Ashburton
DISTRICT COUNCIL

Second Urban Bridge across the Ashburton River
Notice of Requirement

CULTURAL IMPACT ASSESSMENT

Please note:

The Notice of Requirement (NOR) makes reference to Te Runanga o Arowhenua undertaking the preparation of a Cultural Impact Assessment (CIA), and that the CIA would be forwarded to Council for inclusion in the NOR once it had been received.

The CIA was received by Council on the 5th November 2013, one day prior to the NOR being notified. The CIA is now included within the documentation that accompanies the NOR, however the NOR has not been updated. Where the NOR refers to the CIA being in preparation, this should now be read as Council has received the CIA.

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6 November 2013

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CULTURAL IMPACT ASSESSMENT

FOR

A NEW 2 LANE BRIDGE

Prepared by Tipa & Associates

31 October 2013

TABLE OF CONTENTS

1.0 INTRODUCTION

Ngai Tahu have a long association and involvement with the catchments of South and Mid Canterbury. The Crown initially recognised this significance recently with the enactment of the Te Runanga o Ngai Tahu Act 1996 and the Ngai Tahu Claims Settlement Act 1998. The papatipu runanga, Te Runanga o Arowhenua, believes that it has a responsibility to assess how any activity in their takiwa impacts upon their cultural values.

Ashburton District Council acknowledges the responsibilities of Te Runanga o Arowhenua and recognises Te Runanga o Arowhenua as its Treaty Partner in its activities in South Canterbury. It commissioned this CIA to document the concerns of Te Runanga o Arowhenua with respect to the construction of a second bridge and related infrastructure across the Ashburton River.

1.1. PROJECT OBJECTIVES

The objectives of this report are:

- To provide information on the nature and extent of cultural interests, in the areas where the construction and operation of the new bridge across the Ashburton River will occur, that are protected by the provisions of the Resource Management Act 1991, in particular sections 6(e), 7(a) and 8;
- To identify the impacts associated with the proposal that are of concern to Te Runanga o Te Runanga o Arowhenua; and
- To identify mitigation for impacts identified that are to be discussed with Te Runanga o Arowhenua.

1.2 FORMAT OF THE REPORT

This report has been divided into a number of chapters:

Chapter 1 sets out the objectives and scope of the report.

Chapter 2 describes the proposal

Chapter 3 provides the statutory, planning and policy framework within which the cultural impacts will be assessed.

Chapter 4 provides an overview of the cultural environment, both traditional and current.

Chapter 5 provides a general discussion of the issues of concern to Te Runanga o Arowhenua that are specific to the proposal.

Chapter 6 concludes the report, highlighting the key issues that from the perspective of Te Runanga o Arowhenua need to be addressed.

1.3 THE AREAS CONSIDERED IN THIS REPORT

The Ashburton District Council (ADC) proposes to construct, use and maintain a new 2-lane bridge across the Ashburton River and an associated road that directly links Chalmers Avenue through 'green fields' to the east of Tinwald to a connection with Grahams Road, Ashburton.

1.4 UNDERSTANDING THE CULTURAL CONTEXT

The discussion of the cultural values of Te Runanga o Arowhenua that is included in section 4 of this report is not meant as an exhaustive treatment of the subject. Rather, it seeks to provide a conceptual framework for the Impact Assessment, which follows in Chapter 5. It is an attempt to explain Ngai Tahu's perspective on the environment into terms more readily understood by the wider public, recognizing that a Te Runanga o Arowhenua perspective is fundamentally different in its treatment of human/nature interactions. This framework, we believe, is essential to understanding the depth and complexity of Te Runanga o Arowhenua relationship with South Canterbury, and the impacts of the development on this relationship.

1.5 TERMINOLOGY USED IN THIS REPORT

In this document, the use of the term 'Ngai Tahu' should be considered to include the constituent indigenous iwi, being Kai Tahu, Kati Mamoe, Waitaha. The term 'iwi' (tribe) is used in the same context.

We have also "Arowhenua" which is to be read as Te Runanga o Arowhenua.

1.6 LIMITATION OF THIS REPORT

This CIA represents best endeavours by the papatipu runanga to identify cultural effects of concern. They reserve the right, however, to oppose the proposal or pursue avoidance or mitigation of any subsequent impacts that are identified as a result of site visits or further discussions with Ashburton District Council.

1.7 CONSULTATION WITH TE RUNANGA O AROWHENUA

Pursuant to section 6 of the Te Runanga o Ngai Tahu Act 1996, Te Runanga o Ngai Tahu (TRONT) is the tribal representative body of Ngai Tahu Whanui (the tribal collective), and is a body corporate duly established on 24 April 1996. Contained in Section 5 of that Act is a detailed description of the takiwa (area) of Ngai Tahu Whanui, which confirms that the proposal is within the takiwa.

Section 15(1) of the Act states:

> *Te Runanga o Ngai Tahu shall be recognised for all purposes as the representative of Ngai Tahu Whanui.*

Section 15(2) of the Act states:

> *Where any enactment requires consultation with any iwi or with any iwi authority, that consultation shall, with respect to matters affecting Ngai Tahu Whanui, be held with Te Runanga o Ngai Tahu.*

Section 15(3) of the Act states

> *Te Runanga o Ngai Tahu in carrying out consultation under subsection 2 of this section shall seek the views of such papatipu runanga of Ngai Tahu whanui and such hapu as in the opinion of Te Runanga o Ngai Tahu may have views that they wish to express in relation to the matter ...*

The Act therefore confirms TRONT's status as the legal representative of the tangata whenua within the takiwa of Te Runanga o Arowhenua.

The First Schedule of the Act lists the eighteen Papatipu Runanga that represent the members of Te Runanga o Ngai Tahu. Te Runanga o Arowhenua is identified as one of those constituent Papatipu Runanga and is therefore recognised by TRONT as the kaitiaki Papatipu Runanga for the area affected by the proposal. It is common practice today for the interests of Ngai Tahu whanui to be represented by both TRONT and the Kaitiaki Runanga of the area involved. The Kaitiaki Runanga, in this case Te Runanga o Arowhenua, is the representative of those members of Ngai Tahu whanui who have specific rights and interests in the area.

1.8 The relationship between this and previous CIAs prepared for the project Area

Various organisations when applying for authorisations necessary to enable their continued operation have commissioned TRONT or papatipu runanga to prepare Cultural Impact Assessments. CIAs previously prepared that were specific to South Canterbury and / or Ashburton have been accessed to ensure consistency in the information that is being supplied. This information is particularly relevant to the cultural values discussed in chapters 3 and 4 of this CIA.

1.9 Release of this CIA

Te Runanga o Arowhenua approved the CIA for release to Ashburton District Council (email correspondence 1 November 2013).

2. THE PROPOSAL[1]

The Ashburton District Council (ADC) proposes to construct, use and maintain a new 2-lane bridge across the Ashburton River and an associated road that directly links Chalmers Avenue through 'green fields' to the east of Tinwald to a connection with Grahams Road, Ashburton.

ADC wishes to protect the route for a future bridge and associated new road before too much development occurs within the area. The designation for the Ashburton Second Urban Bridge is being sought now in order to secure the required land to ensure the project can proceed at the time that it is needed.

The current project is not to construct the bridge and road. Construction is not expected to be required until approximately 2026. Prior to construction, detailed design will be undertaken and resource consents from Environment Canterbury will be sought for the bridge construction / disturbance works within the bed of the Ashburton River, and for stormwater disposal.

The proposed project is only one of a number of related transport projects for the Ashburton urban area that was identified in the Ashburton Transportation Study (ATS) completed in 2006. The proposed Second Bridge project is not being undertaken in isolation but rather fits within an overall strategy for transport network improvements within the township.

ADC is seeking a new designation to include the entire infrastructure associated with the Ashburton Second Urban Bridge including a 2-lane bridge, traffic lanes (including cycle lanes and parking), footpaths / pedestrian connections, intersections, stormwater infrastructure, landscaping, ancillary road infrastructure (e.g.; services within the road corridor), and road construction.

Traffic modelling indicates that traffic volumes on key routes throughout Ashburton are likely to increase significantly by 2026 regardless of a second bridge. This is expected to result in significant congestion and delays at a number of locations, including the existing bridge and the intersection of SH1 with Moore Street (SH77). Vehicle number plate surveys undertaken in 2006, and repeated again in 2012, indicate the bulk of the traffic on the existing bridge during peak times is local traffic between Tinwald and Ashburton. Less than 30% of the traffic is "through traffic" on SH1. The existing state highway bridge is nearing capacity at present, but is still functioning adequately most of the time. ADC and the NZ Transport Agency (NZTA) have agreed the traffic issue on the current bridge is a local traffic issue and that the Ashburton Second Urban Bridge project will primarily be to serve the local traffic needs of the Tinwald and Ashburton communities. Once constructed, the bridge will become an extension of the existing urban road network within east Tinwald and Ashburton township and will be maintained and controlled by ADC. It will not become the state highway.

[1] This information was supplied by the Ashburton District Council.

Physical construction of the second bridge and associated road is not required until approximately 2026, at which time traffic congestion on the existing bridge is expected to reach a point which justifies the need for a second bridge. Traffic modelling indicates that up to 14,000 vehicles per day (vpd) are likely to use a second bridge by 2026, with between 5-10% expected to be heavy goods vehicles (HGV's). This traffic is likely to distribute amongst side roads to the north and south of the bridge and is expected to result in an overall reduction in total average travel time for all vehicles in the Ashburton urban area.

It is expected that by the time the Ashburton Second Urban Bridge project is required to be constructed, the environment within which the proposed designation is located will have undergone a degree of change from the current low density rural-residential land use to a land use that is in accordance with the new residential zonings within the district plan. As noted above, ADC wishes to protect the route for a future bridge and associated new road before too much further development occurs. The designation for the second bridge is being sought now in order to secure the required land to ensure the project can proceed at the time that it is needed.

A number of technical reports are being prepared as part of the designation application. These include noise, landscape / visual amenity, ecology, air quality, vibration, lighting / glare, traffic. Mitigation measures will be identified and will be included within the application. It is ADC's intention that a condition will be put on the designation requiring all works within the corridor to proceed under an accidental discovery protocol.

Council will consider the draft Notice of Requirement application on 19th September 2013, with the intention of approving the final Notice of Requirement on 3rd October 2013. The application will be lodged soon thereafter.

3. STATUTORY PLANNING AND POLICY FRAMEWORK

3.1 TE TIRITI O WAITANGI

In 1840, Te Tiriti o Waitangi (Treaty of Waitangi) was signed between the Chiefs of Aotearoa and Her Majesty the Queen of Enland formalising an agreement to allow British subjects to settle in areas such as Te Wai Pounamu, under formal British colonial rule, and which guaranteed to Maori the protection of their taonga (possessions) for so long as they wished. Such taonga included their waters[2], lands, fisheries and mahinga kai.

