



Takaka Water Management Catchments Values and Objectives Summary

November 2014

Process

1. What are we managing our water bodies for?
(our values and our objectives)



2. What attributes are important for our values/objectives?



3. What state do the attributes need to be?



4. What is the current state of these attributes?



5. How do our desired and current states compare?



6. What are the threats and risks to attributes/objectives?



7. How can we manage the attributes and threats/risks?



8. Can we afford it, will this be effective?

Cultural and Spiritual Values - Description

What this value means:

Healthy water is vital for our well-being, energy and peace of mind. We respect and treasure our waters, Wahi Tapu (sacred places) and **Wai Tapu (sacred waters) where rituals and ceremonies are performed**. Our well-being is reflected by the health of our waters. The purity and health of our water supports our connection with nature and Papatuanuku. It imbues peace of mind and revitalising energy and allows for cultural and spiritual rituals and uses. Individuals and families are able to enjoy and connect with our water bodies now and in the future.

Rituals and ceremonies include, but are not limited to, tohi /baptism, karakia/prayer, waerea (protective incantation), whakatapu (placing of raahui), whakanoa (removal of raahui), and tuku iho (gifting of knowledge and resources for future generations).

In providing for this value, the wai tapu would be free from human and animal waste, contaminants and excess sediment, with valued features and unique properties of the wai protected to some extent. Other matters that may be important are that identified catchments have integrity (there is no artificial mixing of the wai tapu) and identified taonga in the wai are protected.

[Need to combine NOF & FLAG to reflect pakeha new Zealand spiritual values, they may not be able to be as clearly articulated as Maori values but do need acknowledgement.]

Cultural and Spiritual Values Management Objectives

- Our water bodies have healthy Mauri. Those water bodies which do not have a healthy mauri are restored.
- Surface and ground water is suitable for cultural and spiritual uses and rituals (tikanga).

Applies to: All surface and groundwater

- Wai Tapu (sacred waters) are free from **direct** human and animal waste **discharges**, contaminants and excess sediment.
- Valued features, taonga and unique properties of water at Wai Tapu are maintained and protected.

Wai tapu applies to: Te Waikoropupu Springs

[Quantity and Qualities are of equal value – can't have one without the other]

Cultural and Spiritual Values – Attributes

The characteristics of water that are important for cultural and spiritual values:	Measured Attributes:
<p>The water is appealing (look, smell, taste). The water is clear and naturally coloured. The water smells and tastes pleasant.</p>	<p>Visual Water Clarity (black or secci disc) Odour (subjective odour types) Visual Colour (qualitative colour charts)</p>
<p>The water does not contain human or animal wastes. The water is suitable for immersion (ie primary contact).</p>	<p>Disease causing organisms: E.coli, Faecal coliforms, Enterococci <u>Number of direct sewage discharges to water</u></p>
<p>The water does not contain contaminants.</p>	<p>Visual contaminant assessment – Films, scums, floatables. Turbidity. Chemical/physical/microbiological parameters used based on risk associated with various land uses or pollution events.</p>
<p>There are no unpleasant slimes or overgrowth of aquatic plants and algae.</p>	<p>Periphyton (% Bed Cover - visual assessment). Cyanobacteria (% cover of bed – visual assessment).</p>
<p>There is good natural flow, good depth and movement of water.</p>	<p>Flow regime Low flows (may be estimated)</p>
<p>There is diverse life in the water. There is healthy life in the water.</p>	<p>Macro-invertebrate indices (eg MCI). Freshwater fish abundance and diversity.</p>
<p>The water has healthy Mauri.</p>	<p><u>Assessment of Mauri (via Cultural Health Index)</u></p>
<p>The water is accessible and available for use</p>	<p>Number/spread of public, safely accessible sites.</p>

Municipal & Domestic Water Supply - Description

What this value means:

“Water supply (Wai Māori) – The [freshwater] can meet people’s potable water needs. Water quality and quantity would enable domestic water supply to be safe for drinking with, or in some areas without, treatment.”

