Application for a Water Conservation Order

in respect of Te Waikoropupū springs and associated water bodies (including the aquifers, Takaka River, and tributaries)

By
Ngāti Tama Ki Te Waipounamu Trust
and Andrew Yuill

April 2017

Pursuant to section 201(1) of the Resource Management Act 1991

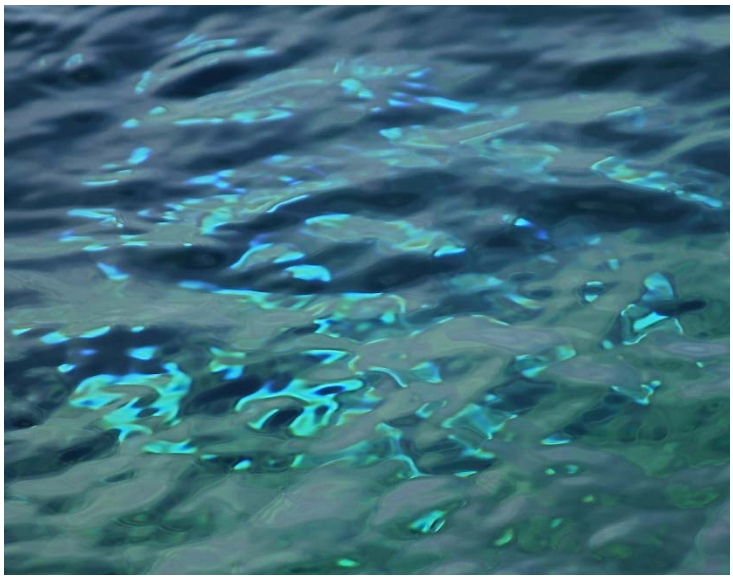
Table of Contents

Introduction

Waikoropupū, Waikoropupū
Pupū ake te whenua
Pupū ake ko ngā waiora
Waikoropupū
Ngā puna wai o Takaka
Ngā puna roimata wairua
Waikoropupū, Waikoropupū

Bubbling waters from the throat of the spring
Bubbling waters from the throat of the spring
Forever bubbling from the land

Forever bubbling for the health of the people and the spring waters
The spring waters of Takaka
The tears of the spirit ancestors,
Water bubbling from the throat of the spring
Waters bubbling from the throat of the spring[1]



[1]The importance of te Waikoropupū Springs is reflected in this waiata written at the Ngāti Tama ki Te Tau Ihu marae. It is the most commonly sung waiata by Ngāti Tama, including at formal events.

1. Ngāti Tama ki Te Tau Ihu descend from Māori chiefs, who, through *raupatū* (conquest) and intermarriage, assumed the role of kaitiaki, or guardians of the *rohe* (area); a responsibility, which was subsequently passed down by way of *tikanga* (protocols) and *whakapapa* (genealogy)[2]. Today's kaitiaki continue to carry out their responsibilities and obligations to uphold the cultural, spiritual and environmental integrity of the rohe for past, present and future generations.Te Waikoropupū is a taonga tuku iho and a registered *wāhi tapu* (sacred place)[3]. It cannot be separated from other taonga within the Takaka watershed boundaries. Water links all taonga in the catchment. This applies nowhere more so than to the relationship between Te Waikoropupū and the aquifer from which water rises up. The Mauri of Te Waikoropupū depends utterly on the quality of the water rising from the aquifer. Huriawa, a *kaitiaki taniwha* (guardian spirit), resides in the underground streams of Te Waikoropupū. The *wai* (water) rising up from the aquifer at the springs is wai ora, the purest form of fresh water. It attains that quality while it is underground.

Executive Summary

2. Ngāti Tama Ki Te Waipounamu Trust and Andrew Yuill present this application jointly to the Minister for the Environment with the sole objective to protect a culturally significant *Wāhi tapū* (sacred place) and outstanding natural freshwater and aquifer system of national significance to the descendants of Ngāti Tama and the communities of New Zealand.

3. The iconic Te Waikoropupū in Mohua (Golden Bay) is the largest freshwater *puna* (springs) in New Zealand and the Southern hemisphere. It is a registered *Wāhi tapū* (sacred place), a *taonga tuku iho* (treasured resource), and is listed as a Water of National Importance for biodiversity (DOC, 2009)[4] . The water is some of the clearest in the world. By contrast the aquifer that supplies Te Waikoropupū is almost unknown. Yet the aquifer is crucial in creating the remarkable qualities of the water, including its outstanding clarity. This application seeks to recognise and sustain the aquifer's *mauri* (life force) and *wairua* (spirit), and its associated physical and spiritual health and wellbeing.

4. This Application and the draft water conservation order included in Appendix 1 are unique in that this is the first opportunity for WCO protection to be afforded to an underground aquifer system. Te Waikoropupū and associated waters possess outstanding characteristics and values which are recognised nationally and internationally. The restrictions and prohibitions sought in this Application and included in the draft water conservation order will provide appropriate and adequate protection of these outstanding waters.

[2]These chiefs included: Te Meihana Te Aho, Tāmati Pirimona Marino, Tahana Rerengaio and Takarei Te Whareaitu
[3]Te Waikoropupū springs, registration number 7605, New Zealand Heritage List/Rārangi Kōrero
[4]The Government's Sustainable Development Programme of Action for Freshwater consists of three themes: Water Quality, Water Quantity, and Waters of National Importance (WONI). The main aim of the WONI project is to develop lists of water bodies that can contribute to a process seeking to sustain national important freshwater assets.

5. The Applicants have assessed the values of these waters and consider that:

   a) The confined and unconfined Arthur Mable Aquifer have outstanding amenity and intrinsic values which are afforded by the waters in their natural state and should be preserved in accordance with section 199(2)(a) and (c) of the Resource Management Act 1991 ("RMA" or "Act"). These waters also contribute to outstanding characteristics of Te Waikoropupū Springs. In particular, the waters of the Arthur Mable Aquifer have outstanding significance in accordance with tikanga Māori, outstanding cultural and spiritual values, outstanding biodiversity and habitat for indigenous wildlife, and contribute to the outstanding recreation and scenic values seen at Te Waikoropupū, and outstanding scientific and ecological values for water quality.

   b) Te Waikoropupū Springs have outstanding amenity and intrinsic values and should be protected in accordance with sections 199(b) and (c) of the Act. In particular Te Waikoropupū Springs have outstanding Significance in accordance with tikanga Māori, outstanding cultural and spiritual values, outstanding amenity and intrinsic values, outstanding biodiversity and habitat for indigenous wildlife, outstanding recreation and scenic characteristics, and outstanding scientific and ecological values.

   c) The Takaka River and its tributaries, including the Waingaro, Anatoki, Waikoropupū Rivers contribute to the outstanding characteristics and features of the above waters and have outstanding cultural and spiritual values and significance in accordance with tikanga Māori, and should be protected in accordance with section 199(2)(b) and (c) of the Act.

   d) Hydraulically connected groundwater including the Takaka Limestone Aquifer and Takaka Unconfined Gravel Aquifer contribute to the outstanding characteristics and features of the above waters and have outstanding cultural and spiritual values and significance in accordance with tikanga Māori, and should be protected in accordance with section 199(2)(b) and (c) of the Act.

6. Biological processes operating within the aquifer play an essential part in creating the outstanding water clarity. The balance between dissolved oxygen and dissolved organic matter in the aquifer is crucial to the aquifer's ecology and health. The biology and ecology of the aquifer, and hence its susceptibility to pollution are poorly understood. Much of the water takes over 10 years to flow through the aquifer so any pollution could cause great damage before becoming apparent.

7. In order to give effect to the above recognised outstanding values, the following is a summary of the provisions and restrictions sought in this Water Conservation Order application:

   a) Acknowledgement of Ngāti Tama ki Te Tau Ihu as rangatira, and kaitiaki (guardian) of the aquifer.

   b) Protection for the aquifer's spiritual qualities of mauri and wairua, and its physical health.

c) Protection of the Aquifer from degradation, damage and pollution in its recharge sources (having regard to a range of matters, including: biological oxygen demand, toxins and fertiliser leachates).

d) The protection of rare and specialised biota within the Aquifer.

e) An integrated catchment management approach is applied to all current land-use within the catchment, and to provide for the spiritual qualities of mauri and wairua.

f) All land and water use within the Takaka Catchment is assessed in terms of its potential cumulative effects on the Aquifer. The precautionary principle must apply where proposed developments may have an adverse impact on the aquifer.

g) Allocation of water within the catchment to ensure there is sufficient to maintain existing flow rates into Te Waikoropupū.

h) Protection for the rare and specialised biota within the aquifer.

i) Proposers of new or intensified land and water use in the Catchment must demonstrate that their proposed activity will not contribute to degradation of the Aquifer.

Key Issues

- The biology and ecology of the aquifer and its susceptibility to pollution are poorly understood.
- The degradation, damage and pollution of the aquifer network system and Te Waikoropupū.
- Potential cumulative effects from land and water use, and activities on the aquifer and Te Waikoropupū,
- Water allocation within the catchment may reduce water flow levels in Te Waikoropupū, Fish Springs, Dancing Springs, and aquifer network system.
- Degradation, damage and pollution of rare biota with the aquifer network system.
- New activities, water takes, land and water use in the catchment may contribute to the degradation of the aquifer network system.
- Mining activities may degrade, damage and pollute Te Waikoropupū and aquifer.
- Water abstraction activities may impact on Te Waikoropupū and aquifer.

- Te Waikoropupū and aquifer life supporting capacity and ecosystem processes not adequately safeguarded in planning instruments, including:
    - National Policy Statement for Freshwater Management 2014;
    - National Policy Statement for Renewable Electricity Generation 2011;
    - Tasman Regional Policy Statement;
    - Tasman District Council Resource Management Plan;
    - Nelson/ Marlborough Conservation Management Strategy 1996-2006;
    - Te Waikoropupū Springs Scenic Reserve Management Plan; and
    - Iwi / hapū management plans and strategies
- Over allocation of water may impact on Te Waikoropupū and aquifer.

Section A - Description of the Waters Subject to the Application

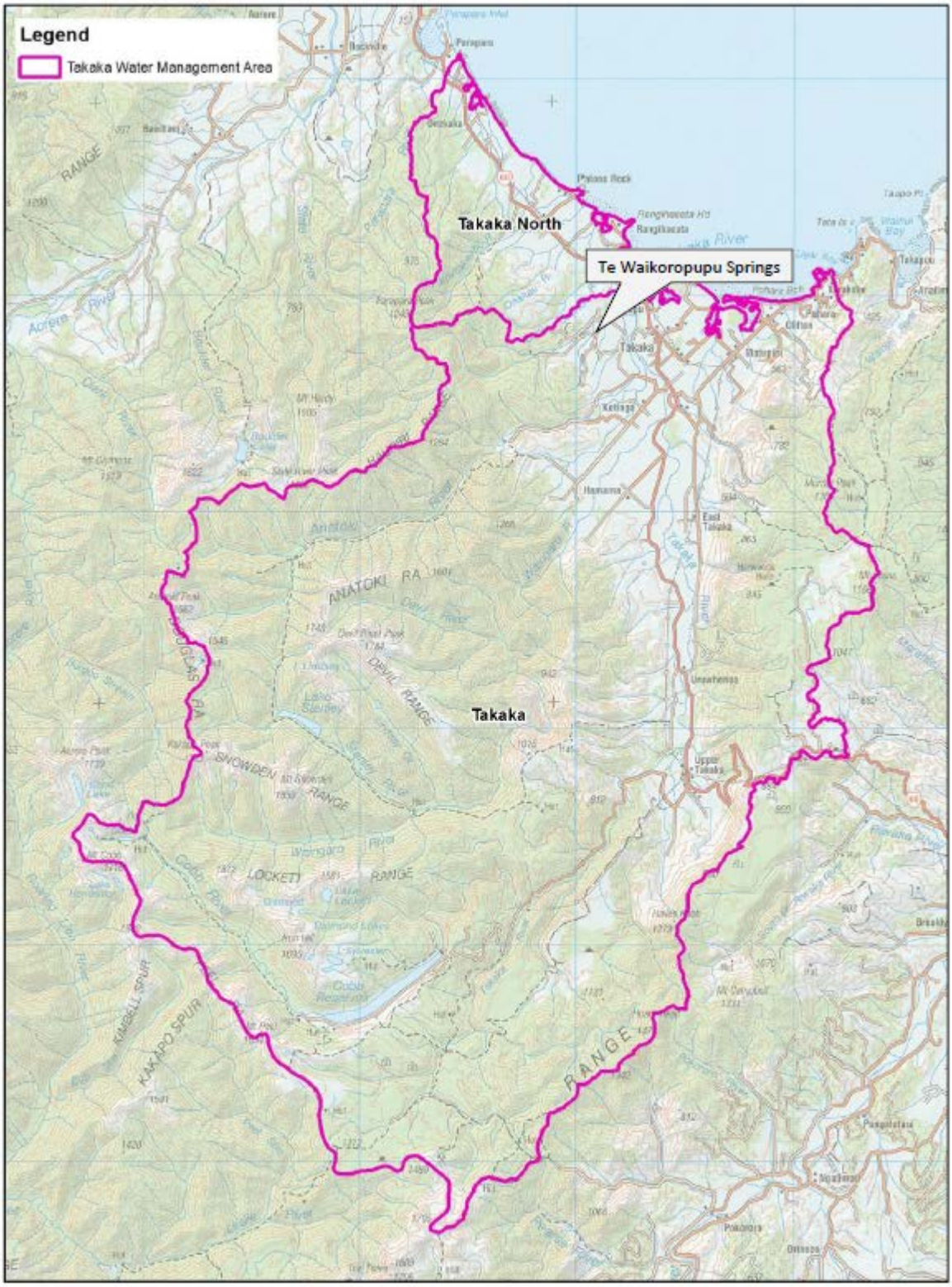
8. Section 201(2)(a) of the Resource Management Act 1991 requires the Applicant to identify the water body concerned.

9. For the purposes of this application we identify the water body as all parts of the aquifer in the catchment of the Takaka River and its tributaries that supply water to Te Waikoropupū and / or are hydraulically connected. This water body is described and identified in Schedules 1, 2, and 3 of the Draft Water Conservation Order, attached as **Appendix 1**.

10. There have been many studies to identify the extent and nature of the underground water systems carrying water to Te Waikoropupū. Stewart and Thomas (2008) reviewed earlier work and combined it with their own new evidence. They describe a system of two largely independent components: a deeper one with a volume of 3 cubic kilometres in which the mean residence time of the water is 10.2 years; and a shallower one with a volume of 0.4 cubic kilometres in which the mean residence time is 1.2 years.

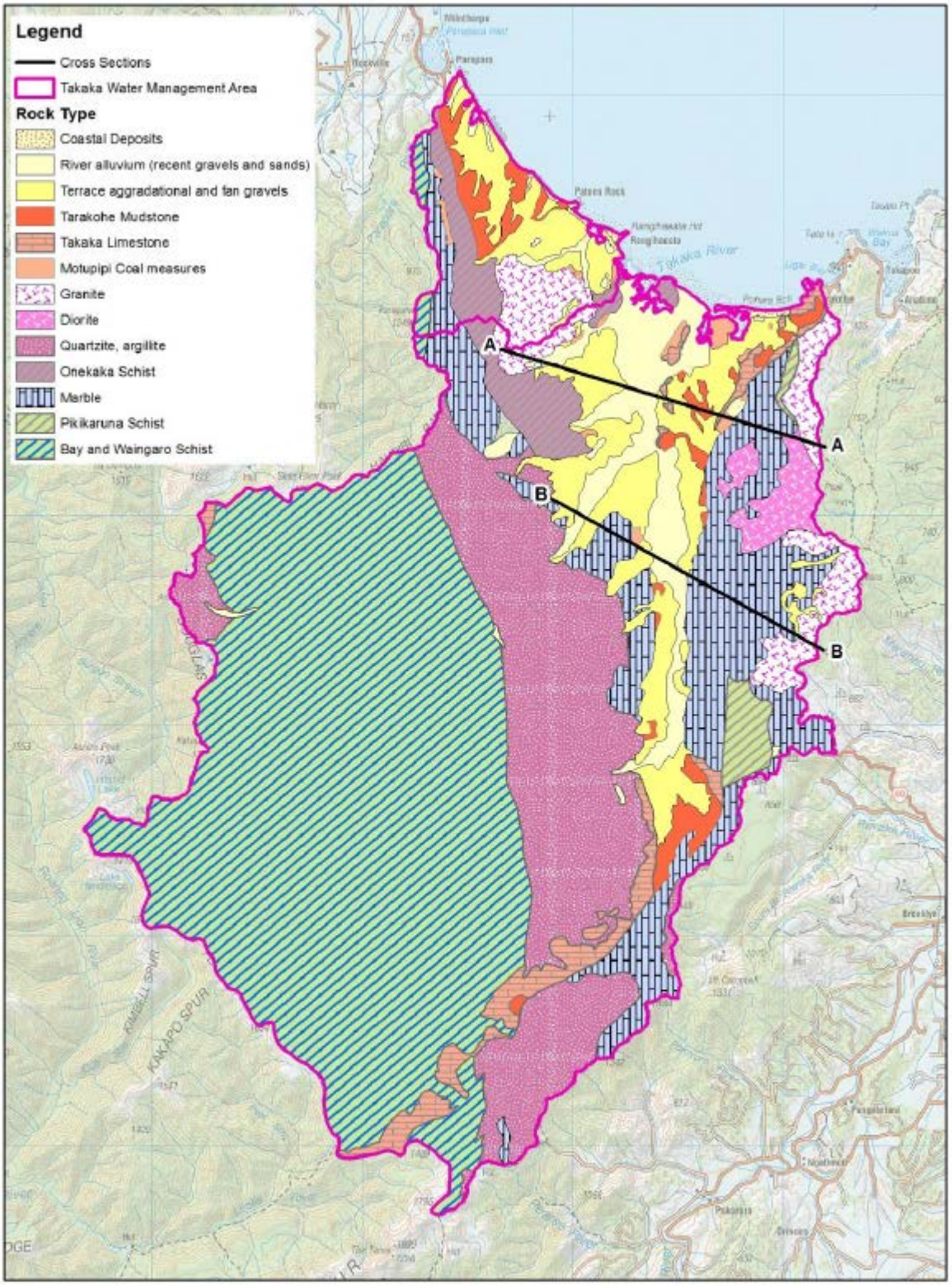
11. The principal aquifer is the Arthur Marble Aquifer which underlies the Takaka Valley and extends some distance up on either side of the valley; smaller amounts of water are held in Takaka limestone and quaternary gravels and sands. Arthur Marble is between 500 and 1000m thick. Recharge sources of the aquifer are the karst uplands to the east and west of the Takaka Valley, drainage from sinks in the beds of the Takaka River and its tributaries and rainfall in the Takaka Valley, which infiltrates through permeable cover. These are shown in Figure 1, Hydrogeological map of Takaka Valley with two cross-sections (from Stewart and Thomas, 2008). The area of the Arthur Marble Aquifer is 180 km^2 of which 45 km^2 is covered by the gravels and coal measures. The total area of the Takaka catchment is 382 km^2 (see Figure 2, The Takaka River catchment area designated in the Ngāti Tama ki Te Tau Ihu settlement with the Crown on 20 April 2013). Note that the main aquifer extends seaward from the main spring as is evidenced by the small amount of salt water that mixes with the main water flow and the effects of tides, even though the springs are 14-17 m above sea level.