[2] The Waitangi Tribunal has defined taonga value as including the value of the water itself, the resources living in the water and the resources sustained by the water.

Te Tiriti o Waitangi reaffirmed these rights thus:-

Maori Text:

"Ko te Kuini o Ingarani ka whakarite ka whakaae ki nga Rangatira, ki nga Hapu, ki nga tangata katoa o Nu Tirani, te tino rangatiratanga o o ratou whenua o ratou kainga me o ratou taonga katoa. Otiia ko nga Rangatira o te Whakaminenga me nga Rangatira katoa atu, ka tuku ki te Kuini te hokonga o era wahi whenua e pai ai te tangata nona te whenua, ki te ritenga o te utu e whakarite ai e ratou ko te kai hoko e meatia nei i te Kuini hei kai hoko mona".

English Text:

"Her Majesty the Queen of England confirms and guarantees to the Chiefs and Tribes of New Zealand to the respective families and individuals thereof the full exclusive and undisturbed possession of their Lands and Estates, Forests, Fisheries and other properties which they may collectively or individually possess so long as it is their wish and desire to retain the same in their possession....".

The words "their lands and estates, forests, fisheries..." in the Treaty of Waitangi encapsulates the right to mahinga kai, to places where the resources are harvested, the activity and business of gathering kai and includes the type of resources that were caught or gathered. It was upheld by the Waitangi Tribunal that Maori fishing rights have endured to the present day.

3.2 TE RUNANGA O AROWHENUA CULTURAL AND TRADITIONAL PRINCIPLES FOR SUSTAINABLE MANAGEMENT[3]

Traditional management was founded on a set of cultural values that arose from the Ngai Tahu worldview. These cultural values include a set of principles upon which the relationship between people and the environment must be based in order to sustain balance between the needs and demands of humans and the health of the natural world that sustains them. The following principles are significant elements of the Ngai Tahu worldview which, when understood together, approximate the non-Maori concept of "sustainable management".

Te Ao Maori: The principle of holism: Sustainable management must consider the environment and its component parts as a whole and assess effects from actions

[3] This section draws on the work of Hana Crengle (2002) in Tipa et al (2002). Crengle has written extensively about cultural values, Treaty values and the Resource Management Act 1991.

across all dimensions, spiritual, mental, biophysical, and social [te taha wairua, te taha hinekaro, the taha tinana, te taha whanau].

Whanaungatanga: The principle of kinship, connectedness, and inter-dependence between all things within the natural world including people: Sustainable management must be based on ethics of Whanaungatanga reflecting and giving life to the inter-relationship between all things. Sustainable management should seek to sustain the health, wealth and well-being of the natural environment while sustaining the communities of people dependent upon them.

Whakapapa: The principle of cause and effect, descent and transmission: Sustainable management must be predicated on an understanding that all actions cause effects which in turn cause other effects. Eventually the cycle of effects returns in kind to the original actor. Sustainable management decisions must consider all immediate and downstream effects in the present and, as far as possible, into the future.

Taonga Tuku Iho: The principle of generational continuity and responsibility: Present generations are one with those who have gone before us and those yet to be born. This applies to people and to generations or successive cycles of other species or natural phenomenon. Present generations have an overriding obligation to control the effects of their actions so as to ensure that resources are passed on to future generations in at least as healthy and productive a condition as they were inherited from the ancestors.

Under Ngai Tahu conception, all elements within the world are linked by mutual descent from the atua (dieties) and the primeval parents, Rakinui and Papatuanuku. Thus all parts of the environment are related to one another and exist within a mutually inter-dependent whole.[4] People and their communities rely upon the other children of Papatuanuku and Explanation of how cultural values are impacted is covered elsewhere in this assessment. Instead, the section that follows summarises key cultural values via a series of concise descriptions of relevant elements of those values as understood and approved by Ngai Tahu. These descriptions form the basis of the structure of the impact assessment in Chapter 5.

Whakapapa incorporating:

1. Traditional knowledge and scientific classification of relationships between parts of the ecology (e.g. the relationship between water and fisheries, or between individual ecological functions);

[4] "Maori developed a system of resource management in which people were no more than another living part of the whole ecosystem, capable of a care-taking role alongside other creatures...People lived within and as a part of a whole to which they were intimately and genealogically related." Love (1992)

2. Ancestral descent rights that define authority as between individuals and groups of people to control, manage and act as kaitiaki guardians, for the benefit of present and future generations;[5] and
3. Approval from the Gods and non-human kaitiaki guardians conferred on certain individuals, whanau, and hapu who are designated by mana Atua expressed through whakapapa ancestral right and obligation, to be the rightful people entitled to benefit from the resources and to carry the associated mandate to protect the environment and to speak on its behalf.

Whanaungatanga incorporating:

4. Inter-relationship between all parts of the ecology;
5. Inter-relationship between the ecology and the well-being of mana whenua; and
6. Obligations on decision-makers to ensure that all parts of the ecosystem including people and their communities are cared for.

Mauri incorporating:

7. The life force[6]; and
8. The "Environmental Benchmark" by which Te Runanga o Arowhenua measure the present health of the environment, the inter-linked well-being of mana whenua, and the actual and likely effects, positive or adverse, of the proposed mine development

Mana (Rangatiratanga) incorporating:

9. Tribal areas of land and waters which are the exclusive territories of Kai Tahu, the holders of exclusive rights of authority over those areas as against other tribes.
10. Chiefly authority conferring and defining rights to control and manage and the activities of people affecting the environment; and
11. The Article II guarantee of the Treaty of Waitangi.

Mana Whenua incorporating:

12. Spiritual power and authority that creates rights and obligations flowing from the lands that sustain and are cared for by an iwi, hapu, or whanau;

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[5] "In addition to the interconnection between all things, whakapapa defines ancestral rights as between people. Rights flowing from whakapapa include rank and status in society, mana to belong to a specific group or a number of hapu or whanau kinship groups, and authority to exercise rakatirataka or chieftainship." Lifeforms Focus Group, Ministry of Commerce Maori and the Patenting of Lifeform Inventions (1999)

[6] "Mauri is the life-force which generates, regenerates, and upholds creation. It is the bonding element that knits all the diverse elements within the Universal Process giving creation its unity in diversity. It is the bonding element that holds the fabric of the universe together". Rev Maori Marsden The Holistic World View of the Maori (1992)

13. The people holding traditional rights of exclusive authority as Tangata whenua of their tribal territories; and
14. The concept of allocation of use and management rights to the "right" people on the basis of ancestry i.e. whakapapa descent.

Taonga incorporating:

15. All things prized, tangible and intangible, animate and inanimate;
16. The concept of a resource, its utility, and notions of sustainability, the wise use of resources, and the obligation to maintain the mauri;
17. Respect for the past and the obligation to preserve resources and cultural wealth and well-being for future generations;
18. Intrinsic values; and
19. Cultural use, heritage, and amenity values.

Kaitiaki incorporating:

20. Guardian spirits who communicate with the living world to warn of danger and herald the times and limits of harvest seasons, sometimes manifested through guardian animals, birds, fish, or taniwha;[7]
21. Intergenerational responsibilities as resource caretakers (i.e. responsibilities to protect the interests of future generations including the ecology, species, and people);
22. The obligation to guard, foster, and protect resources and people, including the obligation to consent to or refuse access to resources to protect sustainability;
23. The power to assess effects and to allocate responsibility or liability for actions that harm the environment;8 and
24. Tohunga and whanau kaitiaki people with the matauraka (training and knowledge) to interpret signs in the environment (such as environmental indicator species or natural events) that were utilized to understand the changing ecology, who act as monitors of resource health and well-being

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[7] "Kaitiaki or guardian spirits are left behind by deceased ancestors to watch over their descendants and to protect sacred places. Kaitiaki are also messengers and a means of communication between the spirit realm and the human world. There are many representations of guardian spirits, but the most common are animals, birds, insects, and fish." Cleve Barlow Tikaka Whakaaro: Key Concepts in Maori Culture

[8] "Kaitiaki may be friendly to the 'client' and/or destructive to the 'non-client', eg a kaitiaki may appear in different shapes and forms to warn of impending danger. Conversely, they may punish or disapprove of someone who has transgressed or been disrespectful to the resource protected by the kaitiaki." Mana Cracknell of Rongomaiwahine, quoted in Solomon and Schofield The Resource Management Act and the Treaty of Waitangi: A Starting Point and Framework (1992)

Wahi Tapu and Wahi Taonga incorporating[9]:

25. Sites that are or have been made tapu in nature to protect their intrinsic values and/or because of their association with the Gods, the tupuna, or important historic and cultural events and activities; and
26. Other sites particularly valued for their utilitarian significance as places from which resources are customarily sourced, that are ecologically significant (for e.g. as breeding or migratory habitats) or that were particularly significant species or taonga resources are located.

Mahinga kai incorporating:

27. The bounty given by Papatuanuku to its people;
28. Places and resources (e.g. species) important for sustaining the cultural, social, and economic well-being of mana whenua; and
29. The activities associated with gathering and use of the resources, including cultural harvest, whanau experience and knowledge, and transmission of cultural values and tikanga practices between generations.

Tikanga incorporating:

30. Rules and regulations controlling the actions of people and the practices associated with these rules and regulations;
31. Te Runanga o Arowhenua sustainable management kawa (protocols, use controls, and culturally-sound techniques) designed to ensure the results of human action are consistent with the Te Runanga o Arowhenua cultural values and desired environmental, social, and economic outcomes;
32. Environmental standards for measuring the effects of people's behaviour on the environment; and
33. Traditional biophysical and cultural indicators that are used to monitor ecological states and effects from human activity.

3.3 RESOURCE MANAGEMENT ACT 1991 (RMA)

The Resource Management Act 1991 is the principal legislation under which the natural and physical resources of New Zealand are to be sustainably managed.
Section 5. Purpose –

> *(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.*

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[9] "All the lands of Papatuanuku are sacred. Any time you want to disturb the surface of that land and do something with it, certain protocols and procedures need to be carried out in order to make it noa (non-sacred). This would usually involve a tapu lifting ceremony and karakia to appease the essence of the earth."

Huirangi Waikerepuru of Taranaki, quoted in Solomon and Schofield The Resource Management Act and the Treaty of Waitangi: A Starting Point and Framework (1992)

(2) *In this Act, "sustainable management" means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well being and for their health and safety while -*

(a) Sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations;

(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

The duties and the obligations that Part 2 of the RMA imposes for all people who exercise functions or powers under the Act in relation to the use of natural resources are detailed below.

Section 6 sets out the matters that are of national importance

Matters of national importance – In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

....

(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites waahi tapu, and other taonga.

Section 7 sets out other matters that regard is to be had to

Other matters - In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to –

(a) Kaitiakitanga

Section 8 states that the principles of the Treaty of Waitangi need to be taken into account.

