sometime in the seventeenth century his descendants gradually migrated south from the Poverty Bay-Hawkes Bay area, travelling first to the Wellington coast and then crossing Raukawamoana (Cook Strait) in several waves to Te Wai Pounamu. Over a number of generations, they spread through Te Waipounamu and on to Rakiura (Stewart Island) (Wai 27, Chapter 3).

As Kāi Tahu moved south, they sometimes fought and defeated, and sometimes intermarried with, other tribes. In doing so they absorbed these peoples' older knowledge and experience of the land and its resources, forging links with more ancient history and resources. Kāi Tahu is therefore an amalgam, formed from three main lines of descent which flowed together to make the modern tribe (Wai 27, Chapter 3).

These three tribes can be described as:

- First, Waitaha, being also a collective name given to a number of ancient tribal groups which occupied Te Waka o Aoraki (South Island), descending from the founding ancestor Rakaihautu of the Uruao canoe.
- The second tribe, Kāti Mamoe came from the Heretaunga (Napier) area around the sixteenth century and gradually filtered through the South Island to intermarry with Waitaha and assume control.
- The third, Kāi Tahu, also migrated from the eastern region of the North Island and gradually united with Kāti Mamoe, absorbing Waitaha at the same time and inheriting many traditions.

By the time of Te Tiriti, Kāi Tahu were in control of a vast territory, but existed in hapū and whānau communities, with different genealogies, often reflecting the mixed origins of the tribe (Wai 27, Chapter 3).

3.2 Te Rūnanga o Ngāi Tahu

Te Rūnanga o Ngāi Tahu is the present iteration of a process that has spanned nearly two centuries, involving at various times tribal councils, tribal parliaments at Otakou, Kaiapoi, and Temuka and the Ngāi Tahu Māori Trust Board.

On 6 September 1991, the Waitangi Tribunal issued a *'Supplementary Report on Ngāi Tahu Legal Personality'* to its Minister recommending the Minister of Māori Affairs introduce legislation constituting a Ngāi Tahu Iwi Authority. The Tribunal noted in that report that Kāi Tahu had engaged widely with tribal members and that:

> *'Te Runanganui o Tahu' has been formed which is recognised as the real 'owners' of Ngai Tahu and the repository of the tribe's collective tino rangatiratanga. Ngai Tahu affirm that tino rangatiratanga resides ultimately in the papatipu runanga which comprise the runanganui.*

The Te Runanga o Ngai Tahu Bill was introduced to Parliament by Hon Doug Kidd in mid-1993 but was not passed until 1996. It was passed as a Private Act, for the particular interest and benefit of

Ngāi Tahu Whānui. The 1996 Act says Te Rūnanga o Ngāi Tahu was established for the benefit of, and as the representative of, "*Ngāi Tahu Whanui*". That Act states that:

- Te Rūnanga o Ngāi Tahu shall be recognised for all purposes as the representative of Kāi Tahu Whānui.
- Ngāi Tahu Whānui "*means the collective of the individuals who descend from the primary hapu of Waitaha, Ngāti Mamoe, and Ngāi Tahu, namely, Kati Kuri, Kati Irakehu, Kati Huirapa, Ngāi Tuahuriri, and Kāi Te Ruahikihiki*".
- Where any enactment requires consultation with any iwi or with any iwi authority, that consultation shall, with respect to matters affecting Ngāi Tahu Whānui, be held with Te Rūnanga o Ngāi Tahu.

The 1996 Act specifies the charter of Te Rūnanga o Ngāi Tahu as the charter adopted at a meeting of representatives of the Papatipu Rūnanga of Ngāi Tahu Whānui at Aparima on 21 August 1993. The Kaupapa Whakakotahi of the charter adopted at Aparima, as recognised by the 1996 Act, is that the poupou of the House of Tahu are the Papatipu Rūnanga of our people, each with their own mana and woven together with the tukutuku of our whakapapa. In them resides the tino rangatiratanga of Ngāi Tahu. Its collective voice is Te Rūnanga o Ngāi Tahu.

Te Rūnanga o Ngāi Tahu sits at the centre of an integrated system that supports Kāi Tahu hapū and Rūnaka throughout the takiwā. Te Rūnanga operates according to tikaka, and on the shared understanding throughout Kāi Tahu that tino rangatiratanga rests with hapū and Rūnaka.

In accordance with this tikaka, while Te Rūnanga o Ngāi Tahu has been involved in and kept informed by Manawhenua throughout the process of discussing applications for renewing consents for the Waitaki and Tekapo Schemes, it is the Waitaki Rūnaka that have led this process, consistent with their tino rangatiratanga.

3.3. Waitaki Rūnaka

The Papatipu Rūnaka of Kāi Tahu whānui representing Manawhenua for the Waitaki Catchment are Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki.

Te Rūnanga o Arowhenua

The takiwā of Te Rūnanga o Arowhenua centres on Arowhenua and extends from Rakaia to Waitaki, sharing interests with Ngāi Tūāhuriri ki Kaiapoi between Hakatere and Rakaia, and thence inland to Aoraki and the Main Divide (Te Rūnanga o Ngāi Tahu (Declaration of Membership Act) Order 2001). Arowhenua marae is located near Te Umu Kaha (Temuka) and is situated near the historic Kāi Tahu kāika of Te Waiateruati and the well-known Arowhenua bush that sustained local Kāi Tahu. Arowhenua connects ancestrally to the waka Takitimu and Ārai-te-uru, the mauka Tarahoua and the awa Waitaki and Opihi. The Kāi Tahu name for The Main Divide is Kā Tiritiri-o-te-moana.

Te Rūnanga o Waihao

The takiwā of Te Rūnanga o Waihao centres on Wainono, sharing interests with Te Rūnanga o Arowhenua to Waitaki, and extends inland to Omarama and the Main Divide (Te Rūnanga o Ngāi Tahu (Declaration of Membership Act) Order 2001). Manawhenua within the Waihao rohe whakapapa to Waitaha, Kāti Māmoe and Kāi Tahu. To these people Waihao is their tūrakawaewae; their home. The name Waihao refers to the hao tuna, an important food resource obtained from the Waihao River that has its beginnings in the upland country behind the hills, Te Tari-a-Te-Kaumira (Hunter Hills). The

hao tuna, the life-stage of the short-fin tuna, was and still is a delicacy to whānau who gather mahika kai from the Wainono Lagoon and the Waihao River.

Te Rūnanga o Moeraki

The takiwā of Te Rūnanga o Moeraki centres on Moeraki and extends from Waitaki to Waihemo and inland to the Main Divide (Te Rūnanga o Ngāi Tahu (Declaration of Membership Act) Order 2001). The interests of Te Rūnanga o Moeraki are concentrated in the Moeraki Peninsula area and surrounds, including Te Rakahineatea Pā, Koekohe (Hampden Beach), and Te Kai Hinaki (the Boulders Beach) with its boulders. In addition, the interests of the Rūnaka extend both north and south of the Moeraki Peninsula, within their takiwā.

Collective Manawhenua over the Waitaki

The Waitaki Iwi Management Plan explains that:

- Over many generations, Waitaki Rūnaka whānau and hapū have developed a powerful sense of belonging in the Waitaki catchment.
- Manawhenua have lived in the Waitaki for the last thousand years.
- In the last two hundred years the landscape has changed dramatically but its significance to Manawhenua has not.
- Manawhenua relationship with the Waitaki brings responsibilities and obligations.

This document is a reflection of the sense of belonging, responsibilities and obligations of Manawhenua as rangatira over, and kaitiaki of, the Waitaki.

3.4 Kāi Tahu Whānui

After many years of negotiations, Kāi Tahu signed the Deed of Settlement for its historic claims against the Crown at Kaikoura on 21 November 1997, and the Ngāi Tahu Claims Settlement Act was passed on 29 September 1998. The Kāi Tahu settlement was expressed on the basis that it was full and final with regard to the specified claims of Kai Tahu Whānui. Importantly, the validity of the Deed of Settlement cannot be undermined.

The legislation records Ngāi Tahu Whānui tikaka that Te Rūnanga o Ngāi Tahu is "*recognised for all purposes as the representative of the Ngāi Tahu Whānui*". Ngāi Tahu Whānui is defined as "*the collective of the individuals who descend from the primary hapu of Waitaha, Ngāti Mamoe, and Ngāi Tahu, namely, Kati Kuri, Kati Irakehu, Kati Huirapa, Ngāi Tuahuriri, and Kāi Te Ruahikihiki*" (Te Rūnanga o Ngāi Tahu Act 1996, ss 6 and 15).

For the avoidance of doubt, Waitaha in Te Waipounamu is part of Ngāi Tahu Whānui. The plain words of the Te Rūnanga o Ngāi Tahu Act 1996 state Te Rūnanga is the representative of Waitaha and other Ngāi Tahu Whānui. The Ngāi Tahu settlement has settled all Waitaha claims in Te Waipounamu (as part of Ngāi Tahu Whānui) that are specified in the Deed of Settlement (Ngāi Tahu Deed of Settlement, cl 1.2.1; and Ngāi Tahu Claims Settlement Act 1998, s 10), and Te Rūnanga o Ngāi Tahu is to be recognised for all purposes as the representative of Ngāi Tahu Whānui.

Chapter 4

4.1 Kāi Tahu rangatiratanga

To Kāi Tahu, rangatiratanga means chiefly sovereignty, authority and autonomy. Rangatiratanga is exercised by leaders (rangatira) of an iwi or hapū and is closely related to and derived from the concept of mana. In exercising rangatiratanga leaders must make decisions that consolidate and improve the mana of the wider whānau, hapū and iwi.

Kaitiakitanga is an inherited obligation on mana whenua to maintain the hauora of the taiao and the mauri of the resources of the takiwā to sustain current and future generations. Rangatiratanga and kaitiakitanga go hand-in-hand: only those who hold rangatiratanga can and must exercise kaitiakitanga.

Wai māori is a key taonga for Kāi Tahu and, as guaranteed by Te Tiriti, Kāi Tahu continues to hold rangatiratanga over wai māori, which includes rights, responsibilities and obligations. Importantly, the Ngāi Tahu Claims Settlement Act 1998 recognised Ngāi Tahu as tāngata whenua of, and holding rangatiratanga within, the Ngāi Tahu takiwā (NTCSA, s 6):

> *The Crown apologises to Ngāi Tahu for its past failures to acknowledge Ngāi Tahu rangatiratanga and mana over the South Island lands within its boundaries, and, in fulfilment of its Treaty obligations, the Crown recognises Ngāi Tahu as the tāngata whenua of, and as holding rangatiratanga within, the Takiwā of Ngāi Tahu Whānui.*

The Environment Court has recognised that, where it finds that certain hapū have the right to exercise rangatiratanga or customary authority over an area, the finding means that it is the tikanga of those hapū which must be applied (*Ngāi Te Hapū v Bay of Plenty Regional Council*).

The Waitaki lies under the cloak of Manawhenua rangatiratanga and is cared for and managed by Manawhenua to the greatest extent possible, in a manner consistent with kaitiakitanga.

As current legislation and regulation does not provide adequate recognition of rangatiratanga, Ngāi Tahu has lodged a claim in the High Court. This Treaty assessment is provided without prejudice to these ongoing legal proceedings. It is the right and responsibility of Kāi Tahu to protect freshwater as under the current framework, while pursuing recognition of rangatiratanga through the courts and in negotiations with the Crown.

The Waitaki Rūnaka wish to engage in a constructive relationship that furthers the practical recognition of their rights, responsibilities and obligations to wai māori. The approach that Manawhenua have taken to discussions with the Generators, and this TIA, reflects the desire of the Waitaki Rūnaka to fulfil obligations and responsibilities to freshwater to the extent currently possible.

4.2 Manawhenua recognised by the RMA

The Environment Court has found that kaitiaki have a right to protect the history of their cultural and customary associations to an area (*Ngāi Te Hapū v Bay of Plenty Regional Council* [2017] NZEnvC 73 at [88]). In a Kāi Tahu context, the Environment Court in *Aratiatia Livestock Ltd v Southland Regional Council* has commented that it is the responsibility of kaitiaki to ensure that water is available for future generations in as good as, if not better, quality, and tikanga goes beyond any rights or

obligations that may attach to the use of water (*Aratiatia Livestock Ltd v Southland Regional Council* [2019] NZEnvC 208 at [50]).

The recognition of Manawhenua in an RMA context has been summarised in findings of Whata J in *Ngati Maru Trust v Ngati Whatua Orakei,* which discusses the comprehensive provision for Māori and iwi interests in the RMA ([2020] NZHC 2768):

- section 104 of the RMA, which provides a power to grant resource consents, is expressly subject to Part 2 of the Act, which outlines "numerous mandatory considerations concerning a wide range of matters" that, alongside Part 2, provide scope for consideration of Manawhenua;

- citing Lord Cooke in *McGuire v Hastings District Council*, sections 6(e), 7(a) and 8 of the RMA are "*focal points*" of "*special significance*" and "*strong directions, to be borne in mind at every stage of the planning process*", going on to note that "*As stated by the Supreme Court in New Zealand King Salmon Co Ltd, planning instruments may set the frame for resource management decision-makers without further need to refer to pt 2"*;

- the RMA is "*replete*" with references to kupu Māori, and Parliament "*plainly anticipated that resource management decision-makers will be able to grasp these concepts and where necessary, apply them in accordance with tikanga Māori*";

- case law over the last 30 years demonstrates "*an evolving understanding and application of mātauranga Māori and tikanga Māori*";

- "*While tikanga Māori is defined in the RMA as* "customary values and practices" *it has come to be understood as a body of principles, values and law that is cognisable by the Courts*";

- iwi involvement in policy and plan promulgation is also anticipated by the RMA "*and that iwi and hapū with defined customary rights will be specifically provided for where relevant*", including through preparation of Mana Whakahono a Rohe agreements, which demands that persons making decisions under the RMA can "*identify, involve and provide for iwi and their manawhenua in accordance with mātauranga Māori and tikanga Māori*";

- "*The statutory obligation to recognise and provide for the relationship of Māori and their culture and traditions with their whenua and tāonga, to have to regard to their kaitiakitanga and take into account the principles of the Treaty of Waitangi, does not permit indifference to the tikanga-based claims of iwi to a particular resource management outcome*";

- decision-makers exercising functions under the RMA are necessarily engaged in ascertaining tikaka Māori in order to discharge statutory directions in Part 2 outlined above and must "*meaningfully respond*" to claims by iwi that a particular resource management outcome is required to meet those statutory outcomes, which may require evidential findings of how "*kaitiakitanga, in accordance with tikanga Māori, is to be provided for in the resource management outcome*".

In light of the above, this TIA sets out the process through which tikaka was followed in preparing for these consent applications, and the outcome reached that Waitaki Rūnaka support the granting of consents, with appropriate mitigation, is informed by tikaka. This must be respected throughout the consenting process.

4.3 Te Tiriti o Waitangi

The position and interests of the Waitaki Rūnaka are informed by Te Tiriti, on the basis that Te Tiriti:

- is a founding constitutional document for New Zealand;
- is the primary nexus between tikaka Māori and the laws of England, which today form the laws of New Zealand; and
- guaranteed for Māori tino rangatiratanga, the unqualified exercise of chieftainship, over lands, villages, and all their property and treasures.

There are many New Zealand laws which have referred to the principles of the Treaty. The first law to do so was the Treaty of Waitangi Act 1975, which established the Waitangi Tribunal. Principles have been used as a means of reconciling the differences between the texts, being Te Tiriti (the Māori version), and the Treaty (the English version). In 1983 the Waitangi Tribunal said, *'The spirit of the Treaty transcends the sum total of its component written words and puts literal or narrow interpretations out of place.'* Although recognising that the principles evolve over time and vary depending on the context and issues at play, the following principles are relevant (both procedurally and substantively) and are engaged here.

4.3.1 Rangatiratanga

This can be referenced directly with Article 2 of the Treaty and includes ideas and values around sovereignty, leadership, autonomy, and self-determination, as discussed above. Within this are concepts around stewardship and looking after others (in this case that includes both members of Waitaki Rūnaka and wider New Zealand) along with ensuring well-being.

4.3.2 The Principle of Partnership

This requires that the Crown work together with iwi, and within that owe each other duties of fair conduct and good faith, including through the Crown respecting Manawhenua interests. This is not consultation but rather 'co-operation' in light of the obligation of good faith and partnership to each other.

4.3.3 The Principles of Reciprocity and Mutual Benefit

These reflect the equal status of the Treaty Partners and including an obligation to enable Māori wellbeing. This is important as the agreed arrangements between Waitaki Rūnaka and the Generators will provide for the wellbeing of Manawhenua and the wider population of New Zealand.

4.3.4 A duty to make informed decision

Any Crown agent, in exercising their statutory functions, is under a duty to make fully informed decisions. In this instance it is essential that the perspectives of Waitaki Rūnaka are properly explored and understood, which is the purpose of this TIA. In light of this principle, this document and the wider position of Waitaki Rūnaka must be respected and understood, and this TIA should therefore be treated with respect.

4.3.5 The Principle of active protection

This principle is a positive obligation on the Crown to protect Māori interests. It includes a duty on the Crown to protect Māori rangatiratanga. We emphasise that:

- Enabling Waitaki Rūnaka is central to the principle of active protection;

- Waitaki Rūnaka views are expressed in this document and must be carefully considered and understood by the decision-maker.

The discussion above is not intended to be exhaustive.

PART 3

Chapter 5: Identification of the losses and effects

5.1 Introduction

Kāi Tahu have, for generations, voiced their concerns at the continual development of the waterways within their rohe. Many are degraded as a result of what Kāi Tahu perceive as inappropriate use and development. In the last two decades, Kāi Tahu have become more vocal in seeking greater recognition of its cultural beliefs, values, and practices. Some non-Māori fear that increased recognition of cultural values will threaten the existing economy and bring development to a halt. Kāi Tahu, on the other hand, fear that a failure to recognise their customary and Te Tiriti rights will constrain their autonomy and ultimately could destroy many of the foundations of the culture and identity. This tension has surfaced in many forums in recent years, particularly resource consent hearings. However, Kāi Tahu, as rangatira and kaitiaki, are obligated to identify the effects (positive and negative) of resource use and development on their cultural, beliefs, values and practices.

5.2 The Hydro Schemes of the Waitaki

To harness the power of the Waitaki River, multiple hydropower stations in the Waitaki were constructed, which involved construction of a dam to create a lake for water storage. This lake is then used to generate electricity by passing the water through turbines located within the hydropower station. In the more complex hydropower scheme in the Upper Waitaki Catchment, canals were used to transport water to hydropower stations constructed on these artificial canals e.g., Tekapo B, Ōhau A, B and C stations.

As early as 1904 a report by Mr P.S. Hay (Superintending Engineer of the Public Works Department) identified the hydro-electric potential of the Waitaki River. Some of the recommendations from this report are included below:

> *"The Tekapo River is the largest volume of water at a very high level (2323 feet above the sea) available for power purposes in the colony…the question of how to best utilize the water flowing from this lake, in whole or in part, for the generation of power is one of interest, even though the complete carrying out of so vast a scheme is quite beyond present requirements….trial lines for races have been run from Tekapo to Pūkaki…the line to Pūkaki Lake has a final fall of 600feet between the end of the race and the lake. …the lake level (of Tekapo) could be raised by 50feet"*

"…Lake Pūkaki could be made use to develop power. The flow from this lake is very large. The water could be raised by a dam and then carried down the terraces as far as possible".

"For Lake Ōhau "a dam of 70feet or more could be built at the outlet of the lake and there would be a smaller dam likely to be required to the west of the outlet to close an old channel".

