

Measuring the cultural health of Reservoir Creek

Using tangata whenua environmental indicators for wai



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Iwi monitoring group members

Chris Hemi (Ngati Kuia)

Daren Horn (Ngati Rarua)

Justin Kere (Ngati Kuia)

Melanie McColgan (Ngai Tahu)

Report prepared by

Ursula Passl

For

Tangata whenua ki Whakatu

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Cover

View from Reservoir Creek Dam to Tasman Bay (Ursula Passl, June 2008)

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1. BACKGROUND

Reservoir Creek is a small-modified stream that flows from the Richmond Hills or mountains (maunga) to the Waimea Estuary and out to the sea (moana). The Creek flows through a range of habitats – exotic forest, indigenous lowland hill country forest (dominated by Titoki, Mahoe, Tawa and Matai) regenerating scrub and Richmond Township, before making its way to sea. Reservoir Creek is a significant water ecosystem and is valued for its indigenous aquatic life and its cultural, aesthetic and recreational attributes.

Reservoir Creek became a community restoration project in 2006. The project aims to:

- ⇒ Promote sustainable management of the Creek;
- ⇒ Strengthen partnerships between different community interests including community groups, schools, tangata whenua and local government; and
- ⇒ Maintain and enhance natural habitats, water quality and public access.

i. Tangata whenua involvement

Tangata whenua ki Whakatu are the six iwi affiliated to Whakatu Marae. Each iwi is autonomous and is represented by one of the following organisations:

Ngati Koata Trust
Ngati Rarua Trust
Ngati Kuia Trust
Te Atiawa Trust
Ngati Tama Trust
Ngati Toa Rangatira

At the outset of the project, Tasman District Council (TDC) met with tangata whenua ki Whakatu to discuss plans to restore Reservoir Creek. Tangata whenua gave their support in principal and suggested that an assessment of cultural health indicators (CHI) could complement the proposed project. Monitoring the cultural health of Reservoir Creek using a range of environmental indicators facilitates tangata whenua participation in the management of the waterway.

ii. Identification of tangata whenua environmental indicators

In 2003, tangata whenua ki Whakatu prepared a worldview statement documenting tangata whenua beliefs, values and practices associated with wai. The worldview statement became the foundation for the development of environmental indicators for wai (water). Using the Maitai River as a case study, tangata whenua tested different indicators to assess their usefulness in monitoring the health of waterways. The indicators identified through this process were used for monitoring Reservoir Creek.

2. TANGATA WHENUA RELATIONSHIP WITH WAI¹

This section is not intended to be a comprehensive discussion of tangata whenua principals and values associated with wai (water). Rather, it is a brief overview of key concepts.

i. Wai

Wai is an essential element of life – life cannot survive without wai. For tangata whenua, wai represents the lifeblood of Papatuanuku (Earth Mother) and the tears of Ranginui (Sky Father). Wai symbolises the spiritual link between past and present.

Nga awa (rivers) have mauri (life force) and mana (status) of their own and therefore are taonga (treasures) to tangata whenua ki Whakatu. The mismanagement of wai impinges directly on the ability of tangata whenua to practice their customs and traditions. Loss of access to wai and the life it sustains therefore prevents tangata whenua from maintaining undisturbed possession of their culture.

ii. Nga atua kaitiaki

Nga atua kaitiaki are the spiritual guardians who created nga taonga tuku iho (the treasured resources) by breathing life into them. All natural resources including wai are regarded as the uri (descendants) of the atua and are taonga (treasures). There are many atua kaitiaki (spiritual guardians), but the ones that provide the context for the examination of indicators are those, which form the cornerstone of the tangata whenua management plan:

Tawhirimatea (atua of the wind and air);
Tumatauenga (guardian of tangata whenua);
Tane Mahuta (atua of the trees and birds);
Tangaroa (guardian of the rivers, lakes and of the sea);
Rongomatane (atua of cultivated foods); and
Haumie-tiketike (guardian of wild foods)

NB: There are other atua associated with natural resources and some are mentioned in relation to specific taonga, such as Tawhirimatea (the grandson of Tangaroa); he is the guardian of water creatures.