12. There are two main spring systems at Te Waikoropupū; the Main springs (including the Dancing Sand spring) and the Fish springs. According to Stewart and Thomas, 2008, the primary sources of water for these springs are the Takaka River (including via tributaries such as the Waingaro River), the karst uplands and valley rainfall. The Anatoki River is not believed to be an important source of water. While the mean flow from the main springs is 10 m3/sec, this can vary from 7.3-12 m3/sec. Flow from the Fish springs varies from almost nil to 7 m3/sec. After entering the aquifers, water travels through Arthur Marble to the springs in two largely independent systems called the deep system and the shallow system. Both systems supply both springs, however the main springs are primarily fed by the deep system while the Fish springs are predominantly fed by the shallow system. The main springs draw an increased proportion of their flow from the shallow system during low flows.



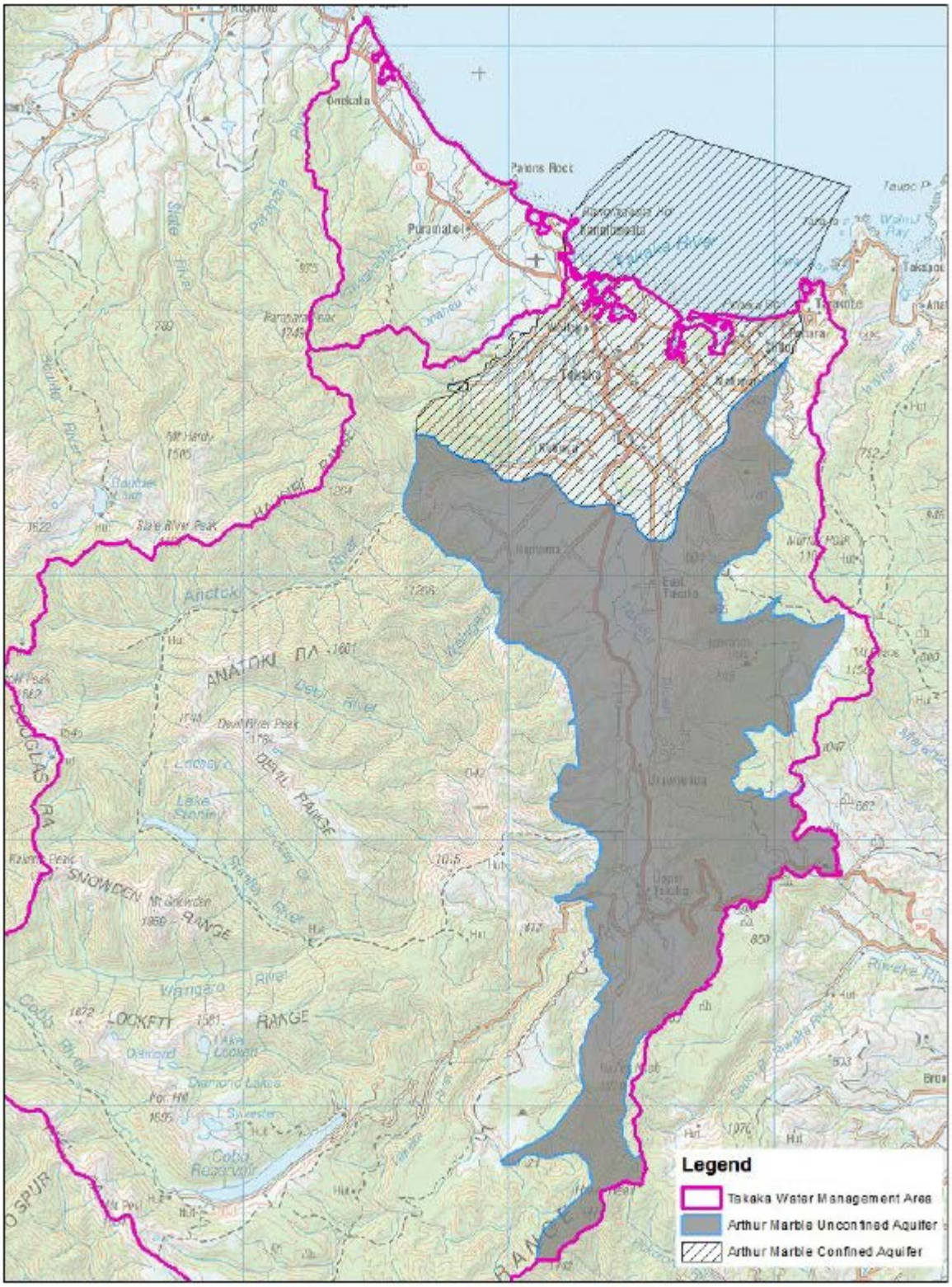
Takaka Water Management Area

July 2013



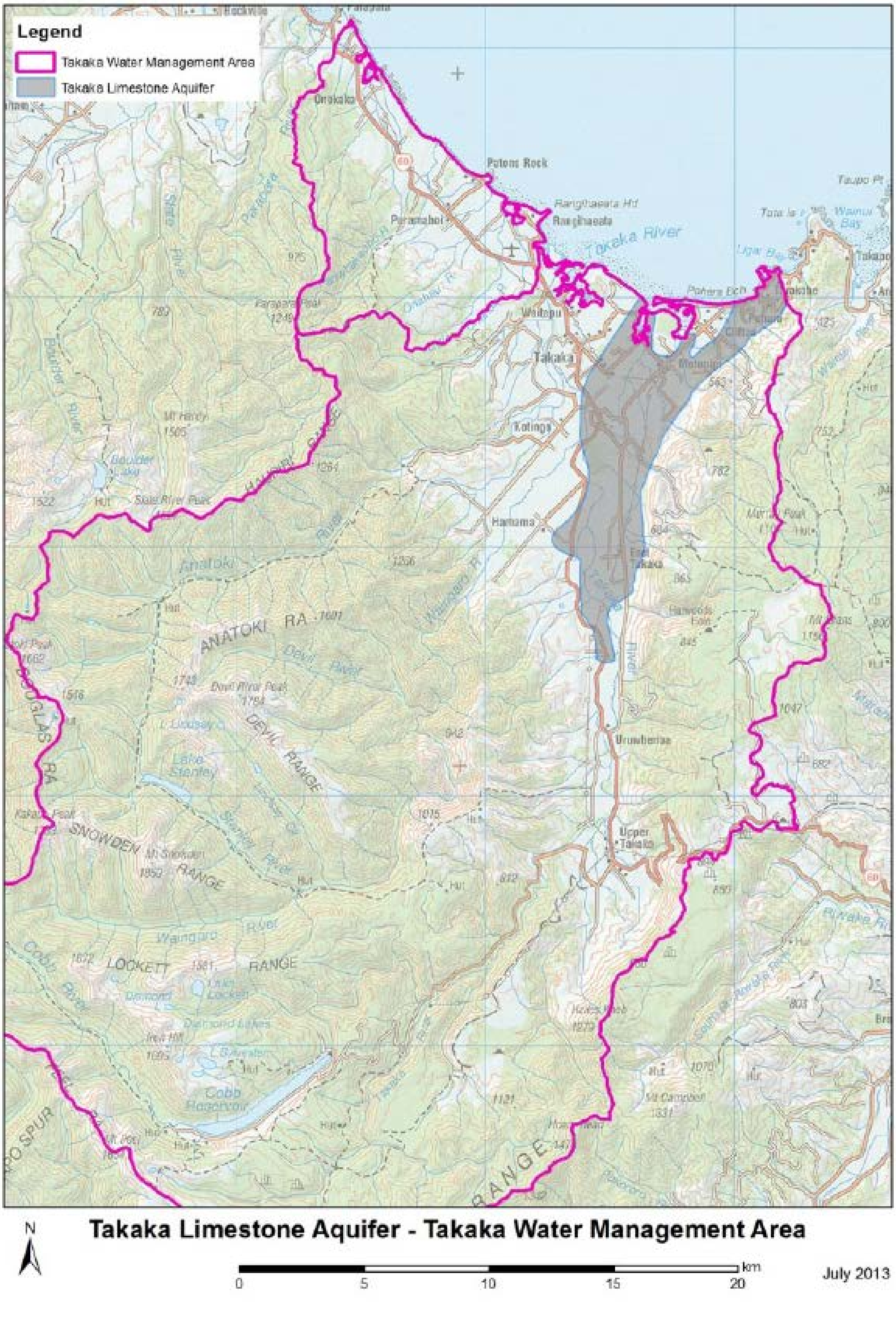
Geology - Takaka Water Management Area

July 2013

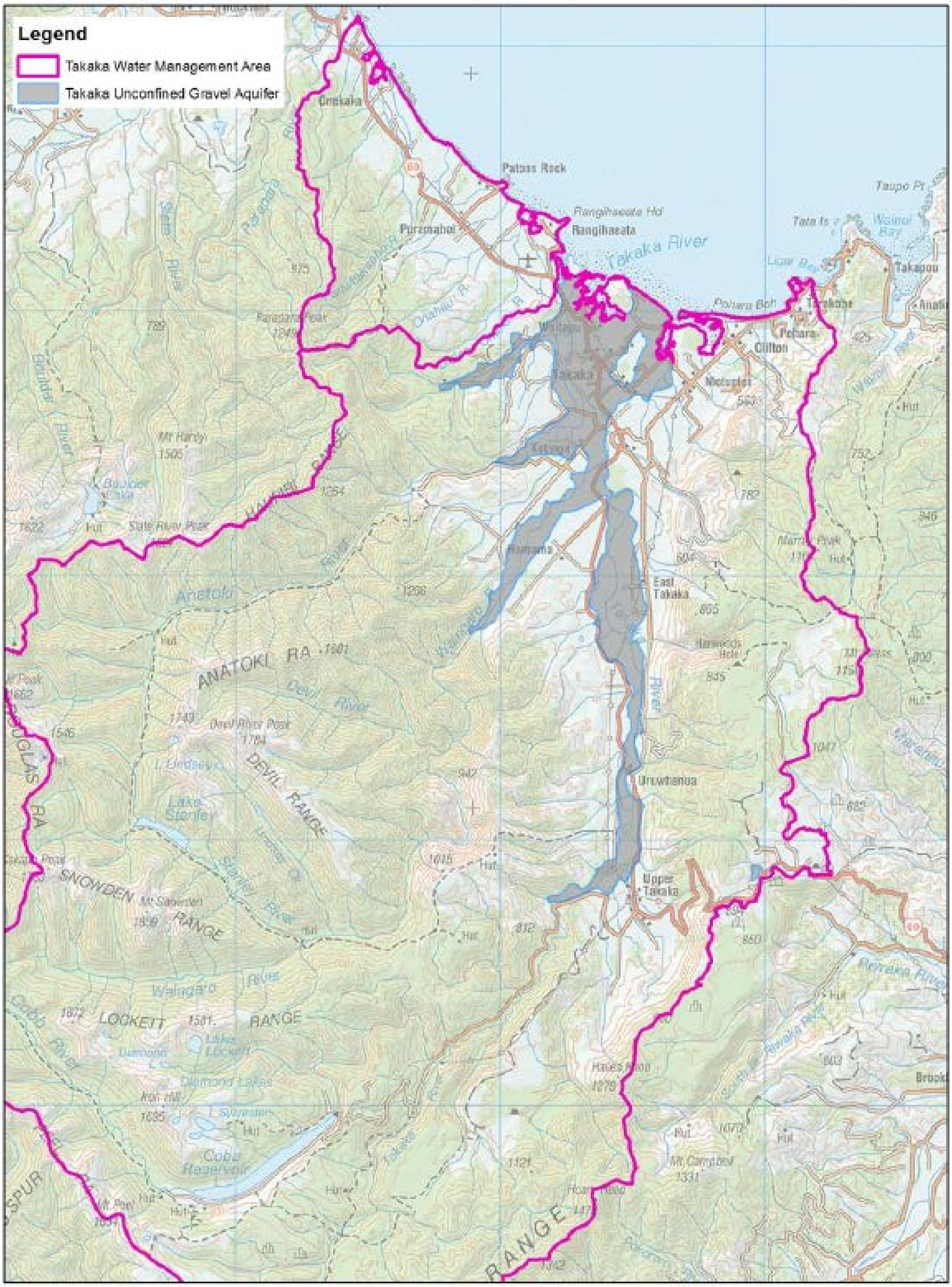


Unconfined and Confined Aquifers - Arthur Marble Aquifer

July 2013



Takaka Limestone Aquifer - Takaka Water Management Area



Takaka Unconfined Gravel Aquifer - Takaka Water Management Area

0 5 10 15 20 km

July 2013

A1 - Reasons for the Application

13. The Resource Management Act requires the Applicant to state the reasons for the application with reference, where practicable, to the matters set out in sections 199, 200 and 207. Following the terms of the Act, the reasons for the application are:

14. The aquifer and characteristics that it contributes to are of outstanding significance in accordance with tikanga Māori (section 199(2)(c).

15. The aquifer itself and characteristics that it contributes to are outstanding:

    a) As a habitat for aquatic organisms (section 199(2)(b)(i);

    b) For scientific and ecological reasons (section 199(2)(b)(iv);

    c) For the exceptional natural clarity of the water (section 199(2)(b)(iii); and

    d) For recreational, cultural and spiritual reasons. (section 199(2)(b)(v).

16. The waters in their natural state afford outstanding amenity and intrinsic values.

17. The outstanding characteristics and values of the aquifer are not currently formally recognised or afforded protection by any legislation or regulatory instrument. This application for a water conservation order accordingly seeks to recognise and sustain the foregoing values.

18. The reasons for the application are described in greater depth in the following sections, with reference to the statutory provisions where possible.

A2 - The Applicants

19. Ngāti Tama ki Te Waipounamu Trust is a Trust formed in 2013 to represent the Uri o Ngāti Tama who whakapapa to Te Tau Ihu. The Trust was incorporated in 1993 under the charitable Trusts Act 1957 as a post-settlement governance entity for the iwi and hapū of Te Tau Ihu o Te Waipounamu (top of the South Island).

20. The Trust receives, holds, manages and administers the Trust Fund for purposes of benefiting Ngāti Tama Te Tau Ihu whether relating to the advancement of religion, education, economic, social, or cultural enhancement and wellbeing, or any other matters Trustees deem beneficial to the community of Ngāti Tama Te Tau Ihu, and all registered members of the Trust.

21. The Trust negotiated with the Crown for many years in order to achieve settlement of Ngāti Tama's grievances due to historical breaches of the Treaty of Waitangi by the Crown. A significant part of the settlement was the recognition and redress relating to cultural sites and waterways that are of major cultural importance to Ngāti Tama.

22. This WCO application represents a significant role in Ngāti Tama's kaitiaki role and its physical, spiritual, and historical association with Te Waikoropupū springs and associated waters.

23. Andrew Yuill has a strong background in physics, chemistry and maths. He has a professional qualification Bsc with honours in Engineering Science, from Durham University, U.K. His work frequently involves the analysis of complex systems in order to determine how to intervene to bring about a desired result or rectify a problem. Andrew has lived in Golden Bay and known of Te Waikoropupū for over 30 years, and for most of that time has taken a personal interest in the waterbodies particularly their unique characteristics, including their outstanding clarity.

Section B - Outstanding Values and Characteristics

B1 - Outstanding significance in accordance with tikanga Māori and for cultural and spiritual purposes

***Ngāti Tama ki Te Tau Ihu - Statement of Values*.**[5]

24. Te Waikoropupū is a large karst resurgence consisting of a collection of springs. It is a precious taonga, which has outstanding water quality. Since their occupation of Mohua, Te Waikoropupū has been central to the lives of Ngāti Tama ki Te Tau Ihu whānau. Ancestral connections with this wāhi tapu encompass the spiritual and physical realms.

25. The spiritual significance of Te Waikoropupū is illustrated by the legend of Huriawa, a *kaitiaki taniwha* (guardian spirit). Huriawa is a *tūpuna* (ancestor) who works her way through the lands of Mohua, travelling in the waters that flow through the domains of Hine-tu-ahoanga (the sandstone lady), to free the flow of water. Originally this tūpuna taniwha was buried on Parapara Maunga, but she was called forth to guard Te Waikoropupū. Now her resting place, Huriawa resides within the numerous sandstone caves and underground streams of Te Waikoropupū.

26. The waters of Te Waikoropupū represent the lifeblood of Papatūānuku and the tears of Ranginui, symbolising the link between past and present. Te Waikoropupū is a source of wai, an essential element of life. Wai is considered to transcend life itself as it sustains the physical and spiritual wellbeing of all things.

27. Tūpuna have been kaitiaki of these precious waters continually for generations. Central to this role is the belief that spiritual and physical survival of all living things is dependent on the maintenance of the mauri and wairua of Te Waikoropupū. Cultural traditions relate to the purity of water. Te Waikoropupū spring water was called the "water of life" or Wai Ora, the purest form of freshwater. Generations of whānau have used these sacred waters for cleansing and spiritual healing. These waters were central to the cultural traditions practiced by tūpuna and remain so today.