"Below the junction of the three streams from the lakes, the Waitaki continues to flow over a wide shingle bed for about eight miles; then the hills close in and at about ten miles down a dam might

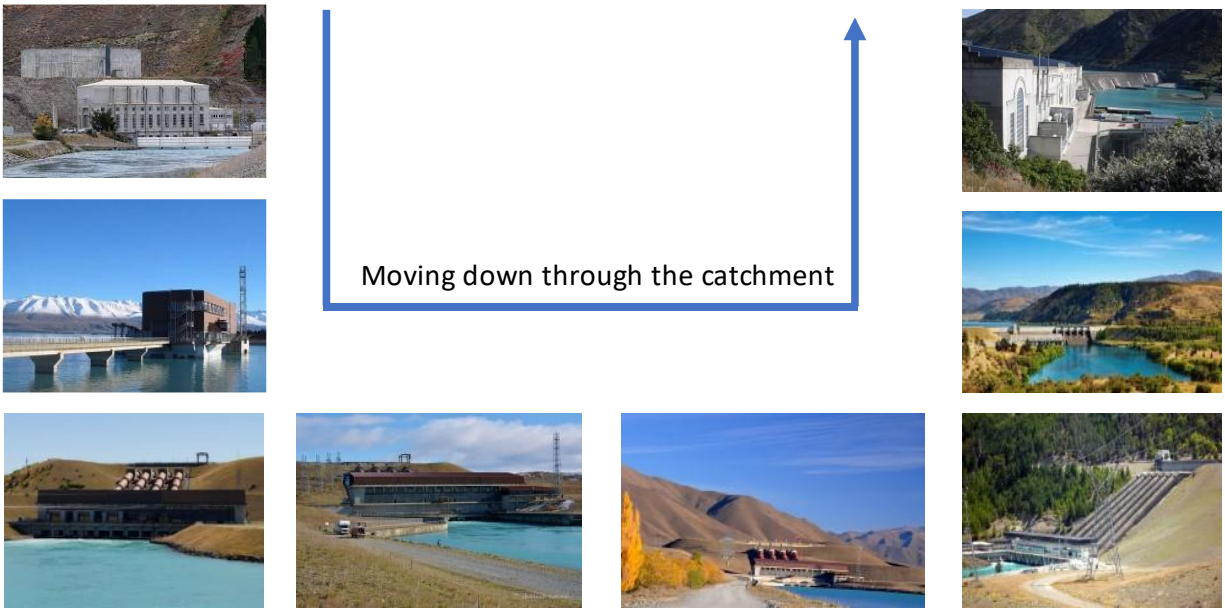
be built to utilize the water. Further downstream at the Gooseneck about one mile in a straight line above the junction of the Ahuriri River, a dam could be built or at the best place in the bend… the Waitaki might also be dammed a few miles above Kurow, but I did not ascertain to what height as this would be one of the last projects likely to be attempted".

In the Waitaki Catchment the first power station to be constructed was the Waitaki Dam. Its contribution to evening out the water flow, however, was a modest one until the Benmore and Aviemore Dams were constructed in Mid Waitaki. Table 1 summarises the hydropower developments via a timeline while Figure 1 gives a catchment overview of the same hydropower developments.

Table 1: Waitaki Catchment hydro power development timeline

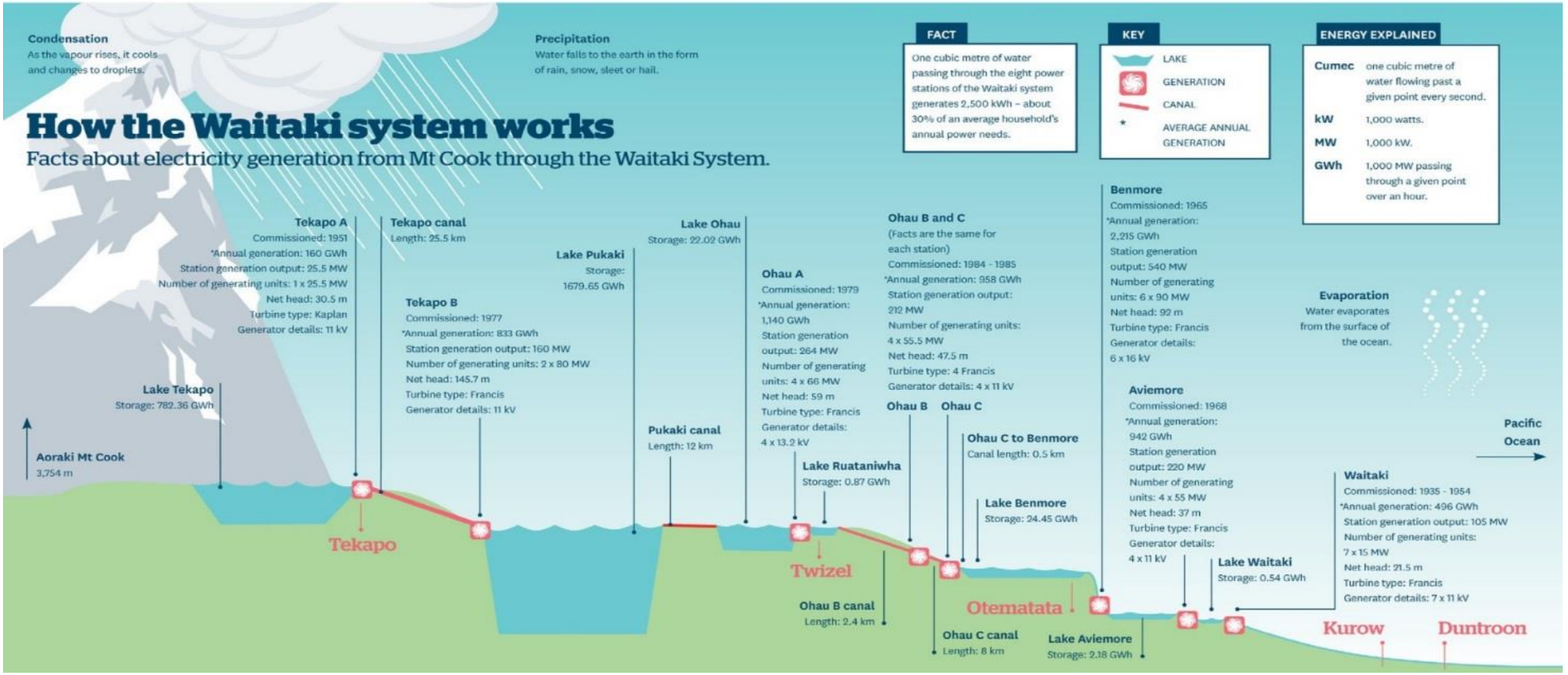
Dam	Construction period	Generation
Waitaki	Initial: 1928 - 1935	1949 – 75MW
	Upgrade / Capacity expansion: 1941, 1949 and 1954	1954 – 105MW
Tekapo A	1938 - 1951	1951 – 25.5MW
Benmore	1958 - 1965	1965 – 540MW
Aviemore	1962 – 1968	1968 – 220MW
Tekapo B	1977	1977 – 160MW
Ōhau A	1971 – 1979	1979 – 264MW
Ōhau B	Commissioned: 1984	1984 – 212MW
Ōhau C	Commissioned: 1985	1985 – 212MW

Figure 1: The power stations found in the Waitaki starting with Tekapo A (top left) and progressing down the catchment to Waitaki Dam (top right)



The focus of this TIA is the Tekapo Power Scheme and the Waitaki Power Scheme as shown in Figure 2.

Figure 2: A summary of the how the Waitaki system operates.



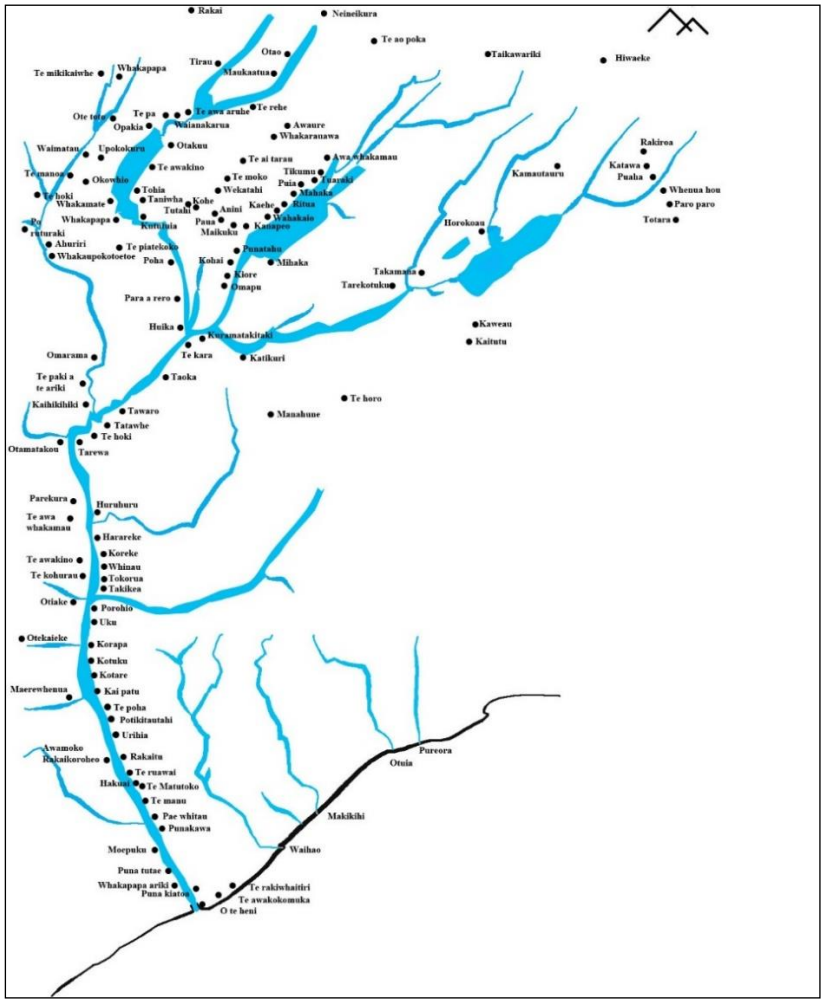
5.3 Manawhenua baseline

A reference condition or a “Manawhenua baseline” refers to the Manawhenua view of the baseline condition of a catchment at the time of the signing of Te Tiriti in 1840. Other baselines utilised by resource managers may be the state of the catchment now, or how it may be in the future with all consented development occurring and all resulting changes becoming apparent in the catchment. Scientists may use the extent of historical empirical data to establish a baseline.

The sites, the taoka and practices they sustained historically represent the “Manawhenua baseline.”

- Historically Manawhenua had more than 160 permanent and temporary settlements throughout the Waitaki (see Figure 3)
- Despite land sales in the mid nineteenth century, waterways were still accessible and used by Manawhenua.
- Until recent decades whānau lifestyles remained centered on mahika kai.
- The predominant species taken from the Waitaki were tuna and weka.
- Manawhenua do not see the catchment in 1990 as the baseline or the starting point for assessing the degree or significance of effects.

Figure 3: Location of historic settlements (adapted from Beattie (1945) and the maps by Beattie found in the Hocken Library)



5.4 Wāhi taoka

When Manawhenua talk of the aspiration to protect wāhi taoka, a range of sites valued by Manawhenua are recognised as wāhi taoka including:

- Ara tawhito (trails)
- Kāika Nohoanga (occupation, settlement sites, including sites from NTCSA)
- Mahika Kai
- Mauka (important Mountains)
- Pā Tawhito (pā sites)
- Tauranga Waka (canoe mooring sites)
- Tūāhu (sites important to identity)
- Tuhituhi Neherā (Rock drawing sites)
- Urupā (human burial sites)
- Umu (earth ovens)
- Wāhi pakanga (battle sites)
- Wāhi paripari (cliff areas)
- Wāhi raranga (weaving material)
- Wāhi taoka (treasured areas generally)
- Wāhi tapu (sacred places)
- Wāhi tāpuke (buried taoka)
- Ikoa Tawhito (place names)
- Wāhi kaitiaki (resource indicators from the environment)
- Wāhi kōhatu (rock formations)
- Wāhi tohu (locators within the landscape)
- Repo Raupō (wetlands)
- Puna (springs)
- Wai Māori (freshwater areas)
- Wāhi mahi kōhatu (quarry sites)

Protecting remaining wāhi taoka and where feasible restoring degraded wāhi taoka is a priority for Manawhenua.

5.5 Summary of historical associations and infrastructure present today.

In this section we attempt to provide a visual summary of the past and present state of the catchment from the perspective of Manawhenua. Our summary progresses down the catchment starting at Takapō.

Kāi Tahu identified seven lakes as the headwaters of the Waitaki. Historically the river spread out and meandered over the plains of the Upper Waitaki. Many small creeks came tumbling in adding water as the mainstem Waitaki gained in size and power as it moved downstream. Today the Upper Waitaki is more commonly recognised as being centered on the three natural lakes namely Pūkaki, Ōhau and Takapō. The Southern Alps - rugged mountains with icy peaks and alpine lakes, secluded valleys, streams winding downstream across the river valley – shed source waters that once ran down the rivers but are now captured and stored or diverted. Through a network of dams, canals and reservoirs today the catchment contributes water to the upper, mid and lower Waitaki hydro schemes.

5.5.1 Takapō catchment

> *Takapo is one of the lakes referred to in the tradition of "Ngā Puna Wai Karikari o Rakaihautu" which tells how the principal lakes of Te Wai Pounamu were dug by the rangatira (chief) Rakaihautu. Rakaihautu was the captain of the canoe, Uruao, which brought the tribe, Waitaha, to New Zealand. Rakaihautu beached his canoe at Whakatū (Nelson). From Whakatū, Rakaihautu divided the new arrivals in two, with his son taking one party to explore the coastline southwards and Rakaihautu taking another southwards by an inland route. On his inland journey southward, Rakaihautu used his famous kō (a tool similar to a spade) to dig the principal lakes of Te Wai Pounamu, including Takapo (*Schedule 57 of the Ngāi Tahu Claims Settlement Act 1998)

For centuries, Lake Takapō discharged its waters into the Takapō River which after its junction with the Pūkaki became known as the Waitaki, to be subsequently joined by the Ōhau, Ahuriri and numerous other rivers and streams. Historically –

> *The Tekapo river flows out of the extensive lake of the same name in a deep and narrow channel, and the stream continues so deep or so strong that even at its lowest it is unfordable until it has traversed ten or twelve miles, and then the bottom is so rough that the ford is almost impracticable for light vehicles. … On many occasions during the prevalence of floods, or of nor'-westers — which blow with extreme violence down the lake — and especially where both were combined, it was impossible to work the punt, and travelers have frequently been delayed several days on its banks. It is a boast of Mr Macleod (*Timaru Herald, 11 September 1880, Page 3)

From the oral histories of Kāi Tahu and their written manuscripts a description of a stable mahika kai-based lifestyle emerges. Evison (1993) describes how the great number of plants, birds, and fish comprised the food sources of Kāi Tahu and assured that somewhere there was something available to eat. An outstanding characteristic was the sequential utilisation of a variety of natural resources from widely dispersed localities mirroring the cycles of rivers and species (Dacker 1991, Anderson 1998). This pattern of resource use shaped an itinerant lifestyle where mobility was pronounced and essential.

The Takapō River was one of the feeders of the mainstem Waitaki River. The wider Takapō area was an important part of the extensive food gathering area renowned for tuna (eels) and weka. Other wāhi taoka present included kāika, mauka, pā, motu, puna, repo, rock art, urupā, taoka species, mahika kai, and trails. Historic photographs and paintings help us to visualise Takapō before the landscape was modified following settlement. Julius von Haast (1947) describes how the margins of Lake Takapō sustained waterfowl, wading birds and tuna. The low-lying marshes around an unmodified lake sustained populations are shown in Figure 4.

Figure 4 (left): looking upstream over the Takapō River and Lake Takapō.

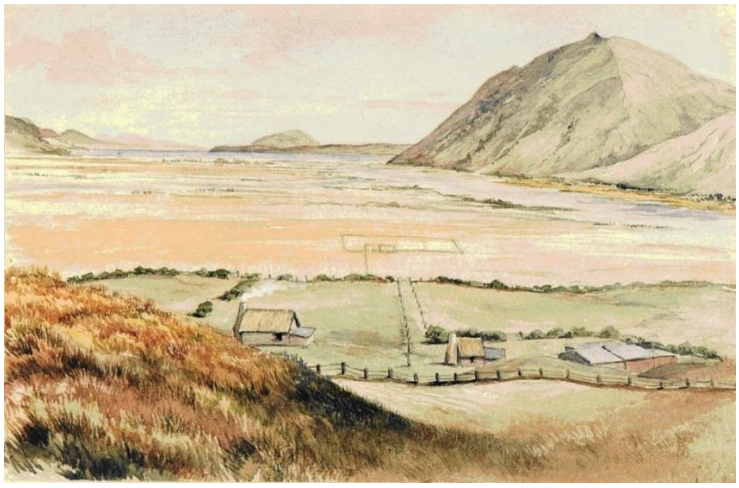


Figure 5 (right): Water colour painting of Richmond Station at Lake Takapō (Both figures were sourced from Alexander Turnbull Library)

Figure 6: A view of the Takapō River from the true left looking upstream towards the outlet from Lake Takapō. A road bridge is seen at the outlet. This reach of water of river is now dewatered (Alexander Turnbull Library).

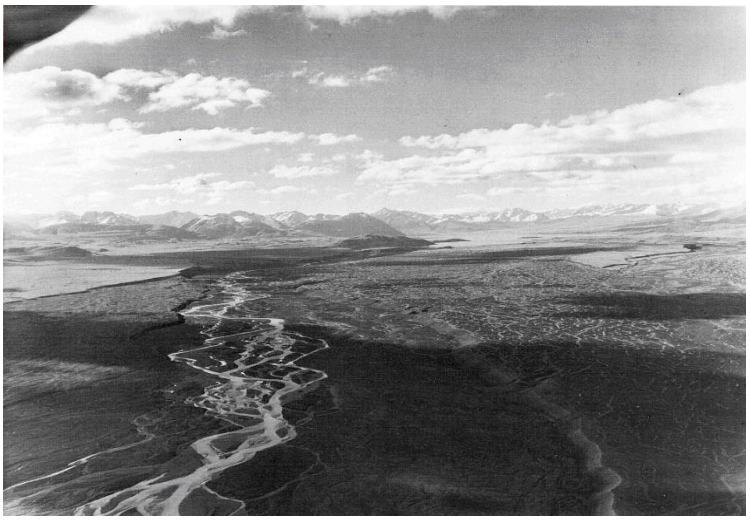


Figure 7: Lake Takapō and the braided Takapō River crossing Manahuna (the Mackenzie Basin) before hydro in the Upper Waitaki (Alexander Turnbull Library)

The Takapō River that is visible in Figures 6 and 7 had a mean flow of approximately 80 cumecs (Freestone, 1990). There was no barrier at the outlet. There are stories of whānau exiting the lake via mōkihi loaded with the kai they gathered. The Takapō formed part of the seasonal cycle of gathering. Rotating gathering across multiple sites (over a takiwā), and following seasonal harvesting patterns, were important sustainability measures. This pattern of rotation has been disrupted by the degradation of mahika kai in the Waitaki, thus extending the spatial extent of the impacts beyond the Waitaki catchment boundaries.

In 1951 the outlet of Lake Takapō was controlled by a series of gates incorporated into the bridge carrying traffic on the State Highway over the lake's outlet. Previously a tunnel some 1600m long and 6m wide had

been driven from the lake towards the Takapō River and a hydro station (Tekapo A) constructed at the end of the tunnel. The water discharged from the station then spilled into the Takapō River. Though the station was modest in size, its construction together with the control gates on the State Highway meant that spring and summer inflows could be conserved, to a limited extent, to provide water storage for winter needs. This changed with the construction of the Tekapo Canal and Tekapo B power station.

