

Freshwater Management Values and Aspirations for the Manuherekia Rohe

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Executive Summary

This report describes the values and aspirations held by mana whenua, the local community and stakeholders for the Manuherekia Rohe¹/Catchment. Its purpose is to inform freshwater management options for the rohe.

Information for the report comes from:

- two community consultations in August 2016 and September 2019;
- the Community Proposition developed by the Manuherikia Catchment Water Strategy Group in 2013; and
- a Kāi Tahu Cultural Values Report by KTKO/Aukaha in 2017.

Water is a scarce and highly valued resource in the catchment. It supports multiple and sometimes competing environmental, social, cultural and economic values. Some of these require water extraction while others depend on water remaining in water bodies.

Environmental values relate to the health, integrity and extent of the natural environment. People value a clean, clear, healthy river with sufficient and variable flow that supports:

- Ecosystem health, including diverse aquatic life
- Indigenous biodiversity and threatened species
- Natural form and character, and
- Retention or enhancement of remaining wetlands.

Social values are about the health and wellbeing of the community. People value:

- Water bodies that are safe and enjoyable for swimming, playing and kayaking
- A safe and secure supply of drinking water and
- Community wellbeing/hauora, including mental health.

Economic values enable the community's livelihood. A reliable and secure supply of water supports:

- Irrigation for farming, horticulture and viticulture
- Employment and prosperity
- Stock water
- Electricity generation and
- Tourism.

Cultural values are about ways of life and links to the past that people wish to preserve, including:

- Access to water bodies,
- Kāi Tahu values of mahika kai, place names, ara tawhito (trails) and quarry sites,
- Fishing,
- A broad range of other recreation, and
- Heritage sites.

Future aspirations for the catchment are diverse and not all compatible, so a range of scenarios need to be developed for further community consultation. This will inform the Regional Land and Water Plan and other non-regulatory interventions.

¹ A rohe is a sub-unit of a Freshwater Management Unit as defined by the National Policy Statement for Freshwater Management.

Some people would like the *status quo* to remain, with the environment remaining as good as it is now and a continuation of the current water management regime.

Environmental aspirations ranged from the natural environment remaining as good as it is now, to restoring the catchment back to its naturalised (pre-European) state. No one expressed a view that we should accept further decline. Most people would like a balanced approach that maintains or improves ecosystem health and the suitability of waterbodies for primary contact, whilst also supporting social and economic values.

Future environmental outcomes that people would like include:

- More clean, clear water flowing in the river
- Improved habitat for indigenous and sports fish
- Less nuisance weed and algae
- A reverse in the decline of some threatened species
- Protecting or restoring remaining wetlands.

Social outcomes sought include:

- Improved water quality and flow for primary contact (e.g. swimming, kayaking, playing)
- A more consistent supply of safe drinking water
- Community wellbeing
- Resilience to climate change
- Improved information on and understanding of freshwater management and primary production within the rohe.

Economic outcomes sought:

- A secure, reliable supply of water for irrigation and stock to underpin employment and prosperity in the district.
- For irrigation people would also like:
 - o increased equity between users
 - o more efficient use of available water
 - an increase to the irrigated area.
- Ongoing tourism.

Cultural aspirations include:

- Principles of stewardship and kaitiakitanga
- Improved access to water bodies
- Ongoing fishing and other recreational opportunities
- Mahinga kai values maintained and enhanced.

Methods proposed to facilitate these aspirations include:

- Improved infrastructure for:
 - water storage
 - o urban wastewater.
- Reduced water extraction
- Better management of land-use intensification, including urban growth
- Improved land management practices for water quality
- Removing trout from some reaches to enhance indigenous biodiversity.

Two key issues will need to be resolved to sustainably manage water within the rohe:

• Bottom lines and limits for water abstraction and discharges

• How to fairly distribute water and discharges between users within these limits.

Potential scenarios for future management of the rohe/catchment include:

- the status quo;
- holding the line (no further decline in natural values),
- naturalised flows; and
- integrated catchment management that seeks to find balance between competing instream and out-of-stream values.

Options and issues related to increased water storage and transfer of water into or out of the rohe also need to be considered.

1. Introduction

1.1 Purpose

This report describes the values and aspirations held by mana whenua, the local community and stakeholders and for the Manuherekia Rohe/Catchment. Its purpose is to inform freshwater management options for the rohe.

1.2 Regulatory context

The Manuherekia catchment is one of five rohe within the Clutha-Mata-au Fresh Water Management Unit (FMU) (see **Appendix 1**). The Otago Regional Council (ORC) is undertaking full review of the Regional Plan Water for Otago (Water Plan) to be notified by December 2023. The review will include specific provisions for the Manuherekia Rohe to be developed by December 2021.

