Developing a freshwater management framework for the Upper Lakes rohe

STAGE 1 COMMUNITY CONSULTATION - OVERVIEW REPORT OF FEEDBACK RECEIVED (JANUARY 2022)

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Contents

1.Introduction

1.1 Purpose of the Report

This report summarises the results from the first stage of community consultation undertaken to develop a planning framework for managing freshwater in the Upper Lakes Rohe.

1.2 Regulatory context

In 2019, Otago Regional Council (ORC) committed to develop and notify a new Land and Water Regional Plan (LWRP), that gives effect to the National Policy Statement for Freshwater Management 2020 (NPSFM) by 31 December 2023. [1]

Under the NPSFM regional councils are required to identify Freshwater Management Units (FMUs) for the region at an appropriate spatial scale for freshwater management. Each FMU must reflect the unique circumstances of each region, as these circumstances will dictate what freshwater objectives and limits will be set within the FMU.[2] Five FMU's have been identified for the Otago region, these are: Clutha-Mata-au, Taieri, North Otago, Dunedin & Coast and Catlins. The Clutha-Mata-au FMU has been further subdivided into five rohe and the Upper Lakes is one of these rohe. (Maps showing the boundaries of the of the Upper Lakes Rohe and Clutha-Mata-au FMU are shown in Appendix 1)

Under the NPSFM regional councils are also required to identify values related to freshwater applying to an FMU or part of an FMU. Regional councils must develop environmental outcomes for each of these values and set these as objectives in a plan. Attributes must then be identified for each value, along with baseline and target attribute states and environmental flows/levels and limits designed to support the achievement of the environmental outcomes.[3] These environmental outcomes and limits must be developed through engagement with the community and active involvement of takata whenua regarding their values and aspirations.[4]

The NPSFM has identified 4 compulsory values that apply to every FMU and 9 other values that must also be considered as applying to an FMU or part of an FMU.[5] Other values identified by the community are also to be considered.[6] Appendices 2A and 2B list attributes that need to be managed, e.g. total nitrogen is an example of a relevant attribute.

[1] NPSFM 2020 https://environment.govt.nz/publications/national-policy-statement-for-freshwater-management-2020/.
[2] NPSFM Clauses 1.4 and 3.8(1).
[3] NPSFM Subpart 2 National Objectives Framework.
[4] While environmental outcomes (and target attribute states, environmental flows/levels and limits) set in the new LWRP need to be developed through engagement with the community and active involvement of takata whenua, the outcomes achieved must also meet the national bottom lines set in the NPSFM, achieve the objective of the NPSFM and fulfil the relevant long-term visions set in the regional policy statement.
[5] NPSFM Clause 3.9(1), Appendix 1A Ecosystem Health, Human contact, Threatened species, and Mahinga kai, and NPSFM Appendix 1B Natural form and character, Drinking water supply, Wai tapu, Transport and tauranga waka, Fishing, Hydro-electric power generation, Animal drinking water, Irrigation, cultivation, and production of food and beverages, and Commercial and industrial use
[6] NPSFM Clause 3.9 (2)

1.3 Purpose of the Consultation

The first stage of community consultation on the new LWRP in the Upper Lakes rohe took place in November and December 2021. This stage was aimed at identifying community values related to freshwater that will inform the setting of environmental outcomes for each value.

By undertaking this community consultation process, ORC is meeting its obligation to engage with communities under Clause 3.7 (National Objectives Framework process) of the NPSFM.

The process will also assist ORC with fulfilling its statutory requirements under Clause 3 of Schedule 1of the RMA, including ensuring that consultation is undertaken in accordance with the principles set out in section 82 of the Local Government Act 2002.

1.4 Future consultation stages

The next consultation stage in the Upper Lakes rohe is scheduled to take place in the first half of 2022. It will focus on presenting environmental outcomes for the various identified community and Kai Tahu values, as well as management options to achieve these outcomes.