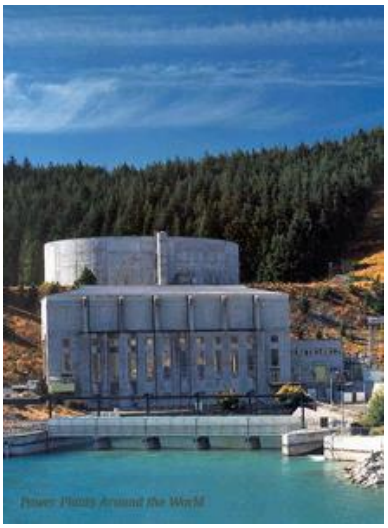


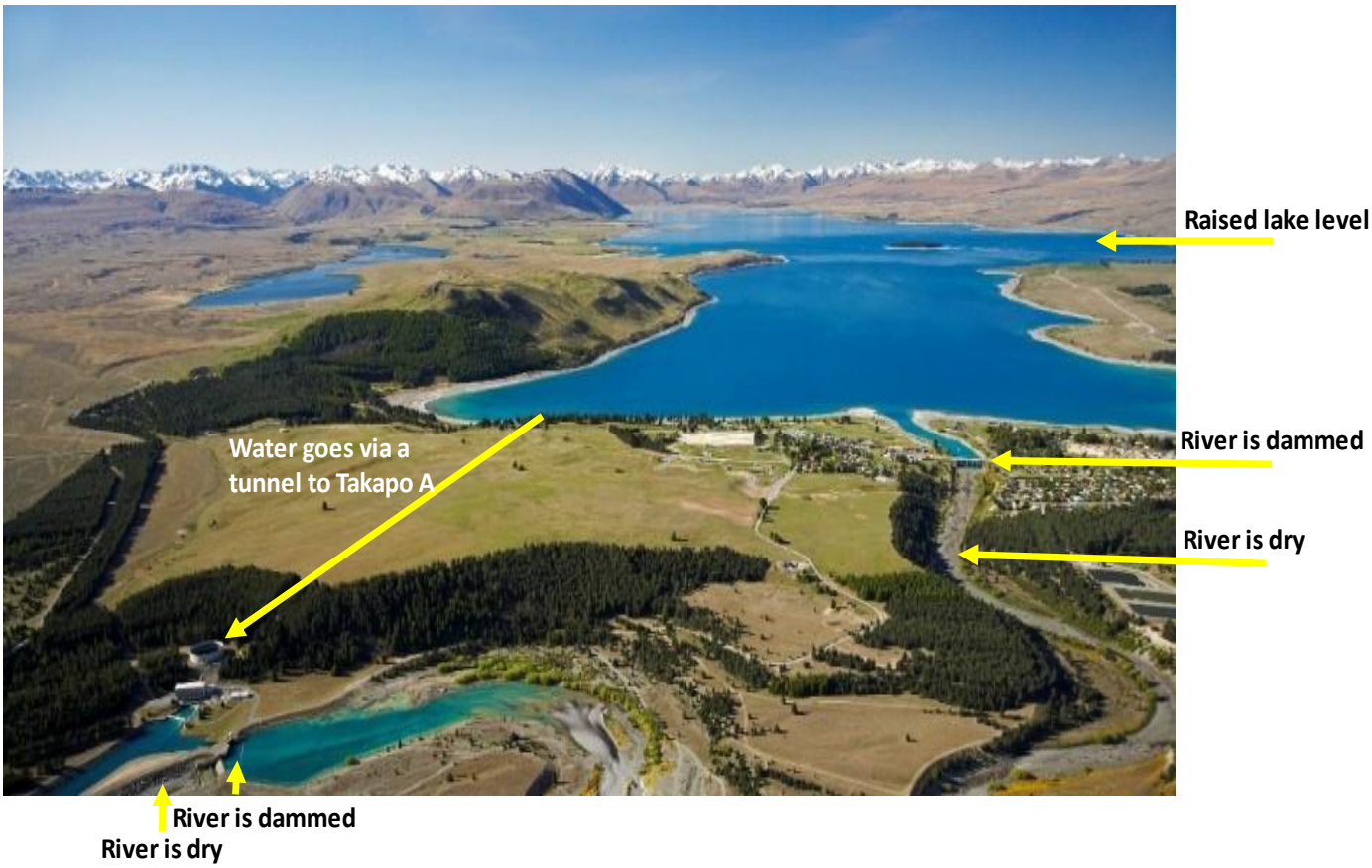
Figure 8 (left): Tekapo B power station sitting on the shore of Lake Pūkaki.

Figure 9 (right): Tekapo A discharging to the Tekapo Canal (in the foreground)

In the paragraphs that follow, we summarise the impacts experienced by Kāi Tahu that are associated with the various components of the Tekapo scheme. Figure 10 that follows illustrates the effects to the waterbodies in the Takapō system.

	SCHEME COMPONENT	TAOKA IMPACTED
Whenua	Headworks, Penstocks, Roads, Transmission lines	Nohoanga, pā, ara tawhito, tuhituhi neherā, other archaeological sites, taoka species
Wai Māori	Intake structure, control gate at Tekapo, gates, weirs, canal	Awa, repo raupō, puna, taoka species (in particular water birds), nohoanga, pā, mahika kai, (especially tuna, migratory native fish species, and waterfowl)

Figure 10: Lake Takapō today showing some of the modifications.



It is the effects on the waterways that cause the greatest concern for Kāi Tahu. Some of the effects that apply equally to the changes to the Takapō River, Pūkaki River and the Lower Ōhau River are set out below.

Dewatering: Dewatering refers to the reduction of streamflow caused through the diversion of water:

- Through the intake to Tekapo A which dewaters the Upper Takapō River (from Takapō township to Lake George Scott)
- To the Tekapo Canal which reduces flows in the Lower Tekapo River below Lake George Scott.

Visible dry riverbed: The dry stream bed in the Lower Takapō River (see Figure 11) confirms that flow alteration is a cause of significant cultural impacts.

Channel features incongruous with observed flow: Observation of the channel of the lower Takapō River suggest that flows greater than present flows should be the norm for the river.

Figure 11 (above): The riverbed of the Lower Takapō below Lake George Scott (photo supplied by Genesis Energy Ltd).

Figure 12 (right): The riverbed of the Takapō River below the Tekapo Control Structure (photo supplied by Genesis Energy Ltd).

Permanent loss of water from the Takapō system **-** With run of the river schemes such as Waitaki, Aviemore or Benmore, water used in the station is returned to the main channel. In the Tekapo scheme, water diverted to the Tekapo Canal is lost to the Takapō catchment as the water is diverted and passes through Tekapo B into Lake Pūkaki and the three stations of the Ōhau system before entering Lake Benmore.

Fish Passage – upstream blockage - For migrating fish species (such as tuna), the presence of weirs, gates and control structures inhibits their upstream passage. Water diversion also inhibits fish passage, as conditions such as stream connectivity are altered. Although elvers are transferred to Lake Benmore, they can no longer inhabit their historic range.

Fish passage – Fish moving downstream are at risk due to entrainment in the diversion infrastructure. If passed through the intake, fish can be killed or damaged. Turbines are often responsible for crushing or striking fish, while possibly creating changes in water pressure.

Habitat alteration - The construction of the weirs, gates and control structures results in a loss of habitat, as riparian vegetation and gravels are replaced by concrete and metal infrastructure. As noted above, water diversion may also decrease the depth and width of wetted area in the downstream reach, shrinking suitable habitat area.

Changing the connectivity of flows in the tributaries of the Takapō River – a number of smaller streams that historically flowed to the Takapō River now pass into the Tekapo Canal.

Land cover alteration: Changes in land cover alter hydrologic processes including infiltration, uptake of runoff by vegetation, and the efficiency of overland flow.

Channel alteration: Structural habitat changes result from straightening or restructuring natural watercourses. This can involve adding riprap, installing a dam, canal or road crossing.

Altered seasonality of flows: Many aquatic organisms rely on consistent seasonal flow patterns (e.g., flow increases with spring snow melt) to cue life cycle stages. Altered or reduced seasonality of flows could disrupt natural cues. Hydro electricity generation has “reversed” the seasonal pattern of flows. Historically, flows were lower in winter as water was stored as snow and ice. The thaw in the spring saw higher flows. Today electricity demand is greater in winter. The storage in Takapō and Pūkaki enable water to be stored and used in winter thus leading to higher flows in the river over the winter months.

Changes in flow variability: The Tekapo Control Structure has regulated releases but generally there is no water flow in the Upper Takapō. The absence of releases from Lake George Scott means that any variability in flows in the lower Takapō River is due to spills or variable flows in the contributing streams – Irishman, Maryburn, Forks.

Changes to wetlands in the Lower Takapō – Whānau are concerned that the low flows in the Lower Takapō River have altered the surface – groundwater interaction and put at risk the wetlands and springs of the Lower Takapō.

SUMMARY TABLE 1 - IMPACTS IN THE TAKAPŌ SYSTEM

- **Lake Takapō is dammed (at SH8) and has an operating range of approximately 10 metres.**
- **The Upper Takapō River below the dam at the State Highway mostly dewatered. Upper Takapō River is dammed again at Lake George Scott.**
- **The Lower Takapō River, which is below Lake George Scott is mostly dewatered until it starts to gather tributary flows e.g. the Forks. It does receive sill flows, however.**
- **There are recreational releases.**

Consents[4]	Affected waters[5] [6]											Affected waters	Taoka species found in those waters[7]											Examples of lost or impacted wāhi taoka	A selection of wāhi taoka associated with these catchments / sub-catchments[8]										
	Lake Takapō	Upper Takapō River	Lower Takapō River	Fork Stream	Maryburn	Irishmans	Other tributaries to the Takapō River	Wetlands/springs	Lake McGregor	Cass, Godley	Lake Pūkaki		Long fin tuna	Short fin tuna[9]	Mahika kai	Inanga/smelt	Upland longjaw	Lowland longjaw	Alpine galaxias	Kōaro	Canterbury galaxias	Big nose galaxias	Braided river birds			Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wai Māori	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters / gorges
Dam Lake Takapō	X	X	X					X	X(?)	X		Lake Takapō	X											Tarekotuku	X	X									
Take water from Lake Takapō	X								X(?)	X		Upper Takapō River	X							X	X			Takamana	X	X									
Discharge water to Upper Takapō River		X	X									Lower Takapō River	X						X	X	X		X	Katikuri	X	X									
Dam Lake George Scott		X	X					X				Fork Stream	X							X	X	X			Kuramatakitaki	X	X									
Take water for Tekapo A (use at the station)								X[10]				Maryburn	X						X	X	X	X			Te Kara	X	X									
Take water at Lake George Scott			X					X				Irishmans	X							X	X	X			Drowned sites								X		X	
Divert water to Tekapo Canal			X					X				Other tributaries under canal	X							X	X															
Use water at Tekapo A												Wetlands/springs	X										X													
Discharge water below Lake George Scott to the Lower Takapō			X					X[11]				Lake MacGregor	?										X													
Divert Forks (under canal)				X								Cass, Godley	X							X	X		X													
Divert Maryburn (under canal)					X							**Other catchment waters in the Takapō system**																								
Divert Irishmans (under canal)						X																														
Divert unnamed streams under canal[12]							X					Grays (incudes Edwards, Sawdon)	X					X	X	X	X	X	X													
Use water from Tekapo Canal at Tekapo B												Tributaries to Lake Takapō	X						X		X		X													
Discharge water from Tekapo B to Lake Pūkaki											X	Tributaries to Lower Takapō River	X						X																	

[4] We do not include contaminant discharges from the two power stations in the Tekapo Power Scheme.
[5] We have not listed groundwater although it is not known how the loss of flows in the Tekapo have impacted groundwater systems including the wetlands in the Lower Tekapo.
[6] Please note that we have chosen to identify all waters that we believe are impacted by the infrastructure as it is relevant to any discussion of giving effect to Te Mana o te Wai. Over time, the obligation is to improve all affected waters.
[7] This table will be finalised once we have completed the review of the native fish surveys undertaken by the generators. It also draws from the NZFWD (up to 2012). We have not included bullies because there are many throughout the whole system.
[8] In this section we name some of the sites that were drowned when Tekapo was raised and the control structure created. Kahurumanu and other public sources have been used. Additional information may be provided as evidence.
[9] Short fin tuna are predominantly found below Waitaki Dam although some elvers have been released to Lake Benmore which gives access to the Takapō system.
[10] It is a take from a spring under the station.
[11] We do not know the effect of the Lower Tekapo River regime on the wetlands of the Lower Tekapo.
[12] There are about 6-7 streams that pass through a culvert under the canal.

Finally, with respect to the impact of the changes to waterways on wāhi tupuna, a feature of the Upper Waitaki hydro infrastructure is the network of canals (Tekapo, Pūkaki, Ohau, Ohau B/C canals). Today, our wāhi tupuna (cultural landscapes) are crisscrossed by artificial canals that whānau can't interact with for our activities, yet other users can (e.g. fishermen).

Figure 13: The Tekapo Canal

Figure 14: The Pūkaki Canal

Canals now carry water that passed down the streams pre hydro development, and collectively joined to form the Waitaki River. Now, the rivers run dry – apart from spill or once they start to pick up downstream tributary flows. Many small streams now pass under hydro canals.

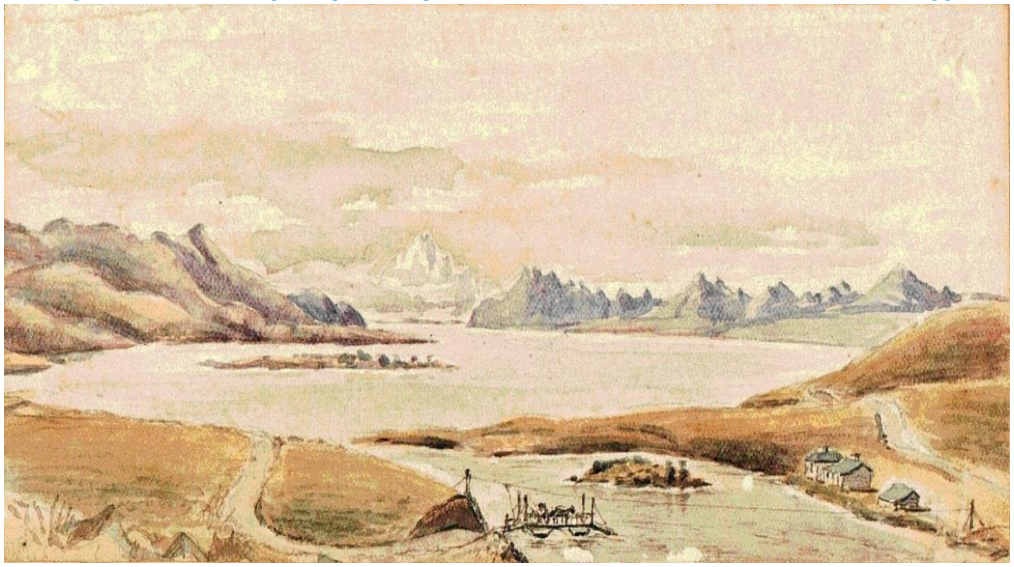
From a Manawhenua perspective:

- The mauri of the Takapō system has been adversely impacted.
- Manawhenua do not know the impact of river changes on puna and repo in the Lower Takapō River
- Sites (including rock art) were inundated by raising lake levels in the case of the Upper Waitaki lakes and creation of new lakes in the Mid Waitaki.
- Taoka species have been adversely impacted, especially tuna.
- Use of the Takapō River by Manawhenua has been lost.
- The lake environs now support uses that disconnect Manawhenua, for example increased use of motorised watercraft.
- The lake environs now support activities that generate impacts that (overtime) have become priorities for agencies, for example recreation and tourism.

5.5.2 Pūkaki catchment

*Pūkaki is one of the lakes referred to in the tradition of "Ngā Puna Wai Karikari o Rakaihautu" which tells how the principal lakes of Te Wai Pounamu were dug by the rangatira (chief) Rakaihautu. Rakaihautu was the captain of the canoe, Uruao, which brought the tribe, Waitaha, to New Zealand. Rakaihautu beached his canoe at Whakatū (Nelson). From Whakatū, Rakaihautu divided the new arrivals in two, with his son taking one party to explore the coastline southwards and Rakaihautu taking another southwards by an inland route. On his inland journey southward, Rakaihautu used his famous kō (a tool similar to a spade) to dig the principal lakes of Te Wai Pounamu, including Pūkaki. (*Schedule 34 of the Ngāi Tahu Claims Settlement Act 1998).

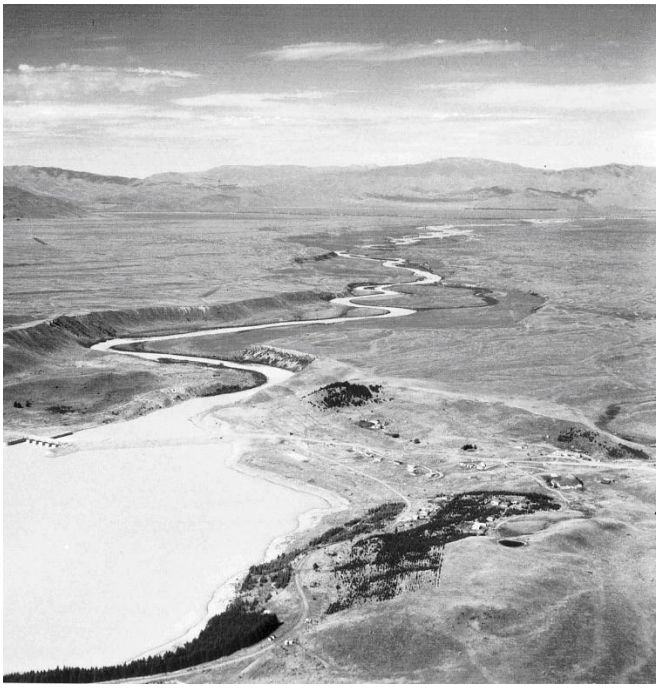
Figure 15: Lake Pūkaki before it was raised. The painting shows the island in the lake and the flowing Pūkaki River. (The painting was sourced from Alex Turnbull Library).

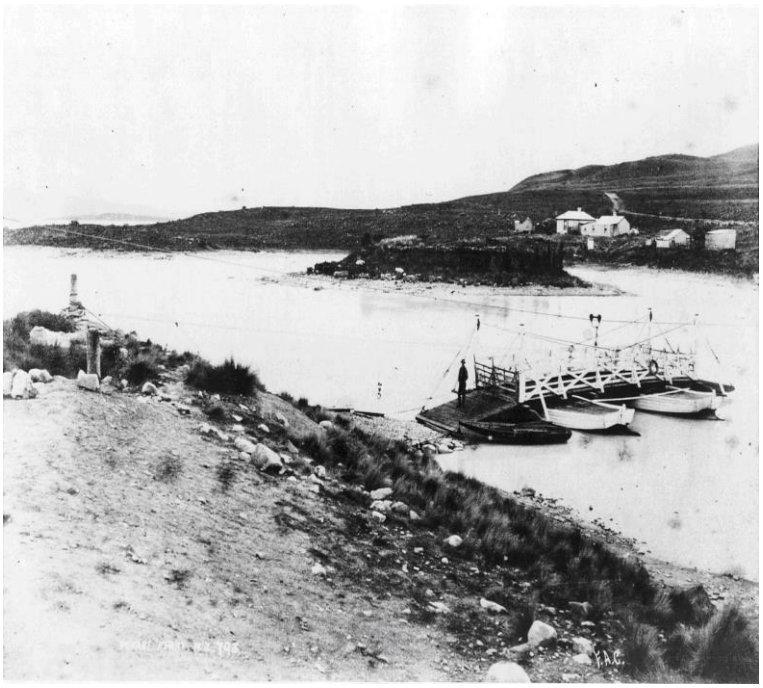


Hall Jones (1992) wrote that the Pūkaki branch is the "parent river" and gives the Waitaki its "milky whiteness…. The lake out of which the river flows also has a blueish milky appearance". In

Kahurumanu[13] Pūkaki was identified as a kāinga nohoanga where weka, pūtakitaki (paradise duck), aruhe (bracken fernroot), and tuna (eels) were gathered. Sites from which resources were gathered extended to the base of Aoraki. Tuna were gathered from the wetlands at the head of Pūkaki. Other wāhi taoka within the wāhi tupuna include: Aoraki, mauka, Pūkaki River, motu, puna, taoka species, kāika.

Figure 16 (top): At the wetlands at the head of Lake Pūkaki before it was raised. Figure 17 (bottom left): the meandering Pūkaki River is seen leaving the lake. Figure 18 (bottom right): the Pūkaki River pre damming. (The painting and photos were sourced from Alex Turnbull Library).





[13] See Kahurumanu.co.nz

The Pūkaki River, with a mean flow of approximately 130 cumecs, was the parent stream providing source waters from Aoraki and his brothers to the downstream Waitaki River. It provided direct access between Lake Pūkaki and the Waitaki River. Several kāika mahika kai were located on the lakeshore and along the Pūkaki River, where tuna (eels) and a variety of birds, including weka, were gathered.

Figure 19: The construction site when Pūkaki Control Structure was being built. The Pūkaki River is enclosed in the red box.

Figure 20: The head of Lake Pūkaki now that the lake has been raised twice.

Figure 21): Pūkaki Control Structure.
"A" shows the dewatered Pūkaki River.
"B" shows where the water now leaves the lake via a spillway

When considering impacts, the key issue from the perspective of Manawhenua is the changes to the Pūkaki River. Please note that the changes that were described in relation to the changed regime in the Takapō River are relevant to any discussion of the impacts of damming on the Pūkaki River.