Under the current National Policy Statement for Freshwater Management (NPSFM)² regional councils are required to set freshwater objectives and limits for water use, including discharges and takes, within an FMU or part of it (e.g. rohe). At a minimum, these must maintain or enhance the two compulsory national values of ecosystem health and primary contact and phase out over allocation. The draft NPSFM (2019) (pNPSFM) indicates that Te Mana o te Wai and ecosystem health should underpin limit setting.

Te Mana o te Wai is an integral and underpinning aspect of water management under the NPSFM. Upholding Te Mana o te Wai acknowledges and protects the mauri of water and recognises that the health and wellbeing of freshwater bodies is vital for the health and wellbeing of our land, resources and communities.³

In addition to the compulsory values (ecosystem and primary contact) and attributes defined by the NPSFM; objectives and limits are based on discussions with the community and mana whenua regarding their values and objectives for an FMU or rohe.

1.3 Background on the Manuherekia Catchment

The Manuherekia River flows from its headwaters in the Hawkdun, St Bathans and Dunstan mountain ranges over 85 km in a south-west direction towards Alexandra where it joins the Clutha Mata-Au River (see **Appendix 2**). Its catchment spans an area of 3,033 km². The larger tributaries of the river include the Dunstan, Thomsons, Lauder and Chatto Creeks, and Ida and Pool Burns. The catchment is made up of two main valleys; the Manuherekia in the west and the Ida to the east, which are divided by the Raggedy Range. There are four aquifers and groundwater management zones (GMZ) within the catchment: the Manuherekia and Ida Valley GMZs, the Manuherekia Alluvium Aquifer (connected to surface water in the Manuherekia main stem) and the Manuherekia Claybound Aquifer. The catchment also contains 11 Regionally Significant Wetlands below 800 m, which are listed in the Regional Plan: Water.⁴

The climate of the Manuherekia catchment is characterised by cold winters and warm, dry summers. Rainfall in the region is low, with an annual median between 350 and 500 mm in the valley floors and up to 1,000 mm in the surrounding ranges.⁵ The area is dominated by pasture grasslands on the flat and

² NPSFM 2014 (amended 2017) <u>https://www.mfe.govt.nz/publications/fresh-water/national-policy-statement-freshwater-management-2014-amended-2017</u> accessed 11/11/19.

³ Ibid.

⁴ RSW are listed in Schedule 9 of the Water Plan and protected. Any wetland above 800 m is also regionally significant and protected.

⁵ Olsen et al. (2017). *Management flows for aquatic ecosystems in the Manuherikia River and Dunstan Creek*. Dunedin: Otago Regional Council.

gently sloping land, while tussock grasslands are common in the higher country. Below Falls Dam, introduced willows, grasses and shrubs dominate.

Historically, the catchment supported mahinga kai,⁶ Māori transport and trade routes, gold mining and extensive pastoral farming of sheep and beef. The valley was an important area for summer seasonal food gathering and processing by Kāi Tahu whānau and hapū. This is reflected in the valley's name; Manuherekia meaning to catch or snare birds. There are many other place names in the rohe that are significant for Kāi Tahu.⁷

Water from the river, tributaries and aquifers is used for irrigation, town water supply to Omakau and Ophir, individual domestic supplies and stock drinking water. Approximately, 23,162 hectares of land in the catchment is irrigated.⁸ It is estimated that about 60,000 hectares in total are suitable for irrigation, if additional water were made available (through storage or access to an alternative source).⁹

In the past decade, land use in the catchment has intensified with an increase in dairy farms, vineyards, lifestyle block development and urban growth. Demand for water has subsequently increased. The Central Otago Rail Trail, tourism and recreation activities (including fishing, food gathering, kayaking, walking, biking, picnicking, camping and hunting), also benefit from the physical, historical and aesthetic qualities of the river, its tributaries and surrounds.

The catchment has a long history of water use, thus flows and distribution of water are highly modified. Water races were originally built to sluice for gold and these races along with natural water courses (both tributaries and the mainstem) are now used to convey water for irrigation, stock water and domestic supplies. This has resulted in the creation of an expansive and complex distribution network to move water throughout the catchment. Several reservoirs were built to capture water in the upper parts of the catchment. The Poolburn and Manorburn Reservoirs provide water to Ida Valley and Galloway. Falls Dam in the upper catchment of the Manuherekia River mainstem, is the largest reservoir in the catchment and supplements takes along the mainstem. Most of the water taken from the catchment is distributed through six major irrigation schemes. In addition to these schemes there are also various private water takes and a small number of community supplies.