2 Consultation approach

2.1 Consultation methods

The first consultation stage for the Upper Lakes rohe consisted of:

- In-person interactive drop-in sessions which took place in Queenstown and Wanaka on 17 and 18 November 2021
- An online questionnaire that was published and available on the ORC website over the period 17 November 2021 to 10 December 2021

The purpose of the in-person interactive sessions and online questionnaire was firstly, to gain an understanding of what characteristics for each value matter to the community and secondly, whether the community thought those characteristics are currently being provided for. Participants were also asked to identify locations on maps where they enjoy each value and to identify any characteristics or values that were not identified.

This feedback will be used to identify all the values that are important to the community, while also helping to inform the setting of environmental outcomes for each value and the identification of attributes for assessing the achievement of these outcomes.

During consultation people were asked to comment on characteristics of a value instead of attributes, as this allowed them to provide feedback in simple plain terms on easy-to-understand concepts. Attributes (as referred to in the NPSFM) are a representation of these characteristics in more technical terms, allowing the condition or state of this value to be assessed in objective and, where practicable, numeric terms. Examples of characteristics for the value of swimming include water clarity and risk of getting sick. Attributes that correspond to these characteristics are suspended fine sediment and *Escherichia Coli (E. coli)*.

An estimated total of 45 people attended the interactive drop-in sessions in Queenstown, while approximately 65 people attended the Wanaka drop-in sessions.

A total of 3 responses with feedback were received by ORC via email, while 49 people provided feedback via the online questionnaire on the ORC website.

2.2 Methodology

2.2.1 In-person interactive drop in sessions

Thirteen values, each with their own set of characteristics, were presented for feedback during the drop-in sessions. These values were:

- Swimming and water recreation
- Fishing
- Non-contact recreation (e.g. walking, picnicking, sightseeing)
- Aquatic species
- Threatened species
- Habitat
- Ecosystem function and processes
- Water Quality
- Flow regime and river behaviour
- Natural Character
- Water use
- Wetlands

- Groundwater

Each of the values had their own respective poster and corresponding map (see Appendices 2 & 3 for examples). The poster for each value listed specific characteristics for that value. Participants were asked to identify, from the list of characteristics provided, which characteristics matter to them for that value by placing a blue dot sticker next to the relevant characteristic shown on the poster. There was no limit as to how many characteristics a participant could select. Participants were also able to record on the poster any other any characteristics that matter to them that were not listed. Participants were then asked if they thought each characteristic, from the list provided for that value, was currently okay using a green sticker dot for 'yes' and a red dot for 'no'.

On the corresponding map, participants were also asked to identify where they want to enjoy the value with a yellow dot sticker. They were able to identify as many locations as they wished on this map.

Finally, participants were able to note on a poster labelled 'Is there anything missing?' any other values that matter to them that were not stated on any of the 13 posters. They were also able to note whether they thought the additional value that they identified was currently well looked after (using a green dot for 'yes' and a red dot for 'no'). On the corresponding map, they were able to identify (using a yellow dot sticker) where they want to enjoy the additional value (see Appendices 4 and 5 for examples of the 'Is there anything missing?' poster and corresponding map).

2.2.2 Online survey

From 19 November 2021 to 10 December 2021 people were also able to respond to an online questionary that was published on ORC's Yoursay webpage (see Appendix 6 for a copy of the online survey).

The questions in the online survey were similar (but not identical) to those shown on the posters that were used during the drop-in sessions.[7]

2.2.3 Feedback via email

Three individuals and organisations provided feedback via email. A summary of the key points made in these emailed responses is shown in section 4 of this report.

[7] Question 3 in the online survey asked respondents to rate the condition of each characteristic. The wording of this question differed slightly to that of the corresponding question shown on the poster used during the interactive sessions. Question 3 of the online survey asked respondents to rate the condition of each characteristic as either 'Good', 'Okay' or 'Poor'. During the interactive session participants were asked if they thought the characteristics were currently OK and were able to answer either 'Yes' or 'No' using the corresponding dots. Question 5 of the online survey asked respondents to list locations where they want to enjoy the value, by writing the location in a text box. Participants at the interactive session were asked to identify locations where they want to enjoy the value by placing a yellow dot on a A0 map (see appendix 5 for an example of the online survey).