All the atua are in balance with each other. If there is an imbalance in the domain of one atua, this impacts on the realms of the other atua.

iii. Kaitiakitanga

As descendants of nga atua kaitiaki (spiritual guardians), tangata whenua have inherited the responsibility to take care of places, natural resources and other taonga (treasures) for their tupuna (ancestors), but also for the generations to come; this responsibility is called kaitiakitanga. Tangata whenua are therefore kaitiaki of the natural resources in their rohe (area), including wai (water).

¹ This section is taken from *Tangata whenua indicators for wai* (August 2005:6-9)

iv. **Tangata whenua values associated with wai**

a) Ancestral rights

Te Tiriti O Waitangi promised the protection of Maori custom and cultural values – a right that extends to the protection of tino rangatiratanga, being the full authority, status and prestige as regards Maori possessions and interests. Wai (freshwater) is a taonga (treasure) to tangata whenua – a resource, which is integral to all life and to tangata whenua customs and traditions. Therefore, maintaining, protecting, and enhancing wai is vital for the well being of tangata whenua; mismanagement impinges directly on the ability of tangata whenua to practice customs and traditions associated with wai. Loss of access to wai and the life it sustains therefore prevents tangata whenua from maintaining undisturbed possession of their culture.

b) Protecting the mauri of wai

As kaitiaki (guardians), tangata whenua are responsible for protecting the mauri (life force) and wairua (spirit) of wai (water). Mauri is the life force that gives being and form to nga awa (the rivers), streams and other water bodies. The wairua of wai is closely associated with the mauri, because the physical and spiritual elements of wai are joined together by the mauri. Therefore protecting the mauri and wairua of wai is the overriding management principal for tangata whenua.

Environmental indicators or tohu are essential for measuring the health and well-being of water (wai). The health of a water body is also an indication of the health of nga atua kaitiaki (the spirit guardians) and of tangata whenua. Where a water body has been compromised by human activities, this is an affront to nga atua kaitiaki and to tangata whenua. In such cases, tangata whenua are concerned with enhancing the mauri (life force) to a level where physical and spiritual health of the water body can be sustained. Maintaining the integrity of wai is central to maintaining the cultural identity of tangata whenua.

c) Protecting biodiversity and associated matauranga and tikanga

For tangata whenua, the protection of biodiversity and associated matauranga (knowledge) and tikanga (customary practices) is another important principal in the management of wai (water). Healthy water bodies sustain a diverse range of habitats and species. The matauranga associated with those habitats and species underpin the cultural identity of tangata whenua – this matauranga forms the basis of tangata whenua tikanga. Loss of biodiversity is not only an affront to nga atua kaitiaki (spiritual guardians) of those taonga (treasures); it also results in the loss of matauranga and tikanga connected with those resources.

d) Maintaining customary use

One customary practice associated with water bodies is the tradition of gathering food and resources. Using wai (water) and the resources wai sustains is fundamental to being Maori. Traditionally, mahinga mataitai (food gathering places) were used to sustain the spiritual and physical needs of tangata whenua. Although fewer mahinga mataitai exist today, they are still an important part of tangata whenua cultural life. Tangata whenua maintain customs such as providing hospitality to guests, by providing local specialities from the rohe (area).

e) Protecting waahi tapu and waahi taonga associated with wai

Wai (water) is valued by tangata whenua because of its mauri (life forces), its relationship to nga atua kaitiaki (the spiritual guardians), and /or an association with tapu (sacred) events, koiwi (human remains) or tapu objects. Waahi tapu (sacred places) provide tangata whenua with a physical and spiritual link to the tupuna (ancestors). Waahi tapu can also signify ahi kaa roa (long-term residency) in an area – they are indicators of tangata whenua identity, confirmed and protected by the use of tapu. As kaitiaki, tangata whenua are responsible for the protection of waahi tapu in their rohe (area).

Other water bodies are not tapu, but have taonga (treasured) status because of the uses the water body supports, such as mahinga mataitai (food gathering places), waka (canoe) routes or landing sites, trails, camping sites, working areas and rongoa (medicinal plant) gathering areas.