Treaty of Waitangi - In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

Court of Appeal in *Court of Appeal v Attorney General 1987 CA 54/87*:

(i) The principle of partnership.

(ii) The principle of active protection of Maori people in the use of their lands and waters to the fullest extent practicable.

(iii) The principle of utmost good faith in dealings with the other Treaty partner.

Within the RMA context a further principle, that of consultation has been found to arise under the principles of the Treaty of Waitangi.

The Environment Court has noted that active protection of Maori interests requires positive action, which will at times oblige both the decision making authority and the applicant to consult, and also to initiate, facilitate, and monitor the consultation process as part of the duty to take into account the principles of active protection and partnership. Consultation must be conducted in a spirit of good will and open mindedness, and over a reasonable span of time, and to a degree sufficient for the local authority to be informed on the matters in issue.

3.4 TE RUNANGA O AROWHENUA IWI MANAGEMENT PLAN

Because the Ashburton area is significant for its mahinga kai values, we include below extracts from the Iwi Management Plan of Arowhenua specific to mahinga kai.

The Takata Whenua say that the management of Mahika Kai recognises and accounts for the traditional values and uses of resources by the Takata Whenua

- *Issues of use, control and ownership of Mahika Kai resources are resolved on the marae.*
- *Any management plans proposed be drafted in consultation with the Takata Whenua.*
- *The taking of Mahika Kai ceases until it is proven that the quantity, type and size of resources taken is sustainable and does not prevent the exercise of traditional uses by the Takata Whenua.*
- *Traditional values include the recognition of rahui.*
- *Traditional uses include the erection and use of eel weirs and other traditional means of taking Mahika Kai and the opening of river mouths.*
- *Seeding of shellfish (including freshwater shellfish), the protection of habitat and breeding areas.*
- *Restocking of coastal (kai moana) areas and the protection of habitat and breeding areas.*
- *Restocking of rivers, lakes, wetlands with indigenous fish and protection of habitat and breeding areas.*
- *Record of sites for the protection and/or restoration of Mahika Kai in riverbeds, coastal areas, the margins of waterways, natural water, which is subject to Canterbury Regional Council Rules.*

3.5 THE NGAI TAHU CLAIMS SETTLEMENT ACT 1998

The Ngai Tahu Claims Settlement Act ("the Settlement Act") includes a number of provisions that are relevance to the management of the freshwater resources of South Canterbury, including

- Statutory adviser to Minister of Fisheries;
- Protocols and a closer working relationship with Department of Conservation;
- Identification of taonga species.

4. KAI TAHU'S ASSOCIATION WITH THE AFFECTED AREA

4.1 DESCRIPTION OF THE AFFECTED AREA

The Hakatere catchment covers an area of 1652 square kilometres. The Hakatere originates in the high country, comprising two branches fed by snow, ice and rain. Both branches and the mainstem below their confluence are braided. A variety of land uses takes place in all three sub-catchments.

Two main branches and the principle tributaries feeding them originate in the ranges:

- the South Branch from Mt Arrowsmith and
- the North Branch from Godley Peak.

After the South Branch emerges from the Upper Gorge is becomes braided in the low relief area of the Hakatere / Ashburton Lakes. Across the plains both branches and the mainstem below their confluence have braided gravel bedded channels.

Tributaries vary from typical cobble and gravel bedded streams to streams that meander through farmland. A series of intensively managed spring fed drains and ditches are a feature below Highway 1. Before entering the sea the Hakatere forms a lagoon that is subject to frequent and extended closures as a result of low flows.

4.2 PLACENAMES

Just as the land itself has distinctive form, place names and histories provide cultural contour and context. The naming of places by Ngai Tahu began hundreds of years ago and are testament to the long history of occupation and travel within the Hakatere. They confirm the presence of tupuna and their use of the resources in every part of the catchment. Within the memory of individual Ngai Tahu there would be a map of important places and it would include the detailed names of camping places, creation traditions, incidents, weather, ancestors, ancient settlements, different foods that could be obtained - all held in memory like whakapapa, where the sequence and significance of every name had its own place.

Place names not only provide Ngai Tahu with historical information but also maintain an important connection with tupuna – the same connection that also obligates Ngai Tahu to care for and respect future generations. Because Ngai Tahu names provide insights to whanau resource use and the heritage values of places in the takiwa, the names could and arguably should play a vital role in the development of appropriate land management schemes and policies. The teachings associated with names give relevance and meaning to places. Ngai Tahu are obligated to their past and future generations to ensure that their identity and connection to the land lives on.

Ingoa Tawhito (place names) associated with the Hakatere that are in the public domain[10] include:

Puteawhatiia	Tutaewera	Kirihonuhonu
Hakatere	Whareka	O tau tari
Hukanui	Ihao	Punataka
Paturiki	Makawatai	Otamatako
Tuhiro a po	O piha	Opihako
Ohiraho	O hine tu	Te Kiakia
Whakanui	O ue tou	O puke
Whakataka	Hatere	Te Makaha
Tahuka	Matakou	
Kapuka	Uhi	

The names are attached to ranges, mountains, streams, and lands in the vicinity of streams. Some describe the features of landscapes that whanau want to see protected including:

Characteristic captured in the place name	Implications for flow / water management
broad leaf (or more generally vegetation)	protection of indigenous vegetation especially in riparian margins
branches of streams or the tributaries in the catchment	• protection of connections between tributaries and mainstem • no loss of tributaries
gravels / cobbles of streams	• management of sediment within the catchment • flows need to ensure movement of gravels within the system to replenish the mouth and coastal environs.

10 Te Runanga o Arowhenua will decide what other descriptions of wahi taonga are to be forwarded to Environment Canterbury. This report is only identifying sites that are publically available.

springs,	• protection of springs • protection of connections between springs, tributaries and river
deep water	protection of river patterns – pools, rifles, runs
swift waters	flows need to maintain velocities within the stream
resting places.	the health of the river needs to be conducive and able to sustain whanau resting.

We also know the resource that these sites sustained for example Tutaewera provided Te kouka, tutu, eels, weka, and rats.

4.3 WAHI TAPU / TAONGA

Since 1999 Ngai Tahu has identified a range of wahi tapu / wahi taonga. Those found in the Hakatere include:

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

4.4 MAHINGA KAI[11]

Historically the catchments of South and Mid Canterbury represented a highly prized landscape. Ngai Tahu fished extensively in the wetlands, streams, creeks and the many braids and backwaters of the main Canterbury rivers. According to Matiaha Tiramorehu there were eight regional divisions of mahinga kai between Purehurehu and Kaiapoi. Those regions were Purehurehu, Waiputi, Waihemo, Waitaki, Makihikihi, **Hakatere**, Waikirikiri and Kaiapoi (Anderson 1998, 2003).

An outstanding characteristic was the sequential utilisation of a variety of natural resources from widely dispersed localities mirroring the cycles of rivers and species (Anderson 1988, 1998; Dacker 1990). This pattern of resource use shaped an itinerant lifestyle where mobility was pronounced and essential. Movement and an understanding of the resources available over a wide territory were therefore crucial for sustaining the livelihoods of Ngai Tahu whanui pre-European settlement (Waitangi Tribunal 1991). Anderson (1998) described how the population dispersed during late spring to autumn to inland regions and retreated to long term settlements (typically nearer the coast) in winter and early spring. Various resources which were seasonably abundant, would be preserved and the food taken back to these more permanent settlements (Waitangi Tribunal 1991). Other purposeful travels included inland hikoi to collect pounamu and the annual migration south to the Titi Islands in autumn to obtain titi. Mahinga kai was the basis of the Ngai Tahu economy and culture before contact with Europeans.

Table 2: Species traditionally gathered from across South and Mid Canterbury. Those of continuing significance in the Hakatere are highlighted.

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

The 1880 map and accompanying manuscript, commonly referred to as the "Taiaroa reports" by Ngai Tahu, represent a highly valued "cultural map" (Poole 2004). It was an initiative by kaumātua from neighbouring hapu and facilitated by H.K. Taiaroa, to map their collective

[11] This is a general description that will be included in all South Canterbury Flow Reports.

territory, their mahinga kai interests and values associated with particular sites[12].These records allow a more complete examination of the food gathering system within the Canterbury and Otago regions.

As Table 2 illustrates, 38 different foods and materials were gathered from more than 100 sites across South and Mid Canterbury (between the Waitaki and the Rakaia and extending inland to the main divide). Table 3 presents the 10 most commonly gathered species.

Table 3: Percentage of sites from which species were gathered from across South and Mid Canterbury.

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

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

Mahinga kai was the basis of an economy based "principally on the giving of gifts upon which were attached the obligations of reciprocity" (Williams 2003). By the time of European settlement Ngai Tahu had built a robust economy and a rich culture adapted to the local climate, resource base, and landscape (Evison 1993). Having the ability to access a range of sites across multiple catchments was one means by which manawhenua ensured that fishing pressure was spread thus minimising the stress on any one site. Loss of sites, reaches and even catchments compromises these practices.

[12] Nearly 1400 places across Canterbury and Otago were written down and mapped which coincided with the Smith Nairn Commission enquiry (1881).

The Continuing Importance of mahinga kai resources

Changing landuses over the last century, in particular the intensification of farming activity, resulted in mahinga kai losses. Despite these changes, it is important to emphasize that the cultural values and traditional mahinga kai behaviours have survived. Mahinga kai remains a cornerstone of Ngai Tahu culture and identity. It is necessary to stress the fact that the freshwater and terrestrial resources, valued by Ngai Tahu as mahinga kai, continue to be "absolutely necessary" today. Although the number of sites available to Ngai Tahu in the Hakatere has reduced drastically and the abundance and diversity of mahinga kai species is also reduced, mahinga kai continues to play a vital role in the health and well-being of Ngai Tahu. A conscious effort is needed to ensure that steps are put in place to reverse the history of degradation of habitats within the catchment. Ngai Tahu is especially aware of the value of the remaining lands waters and resources that are relatively unmodified or in good health. This awareness underpins contemporary efforts to protect remaining mahinga kai habitats and achieve a sustainable use of resources.

The information presented here, is a brief overview, but is intended to demonstrate the strength of relationship between Ngai Tahu and the mahinga kai resources of the Hakatere / Ashburton, a relationship developed through centuries of wise use and management. Unfortunately, many of the mahinga kai resources of the Hakatere / Ashburton are no longer available or accessible to Kai Tahu. Of the vast number of mahinga kai areas and species traditionally utilised, few remain accessible today. Many were lost over recent decades. The increased settlement and modification of the plains posed the biggest threat to the resources. Because of modifications to the environment there are fewer and fewer areas available for harvesting. Although what is termed "traditional" activities have been altered, the basic patterns of mahinga kai behaviour persist and resources from the land and the freshwater continue to play a prominent role in Ngai Tahu lifeways. Te Runanga o Arowhenua want to protect the mahinga kai values of the Hakatere.