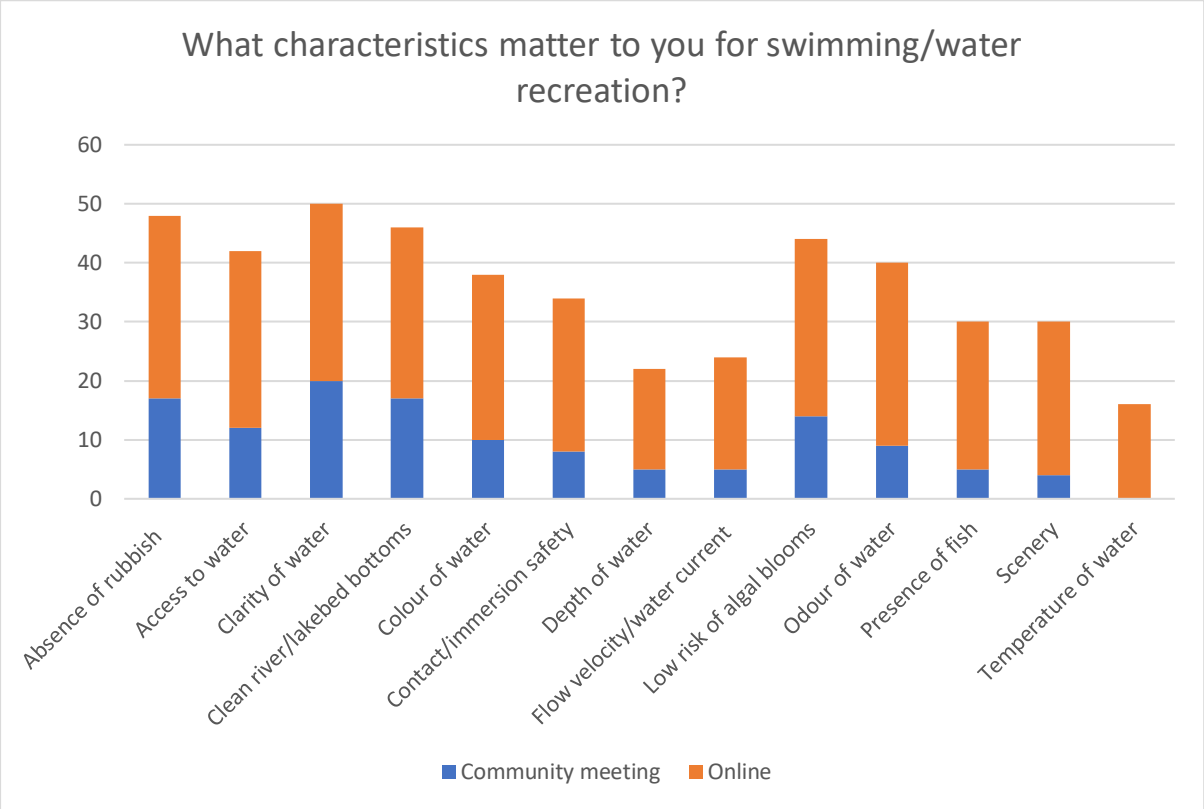
3. Results from the interactive drop-in session and online survey

This section provides an overview of the feedback that was received over the period 17th November 2021 to 10 December 2021 (end of the Stage 1 community consultation period):

- during the interactive drop-in session
- via the online survey published on the website

Results are grouped by value.[8]

3.1 Swimming/water recreation



[8] Note that

- Text comments under the headings *Comments on specific characteristics* and *Comments on other* characteristics are lightly edited. Text comments under the heading *Other comments* are summarised.
- Labels along the horizontal axes of the bar graphs may not be visible in full, but the full text of the questions can be seen in the tables beneath each bar graph.