3. HISTORY OF MAORI IN THE AREA²

One of the first recorded legends is that of Rakaihautu who landed in Whakatu around 800AD. He travelled through the Waimeha Plains on his way down the South Island digging out the lakes as he went. Some of the earliest Iwi recorded in the area of the Waimeha Plains were Rapuwai and Waitaha. Implements and other taonga (treasures) found in the area date back over 800 years to the archaic period.

In the late 1500s, Ngati Tumata Kokiri arrived from the Wanganui District – they controlled Te Tau Ihu (Top of the South) for around one hundred years until the Kurahaupo tribes – Ngati Kuia and Ngati Apa absorbed them in the early 1800s. There was also a small group of Ngai Tara based on the Waimeha Plains around this time and they are credited with building the Pa in the area where the Appleby School now stands. They were agriculturalists and had extensive gardens on the plains.

The domination of the Kurahaupo tribes only lasted a couple of decades. In late 1827, an enormous force of Tainui and Taranaki warriors from the North attacked the whole of Te Tau Ihu. The result was a comprehensive defeat of a people who were unprepared for the overwhelming numbers of invaders armed with musketry and cannon.³ By the mid 1830s, the Tainui/Taranaki tribes had put down their roots in the Te Tau Ihu districts they had conquered.⁴ These tribes were: Ngati Rarua, Ngati Toa, Te Atiawa, Ngati Koata and Ngati Tama.

Maori used the Waimeha plain extensively for the production of kai (food) and the adjoining estuary contained a bountiful supply of kaimoana (seafood). Seasonal Pa were established along the shores and on the islands in the estuary. The Plain was also the main trading route for iwi travelling from Nelson (Whakatu) to the West coast (Te Tai Poutini).

Tangata whenua harvest Ika (fish), Pipi, Tuangi (Cockles), Titiko (Mud Snails), Tio (Oysters), Kuku (Mussel), Inanga (Whitebait) and Kawari (Whelks) in the estuary. Sea birds were also eaten. In the rivers and freshwater creeks across the plain, there were Koura (freshwater crayfish) and Tuna (eel); the wetland areas contained Pukeko and Duck – the forests were home to Kereru (wood pigeon) and Tui.

Although most of the indigenous forest has disappeared from the area, Harakeke (flax) was plentiful in the swampy lowlands and Totara, Nikau, Beech, Matai, Kahikatea and ferns grew on the flats to the hills of the Barnicott Range. Many of these species were used for making various items to capture and prepare kai. Totara trees and others were used for constructing waka (canoes). Harakeke had many uses from clothing to baskets for gathering and cooking kai. The muka (fibre) was used for weaving and rope binding for things such as bird, eel and fish traps. In addition, many plants were used for making rongoa (medicines).

² Material taken from *A Cultural Health Index for Reservoir Creek* (June 2007:10-13)

³ Mitchell J & H (2004:101) *Te Tau Ihu o Te Waka – A history of Maori of Nelson and Marlborough*

⁴ Mitchell J & H (2004:138) *Te Tau Ihu o Te Waka – A history of Maori of Nelson and Marlborough*

4. DISCUSSION OF INDICATORS⁵

This section examines each indicator and the factors tangata whenua ki Whakatu considered when looking at the health of Reservoir Creek on seasonal site visits. These indicators are all tohu (signs) of the health of nga atua kaitiaki (the spiritual guardians) and therefore each indicator has been grouped under the appropriate kaitiaki.

Tangaroa

Tangaroa is the guardian of inland waters, such as nga awa (the rivers), streams, nga roto (lakes) and wetlands.

❖ **Riverbank condition**

The health of the riverbank relates to the degree of erosion that can be seen at each site and the amount of cover or vegetation that exists to reduce the effects of erosion and shade the water.

❖ **Sediment on riverbed**

Sedimentation occurs naturally, but is also caused by human activity. Therefore, the health of wai can be measured by looking at the type of sedimentation covering the river stones, whether the sediment is in the form of green or brown slime and whether there are mossy growths in the water.

❖ **Water clarity**

This indicator relates to watercolour, whether the water is clear or discoloured and whether the stones and river gravel can be seen through the water. Human pollution may also be measured if it appears in the form of foam or oil on the surface of the water.

❖ **Water flow**

A healthy river is always flowing and wai can be measured by the nature of its movement. Key considerations are whether the sound of flowing water can be heard, whether the water is moving and at what rate. Where the flow of the river is fast and the gradient steep, it is more likely that the sound of the current can be heard and visible movement can be seen.