[This would be difficult to achieve/supervise in domestic supply]

Municipal and Domestic Water Supply Management Objectives

Surface water bodies that are used for drinking water are sufficiently abundant to meet the domestic needs of users and are easily and affordably managed or treated to meet the New Zealand Drinking Water Standards.

Applies to: All surface water - with treatment if required

Groundwater is sufficiently abundant to meet the domestic needs of users and meets the New Zealand Drinking Water Standards without the need for treatment.

Applies to: All groundwater - without treatment when taken from a secure bore*

*(*As per NZDWS a secure bore is free from surface influences and free from contamination by harmful micro-organisms, with water abstracted via a protected bore head. It excludes water from springs and unconfined aquifers with bore intakes less than 10m deep)*

[Managing Nitrate levels – especially in Motupipi and E.coli risks?]

Municipal & Domestic Water Supply – Attributes

<p>The characteristics of water that are important for municipal and domestic water supply (management is of the source water not “at the tap”):</p>	<p>Measured Attributes:</p>
<p>The water is appealing (look, smell, taste). The water is clear and naturally coloured. The water smells and tastes pleasant.</p>	<p>[NZDWS] water is acceptable to the majority of users</p>
<p>The water does not contain disease causing organisms. [E.coli as an indicator]</p>	<p>E.coli or Faecal coliforms in source water. Number of direct sewage discharges to water. OR Treatment or management regimes that meet the New Zealand Drinking Water Standards.</p>
<p>The water does not contain contaminants.</p>	<p>Risk assessment of source waters and monitoring of expected contaminants –OR Treatment or management regimes that meet the New Zealand Drinking Water Standards.</p>
<p>There is sufficient water to meet the reasonable domestic needs of users.</p>	<p>Water resources maintained (measured by groundwater level and river low flow) Water demand assessment. Water augmentation assessment if necessary</p>
<p>The source water meets the New Zealand Drinking Water Standards (NZDWS) or can be affordably and readily treated or managed to meet the standards.</p>	<p>Affordability of treatment or management regime if required to meet the NZDWS</p>

Ecosystem Health – Description

(compulsory under NOF)

What this value means:

The Takaka catchments have a special environment with rare and unique qualities. From the dynamic estuaries, to the karst and marble areas, and bush-clad national park catchments, water is essential to functioning and provides for all life. It is vital that our natural resources, including rivers and streams, springs, coastal areas and river bank vegetation, are protected and maintained in a healthy state, with healthy mauri and that *the freshwater supports healthy ecosystems.*

In a healthy freshwater ecosystem ecological processes are maintained, there is a range and diversity of indigenous flora and fauna, and there is resilience to change.

Matters to take into account for a healthy freshwater ecosystem include the management of adverse effects on flora and fauna of contaminants, changes in freshwater chemistry, excessive nutrients, algal blooms, high sediment levels, high temperatures, low oxygen, invasive species, and changes in flow regime. Other matters to take into account include the essential habitat needs of flora and fauna, the relationship of riparian and wetland vegetation, substrate, meander, width/depth diversity and bank shape to aquatic and riparian fauna needs and to water quality, and the connections between water bodies. The health of flora and fauna may be indicated by measures of macroinvertebrates.

Ecosystem Health

Management Objectives

- All surface and ground waters have healthy mauri.
- There is a diversity of indigenous flora and fauna and a range of life stages expected for the water body type.
- Water quality provides at least the minimum requirements for healthy, functioning and resilient aquatic populations (population dynamics, feeding, growth and breeding are occurring within expected ranges for the water body type).

Applies to: All surface and groundwater – including rivers, streams, springs, groundwater, wetlands and coastal areas affected by freshwater outflows.

- There is good habitat diversity, including riparian and wetland vegetation, river/stream substrate, meander, width/depth and bank shape suitable to aquatic and riparian fauna needs.

Applies to: All rivers, streams, springs and wetlands.

[should apply to 'all', but extent will need to be assessed on case by case basis]

[yes should be all, but is it achievable?]