The catchment supports important habitat for indigenous and introduced species, particularly indigenous biodiversity in some of the tributaries and the braided mainstem above Falls Dam. Indigenous freshwater species include bullies, nationally threatened galaxias, and at-risk species of longfin eel (tuna) and koura/crayfish. Non-migratory galaxias species are endemic to the area and highly valued. Sport fish include brown trout, rainbow trout, brook char and perch. The catchment vegetation supports a diverse invertebrate community, as well as significant lizard species, including Scree Skinks (nationally vulnerable) and Green Skinks (at risk). The braided upper mainstem, along with streams, ponds and reservoirs throughout the catchment provide nesting and foraging habitat for a diverse array of birdlife, including at-risk or vulnerable birds such as banded dotterels, wrybill, black-fronted tern, pied stilt and oyster catchers.

2. Method

This report has been informed by multiple sources, including:

⁶ Mahinga kai refers to traditional Māori food and resource gathering and the knowledge associated with these practices.

⁷ Clucas, R. (2017). *Cultural Values Report for the Manuherekia Catchment*. KKTO.

⁸ Based on data researched and provided by Aqualinc (2018), (ORC Doc. #A1346305).

⁹ Manuherikia Catchment Water Strategy Group (2013). *Manuherikia Valley Water. A Community Approach to Water Use and Management*. <u>https://www.mcwater.co.nz/ManuherikiaCatchment/files/7c/7c33b602-95d1-4bfd-9e6d-c7c01f830271.pdf</u> accessed 3/10/19.

- community consultations by the ORC in August 2016 (see Appendix 2) and September 2019;
- a Kāi Tahu Cultural Values Report by KTKO/Aukaha consultancy in 2017;
- the Community Proposition developed by the Manuherikia Catchment Water Strategy Group (MCWSG) in 2013; and
- discussions by the Manuherekia Reference Group.

2.1 2019 community consultation

The most recent consultation was in September 2019. To encourage community involvement, it was widely publicised in the catchment's towns and rural areas with advertisements in local papers and on local radio; a brochure sent to nearly 3,000 local letter boxes, invitations to attendees of previous consultations, online updates and posters.

Respondents were asked two key questions:

- What do you value or love about the Manuherekia Catchment?
- What would you like to see in the future for the catchment?

People responded by:

- attending drop-in sessions to discuss and note responses on large maps of the rohe
- providing online feedback
- returning a feedback form from the mailed brochure, or
- visiting an ORC stall held at the annual Blossom Festival in Alexandra.

ORC also consulted with a class of Year 7 and 8 students at St Gerard's School in Alexandra using the same maps as for the drop-in sessions.

All the responses were collated and summarised to inform this report, which also incorporates findings from the 2016 consultation and the KTKO and MCWSG reports.

More detail on respondents to the 2019 consultation is in Appendix 4.

3. Values and Aspirations

This section summarises the values and aspirations held by mana whenua, the local community and other stakeholders for the Manuherekia Rohe.

3.1 Values

Respondents and reports identified environmental, social, economic and cultural values within the catchment.¹⁰

3.1.1 Environmental

Environmental values are about the health, integrity and extent of the natural environment, these include:

- Ecosystem health
 - Flow
 - Enough water in the river and tributaries to support healthy aquatic life and habitat for biodiversity.
 - A full, clear running river. A biologically living and healthy waterway.
 - Water quality

¹⁰ Note these groupings were made by ORC staff during analysis.

A clean, clear, healthy river that allows life to thrive with adequate flushing flows to clear accumulated weed and algae/slime.

- Indigenous biodiversity and threatened species are valued including:
 - freshwater fish (tuna/eel and koura) and invertebrates
 - manu/ birds
 - lizards, and
 - dryland ecosystems and plants.

See **Appendix 5** for more information on species, threat status and location within the catchment.

- Natural form and character is valued with people appreciating:
 - the beauty of the river, streams and surroundings for their naturalness, peacefulness and cleanliness
 - Clean, healthy waterways that are rubbish free
 - the naturalness of the braided main stem in the upper catchment is particularly valued both for its aesthetic qualities and because it supports mahinga kai and biodiversity, including habitat for threatened indigenous birds, lizards and fish
 - the distinctive surrounding landscapes; natural/undeveloped areas, open space and the dryland vegetation of the surrounding hills and mountains.
- Remaining wetlands are also valued.

3.1.2 Social

Social values are about the health and wellbeing of the community:

• Primary contact

Water bodies that are safe and enjoyable for swimming, playing and kayaking.¹¹ This means that:

- they don't get sick after contact
- there is enough water flowing for the activity
- water is clean and clear, and
- there is not too much slime and weed on the riverbed.
- Drinking water
 - water that is safe and pleasant to drink
- Community wellbeing
 - ensuring community wellbeing/hauora, including mental health.