28. Maintaining the purity of the waters of Te Waikoropupū is integral to the spiritual and cultural wellbeing of Ngāti Tama ki Te Tau Ihu. The protection of this wāhi tapu is fundamental to Ngāti Tama ki Te Tau Ihu identity and the maintenance of tribal traditions.

29. Ngāti Tama ki Te Tau Ihu have continuously maintained the role of kaitiaki over this rohe since pre-1840.

[5]Ngāti Tama values in relation to Te Waikoropupū Springs are recorded in the Deed of Settlement (Documents Schedule); ' 3. Ngāti Tama Ki Te Tau Ihu Values'

B1.1 - Ngāti Tama ki Te Tau Ihu - Protection Principles

30. The Deed of Settlement outlines the protection principles for Te Waikoropupū Springs as follows:

"4.1 The following protection principles are directed at the Minister of Conservation avoiding harm to, or the diminishing of, Ngāti Tama ki Te Tau Ihu values related to Te Waikoropupū Springs Scenic Reserve:

a) *Protection of wāhi tapu, indigenous flora and fauna and the wider environment of Te Waikoropupū Springs Scenic Reserve;*

b) *Recognition of the Ngāti Tama ki Te Tau Ihu mana, kaitiakitanga and tikanga within Te Waikoropupū Springs Scenic Reserve;*

c) *Respect for Ngāti Tama ki Te Tau Ihu tikanga and kaitiakitanga within Te Waikoropupū Springs Scenic Reserve;*

d) *Encouragement of respect for the association of Ngāti Tama ki Te Tau Ihu with Te Waikoropupū Springs Scenic Reserve;*

e) *Accurate portrayal of the separate and distinct association and kaitiakitanga relationship of Ngāti Tama ki Te Tau Ihu with Te Waikoropupū Springs Scenic Reserve;*

f) *Recognition of the relationship of Ngāti Tama ki Te Tau Ihu with the wāhi tapu and wāhi whakahirahira; and*

g) *Recognition of the interest of Ngāti Tama ki Te Tau Ihu in actively protecting species within Te Waikoropupū Springs Scenic Reserve.*[6]"

31. These protection principles were published in the Gazette notice on 21 August 2014.

B 1.2 - Ngāti Tama ki Te Tau Ihu Deed of Settlement

32. The Ngāti Tama ki Te Tau Ihu Deed of Settlement (Schedule: Documents) (attached as Appendix 2) further state that the Iwi must be portrayed accurately in all government education and information materials, and most importantly, where there are significant earthworks and/or disturbances of soil and/or vegetation, they must be consulted and particular regard will be paid to their views.

33. The Deed of Settlement between Ngāti Tama Te Tau Ihu and the Crown, signed on 20 April 2013, acknowledges the cultural, spiritual, historic and traditional interest in Te Waikoropupū and the Takaka River and its tributaries. The area covered is shown in Figure 2. The Ngāti Kōata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, and Te Ātiawa o Te Waka-a-Māui Claims Settlement Act 2014 ("**Settlement Act**") was passed by Parliament on Thursday 17 April 2014. A significant part of the settlement for Ngāti

[6]Ngāti Tama ki Te Tau Ihu Deed of Settlement, Schedule: Documents, Page 5

Tama was the recognition and redress relating to cultural sites and waterways that are of major cultural importance to Ngāti Tama. The settlement included Statutory Acknowledgements that apply to the Takaka River and its tributaries, including Te Waikoropupū Springs and other springs and groundwater systems, and an overlay recognition for the Waikoropupū Springs.

34. An overlay is a unique form of cultural redress and is understood to be the next best thing to the return of full ownership to the iwi. The statement of association for the Takaka River and its tributaries is recorded in the Deed of Settlement [Documents Schedule] as follows:

> ***TAKAKA RIVER AND ITS TRIBUTARIES*** *- The relationship Ngāti Tama ki Te Tau Ihu has with the Takaka River catchment is a significant one, as it encompasses both the spiritual and physical realms. The spiritual realm is reflected in the legend told about Huriawa.*
>
> *Huriawa is a tupuna and kaitiaki taniwha (guardian) who works her way through the lands of Mohua. Mohua is the domain of Hine Tu Ahoanga (the Sandstone Lady). There are large areas all over the region showing her handiwork. The rock formations, the tunnels and the caves were all places that acted as shelter for the living and those who had passed on. Huriawa travels in the waters that flow through the domains of this Lady of the Stone. Through whakapapa, she has connections between Mohua, the northern areas of the North Island and Te Wai Pounamu. Huriawa is the caretaker taniwha of the sacred carved prow piece of the waka "Uruao" that was ceremoniously invested in the mouth of the Waitapu River, the river that was once called Ngā Waitapu o Uruao (the sacred waters of the Uruao).*
>
> *Huriawa travels through the northern lands to clear all the waterways from the effects of storms. She tosses fallen trees and tangled vegetation out of the rivers to free the flow. With the help of her children, she guards the top of the waka (canoe). When the rains come, Huriawa dives deep into the land and sea. It is she who churns up the waters when fresh water is found rising through the sea, far from shore. The waters in the Takaka River catchment where Huriawa resides are sacred - these waters are used for ceremonies, offerings, blessings and for healing purposes.*
>
> *The Waitapu River was originally a tributary of the Takaka River. The confluence of these two rivers was subject to strong tidal flows. From the 1860s and onwards, modifications and extensions to the Waitapu Wharf separated the Waitapu River from the Takaka River. However, Ngāti Tama ki Te Tau Ihu whanau continue to recognise the history here and how the waters of these two awa connected.*
>
> *The physical relationship Ngāti Tama ki Te Tau Ihu has with the Takaka River relates to the protection and use of numerous resources associated with this taonga. Descendants of Ngāti Tama ki Te Tau Ihu chiefs have maintained ahi ka roa in Mohua since the early 1800s.*

Traditionally, there were kainga throughout the catchment, and the land and the river with all its resources were integral to the wellbeing of tupuna. Te Meihana Te Ao, a Ngāti Tama ki Te Tau Ihu chief from Takaka, and his whanau cultivated the lower reaches of the Takaka River. On the east of the Takaka River Mouth is an area once known as Patoto Island. This was another kainga and mahinga kai of Te Meihana.

The natural outlet of the Takaka River, Rangihaeata, was traditionally known as Rangi-ata. A place of great spiritual significance to Ngāti Tama ki Te Tau Ihu, Rangihaeata was cited in an old moteatea (lament) composed by Te Meihana. The words relate to the significance of the Takaka River mouth and tell of the grieving of Te Meihana over the loss of his loved one. Although the river now flows through the urupa where the Meihana whanau are buried, a grave is still visible on the Rangihaeata side.

Ngāti Tama ki Te Tau Ihu have continuously maintained the role of kaitiaki over this awa since pre-1840.[7]

35. The Ngāti Tama values in relation to te Waikoropupū Springs are recorded in the Deed of Settlement [Documents Schedule] as follows:

3. NGĀTI TAMA KI TE TAU IHU VALUES

Waikoropupū Springs is a large karst resurgence consisting of a collection of springs. It is a precious taonga, which has outstanding water quality. Since their occupation of Mohua, Waikoropupū Springs has been central to lives of Ngāti Tama ki Te Tau Ihu whanau. Ancestral connections with this Wāhi tapu encompass the spiritual and physical realms.

The spiritual significance of Waikoropupū Springs is illustrated by the legend of Huriawa, a kaitiaki taniwha (guardian spirit). Huriawa is a tupuna (ancestor) who works her way through the lands of Mohua, travelling in the waters that flow through the domains of Hine-tu-ahoanga (the sandstone lady). Huriawa clears the waterways of storm debris (fallen trees and vegetation), to free the flow of water. Originally, this tupuna taniwha was buried on Parapara Maunga, but she was called forth to guard Waikoropupū Springs. Now her resting place, Huriawa resides within the numerous sandstone caves and underground streams of Waikoropupū Springs.

The waters of Waikoropupū Springs represent the lifeblood of Papatuanuku and the tears of Ranginui, symbolising the link between past and present. Waikoropupū Springs is a source of wai, an essential element of life. Wai is considered to transcend life itself as it sustains the physical and spiritual wellbeing of all things.

Tupuna have been kaitiaki of these precious waters continually for generations. Central to this role is the belief that the spiritual and physical survival of all living things is dependent on the maintenance of the mauri and

[7]Ngāti Tama ki Te Tau Ihu Deed of Settlement, Schedule: Documents, Pages 23-24

wairua of Waikoropupū Springs. Cultural traditions relate to the purity of water. Waikoropupū Springs spring water was called the "water of life" or Wai ora, the purest form of freshwater. Generations of whanau have used these sacred waters for cleansing and spiritual healing. These waters were central to the cultural traditions practised by tupuna and remain so today.

3.5 Maintaining the purity of the waters of Waikoropupū Springs is integral to the spiritual and cultural well-being of Ngāti Tama ki Te Tau Ihu. The protection of this Wāhi tapu is fundamental to Ngāti Tama ki Te Tau Ihu identity and maintenance of tribal traditions.[8]

36. The Treaty settlement was and remains a major milestone in the history of Ngāti Tama. It is a 'historical event' and signals a momentous change in the social, cultural, environmental, and economic position, aspirations and means of Ngāti Tama.

37. Redress provided to all eight Iwi in Te Tau Ihu in their Deeds of Settlement provides for the establishment of a Freshwater Advisory Komiti, to work with, and provide consultation to, local government.

38. The Management Plan for Te Waikoropupū developed by the Department of Conservation in conjunction with Manawhenua ki Mohua and the Tasman District Council also stresses this connection.

39. Te Waikoropupū is registered by the New Zealand Historic Places Trust as Wāhi Tapu under section 25 of the Historic Places Act, 1993. It is also covered in the Tasman Regional Management Plan Schedule 30.A (which was proposed in August 2012). The National Policy Statement for Freshwater 2014 ("NPSFM") came into force in July 2014. Regional councils (and unitary authorities) are primarily responsible for implementing the NPSFM through their regional plans and policy statements. The objectives and policies in the NPSFM direct how local authorities are to manage fresh water in their regional policy statements, regional and district plans, and in the consideration of resource consent applications. Local authorities are required to 'give effect' to national policy statements in their regional policy statements and regional and district plans, and to 'have regard' to a national policy statement in determining applications for resource consents. Full implementation of the NPSFM is required by 31 December 2025; however, the implementation timeframe may be extended to 2030 if the 2025 timeframe will affect plan quality or it would be impracticable for the council to fully implement the NPS-FM by 2025. Policy E of the NPS-FM outlines the timing for implementing the NPS-FM.

40. The Tasman Regional Policy Statement and Tasman Resource management plans are yet to be amended in accordance with the NPSFM. A full consideration of these statutory planning instruments is set out in section 'D' of this application.

41. None of these documents address the role of the aquifer in producing the water qualities observed at Te Waikoropupū, or the matter of appropriate protection for the operative processes (being the processes operating in the aquifers that digest the coloured dissolved organic matter in the water and filter out sediment).

[8]Ngāti Tama ki Te Tau Ihu Deed of Settlement, Schedule: Documents, Page 4

B1.3 - Significance of Wai

42. Te Waikoropupū is a source of wai, essential for the physical and spiritual wellbeing of all things. Wai is a taonga, which relates not only to its intrinsic value, but to the resources living in wai, and the sites and uses sustained by wai. For Ngāti Tama ki Te Tau Ihu, wai transcends life itself. The spiritual and physical survival of all things is directly linked to the health of wai. The spiritual qualities of mauri (life force) and wairua (spirit) are dependent on the physical health of wai and its ability to sustain healthy environments[9].

43. For Ngāti Tama ki Te Tau Ihu, the wai flowing through Te Waikoropupū expresses all dimensions of life: *Taha wairua* (the spiritual); *Taha hinengaro* (the intellectual); *Taha tinana* (the physical); and *Taha whānau* (the social). These dimensions are integrated with the Ngāti Tama ki te Tau Ihu values associated with wai [10]:

B1.4 - Te Wairua

44. The identity of Ngāti Tama ki Te Tau Ihu is intertwined with wai. This is reflected in *pūrākau* (stories), *waiata* (songs), and *karakia* (prayers). It is still customary for Iwi to recite the relationship that connects them to the natural world, when speaking in a formal setting. This tradition identifies where Iwi come from, and the natural resources they rely on for their spiritual and physical wellbeing. The health and wellbeing of Ngāti Tama ki Te Tau Ihu is therefore dependent on the continued health and wellbeing of the waters associated with Te Waikoropupū. Activities which diminish or degrade wai represent a loss of cultural identity for Iwi.

B1.5 - Māoritanga

45. Māoritanga describes the actions associated with being Māori and living according to Māori customs, traditions, values and cultural practices. Over many generations Ngāti Tama ki Te Tau Ihu have developed relationships with ngā taonga tuku iho – relationships based on *tikanga* (customary practices), *kawa* (rules); and *mātauranga* (local, indigenous and historical knowledge). When a taonga is diminished or destroyed, so too is the relationship Ngāti Tama ki Te Tau Ihu maintain with that taonga. Whānau are unable to practice their customs and traditions and subsequently mātauranga associated with the resource is lost.

B1.6 - Kaitiakitanga

46. Kaitiakitanga encompasses the concepts of guardianship, preserving, sheltering and watching over *ngā taonga tuku iho* (treasured resources), such as wai. It is through whakapapa and their spiritual relationship with *ngā atua kaitiaki* (the spiritual guardians), that Ngāti Tama ki Te Tau Ihu believe they have a duty to their *tūpuna* (ancestors) to take care and protect wai. The spiritual and physical survival of Ngāti

[9] *Nga taonga tuku iho ki Whakatu management plan* (June 2004:16)

[10] Concepts discussed in Dr Gail Tipa's report, *Consideration of a significance assessment method for tangata whenua rivervalues* – A Murihiku Case Study (August 2010:14)

Tama ki Te Tau Ihu is dependent on their ability to safeguard resources, as kaitiaki of the rohe.

47. Examples of customary practices associated with wai include: acknowledging ngā atua kaitiaki before utilising resources; working to enhance the health of waterways; and using wai for cleansing and healing purposes.

B1.8 - Wāhi Tapu

48. Traditionally, waterways were used by Ngāti Tama ki Te Tau Ihu to access food and other resources. Remains of camp sites (from which seasonal food was gathered) and waka landing sites are widespread in the Takaka catchment. Sites are often found near wetlands or at the confluence of tributaries[11]. Wāhi tapu include, but are not limited to: *urupā* (burial grounds), sites used for ceremonial purposes, *mahinga mātaitai* (food gathering areas), *riu waka* (landing sites), camping sites, work areas and places for harvesting *rongoā* (medicinal plants).

49. Wāhi tapu are frequently associated with wai. Te Waikoropupū is one such place which is of immense spiritual importance to Ngāti Tama ki Te Tau Ihu. Te Waikoropupū has been a wāhi tapu since the earliest Māori settlement in Mohua. Therefore, *ahi kā roa* (those who keep the homefires burning) have maintained a continuous relationship with Te Waikoropupū, the Springs River and associated *taonga tuku iho* (treasures) since pre-1840.

B2 - Outstanding Habitat for Terrestrial or Aquatic Organisms

B2.1 - Te Waikoropupū

50. Te Waikoropupū is noted for its biodiversity and is listed as a Water of National Importance (DOC, 2009). The flora include 23 species of algae, bryophytes (7 species of moss and 3 species of liverworts), plus 2 species of indigenous larger aquatic plants. The moss *Hypnobarlettia fontana* is an endemic moss found nowhere else while there is a local form of another moss *Drepanocladus aduncus.* Some 43 indigenous species of aquatic animals were recorded by Frances Michaelis (1977) and more have been found since then (DOC, 2009). It appears about half are found only in the springs, not elsewhere in the reserve (DOC, 2009). They include flatworms, amphipods, snails, shrimps, and insects. The most notable is *Spathula alba* an eyeless flatworm that is assumed to be a subterranean species. The amphipod, *Paracalliope karitane,* is present because of the salt level in the spring. White, eyeless amphipods, assumed to be a subterranean species, are numerous within the gravels of Fish Creek springs (I Millar, pers. comm.). The caddisfly, *Rakiura vernale* is found here and in Stewart Island. Te Waikoropupū also contains northern kōura, the giant kōkopu and the long finned eel. Further information on the diversity of New Zealand springs is given by Scarsbrook, *et al*. (2007).

[11] *A cultural impact assessment – managing waterways in the Tasman District*, Tiakina te Taiao, April 2011:20)

B 2.2 - Karst Cave Systems

51. There has been no published research on the biodiversity in the Arthur Marble karst aquifer associated with the springs, largely because of the difficulty in accessing this part of the system.

52. Research into groundwater fauna in New Zealand has been both limited and erratic in occurrence. The earliest collections were undertaken in the 1880s in Canterbury by Chilton. It was not until the 1970s that further collecting occurred, undertaken by G. Kuschel who sampled widely, but mainly in the Nelson region. Kuschel's collections included a wide range of taxonomic groups which were dispersed to appropriate taxonomists, many of them overseas. Some of the groups have been described in a range of publications over the years, in particular many species of freshwater mites. Other groups, including a very large collection of amphipods, have languished. Recently, the amphipod collection was returned to New Zealand and is now held at NIWA for identification as funding becomes available. More recently NIWA employed Dr Martin Haase to sample and work on New Zealand's hydrobiid snail fauna. This work resulted in the description or re-description of 64 species (Haase, 2008), of which about 40 are subterranean. Twenty-four of the subterranean species are known only from the Nelson-Golden Bay region and many of these are known at present from a single site. At present, about 140 species of groundwater fauna have been described in New Zealand (Fenwick *et al*., 2004; Fenwick and Scarsbrook, 2004; Haase, 2008), including approximately 70 aquatic mites, 40 snails and 15 crustaceans. At least 35 species of amphipods awaited description as of 2000 (Fenwick, 2000). New discoveries continue, with three new species being found in the Pearse resurgence below Mt Arthur in 2012. The Northwest Nelson karst systems are known to be a centre of hydrobiid snail and amphipod diversity with high levels of endemism (Scarsbrook *et al*., 2007).

53. It is known overseas that fauna may be found at depths well below 100 m but apparently no groundwater deeper than 50 m has been sampled anywhere in New Zealand (Fenwick *et al*., 2004). There are also microorganisms inhabiting these karst systems (Simon, 2008) but these are also not researched in New Zealand. However, despite this lack of research it is certain that these fauna and microorganisms have significant biodiversity value and play important ecological roles (Simon, 2008; Boulton et al., 2008).