SUMMARY TABLE 2 - IMPACTS IN THE PŪKAKI SYSTEM

- **Lake Pūkaki is dammed and has an operating range of approximately 20 metres consisting of 14.5m of normal operational range and up to 5m of electricity security of supply contingent range.**
- **Pūkaki River below the Pūkaki Control Structure at the State Highway mostly dewatered until it gathers water from groundwater 3km to 5km above the confluence of the Takapō River and then water from the Takapō and its tributary flows.**
- **There are recreational releases.**

Consents[14]	Affected waters[15] [16]									
	Lake Pūkaki	Pūkaki River	Tributaries to Lake Pūkaki	Twizel River	Dry River	Fraser Stream	Unnamed streams	Wetlands/springs		
Dam Lake Pūkaki[20]	X	X	X					X		
Discharge to Pūkaki River via spillway		X								
Discharge to Pūkaki River via diversion outlet		X								
Discharge to Pūkaki River via spill weir (emergency)		X								
Divert the Twizel River (under Pūkaki Canal)				X						
Take at the Pūkaki Control Structure into the Pūkaki Canal	X	X	X							
Divert the Dry River (under Pūkaki Canal)					X					
Divert the Fraser River (under Pūkaki Canal)						X				
Divert the unnamed streams (under Pūkaki Canal)[21]							X			

Affected waters	Taoka species found in those waters[17]										
	Long fin tuna[19]	Mahika kai	Mudfish	Mahika kai	Upland longjaw	Lowland longjaw	Alpine galaxias	Kōaro	Canterbury galaxias	Big nose galaxias	Braided river birds
Lake Pūkaki											
Pūkaki River											X
Tributaries to Lake Pūkaki											X
Twizel River							X		X	X	X
Dry River											
Fraser Stream							X		X	X	
Unnamed streams											
Wetlands/springs											X
Other catchment waters in the Pūkaki system											
Other tributaries to the Pūkaki River							X		X	X	X

Examples of lost or Impacted wāhi taoka	A selection of wāhi taoka associated with these catchments / sub-catchments[18]									
	Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wai Māori	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters/ gorges
Awa Whakamau	X	X									
Tuaraki	X	X									
Mahaka	X	X									
Ritua	X	X									
Kanapeo	X	X									
Kaehe	X	X									
Aoraki	X	X	X				X				
Punatahu	X	X	X	X							
Tīkumu	X	X									
Puia	X	X									
Kohai	X	X									
Kiore	X	X									
Omapu	X	X									
Mihaka	X	X									
Wahakaio	X	X									

[14] The list of consents being sought does not include any associated with the Gate 18 and does not include any ancillary water related matters associated with the power stations.
[15] We have not listed groundwater although it is not known how the loss of flows in the Pūkaki River have impacted groundwater systems.
[16] Please note that we have chosen to identify all waters that we believe are impacted by the infrastructure as it is relevant to any discussion of giving effect to Te Mana o te Wai. Over time, the obligation is to improve all affected waters.
[17] We have not included bullies because there are many throughout the whole system.
[18] In this section we name some of the sites that were drowned when Pūkaki was raised and the control structure created. Kahurumanu and other public sources have been used. Additional information may be provided as evidence.
[19] Approximately 80% of the catchment is above Waitaki Dam (the first barrier to fish passage on the mainstem).
[20] There are two consents. One is for the range 518m to 532m and the other is for below 518m to 515m. Note the Waitaki Allocation Plan also has a permitted activity rule for the range 513m to 518m.
[21] There are a number of small streams that pass under the canal. There is one consent for an unnamed stream culvert at location H38:655-536.

From a Manawhenua perspective:

- The lake was raised 9m in 1952, and another 37m in 1976.
- The tears of Aoraki do not flow unimpeded – they are now dammed.
- The mauri of Pūkaki has been negatively impacted.
- Sites have been inundated – "All our mahika kai lining along the lake shore were drowned[22]".
- The Tasman Delta is directly impacted.
- Taoka species have been impacted.
- Manawhenua use of the Pūkaki River has been lost

5.5.3 Ōhau catchment

The Ōhau was the third river flowing to the mainstem Waitaki River. Like the Pūkaki and Takapō catchments, Ōhau was part of the seasonal food gathering pattern - renowned for tuna and weka. Other wāhi taoka present in the catchment included kāika, taoka species, mauka, tohu, trails, repo, battle sites, and pā. In considering the effects we need to distinguish between the Upper Ōhau (above Ruataniwha) and the Lower Ōhau (below Ruataniwha Dam). We note that Lake Ōhau is kept within its natural range. But:

- The upper Ōhau River is dammed by a weir (that lets higher flows pass over the top).
- A flow – though regulated – was re-established in the Upper Ōhau 1990
- The Pūkaki Canal conveys water to Ōhau A Power Station
- The Upper Ōhau River now flows into an artificial lake – Lake Ruataniwha

Figure 22: The weir across the Upper Ōhau River which is the outlet of Lake Ōhau. The siphon over the weir delivers the minimum flow.

The changes to the Lower Ōhau are more profound (see Figure 23).

- Ohau B/C Canal carries water to Ohau B and C Power Stations.
- The Lower Ōhau is dry aside from receiving seepage, spill from the Ohau B/C canal via the labyrinth weir or picking up tributary flows downstream.

[22] A comment by Trevor Howse during the tenure review process.

Figure 23 Looking downstream over Lake Ruataniwha.
"A" shows Lake Ruataniwha
"B" is Ruataniwha Dam over which State Highway 8 passes
"C" is Ohau B/C canal
"D" is the dewatered Lower Ohau River
"E" is Lake Benmore

- Ōhau B/C canal carries water to 2 Ōhau Power Stations (B and C).
- The Lower Ōhau is dry aside from the Ōhau B/C canal via the labyrinth weir or picking up tributary flows downstream.

SUMMARY TABLE 3 - IMPACTS IN THE OHOU SYSTEM

- **Lake Ōhau is dammed but operates largely within its natural range. The effective operational range is less than a 1m (0.65 to 0.95).**
- **The Upper Ōhau River is controlled with an environmental flow of 8 cumecs and a further (up to) 4 cumecs released to be taken by the Benmore Irrigation Company.**
- **Lake Ruataniwha is an artificial reservoir. The effective operational range is less than 1m (0.3 to 0.8).**
- **Lower Ōhau River water source is fully diverted, with an estimated typical 1 to 3 cumec flow to the confluence of the Twizel River being gathered from groundwater and then water from the Twizel River and its tributaries.**

Consents[23]	Affected waters[24] [25]											Affected waters	Taoka species found in those waters[26]											Examples of lost or Impacted wāhi taoka	A selection of wāhi taoka associated with these catchments / sub-catchments[27]										
	Lake Ōhau	Upper Ōhau River	Lake Ruataniwha	Lower Ōhau River	Tomahawk Lagoon	Wairepo	Lake Benmore	Tributaries to Lake Ōhau	Tributaries to Lake Ruataniwha	Tributaries to lower Ōhau River	Wetlands		Long fin tuna[28]	Short fin tuna[29]	Mudfish	Inanga/smelt	Upland longjaw	Lowland longjaw	Alpine galaxias	Kōaro	Canterbury galaxias	Big nose galaxias	Braided river birds			Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wāhi tapu	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters
Dam Lake Ōhau at the weir	X	X									X	Lake Ōhau	X			X				X				Kututuia	X	X									
Take water from Lake Ōhau to the Ōhau Canal	X	X									X	Upper Ōhau River	X							X	X		X	Poha	X	X									
Discharge water to the Upper Ōhau River		X		X							X	Lake Ruataniwha	X							X				Para a rero	X	X									
Use water at Ōhau A												Lower Ōhau River	X					X		X	X	X	X	Huika	X	X									
Discharge water from Ōhau A to Lake Ruataniwha			X								X	Tomahawk Lagoon																							
Dam the Ōhau River with Ruataniwha Control Structure		X	X	X							X	Wairepo	X							?	X		X												
Discharge water to the Lower Ōhau River				X							X	Lake Benmore (including wetlands)	X								X	X	X												
Divert Wairepo Creek				X		X					X	Tributaries to Lake Ōhau	X										X												
Take waters from Lake Ruataniwha into the Ōhau B-C Canal			X	X							X	Tributaries to Lake Ruataniwha						X																	
Use water at Ōhau B												Tributaries to Ōhau River				X				X	X														
Discharge water at labyrinth zigzag weir (emergency)				X							X																								
Divert Tomahawk Lagoon outflow					X																														
Use water at Ōhau C																																			
Discharge water from Ōhau C to Lake Benmore							X																												

[23] This list of consents does not include contaminant discharge consents from the oil interceptors at the three Ohau stations.
[24] We have not listed groundwater although it is not known how the reduced flows in the Lower Ohau have impacted groundwater systems. We note that artificial wetlands (Ruataniwha have been created).
[25] Please note that we have chosen to identify all waters that we believe are impacted by the infrastructure as it is relevant to any discussion of giving effect to Te Mana o te Wai. Over time, the obligation is to improve all affected waters.
[26] We have not included bullies because there are many throughout the whole system.
[27] In this section we name some of the sites that were impacted. Kahurumanu and other public sources have been used. Additional information may be provided as evidence.
[28] Approximately 80% of the catchment is above Waitaki Dam (the first barrier to fish passage on the mainstem).
[29] Short fin tuna are predominantly found below Waitaki Dam.

From the perspective of Manawhenua:

- The mauri of the Ōhau system has been adversely impacted.
- Taoka species have been impacted.
- Manawhenua use of the river has been lost.
- The changes in the Ōhau system have enabled activities that may be in conflict with Manawhenua aspirations (e.g. trout fishery, conservation of braided river birds).

5.5.4 Concluding statements on the impacts of hydro generation on the Upper Waitaki

Given the significance of Aoraki to Kāi Tahu it is pleasing that the source waters still flow from Aoraki. The headwater streams feeding Lakes Takapō, Pūkaki and Ōhau are largely unmodified. Moving down the catchment however, without doubt damming has been one of the principal contributors to the transformation of the lakes and rivers in the Upper catchment. Some of the transformations include the following:

- Lakes Pūkaki, Ōhau and Takapō have been modified. The outlets of Takapō and Pūkaki have been dammed and the lake levels artificially raised.
    - Takapō – dammed by the Tekapo Control Structure
    - Pūkaki – dammed by the Pūkaki Control Structure
    - Ōhau – dammed.
- A weir is found at the outlet of Lake Ōhau, although the lake is still managed within its historic range.
- More than 70km of canals have been constructed to convey water around a reconfigured water system.
- Of the major tributaries once feeding the Waitaki River
    - Takapō – partially dewatered (with releases)
    - Pūkaki – partially dewatered (with releases) .
    - Upper Ōhau (controlled with a flow regime setup in 1990)
    - Lower Ōhau – dewatered (with seepage through Ruataniwha Dam)
    - Ahuriri – the lower river now discharges to an artificial lake – Lake Benmore
- An artificial lake has been created – Ruataniwha – that receives water from the Upper Ōhau River and the Pūkaki Canal via Ōhau A Power Station.

A significant impact when discussing each of the main sub-catchments is modification of the flows in the waterways. This is summarised below.

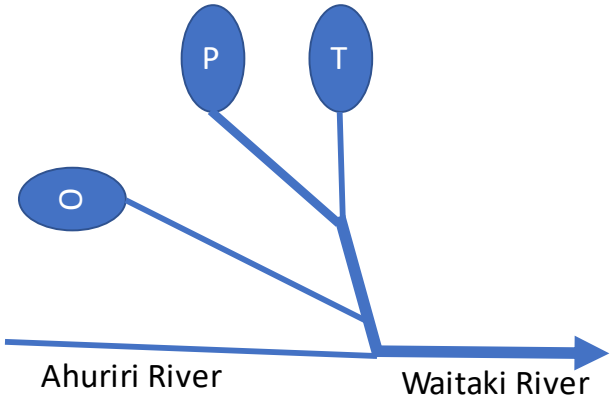
River	Mean flows pre hydro developmen (cumecs)	Flows post development (cume
Takapō River	80	0 (with releases)
Pūkaki	130	0 (with releases)
Ōhau	80	8 plus 4 for irrigation – Upper 0 - Lower

Figure 24 (top left): The dewatered Upper Takapō below the Tekapo Control Structure

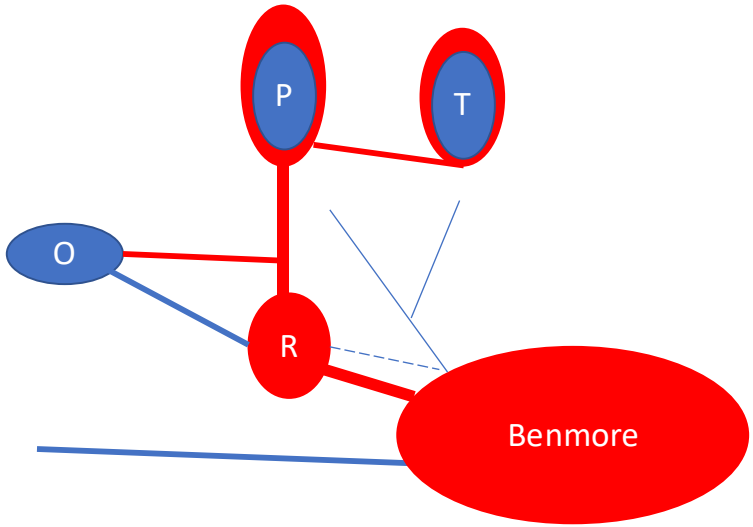
Figure 25 (bottom left): The dewatered Lower Takapō near the Steel Bridge

Figure 26 (top right): The dewatered Pūkaki River

Figure 27 below summarises how the system has been reconfigured to enable hydro-electricity power (HEP) to the generated.



Blue represents historic lakes & rivers
Red represents HEP changes to the system



Our Waitaki River was a system of rivers and lakes – an environment we named and utilised.

Our hauora was sustained. Our mana upheld.

HEP has changed the system to a mix of altered (raised) lake environs, dry or remnant rivers, a network of canals feeding artificial lakes – the mauri and wairua of multiple waterways has been impacted.

A related impact of infrastructure in the upper catchment is that of sediment movement. Hicks (2006) confirms a major reduction of sediment supply from the Upper Waitaki to the Lower Waitaki system as sediment is trapped in Lakes Ōhau, Pūkaki and Takapō. This is one of the likely contributors to the entrenchment of the lower river. Hicks describes how the bed of the Waitaki has been incising for thousands of years. Sediment movement through a river system to replenish coastal environs is an ongoing issue for Manawhenua.

5.5.5 The Ahuriri

The Ahuriri River is a braided river that has it headwaters on the eastern flanks of Kā Tiritiri o Te Moana (the Southern Alps). The river flows for 70 kilometres through the southernmost part of the Mackenzie Basin before reaching the Ahuriri Arm of Lake Benmore, one of the artificial lakes in the mid Waitaki that forms part of the Waitaki Power Scheme. Ahuriri was a kāinga nohoanga (seasonal settlement) and kāinga mahika kai (food-gathering place) where tuna (eels), pora ('Māori turnip'), weka, and purau ('Māori onion') were gathered.

The Ahuriri River is devoid of hydroelectricity infrastructure. Prior to the creation of Lake Benmore, the Ahuriri River flowed directly to join the Waitaki River. Today it flows into the Ahuriri Arm of Lake Benmore.

Since 2006 the Ahuriri Arm of Lake Benmore and all tributaries that flow into that arm of the lake, has been closed to commercial tuna fishing and is now being restored as a customary fishery (Home, 2012). Restoring this arm of the lake is a priority to Manawhenua given it now represents a substitute for many of the mahika kai that have been lost.

Figure 28: The Ahuriri Delta at the head of Lake Benmore.

SUMMARY TABLE 4 - IMPACTS IN THE AHURIRI ARM OF LAKE BENMORE

- **The waters of the Takapō, Pūkaki, Ōhau and Ahuriri Rivers joined to form the Waitaki River.**
- **Three dams (Benmore, Aviemore and Waitaki) have created three artificial reservoirs in the Mid Waitaki Catchment.**
- **The Ahuriri, although without HEP infrastructure, now flows into an artificial lake.**

Consents	Affected waters											Affected water	Taoka species found in those waters[30]											Examples of lost or Impacted wāhi taoka[31]	A selection of wāhi taoka associated with these catchments / sub-catchments[32]										
	Ahuriri River	Waitaki River (Lake Aviemore)											Long fin tuna	Short fin tuna[33]	Mahika kai	Inanga/smelt	Mullet	Lowland longjaw	Alpine galaxias	Kōaro	Canterbury galaxias	Big nose galaxias	Braided river birds	Black flounder		Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wai Māori	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters / gorge
Dam Waitaki River (Benmore)	X	X										Lake Benmore	X								X				Te Ara Whakakairo								X			X
Use water at Benmore Station												Ahuriri River	X					X	X		X	X		X	Omarama (site of historic camp)		X									
																									Te Ana a Ruru		X									X
																									Tarewa	X	X									
																									Te hoki	X	X									
																									Tatawhe	X	X									
																									Tawaro	X	X									
																									Taoka											
																									Te Kara	X	X									
																									NZAA sites								X	X	X	X

[30] We have not included bullies because there are many throughout the whole system.
[31] Please note that many of these sites are repeated when we discuss Benmore as part of the Mid Waitaki system.
[32] In this section we name some of the sites that were impacted. Kahurumanu and other public sources have been used. Additional information may be provided as evidence.
[33] Short fin tuna are predominantly found below Waitaki Dam, although elver releases to Lake Benmore is resulting in short fins being found in the Mid Waitaki lakes.

5.5.6 Secondary impacts

When discussing the impacts of the Schemes on the Upper Waitaki, it is important to acknowledge that some mitigation agreements from the 1990 consenting process impact Manawhenua rights and interests. For example, the Benmore Irrigation Scheme irrigated lands that now runoff to the Ahuriri customary fishery area (see Figures 29 and 30 below).

Figure 29 (top): Looking over the Upper Ōhau River towards Omarama showing the lands irrigated by the Benmore Irrigation Scheme. Figure 30 (bottom): A dairy farm close to Twizel. This photo was sourced from David Wall Photography.

Declining water quality in the Ahuriri Arm cannot be attributed to power generation but if we are looking for a "root cause" the 4 cumecs supplied to Benmore Irrigation Company is seen by Manawhenua as an enabler – it has enabled land use change, and it has enabled intensification.

5.5.7 The Mid Waitaki – Lakes Benmore, Aviemore, Waitaki

The braided river was an important travel route, providing direct access to mahika kai resources in Te Manahuna and Central Otago. The Waitaki River itself was an important source of mahika kai - kāika nohoanga and kāika mahika kai lined both sides of the river. Other wāhi taoka included: kaika, pa, mahika kai, trails, urupā, rock art, shelters, rock formations, braided awa and wetlands.

McLintock (1949) described the Lower Waitaki, with its shingle bed, braided structure and ever-changing channels, as possessing little of the quality of the smooth flowing rivers of the South. He argued that the Waitaki is the northern counterpart of the Clutha (Mata-Au) River. It had an immense torrent fed by three great Lakes, Takapō Pūkaki and Ōhau, and beyond them by the glaciers and snowfields of the Southern Alps.

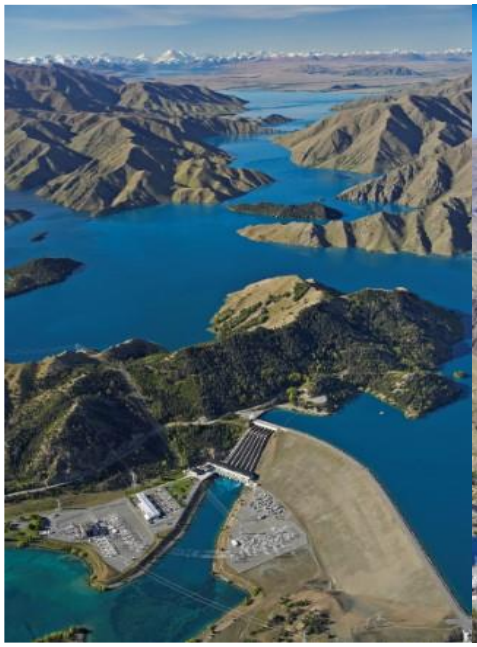
> *"It swings its swift and treacherous course over a wide gravel bed with numerous channels, a formidable barrier well designed to serve as a boundary between the provinces of Canterbury and Otago" (McLintock, 1966)*

Further down from the junction of the Waitaki and the Ahuriri Rivers was a place known to the older generations as Te Anawhaairo where the river had carved out fantastic pinnacles and cut the monoliths of greywacke into slices and boreholes like the windows through them (Stevenson 1947). Many thousands of years ago when the great glaciers that filled the beds of the Ōhau, Pūkaki and Takapō lakes were retreating, the Waitaki was flowing at a height 80 feet above the present level. Carrying with it the ice and the debris of the glaciers, the river left its mark upon this site. At Te Anawhaairo the distance to the hills across the river was said to be fully a mile wide but two miles downstream the river turned sharply to the east to form what was known as Goose Neck Bend, where the mild wide valley again narrowed to a gorge through which the waters raced at speed.