3.1.3 Economic

Economic values enable the community's livelihood. A reliable and secure supply of water supports:

- Employment and prosperity in the district
- Irrigation:
 - irrigation schemes are valued for their flexibility and community ownership
 - water available for horticulture, viticulture, local food production and lifestyle blocks
 - *efficient use* of available irrigation water is important so that it can be more fairly and widely distributed and to minimise the negative environmental effects of too much extraction.
- Water for stock is essential for farmers to ensure animal wellbeing.
- Electricity generation water from the catchment contributes to the Roxburgh Dam.

¹¹ In addition to NPSFM attributes for Primary Contact (i.e. *E. coli* & cyanobacteria), **flow** is also relevant for swimming and kayaking.

• Water in the river and tributaries, and for productive and social uses supports tourism.

3.1.4 Cultural

Cultural values reflect ways of life and connections to the past that people would like to continue into the future; within the rohe these include:

- Access, including access over private land, which is key enabler for other cultural values.
- Kāi Tahu cultural values include:
 - mahinga kai including tuna/longfin eel and koura species
 - place names for the links they provide to tipuna and stories of the past
 - ara tawhito (trails), including rock shelters and seasonal occupation sites
 - historic quarries.
- The water bodies and their surrounds support a diverse range of recreational activities that are valued by locals and tourists, including walking, cycling, camping, hunting, boating, rowing, horse riding, observing nature, playing, ice skating and curling.
- Fishing is valued recreation throughout most of the catchment including:
 - along the Manuherekia River mainstem below Falls Dam,
 - in reservoirs Pool and Manor Burns are popular still water fisheries, while Falls Dam is less popular, all have long established fishing huts
 - Dunstan Creek and the Upper Manuherekia above Falls Dam are valued for backcountry fishing
 - people also fish in tributaries where adult trout occur, e.g. Ida Burn.
- Heritage
 - historic bridges and water races are valued for the links they provide to the past and previous generations.

3.2 Aspirations

The second question explored is what future aspirations people have for the catchment.

Some people indicated that they would like the 'status quo' to remain; with the environment staying 'as good as it is now' and for the current management of irrigation and water use to continue. This option is discussed in section 4.2.1.

3.2.1 Environmental

Many people would like environmental improvements, including more water in the river, increased habitat for indigenous biodiversity and sports fish, improved threat status of threatened species, and clearer, cleaner water. Some respondents thought that while this would be desirable, it was secondary to ensuring ongoing irrigation and the employment, prosperity and wellbeing it enables for the wider community.

Ecosystem health

Ensuring ecosystem health into the future is important to the community and mana whenua. Many respondents stated this view, and no one disputed it.

Many people would like to see more water flowing in the river and tributaries because they thought this would improve water quality and habitat for indigenous biodiversity. Most people did not indicate a specific location for increased flow, however a few said they would like this close to the Clutha confluence and in the Ophir Gorge for kayaking.

Other people wanted current flows and water quality maintained as they thought it was fine.

Desired future states ranged from maintaining current environmental health to restoring the catchment and its waters and biodiversity back to pre-European states, with most people wanting a balance that would support the health of freshwater ecosystem along with social and economic values.

Indigenous biodiversity and threatened species

Indigenous fish (Eels/tuna and galaxiids most commonly mentioned) and indigenous birds were valued, both for their intrinsic and mahinga kai values.

Kāi Tahu would like the extent and integrity of remaining wetlands to be protected and enhanced due to their importance for water retention and quality, and for the habitat they provide for indigenous and mahinga kai species.

Natural form and character

The local community and mana whenua want to retain, and where possible enhance, the naturalness, beauty and distinctive landscapes of the catchment's water bodies and surrounding areas. This is especially important in the upper catchment above Falls Dam, which is the least modified area of the catchment. For Kāi Tahu retaining the braided character in the upper catchment is critical; due to its aesthetic qualities and the indigenous biodiversity it supports (e.g. threatened plants, birds and lizards).

Some respondents indicated that increased flows would better support the natural form and character of the river and tributaries as would riparian planting of indigenous species, which would also improve water quality.

Climate change

Adaption to future climate change (i.e. a hotter, drier climate with greater extremes) needs to be considered and future resilience planned for. Diversity of primary production and income sources (e.g. tourism), along with increased storage of water was proposed to support resilience.

Land use

Concerns were expressed about land use intensification and its negative effects on water quality. Limits and controls on some activities and improved management of run-off were suggestions to better manage these effects.

Some people do not want an increase in areas that are irrigated because they are concerned about potential effects on the natural dryland landscapes and indigenous species and ecosystems that are well adapted to dry conditions, but unlikely to survive in irrigated areas.

Riparian planting with indigenous vegetation and improved management of land and water-based pests and weeds were suggested as ways to improve water quality and the natural character of land- and riverscapes.