54. Te Waikoropupū aquifer itself is almost un-sampled for groundwater fauna. However, the extent of this aquifer, the length of time it has existed in some form, and the range of groundwater habitats that it will certainly incorporate, make it likely to be one of the richest, most diverse groundwater habitats in the country. It may well hold species that remain to be discovered, including species endemic solely to this aquifer.

B3 - Outstanding for Scientific and Ecological Reasons

B3.1 - Water Quality

55. In the catchment of Te Waikoropupū, water entering the spring's aquifer from rivers and streams is filtered through riverbed gravels as it seeps underground. Thereafter

it remains underground in the confined karst aquifer for a substantial period as it moves slowly through the aquifer. This accounts for absence of sediment in the emerging water, but more than this is required to produce the outstanding clarity observed at Te Waikoropupū.

56. Davis-Colley and Smith (1995) described the colour of the spring water as purple-blue, and comment that the colour implies undetectably low yellow substance content, since any detectable amount of yellow substance would shift the colour noticeably towards longer wavelengths. They comment further that the yellow substance which is produced by microbial degradation of organic matter in the recharge water may be removed by chemical adsorption on the calcite mineral surfaces of the rock (Arthur Marble) comprising the aquifer, as calcite is known to adsorb humic material chemically (Suess, 1970). Seuss states that the mineral surfaces become saturated with organic carbon after adsorbing 0.1 mg-1.5 mg of carbon/m^2, which is the amount of organic matter needed to form a mono molecular layer. If this process were acting alone, it would quickly become saturated and inoperative. However, the organic carbon is acted on by microorganisms to form a slime layer (biofilm) which in turn is fed on by larger fauna (Figure 3).In summary, it is biological processes operating within the aquifer that produce the outstanding clarity.

57. Analysis of the water in Te Waikoropupū shows oxygen concentration of about 5.5 mg/l (Table 2). River water or rainfall entering the aquifer contains between 11-12 mg/l, so about 6 mg/l has been consumed by organisms as they digest the organic matter. Ian Millar (pers. comm.) stated that there would be a bacterial film on the underwater rock surfaces, as is shown in Figure 3. This would be grazed on by hydrobiid snails among other fauna. (In the Riwaka spring, evidence has been found suggesting that two species of hydrobiid snails feed on what appears to be a biofilm layer on rocks lying 1-3m below the water surface (F. Climo, pers. comm. to I. Millar, 2000)) Whatever the identities of the species and the relations between them, the fact remains that the system starts with normal river and rain water and produces water of the most outstanding clarity.

58. The absence of light in karst aquifers means that all organisms living there depend ultimately for their food on organic matter that is washed down with the re-charge water. They also depend on there being enough oxygen in the re-charge water to metabolise the available food material.

59. The balance between dissolved oxygen and dissolved organic matter in the aquifer is highly significant to the aquifer's ecology and health. As noted, between entering the aquifer and re-emerging at Te Waikoropupū the water loses some 6mg/l of oxygen. This oxygen is used by organisms as they digest organic matter present in the water. A typical empirical formula for the process is:

$$CH_2O + O_2 \rightarrow CO_2 + H_2O \rightarrow H_2CO_3$$

60. This and the atomic weights of carbon and oxygen imply that 2.25 mg/l of carbon in organic matter is sufficient to consume the observed 6mg/l of oxygen. Whilst the formula is a gross simplification of the intricate biochemical processes operating within the aquifer it is nonetheless a good guide to the relation between dissolved

organic matter and oxygen consumption. The implication is that the aquifer is highly sensitive to the loading of organic matter in its re-charge sources. It is not known at what point anoxia would occur for the organisms in this aquifer, but it appears likely that neither the current biota in the aquifer, nor the outstanding clarity of the emerging water would survive an additional 2 mg/l on average of carbon in the recharge water.

61. The poorly understood and unique biodiversity of the aquifer, its ecology and how it clarifies the water so outstandingly well are of major scientific interest.

B3.2 - Exceptional Natural Clarity of the Water

62. Biological processes operating within the aquifer at Te Waikoropupū play an essential part in creating the outstanding water clarity. The balance between dissolved oxygen and dissolved organic matter in the aquifer is crucial to the aquifer's ecology and health. The biology and ecology of the aquifer, and hence its susceptibility to pollution are poorly understood. Much of the water takes over 10 years to flow through the aquifer so any pollution could cause great damage before becoming apparent.

63. Davis-Coley and Smith (1995) stated that the water had the highest yet reported clarity of any fresh water in the world (63 m). [12] Water entering the aquifer via the Takaka River, for example, is not unusually clear (Table 2). The maximum clarity measured for any river in the system was in the Waingaro River at Hanging Rock where the median is 12.1m (Table 2; Young *et al*., 2010).

B3.3 - Outstanding Intrinsic Values

64. Te Waikoropupū is the largest *puna* (springs) in New Zealand and among the 50 largest known karst (carbonate rock aquifer) springs in the world (Williams, 2004; DoC, 2009). It is an internationally significant geo-preservation site[13]. The associated aquifers are the most important in New Zealand (Williams, 2004). They have exceptional water clarity and quality, and unique fauna.

B4 - Outstanding for Recreational Purposes

B4.1 - Tourism

65. Nearly 50,000 people visit Te Waikoropupū each year (DoC 2009). Although the Applicants consider this number to be well exceeded in more recent years, with over 90,000 visiting over 2016. By their nature, recreational cultural and spiritual values are hard to pin down objectively. For some of these visitors it may be an opportunity to reflect and wonder on the magnificence of the world and our place in it.

[12] In 2011 NIWA reported that Blue Lake in Nelson Lakes National park had even clearer water at 70-80 m.
[13] a site that is recognised as having such significance for the interpretation and understanding of New Zealand geological or land forming processes, that it is listed in the New Zealand Geopreservation Inventory as worthy of protection

66. During the summer of 2010-11 the Department of Conservation employed a ranger to be present at Te Waikoropupū Scenic Reserve in an educational role and specifically to raise awareness among the visiting public of the threat of didymo infestation (*Didymosphenia geminata*). This person met and spoke with a large number of tourists over the summer months, and she has since spoken of the profound effect Te Waikoropupū had on many of the visitors. She commented as follows: "Some were 'doing Golden Bay in 24 hours', rushing in and out again. Others made a point - to take time; absorb the atmosphere, watch the water welling up, sensing the incredible specialness of the place. I was particularly taken with the effect Te Waikoropupū had on visitors, both overseas and New Zealanders. They were captivated, enchanted, seemingly didn't want to pull themselves away. They lingered because it seemed they were gaining some sort of unique benefit from being there. Some were moved almost to tears, and they gained a gentleness about them. The influence of the place on them was profound. I've not come across anything quite like it elsewhere." (Macleod,personal communication.)

67. Whether one regards it as a recreational, cultural or spiritual matter, many people who know Te Waikoropupū say it has a special, slightly intangible quality or atmosphere about it, and they respect and value it.

B5 - Potential Threats to the Aquifer

B5.1 - Overview of Hazard Threats

68. In the broadest terms, threats to the aquifers come from extraction of water, and from pollution of the aquifer's recharge sources. An essential part of care for the water in the aquifer is to ensure that conditions remain favourable for the organisms living in it. Several factors compound the basic threats.

69. People have not been able to enter the aquifers, so the species living there have not been identified. There is therefore uncertainty about how tolerant the stygofauna would be to pollution or other changes in their environment. Groundwater environments are typically very stable and it is entirely possible that the organisms have relied on this stability while adapting to the challenges of living underground. While sensitivity to pollution effects is poorly researched, adverse effects have been observed elsewhere (Ulrich, 2002; Fenwick *et al.*, 2004). Therefore the WCO needs to control pollution and abstraction in all of the Takaka catchment except those parts that are known to be safely isolated from the Arthur marble aquifer by coal measures or other barrier.

70. Dr Serov (private communication) wrote 'It is well documented around the world that aquatic organisms and ecosystems that have an obligate reliance on groundwater have very narrow environmental tolerances for changes that exceed the natural ranges of water level, flow, temperature and chemistry'.

71. It is common for groundwater dependent fauna to be 'endemic' i.e. not occurring anywhere outside their particular aquifer. Organisms in the Takaka Valley aquifers are uniquely effective at clearing the water they live in, which further suggests action by endemic organisms. Hence if they were damaged or eliminated it would not be possible to replace them from elsewhere.

72. The larger part of the water in the aquifer typically resides underground for over ten years, so if pollution entered the aquifer the fact might not become apparent for many years, by which time great damage would be done.

73. The effects of any hazards can migrate through the catchment containing the aquifer so it is not sufficient to restrict attention to those areas directly above the aquifer. As Ngāti Tama ki Te Tau Ihu has observed, water links all taonga in the catchment. The Department of Conservation comments that 'Karst is vulnerable to activities in other (non-karst) parts of surface catchments. It is therefore preferable to manage the entire catchment rather than just those portions containing karst.' (Karst Management Guidelines, Department of Conservation May 1999). NIWA (2015) advised 'any impacts are cumulative along the catchment. A whole of catchment approach is fundamental to sustaining the values of any surface stream, underground aquifer or combination of the two'.

B5.2 - Water Use and Quality

74. In the recharge area of the aquifers supplying Te Waikoropupū**,** allocation of water for irrigation is currently being restricted by the Tasman District Council to 500 l/sec but Council staff are proposing to increase the limit to around 766 litres per second with 355 litres per second additional water available. [Proposed at Takaka FLAG September 2016]. This will permit an increase to the irrigated area. A report by Landcare Research titled 'TeWaikoropupū Springs Water Quality Modelling' was presented to the FLAG meeting in November 2015. Among its conclusions was that increasing irrigation within the aquifer recharge zone would increase the nitrate concentration in the aquifers supplying Te Waikoropupū.

75. According to Williams (2004) the total volume of water stored in the aquifers is less important than the flow dynamics, particularly during low flow, which is also when the demand for irrigation is highest.

76. If water entering the aquifer were to become polluted with an excessive loading of organic matter, the dissolved oxygen would be used up. If that were to happen, it is to be expected that coloured dissolved organic matter would appear in Te Waikoropupū and spoil the clarity of the water. It is also probable that organisms at present living in the aquifer would die (Fenwick *et al*., 2004), so the damage might be permanent.

77. Industrial operations could pose threats from toxins or impact on the water's pH. Dumping of waste into karst systems has occurred in the past in the Takaka valley. It has caused problems and needs strict control. Karst landscapes have the potential for rapid conduit flow of contaminants. The serious problems with the Motupipi catchment in the lower Takaka valley illustrate the range of problems that can occur (Stevens and James, 2008).

78. Nitrate and total phosphorus concentrations in Te Waikoropupū have been increasing. They are many times greater than the concentrations measured in the Takaka River at Harwoods and the Waingaro at Hanging Rock (Table 3). The present levels are at the upper limit advised by NIWA for the aquifer itself and they aer close

to the river trigger levels where there is ecological concern, (ANZECC, 2000; D.J. Mead, pers. Comm.). High nutrient levels pose a risk of excessive growth of weed or green slime (periphyton) in the water after it emerges into daylight at Te Waikoropupū. The more general corollary of these nutrient measurements is that despite the size of the aquifer and its discharge rate, the effects of human activity can still be ecologically significant.

B5.3 - Land Disturbance

79. A far more basic form of pollution is silt, arising from heavy rain fall in conjunction with land disturbance, e.g. clear felling of plantation forest, cultivation, unprotected river banks, heavy stocking rates or other causes. Silt and coarser suspended material enters the aquifers with the recharge water and settles there. Coarser material is likely to be filtered and it may be expected that the finer material will travel further. Average water speeds in the aquifer must be in the order of a tenth of a millimetre per second so there is ample opportunity for silt to settle, and evidently it does settle because of the clarity of the water seen emerging at Te Waikoropupū. There is however a finite amount of space available to accommodate silt in the aquifer, and present silt loadings are clearly well above pre land-clearance levels. It is vitally important that silt does not accumulate in the aquifers to the point that it emerges at Te Waikoropupū, where it would ruin the water's clarity.

Section C- Provisions to be included in this Water Conservation Order

C1 - Overview of Restrictions and Prohibitions Sought

80. For manawhenua iwi, the health of the Te Waikoropupū is interconnected with the health of all taonga within the Takaka Catchment. Therefore the qualities of wairua and mauri relate not only to the spiritual and physical health of the water at Te Waikoropupū Springs, but to the whole Takaka watershed, including the Aquifer.

81. The protection provisions proposed here encompass spiritual values and customary traditions which are intertwined with the ecological health of wai; an important habitat for aquatic organisms. Qualities such as water clarity, flow rates, dissolved oxygen levels and the scientific value of aquatic animals in the aquifer are all important considerations when protecting the physical and spiritual health of the Aquifer. They are also important qualities substantively.

82. The following provisions are sought in this Water Conservation Order:

    a) Recognition of Ngāti Tama ki Te Tau Ihu as *kaitiaki* (guardians) of the *wai* (water) within the Takaka Catchment.

    b) Management of *wai* in the Takaka Catchment reflects the principles of *ki uta ki tai* - wai flowing freely on its pathway from its source – from *Ranginui* (Sky Father) and *ngā maunga* (mountains) through *ngā awa* (rivers) and underground pathways (the Aquifer) to *ngā moana* (sea).

    c) Sufficient water levels and flows are maintained in the Takaka Catchment (flowing through the Aquifer) to sustain life and protect manawhenua iwi cultural values including:

        i. Aquatic habitats, ecosystems;

        ii. Fisheries and other *wāhi taonga* manawhenua iwi wish to protect (sacred treasures/resources); and

        iii. *Mahinga kai/mahinga mātaitai* (customary species gathered for food and food gathering areas).

    d) Wāhi tapu (scared sites/places associated with wai in the Takaka Catchment).

    e) The natural state of Te Waikoropupū Springs.

    f) Protection of Takaka Catchment wai (water) in all its forms from becoming a receiving environment for the discharge of contaminants.

    g) Protection of the Aquifer from pollution in its recharge sources, having particular regard to:

        i. Excessive biological oxygen demand;

ii. Fertiliser leachates, especially nitrates; and

iii. Toxins.

h) Protection of rare and specialised biota within the Aquifer.

i) An integrated catchment management approach is applied to recognise and provide for the:

i. Relationship between land and water resources in the Takaka Catchment; and

ii. Spiritual qualities of *mauri* and *wairua* relating to the Aquifer and the wider catchment.

j) All land and water use within the Takaka Catchment is assessed in terms of its potential cumulative effects on the Aquifer. The precautionary principle must apply where proposed developments may have an adverse impact on the aquifer.

k) Proposers of new or intensified land and water use in the Catchment must demonstrate that their proposed activity will not contribute to degradation of the Aquifer.

l) All land and water users in the Takaka Catchment abide by 'best practice guidelines' for maintaining and enhancing water quality.

m) A requirement for all restoration projects on riparian margins in the Takaka Catchment to prioritise the planting of indigenous vegetation providing habitat and pathways for indigenous species.

n) Protection for the rare and specialised biota within the aquifer.

C2 - Explanation of Water Quality Limits

83. The applicants approached NIWA for advice on the health of the aquifer, and what provisions are needed to protect it. The two reports are included as appendices and are included in the provisions sought for protection of the aquifers. An outline of the main recommendations is presented here.

84. Water quality guidelines or limits for the springs and associated aquifers should be based on historical and present water quality of the springs and of the contributing aquifers, tempered by additional relevant scientific information. Identified key water quality attributes are:

a) Toxicants;

b) Organic carbon;

c) Dissolved oxygen;

d) Nitrate; and

e) Amonia.

85. Toxicants should be kept below concentrations specified in the ANZECC guidelines (see ANZECC & ARMCANZ 2000; Table 3.4.1), using the 99% protection level concentrations specified in those guidelines.

86. Organic carbon enters groundwater from overlying land use activities. Typically, all aquatic ecosystems may be overloaded when too much organic matter enters the system (increasing the biological oxygen demand), usually reducing dissolved oxygen concentrations, and altering both biodiversity composition and ecosystem function and services. So too, with aquifer ecosystems. While increased organic carbon supply increases abundances of some species, it may lead to other strictly stygobitic species and communities being displaced or even eliminated through competition by non-obligate stygophilic species, especially if other environmental factors (e.g., dissolved oxygen) change to suit the stygophiles.

87. Organic carbon concentrations within the Waikoropupū Springs Aquifer complex require urgent measurement to provide a meaningful background for guiding management of water quality at the springs. On-going monitoring, especially to determine any seasonal variations and changes to these, is essential. For the springs water itself, concentrations of dissolved organic carbon must remain undetectable to maintain the water's extreme clarity.

88. Dissolved oxygen appears to become a critical factor at low aquifer levels when the hydraulic gradient is reduced and the rate of water replacement (containing more dissolved oxygen) is slowed. Thus, managing, water levels to ensure near natural velocities/flows through the aquifer matrix, in tandem with managing organic carbon concentrations within groundwater, seems likely to sustain higher dissolved oxygen concentrations within most aquifers.

89. The Waikoropupū Springs Aquifer complex should be managed to ensure that water discharging from the springs contains at least 6.0 mg/l of dissolved oxygen.

90. Recent nitrate concentrations in Te Waikoropupū Springs are reported as "typically <0.4 mg/L-N" (median 0.36 mg/L). Historical data indicate significant increases since the 1970s. The aquifers and catchments should be managed to ensure that NO 3 -N concentrations in spring water do not exceed 0.4 mg NO 3 -N/L in order to protect the springs' high conservation values.

91. Ammonia concentrations for Te Waikoropupū Springs (as NH 3 -N) are recently reported to be 0.0-0.05 mg/L, with higher concentrations in nearby groundwater (Stevens 2010). These values and available information on toxicities of ammonia indicate that Waikoropupū Springs Aquifer complex water should be managed to maintain ammonia concentrations below 0.05 mg/L and perhaps substantially lower.