4.3 THE LOCATION OF NGAI TAHU'S VALUES WITHIN THE HAKATERE / ASHBURTON CATCHMENT

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

As a result of Ngai Tahu's holistic approach to the natural world, and its view of river systems from a 'Ki Uta, Ki Tai' (mountains to the sea) perspective, the cultural values identified for the Hakatere system are presented using the zonal approach utilised by Goodall (2001).

Five Geographic Zones

Goodall (2001) explained that each major part of the system has distinct characteristics and these in turn can be affected differently by development and river management regimes. The values within the Hakatere catchment, and the impacts on those values of past and current resource management practices, were therefore considered across five broad geographic zones.

1 the headwaters (including Ö Tü Wharekai);
2 the mid-catchment;
3 the lower floodplain;
4 the river mouth and lagoon areas;
5 and the coastal environment.

A: Headwaters, and Ö Tü Wharekai

The creation of the O Tu Wharekai wetlands is associated with Tu Te Rakiwhānoa and his shaping of Te Wai Pounamu (the South Island) to make it habitable for humans. The Ō Tū Wharekai complex was created as Tu Te Rakiwhānoa arranged the debris in the Waka o Aoraki while forming the harbours and plains and heaping up mountains of the interior.

For Ngai Tahu, traditions such as this reinforce tribal identity and continuity between generations, and document the events which shaped the environment of Te Wai Pounamu and Ngai Tahu as an iwi. The name O Tu Wharekai actually relates to the part of the complex known as the Maori Lakes. The other lakes and wetlands which make up the complex also have their own names.

This area was, and remains, an important mahinga kai area. It was also a critically important traditional source of food and materials to Ngai Tahu parties moving through area in earlier times. Trails allowed people to move from the catchments to the south through to the Rakaia, and from there over to Te Tai Poutini through passes such as Noti Raureka (Brownings Pass). Parties could also move in and out of the headwaters via the river systems that cut across the plains to avoid the scrutiny of those on the plains below. All of these trails were supported by campsites and named natural markers, ranging from trees to mauka (mountains). These trails, their associated sites, and the mahinga kai available along them were memorised and passed on to other authorised travellers.

Important nohoanga (settlements) associated with seasonal mahinga kai gathering and travel to and through this area included: Tutaewera[13], Hatere, Uhi[14], Matakou, Kirihonuhonu, Otautari, Punataka, Te Kiakia, and Tamatakou. Particular mahinga kai resources traditionally taken from this area included: tuna (eels), weka, käkä, kererü, tüï, pükeko and other waterfowl, swan's eggs, aruhe, kiore, käuru, mätai, and pökäkä. Along with the mid-catchment tributaries, the upper catchment was considered the best eel fishery. While long fin eels dominate in the headwaters, good numbers of short fin eels were also present, attesting to the strong unimpeded water flows in the Hakatere in earlier times. Streams of traditional significance within this part of the catchment include:

[13] Known for eels (using eel weirs) and Ti Kouka, weka, rats, tutu.
[14] A permanent settlement (this having access to potable water supply) . Supplying Ti Kouka, eels, raupo.

1. All streams feeding into the lakes;
2. Gentleman Stream; and
2. Hakatere / Ashburton South Branch - Inland Basin.

B: Mid-Catchment

Members of Te Rünanga o Arowhenua were clear that the whole river system represented, and continues to represent, and important mahinga kai resource. But the tributaries of the mid-catchment Hakatere river system were considered more productive mahinga kai areas than the mainstem itself. This was attributed to the braided unstable nature and the relative lack of cover of the main river system, as compared to the tributaries many of which are bordered by indigenous vegetation. The upper catchment and the mid-catchment tributaries were considered the best eel fisheries. Specific tributaries that are particularly important mahinga kai areas included: the Matakou (Stour), Bowyers, Hatere (Taylors), Pudding Hill Stream, the entire North Branch, and Harding Creek. In addition to the other mahinga kai resources harvested in the area, gulls eggs were harvested from the in-stream rookeries.

The Hakatere, like the other river systems in South Canterbury, was a thoroughfare from the sea to the mountains and back. Resources from the river and its immediate environs were important sustenance to travellers, and were also harvested seasonally as part of the Ngai Tahu's complex mahinga kai calendar.

Streams of traditional significance within this part of the catchment include:
1. Stour River;
2. Bowers Stream;
3. Taylors Stream;
4. Hakatere / Ashburton North branch; and
5. Pudding Hill Stream.

C: Lower Floodplain

This area, bounded by State Highway 1 to the west and the coast on the east, was formerly a very productive mahinga kai due to the prevalence of extensive wetland areas. These wetlands sustained whanau using the trails north and south between the various widespread settlements, as they were for those moving inland and back to the coast.

The different Canterbury river systems were known for their different resources. For example, every year Ngai Tahu from the Öpihi area would travel north to the Hakatere mouth to harvest the heke (migration) of the tuna räkau variety of eel. These have firmer flesh than the hao and horihoriwai eels found in the river systems to the south, and therefore preserve better.

Streams of traditional significance within this part of the catchment include:
1. Hakatere / Ashburton North Branch;
2. Harding Creek;
3. Greenstreet Stream;
4. Hakatere / Ashburton South branch;
5. Hakatere / Ashburton River; and
6. Wheatstone Stream.

D: River Mouth / Lagoon

The Hakatere mouth and the surrounding wetlands were important mahinga kai harvesting areas that supported settlements and temporary mahinga kai collection and processing sites. When whanau were unable to cross the river they needed to be able to "stopover" and feed themselves while doing so. The Wakanui river system to the north of the lagoon was also an important mahinga kai. In addition to the tuna heke referred to above, Ngai Tahu travelled considerable distances to the mouth to harvest whitebait and paraki on an annual basis, the latter being sun-dried and stored for later use. Marine fish, including pätiki in particular, could be caught in the lagoon and further upstream. Aua (yellow-eyed mullet) were also caught in these coastal lagoons.

E: Coastal Environment

The entire coastal zone was traditionally an important source of marine fish that could be caught from the shore in the appropriate seasons.

F: Eels[15]

- Historically the Hakatere was a good eel fishery
- Currently it is considered to be in poor condition due to extraction and the closure of key areas.
- Nevertheless there are good stocks of short fin and long fin.
- Habitat degradation in the lower reaches of the catchment has impacted the fishery. The lower area is in need of restoration
- It is possible that an eel fishery has established in the drains and irrigation ditches. This needs to be investigated.
- Mouth closures impact the fishery.
- Fishing today is confined to the mouth and drains and ditches.
- Closed areas include Lakes Heron, Clearwater, Camp, Spider, Eider, Manuka, Seagull, Maori.
- Most of the fishable water is the upper catchment with tributaries having good populations of eels.
- Short fin are found predominantly at the mouth although their range is increasing.
- Long fins are found in the lakes.

G Summary

A summary of the features of the different zones that continue to be are valued by manawhenua are included in Table 4.

15 This assessment has been taken from the South Canterbury / Waitaki Eel Management Plan.

Table 4: Summary of Culturally Significant Features of Streams and Reaches within the Hakatere / Ashburton Catchment

Zone name and important streams	Valued Characteristics of Zone and Stream
A: Headwaters (including Ö Tü Wharekai) **Includes traditionally significant** • **Gentleman's Stream,** • **Maori lakes and** • **Hakatere / Ashburton South Branch**	• Upper reaches of catchment are largely unmodified. • Mix of wetlands still found in the headwaters • Source waters therefore are considered to be largely unmodified • Mainly indigenous vegetation – including tussocks and stands of trees • Diverse habitats – instream, riparian and terrestrial are generally of high quality Serves important role for taonga species – refuge, kohanga • Healthy instream cover in wetlands, tributaries (although not so in the unstable braided main stem) • Large reaches of indigenous riparian vegetation • Raupo stands around Maori lakes available for gathering • Still a long fin eel population – some of good size • Water appears to be clear and of good quality • A mix of landforms and landscapes – largely unmodified that with healthy flows of clear clean water represent significant cultural landscapes. • Source waters give appearance of limited hydrological alteration • Abundant waterfowl for gathering flappers and eggs
Mid Catchment **Includes traditionally significant** • **Stour River** • **Bowers Stream** • **Taylors Stream** • **Pudding Hill Stream** • **Hakatere / Ashburton North Branch**	• Many reaches of tributary streams appear unmodified – for example Bowers and Taylors have reaches surrounded by indigenous vegetation • Channel morphology, excellent water clarity and quality, healthy flows, indigenous vegetation all contribute to and comprise valued cultural landscapes • The tributaries were highly productive mahinga kai – historically have been more so than the mainstem. • Variety of habitats present sustaining many taonga species including long fin eel, koura, waterfowl • River channel comprises pools, chasms, rocky outcrops, waterfalls, drops etc. – all contributing to the cultural landscape • Numerous taonga bird species. • Upper reaches of streams give appearance of limited hydrological alteration.

Zone name and important streams	Valued Characteristics of Zone and Stream
Lower Floodplain **Includes traditionally significant** • **Harding Creek** • **Greenstreet Stream** • **Hakatere / Ashburton South Branch** • **Hakatere / Ashburton North Branch** • **Wheatstone Stream**	• Braided river character retained • Many springs, tributaries and wetlands have been replaced by a network of drains which are fished as substitute mahinga kai habitats • Water generally appears clear even though quality deteriorating • Historically area covered by significant wetlands. • Eels still found both shortfin and longfin.
Lagoon	• Important mahinga kai • Short fin eels and black flounder important. • Titi found on the cliffs. • It has a history of use that needs to be recognised and re-established.

4.4 Overall Comment on Contemporary Use of the Catchment

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

1 **Whanau resident in the Hakatere / Ashburton Catchment used the river main stem in diverse ways.** Most whanau who lived near the river used and appreciated it at some level, even for just the view as they drove over it. Direct use often hinged on the availability of access, water quality, and perceived safety when interacting with it. Appreciation of the river system, its whakapapa and historically significance to whanau remains an important type of indirect use for whanau, even if they infrequently went out to use it directly.

2 **The river's cultural landscapes, and functional characteristics are important to whanau when interacting with the river.** When whanau talked about the characteristics of the river landscape that were important to them, they often focused on the indigenous vegetation, the variety of habitats and the mahinga kai present. These features were the major attraction in the less modified reaches of the system, but mahinga kai was also important to whanau utilising highly modified settings in downstream reaches, where agricultural landuses dominated. For example the drains in the lower reaches of the catchment have become substitute mahinga kai. Waterbodies throughout the system provide important benefits to whanau, including a visible link to their cultural heritage. People looked to the river for more than natural beauty, however, and emphasise the continuing significance of its utilitarian role as a mahinga kai.

3 **Water quality condition and maintenance was the chief concern.** Whanau felt there were serious water pollution problems on the lower reaches of the catchment. Whanau were also concerned about litter and debris in the water. Whanau see the presence of mahinga kai in their reaches as an indicator that water quality is improving, though it is unknown if this is to the point if the fish in the lower reaches can be safely eaten.