❖ **Water quality/temperature**

Water temperature is a critical factor of river health, as life within a waterway can only be maintained within a specific temperature range. Shading from indigenous vegetation protects wai from extreme heating. The amount of wai in a waterway is also a factor; there must be sufficient wai to sustain life. Water temperature is directly linked to the extent of riparian vegetation and the volume of wai in the waterway.

❖ **Shape and form of river**

The shape and form of nga awa (rivers) relates to the natural pattern of the river; whether it is naturally bending and curving through nga whenua (the land) and whether the river contains pools and riffles. Riffles are an indicator of good water flow and of water being aerated.

⁵ Material from *Tangata whenua ki Whakatu Environmental Indicators for Wai* (August 2005:34-39)

❖ **Insect life**

Tutewehiwehi is the guardian of insects and lizards. Insects are significant indicators of river health, as many insects rely on high water quality for their survival. The degree to which insects can be seen in the water, rising off the water and/or in the surrounding environment are key considerations.

❖ **Fish life**

The abundance and diversity of fish and eels indicates whether the river environment is able to sustain life. A river with few or no fish will have a severely degraded mauri (life force). Therefore, it is important to monitor the number and type of indigenous populations present and whether mahinga kai (food gathering places) exist in a healthy state.

Tane Mabuta

Tane Mabuta is the atua (guardian) of the forests, trees and plants. Tane is also the father of many manu (bird) species including kiwi, kaka and tui.

❖ **Riparian vegetation**

Riparian vegetation creates habitat for species associated with wai. Plant life also provides shading to protect wai from over heating. Flowering plants are important indicators of the time for harvesting certain species. In addition, plant litter is an important part of the food chain. Assessing the health of riparian margins, whether there is shading for indigenous species within the river, and the types of vegetation that exists along riverbanks is a significant measure of river health.

❖ **Bird life**

A healthy waterway has nga manu (birds) present, both on the river and in the surrounding environment. For tangata whenua, it is important to monitor the number and type of bird species living in a water environment.

Haumietiketike/Rongomatane

Haumietiketike is the atua (guardian) of wild foods and Rongomatane of cultivated foods.

❖ **Mahinga kai or rongoa species present**

The abundance of mahinga kai species is an indication of the mauri (life force) of a river – a healthy river flows with life as well as wai. Where indigenous species exist in populations to support customary harvest, the mauri of nga awa (the river) is strong. Discharges to the water, surrounding land use, the sight of rubbish and pollution in and around water, the “feeling in the puku” (stomach) and taste, are all factors tangata whenua consider when assessing whether mahinga kai species are safe to eat.

Tumatauenga

Tumatauenga (Tu) is the guardian of nga tangata (the people). Traditionally, Tu was called upon throughout the lives of tangata whenua. Tangata were often dedicated to him in tobi (the baptismal rite).

❖ **Use of the river**

The use of the river may impact on the health of the river environment. Therefore, identifying different uses and associated impacts on wai provides another strand of information to determine whether a waterway is healthy or not.

❖ **Use of the river margins**

Activities undertaken on the river margin can have major impacts on the health of life supported by nga awa (the rivers). It is therefore important to consider what the river margin is used for and whether these activities enhance or degrade the river environment.

❖ **Access to the river**

Access is an important factor in the relationship between tangata whenua and nga taonga tuku iho (the treasured resources). Where access is limited or non-existent, the health of tangata whenua is greatly reduced; the ability of tangata whenua to practice kaitiakitanga (guardianship) is also lost.

Tawhirimatea

Tawhirimatea is the spiritual guardian of the air. Air links the different elements of the natural world and is therefore a taonga (treasure) to tangata whenua.

❖ **Smell**

A healthy freshwater environment has a distinctive smell. Therefore discharges of foul-smelling and/or hazardous contaminants to air will ultimately contaminate freshwater environments and the waahi tapu associated with wai. A polluted waterway with a high level of contaminants and low flows may also result in an unpleasant smell.