3.2.3 Social

Human contact

Water that is safe for human contact (particularly swimming and kayaking) was by far the most cited social value that respondents would like to see in the future. *E. coli* and toxic algal blooms (cyanobacteria) were the contaminants that would detract from this value. In addition to good water quality, some people thought that higher flows during the summer months¹² would improve conditions for swimming and paddling, as would clearer water and less weed and rock slime.

Drinking water

An ongoing supply of safe, clean and healthy drinking water is valued by the community. Any future management regime needs to be cognizant of population growth, which is likely to increase future demand. In the long term, mana whenua would like to see water quality in the river improved to a potable standard as it was before Pakeha settlement and development.

Community wellbeing

There are some concerns that changes to water management in the rohe may undermine community wellbeing. People are particularly concerned about the mental health of rural people who could be under increased financial pressure as a result of any changes. It is therefore important that people who are negatively affected by any changes have access to social and professional support, and that any changes are implemented within realistic time frames that allow time for people to adapt their practices.

Urban discharges and growth

It was noted that urban growth within the district is increasing. Forward consideration of the implications of ongoing urban growth and adequate infrastructure provision to support this is required.

Some local people and mana whenua would like improved management of wastewater discharges at Ophir. Discharging wastewater to the river is objectionable to Kāi Tahu and others. Many people see the current system as inadequate due to frequent contamination of the Manuherekia River due to flooding of the treatment ponds, which are in close proximity to the river.

Equity and allocation

Some respondents indicated that improved fairness and equity of water distribution between consumptive users is required. This includes equity across rural and urban uses and across different types of primary production and property types (e.g. people on lifestyle properties). Other people would like existing water rights to be maintained as land value is reliant on water being available for irrigation and stock.

Education

There was value seen in improving understanding (particularly by urban residents) of:

- food and fibre production and the benefits it brings locally and nationally;
- how the good management of Falls Dam and irrigation schemes contributes to the health of the river through the summer months by allowing minimum flows to be maintained; and
- the science of the rohe.

¹² Current recreational water quality guidelines apply from 1 December to 30 March.

Monitoring and reporting

Good decision making depends on good information. Having quality, timely and relevant information available to the community would enable transparency and help to ensure residents are well-informed about trends in flows, water quality, land use and indigenous biodiversity.

3.2.4 Economic

Irrigation

The ongoing ability to irrigate was important to some people along with certainty of supply for future planning and reliability of supply over summer. Some noted that improved efficiency in the use of irrigated water would help to facilitate ongoing irrigation. Being able to irrigate for diverse purposes (e.g. farming, stone-fruit and vineyards) was valued by some, as this would increase local food production and economic and environmental resilience, thus enhancing the character and attractiveness of the area for local and tourists alike.

Employment and prosperity

Some commented that water use for irrigation underpins employment and prosperity in the wider community and noted that any restrictions in water use could negatively impact wider community wellbeing.

<u>Tourism</u>

The Central Otago Rail Trail along with other heritage sites attract tourists and visitors to the area. Retaining the rohe's natural character, along with access and opportunities for recreation generally are conducive to tourism.

3.2.4 Cultural

Stewardship and Kaitiakitanga

The principles of stewardship and <u>Kaitiakitanga</u> over land, water and other resources was common across consultations and reports.

This was expressed by local people and in the Community Proposal by the MCWSG.

A future where we can all be proud of the way we look after our wonderful environment.

I want to be able to share the Manuherekia with my grandchildren and to be proud of the qualities I have promoted.

Mana whenua have a distinct role as kaitiaki of the area that is enshrined in Te Tiriti o Waitangi and the RMA. Article II of te Tiriti guarantees mana whenua rangatiratanga (authority) to continue to exercise kaitiakitanga over their lands, waters and other taonga.

Kaitiakitanga is integrated with the spiritual, cultural and social life of mana whenua and people are considered within the concept of environment. It is holistic across land and sea; locally defined and exercised; focuses on authority and responsibility rather than ownership; and is concerned with both sustainability of the environment and the utilisation of its benefits. ¹³

The RMA (section 2) defines kaitiakitanga as the exercise of guardianship by mana whenua in accordance with tikanga Maori in relation to natural and physical resources; and includes the ethic of stewardship.

¹³ <u>http://www.environmentguide.org.nz/issues/marine/kaitiakitanga/what-is-kaitiakitanga/</u> accessed 15 April 2020.

Section 7 of the RMA requires that decision-makers *have particular regard to (a) kaitiakitanga; and (aa) the ethic of stewardship,* while section 8 requires that the principles of Te Tiriti o Waitangi are taken into account.

<u>Access</u>

Both local communities and mana whenua value access to the river, its tributaries and wetlands for cultural and recreational purposes (as described in Section 3.1.4). Access over private land can be difficult and ma whenua and others would like improved access to some water ways (specific locations not noted).

A river corridor that links the community to the river and its environs.