[should have an 'All' target - but must prioritise actions]

Ecosystem Health – Attributes

The characteristics of water that are important for Ecosystem Health:	Measured Attributes:
There is diverse life (indigenous flora and fauna) appropriate to the freshwater body type.	Macro-invertebrate indices (eg MCI). Freshwater fish abundance and diversity. Riparian Vegetation Assessment.
Ecological processes are maintained and there is resilience to change.	Macro-invertebrate indices (MCI) and Fish abundance and diversity. Ecosystem metabolism - gross primary production and ecosystem respiration. Stream habitat score. % of natural wetlands (including riverine wetlands) remaining in catchment. % natural floodplains present.
The water is clear and naturally coloured.	Visual Water Clarity (black or secci disc). Turbidity. Visual Colour (qualitative colour charts).
The water does not contain contaminants.	Chemical/physical/microbiological parameters used based on risk associated with various land uses or pollution events.
Nutrients in the water are not excessive and there is no overgrowth of algae or aquatic plants.	Periphyton (% Bed Cover - visual assessment). Cyanobacteria (% cover of bed – visual assessment). Dissolved Oxygen levels.
There is minimal siltation of the bed. [flood?]	% cover of fine sediment on the stream bed. Suspensible Benthic Sediment Volume in cobbly beds. Imbeddedness.
There is good natural flow, good depth and movement of water.	Stream habitat score (includes shading, meander, substrate, bank shape, depth/width variety, Thalweg profile etc). Riparian Vegetation Assessment (eg Multiple Values Assessment - MAV).
There is healthy and diverse riparian and wetland vegetation, substrate, meander, width/depth and bank shape appropriate to the water body type.	Macro-invertebrate indices (eg MCI). Freshwater fish abundance and diversity. Riparian Vegetation Assessment.
The water has healthy Mauri.	Assessment of Mauri (via Cultural Health Index).

Note: defining terms like 'not excessive' and 'natural' will need to be worked through later in the attribute grading process.

Fishing and Food Gathering - Description

What this value means:

Fishing, and gathering of whitebait and coastal sea food, are important for our families, our wellbeing and our connectedness to the sea and land. *Mahinga Kai must be safe to harvest and eat. Food gathering places must have healthy mauri and support fisheries of species allowed to be caught and eaten.* Being able to fish or gather food at traditional and favorite locations is important and needs to be maintained for future generations.

Mahinga kai generally refers to indigenous freshwater species that have traditionally been used as food, tools, or other resources. Mahinga kai provide food for the people of the rohe and these sites give an indication of the overall health of the catchment.

For this value, kai would be safe to harvest and eat and knowledge transfer is present (intergenerational harvest). In [waters] that are highly valued for providing mahinga kai, the desired species are plentiful enough for long-term harvest and the range of desired species is present across all life stages.

For this value, freshwater resources would be available and able to be used for customary use at some places (but not everywhere). In [waters] that are highly valued for providing mahinga kai, resources would be available for use, customary practices able to be exercised to the extent desired, and tikanga and preferred methods are able to be practised.

For [waters] valued for fishing, the numbers of fish would be sufficient and suitable for human consumption. In some areas, fish abundance and diversity would provide a range in species and size of fish, and algal growth, water clarity and safety would be satisfactory for fishers. Attributes will need to be specific to fish species such as salmon, trout, eels, lamprey, or whitebait.

Fishing and Food Gathering Management Objectives

- Kai are safe to harvest and eat.
- In locations that are highly valued for providing mahinga kai, the desired species are plentiful enough for long-term harvest and the range of desired species is present across all life stages.
- Locations that are highly valued for providing mahinga kai are accessible and able to be used to the extent desired and tikanga and preferred methods of harvest are able to be practised.
- All locations that are valued for providing mahinga kai have healthy mauri.

Applies to: Refer next slide

Note: the implementation methods for such objectives will require elements outside of the scope of the FLAG project.