Table 1 - Contributions to Te Waikoropupū, Fish springs and other springs (from Stewart and Thomas (2008)

Source	Main springs (m^3/sec)	Fish springs (m^3/sec)	Other springs (m^3/sec)
Takaka River	1.85	1.65	4.85
Karst uplands (including other rivers)	7.40	0.83	0.97
Valley rainfall	0.75	0.82	0.63
Total flows	10	3.3	6.45
Shallow fraction	0.26	0.75	0.85

Table 2 - Water clarity and dissolved oxygen measurements for water in Te Waikoropupū and Takaka and Motupipi Rivers (TDC data and Davis-Coley and Smith, 1995)

Location	Water clarity			Dissolved oxygen		
	Number & measurement period	Median clarity (m)	Range (m)	Number & measurement period	Median (mg/l)	Range (mg/l)
Main Springs	4 (1993)	63	NA	20 (1998-2012)	5.5	1.1-9.5
Fish Creek Springs	NA	NA	NA	3 (2000-2001)	5.1	4.8-5.1
Harwoods (upper Takaka)	51 (1992-2012)	4.9	0.5-10.5	37 (1987-2013)	11.7	7.9-28.8
Kotinga (lower Takaka)	51 (1992-2012)	7.8	0.8-13.6	37 (1987-2013)	11.8	9.3-20.5
Waingaro (Hanging Rock)	35 (2000-2010)	12.2	2.9-30.5	24 (1987-2000)	12.0	10.1-16.7

Table 3 - Median values and number of sampling times (in brackets) for water samples collected between 1986 and 2013. Based on Tasman District Council data

Location	pH (field)	Cl	SO_4	Ca	Mg	K	Na	Total P	Sol-P	Total N	NO_3-N	NH_4-N	Alkalinity as $CaCO_3$	Conductivity (field)
Fish Creek spring	7.31 (4)	24.5 (6)	7.3 (6)	46 (6)	3.7 (5)	2.0 (6)	16 (6)	0.007 (1)	0.005 (5)	0.38 (1)	0.43 (5)	0.009 (5)	138 (6)	348 (5)
Pupū main springs*	7.66 (66)	98.0 (87)	17.0 (86)	62 (88)	8.2 (88)	4.6 (88)	59 (86)	0.036 (22)	0.004 (8)	0.37 (1)	0.38 (89)	0.009 (62)	207 (88)	652 (50)
Harwoods Takaka R.	7.70 (49)	2.5 (7)	2.4 (6)	12 (6)	2.6 (6)	0.3 (5)	2 (5)	0.005 (47)	0.002 (58)	0.08 (47)	0.01 (60)	0.005 (55)	34 (5)	78 (37)
Waingaro R.	7.76 (32)	2.5 (3)	2.0 (2)	14 (3)	2.2 (3)	0.4 (2)	2 (2)	0.005 (16)	0.005 (18)	0.06 (15)	0.02 (19)	0.009 (18)	42 (3)	96 (23)
Kotinga Takaka R.	7.59 (52)	2.6 (4)	2.2 (4)	13 (3)	2.0 (3)	4.0 (3)	2 (3)	0.005 (45)	0.003 (58)	0.24 (45)	0.16 (59)	0.005 (56)	39 (3)	95 (37)

*NO_3 significantly increased between 1995 and 2008 while Cl, SO_4, Ca, Mg, K and Na decreased (Daughney and Randall, 2009)

Section D - Matters to be considered by a Special Tribunal

D1 - Summary of Section 207

92. When making an application for a water conservation order, section 201(2)(b) of the Act requires that the applicant shall state the reasons for the application with reference where practicable, to the matters set out in section 207 of the Act.

93. Section 207 states that when considering an application for a water conservation order, a Special Tribunal shall have particular regard to the purpose of a water conservation order and the other matters set out in section 199. These matters have been addressed in previous sections to this application.

94. Section 207 also requires a Special Tribunal to have regard to three matters, being:

    a) The application and all submissions;

    b) The needs of primary and secondary industry, and of the community; and

    c) The relevant provisions of every national policy statement, New Zealand coastal policy statement, regional policy statement, regional plan, district plan, and any proposed plan.

D1.1 - Section 207(a) the Application and All Submissions

95. This will be addressed once the application has been publicly notified and submissions received.

D1.2 - Section 207(b) the Needs of Primary and Secondary Industry, and of the Community

96. The provisions of the Act pertaining to water conservation orders envisage that groups and individuals with an interest in primary and secondary industry, and others in the community, have an opportunity to share their views in the public process of a water conservation order application.

97. In the preparation of this application, the Applicants have undertaken consultation with a number of individuals and organisations/ groups in the community as follows:

    a) Local government - Tasman District Council;

    b) Iwi / hapū;

    c) Community groups - Friends of Golden Bay; and

    d) Scientists, funded by Dairy NZ.

Local Government

98. Since 4 July 2014 Tasman District Council (TDC) has been running a Freshwater and Land Advisory Group called 'Takaka FLAG'. One representative from Ngāti Tama ki Te Tau Ihu whanau (Marge Little), has been a member of the group since the start.

99. From 26 June 2015 to December 2016, in light of this draft Water Conservation Order application, the Applicant Andrew Yuill was a member of the FLAG. The intent of this representation on the FLAG was to share the work the Applicants had done to date and seeing whether there is a set of protection criteria for the waters subject to the Application that the group and the Applicants could agree on.

100. The draft WCO application and supporting papers from NIWA have been circulated to all members of the FLAG and TDC staff. The summary of FLAG process and interim decisions, dated December 2016, records that the draft WCO application has been submitted to the Minister as an approach for managing the Arthur Mable Aquifer and the Springs. Other than to state the legal effect of a WCO in terms of restricting regional council powers but not having a retrospective effect on resource consents, the FLAG summary does not address the draft application in detail.

101. The FLAG has agreed that Council staff should begin drafting proposed changes to planning rules based on the draft measures. The draft changes to the Tasman Resource Management Plan are intended to form part of FLAG's formal recommendations to the Council in 2017.

Community Groups

102. The Friends of Golden Bay Inc are generally supportive of the draft Application, and have funded a programme to assist the Applicants in carrying out more regular nitrate monitoring that is currently carried out by Council.. The funding is entirely from private donations by members and is an indication of how highly the public regards the water quality of the aquifers.

103. The data collected as a result of this community programme has shown up inconsistencies in the previous records and led to a better understanding of where the nitrate is coming from. it has shown there is an unidentified source of some 120 tonnes per year of nitrate-N in the catchment, accounting for about 70% of the nitrate seen in the Main Spring of Te Waikoropupū.

104. The programme has established beyond doubt that the nitrate-N level in Te Waikoropupū Main Spring is 0.4 mg/l, which is already at the limit that NIWA advised. The accepted (Stewart and Thomas) flow model for the aquifers states that the deep aquifer is recharged from the karst uplands, however there is no plausible source of anything like that amount of nitrate in the karst uplands and therefore it is probable that the source is from agriculture. This is an important finding for the WCO and Te Waikoropupū. It demonstrates significantly incomplete knowledge of pollution movement in the aquifers and therefore implies need for greater precaution in allocation and land use policy.

Primary Industry Water Users

105. It should be noted that any direct upstream use of water, such as pasture irrigation, effectively uses spring water which means that flows at the Springs will be reduced.

106. The main consumptive uses of water in the Takaka Fresh Water Management Unit include:

    a) Primary production:

        i. pastoral farming: eg dairy, sheep, beef, deer
        ii. horticulture: eg kiwifruit, viticulture
        iii. aquaculture: eg land based salmon farming, marine mussel farming, marine spat catching
        iv. production associated industrial processing (eg Fonterra milk factory)

    b) Other: eg water bottling, commercial (eg café, hair dressers, etc) and other industrial uses

107. Non-consumptive uses of water in the Takaka FMU include:

    a) Hydro-electric power generation (including the Cobb station and other smaller schemes)

    b) Tourism

108. There is currently no formal allocation limit in the Tasman Resource Management Plan for the Arthur Marble Aquifer Recharge Zone (which contributes to the flow of Te Waikoropupū Springs). However TDC operates an informal allocation limit which has been reached[14]. An informal allocation limit was determined in 1991 for the Arthur Marble Recharge area, but this does not have legal status under the TRMP and did not include consideration of minimum flows, or provision for cease take within the contributing catchments.

109. The Takaka FLAG Summary Report, November 2006, states that in the AMA Recharge Zone (including the Upper Takaka Middle Takaka and Waingaro areas), there is a waiting list for additional water allocation. There are currently 12 registrations on the waiting list totalling 312 L/s (litres per second) of additional water sought.

110. Any application to take water from this zone under the current provisions of the TRMP would be assessed as a restricted discretionary activity, with particular reference to policies 30.1.3.12, 30.1.3.15 and 30.1.3.16.

111. Mining is another threat to the clarity and mauri of Te Waikoropupū. Mining for gold and other hard metals has been popular in the past in Te Waikoropupū, and has more

[14] Table 10 (page 51) of the Takaka FLAG Summary Report dated November 2016 identifies an informal allocation limit of 500L/s, of which 499L/s is allocated to existing consented water takes

recently been applied for by mining permits. Mining in the vicinity of Te Waikoropupū Springs has the potential for adverse impacts on the water quality, including from the use of toxins in the mining process which can have in-stream effects. The Te Waikoropupū Reserve Management Plan recognises that the TDC should be aware of adverse effects from mining on the primary purpose of the reserve, which is to protect and preserve in perpetuity its scenic, beauty, and natural features for the enjoyment of the public (page 76 and 94). Page 94 of the Management Plan in particular provides:

> *"Any mining or extractive activity would have unacceptable adverse environmental effects and be inconsistent with the purposes for which the reserve is held, including the value of Te Waikoropupü to Manawhenua ki Mohua. Therefore, mining should be actively discouraged and applications for access arrangements should be declined.*

112. The Salmon Farm at Te Waikoropupū Springs is a main user of the freshwater resource, and its commercial operation is dependent on the high natural quality of the Springs and catchment. This commercial operation will benefit from the certainty of protecting the outstanding qualities of the Springs and catchment which contribute to ecological health.

113. Representatives of the Salmon Farm have been consulted on this draft WCO application and are supportive of the proposal to protect Te Waikoropupū Springs. In particular, the salmon farming operation is interested in ways to ensure the continued sustainability of the hatchery and not having to use antibiotics in its operation. The operation is investigating methods of increasing the oxygen content of the water it receives, and is concerned about any proposals that would or might result in reduced oxygen levels in the water.

Summary of Needs

114. It is most appropriate that groups and individuals with an interest in primary and secondary industry and others in the community fully explain their views in submissions following public notification of this application on this point.

115. The Region's freshwater resources have a wide range of uses and values, both instream values and value through use of abstracted water. Abstracted or dammed water has a range of public and private uses and values, including water supply for urban uses, fire-fighting, hydro-electric power generation, industrial, irrigation and other commercial uses.

116. The Arthur Marble Aquifer is intended to be retained in its natural state through the proposed water conservation order. This means that existing resource use can continue, but this application (if successful) would place restrictions on any additional water takes or discharges and dams. This application signals to the TDC there is a need for regional plan rules to restrict water takes, dams, runoff and contaminants within the Te Waikoropupū springs and associated waters.

117. The Applicants do not seek to unnecessarily restrict the use of water for individual domestic and stock water needs or firefighting.

118. The community has a significant need to protect the waters identified in this application, given their contribution to social, economic and cultural wellbeing of the community. Te Waikoropupū springs are a known local, national, and international attraction, which without protection may not last for future generations to use and enjoy as the community presently does.

119. Therefore the Applicants consider that this application still allows for reasonable use by primary and secondary industry. The draft water conservation order, if approved, will provide sufficient certainty for the continued use of the waters and land resource by existing consent holder, whilst also providing for future low impact use and enjoyment of the waters by secondary industry such as tourism operations.

120. In addition, recreation users of the waters and those users with an interest in conservation values will have their interests provided for if the draft water conservation order is approved. The Springs are accessible from the sealed Pupü Springs Road and are the most popular visitor attraction in Golden Bay. Visitor statistics show that, on average, nearly 50,000 people visit the springs each year.[15] (Although the Applicants consider this to be more in the order of over 90,000 per year more recently). A number of commercial guided trip operators also value and use Te Waikoropupū from a tourism business perspective.

121. Overall, the potential limitations on future development opportunities by way of limiting abstractions is outweighed by the need to protect Te Waikoropupū springs for the benefit of future generations to use and enjoy.

D1.3 - Section 207(c) The Relevant Provisions of Planning Instruments

122. The relevant planning instruments considered in this application are listed as follows:

    a) National Policy Statement for Freshwater Management 2014;

    b) National Policy Statement for Renewable Electricity Generation 2011;

    c) Tasman Regional Policy Statement;

    d) Tasman District Council Resource Management Plan;

    e) Nelson/ Marlborough Conservation Management Strategy 1996-2006;

    f) Te Waikoropupū Springs Scenic Reserve Management Plan; and

    g) Iwi / hapū management plans and strategies

National Policy Statement Freshwater Management 2014 ("NPSFM")

[15]Te Waikoropupū Springs Scenic Reserve, Page 55, DOC, 2009

123. Te Waikoropupū springs and associated waters hold a large number of values identified in the NPSFM. The draft water conservation order is consistent with the water quality objectives and policies of the NPSFM. This application recognises the current outstanding state of the water quality and the threats to that state, and this application if granted will ensure that Te Waikoropupū springs continues to be managed in accordance with that status.

124. Objective A2, clause (a) is particularly relevant to this application, being the protection of significant values of outstanding freshwater bodies, in light of the contribution which Te Waikoropupū springs makes to the overall regional water quality of the Takaka catchment.

    Objective A2 reads as follows:

    > *Objective A2*
    >
    > *The overall quality of fresh water within a region is maintained or improved while:*
    > *a) protecting the significant values of outstanding freshwater bodies;*
    > *b) protecting the significant values of wetlands; and*
    > *c) improving the quality of fresh water in water bodies that have been degraded by human activities to the point of being over-allocated.*

125. The draft water conservation order would give effect water quantity objectives B1 and B2 by providing for the maintenance and enhancement of outstanding values and by providing a range of limits to achieve on-going protection of those values. Without the draft order being approved, the life supporting capacity and ecosystem processes connected to and dependent on Te Waikoropupū springs may not be adequately safeguarded. Any potential future over allocation of the waters will be prevented by clause 9 in the proposed order.

    > *Objective B1*
    >
    > *To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water.*
    >
    > *Objective B2*
    >
    > *To avoid any further over-allocation of fresh water and phase out existing over-allocation.*

126. The draft water conservation order intends to provide for an integrated management of freshwater and the use and development of land associated with Te Waikoropupū. This application seeks to show the interconnected and interdependent nature of systems for underground aquifers. Recognition of these matters is clear through application of the associated proposed restrictions and prohibitions, and these are consistent with Objective C1 of the NPSFM:

Objective C1

To improve integrated management of fresh water and the use and development of land in whole catchments, including the interactions between fresh water, land, associated ecosystems and the coastal environment.

127. In relation to tāngāta whenua roles and interests, objective D1 of the NPSFM states:

Objective D1

To provide for the involvement of iwi and hapū, and to ensure that tāngāta whenua values and interests are identified and reflected in the management of fresh water including associated ecosystems, and decision-making regarding freshwater planning, including on how all other objectives of this national policy statement are given effect to.

128. As covered in section B1 of this application, Te Waikoropupū has outstanding significance in accordance with tikanga Māori and for cultural and spiritual purposes. Since their occupation of Mohua, Te Waikoropupū has been central to Ngāti Tama ki Te Tau Ihu whānau. Ancestral connections with this wāhi tapu encompass the spiritual and physical realms. This application is therefore entirely consistent with objective D1 of the NPSFM and if the draft water conservation order is approved, it will partially assist the TDC in fulfilling its obligations with respect to tāngāta whenua roles and interests in these waters.

129. Overall this application is consistent with the objectives of the NPSFM and provides significant guidance and support to the TDC in giving effect to the NPSFM and its functions under section 30 of the RMA.

National Policy Statement for Renewable Electricity Generation 2011("NPSRG")

130. This application will not affect existing renewable electricity generation activities. The Cobb Hydroelectric Power Station sits at the junction of the Takaka and Cobb Rivers. The power station is fed by the Cobb Reservoir, which is fed by the Cobb River. There are no restrictions or prohibitions proposed in the draft water conservation order relating to the damming of waters.

131. The application is not inconsistent with the NPSRG, particularly where there is little future potential for hydro electricity generation in the identified waters. There is no current demonstrated interest or investigation underway for hydroelectric development within the catchment, and therefore the application is not inconsistent with policy D:

D. Managing reverse sensitivity effects on renewable electricity generation activities

POLICY D
Decision-makers shall, to the extent reasonably possible, manage activities to avoid reverse sensitivity effects on consented and on existing renewable electricity generation activities.

Tasman regional policy statement ("TRPS")

132. The Tasman Regional Policy Statement (TRPS) is the strategic resource management plan to promote sustainable resource management in the Tasman District.

133. It was prepared by the Council in accordance with the Resource Management Act 1991. It became operative on 1 July 2001. It contains the broad issues, objectives and policies for the District. It also includes methods of implementation; anticipated environmental results and performance monitoring indicators.

134. Section 2 sets out the General Objectives for the Tasman District which reflect the purpose and principles of the Act and its key processes in a manner that is appropriate to the circumstances of the District.

135. Section 3 of the TRPS sets out the long term aims or general objectives of the TRPS for sustainable and integrated management.

Section 2 - General Objectives

General objective 2

Maintenance of the biological diversity and healthy functioning of land, freshwater, coastal and marine ecosystems.

136. The explanation of this objective recognises that resilience is the ability of ecosystems to continue to function following adverse effects. Some effects of resource use may bring about irreversible changes to the function of natural systems. Some natural systems may be much more vulnerable than others to changes to their functioning, where communities or plants and animals may be sensitive to the effects of human activities (for example, wetlands). Maintaining a diversity of natural systems helps to maintain healthy life-support processes in the face of modifying effects. This objective applies key principles in Part 2 of the Act concerning provision for healthy communities, life-support functions and intrinsic values of ecosystems and the concept of kaitiakitanga.

137. This draft water conservation order, if granted, would give effect to general objective 2 as it is based upon evidence of the needs of biological diversity and healthy functioning of Te Waikoropupū springs freshwater ecosystem.

General objective 3

Avoidance, remedying or mitigation of the adverse effects on the environment and the community from the use, development or protection of resources.