The Waitaki Gorge also features prominently in the narratives of early explorers when describing the mid Waitaki. Mantell (in his travels in the mid nineteenth century) estimated the width of the river at this point was less than 300 feet and described the Waitaki Gorge as a gloomy place. The big river was dwarfed and overshadowed by forbidding mountains whose steep sides were broken by desolate valleys and covered by dark grey rocks and still dark scrub. It was seen as a wild and lonely place and described by Mantell as "dismal" (Garnier, 1958).

The Mid Waitaki has seen significant change in the last 60 years as a result of hydro-electricity development. Today, the waters of the mid Waitaki are silent. The gorge has been dammed in three places. Three dams and their lakes have replaced the river that ran through gorges. The dams provide the head required to generate electricity. Inundation has also impacted the tributaries that now flow into a lake.

Figures 31 to 32 (top 4 images): Looking over the Mid Waitaki at the gorge and the flats that are noticeably devoid of willows. Figures 33 to 35 (bottom 3 images): The lakes of the Mid Waitaki (moving from left to right) - Benmore, Aviemore, Waitaki (photo sourced from David Wall Photography.



But construction saw sites destroyed during construction or inundated when the lakes were created.

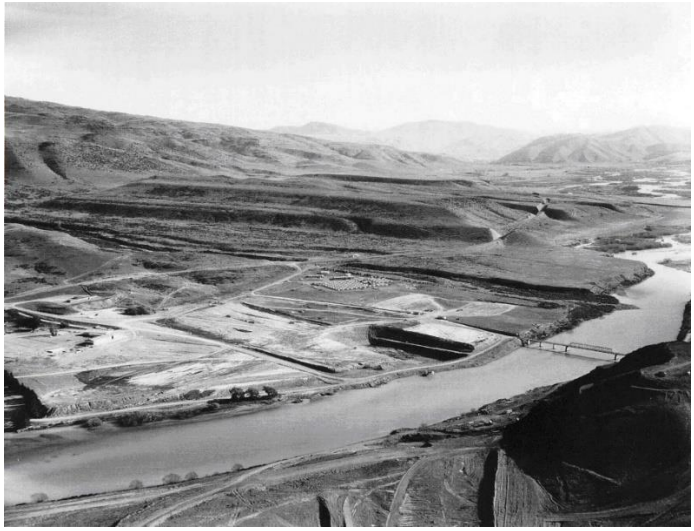


Figure 36 (top left): Looking upstream during the construction of Aviemore Dam. The meandering river is visible.

Figure 37 (top right): Construction activity during the building of Benmore.

Figure 38 (bottom left): shows the Waitaki River winding through the gorges that were inundated when the Mid Waitaki stations were constructed.

All photos were sourced from Alex Turnbull Library.

SUMMARY TABLE 5 - IMPACTS ASSOCIATED WITH BENMORE

- **The waters of the Takapō, Pūkaki, Ōhau and Ahuriri Rivers joined to form the Waitaki River.**
- **Three dams (Benmore, Aviemore and Waitaki) have created three artificial reservoirs in the Mid Waitaki Catchment.**
- **The operational range is 6.2m but the effective day to day range is 0.95.**

Consents[34]	Affected waters[35]											Affected water	Taoka fish found in those waters[36]											Examples of lost or Impacted wāhi taoka[37]	A selection of wāhi taoka associated with these catchments / sub-catchments[38]										
	Lake Benmore	Waitaki River (now Lake Aviemore)	Waitaki River (now Lake Waitaki)	Lower Waitaki River	Wetlands	Ahuriri River	Tributaries to Lake Benmore	Tributaries to Lake Aviemore	Tributaries to lower Waitaki River				Long fin tuna	Short fin tuna[39]	Mahika kai	Inanga/smelt	Mullet	Lowland longjaw	Alpine galaxias	Kōaro	Canterbury galaxias	Big nose galaxias	Braided river birds	Black flounder		Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wai Māori	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters / gorges
Dam Waitaki River (Benmore)	X	X	X	X	X	X	X					Lake Benmore	X								X				Te Ara Whakakairo								X			X
Use water at Benmore Station												Waitaki River (now Lake Aviemore)	X	X						X	X		X		Omarama site (Te Maiharoa camp)		X									
Discharge water via the machines		X	X	X	X							Waitaki River (now Lake Waitaki)	X										X		Te Ana a Ruru		X									X
Discharge water via the spillway		X	X	X	X							Lower Waitaki River	X											X	Tarewa	X	X									
Discharge water via the sluice gates		X	X	X	X							Wetlands	X										X		Te hoki	X	X									
												Tributaries to Lake Aviemore													Taoka											
												Tributaries to Lake Waitaki													Te Kara	X	X									
												Tributaries to Lake Benmore													NZAA sites								X	X	X	X
												Tributaries to Ahuriri River						X		X	X		X														

[34] This list of consents for each of the mid Waitaki stations does not include discharges from oil interceptors at the power stations.
[35] We have not listed groundwater.
[36] We have not included bullies because there are many throughout the whole system.
[37] Please note that many of these sites are repeated when we discuss Benmore as part of the Mid Waitaki system.
[38] In this section we name some of the sites that were drowned when the mid Waitaki lakes were created. Kahurumanu will be able to identify these sites.
[39] Short fin tuna are predominantly found below Waitaki Dam.

SUMMARY TABLE 6 - IMPACTS ASSOCIATED WITH AVIEMORE

- **The operational range is 3.05m but the effective day to day range is 0.6m**

Consents	Affected waters											Affected water	Taoka species found in those waters[40]											Examples of lost or Impacted wāhi taoka[41]	A selection of wāhi taoka associated with these catchments / sub-catchments[42]										
	Lake Benmore	Waitaki River (Aviemore)	Waitaki River (Waitaki)	Lower Waitaki River	Wetlands	Ahuriri River	Tributaries to Lake Aviemore	Mahika kai	Tributaries to lower Waitaki River					Short fin tuna[43]	Mahika kai	Inanga/smelt	Mullet	Lowland longjaw	Alpine galaxias	Kōaro	Canterbury galaxias	Big nose galaxias	Braided river birds	Black flounder		Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wai Māori	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters
Dam Waitaki River (Aviemore)		X	X	X	X		X					Lake Benmore	X								X				NZAA sites								X	X	X	X
Use water at Aviemore Station												Waitaki River (now Lake Aviemore)	X	X						X	X															
Discharge water via the machines		X	X	X	X							Waitaki River (now Lake Waitaki)	X																							
Discharge water via the spillway		X	X	X	X							Lower Waitaki River	X											X												
Discharge water via the sluice gates		X	X	X	X							Wetlands	X																							
Divert water to the spawning race												Ahuriri River	X					X	X		X	X	X	X												
Discharge from the septic tank												Tributaries to Lake Benmore																								
Discharge water from the spawning race												Tributaries to Lake Aviemore																								
												Tributaries to Lake Waitaki																								
												Tributaries to Lower Waitaki River																								
												Tributaries to Ahuriri River						X		X	X															

[40] I have not included bullies because there are many throughout the whole system.
[41] Please note that many of these sites are repeated when we discuss Benmore as part of the Mid Waitaki system.
[42] In this section we name some of the sites that were impacted by creation of the lakes. Kahurumanu will be able to identify these sites.
[43] Short fin tuna are predominantly found below Waitaki Dam.

SUMMARY TABLE 7 - IMPACTS ASSOCIATED WITH WAITAKI

- **The operational range is 3.8m but the effective day to day range is 2.1m.**
- **The flows hat must be provided into the Lower Waitaki River are as agreement through the WAP3 including the environmental (150 cumecs) and irrigation (up to 40 cumecs depending on time of year demand).**

Consents[44]	Affected waters										
	Lake Benmore	Waitaki River (Aviemore)	Waitaki River (Waitaki)	Lower Waitaki River	Wetlands	Ahuriri River	Tributaries to Lake Benmore	Tributaries to Lake Aviemore	Tributaries to Lake Waitaki	Tributaries to lower Waitaki River	
Dam Waitaki River (Waitaki)			X	X	X			X	X		
Use water at Waitaki Station											
Discharge water via the machines			X	X	X					X	
Discharge water via the spillway			X	X	X					X	
Discharge water via the sluice gates			X	X	X					X	

Affected waters	Taoka species found in those waters[45]											Examples of lost or Impacted wāhi taoka[46]	Examples of wāhi taoka associated with these catchments / sub-catchments[47]										
	Mahika kai	Short fin tuna[48]	Mahika kai	Inanga/smelt	Mullet	Torrent fish	Alpine galaxias	Kōaro	Canterbury galaxias	Kanakana	Braided river birds	Black flounder		Mahika kai	Settlement	Repo	Waipuna	Ara tawhito	Reserves	Wai Māori	Rock art	Ovens (NZAA)	Find spot (NZAA)	Caves / shelters/gorges
Lake Benmore													Harakeke	X	X									
Waitaki River (Aviemore)	X	X						X	X				Huruhuru		X									
Waitaki River (Waitaki)	X	X											Te Awakokomuka	X	X				X					
Lower Waitaki River	X	X	X	X	X	X	X			X	X	X	Koreke	X	X									
Wetlands	X	X									X		NZAA sites									X	X
Tributaries to Lake Waitaki																								
Tributaries to Lower Waitaki River		X																						
Waitaki River mouth	X	X		X	X	X				X		X												

[44] These consents do not include the consents for discharges from the oil interceptors at the power station.
[45] We have not included bullies because there are many throughout the whole system.
[46] Please note that many of these sites are repeated when we discuss Benmore as part of the Mid Waitaki system.
[47] In this section we can name all the sites that were lost when the lakes were created. Kahurumanu will be able to identify these sites.
[48] Short fin tuna are predominantly found below Waitaki Dam.

From the perspective of Manawhenua:

- The modifications in to the Mid Waitaki system negatively impact many Kāi Tahu values.
- This part of the catchment has undergone the most profound irreversible changes.
- The braided river that flowed from the junction of the four rivers has been dammed in three places.
- Artificial lakes have replaced the braided river. Large parts of the lakes are inaccessible to whānau.
- Sites (including rock art, shelters, nohoaka) were destroyed. Ninety five percent of sites in the Mid Waitaki have been destroyed by hydro-electricity development (using the data from NZAA site records).
- Taoka species have been impacted, most notably migratory fish species.
- The changes in the mid Waitaki have enabled activities that may be in conflict with Kai Tahu uses and aspirations, in particular recreation and tourism.

5.5.8 The Lower Waitaki River

Historically as flows scoured out the headwaters of the Waitaki they carried downstream the boulders and sediments that shaped and structured the lower reaches of a Waitaki River. Kāi Tahu know how floods resulting from heavy rains or runoff when the mountain snows melt, can rearrange channels, clear islands of vegetation including weeds and in effect reset the braided river system. Change brought about by the flooding is natural and needed. In contrast, dams and reservoirs intercept floods and nutrients that should be moving downstream, and this is viewed negatively by Kāi Tahu. Regulation of flow regimes in rivers are of concern because they change the patterns of low flows, freshes and floods. The water still flows downstream but the Waitaki River and coastal environment does not receive the material needed to renew its channel and habitats.

The flood plain-delta comprising the Lower Waitaki sub-catchment extended 60 km from Kurow to the Waitaki River mouth. In keeping with other major rivers, the Waitaki was somewhat volatile. Flooding could be severe and relatively unpredictable, yet the river could be forded during periods of low flow, especially during winter. The plains are a manifestation of the river. In some places adjoining the river the out-wash gravels are arranged in distinctive terraces ranging in height up to several metres. These terraces have been used as pathways and places for settlement (i.e. they were above flood level). The hills lining the southern side of the valley contain orthoquartzite and schist outcrops where deformation has resulted in ridge and valley systems, supporting mahika kai. Limestone outcrops on the plains were used as shelters, and natural canvasses for cultural expression, some of this rock art has survived to this day (Allington & Symons 2002).

A network of waterways and springs within these lower plains are both directly associated with the main riverbed and tributaries. Collectively these environs provided a patchwork of wetland environments supporting fish, bird and plant life. Significant tributaries in the Lower Waitaki sub-catchment include the Hakataramea and Maerewhenua Rivers, and Whakapapa Ariki (Welcome Creek).

Written descriptions dating from the 1840s describe how the extensive plain and most of the adjoining hills lining both sides of the Lower Waitaki sub-catchment were largely grassed, with the isolated forest and bush areas occurring in pockets (Shortland, 1974). These included the Papakaio and Waikoura Creeks (on the south side). Extensive tracts of forest still remain on the lower slopes of the adjoining ranges.

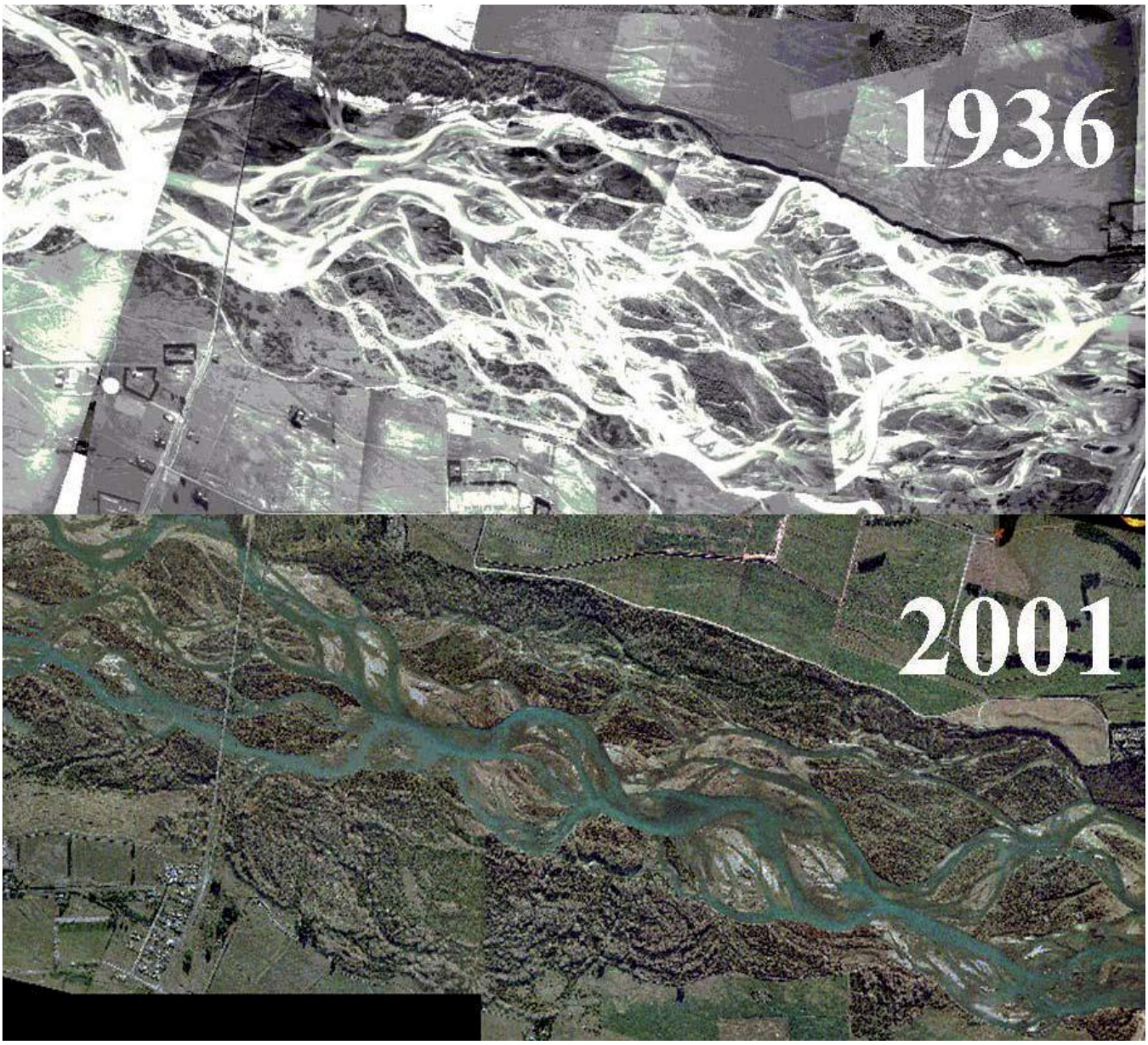
Location of the Waitaki River mouth varied from year to year, depending on river flows and coastal conditions. Sometimes the river flowed into the waves near the south bank; at times the waves surged into the river near the north bank. There were also months during drought years or when too little water flowed that Kai Tahu feared the river lacked enough force to reach the ocean.

The Waitaki River mouth was also a hub connecting a network of trails to the north, south and inland. Whānau who lived on the Waitaki riverbanks used this network to access the rich fish and bird resources. Today a scattering of houses at a fishing village, reserved lands, an urupā, and a fishing easement; all now isolated from the river, are remnants of the settlements that had been continually inhabited at the river mouth for centuries.

Today, the Lower Waitaki River is a regulated river. Flows are determined by what comes through or over the Waitaki Dam. The Waitaki Allocation Plan prescribes the flow regime. Another feature of the Lower Waitaki are the many extractions from the mainstem and tributaries.

Despite the level of extraction and the regulation of river flows, Manawhenua are committed to maintaining a braided riverscape. Hall (1984), however, explained that the reduced sediment load and the reduced flows should lead to a reduced number of braids in the Lower Waitaki River. Hicks et al (2002) describe the impact of river flows on the movement of sediment, vegetation encroachment of the river channel and the braiding pattern of the Lower Waitaki. The braiding pattern of the Lower Waitaki (which is shown in Figure 39) has been impacted by the Waitaki Dam which has stopped the supply of bed material sourced from areas upstream of the dam; and dampened the flood flows.

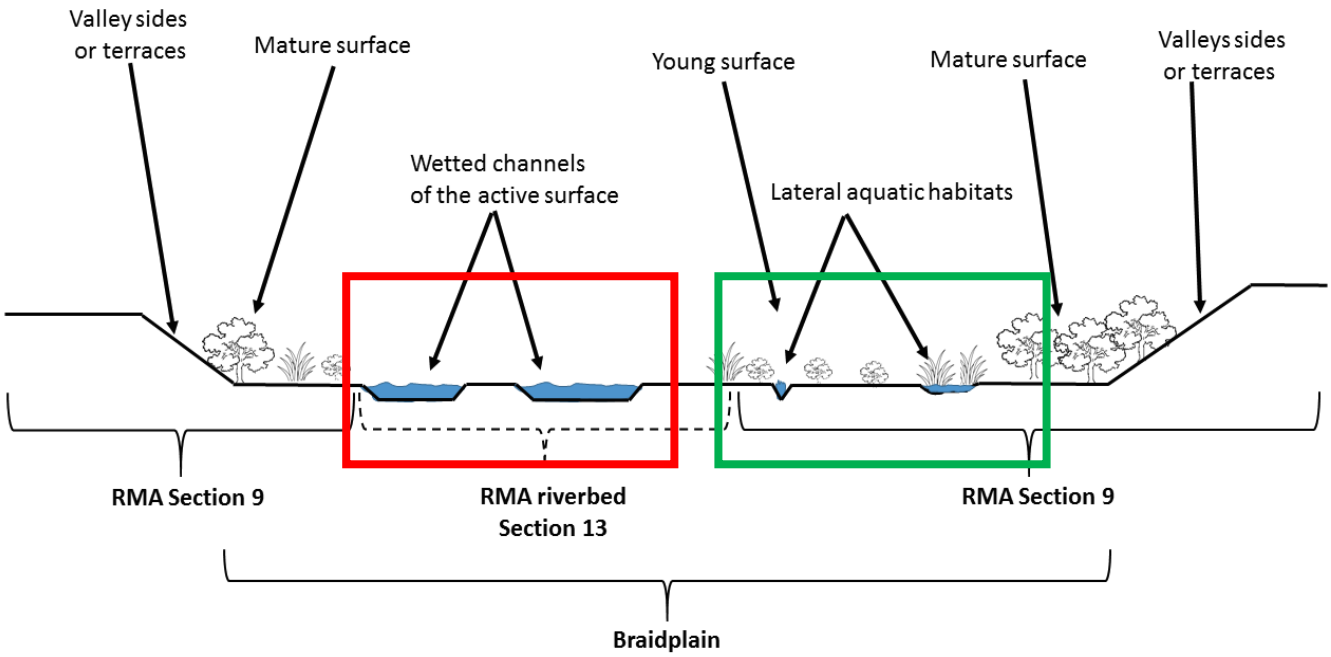
Figure 39: The changes to the braiding pattern between 1936 and 2001 (Hicks, 2006)



Ryder (2013) explained that floods of 900 cumecs will provide energy sufficient to move bed material in the Lower Waitaki mainstem and assist with maintaining the braiding pattern. Floods of 900 cumecs are called “channel maintenance flows”. Smaller flows of 450 cumecs are considered sufficient to clear the channels of fine sediment and periphyton growth. Annual flushing flows are required pursuant to the provisions of the Waitaki Allocation Plan. Vegetation changes, especially infestations of willows in the riparian areas, impact channel shape and width of the river channel (Hicks, 2006).