Fishing and Food Gathering – Locations & Species

Applies to: surface water in:

- **Western coastal catchments** (Tukurua to Little Onehau?)-
 - whitebait species, tuna (eels)
- **Motupipi catchment**
 - whitebait species, tuna (eels), freshwater shellfish, koura
- **Takaka River**
 - whitebait species, tuna (eels), trout
- **Anatoki and Waingaro Rivers**
 - tuna (eels), salmon?, trout
- **Te Waikoropupu River**
 - ??
- **Motupipi and Waitapu Estuaries** (where affected by river outflows)
 - Estuarine shellfish??

[we should be seeking to both maintain and improve current species]

Fishing and Food Gathering – Attributes

The characteristics of water that are important for Fishing and Food Gathering:	Measured Attributes:
Fish and instream food are safe to gather and eat.	Number of sites with safe public access. E.coli levels in water Fish/shellfish flesh sampling for Faecal coliforms Risk Assessments where fish or instream food may be at risk
Traditional and valued spots for fishing and food gathering are accessible and protected.	Mapping of fishing and food gathering locations Assessment of safe public access.
Mahinga kai species are abundant and healthy.	Fish and other kai species surveys Surveys of iwi, hapu and other users
There is good flow, depth and clarity of water.	Visual Water Clarity (black or secci disc). Turbidity. Low velocity and depth/cross-section measurements. Low flow volume (may be derived).
The water does not contain contaminants.	Visual contaminant assessment – Films, scums, floatables. Chemical/physical/microbiological parameters used based on risk associated with various land uses or pollution events. Turbidity
The water does not contain human or animal wastes.	E.coli or Faecal coliforms in source water.
There is no overgrowth of algae or aquatic plants.	Periphyton (% Bed Cover - visual assessment). Cyanobacteria (% cover of bed – visual assessment). Dissolved Oxygen
The water has healthy Mauri.	Assessment of Mauri (via Cultural Health Index)

[there need to be national controls on whitebait limits]

Livelihood and Economic Use - Description

What this value means:

Water of sufficient quality and quantity is important for our farming, horticulture and tourism livelihoods and community wellbeing. It provides for **irrigation , stock water and economic opportunities for people, businesses and industries**. Water storage can improve security of supply.

Water quality and quantity would be suitable for irrigation needs, including supporting the cultivation of food crops, the production of food from domesticated animals, non-food crops such as fibre and timber, pasture, sports fields and recreational areas. Attributes will need to be specific to irrigation and food production requirements.

Water quality and quantity would meet the needs of stock, including whether it is palatable and safe.

*Water quality and quantity can provide for commercial and industrial activities. **If available and sustainable**. Attributes will need to be specific to commercial or industrial requirements.*

Livelihood and Economic Use Management Objectives

- There is an **acceptable security of supply achievable** for **existing** water users – in some areas and for some uses this may require water storage
- Water quality is suitable for the **existing** economic uses with **minimal or no** treatment:
 - Water used for irrigation meets the quality needs of **existing** farming and horticulture uses
 - Water used for stock water meets the stock water drinking standards and is palatable to stock
 - Water used for **existing** commercial and industrial activities meets the needs of ~~those~~ industries **with minimal need for treatment**
 - Water that is important for tourism activities meets the expectations of tourists, and meets primary contact (swimming) objectives where relevant

Applies to: All surface and groundwater currently used for irrigation, stock water, industrial and commercial uses and tourism activities.

[Water availability at certain times of the year, without extra storage, may be limited.]

~~[Economic uses cannot compromise the ecological health of the river]~~

[We need to consider future use in general (not specific uses)]

[Our focus should be on the most efficient users of water]

[What are the expectations of tourists?]