4 **Safety and access were among the other important concerns of whanau.** Two other issues cited by whanau, safety and access have important implications for river management. For safety, whanau were concerned with physical safety, particularly the consequences of body contact with water. For access, whanau are concerned about such issues as the convenience, amount, and type of access to the river, and public versus private rights to use the waterway.

5 **Some whanau perceived positive changes occurring along the river.** Despite some serious problems with the condition the lower reaches of the system, many whanau were hopeful about improvements. Water quality changes are those improvements that will be directly perceived: for example increased water clarity, and reductions in debris and odours.

4.5 GOING FORWARD

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

Table 5: Summary of Current and Future Cultural Opportunities for Streams and Reaches of Significance in the Hakatere / Ashburton Catchment

Zone name and important streams	Opportunities Sought
A: Headwaters (including Ö Tü Wharekai)	• Abundant populations of taonga species, especially abundant mahinga kai (most notably eel fishery) restored to their historic range – this requires o Access to traditional sites restored o Ability to camp and gather and use resources in close proximity to traditional sites o Protect existing wetlands o Restore wetlands using historic distribution as a reference. • Prioritise maintaining and or restoring connections and river flow ki uta ki tai o No further hydrological alteration to streams in the headwaters and in the inland basin • Retain existing indigenous vegetation – riparian and terrestrial • Retain landscape features that are largely unmodified and important to cultural landscapes. As a priority retain character of rivers – rocky outcrops, chasms, falls etc o No impoundments in traditionally significant streams and reaches • Retain water quality and clarity • Retain the cultural symbolism of the landscapes and landforms in this part of the system (values of mahinga kai, taonga species, wetlands, trails etc). • Most whanau have to drive to reach the site, will access it as a whanau activity, and may do so infrequently. It needs to provide a rich and positive experience. • Harvesting of moulting waterfowl and eggs
Mid Catchment	• Abundant populations of taonga species, especially abundant mahinga kai (most notably eels) restored to their historic range • Access to traditional sites to gather kai and natural resources • Retain landscape features that are largely unmodified and important to cultural landscapes – flows, clarity, quality, indigenous vegetation, taonga species, and channel morphology. • Restore access to resources gathered historically e.g. gull eggs • Retain indigenous vegetation especially on riparian margins • Flow variability introduced to o address issues of extended low flows o ensure flows at the right times to trigger crucial life cycle stages • Through restoration connect the mosaic of very healthy sites and extend these downstream • Protect flows ki uta ki tai • Maintain passage so that species can reach habitats in headwaters • Protect the features of the gorges. o No impoundments in traditionally significant streams and reaches

Zone name and important streams	Opportunities Sought
Lower Floodplain	• Abundant mahinga kai populations, especially eel fishery • Access to traditional sites to gather kai and natural resources o Wetlands restored consistent with historic records o Water quality improvements to enable safe use and kai safe to eat. o Environmental flows that address flow variability – the maximum cannot be the minimum – flows trigger crucial life cycle stages o Drains managed as mahinga kai habitats with flows and quality standards set o Connections restored (culverts etc all examined to ensure passage not impeded) – all of upper catchment "opened up" as habitat • Reestablishment of lost wetlands – using historic distributions as a reference • Enhance the water quality to make it a desirable place to visit, gather from, and for whanau to swim and enjoy • This part of the system is the one that is in closest proximity to population centres and is most easily accessed by whanau. But the quality of the river system may not support the cultural uses that the more productive and unmodified reaches found in the upper parts of the catchment sustain. It should be available (in a condition fit for) regular interaction and recreation. Signage (for example around Hakatere / Ashburton warning of water quality) and the visible presence of litter and rubbish in the river environment do not encourage regular use.
Lagoon	• Enhance the water quality to make it a desirable place to visit and gather from • Flow variability needs to ensure the river mouth is open at crucial times for spawning • Titi harvest from cliffs.

A summary of key themes across all zones are as follows:

1 **Restoration of mahinga kai** – As noted above mahinga kai is the ultimate test of a river's health.

2 **Protection of largely unmodified cultural landscapes and dominant landforms / features within the river channel that contribute to these landscapes.** Whanau described the diversity found in the upper catchment that included gorges, waterfalls, rocky features in the channel, wetlands, streams meandering through tussocks in the inland basin, raupo lined lakes, braided unstable channel in the mainstem. The diversity of features needs to be protected. Flows, quality of water, and its clarity are also important characteristics that are to be protected.

3 **Clean water is a key factor that will decide the future of the river for cultural use. W**hanau recognize that substantial improvements in water quality in the lower catchment need to be made if the river is to be used more fully. Good water quality is important for direct, water-based activities such as mahinga kai. Whanau have been forced to accept less-than-healthy and less-than-safe conditions as long the odours and debris are not offensive and the waters are not visibly unsafe. Fishing the drains is an example of this acceptance but going forward this need to be addressed.

4 **The natural environment should be enhanced throughout the river system.** Vegetation and wildlife (especially taonga species and mahinga kai) are important to whanau enjoyment and use of the river. Along more remote upland reaches of the system protective strategies are needed, while enhancement of the natural environment in the lower reaches means replanting indigenous vegetation and restoring its integrity. Restoration in some cases might include reducing current population levels, such as the populations of introduced fauna. Along the most modified sections of the river, more trees and tussocks could be planted to soften the edge between the river and the modified environment that surrounds it, to make the experience of interacting with waterways more pleasing, and thus more conducive to use.

5 **Increased and improved access is needed before more whanau will perceive and use the river as a resource.**
To conclude whanau demonstrate a range of perceptions and emotions toward the river. As mentioned earlier these include many positive aspects about the river—its history, wildlife, and the attractiveness of cultural landscapes which when relatively unmodified represent are the environments utilised by tupuna —these aspects give those whanau who experience the river, a sense of rootedness or connection with the river and tupuna. It is difficult to replicate these feelings and benefits in modified or artificially created settings.

6 **Native Biodiversity Prioritised** Whanau do not want to see aquatic habitats restored for introduced species. The priority has to be indigenous biodiversity.

5. THE IMPACT ON CULTURAL VALUES

5.1 Overview of Potential Environmental Effects

Although the second bridge is conceptual at this tage, whanau need to assess the impacts that could be experienced during the

1. Planning phase
2. Construction phase; and
3. Operational phase.

We start by identifying positive impacts.

5.2 POSITIVE AND BENEFICIAL IMPACTS

- The upgrading of the proposed roading network with a second bridge will enhance the usage of the road network. The proposed road is very crucial in supporting socio-***economic development*** in the region.

- ***Improved Drainage and flood control***: The bridge needs to be constructed with appropriate drainage systems to avoid water retention on the road surfaces and sides.

- ***Road safety*** – reducing congestion at key points in the network should improve road safety.

5.3 PLANNING PHASE

The following are some prevention techniques that Te Runanga o Arowhenua believe could be incorporated into highway planning and design:

- *Preserve the corridors for the new bridge well in advance of construction* Te Runanga o Arowhenua supports the early planning of the ADC.
- *Incorporate the bridge into the natural characteristics of the site* (i.e. topography, drainage patterns, soils, climate, and existing land use). Natural drainage systems need to be understood and taken advantage of, clearing and grading can be minimized, natural vegetation and buffer areas can be preserved, and sensitive land and water areas that provide water quality benefits (e.g., wetlands, spawning waters, etc.) and areas susceptible to erosion and sedimentation can be avoided.
- *Avoid building bridges where they will impact riparian areas adjacent to surface waters and wetland areas.* These vegetated areas provide enormous water quality benefits through their ability to filter pollutants out of water passing through them.

As plans are developed, best management practices to help reduce the volume and concentration of erosion and sedimentation produced by the project should be incorporated into project design.

In this rest of this CIA we only look at the construction and operational phases.

5.4 IMPACTS DURING THE CONSTRUCTION PHASE

Activities during the construction period could include the following: -

- Relocation of facilities if necessary.
- Construction / setting up of temporary site offices, site facilities such as workshops, equipment storage, including sanitary facilities.
- Mobilisation of equipment, labour and materials to site. This includes the sourcing of suitable base materials such as gravel, concrete etc.
- Surveying and setting out of the proposed alignments and facilities.

- Construction of any temporary access or ramps, to ensure undisturbed service during construction.
- Vegetation clearance.
- Earthworks and surfacing of the approach roads.
- Visual impact
- Transportation of construction materials (both raw and finished materials) and machinery to site.
- Construction of the bridge foundation into the river bed.
- Construction of bridge support and bridge deck
- Road signage
- Landscaping and rehabilitation of degraded sites
- Re-vegetation
- Decommissioning of Project

5.5 DISCUSSION OF POTENTIAL CONSTRUCTION EFFECTS

Waterways - A priority for Te Runanga o Arowhenua is protecting waterways. Run-off during bridge construction and reconstruction could generate runoff pollution due to of the sheer volume of earth that must be disturbed and topsoil that is removed during these activities. For example, roads built perpendicular to slopes rather than parallel to them can cut across natural drainage lines and create excessive earth disturbance.

Planning for pollution prevention and control measures in advance of and during construction can help avoid problems.

Valued habitats - Wetlands and vegetated areas near waterbodies can be damaged by construction, decreasing the water quality benefits that they normally provide. Areas susceptible to erosion, such as steep slopes or land with loose soil, can be disturbed, causing increased sedimentation flows into receiving streams.

Edge Habitat Disruption – Rivers contain valued shoreline habitats known as "edge habitats." These are areas where, because of the variety of ecological influences, a higher diversity of plant and animal life exists. Bridges can disrupt edge habitats. Areas of particular richness and diversity should be avoided when planning bridge construction to minimize the damage that is inflicted.

Safety of contractors and workers - Safety questions are to be addressed during the design and construction phases.

Traffic - Vehicular traffic is a major contributor to air pollution and climate change. Some people insist that transportation infrastructure should grow to meet needs, yet others question the ethics of expanding a system that is damaging the earth's sustainability. Te Runanga o Arowhenua has focused on local impacts.

Erosion and Sediment Control - Te Runanga o Arowhenua will want to see a site-specific erosion and sediment control plan developed to minimize the impacts of runoff waters on construction activities.

Chemical Use and Control - Whanau know that some chemical and hazardous substances are to be stored on site including herbicides, insecticides, oils, gasoline, degreasers, antifreeze, concrete and asphalt products, sealers, paints, and wash water associated with these products to minimize their entry into runoff.

Nutrient Use and Control - Te Runanga o Arowhenua would not expect fertilizers to be used to promote the growth of vegetation on disturbed earth as this could contribute excessive nitrates and phosphates to surface waters if overused.

Land Acquisition and Compensation - The road and bridge project could require acquisition of land. Early identification of affected properties is needed.