Manawhenua raise the issues of braiding pattern and vegetation encroachment because of the significance of the Lower Waitaki as a mahika kai. While jet boaters and other recreational interests including photographers may be interested in the wetted channels carrying the bulk of the flows (red box in Figure 40), these main braids could be too dangerous for whānau to use. They may prefer to use the safer lateral aquatic habitats as shown in the green box. Sadly it is these lateral aquatic habitats that are at risk from encroachment of willows and adjacent uses.

Figure 40: A profile of braided river showing the different habitats (Gray, 2018)

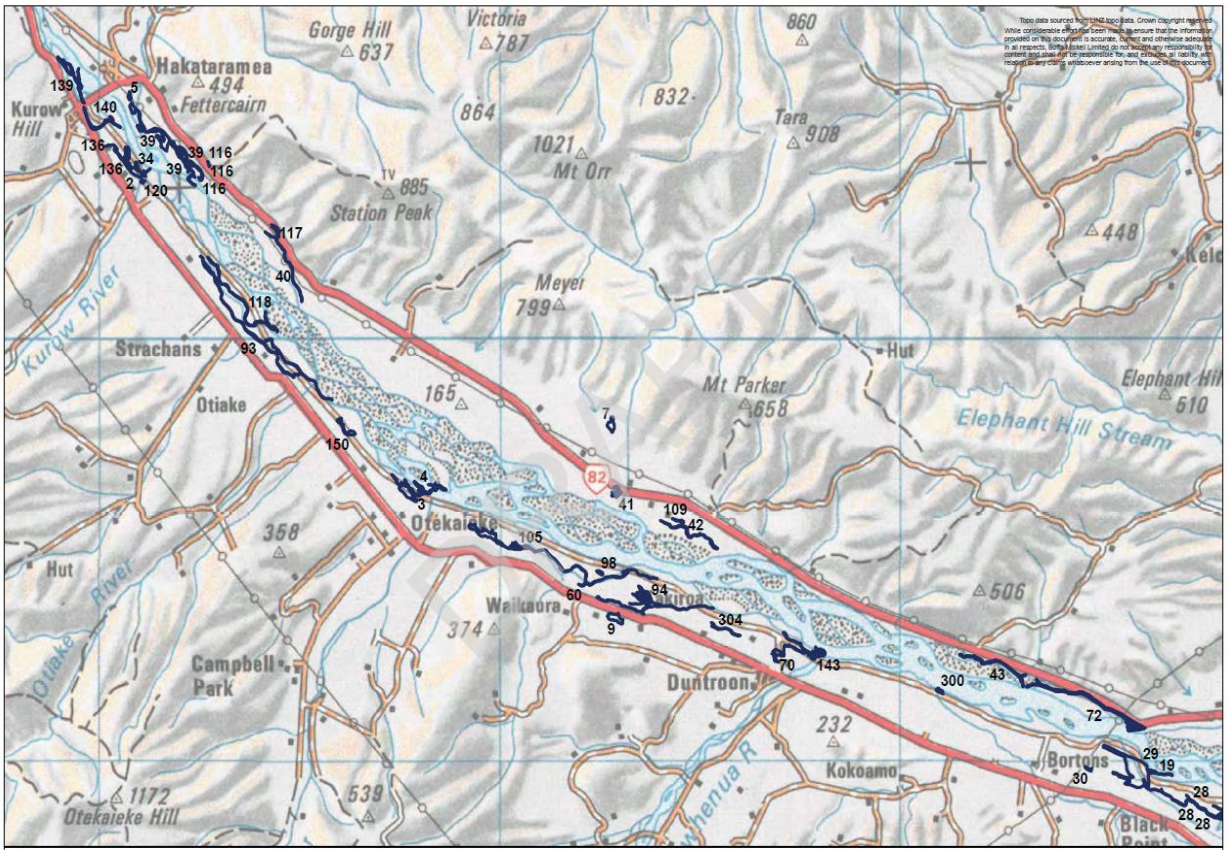


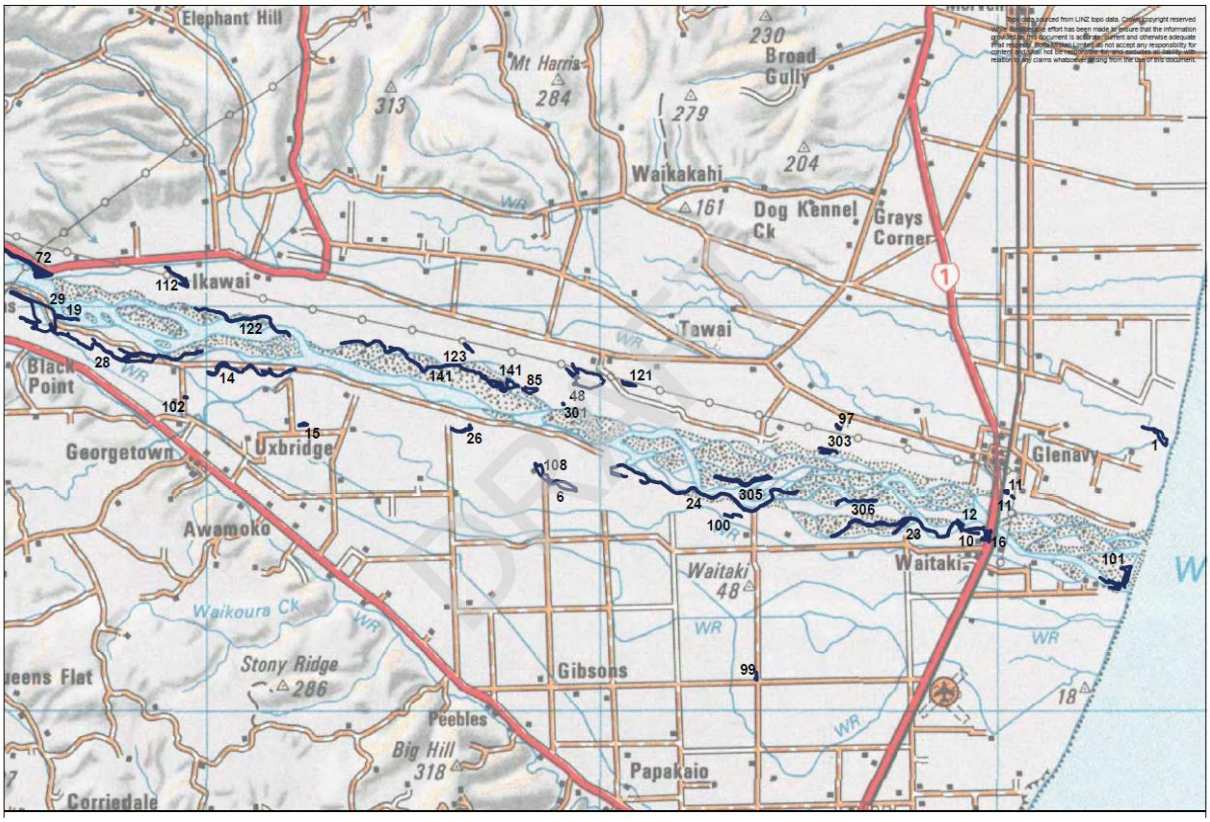
Examples of safer lateral aquatic habitats in the Lower Waitaki are shown in Figures 41 and 42.

Figures 41 (left) and 42 (right): Lateral aquatic habitats in the Lower Waitaki

Riparian wetlands are also highly valued by Manawhenua. The wetland study that was undertaken as part of the North Bank Tunnel Investigations surveyed the stated of many of these wetlands. Maintaining the values of these wetlands is a priority for Manawhenua and it is hoped they are a focus of the biodiversity mitigation. Figures 43 and 44 show the location of riparian wetlands below Kurow.

Figure 43 (top) and Figure 44 (bottom): Maps showing the location of riparian wetlands in the Lower Waitaki (Robertson, in Project Aqua contracted reports).





To reiterate, Manawhenua are excited that the biodiversity mitigation package that accompanies the consents is likely to enable these riparian habitats to be restored.

5.6 Significant impacts

In the preceding sections of this TIA we have attempted to provide a spatial description of the impacts experienced by Kai Tahu. In this section we want to emphasise three issues.

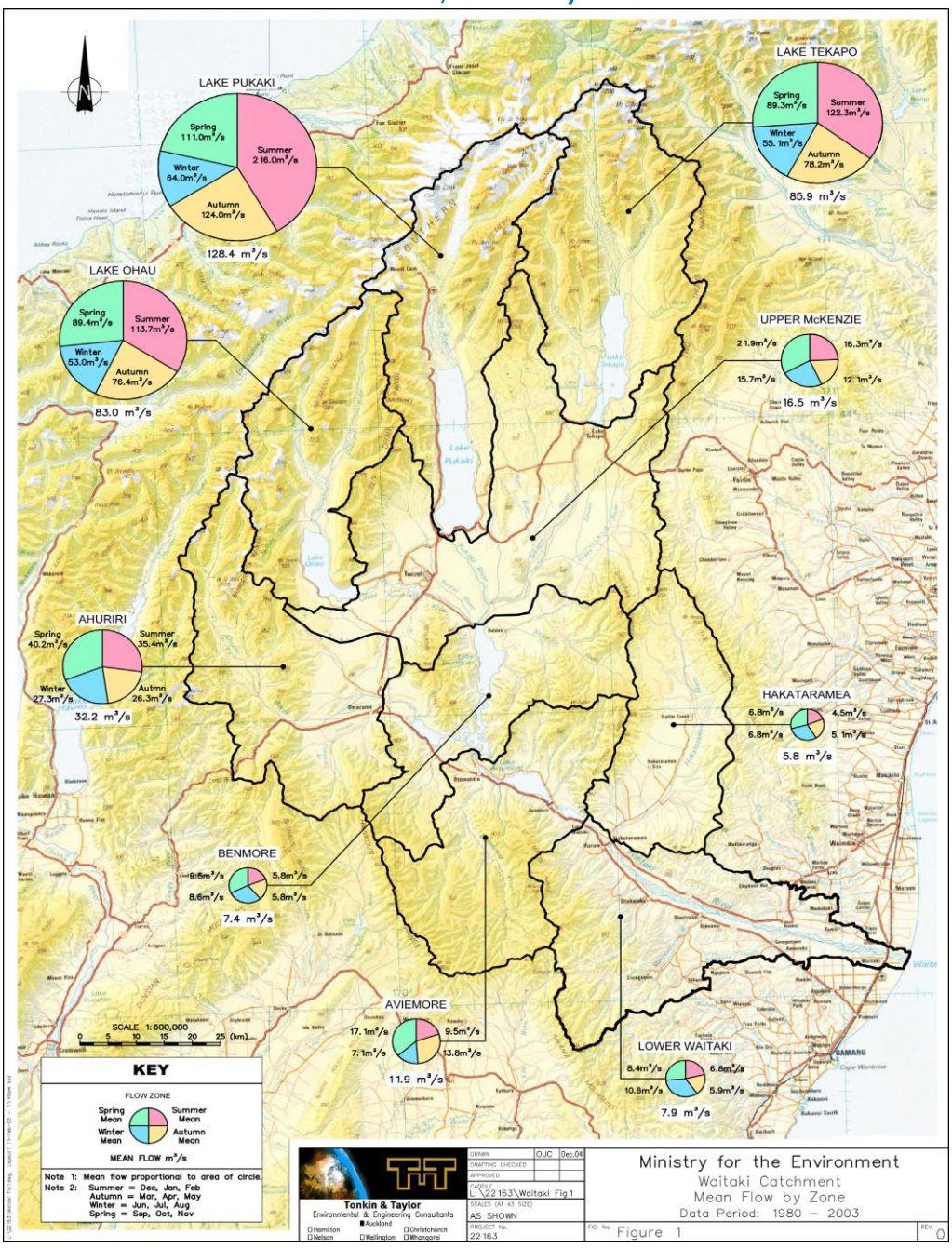
5.6.1 Seasonality of flows

Figure 45 shows the contribution of streams in the different areas to flows in the lakes and Waitaki River mainstem. This figure also helps us understand how storage has changed both the size of flows and their seasonality.

Figure 45 shows that flows into the three headwater lakes of Takapō, Pūkaki and Ōhau, which are unregulated, in summer contribute 122.3 cumecs, 216 cumecs and 113 cumecs respectively. Historically these high flows would have passed downriver.

Freshes and floods would have been experienced in the lower reaches of the catchment. Now that the system is managed for electricity, demand for electricity is lower in the summer months so part of this water is stored for use in winter.

Figure 45: Waitaki Catchment mean flows by zone from 1980 to 2003 (Leong 2005, MFE 2006)



The lowest inflows to the lakes occur in winter with flows of 55.1 cumecs, 64 cumecs and 53 cumecs. Historically this would have meant lower flows in the downstream river. In contrast, today the demand for electricity is greater in the winter months and therefore higher flows occur as water must be passed through the power stations and downriver to generate electricity to meet the winter demand.

5.6.2 Loss of sites

Historically there were more than 160 settlements across the Waitaki. Connecting these settlements were land and water-based trails. Whānau at the sites – either permanently or temporarily – were sustained by the abundance of resources found in wetlands, streams and the Waitaki itself. Construction of the hydro infrastructure drowned many sites of significance and removed the opportunity for future generations to reclaim these lost associations.

The priority that has been agreed with the Generators is that rock art conservation (undertaken on behalf of the three Waitaki Rūnaka and Te Rūnanga o Ngāi Tahu by the Ngāi Tahu Rock Art Trust) will continue to be supported for the duration of the consent.

5.6.3 Mahika kai

Mahika kai lies at the heart of Kāi Tahu culture. There were in excess of 30 different species taken from the Waitaki catchment, with the most commonly harvested species shown in Table 2. Tuna were taken from approximately 69% of sites in the catchment.

Taonga species	Percentage of sites from which species gathered
Tuna	69%
Weka	53%
Turnip / potato	20%
Aruhe (bracken fern)	17%
Kōareare (raupō)	8.6%
Birds	8.6%
Kākāpō	7.9%
Kāuru (from Cabbage Trees)	6.9%

Historically for many whānau, tuna were a staple and consumed all year round. Tuna stocks have declined in recent years, an impact that Kāi Tahu contend has resulted from a combination of factors[49]. However, within the Waitaki the adverse impact of infrastructure of the tuna population is overwhelming.

We include two maps that illustrate the impact of hydro-electricity infrastructure:

- Figure 46 (left) shows the historic distribution of sites from which tuna were gathered by Kāi Tahu and is based on manuscripts where sites from which tuna were gathered are mapped and described.
- Figure 47 comes from FENZ (Freshwater Ecosystems of New Zealand) and also depicts data from the Freshwater Database[50]. The FENZ map illustrates the current prediction of tuna habitat in the

[49] See Waitaki South Canterbury Tuna Management Plan.
[50] The blue dots represent sites where the database has records of tuna being caught in the catchment.

catchment. Using FENZ all waterways that appear brown in the Figure (which corresponds with all waterways upstream of Waitaki Dam) represents no habitat for tuna. Kāi Tahu does not accept that there is no habitat for long fin tuna upstream of Waitaki Dam. More correctly, this map shows that Waitaki Dam is an impassable barrier to tuna reaching habitats upstream. For tuna, more than 80% of the catchment is above Waitaki Dam.

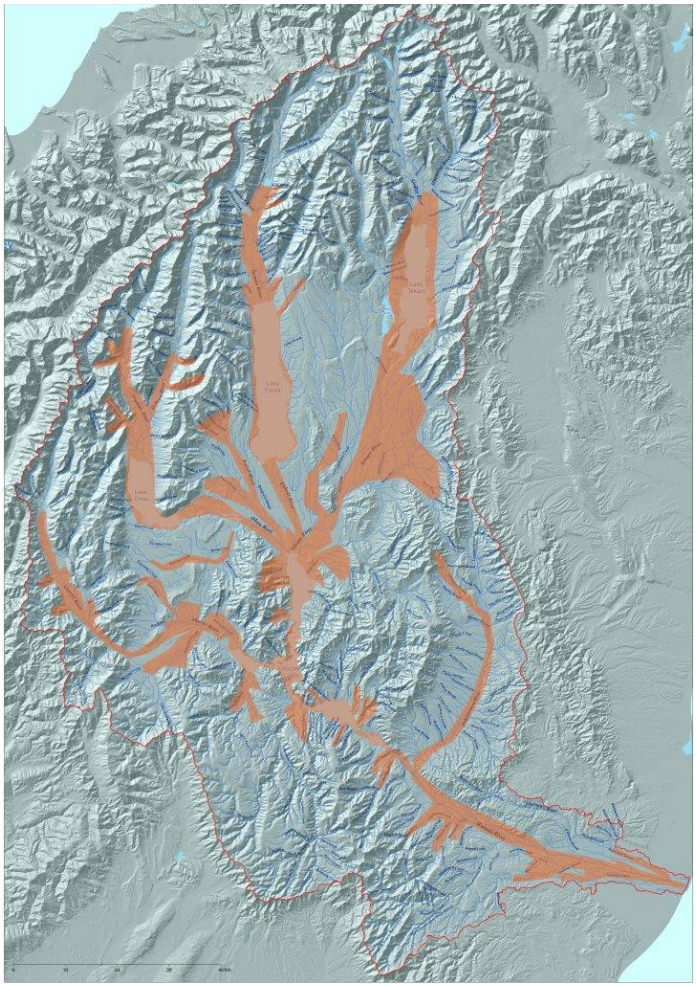


Figure 46: Sites in the Waitaki from which tuna were taken historically (adapted from a written manuscript listing sites where tuna were harvested).

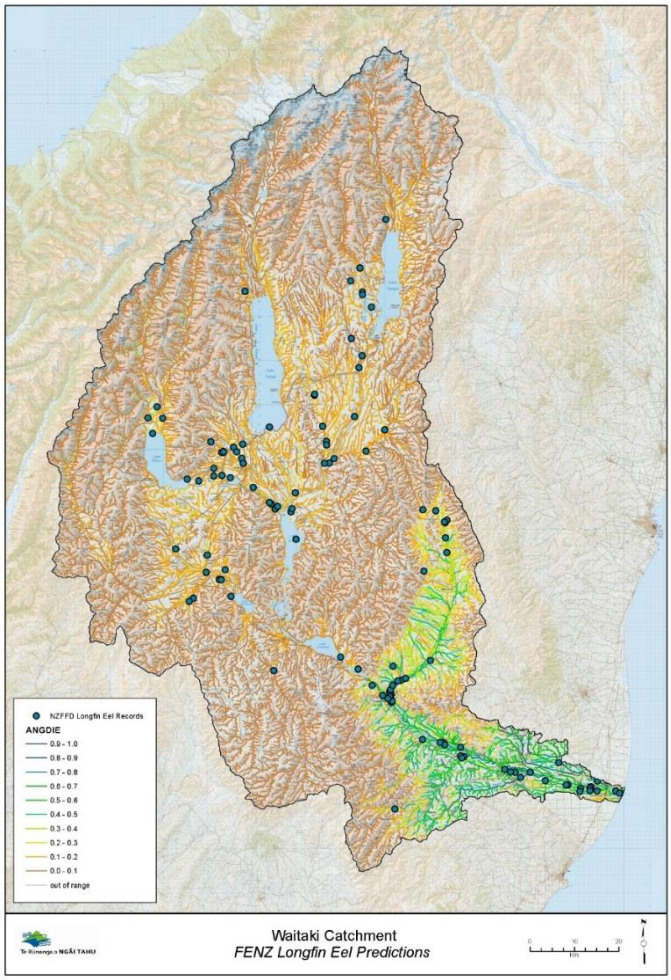


Figure 47: Predictive Habitat for Long Fin Tuna (using FENZ) with the tuna recordings from the New Zealand Freshwater database. The map was supplied by Iain Gover (TRONT)

As noted earlier, restoration of the tuna fishery has been underway for many years with relocation of elvers from a trap at the Waitaki Dam to the upper catchment, principally Lake Benmore and tributaries of the Ahuriri catchment. Over the years Manawhenua have reviewed initiatives from around the world to see if they were an option for the Waitaki. Given the size of the dams in the Mid Waitaki and the fact that there are multiple barriers, at this point in time Kāi Tahu supports an enhanced tuna management program for the Waitaki as part of the initiatives that have been negotiated with the Generators. This will include an expanded trap and transfer program.