138. The draft water conservation order application is consistent with this objective as it recognises that control of the effects of activities can help to maintain or enhance resource use options for future community needs. Without protection through this water conservation order, adverse effects may restrict opportunities for future uses of te Waikoropupū springs through damage or loss of resource values, particularly if there are irreversible effects.

General Objective 6

Protection and enhancement of significant natural, heritage and cultural values of resources

139. General objective 6 requires unqualified protection of significant resources. Te Waikoropupū springs is a significant natural and cultural resource; as provided for in Schedule 30 of the TRMP, discussed below, and as outlined in this application with respect to their outstanding values for ecological, scientific, and importance to tikanga Māori, The draft water conservation order is consistent with the explanation of this objective, which states:

a) The Tasman District contains many outstanding natural areas, features and landscapes with high biological, cultural and recreational values. These include coastal margins, water bodies, and indigenous vegetation, and karst and mountain landscapes.

General objective 7

Recognition and protection of significant traditional interests of the tangata whenua in relation to land, water, the coast and other taonga Māori

140. The Council acknowledges the special place in our natural and cultural environment of iwi heritage and current interests in protecting that heritage. These interests include regard for special sites and areas (Wāhi tapu), and the beliefs, values and principles (wanata, kaupapa) for the conservation of natural resources that are held by Māori, including those who are descended from tribes by right of occupation or conquest (tangata whenua iwi) in the District. Specific areas and resources are regarded by iwi as taonga or prized treasures, to be safeguarded for the future. The Treaty of Waitangi recognised the interests then held by iwi over resources.

141. Despite the development of statutory powers and responsibilities for resource management, these traditional interests of iwi are still present and require recognition and protection. The draft water conservation order is required for the protection of Te Waikoropupū springs, in addition to Statutory Acknowledgement, given its outstanding significance.

General objective 9

Resolution of conflicts of interest in resource management between people in the community and within Council.

142. The draft water conservation order is an appropriate way to give effect to general objective 9 as it identifies and defines the particular values of Te Waikoropupū Springs resource. The restrictions and prohibitions suggested are drafted based upon those identified values, whilst recognising the existing rights of those who use and develop the water resource currently.

143. Resolution involves establishing and enforcing the appropriate values, rights and responsibilities of the community over resources. Sound resource management requires an awareness of resource use conflicts of interest and a commitment to understand and seek their resolution through formal and informal means. The water conservation order if granted gives certainty to all users and the community on the resource and therefore is consistent with objective 9.

Section 3 - Significant Resource Management Issues in Tasman District

4.0 - Tangata whenua values

> *Policy 4.1 Council will seek protection of Wāhi tapu, water, ancestral lands, sites, coastal resources and other taonga from disturbance or contamination in a manner consistent with tangata whenua kaupapa and tikanga while acknowledging the significance of private interests in land and other resource users.*

144. This application represents an opportunity for iwi to pursue kaitiakitanga or stewardship of resources under Council control, and for their traditional values and rights concerning natural resources safeguarded by the Treaty of Waitangi to be formally recognised in accordance with the Resource Management Act. This application also recognises the interests of private resource users of Te Waikoropupū Springs, in particular by way of community consultation through the water conservation order process, and by recognising the continuance of established rights.

7.0 - Freshwater Resources

145. Section 7.0 sets out the key catchments of the Tasman District, and includes the waters of this application in the following summary of the Takaka catchment:

> *This includes the Cobb, Anatoki and Waingaro tributaries, and coastal rivers like the Pariwhakaoho and Onekaka north of Takaka. The Takaka valley contains the major marble and limestone karst aquifers associated with Pupū Springs. Cobb power station discharges water into the Cobb River. Main users of water are dairy farms, some horticultural irrigators, and the salmon farm at Waikoropupū (Pupū Springs).*

146. This section also lists the main uses of the freshwater resources of the District as including; plant growth, irrigation, public water supply, industry, farming, mining, discharges, recreation, fisheries, wildlife values, traditional values and intrinsic values, and electricity generation. The draft water conservation order represents a balance of the issues which include sustainable water allocation, protection of natural, recreation, and cultural values, and protection against activities which may adversely affect water availability through irrigation demands. For groundwater,

potential adverse effects which may limit the sustainable use of the aquifers include reduced water yields because of excessive water table drawdowns, seawater intrusion, excessive induced seepage from connected surface waters, and changes in groundwater recharge or quality because of land use practices. Investigations into groundwater and associated hydrological systems are essential so that sustainable allocation limits can be established. This application provides for such limits for groundwater by way of minimum water levels and maximum allocable volumes (or yield rates). These limits are set on a precautionary basis, given the outstanding qualities of the springs, rather than being set to respond to degradation.

Objective 7.1

Maintenance and enhancement of the natural and cultural values, including natural character of fresh waters, including recreational, fisheries, wildlife and other instream values.

147. Te Waikoropupū Springs is a resource significantly valued for its natural and cultural features, and the RMA requires the Council to provide for their protection in sustainable water management. The Water Conservation Order will assist Council to achieve this objective.

Objective 7.4

Maintenance and enhancement of the quality of surface waters and ground waters for all public uses and values.

148. This application will ensure that Te Waikoropupū Springs is maintained to an adequate quality standard for a wide range of community purposes. This allows continuing benefits from using or valuing the resource.

Policy 7.1

The Council will adopt a cautious approach to setting sustainable limits to water allocation for abstractive purposes.

149. The draft water conservation order and this application recognise the benefits of a precautionary approach to management of Te Waikoropupū Springs given its outstanding values. This is consistent with this policy of setting constraints or limits on the abstractive use of available water before significant adverse effects or risks arise, rather than having to respond to problems after they are apparent. The cautious approach reflects the lack of complete understanding about water resource processes and effects of activities

Policy 7.4

The Council will:
(i) preserve the natural character of wetlands, rivers and lakes, and
(ii) protect and enhance or support the protection and enhancement of natural, recreational, cultural, intrinsic, and instream features and values of wetlands,

rivers (including karst rivers), and lakes, in particular those that are of international, national, or regional significance;
and in determining significance of such water bodies for such values, the following criteria shall be applied:
(i) size of the water body; and
(ii) diversity of species and abundance of populations of indigenous flora and fauna supported by the water body; and
(iii) rarity of any species of flora or fauna, or of habitat type, associated with the water body; and
(iv) condition of the water body; and
(v) special scientific, recreational, cultural, or amenity values of the water body; and
(vi) recognised international, national, or regional importance of the water body; and in relation to all significant wetlands, rivers, and lakes, the risk adverse effects on their natural, recreational, cultural, intrinsic or instream values shall be relevant to achieving such protection or enhancement.

150. This policy seeks protection and enhancement of the natural, recreational, cultural, intrinsic, and instream features and values of rivers (including karst rivers). This application has addressed all of these natural features, and in particular the outstanding values pertinent to each of these for Te Waikoropupū Springs.

151. In particular, this application has addressed all of the criteria for determining significance Te Waikoropupū Springs identified in this policy at (i) – (iv). The potential risks to these outstanding values, if not protected through this draft water conservation order are apparent and outlined in this application. The draft order is therefore consistent with this policy. These values are in addition to productive values such as water supply or hydropower potential. The Act obliges Council to provide or have regard to the protection of instream values of water bodies of demonstrated significance.

152. The implementation method for this policy states that the Council will evaluate the significance of natural, recreational or cultural values for water bodies in the District, and including in particular….

(d) Takaka River and tributaries, including limestone and marble aquifers and Waikoropupū Springs; …

(iv) The Council will declare as a future amendment to this policy those water bodies that it regards as worthy of appropriate protection for their outstanding or otherwise significant natural, recreational or cultural values or features.

153. The draft water conservation order is entirely consistent with these implementation methods, and will assist the Council in its statutory role to carry out such protection of the outstanding values of Te Waikoropupū Springs.

Policy 7.5

Except as provided for under Policy 7.4, the Council will only protect or reserve water for future uses or values where:

(i) there is sufficient evidence of a significant future public need for water; and (ii) that need may be provided for without adverse effects on existing significant natural, recreational or cultural values and features of the relevant water body.

154. This policy lends weight to the approach taken in the draft water conservation order which protects and confirms rights of existing users, but restricts future additional industry uses (such as additional abstraction). This is consistent with policy 7.5 as there is no sufficient evidence that there is a significant future public need for increased take and use of the Te Waikoropupū Springs water resource, and there is no assurance that such increase in use would not have adverse effects on the existing natural, recreation, and cultural values of Te Waikoropupū Springs (of which such values are outstanding).

Policy 7.6
The Council will recognise the priority of minimum domestic, stock water and firefighting needs in providing for water allocation for abstraction during drought periods.

155. The draft water conservation order is consistent with this policy as it seeks to continue to recognise and provide for the continued reasonable domestic, stock, and firefighting needs of the community in reliance on Te Waikoropupū Springs

8.0 River and Lake Resource Objectives

Objective 8.2

Maintenance and enhancement of natural and other instream values of rivers, lakes and streams.

156. The draft water conservation order recognises that the natural habitats, water quality, recreational and other instream values of Te Waikoropupū Springs are important public values. This application recognises that disturbances, structures, contaminant discharges or water abstractions must avoid, remedy or mitigate adverse effects on the health of the riverine ecosystem.

Policy 8.2

Council will avoid, remedy or mitigate adverse effects of activities in river and lake beds on intrinsic, recreational, cultural, and other instream values of rivers, lakes and streams.

157. The draft water conservation order recognises maintenance of instream values of Te Waikoropupū Springs is important for healthy riverine and lacustrine ecosystems. The draft order will provide the Council with the ability to ensure the protection of significant natural habitats and features and the life-supporting capacity of river and lake waters in accordance with this policy. This application has undertaken an exercise of investigating and monitoring instream uses and values of Te Waikoropupū and assessing the significance of and risks to such values, and methods of their necessary and appropriate protection or enhancement. The draft order is

considered the most appropriate method to achieve such protection and enhancement.

158. In summary, this application and the draft water conservation order are entirely consistent with the relevant (general and specific) objectives and policies of the RPS. Furthermore, this application will assist the TDC to achieve its statutory functions under section 30 of the Act and will fill a very obvious and dangerous gap in the RPS itself in terms of methods to give effect to the RPS. There is no explicit recognition of Te Waikoropupū Springs and associated waters within the RPS, despite their regional importance and recognition in the Regional Plan (considered below). The draft water conservation order would provide such appropriate recognition at the regional level.

Tasman Resource Management Plan

159. The Tasman Resource Management Plan (**TRMP**) is the TDC's combined district and regional plan. The Plan was first publicly notified as a proposed plan on 25 May 1996. Since then, amendments as Variations to the proposed Plan have been notified. The key provisions of the TRMP which have been analysed in this application are those matters relating to surface water quantity and quality (contained in Part V). Part V constitutes regional plan provisions controlling the taking, using, diverting and damming of water and the management of water quantity.

160. Overall it is considered the draft water conservation order is not in conflict with the provisions of the TRMP.

Chapter 30 – taking, using, damming, and diverting water

161. This chapter separates out the four main topic areas in relation to water, namely:

    a) Water resources in Tasman District;

    b) Uses and values of water;

    c) Sustainable water management; and

    d) Activities with adverse effects on water bodies.

162. There are three broad issues identified as follows:

    a) Reduced water body flows or levels;

    b) Allocation of fresh water between competing water users; and

    c) Fresh water augmentation.

163. For each of these issues there are objectives and policies; methods of implementation; principal reasons and explanation; performance monitoring indicators and anticipated environmental results.

Water resources in Tasman District

164. The introduction to Chapter 30 recognises the water resources of Tasman District (30.0.1). This section recognises the importance of underground water resources and their interconnected nature. Te Waikoropupū Springs are also specifically recognised in this section, supporting the acceptance of their importance to the Region. However it is also recognised that compared to other groundwater resources, there is the potential for further identification and understanding of the hydrological functioning of these underground systems, in order to inform good management of these resources:

> *The Council also has a good knowledge about the interconnections between ground and surface water resources, recharge mechanisms, and rates and extent of groundwater resources in the Waimea and Motueka plains and in the Moutere Valley. It continues investigations to define more accurately the groundwater resources, particularly those of the Takaka Valley, the Upper Motueka Valley and the deep Moutere aquifers. The Council recognises the importance of good hydrological data and information about interconnections between water bodies and water use relationships in making robust and equitable water management decisions. It is committed to the on-going collection and analysis of this information.*
>
> *The Takaka valley contains the major marble and limestone karst aquifers associated with Te Waikoropupū Springs. The Cobb Power Station is located in this catchment.*

165. The draft water conservation order, if approved, would be consistent with the above introductory statements of the TRMP in that it recognises the importance of te Waikoropupū springs and is founded upon sound hydrological data demonstrating a need for protection.

Uses and values of water

166. The TRMP aims for an integrated approach to the management of water by managing water as part of an ecosystem, with uses and values that are required to be sustained. Section 30.0.2.2 recognises the groundwater resources of the Region also have a range of uses and values dependent on adequate water levels being maintained in each aquifer. This section also specifically recognises the competing intrinsic and economic values of the groundwater resources:

> *There is considerable abstractive use made of most groundwater resources for a range of purposes, including community supply, domestic use, stock use, and irrigation. Groundwater resources in karst terrain also have significant ecological, intrinsic and recreational values and have an important role in creating karst features, landforms and ecosystems. They may also contain phreatic communities of underground fauna whose water quality and quantity needs are not well understood.*
>
> *Some groundwater resources also sustain important uses and values of surface water resources, such as special aquatic ecosystems and fisheries. The Te*

Waikoropupū Springs, alluvial coastal springs such as Neimann and Pearl creeks, and the Riuwaka River are particularly significant examples. The Te Waikoropupū Springs also has particularly significant value as a taonga to Māori, as well as the community at large.

167. The draft water conservation order, if approved, will give effect to and be consistent with the above specific recognition of Te Waikoropupū Springs sustaining the values of special aquatic ecosystems and having particular significance as a taonga to Māori.

168. Section 30.0.2.5 of the TRMP recognises the tāngāta whenua Values of water:

> *Water is of great significance to tangata whenua — it is an essential element to all life. As kaitiaki, or guardians, tangata whenua believe that the maintenance of the mauri, or life-supporting capacity of water, is fundamental to ensuring the physical and spiritual survival of all living things. A water body with an intact mauri is able to sustain healthy ecosystems.*

169. The recognition in this section that tāngāta whenua have a relationship with the entire river system, not any one component is consistent with the draft water conservation order which seeks to provide an interconnected approach to the protection of Te Waikoropupū Springs. This section also provides:

> *Restoration, protection and enhancement of the life-supporting capacity of waters, and avoidance or mitigation of all forms of water contamination are directives under the Act fully in accord with kaupapa and tikanga Māori. Concerns about protection of fresh water from overuse are not uniquely Māori issues. These are matters of public concern to which tangata whenua have added their significant cultural perspective, and Council will take heed of these concerns through its Plan.*
>
> *Kaitiakitanga can be expressed through the control and regulation of the effects of human action on the environment and thus supports participation by iwi in the preparation, implementation and monitoring of this Plan.*

170. Section B1of this application recognises the outstanding significance of Te Waikoropupū springs in accordance with tikanga Māori and for cultural and spiritual purposes. The approval of the draft water conservation order will give effect to this section of the TRMP.

Sustainable water management

171. Section 30.0.3 of the TRMP recognises that sustainable water management means that the significant uses and values of a water body that may be adversely affected by reduced water level or flow are identified, and any water allocation regime takes them into account. This section recognises the competing use values which are taken into account in providing for the sustainable use of water resources. Sustainable allocation limits for water allow for continued use for abstractive needs while protecting and enhancing life-supporting capacity of water bodies and their ecosystems, and other identified uses and values of water.

172. In respect of management of groundwater resources, the TRMP recognises that:

> *For groundwater, potential adverse effects which may limit the sustainable use of the aquifers include reduced water yields because of excessive water table drawdowns, seawater intrusion, aquifer compression, excessive induced seepage from connected surface waters, and changes in groundwater recharge or quality because of land use practices. Investigations and continued monitoring into groundwater and associated hydrological systems are essential so that sustainable allocation limits can be established and refined.*

173. As covered in this application, the draft water conservation order does not affect existing abstraction rights already consented. The restrictions ad prohibitions detailed in the draft order will give effect to this section of the TRMP by recognising the need for a sustainable allocation limit to protect life-supporting capacity of Te Waikoropupū springs. This application supports this section of the Plan in that it provides further data and analyses on the hydrological systems of Te Waikoropupū and associated waters.

Activities with adverse effects on water bodies

174. Section 30.0.4.7 of the TRMP acknowledges the competing use demands for water in the Region, noting that establishing minimum flows or aquifer levels in the Plan is needed to protect instream uses and values of water bodies.

> *The Council must first establish the minimum flows or aquifer levels needed to protect the instream uses and values of water bodies. Once these have been established, an allocation limit can be calculated that defines the amount available for out-of-stream use.*

175. The draft water conservation order is consistent with this section because it seeks to set aquifer levels which will protect instream uses and values of Te Waikoropupū springs.

Reduced water body flows or levels 30.1

> *Obj 30.1.2.1 The maintenance, restoration and enhancement, where necessary, of water flows and levels in water bodies that are sufficient to:*
> *(a) preserve their life-supporting capacity (the mauri of the water);*
> *(b) protect their natural, intrinsic, cultural and spiritual values, including aquatic ecosystems, natural character, and fishery values, including eel, trout and salmon habitat, and recreational and wildlife values; and*
> *(c) maintain their ability to assimilate contaminants.*

Water Body Management

> *Pol 30.1.3.1 To maintain and enhance the uses and values of rivers, aquifers, wetlands and lakes that may be adversely affected by reduced water flows or levels including:*

(a) the uses and values of water bodies identified in Schedule 30A, particularly the internationally, nationally and regionally significant uses and values of water bodies;
(b) the customary and traditional uses and values of iwi, including wāhi tapu, mahinga kai and other taonga, particularly in relation to sustaining the mauri of the water;
(c) the capacity of water bodies to dilute contaminants; by taking into account the management objectives specified for each of the water bodies in Schedule 30A.