OVERALL HEALTH

❖ **Feeling in puku**

The “feeling in your puku” refers to the feeling tangata whenua have deep in the stomach when standing by a river. This feeling may be sad or heavy, or it may be strong and light, where the mauri (life force) of nga awa (the river) is felt to be healthy.

5. SITE SELECTION AND LOCATION

Site selections were discussed with Reservoir Creek project partners and iwi monitors with the aim of complementing other monitoring stations along Reservoir Creek. This included Waimaori Stream care stations, electric fishing and Tasman District Council water quality monitoring sites. In addition, research on the history of Reservoir Creek identified several sites of traditional significance to tangata whenua.

Sites were selected from the maunga (mountains – Richmond Hills) to the moana (sea - Waimea Estuary) to provide differing number of habitats, values and land uses. Due to resource constraints, only four of the six sites monitored in the 2006 – 2007 year were monitored from July 2007 – June 2008. A brief description of each site follows:⁶

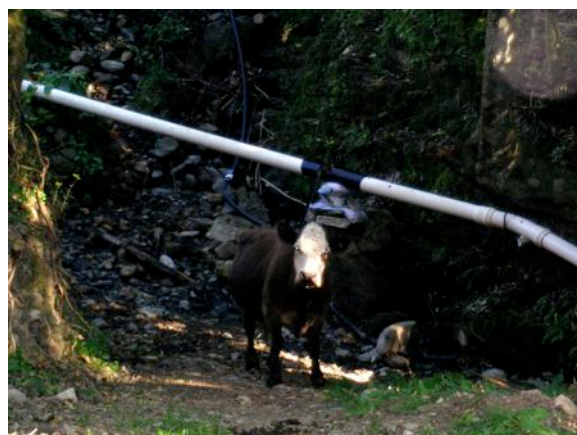
i. Upper creek (above reservoir)



This site is located near the source of Reservoir Creek. It is surrounded by pine forest, but the riparian margin is mostly native shrubs and trees. Public access is on a small-unformed track along the creek.

ii. Below reservoir

This site is highly modified. A culvert connects the Reservoir with the Creek below. Indigenous vegetation consists mainly of ferns with the area predominately covered in grass and scrub. Cattle are often seen grazing in and around the Creek.



⁶ A cultural health index for Reservoir Creek (June 2007: 17-23)

iii. Easby Park

This site is located along Keith's walkway near the Tasman District Council boundary with private property. A large number of middens have been reported in the area along with the discovery of an adze. Although grasses dominate the riverbank, there are some indigenous scrubs and trees shading the creek.



iv. Welsh Place

This reach follows a public walkway, which meanders through an urban, grassy park-like setting.



6. MONITORING RESULTS

The four sites were visited four times during the year – in spring, summer, autumn and winter. Three iwi monitors assessed the health of the creek and surrounding environment using the environmental indicators as detailed in Section four of the report. Each indicator was assigned a rating from 1 – 5 (1 being very unhealthy and 5 very healthy). The average rounded rating for each indicator is recorded in the following tables (for each season).

i. Upper creek (above reservoir)

Indicator	Spring	Summer	Autumn	Winter
TANGAROA				
1. Riverbank condition	4	5	4.5	4
2. Sediment on riverbed	3	4.5	4	3
3. Water clarity	4	4.5	4	3.5
4. Water flow	4	4.5	5	4
5. Water quality	4	5	4	4
6. Shape & form	4.5	5	5	4.5
7. Insect life	Cadis fly, May fly, Midges			
8. Fish life	Kokopu, Tuna	Koura	Nil	Nil
TANE MAHUTA				
9. Riparian vegetation	5	5	4.5	5
10. Catchment vegetation	4	4	4	4
11. Bird life	Bellbird, Kereru, Finches, Sparrows			
12. Ngahere	Fern, Kiekie, Tawa, Toi Toi, Mahoe			
13. Pest plants/animals	P. Radiata, Banana P. Cattle			
HAUMIETIKETIKE AND RONGOMATANE				
14. Mahinga kai	Puha, Kawakawa, Tawa, Titoki			
15. Rongoa	Rangiora, Ferns, Putatutaweta			
TUMATAUENGA				
16. Use of river	4.5	4.5	4	4
17. Use of river margins	5	5	4	4
18. Access to river	5	5	5	5
19. Cultural site	No			
TAWHIRIMATEA				
20. Smell of river	5	5	5	4.5
21. Weather	5	3	5	5
OVERALL HEALTH				
22. Feeling in puku	5	5	5	5

Adjacent landuse: Commercial, exotic forest, native, scrub.