5.7 A summary of the impact on the health and wellbeing of Kāi Tahu whānau

The previous sections of this chapter have described the impacts arising from the changes to the Waitaki as a result of hydro electricity generation. The final assessment of impacts needs to recognise the consequent intergenerational harm of these operations to the health and wellbeing of Kāi Tahu whānau. The connections of Kāi Tahu to the lands and waters of the Waitaki remain and represent the foundation of whānau spiritual, social and emotional wellbeing. More specifically, cultural activities, including mahinga kai, continue to be essential to the wellbeing of Kāi Tahu for whom a state of well-being, reflects an ability to thrive and prosper – it reflects the interconnections across past, present, and future generations. But today the belief among many Kāi Tahu is that "*Everyone is thriving in that valley but not us*" (pers comm J. Tipa).

Health and wellbeing may be defined and assessed on a whānau and hapū level, consisting of inseparable strands of human health, ecological health, and cultural health woven together, all equally important. Individual health is affected when whānau/hapū and the non-human environment is unhealthy. Without doubt the wellbeing of Kāi Tahu whānau has been impacted by changes in the valley as a result of hydro-electricity generation. Below are listed some of the dimensions of wellbeing that are impacted.

Whānau connections	If Manawhenua do not restore the waterways of the Waitaki, the resources sourced from them, and sites of significance across the wider environment, then the belief for many is that one cannot sustain themself, honour their tūpuna, or provide for the children of their children into the future. *It is sad that my grandchildren will not have the experiences I had at Pūkaki when I was a child.* (Jennifer Thomas, Te Rūnanga o Waihao)
Security of resources	Access to healthy populations of taonga species is no longer assured. Taonga, such as tuna, which was a mainstay of many whānau diets, is significantly impacted by damming the river.
Cultural use	The ability to fully maintain practices, especially those associated with mahinga kai, is at risk, which threatens the potential loss of mātauranga associated with the species, places and practices.
Mātauranga Ngāi Tahu	The passing down of mātauranga is a seminal way in which cultural heritage is transmitted to younger generations and it is how cultural identity is maintained over the passage of time. Mātauranga is generated from being active in the catchment, undertaking activities as tūpuna did, and applying what has been taught to us. Having limited opportunities in the catchment threatens the perpetuation of mātauranga requiring an intense effort by whānau to mitigate this threat.

Rangatiratanga	Widespread environmental change and deterioration to the waterways of the catchment has contributed to the erosion of the recognition of the rights and interests of Manawhenua. Governments and agencies have prioritised the uses of lands and waters by others to the detriment of Kāi Tahu. Many whānau see this lack of recognition continuing today. *Others, such as tourists, are treated as if they have more rights than us*. (Justin Tipa, Te Rūnanga o Moeraki) *We are like manuhiri in our own takiwā. Going for a visit then going home.* (John Henry, Te Rūnanga o Arowhenua)
Economic wellbeing	Compounding the sense of loss for many whānau from North Otago and South Canterbury has been their role in changing the valley. Economic conditions in the 1960s through to the 1980s meant that some whānau – to feed their families - accepted wages building the very infrastructure that has significantly altered the value. There are a number of whānau who grew up in the hydro villages found in the valley. Today, those experiences generate mixed emotions.
Kaitiakitanga	The viability of Kāi Tahu culture, mahinga kai and ways of life is intimately connected to the overall health of the environment. Recent declines in many aspects of environmental quality, for example the loss or decline of taonga species, have led Kāi Tahu to engage in a range of forums expressing the threats to the well-being of Kāi Tahu whānau. Sadly, in many of the management processes since the first infrastructure went into the valley in the 1930s, the perspectives and even the necessity to account for the lifestyles off Kāi Tahu have largely gone unnoticed.
Mana	When hosting other hapū and iwi in the catchment many visitors are shocked to witness the scale of change to the waterways and the impacts experienced by Kāi Tahu. Having to repeatedly explain that the change was imposed at a time when there was no engagement with Manawhenua is the only response when asked *"How did you let this happen? What are you*

	going to do"? (Tūwharetoa visitor to the catchment in 2017).
Well-being	*If your land, your rivers, your sea, and your air, that you sustain your very essence with are mate ... then regardless of how strong you stand in your spirituality eventually, it may take a generation or so, it makes you a sick people ... It makes you invisible in your own land ... and physically sick* (H Forsyth)

To conclude, in the Waitaki today Kāi Tahu are forced to deal with an increasingly complex set of problems related to the construction and ongoing operation of hydro-electricity generation infrastructure. Over generations this has impacted their health and wellbeing. But today, they accept this challenge as the identity of Kāi Tahu remains situated in a strong connection to Waitaki and they know that through their commitment, they and their culture will endure - *mō tātou, ā, mō kā uri ā muri ake nei.*

Chapter 6: Considering Te Mana o te Wai

Ko te wai te ora ngā mea katoa

Water is the life giver of all things.

6.1 Te Mana o te Wai

The preceding chapters detail the significant impact that the hydro scheme has had on the waterbodies of the Waitaki and all that depend on it. In this chapter we describe how the hierarchy and a number of the principles of TMotW are applied by Manawhenua to the Waitaki catchment in the context of these applications that are specific to the Tekapo and Waitaki Power Schemes. We start by acknowledging that when assessing the impacts of the Tekapo and Waitaki Power Schemes we must acknowledge that TMotW is relevant to all waters not just riverine and not just to the specific aspects of freshwater management referred to in the National Policy Statement or in the case of the Generators their resource consent applications.

Te Mana o te Wai (TMotW) has been included within the National Policy Statement for Freshwater Management since 2014, it is therefore not a new concept. Its evolution has however made it clearer that it applies a hierarchy of obligations that prioritises:

- first, the health and well-being of water bodies and freshwater ecosystems
- second, the health needs of people (such as drinking water)
- third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

We also want to stress that, consistent with principles 1, 2 and 3 of TMotW, it is the role of Manawhenua, as rangatira and kaitiaki, to determine the parties they wish to establish relationships with, and the nature of those relationships, in order to achieve the outcomes Manawhenua seek. A recurring sentiment throughout this chapter is the value Waitaki Rūnaka place on a direct and enhanced relationship with the Generators.

TMotW encompasses six principles relating to the roles of Tāngata Whenua and other New Zealanders in the management of freshwater, and these principles inform the National Policy Statement and its implementation. The principles are:

Mana whakahaere: the power, authority, and obligations of tāngata whenua to make decisions that maintain, protect, and sustain the health and well-being of, and their relationship with, freshwater.

Kaitiakitanga: the obligation of tāngata whenua to preserve, restore, enhance, and sustainably use freshwater for the benefit of present and future generations.

Manaakitanga: the process by which tāngata whenua show respect, generosity, and care for freshwater and for others.

Governance: the responsibility of those with authority for making decisions about freshwater to do so in a way that prioritises the health and well-being of freshwater now and into the future

Stewardship: the obligation of all New Zealanders to manage freshwater in a way that ensures it sustains present and future generations

Care and respect: the responsibility of all New Zealanders to care for freshwater in providing for the health of the nation.

An analysis of the policies of the NPSFM has not been undertaken here but it is noted in informing the analysis in this section particular regard was had to the following policies:

- that freshwater must be managed in a way that gives effect to Te Mana o te Wai (Policy 1);
- that Manawhenua are actively involved in freshwater management (Policy 2);
- that freshwater is managed in an integrated way that considers the effects of land use and development of land on a whole of catchment basis including the receiving environments (Policy 3); and
- that freshwater is to be managed as part of the integrated response to climate change (Policy 4).

In summary, TMotW is about refocusing how freshwater is managed within statutory planning processes, from a focus on trading off or balancing ecological and other values, with economic uses of water; to prioritising the hauora/health of the waterbody first. The highly modified nature of the Waitaki catchment today and the national significance of the uses of its waters, means such reprioritisation is a journey of continual improvement. Throughout this consenting process with the generators, Waitaki Rūnaka have sought to develop a package that, over time, will enable them to fulfil this commitment.

6.2 The uniqueness of the Waitaki

The waters of the Waitaki that are subject to the TMotW obligations are found in wetlands, springs, lakes, streams, rivers, and under the surface of the whenua (i.e. groundwater). These diverse waters are found across an 11,000 square kilometre catchment. But if we are to apply the first obligation in the hierarchy, and put the health and wellbeing of the waterbodies and freshwater ecosystems first, we must recognise that over the last hundred years:

- Three natural lakes are now dammed at their outlet (two have control structures and one has a passive weir).
- Two of the natural lakes have their lake levels manipulated to provide storage for the hydro-electricity schemes.
- There are now four artificial lakes where there were once gorges and braided river systems.
- There are four dewatered reaches in the major tributary rivers, specifically the Upper Takapō[1], part of the Lower Takapō[2], part of the Pūkaki River, and the Lower Ōhau River[3].
- There are now approximately sixty kilometres of hydro canals that carry the waters that once flowed down the rivers.
- There is one “reinstated” but regulated river flow in the Upper Ōhau that flows from Lake Ōhau into Lake Ruataniwha.
- There were wetlands that were drowned by raised or artificially created lakes.
- There are dewatered / lost springs and wetlands that could be associated with reduced river flows e.g. Lower Takapō wetlands.

- There is a regulated remnant of the Waitaki River as a braided river below Waitaki Dam.

This is the scale of modification that can be attributed principally to hydro-electricity generation.

We recognise as well that as a result of these modifications, annually the Waitaki provides between 19-30% of the nation's electricity. This electricity cannot be replaced at short notice. Of greater importance, the storage in Lakes Pūkaki and Takapō represents 50% of the nation's water storage. When applying Te Mana o te Wai, Kā Rūnaka cannot ignore the significance of electricity to the health and wellbeing of New Zealanders, and its contribution to enabling New Zealand to meet its global commitments with respect to climate change. Manawhenua when considering the scale of artificiality in the Waitaki, also recognise that the catchment is also nationally significant for tourism, recreation and agriculture.

A unique catchment requires a unique solution to the implementation of TMotW. Waitaki Rūnaka agree:

- TMotW is to be applied across 11,000 square kilometres.
    - Manawhenua when considering the Waitaki remain committed to adopting an intergenerational approach to giving effect to TMotW.
    - Given the existing scale of modification, the priority (and most cost-effective strategy) is to protect the "remaining good stuff" first.
    - Groundwater, springs, wetlands (discrete and riparian), lakes and rivers are all to be subject to strategies designed to deliver the TMotW obligations. The agreements negotiated between the Generators and Kā Rūnaka provide the flexibility to strategise and prioritise implementation of initiatives across the catchment.
    - TMotW cannot and should not be reduced to a discussion of minimum flows in specific reaches of three rivers – the Takapō, the Pūkaki and the Lower Ōhau.

6.3 Relating TMotW to the consent applications

Generic definitions of generalised concepts and prescribed, universally applicable methods are touchstones of New Zealand's statutory planning framework. However, Manawhenua do not have a formulaic prescription for giving effect to TMotW. Te Mana o te Wai is to be applied across each river reach, each waterbody, and each sub-catchment; and each of these awa will require its own tailored strategy Tailored strategies will require a comprehensive understanding of the state of each waterway/waterbody, its management needs, in particular any restoration needs, as well as an understanding of its contribution to overall catchment health. In short, TMotW in the Waitaki Catchment is best described as an ethic, not an outcome; an ethic which recognises and respects that the appropriate management of each water body is place and knowledge- specific.

The Generators have advised Waitaki Rūnaka that they are proposing no material changes to the current activities existing consenting flexibility with respect to how these schemes are operated. With this advice, as rangatira and kaitiaki, it is for Manawhenua to determine the priorities for giving effect to the objectives and principles across the waters of the catchment.

More specifically, it is against this background that Waitaki Rūnaka have adopted an approach to these consents that represents an intergenerational response to realising TMotW.

We have chosen to explain TMotW and these applications for consent:

- In relation to the aspirations that Manawhenua have for the catchment;
- In relation to the effects of the Schemes; and
- In relation to the types of consent conditions that have been agreed with the Generators.

6.3.1 The impact of the Schemes on Whānau aspirations in the Waitaki catchment

In numerous documents produced in recent years Manawhenua have articulated their aspirations for the Waitaki[4]. We start by assessing the impact of the Schemes and the obligations of TMotW within the context of these aspirations.

Manawhenua aspirations	Considering TMotW in the consenting process
Recognition of Rangatiratanga	A touchstone of giving effect to TMotW in the Waitaki Catchment is recognising and respecting Manawhenua rangatiratanga and associated duty of kaitiakitanga. The relationship between Kā Rūnaka and the Generators and the commitments they have made to work together in the Waitaki Catchment rather than relying on the medium of resource consent conditions is a manifestation of that recognition and respect.
Ki uta ki tai	The Kāi Tahu ethic of ki uta ki tai or integrated management of catchments from the mountains to the sea underpins TMotW in the Waitaki Catchment. Ki uta ki tai is expressed through having equivocal relationships, agreements, programmes and where relevant consent conditions with both Generators, and having the one TIA for both applicants and across all applications.
Protecting Aoraki and kā roimata o Aoraki (the tears of Aoraki)	Kā roimata o Aoraki are afforded a degree of protection within Aoraki National Park. We note that currently there is very little hydrological alteration upstream of the Upper Waitaki lakes. Protecting these largely unmodified areas is a priority for Manawhenua.
Protecting the quality of the waters of the Waitaki	Putting the health and wellbeing of the waters first requires a focus on the health and wellbeing of the whenua over which the waters flow. Waitaki Rūnaka are active in this space via processes that are largely managed outside of this consenting process. The package of initiatives agreed with the Generators will provide resourcing to initiatives that are intended to improve water quality.
Protecting rock art sites	In creating the Waitaki hydro-scheme rock art sites were lost. It is therefore critical to protect the remaining rock art. The package of measures that has been negotiated with the Generators will afford the Rock Art Trust the opportunity to continue rock art conservation.
Protecting other wāhi tapu / wāhi taoka	By continuing with the “status quo” operation of the Schemes, it is anticipated that no further wāhi taoka and wāhi tapu in the valley will be lost as a result of hydroelectricity generation. The enhanced relationship agreement with the Generators also affords a degree of protection. Manawhenua expect the relationship agreement will act as an “early warning system” whereby generators advise of any activity changes.
Protecting cultural landscapes	The Waitaki Hydro scheme altered the landscape. Through developing an enhanced relationship agreement with the Generators this affords a greater degree of protection for landscapes than at present. The

	biodiversity mitigation package and the package separately agreed with Waitaki Rūnaka could see cultural landscapes restored and or protected. Waitaki Rūnaka recognise that it is fundamental that they have a role in governing the biodiversity programme to ensure biodiversity, mahinga kai, taonga species and cultural landscapes are all accorded attention.
Developing more appropriate flow regimes	Manawhenua are committed to seeing flowing rivers across the Waitaki[5]. But more appropriate regimes, from a Manawhenua perspective, means restoring flow regimes that mimic historic regimes. In this consenting process it is acknowledged that reverting back to the seasonal pattern of historic flows may not be a feasible until a replacement energy source for part or all of the generation from the dams and powers stations in the Waitaki is found. Also, it is important to review the Summary Tables 1-7 in section 5 of this TIA. Those tables identify "affected waters". TMotW requires Manawhenua to, over time, address the needs of all waters in the Waitaki including all affected waters. .
Ensuring variability in river levels	It is expected that climate change will result in greater variability in river flows mainly as a result of higher inflows into the Upper Waitaki lakes creating more spills into the Takapō and Pūkaki Rivers. But the extent of the variability is unknown. Agreed monitoring methods and the enhanced relationship agreement will provide information to Waitaki Rūnaka.
Providing a sufficient buffer, or safety margin, to mitigate against the adverse effects of changing land uses on the waters of the Waitaki.	This aspiration touches on land tenure and is not solely within the ability of generators to influence. However, the biodiversity mitigation package and the package of initiatives agreed with Waitaki Rūnaka (which includes an tuna management programme) is likely to see riparian habitats enhanced. Some riparian lands could be retired (thereby creating a buffer) but that is still to be determined.
Undertaking the restoration, enhancement and creation of wetland areas, to act both as flow moderators and kōhaka for mahika kai species	The biodiversity mitigation package and the package agreed with Ngā Rūnanga (which includes an tuna management programme) is likely to see riparian habitats including wetlands, enhanced. Hopefully riparian wetlands in the Lower Waitaki will be a priority.
Enhancing access throughout the river system	This also touches on land tenure issues that are beyond the scope of this consent. But the relationship agreement could be a mechanism to work towards improved access.
Addressing issues relating to changing land uses in the catchment, in particular the increase in dairying.	This remains a priority for Waitaki Rūnaka. Waitaki Rūnaka are active in this space via a number of processes that are largely managed outside of this consenting process. In balancing the obligations in the TMotW hierarchy in other statutory processes, it is highly unlikely that any land use will be seen in the same light (or level of significance) as 19-30% of the nations' power and more than 50% of the nation's storage. Therefore, the interpretation of TMotW and the balancing of obligations described in this section is specific to this suite of applications.
Protecting habitats in the lagoon.	This remains a "work-on" but agreed monitoring provisions will provide information about the river mouth. Also, the biodiversity mitigation

	package and the package agreed with Waitaki Rūnaka could include restoration of habitats in and around the lagoon.

6.3.2 Avoiding, remedying or mitigating the impact of the Schemes

When assessing the impacts of the Schemes, Manawhenua needed to be cognisant of how their decisions contribute to protecting the health and well-being of our freshwater.

Effects associated with the Schemes	Considering TMotW in the consenting process
Loss of sites as a result of creation and continued operation of the Schemes.	This is an ongoing impact that is experienced by whānau when travelling through the catchment. The ongoing operation of the Schemes perpetuates the sense of loss.
Any further dewatering or loss of tributaries, wetlands, side braids, springs, backwaters, adjacent to or surrounding mahika kai sites throughout the catchment.	The packages that have been developed will enable initiatives to the implemented that enhance riparian and aquatic habitats valued as mahika kai across the catchment. Minimum flows are not sought in the Takapō, Pūkaki or Lower Ōhau Rivers. Maintaining the status quo with respect to Scheme operations will result in no further dewatering or loss of tributaries, wetlands, side braids, springs, backwaters. Monitoring will enable Waitaki Rūnaka to observe this.
Any deterioration to the quality of water in the mainstem and the tributaries.	It is not anticipated that there is to be any deterioration to quality of water as a result of hydro generation. Some outside interests may argue that reduced flows change the concentration of contaminants. However, the issue for Waitaki Rūnaka is the contaminant load entering the awa in the first instance, and they do not support the position of “dilution being the solution” for degraded water quality. Further, the mitigation packages that have been developed will enable initiatives to the implemented that are likely to start improving water quality.
Any encroachment of adjacent land uses onto the Waitaki riverbed as a result of reduced flows in rivers.	The package of initiatives that have been developed will enable measures to the implemented that focus on riparian and aquatic habitats that will start to address this issue. These initiatives could even enable the acquisition of key lands if that is an action desired by the parties.
Unnatural changes to the sediment flow and patterns of deposition in the main river channel and at the coastal area.	Dam removal is a strategy that is being employed internationally. It has also been raised as an option by whānau members during consenting discussions. The scale of the Waitaki dams and the fact that the river which was inundated was a braided river, means that the dams in the Mid Waitaki and their effects on sediment accumulation or deprivation may be irreversible. Coastal management is a subject that is being investigated in other forums.