Pol 30.1.3.4 To establish the sustainable yield of aquifers taking into account:
(a) depletion of aquifer yields;
(b) reduction of connected surface water flows, including coastal springs and wetlands;
(c) potential for compression of the aquifer;
(d) potential contamination of the aquifer by seawater intrusion;
(e) potential for excessive drawdown of groundwater levels;
(f) presence and significance of living organisms naturally occurring in the aquifer;
(g) effect of land use activities on recharge of the aquifer;
to avoid:
(i) long term aquifer depletion;
(ii) drying up of surface waters;
(iii) compression of the aquifer;
(iv) irreversible seawater contamination of the aquifer;
(v) over-allocation of water from the aquifer.

Water Takes

Pol 30.1.3.9 To manage the allocation of water taken from water bodies so that the cumulative effect of water takes does not exceed:
(a) the stated flow or water level regime;
(b) any allocation limit for water takes for consumptive use for the water body;

176. This application and the draft water conservation order are consistent with the aspects of the above objectives and policies in relation to sustaining and improving freshwater ecosystems. The protection provided to Te Waikoropupū through a water conservation order would sustain the outstanding values associated with those waters. Objective 30.1.2.1 is particularly important in that it requires the maintenance, restoration and enhancement of water flows and levels. This is a requirement to ensure that waterbodies are not degraded further, which this application if granted would achieve for Te Waikoropupū.

Schedule 30A: uses and values of rivers, lakes, wetlands, aquifers, and coastal waters

177. This Schedule lists values for water bodes within the Tasman District. Te Waikoropupū springs are specifically identified in the schedule as follows:

Water body	Values/ uses adversely affected by reduced flows or levels	Water management objectives for water quality
(19) Te Waikoropupū Springs	**Instream Uses and Values**	
	Internationally significant wetland values including plant, macroinvertebrate, and fauna habitat and cultural, heritage, spiritual and landscape values.	Maintenance of existing water levels and flows to protect aquatic habitats and cultural, spiritual and landscape values
	Other uses and values	
	Stock and farm water supply.	

178. The Karst Terrain aquifers and rivers are also scheduled as follows:

Water body	Values/ uses adversely affected by reduced flows or levels	Water management objectives for water quality
7) Karst Terrain Aquifers and Rivers	**Instream Uses and Values**	
	☐ Subsurface aquatic habitat. ☐ Contribution to Te Waikoropupū Springs, Motueka River and Riuwaka River flows.	☐ Protection of subsurface aquatic habitats. ☐ Maintenance of Te Waikoropupū Springs' and Riuwaka River flows.
	Other uses and values	
	☐ Human consumption ☐ Irrigation including for food production. ☐ Community water supply. ☐ Stock and farm water supply. ☐ Industrial supply. ☐ Hydro-electric power generation.	☐ Protection of water supply needs of stock and domestic users. ☐ Maintenance of water users' security of supply at acceptable level.

179. The above scheduled values are consistent with the outcomes sought through this application. The instream objectives in particular relating to Te Waikoropupū and Karst Terrain Aquifers and Rivers seek to achieve protection of aquatic habitats and cultural, spiritual and landscape values. The objectives for other uses and values for Karst Terrain Aquifers and Rivers only provide for domestic and stock water needs, and maintenance of water users' security of supply at an existing level. This does not envisage any increase in such supply.

180. However it is also apparent from the above extracted tables, when compared to this application, that the Plan significantly understates the important instream uses and values associated with the Springs. This application will assist TDC to better recognise and provide for these values in accordance with its statutory functions.

181. This application is entirely consistent and will give effect to the Schedule 30A uses and values identified.

Chapter 33 – Discharges to land and freshwater

182. The Act requires that all discharges of water or contaminants to water, or to land where contaminants from the discharge may ultimately enter water, be authorised either by resource consent or a rule in a plan. Discharges to land are permitted (except on industrial and trade premises) unless a rule in this Plan states otherwise. Discharges of contaminants may be from defined point sources or from diffuse sources that are associated with a range of urban, industrial or rural activities.

183. Chapter 33 specifically identifies issues of non-point source contaminant discharges into aquifers which can be difficult to control and contribute to lower water quality:

> *Some land use and discharge activities also result in contamination of groundwater. For example, nitrates from a variety of land uses have caused elevated nitrate levels in parts of the Waimea and Motueka plains aquifers. There is a risk to water quality as a result of nutrient leaching or run-off caused by poor land management practices and as land use intensifies, including through inefficient irrigation or high stocking rates.*
>
> *Issue 33.1.1.1 Discharges of contaminants, including diffuse discharges from some land use activities:*
> *(a) can cause significant adverse effects either on their own or cumulatively;*
> *(b) degrade the suitability of some of the District's water bodies for some of their natural and human values;*
> *(c) cause elevated nutrient, pathogen, chemical or sediment levels in some of the District's water bodies, particularly nitrate levels in some of the Waimea plains, Motupipi and Motueka aquifers.*
>
> *33.1.1.2 While the community expects that some discharges of contaminants will be provided for, there is also an expectation that adverse effects of contaminant discharges to land and water are avoided, remedied or mitigated.*
>
> *Objective 33.1.2.1 The discharge of contaminants in such a way that avoids, remedies or mitigates adverse effects while:*
> *(a) maintaining existing water quality; and*
> *(b) enhancing water quality where existing quality is degraded for natural and human uses or values.*
>
> *Policy 33.1.3.1 To recognise and provide for the uses and values of water through a system of classification that establishes the water quality standards required to protect the water quality needs of those uses and values.*
>
> *Policy 33.1.3.2 To avoid, remedy or mitigate the adverse effects of discharges of contaminants so that both individually and cumulatively with the effects of other contaminant discharges, they enable the relevant water quality classification standards to be complied with.*
>
> *Policy 33.1.3.3 To seek to improve water quality where existing water quality is lower than the requirements of any water classification or water conservation order.*
>
> *Policy 33.1.3.4 To ensure that water quality is not degraded where the existing water quality is the same or higher than the relevant water classification or any water conservation order.*
>
> *Policy 33.1.3.7 To ensure the loss of nutrients and sediment to water is minimised through:*

(a) working with industry and landowners to develop good industry practices that maximise nutrient use efficiency and minimise nutrient run-off and leaching;
(b) requiring through conditions on consent or plan rules that activities that discharge nutrients, or take and use water for irrigation, or are land disturbances, are carried out with good industry practice.

184. As discussed under the section, potential threats in this application, if water entering the aquifer were to become polluted with an excessive loading of organic matter, the dissolved oxygen would be used up. If that were to happen, it is to be expected that coloured dissolved organic matter would appear in Te Waikoropupū and spoil the clarity of the water. It is also probable that organisms at present living in the aquifer would die. The draft water conservation order provides specific water quality limits which will achieve objective 33.1.2.1 and associated policies outlined above, namely to maintain and enhance existing water quality.

185. Despite the scheduled recognition of the importance of the Springs, there is a major gap in the policy framework of the plan as there are no real methods to recognise and protect the outstanding values of the waters. This is a risk under the current regime which can be rectified by the additional protective measures proposed through this application.

Nelson / Marlborough Conservation Management Strategy 1996-2006

186. The purpose of the Conservation Management Strategy (CMS) is to set out how the Department of Conservation will manage the areas in its care and its responsibilities. It was been prepared in consultation with iwi, the Nelson and Marlborough Conservation Boards, local authorities and other interested groups and individuals, and is the first Conservation Management Strategy for the Nelson/Marlborough Conservancy. It was prepared for approval by the Conservation Authority, as required by the amendments made to the Conservation Act 1987 by the Conservation Law Reform Act 1990.

187. The CMS explicitly recognises the international importance of Te Waikoropupū from an international perspective, and the importance of its protection on a catchment wide basis, recognising that Karst boundaries often bear no relationship to apparent topographic catchments:

The karst of the Pikikiruna Range is continuous with the huge marble aquifer feeding the Waikoropupū Springs .and· several submarine springs in Golden Bay. Te Waikoropupū Springs and the glaciated alpine karst of Mount Owen are landforms of international significance. (page 95)

Some major karst systems are too large, or draw their water sources from too vast and varied an area for management control of the catchment to be conceivable. For example, the Waikoropupū Springs are fed by a huge aquifer, estimated to be between 1.5. and 3.5.cubic kilometres in volume. It underlies a large part of the lower Takaka Valley and has submarine connections. In such a situation the only effective management control may be to seek protection for

water quality and. Quantity within the aquifer and its sources through. the provisions of the RM Act. (page 98)

Implementation 6.2
Wherever possible protection will be sought for entire karst catchments or systems and their aquifers and elsewhere good land management practices will be advocated and protection sought through relevant regional or district plans or covenants. (page 100)

188. The draft WCO if approved will give effect to and be consistent with the above provisions of the CMS, in particular the need for an entire catchment or system approach to management and protection.

189. Although there is no clear methodology for reviewing achievement of the CMS provisions, and the CMS is somewhat outdated, the values identified and the vision expressed are complementary and consistent with this application. The CMS is of assistance in understanding the unique nature of Te Waikoropupū springs and its needs for protection.

Te Waikoropupū Springs Scenic Reserve Management Plan "Reserve Management Plan"

Introduction and Background

190. The Reserve Management Plan is a plan prepared under the Reserves Act 1977 and which was developed through a collaborative process between the Department of Conservation, Tasman District Council and Manawhenua ki Mohua from 1998 to 2008. This Plan is particularly important for understanding and supporting this application and is attached as **Appendix 8.**

191. The area for which this management plan has been prepared equates to the legal boundary of the scenic reserve (classified as Scenic Reserve by NZ Gazette Notice 1987/1328, 1981/2524 and 1990/2007. The location of the Reserve is shown below:

Te Waikoropupū Springs Scenic Reserve[16]

Statutory Purposes

192. The purposes of the Reserve Management Plan are stated in section 1.2 as follows:

The purposes of the management plan are to:

[16]Te Waikoropupū Springs Scenic Reserve, Map 2, Page 21, DOC, 2009

(i) Protect the values of Te Waikoropupū *by providing guidance and directions for the management of* Te Waikoropupū *over the next ten years;*

(ii) Give effect to the relevant legislation and associated statutory documents6; and

(iii) Give effect to the kaitiakitanga/guardianship role of Manawhenua ki Mohua. The availability of resources and level of community support determines what can be achieved. This management plan does not establish a promised level of funding. Nonetheless, there is a commitment to endeavour to obtain the necessary funding and support to achieve the stated outcomes.

193. The reserve is classified as a scenic reserve under Section 19(1)(a) of the Reserves Act 1977 for the purpose of:

Protecting and preserving in perpetuity for their intrinsic worth and for the benefit, enjoyment, and use of the public, suitable areas possessing such qualities of scenic interest, beauty, or natural features or landscape that their protection and preservation are desirable in the public interest.

Relevant Objectives and Policies

194. Section 4.2 of the Reserve Management Plan provides for objectives, policies and methods to achieve issues relevant to: biodiversity, water quality and quantity, Te Tiriti o Waitangi, historical and cultural heritage, recreational use and visitor management, concessions and other authorisations, statutory land management. The relevant provisions for each of these issues are substantial, and in summary are supportive and relevant to this application. Therefore only select objectives have been copied below and explained for their relevance. The complete set of provisions is included in the Plan attached as Appendix 8.

Biodiversity

4.2.1.5 Objectives

1. Preservation, protection and recognition of the national and international significance of the indigenous biodiversity and ecosystems of Te Waikoropupū

2. Protection and preservation of the intrinsic values of Te Waikoropupū that provide benefit and enjoyment to the public.

195. For Manawhenua ki Mohua, the protection of indigenous biodiversity and associated mataurangā/traditional Māori knowledge is an integral part of the management and utilisation of ngā taonga tuku iho/the treasured resources. The above objectives provide a directive framework to ensure that biodiversity values are protected (i.e. are not allowed to be degraded). These objectives and the associated policy set also pertain to whole ecosystem; recognising the interrelationship and interdependence of species in such a unique and pristine environment.

196. The draft water conservation order recognises outstanding biodiversity and ecological values and seeks to provide limits and restrictions to ensure their preservation. Because of the sensitive nature of these resources, the high vulnerability of such ecosystems, and the unknowns about abstractive adverse impacts, a precautionary approach is appropriate to give effect to these objectives.

Water quality and quantity

4.2.2.3 Objective

1. Protection, preservation and recognition of the quantity, quality and mauri/life force of Te Waikoropupū Springs as nationally and internationally significant waters and as a taonga/treasure and wāhi tapu/sacred site.

197. The maintenance and protection of the quality and quantity of water that flows from the aquifers creating the springs of Te Waikoropupū is essential. Otherwise, the internationally important water clarity may be ruined, the significant and unique indigenous biodiversity may be lost, and the associated cultural, scenic and scientific values degraded. Manawhenua ki Mohua considers the maintenance of water quality and quantity to be important for all life. Activities that reduce the water quality of Te Waikoropupū Springs and the associated Takaka River system diminish the mauri/life force and overallocation of water within the catchment could lead to the inability of water bodies to sustain the indigenous communities within them.

198. This objective recognises the need for a high level of protection of the water quantity and quality for its nationally significant values. The outcome associated with this objective seeks that the integrated management of activities in the Täkaka catchment protects, preserves and enhances the quantity and quality, and the mauri/life force and wairua/spirit of the waters of Te Waikoropupū Springs.

199. The restrictions and provisions provided in the draft water conservation order are determined based upon data to ensure that water quality and quantity are maintained. The application is therefore consistent with these maintenance objectives.

T*e Tiriti o Waitangi*

4.2.3.2 Objectives

1. Recognition of the kaitiakitanga/guardianship, and associated tikanga/customary practices and mātauranga/traditional Mäori knowledge of Manawhenua ki Mohua in the management of Te Waikoropupū

2. Effect given to the principles of the Treaty of Waitangi, to the extent that they are consistent with the provisions of the Conservation Act 1987 and the Reserves Act 1977.

Historical and cultural heritage

4.2.4.5 Objective

1. Protection and preservation of the historical and cultural heritage of Te Waikoropupū, where possible.

200. Te Waikoropupū is a registered wähi tapu23 under the Historic Places Act 1993 (HPA). The HPA promotes the identification, protection, preservation, and conservation of the historical and cultural heritage of New Zealand. It is an offence, under the HPA, to destroy, damage or modify the whole or any part of any archaeological site without a permit. Section 19(2)(d) of the Reserves Act 1977 seeks to manage and protect historic, archaeological and other features in the reserve, where it is compatible with the primary purpose of the reserve.

201. The draft water conservation order will assist to achieve this objective and is complementary to its associated policies in that it seeks to ensure that historical, archaeological and cultural values of Te Waikoropupū are protected and preserved for the benefit of future generations.

Recreational use and visitor management

4.2.5.5 Objectives

1. Provision of opportunities for the public to receive benefit and enjoyment from the beauty, and scenic, natural and landscape features of the reserve to the extent compatible with the Reserves Act 1977 and this management plan.

2. Allow visitors to experience Te Waikoropupū without adversely affecting natural, historic and cultural values.

202. The draft water conservation order recognises the need for visitors to respect and appreciate the iconic landforms, landscape, natural, scenic and cultural values of Te Waikoropupū which are preserved in perpetuity.

203. The order will allow the public to continue to visit and enjoy Te Waikoropupū Springs in a quiet and tranquil setting, where facility development is minimal and designed to blend with the environment and enhance the visitor experience.

Concessions and other authorisations

4.2.6.4 Objectives

1. Provision of opportunities for high quality, commercially guided walks in the reserve that recognise and protect the scenic, natural, cultural and historic values of Te Waikoropupū

2. Provision for non-recreation concessions or other activities requiring authorisation that do not adversely affect the scenic, natural, cultural and historic values of Te Waikoropupū

204. It is essential to protect the significant values of Te Waikoropupū Any concession or other authorisation has the potential to cause adverse effects on cultural values, the natural environment and the experiences of visitors. Use by commercial interests is secondary to protecting and preserving the values of Te Waikoropupū, and should not occur at the expense of these values.

205. The draft water conservation order is consistent with this objective as it seeks the values of Te Waikoropupū are enhanced, protected and preserved – this is the same vision as the associated outcome for this objective which seeks preservation by concessions or authorisations permitted in the reserve

Summary of Reserve Management Plan

206. Overall, the objectives summarised above are all consistent with the application and the draft water conservation order. The Management Plan clearly recognises the significance of Te Waikoropupū and seeks to protect and preserve the springs in perpetuity. The draft water conservation order will lend further eight to the Management Plan, which has limited authority in the context of resource management planning, allocation and development of resources. The Order is therefore a necessary supplement to the Reserve Management Plan to assist its implantation and certainty.

Summary of section 207

207. This section analyses the instruments relevant to an application for a water conservation order over the Te Waikoropupū springs and associated waterbodies (including the aquifers, Takaka River, and tributaries). Those instruments include policy statements, the Regional Resource Management Plan, and the Conservation Management Strategy.

208. These instruments are all either complementary to, or consistent with, the application for a water conservation order. Of particular importance is that at the regional level , the waters the subject of this application are explicitly recognised for their values and their need for protection.