Winter: Track cleaned up.

Autumn: Forestry operations resulted in a lot of sediment in the Creek

ii. Below reservoir

Indicator	Spring	Summer	Autumn	Winter
TANGAROA				
1. Riverbank condition	1	1	2	1
2. Sediment on riverbed	1.5	1	1	1
3. Water clarity	1	1	1	1
4. Water flow	3	3.5	4	3
5. Water quality	2.5	2	1	1
6. Shape & form	2	2	3	3
7. Insect life	May flies, Stone Snails,	Snails, Cadis Fly, Stone Fly, Water spider	Snail	May fly
8. Fish	Tuna	Nil	Nil	Nil
TANE MAHUTA				
9. Riparian vegetation	3	3.5	3.5	3
10. Catchment vegetation	2.5	3.5	3	3
11. Bird life	Gold Finch, Californian Quail, Fantail, Bellbird, Mallard,	Kereru, Fantail, Cicadas,	Sparrow, Tui, Grey Duck, Bellbird, Californian Quail	
12. Ngahere	Titoki, Rata vine, Fern, Kawakawa, Mahoe			
13. Pest plants/animals	Nightshade, Barberry, Old Man's Beard, Cattle, Banana P. Tobacco, Gorse, Old Man's Beard, Blackberry			
HAUMIETIKETIKE AND RONGOMATANE				
14. Mahinga kai	Koura	Nil		
15. Rongoa	Nil			
TUMATAUENGA				
16. Use of river	1	1	1	1
17. Use of river margins	1	1	1	1
18. Access to river	3	5	5	5
19. Cultural site	No			
TAWHIRIMATEA				
20. Smell of river	3.5	1	1	1
21. Weather	5	3	5	5
OVERALL HEALTH				
22. Feeling in puku	2	1	1	1

Adjacent land use: scrub, native, commercial

Spring: Tasman District Council work to install a new pipe - bulldozer damage. Bulldozer also used for track maintenance.

Summer: Health of waterway has deteriorated since spring. Cattle observed grazing in and around creek damaging riverbank and polluting water, sediment in water leading to low water clarity and a very low feeling in puku

Winter: Vegetation on dam face cut down; clay inside pipe; cows grazing in and around the creek.

iii. Easby Park

Indicator	Spring	Summer	Autumn	Winter
TANGAROA				
1. Riverbank condition	3.5	4	4	3
2. Sediment on riverbed	3	2	2	2.5
3. Water clarity	3	1	1	3
4. Water flow	3	4	4.5	3.5
5. Water quality	2.5	1	2.5	3
6. Shape & form	4	4	4	3.5
7. Insect life	May fly, Dragon fly, Damsel fly	Flatworms, Slugs, May fly, Damsel fly	May fly	May fly, flatworms
8. Fish	Whitebait, Koura	Tuna	Nil	Nil
TANE MAHUTA				
9. Riparian vegetation	4	4	4	4
10. Catchment vegetation	4	3	3	3
11. Bird life	Bellbird, Fantail, Grey warbler, Californian Quail, Yellow & Gold Finch	Cicadas	Fantail, Grey warbler, Sparrow	Fantail
12. Ngahere	Manuka, Harekeke, Akeake, Kowhai			
13. Pest plants/animals	Blackberry, Old Man's Beard, Barberry, Banana P.			
HAUMIETIKETIKE AND RONGOMATANE				
14. Mahinga kai	Koura, Titoki, Pohutukawa, Nie nie			
15. Rongoa	Harakeke			
TUMATAUENGA				
16. Use of river	4	2	3	3
17. Use of river margins	4	2	4	4
18. Access to river	5	5	4.5	4.5
19. Cultural site	No			
TAWHIRIMATEA				
20. Smell of river	5	4	4	3
21. Weather	5	3	5	5
OVERALL HEALTH				
22. Feeling in puku	4.5	4	3.5	2

Adjacent landuse: native, exotic forest, scrub, recreational

Spring: Over night rain; cattle have been grazing in and around the water.