Impact on soils - *R*ehabilitation activities could expose loose earth making it prone to various forms of erosion such as wind and surface run-off. The loose material should not be able to be eroded by wind and should not settle on surfaces of other objects such as vegetation or be blown into water bodies.

Land Clearance and Vegetation Loss - Rehabilitation/construction works for the proposed bridge could involve land clearing which could lead to loss of vegetation and habitat for different species.

Impact on Water Resources: Water is likely to be required for compaction during construction, washing of machinery, and equipment, for sanitation, and for reducing the impacts of dust. This demand for water could exert pressure on the existing water supply sources. The potential adverse impact on water quality is related to an increase of suspended sediment and risk of residual chemical contamination from bridge construction, earth work and other construction activities. Oil products used for the machinery and vehicles during construction works and waste generated in garages could also be sources of pollution to the water.

Waste Management - The Project could generate solid waste. The Contractor should be required to prepare and implement a Waste Management Plan.

Road Safety and Accident Prevention: Road accidents need to be prevented.

5.5 OPERATIONAL PHASE

Bridge operation and maintenance involve inspection, routine and season-specific maintenance, and repair of the bridge when necessary. The following are examples of some maintenance activities that are neeeded to prevent and control runoff pollution:

Inspection and General Maintenance

- Properly dispose of accumulated sediment collected from detention ponds, drainage systems, and pollution control structures, and any wastes generated during maintenance operations, in accordance with appropriate local, regional and national plans and regulations.
- Use techniques such as suspended tarps, vacuums or booms to prevent paint, solvents and scrapings from becoming pollutants during bridge maintenance.
- Develop an infrastructure safety inspection programme in conjunction with general maintenance.
- Keep drainage ditches free of debris.
- Limit the use of chemicals to avoid excess application and consequent intrusion of such chemicals into surface runoff.
- Maintain shoulders, slopes and swales to assure their function and operation.

Road Cleaning and Debris Removal

- Collect and remove road debris.
- Encourage litter and debris control management.

In the paragraphs that follow we link the impacts summarised above with the cultural values discussed in Chapter 4.

5.2 LINKING ENVIRONMENTAL AND CULTURAL IMPACTS

5.2.1 TE AO MAORI

Te Ao Maori emphasises holism and requires consideration of a catchment as an interconnected whole. Today the Ashburton is fed by natural streams (some of which are heavily polluted).

The river was a very productive fishery in the past and represents a significant cultural resource that in many parts of the South Island were lost. Arowhenua does not support any further loss or degradation of the river. To ensure the protection ADC is to confirm that :

- The river is to be protected and enhanced during the course of the project.
- plans for restoring streams will be prepared in consultation with Arowhenua.
- they will discuss with Arowhenua initiatives to restore aquatic habitats.

ADC is to reduce the visual impact of the proposal by replanting with native vegetation on disturbed areas as soon as practicable

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Te Ao Maori • is recognised in "*Ki Uta Ki Tai*" a culturally	1. Change in landscape 2. Change in visual quality due to new infrastructure 3. Reduction in habitat

based 'mountains to the sea' natural resource management framework • recognises that Arowhenua value and use all parts of a catchment.	4. Potential change to the river and edge environs 5. Soil disturbance and accelerated erosion. 6. Physical destruction or harm to vegetation 7. Potential introduction of invasive species 8. Changes in populations of taonga species. 9. Changed access to and from the river.

5.2.2 WHAKAPAPA

Whakapapa binds Arowhenua to the lands and waters around Ashburton and the diversity of life supported by them.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Whakapapa • Whakapapa describes bonds, relationships, and connections. • Arowhenua have rights and responsibilities arising from whakapapa • Connections between waters, riparian margins and terrestrial lands need to be managed as a whole living entity. • Ashburton is a particular focus.	1. Excavation and building activities 2. Change in landscape quality 3. Bulk movement of material 4. Electricity consumption increased 5. Increased consumption of water 6. Increased disposal of solid and liquid waste 7. New hazardous waste site. 8. Generation and disposal of waste water 9. Change in visual quality due to new structures 10. Reduction in habitat 11. Physical destruction or harm to vegetation 12. Potential introduction of invasive species

5.2.3 IMPACT ON THE CULTURAL LANDSCAPE

The entire landscape of the Ashburton is of significance to Arowhenua. Places did not function in isolation from one another, but were part of a wider cultural setting that included not only sites as defined by the presence of archaeological remains, but all manner of highly valued places that were named by the earliest inhabitants of the area.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Cultural Landscapes • Every part of the landscape was known and named. • Cultural landscapes encompass a range of sites valued and utilised by Arowhenua • Arowhenua rights stem from specific lands and waters – these are the places that symbolise and validate the rights of the whanau to use resources.	1. Excavation and building activities 2. Change in landscape quality 3. Change in air quality 4. Increased lighting 5. Increased noise levels 6. Change in visual quality due to new structures 7. Reduction in habitat 8. Physical destruction or harm to vegetation 9. Potential introduction of invasive species

CUMULATIVE EFFECT

A special challenge for Arowhenua, as kaitiaki, is to assess the cumulative effects of proposals. Many of the impacts raised in this section may be of relatively minor significance when individual projects are assessed but Arowhenua are concerned that the cumulative effect could be significant long term changes to many of the catchments found within their takiwa. This cumulative effect may impair the cultural association of Arowhenua with the Ashburton and other catchments. Arowhenua therefore want to be advised of initiatives proposed in the area by ADC.

5.2.4 PLACENAMES

Placenames reflect the significance of the relationship between this land and the Arowhenua peoples. Modifications to landforms, landscapes and resources mean that many place names are "displaced". Over time the original name has been lost plus the association between the place and the name has also been lost.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Placenames The physical presence of our tupuna throughout the inland regions is evidenced by the place names that survive. In other words Arowhenua placed names to remind them of their history and who they are.	1. Change in landscape quality 2. Change in visual quality due to new structures

5.2.5 MAURI

Mauri is a diminishable value. The potential exists for the mauri of many waterways to be further degraded. Cultural use is dependent on good water quality in sufficient quantities being available to sustain the customary fishery and the ability to use Ashburton.

- Arowhenua believes that ADC is making progress in recognising the need to manage point source discharges. While the Rünanga commends ADC on these efforts, it is important to recognise that while rehabilitation may bring back aspects of the physical and ecological landscape, it may not restore the mauri, or life giving essence, of the land.
- Groundwater and surface waters must not be contaminated by any of the activities within the area.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Mauri • The primary management principle for Ngai Tahu is the protection of the mauri	1. Excavation and building activities 2. Change in landscape quality 3. Movement of material 4. Electricity consumption increased 5. Increased consumption of water

• Mauri describes life, energy, vitality and movement • A healthy mauri is reflected in a range of aquatic habitats supporting diverse kaiora. • Headwaters are particularly vulnerable and should be protected • High water quality of sufficient quantities is necessary to sustain the mauri of waterways.	6. Increased disposal of solid and liquid waste 7. New hazardous waste sites. 8. Generation and disposal of waste water 9. Threat of toxic releases 10. Change in air quality 11. Increased lighting 12. Increased noise levels 13. Change in visual quality due to tall or large structures 14. Reduction in habitat 15. Physical destruction or harm to vegetation 16. Threat of introduction of invasive species

5.2.6 WAHI TAPU / WAHI TAONGA

Modifications to and the destruction of waahi tapu / wahi taonga is a concern for Arowhenua.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Waahi Taonga Across Te Wai Pounamu, there are written records of sites being destroyed as a result of the construction of infrastructure	1. Excavation and building activities 2. Change in landscape quality 3. Bulk movement of material 4. Electricity consumption 5. Increased consumption of water 6. Increased disposal of solid and liquid waste 7. New hazardous waste site. 8. Generation of substandard water 9. Generation or use of hazardous substances 10. Risk of toxic releases 11. Change in air quality 12. Reduction in habitat 13. Physical destruction or harm to vegetation 14. Introduction of invasive species

5.2.7 TAONGA SPECIES

The loss of habitat for many bird species in addition to the losses already experienced is a concern for Arowhenua. The river is rich in birdlife, many of which are taonga species (see Appendix 2). ADC must advise how habitat loss of taonga species is to be mitigated.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Taonga species are native birds, plants and animals of special cultural significance and importance to Ngäi Tahu	1. Excavation 2. Bulk movement of material 3. Electricity consumption 4. Increased consumption of water 5. Increased disposal of solid and liquid waste 6. New hazardous waste site. 7. Generation and disposal of waste water 8. Generation or use of hazardous substances 9. Generation of acute toxic releases 10. Change in air quality 11. Increased lighting

	12. Increased noise levels 13. Reduction in habitat 14. Physical destruction or harm to vegetation 15. Potential introduction of invasive species 16. Changes in food webs and predator/prey relationships

5.2.8 MAHINGA KAI

Historically diverse habitats throughout South and Mid Canterbury were accessed. However, as lands and sites were moved into private ownership the focus of gathering shifted.

VALUE	POSSIBLE ENVIRONMENTAL IMPACTS WITH FLOW ON CULTURAL IMPACTS
Mahinga kai • Rights and responsibilities governed behaviours • Access to sites has changed since settlement • Not all resources previously valued and gathered are available today. • When rights are location specific they cannot be translocated once habitats are degraded and no longer useable	Construction interrupting access and gathering 1. Excavation and building activities 2. Bulk movement of material Pressure on habitats 3. Electricity consumption 4. Increased consumption of water 5. Increased disposal of solid and liquid waste Risks to habitats and species 6. New hazardous waste site. 7. Generation of waste water 8. Generation or use of hazardous substances 9. Risk of acute toxic releases Conditions not conducive to gathering 10. Change in air quality 11. Increased lighting 12. Increased noise levels Direct impacts on mahinga kai 13. Reduction in habitat 14. Threat of introduction of invasive species 15. Changes in food webs of key species 16. Increased traffic congestion and risk of traffic accidents 17. Loss or disruption of established patterns of gathering 18. Changed access to and from the area

5.2.9 KAITIAKITANGA

Rights are accompanied by responsibilities to manage resources sustainably.

VALUE	DESCRIPTION
Kaitiakitanga Arowhenua have a fundamental duty to protect the natural world	Arowhenua believe they have a right to participate in the management of waterways. However, they feel that their role as kaitiaki has been marginalized. The exploitative use of the catchments has taken priority and dominates many of the landscapes, and the interpretation of the landscape. This has affected Arowhenua's relationship with the catchments of South and Mid Canterbury. Restorative action is needed to create new, innovative relationships. Further a balance needs to be restored so a Arowhenua perspective is recognized and

	their involvement is provided for. ADC has the opportunity to negotiate pro-active and innovative measures with Arowhenua.

5.2.10 Summary of potential impacts and their significance

the table that follows summarises the discussion in the previous sections of this report. the impacts of high significance are highlighted.