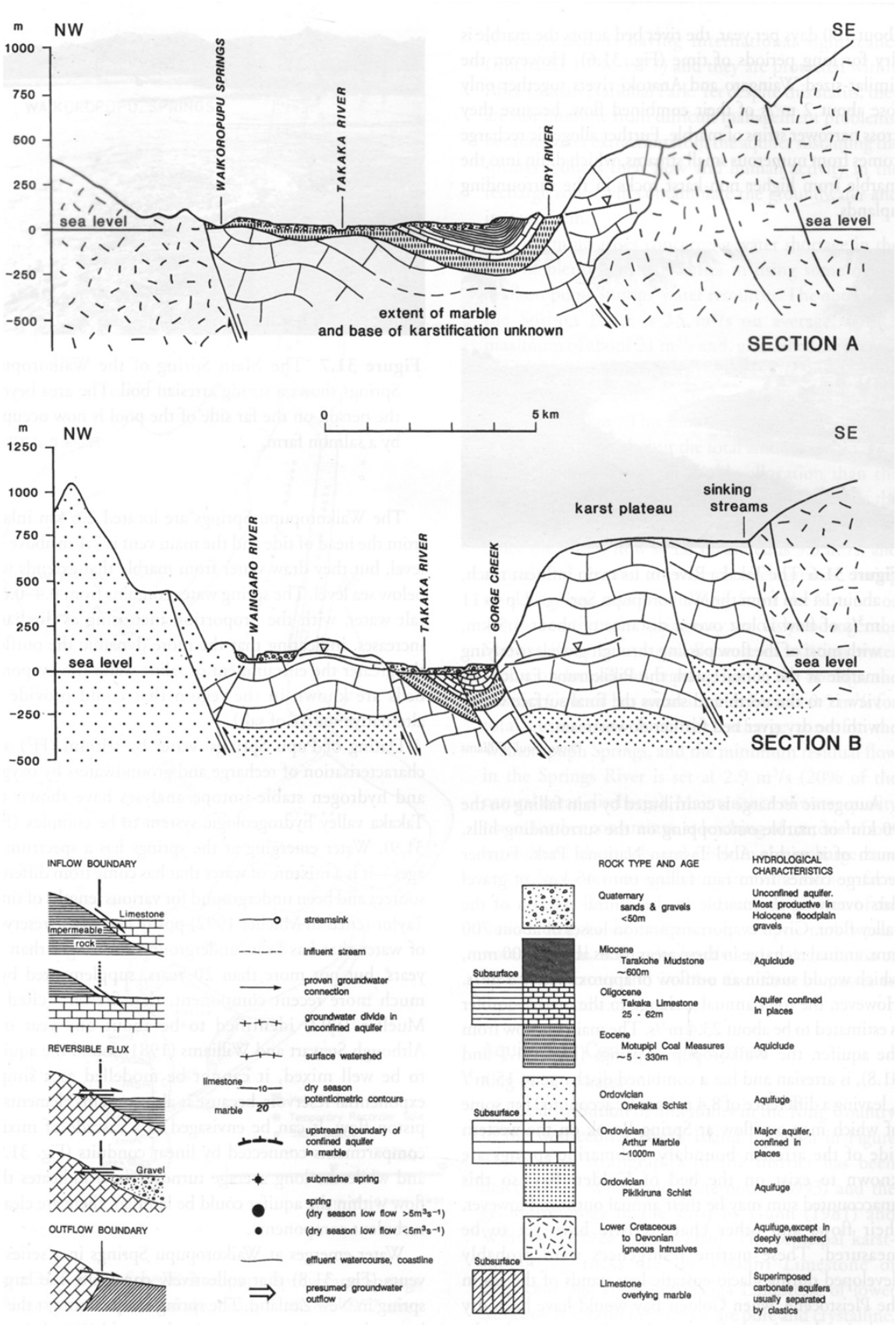
209. In accordance with section 207 of the RMA, in preparing this application the following matters have been provide for:

Consultation with interested stakeholders which has confirmed significant community support for the application.

The needs of primary and secondary industry and of the community are met. The draft water conservation order restrictions will provide for existing needs of water users to continue while protecting the outstanding values present in the waters from future degradation. The needs of the community will be met by ensuring Te Waikoropupū springs are maintained and enhanced for the enjoyment of future generations.

The application is consistent with the relevant statutory documentation prepared in accordance with the Resource Management Act 1991

Figure 1 - Hydrogeological map of Takaka Valley with two cross-sections (from Stewart and Thomas, 2008)



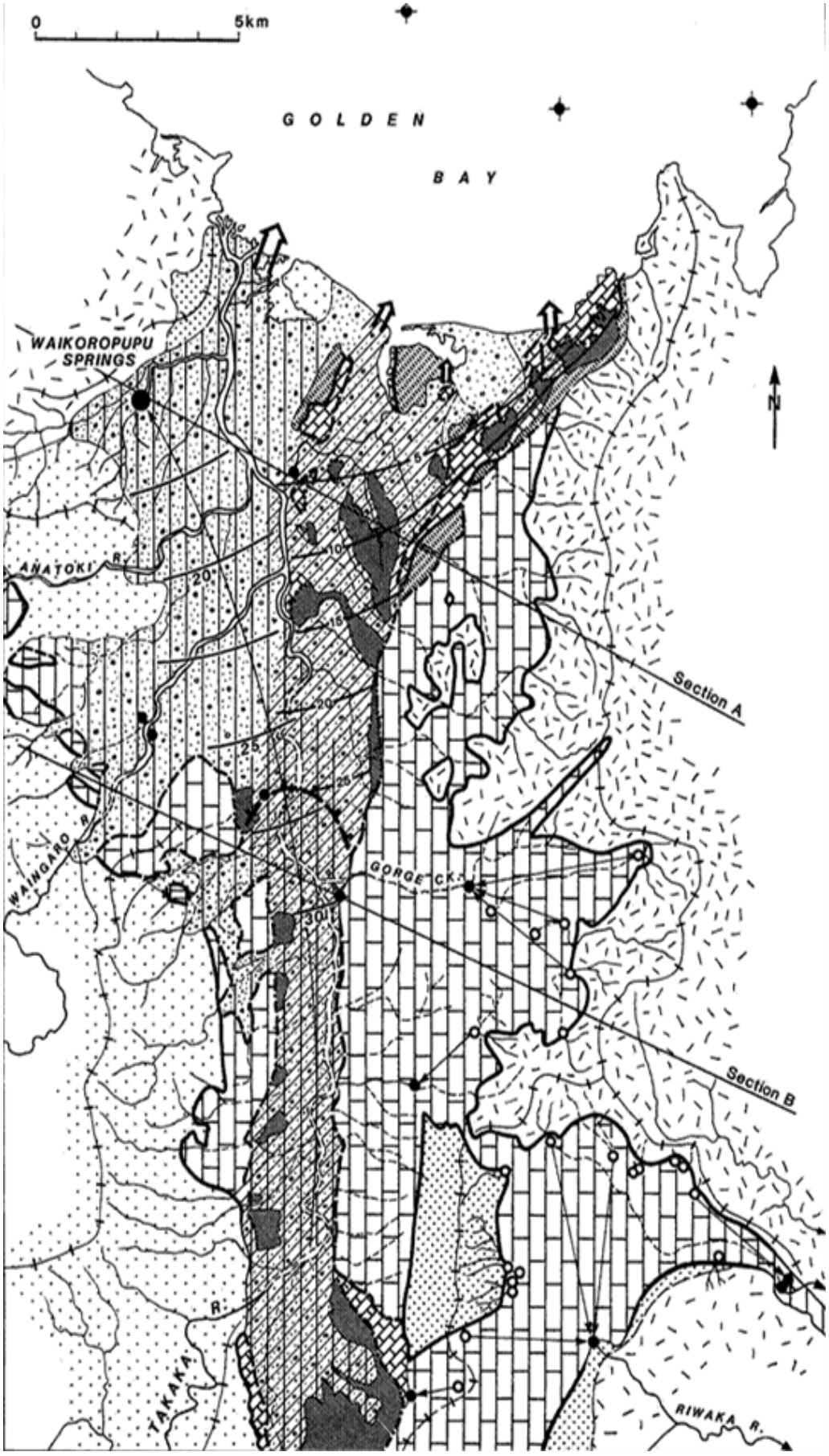

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Figure 2 - The Takaka River catchment area designated in the Ngāti Tama ki Te Tau Ihu settlement with the Crown on 20 April 2013

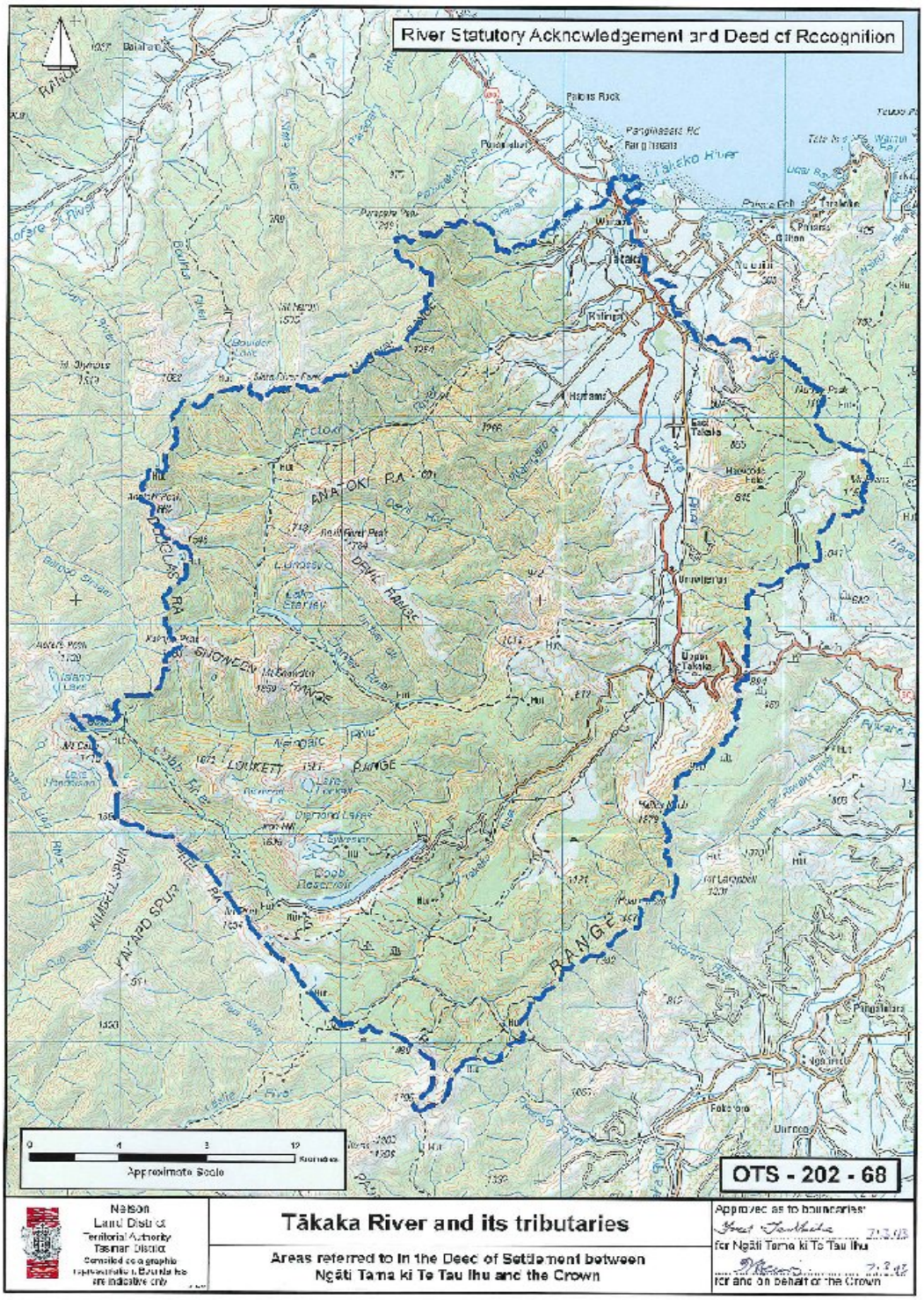
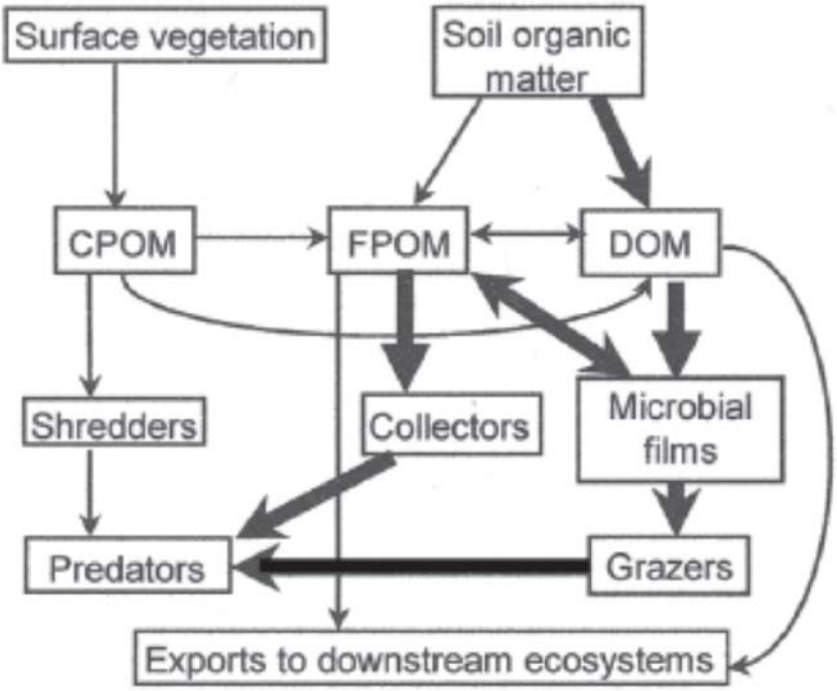


Figure 3 - Generalized aquatic food webs in karst systems. Arrows indicate energy fluxes with their size based on research. CPOM = coarse particulate organic matter; FPOM = fine particulate organic matter; DOM – dissolved organic matter (from Simon, 2008)



Appendices

1. Draft Te Waikoropupū and Arthur Marble Aquifer Water Conservation Order.

2. Ngāti Tama ki Te Tau Ihu Deed of Settlement (signed 20 April 2013 at Onetahua Marae, Pohara, including Schedule: Documents

3. Commentary provided by NIWAPrincipal Scientist, Biodiversity, Graham Fenwick PhD, "Biodiversity Te Waikoropupū Springs, Assessment and Vulnerabilities to reduced flows", August 2016.

4. A conceptual model of flow to the Waikoropupū Springs, NW Nelson, New Zealand, based on hydrometric and tracer (^{18}O, Cl, ^{3}H and CFC) evidence. M. K. Stewart and J. T. Thomas.

5. Water Resources of the Takaka Water Management Area. J. T. Thomas and M. M. Harvey.

6. A cultural impact assessment – managing waterways in the Tasman District, Tiakina te Taiao, April 2011.

7. Consideration of a significance assessment method for tangata whenua river values – A Murihiku Case Study Dr Gail Tipa (August 2010:14).

8. DoC 2009. Te Waikoropupū Springs Management Plan. Mahere tukutahi o Te Waikoropupū. Department of Conservation, Nelson.

9. Commentary provided by NIWA Principal Scientist, Biodiversity, Graham Fenwick PhD, "Sustainability of Te Waikoropupū Springs' aquifer ecosystems", March 2015.

References

1. ANZECC 2000. Australian and New Zealand guidelines for fresh and marine water quality. Volume 1, The guidelines. Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand.

2. Boulton, A.J., Fenwick, G.D., Hancock P.J., & Harvey, M.S. 2008. Biodiversity, functional roles and ecosystem services of groundwater invertebrates. Invertebrate Systematics 22: 103–116.

3. Davies-Colley, R.J. and Smith, D.G. 1995. Optically pure waters in Waikoropupū ('Pupū') Springs, Nelson, New Zealand. New Zealand Journal of Marine and Freshwater Research 29: 251-256.

4. Daughney, C.; Randall, M. 2009. National Groundwater Quality Indicators Update: State and Trends 1995-2008, GNS Science Consultancy Report 2009/145. 60p. Prepared for Ministry for the Environment, Wellington, New Zealand. Spreadsheet 1 available at http://www.mfe.govt.nz/publications/ser/groundwater-quality-trends-2008/

5. DoC 2009. Te Waikoropupū Springs Management Plan. Mahere tukutahi o Te Waikoropupū. Department of Conservation, Nelson.

6. DoC 1999. Karst Management Guidelines: Policies and Actions. Department of Conservation, Wellington.

7. Fenwick, G.D. 2000. Collections of New Zealand groundwater amphipods. NIWA Technical Report 95. 21pp.

8. Fenwick, G and Scarsbrook, M. 2004. Lightless, not lifeless: New Zealand's subterranean biodiversity. Water & Atmosphere 12(3): 2pp.

9. Fenwick, G. D., Thorpe, H. R., and White, P. A. (2004). Groundwater systems. pp. 29.1–29.18 *In* Freshwaters of New Zealand. J. Harding, P. Mosely, C. Pearson and B. Sorrell (Eds.). New Zealand Hydrological Society and New Zealand Limnological Society: Christchurch, New Zealand.

10. Haase, M. 2008. The radiation of hydrobiid gastropods in New Zealand: a revision including the description of new species based on morphology and mtDNA sequence information. Systematics and Biodiversity 6(1): 99-159.

11. Michaelis, F. 1977. The biological features of Pupū Springs. New Zealand Journal of Marine and Freshwater Research 11(2): 357-373.

12. Ngāti Tama ki Te Tau Ihu Deed of Settlement, signed by Iwi and Crown representatives on 20 April 2013 at Onetahua Marae, Pohara.

13. Scarsbrook, M., Barquín, J. and Gray, D. 2007. New Zealand cold water springs and their biodiversity. Science for conservation 278, Department of Conservation, Wellington. 72p.

14. Suess, E. 1970: Interaction of organic compounds with calcium carbonate. 1. Association phenomena and geochemical implications. Geochimica and cosmochimica acta 34: 157-168.

15. Simon, K.S. 2008. Ecosystem science and karst systems. P 49-53. *In* Martin, B.J & White, W.B. (eds.).Frontiers in karst research. Karst Waters Institute, special publication 13. Leesberg, Virginia, USA.

16. Stevens, G., James, T. 2008. Groundwater quality in the Motupipi river headwaters. Tasman District Council Report Ref: 07004, 36pp.

17. Stewart, M.K. and Thomas, J.T. 2008. A conceptual model of flow to theWaikoropupū Springs, NW Nelson, New Zealand, based on hydrometric and tracer (^{18}O, Cl,^{3}H and CFC) evidence. Hydrology Earth System Science 12: 1–19.

18. Thomas, J.T. and Harvey, M.M. 2013. Water resources of the Takaka water management area. Tasman District Council. 38pp.

19. Ulrich, P.B. 2002. Land use in karst terrain: review of impacts of primary activities on temperate karst ecosystems. Science for Conservation 198, Department of Conservation, Wellington.

20. Williams, P. 2004. Karst systems. 31.1-31.20 *In* Freshwaters of New Zealand. J. Harding, P. Mosely, C. Pearson and B. Sorrell (Eds.). New Zealand Hydrological Society and New Zealand Limnological Society: Christchurch, New Zealand.

21. Young, R.G., Doehring, K. and James, T. 2010. River quality in Tasman District 2010. Tasman District Council Ref: R10001 (Cawthron Report 1893). 165 pp. plus appendices.

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