Winter: Cattle have been grazing in and around the water. Severe drought this winter.

iv. Welsh Place

Indicator	Spring	Summer	Autumn	Winter
TANGAROA				
1. Riverbank condition	3	3	1.5	3
2. Sediment on riverbed	4	4	1.5	3.5
3. Water clarity	3.5	4	1	3
4. Water flow	4	3	3.5	3.5
5. Water quality	2	3	2	2
6. Shape & form	2	3	1.5	2
7. Insect life	Damsel fly	Damsel fly, Bumble bees	Midges, snail, wasps	Nil
8. Fish	Tuna	Tuna	Nil	Nil
TANE MAHUTA				
9. Riparian vegetation	2.5	1.5	1	1.5
10. Catchment vegetation	2	2	1.5	1.5
11. Bird life	Sparrow		Sparrow	
12. Ngahere				
13. Pest plants/ animals	Buttercup, Dandelion, Dock, Grass clippings in Creek			
HAUMI'ETIKETIKE AND RONGOMATANE				
14. Mahinga kai	Tuna	Nil		
15. Rongoa	Harakeke			
TUMATAUENGA				
16. Use of river	3	3	2	2
17. Use of river margins	2.5	3.5	3	3
18. Access to river	5	5	5	5
19. Cultural site	No			
TAWHIRIMATEA				
20. Smell of river	4	4	3	3
21. Weather	6	3	5	5
OVERALL HEALTH				
22. Feeling in puku	2.5	2.5	2.5	2.5

Adjacent landuse: residential, recreational

Spring: Improved growth on banks; Weeds being dug out

Summer: Recent heavy rain, creek wide and clear; highest water level in two years

Autumn: Overnight rain; forestry runoff; Tasman District Council engineering department removal of plants planted by schools and Keep Richmond Beautiful – two years work destroyed, a huge disappointment for the project participants.

Winter: Plants replaced; lots of brown algae; grass clippings and foam in the water.

7. DISCUSSION OF RESULTS

i. Upper creek

This site was considered the healthiest of the four with most indicators being rated four or above. Water clarity, flow, and quality ratings were highest in summer and lowest in winter. This site consistently had a range of insects and bird species present. Riparian cover is good with indigenous plants providing shade and protection for the water margins. Mahinga kai and rongoa were recorded as being present. The overall feeling in the puku was strong and light – this section of the waterway was considered healthy by the iwi monitors.

ii. Below reservoir

This site was consistently rated the lowest in relation to riverbank condition, sediment, water clarity and quality. Insect life was present, however an abundance of pest animals and plants were also recorded. Cattle were often observed grazing freely in the area. The overall feeling in the puku is heavy and sad – the health of this site was considered poor.

iii. Easby Park

This site was consistently rated as being of average health. Water clarity was very low in summer and autumn when a lot of sediment was recorded in the water and on the creek bed. Although some indigenous vegetation is found around this site, there are predominately exotic plants growing in the area. Many pest plants and animals were recorded. Despite this, birds and mahinga kai species were also present.

iv. Welsh Place

The lowest ratings were given for water clarity, quality and sediment in autumn. Riparian cover is poor and few mahinga kai species were recorded. Exotic and pest plants dominate the Creek margins. The indigenous species planted by schools and Keep Richmond Beautiful were removed by Tasman District Council contractors, during their maintenance operations. The overall health of this site was considered to be average to poor.

8. ISSUES

In developing environmental indicators for wai, tangata whenua identified a number of management issues associated with waterways. These issues are discussed in the following paragraphs in reference to Reservoir Creek.

i. Catchment management

For tangata whenua, mauri (life force) is associated not only with Reservoir Creek, but also with its surrounding environment. Therefore, in working towards maintaining the mauri of the Creek, it is important to consider the entire catchment; from the source of a river to where the freshwater meets saltwater near or along the coast.