The flow regime in the Lower Waitaki resulting in extended periods of low flows with limited flow fluctuations.	It is not anticipated that the flow regime that was negotiated as part of Plan Change 3 is to be changed. The status quo will be reflected in the consent conditions.
Flow regimes that fail to recognise the property interests of Kāi Tahu.	It is not anticipated that the flow regimes that Waitaki Rūnaka have agreed to in other forums will be changed.
Any desecration of urupā within the valley.	It is not envisaged that there will be any further desecration of urupā.
Any further loss of rock art.	The package that has been agreed with Waitaki Rūnaka will fund rock art conservation for the duration of the consent.
Any further loss of access to sites of significance, especially remaining mahika kai sites.	The package that has been agreed with Waitaki Rūnaka should enhance mahika kai, especially tuna. Having staff working in the valley is likely to enhance relationships which could improve access to sites over time.
Any further loss of mahika kai habitats and mahika kai species.	The package that has been agreed with Waitaki Rūnaka should enhance mahika kai, especially tuna. An enhanced trap and transfer programme has been agreed, but additional funding will support tuna management initiatives across the catchment. This is also to be complemented by the enhanced relationship with the Generators. Since 1998 Waitaki Rūnaka have sought to be directly involved in tuna management. Delivery of the trap and transfer programmes are seen as key management activities. Continued responsibility for delivering both trap and transfer programmes and being enabled to widen the tuna management tasks in the Waitaki, consistent with principles 1 and 2 of TMotW is an outcome of the negotiations that is hugely significant for Manawhenua.
Any reductions in the size of the lagoon, and unnatural changes to the nature and composition of the river mouth.	It is acknowledged that this is a complex issue that needs to consider a range of activities across the catchment in addition to hydro generation. It will be addressed within other planning processes. The enhancement relationship between Ngā Rūnanga and Generators gives both parties the opportunity to be more informed within these processes.
Any loss of wāhi tapu and wāhi taoka.	It is not envisaged that there will be any further desecration of wāhi taoka and wāhi tapu as a result of the continued “status quo” operation of the Schemes.
Changes in water temperature at key mahika kai sites affecting mahika kai species.	Waitaki Rūnaka have the opportunity to undertake water temperature monitoring at key sites as part of their programmes.
Impacts on the lakes and tributaries of the Mid and Upper Waitaki.	Waitaki Rūnaka recognise the current permanence of the dams in the Mid Waitaki. In this context, (arguably) the TMotW obligation also becomes protecting the waters impounded behind the dams of the Waitaki. The mitigation arrangements could see Waitaki Rūnaka choose to fund initiatives to be undertaken in artificial habitats. As technologies change, the existence and operation of the dams and power stations will be revisited in the future.

6.3.3 Consent conditions proposed by the Generators

In this final section we have adopted an approach similar to that applied in *Ngāti Tūpoho/Ngāti Tumango v Manawatū-Whanganui Regional Council* [2022] NZEnvC 236 where relevant Te Mana o Te Wai principles were applied for each consent condition. It is not practical to apply this approach for all consents, but the two tables below focus on key issues and conditions and relate them to the TMotW obligations and principles.

Tekapo Power Scheme

Conditions addressing these types of issues	TMotW
Maintenance of minimum lake levels	The conditions recognise that if lake levels become too low, various values could be adversely affected. Consistent with principles 1 and 2 of TMotW the enhanced relationship agreement between Waitaki Rūnaka and the Generators will enable direct communication so that Waitaki Rūnaka are aware of plans to recover lake levels.
Management of Takapō River downstream flow fluctuations during high flow management	Flow fluctuations could adversely affect indigenous biodiversity in the river channel, create bank erosion etc. Please see the earlier comments re the Indigenous Biodiversity Mitigation Package.
Cultural monitoring	The enhanced relationship agreement provides a mechanism for the Rūnaka to be involved in ongoing operations of the scheme (thereby aligning with principles 1 and 2 of TMotW).
Cultural mitigation	The enhanced relationship agreement also provides for ongoing assessment of matters relevant to the health and well-being of the wider environment, mauri, with the aim of restoring and preserving the balance between water and the wider environment (as required by Obligation 1 of TMotW).
Fish salvage	If native / indigenous species are stranded, they will be recovered and released through the enhanced tuna management programme (as part of meeting the Obligation 1 of TMotW). Manawhenua will be engaged in the recovery thus fulfilling principles 1 and 2.
Environmental initiatives	A range of interventions provide for an integrated environmental programme that may include both conventional western science and initiatives to address matters of interest to Manawhenua. The initiatives are intended to start to fulfill obligation 1 of TMotW and the engagement of Manawhenua aligns with principles 1 and 2.

Waitaki Power Scheme

Conditions addressing these types of issues	TMotW
Environmental Flows and Levels (Rivers and Lakes – which also in part address water supply to wetlands) Minimum and Maximum Lake levels or Lake Pūkaki, Lake Ōhau, Lake Ruataniwha, Lake Benmore, Lake Aviemore and Lake Waitaki and extreme minimum lake levels for Lake Pūkaki at times of national or South Island electricity shortage Meeting environmental flow regime for Upper Ōhau River and Lower Waitaki River Management of Lake Levels above maximum levels through Flood Flow Management Protocol	In the previous section we noted that Manawhenua are committed to seeing flowing rivers across the Waitaki which, from a Manawhenua perspective, means restoring flow regimes that mimic historic regimes. In this consenting process it is acknowledged that reverting back to the seasonal pattern of historic flows may not be a feasible in the foreseeable future. We also note that the Summary Tables 1-7 in section five of this TIA identify "affected waters". TMotW requires Manawhenua to, over time, address the needs of all waters in the Waitaki including all affected waters. The enhanced and direct relationship between generators and Waitaki Rūnaka will start on the pathway to implementing Obligation 1 of TMotW
Allocation of Water Meeting allocation regimes, set out in the Waitaki Allocation Plan, in particular complying with the allocation provided for electricity generation and meeting any obligations for water to be available to other users consistent with the allocation regime.	Allocation of water to enable the continued generation of electricity, from renewable energy sources, aligns with Obligation 2 of TMotW. It also represents an interpretation of principle 3, the Waitaki has been impacted but in return gifts the nation renewable energy.
Mahinga kai allocation	The flow and allocation regime for the Lower Waitaki River in the Waitaki Allocation Plan includes a mahinga kai allocation which is provided for in these consent conditions. The mahinga kai allocation was introduced by Plan Change 3 in 2016 and may be used to enhance mahika kai both in-stream and out-of-stream, in accordance with tikanga. Therefore, the mahinga kai allocation gives effect to the first three principles of TMotW. The concept of a mahinga kai allocation managed in accordance with tikanga is not yet widely accepted in statutory freshwater planning in Canterbury. The plan change was allowed because Meridian spill additional water into the Lower Waitaki River to ensure the mahinga kai allocation can be abstracted without affecting the minimum flows set in the Waitaki Allocation Plan. Hence it was the relationship between

	Meridian and Waitaki Rūnaka which enabled the mahinga kai allocation.
Tuna Passage and Management Elver, juvenile programme and migrant programme	Ensuring the health of taonga species is part of the Obligation 1 commitment of TMotW. Enabling Manawhenua to deliver the trap and transfer programmes and undertake tuna management initiatives aligns with principles 1 and 2.
Indigenous Biodiversity Enhancement (including wetlands) Enhancement Programme focusing on the condition, resilience, biodiversity, ecological processes, and other values within the Waitaki Catchment that are representative of those influenced by the scheme including Lake margins and deltas, wetland areas and springs and braided rivers and their margins.	Please see the earlier comments re indigenous biodiversity mitigation. Although it is consistent with obligation 1 of TMotW, engagement of Waitaki Rūnaka in governance of the programme will give effect to principles 1 and 2 of TMotW.
Management of Contaminants from Power Stations Management of discharge of water and entrained contaminants from Oil Interceptors located at Ōhau A, Ōhau B, Ōhau C, Benmore, Aviemore and Waitaki Power Stations	These conditions are to give effect to obligation 1 of TMotW.

6.4 Concluding comment - implementing TMotW

Waitaki Rūnaka have recognised and balanced the significance of the waters of the Waitaki alongside the significance of the hydro electricity generation to the nation. We are also cognisant of the importance of the Waitaki system as New Zealand responds to climate change. Adopting an intergenerational approach to implementing TMotW recognises the scale of the challenge in the Waitaki and the need to start on a pathway.

The vision of Manawhenua – in the medium to long term - is to get water returned to the braided rivers of the Upper Waitaki, most notably the Takapō and Pūkaki Rivers. However, Waitaki Rūnaka agree that an intergenerational perspective is required.

- From a Manawhenua perspective, putting the river first will require flow regimes to mimic natural flow patterns. This is challenging in a hydro catchment where storage for winter generation is a significant feature of the

schemes. It also sets the Waitaki apart from a number of other hydroelectricity schemes. Restoring a minimum flow will not reverse the changes to the seasonality of river flows (see section 5.6.1).

- A minimum flow alone will not deliver TMotW. The issues associated with current flow regimes for the Upper Ōhau and the Opihi systems illustrate how simply reinstating a minimum flow does not always equate to restoring the health and wellbeing of the rivers. To be very clear, Manawhenua aspire to more than minimum flows, hence the need for a longer-term perspective.
- It is unknown what the effect of climate change on lake inflows, spills and flow variability will have on future discharges to the Takapō and Pūkaki Rivers. Waitaki Rūnaka do know that there is likely to be more water in the rivers as a result of spilling. But how and when is unknown. Monitoring changing inflows to the system and changing spill patterns will enable Manawhenua to have a more informed discussion of desired flow regimes in the future.
- There is a risk that committing to minimum flows – as a short-term intervention opportunistically afforded by this consenting process - could do damage (such as riverbed armouring) that could undermine a return, in the future, to a river state sought by Manawhenua.

The greater risk that is perceived by Manawhenua, is that agencies and interests in the Waitaki could equate TMotW as being the reinstatement of flows to the Takapō and Pūkaki River. If flows were instituted, the risk is that agencies would assume a "we've done it" philosophy with respect to TMotW. To Manawhenua a long term, holistic and encompassing catchment wide perspective is required.

- Implementing TMotW is going to require an increased commitment from the Generators. Therefore an enhanced relationship agreement with Ngā Rūnanga was an essential part of the agreements reached for these consents.

It must be stressed that in this chapter any comments made about TMotW and its application in the Waitaki is specific to the hydro schemes operated by MEL and GEL and cannot be used in any forum outside of that context.

[1] Extending from the Tekapo Control Structure to Lake George Scott.

[2] Below Gate 17 and Lake George Scott until it starts to collect tributary flows at the Forks River.

[3] Below Ruataniwha Dam

[4] See Waitaki Iwi Management Plan (Aukaha, 2018)

[5] See Waitaki Iwi Management Plan (Aukaha, 2018)

Chapter 7: Concluding comments on the impacts on Manawhenua values

When assessing the impacts of the scheme, Manawhenua realised that many of the effects of the scheme are permanent given the technology that exists at this point in time. Some whānau want to see the dams removed but know that this is not feasible and, if it becomes feasible, is not likely to give us back our braided Waitaki River.

Please note that within a TIA is not possible to identify all the impacts experienced by Kāi Tahu whānau whānui. Nevertheless in Table 3 below we summarise some of the significant effects.

Table 3: A summary of some of the impacts experienced by Manawhenua.

Impact that are irreversible	Direct impact	Impact of the health and wellbeing of whānau
Losses and effects that are irreversible	The waterways of the Upper Waitaki have been reconfigured with lakes and canals creating dewatered reaches of what were significant headwaters rivers that combined to form the Waitaki are dewatered.	Mauri Mana – Manuhiri when visiting the catchment ask, “How can you live with this”? Our whānau ask “What are we doing to help our awa heal?
	Wāhi taoka (e.g. kāika and rock art) have been inundated by raised lake levels.	Disconnection – over time the mātauraka about sites and the practices to care for them is also at risk of loss.
	Mahika kai have been lost. This loss has changed gathering practices across North Otago & South Canterbury.	Hauora – The loss of mahika kai has directly impacted the livelihoods of whānau Mauri – the resources of the Waitaki are no longer available as part of the rotational pattern of use. The quantities of taoka species are not there.
	The mix of species and their significance in the valley has changed to the detriment of taoka and kai species. “Conservation” species that are threatened or endangered are prioritised.	Rangatiratanga – Other agencies in the valley have prioritised other uses of the reconfigured system to the detriment of Manawhenua. The relationship of Manawhenua to the Waitaki, in particular cultural use, is not accorded the same priority. Within the conservation space other species predominate.
	Braided river environs were at the centre of our wāhi tupuna. The loss of the braided river in the mid Waitaki, and alteration to others, is permanent.	Disconnection - Tourism, that utilises the reconfigured system, is important to the Waitaki. This may impact Manawhenua – as one kaumatua said “We are “visitors” within our own takiwā”. Another

		said, “We and our mokopuna- will never experience what our tupuna experienced”.
Losses and effects that can be remedied or mitigated	Waters sourced from Aoraki no longer flow continuously to the sea – ki uta ki tai.	Mauri Mana Disconnection
	Even where wāhi taoka remain intact, our relationship with them changed as we became visitors to the catchment.	Disconnection – over time the mātauraka associated with sites and the practices to care for them is also at risk of loss. It takes time and resources to re-establish associations and relearn practices.
	Populations of kai species have declined (e.g. tuna) to levels where harvesting is questionable. We have commercial tuna quota we don’t fish	Rangatiratanga – Manawhenua have a right to develop. But a reconfigured system has severely limited those rights.
	A range of agencies and organisations exercise responsibilities in the catchment. They recognise the “power” and influence of GEL and MEL but consult the Rakatira.	Rangatiratanga
	Many communities in the Waitaki are thriving. Our whānau are not.	Mana Hauora The mana, wellbeing, and the future of Manawhenua and their mokopuna in the Waitaki, will – in part - be shaped by the partnership we forge with GEL and MEL.

As a controlled activity, Manawhenua know the Schemes will be reconsented. Within the consenting process (and indeed previous consenting processes with the Generators) Kāi Tahu have been committed to developing directly with Generators initiatives that start everyone on a pathway to:

- protecting Aoraki and kā roimata o Aoraki
- supporting abundant mahika kai, particularly in important wetlands, side braids, backwaters, tributaries and the Waitaki River itself;
- protecting the quality of the waters of the Waitaki;
- conserving remaining rock art sites;
- protecting other wāhi tapu / wāhi taoka;
- protecting cultural landscapes;
- developing more appropriate flow regimes across the catchment;

- ensuring variability in river flows;
- providing a sufficient buffer, or safety margin, to mitigate against the adverse effects of changing land uses on the waters of the Waitaki;
- undertaking the restoration, enhancement and creation of wetland areas, to act both as flow moderators and kōhaka for mahika kai species;
- enhancing access for cultural use throughout the river system;
- addressing issues relating to changing land uses in the catchment, in particular the increase in dairying; and
- protecting habitats in the lagoon.

Kāi Tahu believe that the consent conditions, the agreed package and the enhanced relationship negotiated with the Generators will enable them to adopt an intergenerational response that will enable the following adverse effects to be avoided, remedied or mitigated.

- Any deterioration to the quality of water in the mainstem and the tributaries;
- Unnatural changes to the sediment flow and patterns of deposition in the main river channel and at the coastal area;
- Any encroachment of adjacent land uses onto the Waitaki riverbed;
- The residual flow regime in the mainstem resulting in extended periods of low flows with limited flow fluctuations;
- Residual flow regimes that fail to recognise the property interests of Kāi Tahu;
- Any further dewatering or loss of tributaries, wetlands, side braids, springs, backwaters, adjacent to or surrounding mahika kai throughout the lower catchment;
- Any desecration of urupā within the valley;
- Any further loss of rock art;
- Any further loss of access to sites of significance, especially remaining mahika kai;
- Any further loss of mahika kai in particular habitats essential for taoka species;
- Any reductions in the size of the lagoon, and unnatural changes to the nature and composition of the river mouth;
- Any loss of wāhi tapu and wāhi taoka;
- Changes in water temperature at key mahika kai affecting mahika kai; and
- Impacts on the lakes and tributaries of the Mid and Upper Waitaki

Ngā Rūnanga have therefore worked collaboratively with the Generators during the consenting process to develop a package that includes:

1. Conditions that are to be attached to the resource consents that:
    a. Address issues of concern to Waitaki Rūnaka;
    b. Monitor through agreed measures issues of concern to Waitaki Rūnaka; and
    c. Collect data needed to increase understanding of the operation of the scheme in order to make informed choice for future changes.
2. A package of initiatives that will run for the duration of the consent that will provide funding for rock art conservation and tuna management (including an expanded trap and transfer programme).
3. An enhancement relationship agreement between the Generators and Waitaki Rūnaka; and
4. A funding package.

The four components of this package recognise that TMotW implementation requires time, capacity, commitment, collaboration and importantly resourcing. Collectively the components recognise that Waitaki Rūnaka are realistic in how far and how fast they can move towards implementing TMotW and realising their aspirations, without compromising on what their long-term aspirations are. The package agreed with Generators enables Ngā Rūnanga to derive benefits while the nation retains access to the use of freshwater for renewable electricity generation. Consistent with principle 3 of TMotW.

"Ko tā te Waitaki mahi he manaaki i te motu"

"The generosity of the Waitaki provides for the nation"

Glossary

Hapū	Sub-tribe, extended whānau.
Harakeke	Flax.
Hīkoi	Journey.
Hui	Meeting, assembly.
Iwi	Tribe.
Kāi Tahu	Descendants of Tahu, the tribe.
Kāi Tahu Whānui	The collective of the individuals who descend from one or more of the of the five primary hapū of Kāi Tahu, Kāti Mamoe and Waitaha.
Kāika/Kaik'	Settlement.
Kāika/Kāinga nohoanga	Place of residence.
Kaitiaki	Guardian.
Kaitiakitanga	The exercise of customary custodianship, in a manner that incorporates spiritual matters, by tāngata whenua who hold Manawhenua status for particular area or resource.
Kaumatua	Respected elder.
Kawanatanga	Governance.
Ki Uta Ki Tai	Mountains to the Sea.
Kōrero	Discussion.
Mahinga Kai	Places where food is produced or procured.
Mahinga Mātaitai	Places where food is obtained from the sea or seashore.
Mana	Authority, prestige, influence.
Mana Whenua	Customary authority or rangatiratanga exercised by an iwi or hapū in an identified area.
Manaaki	Show kindness to, look after, entertain.
Manawhenua	Those who exercise customary authority or rangatiratanga.
Marae	Courtyard, meeting place for tāngata whenua.
Mātauranga Māori	Māori knowledge
Mauri	Essential life force or principle; a metaphysical quality inherent in all things both animate and inanimate. (Ngāi Tahu Fresh Water Policy)
Pā	Fortification.
Papatipu Rūnaka	Traditional Rūnaka.
Rangatira	Chief.
Rangatiratanga	Chieftainship, decision-making rights.
Rūnaka	Local representative group or community system of representation.
State of Takiwā	A tool to assess the cultural health of a site.
Tāngata	Person.
Tāngata whenua	The iwi or hapū that holds mana whenua in a particular area.
Takiwā	Area, region, district.
Taoka	Treasure.
Taonga Tuku Iho	Treasure handed down from the ancestors.
Tapu	Sacred.
Tauranga Ika	Fishing ground.
Tauranga Waka	Canoe mooring site.
Te Ao Tūroa	The natural environment.
Te Wai Pounamu	The South Island.
Tiaki	Guardianship.
Tikanga	Lore and custom.
Tino Rangatiratanga	Full chiefly authority.
Tohu	Marker.
Tuhituhi neherā	Rock art.
Tuna	Eel.
Tūpuna/Tīpuna	Ancestor.
Tūrangawaewae	Place of belonging through ancestral rights linked to land, place to stand.
Wāhi Ingoa	Placenames.
Wāhi Taonga	Resources, places and sites treasured by Manawhenua.
Wāhi Tapu	Places sacred to tāngata whenua.

Wāhi tūpuna	Cultural landscape
Whakapapa	Genealogy.
Whakatauki	Proverb, saying.
Whānau	Family.
Whānui	Large, extended, broad.
Whare	House.
Whare Kai	Dining hall.
Whare Kura	School of Learning.
Whare Tūpuna/ Wharenui	Ancestral meeting house.
Whenua	Land.

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