Recreation

Ensuring ongoing recreational opportunities, such as opportunities to walk, bike, camp and picnic close to waterways, is valued by local communities and mana whenua.

<u>Mahika kai</u>

The lower Manuherekia River is of traditional importance to Kāi Tahu for seasonal summer encampment for mahinga kai. They would like to retain and reinvigorate access to the river to prevent further loss of Mātauranga (customary knowledge). Species of import to Kāi Tahu include Tuna (long fin eel), koura (freshwater crayfish) and kakahi (freshwater mussels) among others.

Fishing

Fishing is valued recreation throughout the catchment, which people would like to continue in the future, including along the Manuherekia River mainstem, in the reservoirs, Dunstan creek and some tributaries.¹⁴

3.3 Management Approaches and Solutions

Some respondents contributed ideas about approaches to management and practical solutions.

3.3.1 Integrated management

Some people favoured *long-term sustainability* or a *balanced approach* to managing land and water in the rohe. Integrated management promotes a holistic approach to managing environmental systems through a goal-oriented, strategic process, which emphasises interaction between different stakeholders to generate solutions¹⁵. This would involve all stakeholders working together to find viable, pragmatic solutions that work on the ground.

3.3.2 Local management

Some people would like local management with local input into the priority issues to be resolved within the catchment or decision-making devolved to local users. At a minimum, people wanted *A say for the locals* and for ORC to *listen to the farmers*.

Let local people sort out their own water solutions.

¹⁴ See Section 3.1.4 (p. 10) for a more detailed description of specific fishing values and locations.

¹⁵ Margerum & Born (1995). Integrated environmental management: moving from theory to practice. *Jn of Environmental Planning & Management, 38.* Pp.371-391.

3.3.3 Management Solutions

<u>Storage</u>

Storage was the most cited enabler people would like in the future. This was proposed as a path to winwin outcomes for the community's environment and economy. Many wanted increased storage so that primary production could continue along with environmental improvements, or at least without adverse environmental effects. Several people would like winter harvesting of water at high flows and on-farm storage to supplement larger schemes. Falls Dam was by far the most frequently mentioned location for increased storage, although water transfer from Lake Dunstan was another option suggested.

Some believed that with greater storage it would be possible to:

- maintain environmental values while increasing the irrigated area and productive capacity of the rohe; or
- maintain current levels of irrigation and reliability while increasing flows in the river and streams to ensure resilience in the face of a hotter, drier climate with more extremes.

Kāi Tahu, along with some local people and other stakeholders have concerns about the negative impacts that increased storage could have on environmental values in the upper catchment, such as natural character, biodiversity and threatened species. The area above Falls Dam has considerable value in this regard so not everyone is in favour of increasing the dam's height.

Land use and water quality

Some people would like improved management of discharges from the waste water treatment plant at Omakau and from farming activities (i.e. sediment, nutrients). Limiting further intensification, excluding stock from water ways and riparian planting were put forward as ways to help address rural discharges, thus improving water quality for ecosystem health and human contact.

Several people mentioned that removing didymo would improve in water quality. While this may not be feasible, flushing flows could help to manage the accumulation of weed and algal (slime) growth over time.

Biodiversity

Some participants would like to see trout removed from some reaches of the river and streams to protect native fish. Some reaches could then be managed for indigenous fish (particularly tributaries for non-migratory galaxiids), while other areas could be managed for sports fishing.

4. Discussion

This section discusses key issues, scenarios and next steps emerging from the values and aspirations for the Manuherekia Rohe.

4.1 Issues

4.1.1 Water is highly valued to support multiple values and demand is increasing

Water is a highly valued and frequently scarce resource in the Manuherekia Catchment. Several factors contribute to its scarcity including the semi-arid climate in the valley floors, land use intensification and increased demand for water to support a wide variety of current and emerging values. Some of these values, such as fishing, recreation and ecosystem health, rely on having enough water in the river, streams and reservoirs (i.e. non-consumptive values), while other (consumptive) values rely on the ability to abstract water on a secure and reliable basis. The ability to discharge contaminants to water is a

further use that has direct implications for water quality. In developing scenarios for the future of the Manuherekia Catchment consumptive, non-consumptive and discharge values need to be provided for. We also need to determine where within the catchment, and at what times of the year, water is most valuable.

Water quality and land use is an important part of the picture. The community and mana whenua want clean, clear water that is safe and pleasant to drink, swim, play and gather food in. To help realise these aspirations, best practice land-use practices in primary production will need to be supported, incentivised and/or regulated for.

People also want to maintain or enhance the natural environment of the rohe, including improving the habitat available for indigenous biodiversity, preserving the unique riverscapes and landscapes and ensuring water quality in rivers and streams for ecosystem health and human contact.