Characteristic	Do you think this characteristic for swimming/water recreation is OK (community meeting)?		How would you rate the condition of this swimming/water recreation characteristic (online survey)?		
	Yes	No	Good	Okay	Poor
Absence of rubbish	1	4	11	16	4
Access to water	2	3	19	8	4
Clarity of water	6	4	20	6	5
Clean river/lakebed bottoms	2	5	11	9	12
Colour of water	1	2	17	10	4
Contact/immersion safety	1	3	17	11	3
Depth of water	3	1	20	10	1
Flow velocity/water current	2	1	16	11	4
Low risk of algal blooms	0	10	11	10	9
Odour of water	2	2	16	13	2
Presence of fish	0	1	10	12	7
Scenery	0	0	23	6	0
Temperature of water[9]			16	13	2

3.1.1 Comments on specific characteristics. The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Odour of water	• It's good, but it's changing year on year, season on season.
Contact/immersion safety	• Roys Bay- Stormwater. • Bremner Bay for "duck's itch" with respect to kids is/could be a problem.[10]
Clean river/lakebed bottoms	• The lake bottom in different parts of the lake is becoming a lot more algal covered.
Colour of water	• Lower Cardrona River & consequently the upper Clutha can be badly affected by sediment release.

3.1.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- Presence of boats, noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected
- Free from contamination- chemical, faecal, nutrient, fertilizer
- Vegetation and soil quality in the riparian zone.
- Absence of introduced birds including Canadian geese, swans and an abundance of mallards
- Note that the above check points are for Lakes Hawea – clarity, cleanliness of the lake bed

[9] Characteristic was not stated on the poster used at the community meetings.

[10] Duck's itch or swimmer's itch (Cercarial dermatitis) is a skin reaction caused by the cercariae of certain species of parasitic flatworms whose normal hosts are birds and mammals other than humans.