Livelihood and Economic Use - Attributes

The characteristics of water that are important for Livelihood and Economic Uses:	Measured Attributes:
Acceptable security of supply for existing users (with or without storage)	Flow regime, low flow, usage and demand monitoring, security of supply
<p>Water quality is suitable for existing or likely future use with minimal or no treatment.</p> <p><i>[tourism, eco-tourism, dairying, dry stock (beef, deer, sheep, goat), orchards, viticulture, fodder crops, forestry, bottled water, fishing, aquaculture]</i></p>	<p>E.coli / faecal coliforms/Enterococci Visual Water Clarity Odour (subjective odour types) Visual Colour (qualitative colour charts) Periphyton (% Bed Cover - visual assessment). Cyanobacteria (% cover of bed – visual assessment). Turbidity Nitrate Phosphorus Palatability to stock Industry dependent attributes Cost of treatment requirements</p>

Natural Form and Character- Description

What this value means:

The natural values of our water bodies connect us with nature. People seek out these natural areas as they provide tranquil and spiritual opportunities away from human development. Specific natural values include the sound of flowing water, healthy water and the life within it and the wildness and dynamic nature of our rivers and estuaries. The **headwaters in national park, and the karst/marble** landscapes and springs, in particular Te Waikoropupu, provide a special and unique quality to the Takaka catchment.

Matters contributing to the natural form and character of [freshwater] are its visual and physical characteristics that are valued by the community, including its flow regime, colour, clarity, morphology or location. They may be freshwater management units with exceptional, natural, and iconic aesthetic features.

Natural Form & Character Management Objectives

- The natural and physical characteristics of the water bodies **including within the karst and marble landscapes, and the spring systems (including Te Waikoropupu)** within the Takaka Catchments are protected.
- Water flows, ~~purity~~ **and quality from spring systems including Te Waikoropupu Springs, Takaka Oxbow, Springbrook and Spitalls Springs** are maintained.

Applies to: Te Waikoropupu Springs, Takaka Oxbow Spring, Springbrook Spring and Spitalls Spring **and ??**

[Additional sites could be determined through RiVAS and the Golden Bay/Mohua Landscape project on Outstanding Landscapes and Features [<link>](#)]

[add bush transition zones?]

Natural Form & Character - Attributes

The characteristics of water that are important for Natural Form and Character:	Measured Attributes:
<p>Natural characteristics are protected including: (where they exist naturally):</p> <ul style="list-style-type: none"> •Natural flow patterns •Sound of flowing water •Wildness of water bodies •Physical features of water body, including karst and marble features, and Springs •Healthy water and the life within it •Dynamic nature of water bodies •Shape of river bed and channel •Riparian Vegetation •Water Quality •Man-made structures in and adjacent to the riverbed 	<p>Flow regime Mapping of karst, marble and spring features and assessment of risk Macro-invertebrate indices (eg MCI). Freshwater fish abundance and diversity. Riparian Vegetation Assessment. Stream habitat score. Visual Water Clarity (black or secci disc) Turbidity. Visual Colour (qualitative colour charts) Periphyton (% Bed Cover - visual assessment). % cover of fine sediment on the stream bed. Assessment of Mauri (via Cultural Health Index) Number of man-made structures in reach</p>

Recreation-Description

(compulsory for secondary contact under NOF)

What this value means:

Swimming, fishing, kayaking and tramping are important recreational activities undertaken in the Takaka Catchment. Recreation is important for well-being. It provides enjoyment and refreshes the mind and body. It is an important social activity, particularly for families and those with favoured traditional spots for swimming or fishing. Freshwater used for recreation poses **no more than a moderate risk of infection**.

As a minimum, the [freshwater] will present no more than a moderate risk of infection to people when they are wading or boating or involved in similar activities that involve only occasional immersion in the water. Other contaminants or toxins, such as toxic algae, would not be present in such quantities that they would harm people's health.

*In [freshwater] where a community values more frequent immersion in the water such as **swimming**, white-water rafting, ~~or water skiing~~, the risk of infection will be no more than moderate. In some [freshwater], the risk of infection to people undertaking any activity would be no greater than what would exist there under natural conditions.*

[how difficult would it be to keep the risk of infection at low?]

Recreation - Management Objectives

- ~~All~~ Surface waters listed on next slide are safe for swimming during the months Nov – April
- All surface waters are safe for secondary contact recreation.
- All surface waters used for a specific recreation activity are suitable for that use at the relevant time (refer next slide for list of uses and locations)

[add: at 'normal' flow, not during flood flows]

[why would it be difficult to achieve safe primary contact at all times of year?]