4.1.2 Water is a limited resource and bottom-lines need to be clearly defined

To provide for a future that supports catchment values and gives effect to the NPSFM, it is essential to set environmental limits in the rohe for water takes, variation in flow and discharges to water. While the NPSFM sets limits for water quality to support the compulsory national values of ecosystem health and human contact, no national bottom-lines for water takes and flows have been set. Therefore, based on the best available science, mātauranga Kāi Tahu and local knowledge; ORC along with mana whenua and stakeholders need to determine bottom-lines and limits for water takes and flows.

4.1.3 Criteria are required to assess how water is shared across different users and values

Once clear limits have been determined, we will consider if criteria should to be developed to assess how the available water resource is shared between users in a way that is equitable, efficient and effective. While some water users want to retain existing water use rights, this would likely inhibit new users and diversification that may support resilience to climate change.

4.2 Implications for developing freshwater management scenarios

Mana whenua, the local community and other stakeholders hold a diverse range of aspirations for the future of the rohe. These are not all compatible, so a range of different scenarios need to be developed.

In developing freshwater management objectives and scenarios there are two critical elements:

1. Limits and bottom lines for water abstraction and for discharges to freshwater; and

2. Within these limits, a fair system to allocate available water and discharges between water users.

4.2.1 Limits and bottom lines

The NPSFM requires that limits are set to address over allocation and maintain or enhance water quality for ecosystem health, primary contact and any other values that are important to the community and mana whenua. Science and mātauranga Kāi Tahu will play a key role in determining appropriate limits.

There are diverse views on what the limits and bottom lines for managing fresh water in the Manuherekia Rohe should be. These range from the natural environment remaining as good as it is now, to improvements in the natural environment, to restoring the catchment back to its naturalised, pre-European state. No one expressed a view we should accept further decline of the natural environment. Most people want a balanced approach that retains or improves ecosystem health, and the suitability of waterbodies for primary contact, whilst also supporting social, cultural and economic values.

This leads us to four or five possible options for limit setting:

1. Status quo

The RMA (s.32) requires that the status quo option is considered. This option will need to be clearly defined however. Respondents who would like the status quo said that they would like the environment to stay as good as it is now and for the current water management regime to continue. Existing trends in ecosystem health, the threat status of indigenous species and water quality suggest that some aspects of environmental quality are declining under the current management regime. Under the NPSFM, water quality and indigenous biodiversity need to be maintained or enhanced, which suggests the current situation is not a viable option.

2. Holding the line

No further decline in water quantity and quality for the values of ecosystem health and primary contact. A change in freshwater management would be required to achieve this objective as in some reaches attributes that support ecosystem health and primary contact are declining and/or below national bottom lines.

Options 1 and 2 will likely be problematic for Kāi Tahu and others who aspire to improve the quality of the natural environment, the state of threatened indigenous species, and cultural values.

3. Restoration to naturalised state

This option would:

- aim to bring about the greatest improvement in the quality of the natural environment
- require the greatest change in land and freshwater management practices
- incur the greatest fiscal cost, and
- negatively affect social and economic values for the community.

This option may not result in the best outcomes for indigenous biodiversity as increased flows are likely to facilitate further encroachment of salmonid species into the habitat of threatened species, such as galaxias.

4./5. Integrated catchment management

In between options 2. and 3. above, we could develop at least two different bottom-line scenarios for integrated catchment management that aim to balance environmental, social, economic and cultural values, by seeking improvements in environmental and cultural values, whilst minimising impacts on social and economic values.

4.2.2 Fair distribution of freshwater resources between users

The second issue to resolve is what constitutes a fair system to allocate available water and discharges between water users, within limits and bottom lines. Water within the rohe is currently over allocated and deemed permits expire in 2021, so an alternative model to replace the current system is required.

Some people would like the use of water resources (takes and discharges) to be more fairly distributed amongst different users in the catchment. Current distribution of takes is based on the first-in-first-served principle, with historic prioritisation based on deemed permits for water takes. This does not encourage efficient use of water or readily enable diversification of production and uses, which could help to ensure resilience to climate change.

A useful next step would be to develop criteria and a process for a fair system to allocate water takes and discharges between users. Allocation of water to user groups with local management of distribution between users is likely to be part of the solution.

4.2.3 Inclusion of water storage options

Many people wanted increased storage within the catchment to facilitate ongoing water use. The most frequently proposed solution was to increase the height of Falls Dam. Other suggestions were:

- diversion of water from Dunstan Lake;
- winter harvesting of water at high flows; ¹⁶ and
- on-farm storage to supplement larger schemes.

The MCWSG has undertaken feasibility studies that indicated raising Falls Dam would be the most efficient and effective water storage option to enable an increase in irrigated area. Trade-offs with this option need to be considered and managed however. The area above Falls Dam has considerable indigenous biodiversity, natural character and cultural values that are likely to be negatively affected by raising the dam. Furthermore, an increase of the irrigated area within the catchment is likely to negatively impact dryland ecosystems and may also detract from its natural character.