IMPACT	SIGNIFICANCE BEFORE MITIGATION	SIGNIFICANCE AFTER MITIGATION
• Excavation	H	L
• Change in landscape quality	L	M
• Bulk movement of material	H	L
• Electricity consumption	M	M
• Increased consumption of water	M	M
• Increased disposal of solid and liquid waste	H	M
• Generation of substandard waste water	H	M
• Generation or use of hazardous substances	H	L
• Generation of acute toxic releases	M	M
• Change in air quality	M	L
• Increased lighting	M	M
• Increased noise levels	H	M
• Change in visual quality due to tall or large structures	M	L
• Reduction in habitat	H	M
• Physical destruction or harm to vegetation	H	M
• Introduction of alien species	H	L
• Changes in food webs of taonga species	H	L
• Changes to access	H	L
• Introduction of barriers to dispersal and movement of species	M	L

Impacts of high significance

Most of the negative issues of HIGH significance may be reduced to impacts of lower significance, as most of the impacts could be managed by the ADC. The issues of HIGH significance before mitigation include:

- Bulk movement of material
- Increased disposal of solid and liquid waste
- Generation of substandard waste water
- Generation or use of hazardous substances

- Increased noise levels
- Reduction in habitat
- Physical destruction or harm to vegetation
- Introduction of alien species
- Changes in food webs of taonga species
- Changes to access

All of these impacts if not mitigated to the satisfaction of Arowhenua will erode the association of Arowhenua with the Ashburton River. However, it is recommended that ADC discuss these impacts with Arowhenua how they might be able to be mitigated, thus effectively reducing impacts to MEDIUM or LOW significance. In the next section we summarise the possible mitigation that ADC might want to discuss with Arowhenua.

6.0 CONCLUSION

6.1 MITIGATIONS SPECIFIC TO THE AREAS OF HIGH IMPACT

IMPACT	POSSIBLE MITIGATION
Excavation and building activities	Excavation resulting mainly from construction activities may disturb cultural sites and result in changes in landform and topography. An accidental discovery protocol is to be agreed (See Appendix 1 for an example).
Impact on soils	Mitigation measures include: • cover embankment sides with grass and ensure growth through watering; • store surplus excavated top soil and use to rehabilitate degraded grounds; • loosen compacted soils upon commissioning and vegetate with seedlings, as appropriate; • collect spoil soil and cart away to designated disposal sites. Spoil soil should not be disposed or accumulated at river banks, and definitely not within the floodway .
Erosion control	A number of provisions to lessen the environmental impacts of construction are to be specified in this plan, including measures to ensure that exposed working surfaces are kept to a minimum, silt fences and sediment traps are optimally placed to prevent sediment from reaching drainage systems, vehicles are washed when leaving a construction site to remove excess mud, and temporary exit/entry roads to construction sites are provided with a coarse rock surface to prevent the transfer of soil offsite where it will be washed into nearby drainage channels.

Change in landscape quality	These changes are mainly a result of quarrying, construction activities and the provision of new infrastructure. These actions impact on erosion, landform and topography, and result in visual impacts. All landscaped areas that are damaged during construction are to be reinstated. No landscape refuse should be dumped or stockpiled or allowed to enter the waterways. Rehabilitation specifications for the area around the Ashburton River has to be prepared for the construction phase, and is to be included in any tender document. **Arowhenua is to be forwarded restoration and / or enhancement plans.**
Bulk movement of material	The bulk movement of materials generally takes place during the construction phase, so impacts are of short term duration. These impacts may result in a disturbance to cultural sites, visual impacts, changes in landform and topography. All excess construction material must be removed from site at the end of the construction phase. Attempts should be made to deliver topsoil directly to its destination rather than stockpiling it. If this is not possible, stockpiling and landscaping guidelines should be followed, and stockpile sites must be fully rehabilitated after the removal of the stockpile and excess material disposed of in an appropriate manner. **Arowhenua is to be forwarded guidelines that will be sent to developers / contractors working in the catchment**
Impacts on waterways	Mitigation measures include; • Constructing settling basins to remove silt, pollutants, and debris from road runoff water before it discharges in to stream drainage; • See mitigation measures re soil and erosion - constructing bridge & other major earthwork works around water sources should provide for soil erosion protection measures to minimize the entry of soil material into the rivers by flooding and runoff water.
Increased consumption of water	Water consumption is an important issue that results from the various construction and operational activities, and could result in further depletion of resources in the catchment. Every effort must be made to minimise water consumption during operations. Landscaping plans should take account of the shortage of water. **Arowhenua is to be forwarded landscaping plans.**
Increased disposal of solid and liquid waste	The increased disposal of solid and liquid waste is an important environmental issue that could result from most activities in area. The disposal of solid and liquid waste may be a nuisance to humans, may result in visual impacts, and could result in major biophysical impacts, which, although limited in extent, will be of HIGH significance. **Arowhenua is to be advised of the sites where industrial waste will be disposed of**. .

Generation of substandard waste water	The generation of substandard water may result from quarrying, construction activities and various operations within the project area. The generation of substandard waste water can impact on human health, flora and fauna. Arowhenua expect the health of waters in and around Ashburton to be improved. There needs to be monitoring of surface water quality through a water monitoring programme. This is to be completed by cultural monitoring. Arowhenua need to be advised of the mechanism that will be put in place to ensure that should there be evidence that further degradation of any of these systems has resulted, then the responsible person and the ADC will take appropriate measures to address the degradation. All operators in the area must ensure that polluted run-off is not discharged into the river system. Water that is disposed of into stormwater drains must meet specified standards. There needs to be a buffer established around the river. **Arowhenua is to be forwarded enhancement plans that show how the river is to be enhanced as part of an integrated plan incorporating drains, swales, buffer around river, and access routes.**
Generation or use of hazardous substances	The generation and discharge of hazardous substances could result from a number of impacts on human health and safety, and flora and fauna. The HZNO Act must be complied with to ensure the safety of all. ADC needs to set environmental targets as part of the development of the EMS • A list of all hazardous substances on site must be available, together with storage procedures for these materials. If necessary, the advice of a specialist waste expert must be obtained with regard to the storage of hazardous waste. • Such waste must be disposed of off-site by a specialist waste contractor, at a licensed hazardous waste disposal site and not into the sewage or waste water system. • Servicing and refuelling should preferably occur off-site. However, if these activities occur on-site, that must take place in a designated, appropriately bunded site agreed upon by the ADC. • Appropriate materials and equipment to deal with ground spills of any materials used must be kept on site. • In the event of a spill, the ADC and Arowhenua must be notified. Any spills should be cleared and the contaminated soil/sludge disposed of in an appropriate manner. • All equipment that leaks onto the ground shall be repaired or removed immediately. • Due to the high pH and chemicals contained in cement and concrete, these • materials are regarded as highly hazardous. During construction, the contractor must ensure that all visible remains of concrete are removed and disposed of as waste and that all aggregate is removed. ADC is to eliminate the possibility of contamination of waterways by hazardous substances.

	Arowhenua is to be advised of • **the sites where hazardous waste will be disposed of.** • **Initiatives to protect the Ashburton River from contamination.** • **Notification procedures in the event of a spill.**
Increased lighting	Increased lighting as a result of the various operations, security and safety measures could result in visual impacts, could possibly be a nuisance to humans and hazards to birds. Standards for lighting should be developed to reduce this potential impact. Standards could include restrictions on the number of spotlights used, colour of light, overhead lights rather than laterally orientated spotlights, which could impact on residential areas and road traffic. Where possible, buffers of natural vegetation, should be put in place.
Increased noise levels	The increase in noise levels is an important environmental issue that could result. These have an impact on human health and can be a nuisance to humans and some species. Sources of noise should be enclosed wherever possible.
Reduction in habitat	A reduction in habitat could take place due to a number of activities, including the clearing, construction activities and various operations. Environmental targets should be formulated, and these could include indicators which will be monitored, such as ecological integrity and conservation of valued species. This project should be seen by ADC as an opportunity to enhance the Ashburton River. **Arowhenua is to be forwarded enhancement plans that show how the river is to be enhanced as part of an integrated plan.**
Physical destruction or harm to vegetation	The physical destruction or harm to vegetation will result mainly from quarrying, construction activities and the placement of infrastructure. Mitigation measures include; (i) dumping debris from the proposed project area at appropriate places designated by the concerned councils; (ii) requiring the Contractor to confine earthworks within a defined area of works. (iii) seeking approval prior to felling trees and where trees are felled, these will be compensated by replanting at appropriate locations or compensation of the owners; (iv) Collecting and carting spoil soil to designated disposal sites. **Arowhenua is to be forwarded enhancement plans that show how the river is to be enhanced as part of an integrated plan.**
Threat of the introduction of invasive species	The introduction of invasive species could result from the use of equipment and landscaping activities (floral species). The enhancement plan needs to include guidelines for the control of invasive species (e.g washing machinery etc). Disturbed areas are prone to species invasion. Species must be carefully selected for landscaping purposes, ensuring that no potentially invasive exotic species are used. The guidelines are to encourage the use of indigenous vegetation endemic to the area, monitoring of unused open space in each tenant site and the removal of alien vegetation, etc.

Changes to access	Due to the provision of a new bridge, access to the area could be changed, which will result in changes in social behaviour and interactions. Changes to social behaviour and interactions cannot be mitigated, and economic impacts from the planning and siting of roads within the area are, in reality, also difficult to mitigate. Access to the reserve is to be protected. **Arowhenua is to be forwarded enhancement plans that show how the river is to be enhanced as part of an integrated plan.**
Changes in populations of taonga species	Various operations could possibly result in adverse impacts to taonga species.
Road Safety and Accident Prevention	Mitigation measures include; (i) Designing and installing road safety signage and speed limit signs during construction and operation.

6.2 OTHER RECOMMENDATIONS

- Arowhenua is to be permitted access to all rehabilitation activity. This will allow ongoing monitoring and assessment of success.
- Arowhenua believes that water quality monitoring must include cultural monitoring in terms of tangata whenua values (cultural, spiritual, and ecological) alongside scientific values, with results assessed against scientific and cultural criteria.
- A process needs to be established to ensure that Ngai Tahu are consulted during each phase of the project.
- Wähi ingoa (place names) are evidence of the richness of the area for mahinga kai. Opportunities are to be found to promote the use of traditional placenames – but only with the support of Arowhenua, to ensure that usage is appropriate for a particular situation.

Monitoring is a long-term process, which should begin before construction and should continue throughout the life of the project. Its purpose is to establish benchmarks so that the nature and magnitude of anticipated environmental, cultural and social impacts can be continually assessed. It involves the continuous or periodic review of construction and maintenance activities to determine the effectiveness of recommended mitigation measures.

APPENDIX 1 – ACCIDENTAL DISCOVERY PROTOCOL

1. Introduction

This protocol records those procedures that should be followed in the event that koiwi, taoka, wāhi tapu, or archaeological sites, are unearthed or discovered during development.