Recreation – Types and Locations

Specific Recreation Types	Applicable Water bodies	Time Recreation Occurs
Kayaking	Parts of the Anatoki, Takaka, Waingaro and Cobb Rivers	Site/flow dependent
Swimming	<p>Rivers: Takaka River (at Sh60, Reilly St, Kotinga, Top rocks, Paynes Ford, Lindsays Bridge, Blue Hole); Anatoki River (at One Spec Rd, Happy Sams)</p> <p>Beaches/Estuaries [potentially affected by freshwater flows]: Tukurua, Patons Rock, Pohara, Rangihaeata, Onekaka Wharf, Motupipi.</p>	~Nov-April
Recreational fishing (either for food or release)	Cobb, Takaka, Waingaro, Anatoki	?

[access is more of an issue than lack of fish in some areas]

[primary contact is of most concern]

Recreation – Attributes

The characteristics of water that are important for recreation (as relevant to different locations/times):	Measured Attributes:
There is sufficient minimum -water flow regimes at sites typically used for swimming- holes and kayaking boating that allow for these uses.	Flow depths and velocities (may be estimated).
The water is appealing (look, smell, taste). The water is clear and naturally coloured. The water smells and tastes pleasant.	Visual Water Clarity (black or secci disc) Odour (subjective odour types) Visual Colour (qualitative colour charts)
The water does not contain human or animal wastes. The water is suitable for swimming (primary contact).	Disease causing organisms: E.coli, Faecal coliforms, Enterococci
The water does not contain contaminants.	Visual contaminant assessment – Films, scums, floatables. Chemical/physical/microbiological parameters used based on risk associated with various land uses or pollution events. Turbidity
There are no unpleasant slimes or overgrowth of aquatic plants and algae.	Periphyton (% Bed Cover - visual assessment). Cyanobacteria (% cover of bed – visual assessment).
There is good natural flow, good depth and movement of water.	Flow velocity and depth/cross-section measurements. Low flow volume (may be derived).
The water has healthy Mauri.	Assessment of Mauri (via Cultural Health Index)
The water is accessible and available for use.	Number/spread of publically accessible sites.

Hydro-electric Power Generation - Description

What this value means:

Renewable energy generation through hydro-electric use of water is important for economic, as well as environmental reasons, ~~but needs to be balanced with aesthetic and ecological values.~~

Where freshwater is suitable for hydro electric power generation existing generation output shall be protected.

Hydro-electric power generation (au putea) – The [freshwater] is suitable for hydro electric power generation ~~(subject to provision for fish passage and design/control of discharge of anoxic water).~~

Water quality and quantity and the physical qualities of the [freshwater], including hydraulic gradient and flow rate, can provide for hydro-electric power generation. Existing generation output shall be protected.

[Wish to discuss Cobb management plan]

Hydro-electric Power Generation

Management Objectives

- Existing Hydro-electric power generation schemes are able to continue to generate electricity as needed ~~at this time~~ and existing generation output is protected. ~~the hydraulic gradients and flow rates required for generation are protected.~~
- The future potential for new micro and small scale hydro-electric power generation is ~~considered~~ provided for

[when current power surpluses reduce]

~~[where fish passage can be provided and where discharge of anoxic water is avoided]~~

Applies to:

Existing: Cobb R, Campbell Crk, Waitui Strm, Onekaka R, Rameka R, Gibson Crk, Ellis Crk, Wainui R

~~**Future Potential: ?**~~

~~[Will need to balance these various 'takes' against environment issues]~~

[Additional objective: More storage, less run-of-river if possible]

[Run of river schemes are preferable, storage schemes all need to be subject to minimum flow regimes which may limit generation.]

Hydro-electric Power Generation Attributes

The characteristics of water that are important for Hydro-electric Power Generation:	Measured Attributes:
The hydraulic gradients and flow rates existing generation output required for existing hydro-electric generation schemes are is protected.	Flow regime , usage and demand monitoring
Water quality is suitable for existing hydro-electric generation schemes .	Absence of debris or excess sediment/macrophytes/periphyton