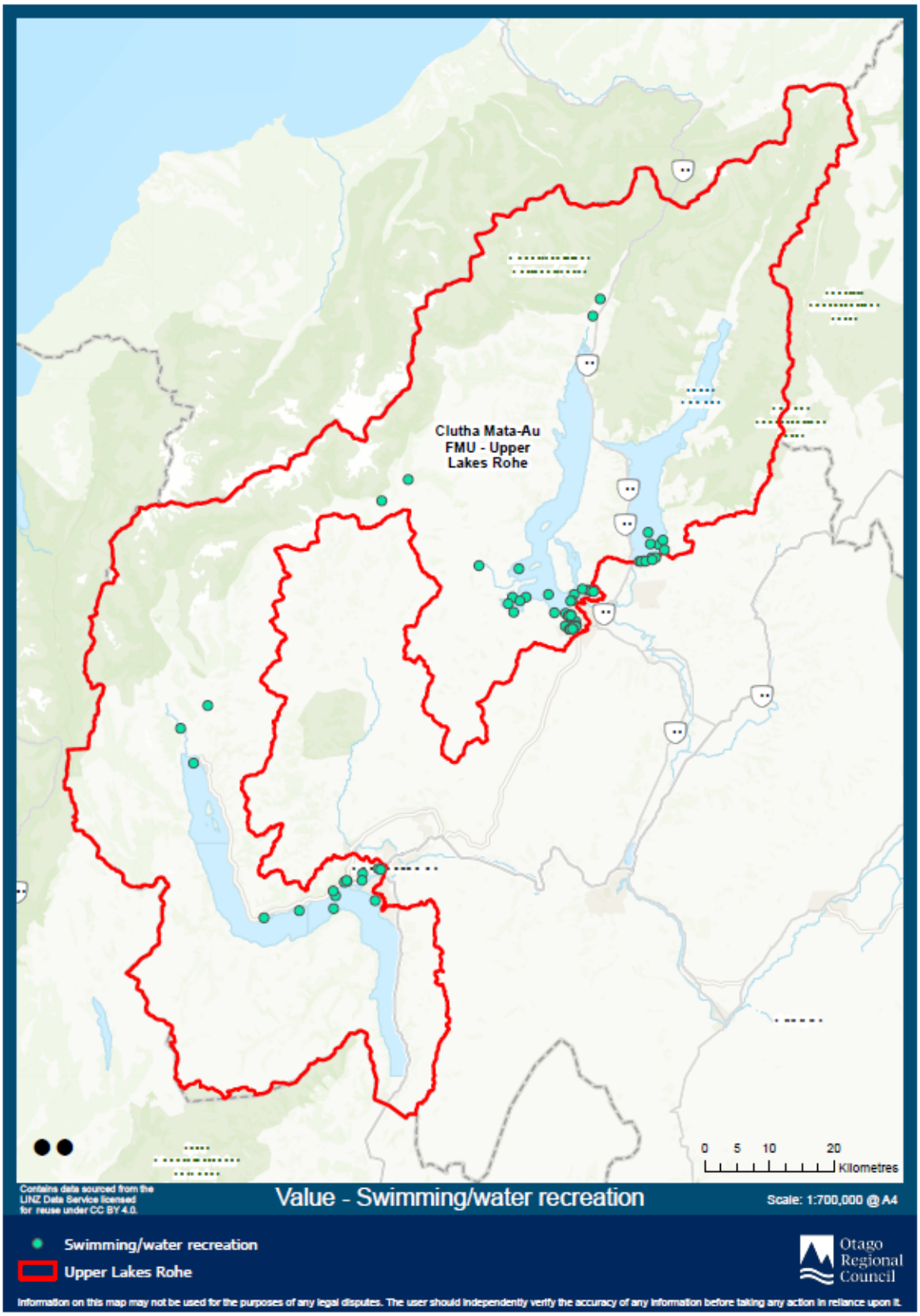
3.1.3 Other comments

Other comments provided by respondents:

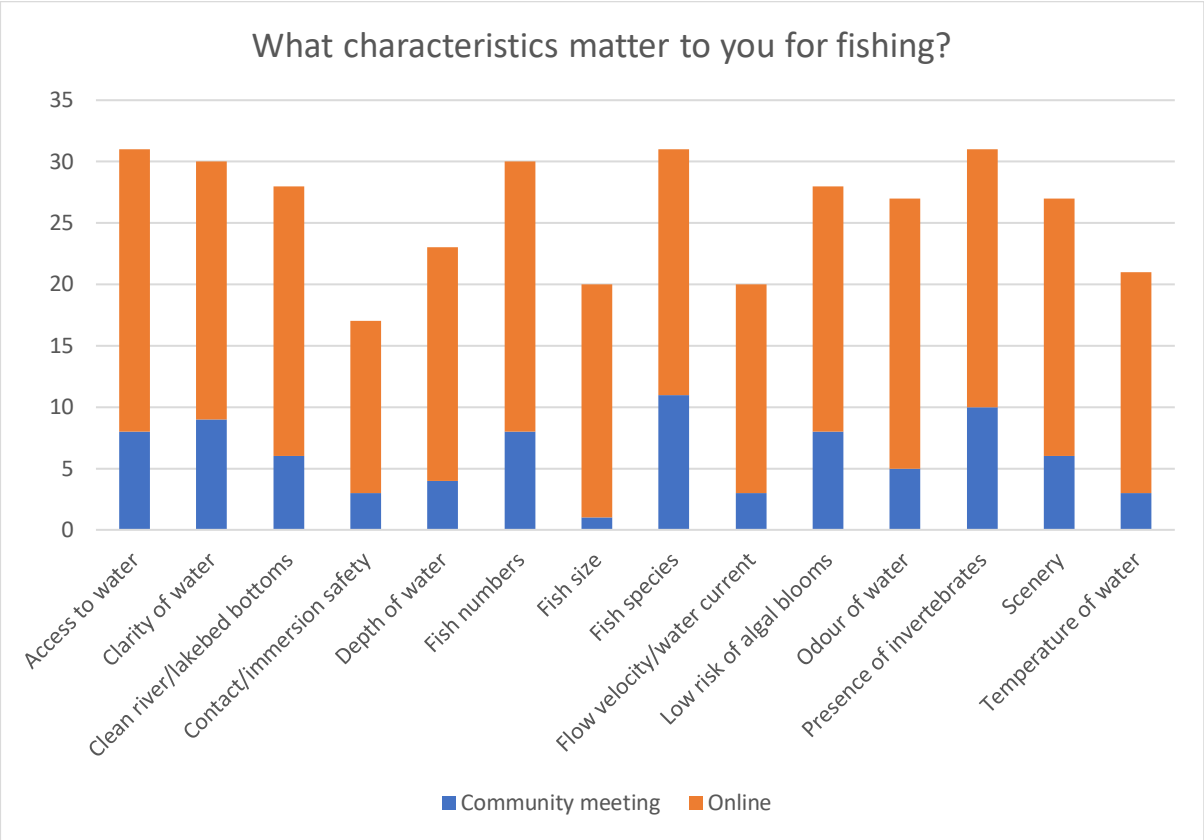
- There are too many trout and salmon predating on native fauna. There needs to be controls to restrict or eliminate their presence. Categorised as pests.
- The answer to the questions varies depending on the waterway you are swimming in as there is a wide range within this rohe.
- Reducing quality of waterways. Introduction of rock snot and didymo is devastating
- The water quality in Lake Wanaka and surrounding lakes rivers and streams is slowly deteriorating due to pressure from development, bad farming practices, poor planning and lack of understanding from the authorities and general public. It is ORC's job to prevent water quality deterioration. Witnessed waterways becoming polluted and this is unacceptable.
- Presence of boats, noise pollution, run off from farmland contamination
- Locals use over commercial use. It would be nice if money wasn't always the priority.
- Bird life needs tall trees. Don't chop all of them down. Even if they're not a native. Get the natives established first.
- A number of waterways in upper catchments still enable stock access as the primary means of providing drinking water. This discourages vegetation, erodes water quality and damages the riparian zone.

3.1.4 Locations identified for value: swimming/water recreation

The map below shows locations for swimming/water recreation identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.2 Fishing



	Do you think this characteristic for fishing is OK (community meeting)?		How would you rate the condition of this fishing characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Access to water	1	4	9	10	4
Clarity of water	4	2	14	8	1
Clean river/lakebed bottoms	3	3	11	6	6
Contact/immersion safety	2	1	14	8	1
Depth of water	2	1	12	10	0
Fish numbers	3	2	6	13	4
Fish size	0	0	4	17	2
Fish species	2	3	6	11	6
Flow velocity/water current	1	1	12	10	1
Low risk of algal blooms	0	4	9	9	5
Odour of water	3	1	14	9	0
Presence of invertebrates	2	6	9	9	4
Scenery	2	0	16	5	2
Temperature of water	1	1	10	10	3

3.2.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Fish numbers	• Salmon numbers have declined in lake Wanaka over the last 2-3 years. Yes they are introduced species but of great recreational value as are trout.
Presence of invertebrates	• After diquat release in Paddock Bay the lake bed turns into anoxic decent – almost all invertebrates are removed and natural galaxiids are also reduced/removed.

3.2.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- Important to recognise the value to the community of treasured introduced species – trout, salmon, mallard duck and the ability to harvest them for a healthy environment.
- Nothing here about duck shooting that is another important recreational activity in the region!
- Access- there are some access issues that need sorting.
- Angler pressure, seasonality of different fisheries.
- Absence of human excrement and rubbish, absence of wheel tracks, absence of fences that run out into the water body, absence of stock.
- Presence of boats, noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected
- All round natural river habitat.
- Fish numbers in Lakes Hawea and Wanaka.