Further discussion is required to identify preferred options for increased storage along with the cost, advantages and disadvantages of each option.

4.3 Questions for discussion

- 1. How can we protect the quality and integrity of the rohe environment while also providing for public and private use and enjoyment of water resources?
- 2. What environmental bottom lines (i.e. for takes, in-stream flows and discharges) are necessary to retain the mauri (Te Mana o te Wai) and ecosystem health of the river, its tributaries and environs?
- 3. Above these environmental bottom lines, what trade-offs best reflect community aspirations and preferences?
- 4. What scenarios emerge from the values, aspirations and implications identified in this report?

¹⁶ Storage location not specified.



APPENDIX 1: Freshwater Management Units and Rohe within the Otago Region



APPENDIX 2: Map of the Manuherekia Catchment/Rohe

Note: The inset box shows the catchment's location within the Otago region.

APPENDIX 3: Summary of 2016 community consultation

In August 2016, ORC held six public drop-in sessions in Omakau, Oturehua and Alexandra. In total, approximately 200 people attended these sessions.

Respondents were asked four questions on feedback forms:

- What is important to you about the Manuherikia River, its tributaries and the aquifers within the catchment?
- Do you have any concerns about the current state of the river and its tributaries and aquifers? If so what are they?
- The ORC needs to set minimum limits and flow/s in the catchment. What should the ORC consider when setting these limits?
- Have we missed anything that is important to you that you would like to add?

People could also respond online, via email, by post or verbally at the drop-in sessions.

Four key groups of values were identified during this consultation, with more specific values identified within each group:

- 1. Recreation
 - Swimming
 - Fishing
 - Kayaking, white water, boating
 - Floating, playing, wading
 - Picnics, BBQs, camping
 - Duck shooting, hunting.
- 2. Use
 - Irrigation
 - Domestic drinking
 - Animal drinking water
 - Tourism.
- 3. Environmental
 - Character, flow, form, landscape
 - Water quality
 - Ecosystem health
 - Aquifer replenishment
 - Freshwater species habitat.
- 4. Community and cultural
 - Iwi values, lifeblood, spiritual
 - Community, family values
 - Mahika kai /food gathering.

Figure 1: Relative importance of values identified in the 2016 community consultation



APPENDIX 4: Respondents to 2019 community consultation

Drop-in sessions

ORC staff and councillors ran four community consultation sessions at:

- Omakau on 26 September at 12.30 and 7.30pm; and
- Alexandra on 27 September at 12.30 and 4pm.

Groups of participants gathered around large maps of the Manuherekia catchment and discussed two key questions:

- what they *valued* about the catchment currently; and
- what *future outcomes* they would like to see for the catchment and its community.

Approximately 120 people attended these sessions.

Online consultation

54 responses were received on YourSay.

<u>Mail out</u>

Information on the community consultation was delivered by mail to nearly 3,000 households in the area. The brochure delivered had a form that could be returned by mail. 14 responses were received on the brochure feedback forms.

APPENDIX 5: Threatened Freshwater and Avian Species in the Manuherekia Catchment

Species	Threat status ¹⁷	Location
Freshwater fish		
Manuherekia alpine galaxias	Nationally endangered	
Central Otago roundhead galaxias	Nationally endangered	Dunstan Creek
Clutha flathead galaxias	Nationally critical	Manor Burn (species D)
Kanakana /lamphrey	Nationally vulnerable	
Tuna/ Longfin eel	At risk: declining	
Каого	At risk: declining	
Koura/ freshwater crayfish	At risk: declining	
Birds		
Black fronted tern	Nationally critical	
Black billed gull	Nationally critical	
Tuakitoto/ grey duck	Nationally critical	
Banded dotterel	Nationally vulnerable	
Torea/ South Island pied oyster catcher	At risk: declining	
Black shag	Naturally rare	

¹⁷ According to the NZ Threat Classification System (2002).



Galaxias aff, paucispondylus "Manuherikia" Galaxias "species D"

Galaxias aff. paucispondylus "Manuherikia" - subcatchments Galaxias "species D" - subcatchments

NZGD 2000 New Zealand Transverse Mercator

NZGD 2000 New Zealand Transverse Merca Not for publication nor navigation Crown Copyright Reserved, NZFFD point data of fish locations - NIWA REC catchments - NIWA Scale at A4 = 1:444,910 Produced by: ndunn Date Produced: 22/08/2019 DOC, Freshwater Team, Biodiversity Unit



¹⁸ Source: Dunn, N., 2019, "Otago Regional Council flow setting process: Manuherikia River catchment – preliminary freshwater values desktop assessment", Department of Conservation, DOC-2854353.