A number of likely effects on the existing indigenous vegetation from the removal of pine forest in the upper catchment were identified and presented to the Tasman District Council in November 2007.⁷ These effects included sedimentation of the waterway from the proposed forestry operations – the construction of a road followed by clear felling forestry. Additional issues related to exposure of the indigenous forest margins, damage to vegetation, weed invasion and spray drift. The road constructed for milling the forest in the upper catchment resulted in eight weeks of discolouration in the length of Reservoir Creek from the Richmond Hills to the estuary. Monitoring work could not be undertaken during this time. Therefore, tangata whenua are concerned about the potential effects of tree felling operation due to begin in spring.

ii. Water quality

Tangata whenua consider the maintenance of water quality to be vitally important to all life. Activities, which reduce water quality impact directly on the mauri of the waterway – the life force that sustains everything within the water catchment. Key concerns relate to sedimentation of waterways, which impacts directly on water quality and the ability of the waterway to provide a habitat for a range of species.

Water quality was not maintained during the construction of the forestry road. The milling of Pinus Radiata in the catchment in spring could produce the same outcome, if operations are not managed with the health of the water catchment in mind.

iii. Riparian management

The matauranga (knowledge) associated with indigenous habitats is a taonga (treasure) to tangata whenua and therefore the protection of these habitats is a priority. For tangata whenua, enhancing degraded riparian habitats is important – to increase the natural shading and filtering capacities of these areas.

Planting along the river margins of Reservoir Creek and maintenance of existing plants is central to the restoration of the waterway and its margins. Unfortunately, maintenance work undertaken by Tasman District Council contract workers resulted in plants being mowed and ripped out.

Of great concern to tangata whenua is farm animal access to waterways, as this can accelerate erosion, increase sediment in the water, damage riparian vegetation and/or contaminate the wai. These activities diminish the mauri of wai and may also damage or destroy waahi tapu (sacred places) and mahinga mataitai (food gathering places).

Currently, stock wander freely along Reservoir Creek; this has led to contamination of the wai, damage to the riverbank and the destruction of plants shading the water.

⁷ Te Ngahere Forest Assessment Reservoir Creek (November 2007: 8)

iv. Introduced species

Introduced species are often responsible for diminishing the mauri of waterways through competition with indigenous species for habitat and food. Some species are directly responsible for degrading river ecosystems, such as Trout, Gambusia and Hornwort.

Other species are able to invade an area when there is damage to vegetation in the catchment – this was identified as a likely effect of the proposed forestry operation. If the indigenous vegetation is damaged at the forest margin by the logging operation, this presents an opportunity for pest plants to establish. For example Woolly nightshade, wilding Pinus Radiata, Old Man’s Beard and Banana Passionfruit.

v. Funding

There is uncertainty about whether the Reservoir Creek project will continue if a funding application is not submitted for the 2008 – 2009 year.

iv. Co-ordination

An overarching issue for tangata whenua is the lack of co-ordination of activities undertaken in and around Reservoir Creek. This has resulted in some activities being counterproductive to the community goal of restoring the waterway. Examples include the forestry operations in the upper catchment, the lack of co-ordination in managing the riparian plantings and cattle access to a large section of the waterway.

9. CONCLUSION

Reservoir Creek is a taonga – a waterway with a range of values, including those specific to tangata whenua. Current management of the waterway is ad hoc and activities often conflict with the desire of tangata whenua and the local community to take care and restore this taonga.

10. RECOMMENDATIONS

Tangata whenua consider it important that a hui with all relevant parties takes place to discuss:

- ⇒ The issues raised in this report and any additional issues identified by hui participants;
- ⇒ Mechanism(s) to ensure that the management of the waterway and its surrounding catchment is undertaken in a co-ordinated and complementary manner – with the view to looking after the waterway, the surrounding habitat and the species living within the catchment. NB: It is important that key stakeholders find common ground in the management of the Creek;
- ⇒ The development of a Riparian Management Plan to define who is responsible for the maintenance of plantings along the Creek margins, allowing weed and grass growth in the short term, where this is beneficial for restoration of the creek banks. KRB (Keep Richmond Beautiful) are part funded by Tasman District Council to maintain specific areas – one such area could be Reservoir Creek;
- ⇒ The development of a work plan to implement the mechanisms recommended in the Reservoir Creek Restoration Report; and
- ⇒ The level of commitment and support for the continuation of the project. If the monitoring and restoration of Reservoir Creek and its catchment is to continue, funding will need to be secured to undertake this work over the next financial year and beyond.