2. Definitions

In this Protocol the following terms are used:

Archaeological Sites – as defined by the Historic Places Act 1993 (as amended).

"Koiwi takata" means human skeletal remains.

"Taoka" means cultural artefacts such as implements, weapons or decorations traditionally and historically utilised by tangata whenua and include parts or the remains thereof.

"Wāhi tapu" means any site of religious, cultural or spiritual significance for takata whenua.

3. Accidental Discovery Protocol

The following procedure shall be adopted in the event that koiwi takata, taoka or wāhi tapu are unearthed or discovered, or are reasonably suspected to have been unearthed or discovered, during the course of development.

a. If koiwi takata (human skeletal remains), taoka or a wāhi tapu site are uncovered during development all activity in the immediate vicinity of the site shall cease.

b. The operator shall shut down all machinery and / or activity immediately, leave the area, and advise the Project Manager of the occurrence.

c. The Project Manager shall take steps immediately to secure the area in a way that ensures that the discovery remains untouched so far as possible in the circumstances.

d. The Project Manager shall, dependent on the nature of the discovery, notify the New Zealand Police and the Public Health Unit (in the event of a koiwi takata discovery); nominated Rūnaka representatives; the New Zealand Historic Places Trust; and the Territorial Local Authority.

e. The Project Manager shall ensure that staff assistance is made available to guide kaumatua, police, or Historic Places Trust staff to the site, assisting with any requests that they may make.

f. The Project Manager shall ensure that kaumatua are given the opportunity to undertake karakia and such other religious or cultural ceremonies and activities at the site as may be considered appropriate in accordance with tikanga Māori (Māori custom and protocol).

g. Where the koiwi takata, taoka or wāhi tapu are of Māori origin, any materials discovered shall be handled and removed by the kaumatua who are responsible for the tikanga (custom) appropriate to their removal or preservation.

h. All parties involved shall endeavour to ensure that these matters are dealt with as expeditiously as possible.

Nominated Runaka Representatives

Gwen Bowyer

Office Manager

Te Runanga o Arowhenua

Huirapa Rpad

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APPENDIX 2

Birds

Name in Maori	Name in English	Scientific Name
Hoiho	Yellow-eyed penguin	*Megadyptes antipodes*
Kahu	Australasian harrier	*Circus approximans*
Kaka	South Island kaka	*Nestor meridionalis meridionalis*
Kakapo	Kakapo	*Strigops habroptilus*
Kakariki	New Zealand parakeet	*Cyanoramphus* spp.
Kakaruai	South Island robin	*Petroica australis australis*
Kaki	Black stilt	*Himantopus novaezelandiae*
Kamana	Crested grebe	*Podiceps cristatus*
Karearea	New Zealand falcon	*Falco novaeseelandiae*
Karoro	Black backed gull	*Larus dominicanus*
Kea	Kea	*Nestor notabilis*
Koau	Black shag	*Phalacrocorax carbo*
	Pied shag	*Phalacrocorax varius varius*
	Little shag	*Phalacrocorax melanoleucos brevirostris*
Koekoea	Long-tailed cuckoo	*Eudynamys taitensis*
Koparapara *or* Korimako	Bellbird	*Anthornis melanura melanura*
Korora	Blue penguin	*Eudyptula minor*
Kotare	Kingfisher	*Halcyon sancta*
Kotuku	White heron	*Egretta alba*
Kowhiowhio	Blue duck	*Hymenolaimus malacorhynchos*
Kuaka	Bar-tailed godwit	*Limosa lapponica*
Kukupa/Kereru	New Zealand wood pigeon	*Hemiphaga novaeseelandiae*

Name in Maori	Name in English	Scientific Name
Kuruwhengu/Kuruwhengi	New Zealand shoveller	*Anas rhynchotis*
Mata	Fernbird	*Bowdleria punctata punctata* and *Bowdleria punctata stewartiana* and *Bowdleria punctata wilsoni* and *Bowdleria punctata candata*
Matuku moana	Reef heron	*Egretta sacra*
Miromiro	South Island tomtit	*Petroica macrocephala macrocephala*
Miromiro	Snares Island tomtit	*Petroica macrocephala dannefaerdi*
Mohua	Yellowhead	*Mohoua ochrocephala*
Pakura/Pukeko	Swamp hen/Pukeko	*Porphyrio porphyrio*
Parera	Grey duck	*Anas superciliosa*
Pateke	Brown teal	*Anas aucklandica*
Pihoihoi	New Zealand pipit	*Anthus novaeseelandiae*
Pipiwharauroa	Shining cuckoo	*Chrysococcyx lucidus*
Piwakawaka	South Island fantail	*Rhipidura fuliginosa fuliginosa*
Poaka	Pied stilt	*Himantopus himantopus*
Pokotiwha	Snares crested penguin	*Eudyptes robustus*
Putakitaki	Paradise shelduck	*Tadorna variegata*
Riroriro	Grey warbler	*Gerygone igata*
Roroa	Great spotted kiwi	*Apteryx haastii*
Rowi	Okarito brown kiwi	*Apteryx mantelli*
Ruru koukou	Morepork	*Ninox novaeseelandiae*
Takahe	Takahe	*Porphyrio mantelli*
Tara	Terns	*Sterna* spp.
Tawaki	Fiordland crested penguin	*Eudyptes pachyrhynchus*

Name in Maori	Name in English	Scientific Name
Tete	Grey teal	*Anas gracilis*
Tieke	South Island saddleback	*Philesturnus carunculatus carunculatus*
Titi	Sooty shearwater/Muttonbird/Hutton's shearwater	*Puffinus griseus* and *Puffinus huttoni* and *Pelecanoides urinatrix*
	Common diving petrel	and
	South Georgian diving petrel	*Pelecanoides georgicus* and
	Westland petrel	*Procellaria westlandica*
	Fairy prion	and
	Broad billed prion	*Pachyptila turtur* and
	White-faced storm petrel	*Pachyptila vittata* and *Pelagodroma marina* and
	Cook's petrel	*Pterodroma cookii* and
	Mottled petrel	*Pterodroma inexpectata*
Tititipounamu	South Island rifleman	*Acanthisitta chloris chloris*
Tokoeka	South Island brown kiwi	*Apteriyx australis*
Toroa	Albatrosses and Mollymawks	*Diomedea* spp.
Toutouwai	Stewart Island robin	*Petroica australis rakiura*
Tui	Tui	*Prosthemadera novaeseelandiae*
Tutukiwi	Snares Island snipe	*Coenocorypha aucklandica huegeli*
Weka	Western weka	*Gallirallus australis australis*
Weka	Stewart Island weka	*Gallirallus australis scotti*
		Gallirallus australis hectori
Weka	Buff weka	

Plants

Name in Maori	Name in English	Scientific Name
Akatorotoro	White Rata	*Metrosideros perforata*
Aruhe	Fernroot (bracken)	*Pteridium aquilinum* var. *esculentum*
Harakeke	Flax	*Phormium tenax*
Horoeka	Lancewood	*Pseudopanax crassifolius*
Houhi	Mountain ribbonwood	*Hoheria lyalli* and *H glabata*
Kahikatea	Kahikatea	*Dacrycarpus dacrydioides*
Kamahi	Kamahi	*Weinmannia racemosa*
Kanuka	Kanuka	*Kunzia ericoides*
Kapuka	Broadleaf	*Griselinia littoralis*
Karaeopirita	Supplejack	*Ripogonum scandens*
Karaka	New Zealand laurel/Karaka	*Corynocarpus laevigata*
Karamu	Coprosma	*Coprosma robusta, coprosma lucida, coprosma foetidissima*
Katote	Tree fern	*Cyathea smithii*
Kiekie	Kiekie	*Freycinetia baueriana* subsp. *banksii*
Kohia	NZ Passionfruit	*Passiflora tetranda*
Korokio	Korokio Wire-netting bush	*Corokia cotoneaster*
Koromiko/Kokomuka	Koromiko	*Hebe salicfolia*
Kotukutuku	Tree fuchsia	*Fuchsia excorticata*
Kowahi Kohai	Kowhai	*Sophora microphylla*
Mamaku	Tree fern	*Cyathea medullaris*
Mania	Sedge	*Carex flagellifera*
Manuka Kahikatoa	Tea-tree	*Leptospermum scoparium*

Name in Maori	Name in English	Scientific Name
Mapou	Red Matipo	*Myrsine australis*
Matai	Matai/Black pine	*Prumnopitys taxifolia*
Miro	Miro/Brown pine	*Podocarpus ferrugineus*
Ngaio	Ngaio	*Myoporum laetum*
Nikau	New Zealand palm	*Rhopalostylis sapida*
Panako	(Species of fern)	*Asplenium obtusatum*
Panako	(Species of fern)	*Botrychium australe* and *B. biforme*
Patotara	Dwarf mingimingi	*Leucopogon fraseri*
Pingao	Pingao	*Desmoschoenus spiralis*
Pokaka	Pokaka	*Elaeocarpus hookerianus*
Ponga/Poka	Tree fern	*Cyathea dealbata*
Rata	Southern rata	*Metrosideros umbellata*
Raupo	Bulrush	*Typha angustifolia*
Rautawhiri/Kohuhu	Black matipo/Mapou	*Pittosporum tenuifolium*
Rimu	Rimu/Red pine	*Dacrydium cypressinum*
Rimurapa	Bull kelp	*Durvillaea antarctica*
Taramea	Speargrass, spaniard	*Aciphylla* spp.
Tarata	Lemonwood	*Pittosporum eugenioides*
Tawai	Beech	*Nothofagus* spp.
Teteaweka	Muttonbird scrub	*Olearia angustifolia*
Ti rakau/Ti Kouka	Cabbage tree	*Cordyline australis*
Tikumu	Mountain daisy	*Celmisia spectabilis* and *C semicordata*
Titoki	New Zealand ash	*Alectryon excelsus*
Toatoa	Mountain Toatoa, Celery pine	*Phyllocladus alpinus*

Name in Maori	Name in English	Scientific Name
Toetoe	Toetoe	*Cortaderia richardii*
Totara	Totara	*Podocarpus totara*
Tutu	Tutu	*Coriaria* spp.
Whararíki	Mountain flax	*Phormium cookianum*
Whinau	Hinau	*Elaeocarpus dentatus*
Wi	Silver tussock	*Poa cita*
Wiwi	Rushes	*Juncus* all indigenous *Juncus* spp. and *J. maritimus*

Marine Mammals

Name in Maori	Name in English	Scientific Name
Ihupuku	Southern elephant seal	*Mirounga leonina*
Kekeno	New Zealand fur seals	*Arctocephalus forsteri*
Paikea	Humpback whales	*Megaptera novaeangliae*
Paraoa	Sperm whale	*Physeter macrocephalus*
Rapoka/Whakahao	New Zealand sea lion/Hooker's sea lion	*Phocarctos hookeri*
Tohora	Southern right whale	*Balaene australis*