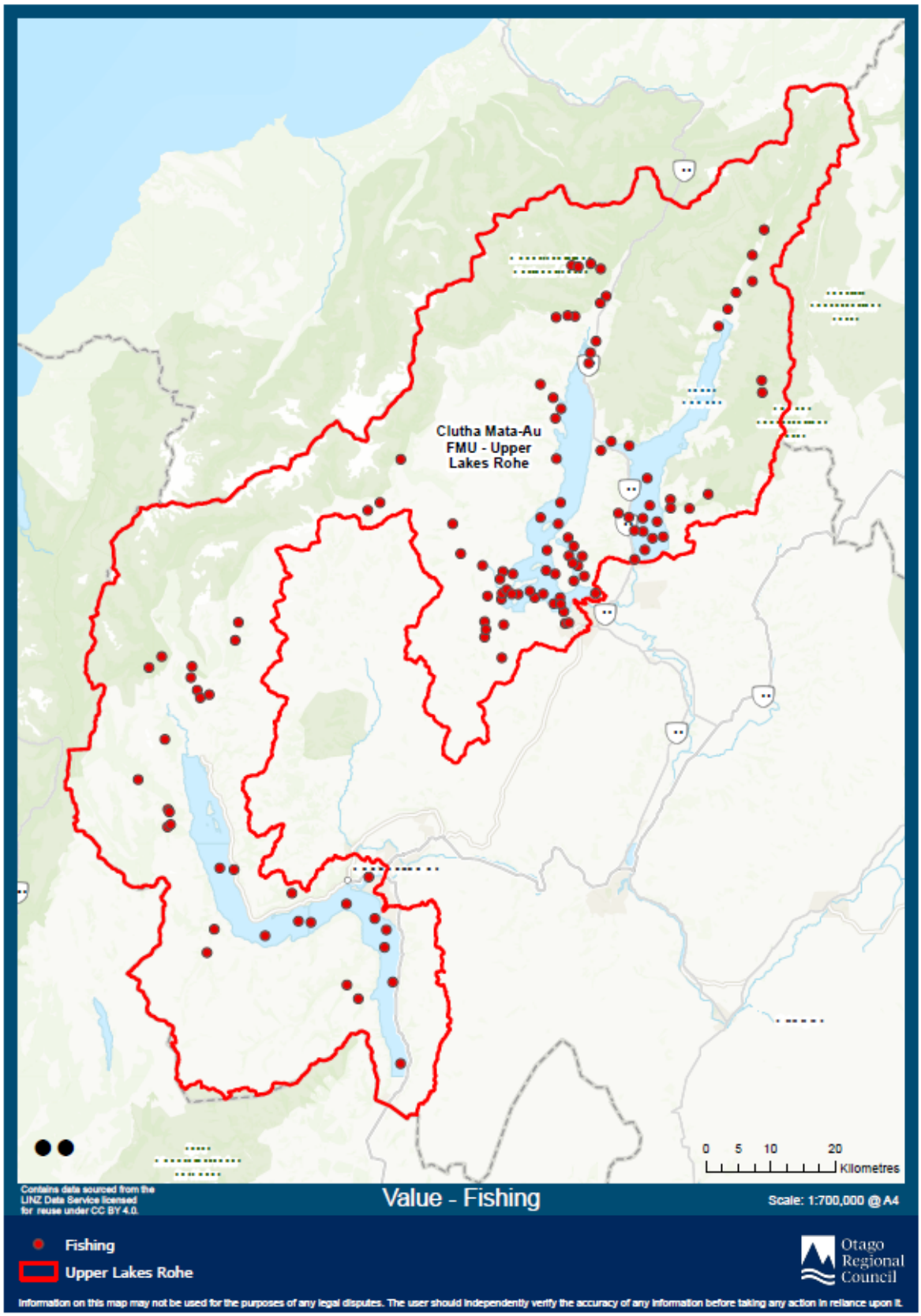
3.2.3 Other comments

Other comments made by respondents:

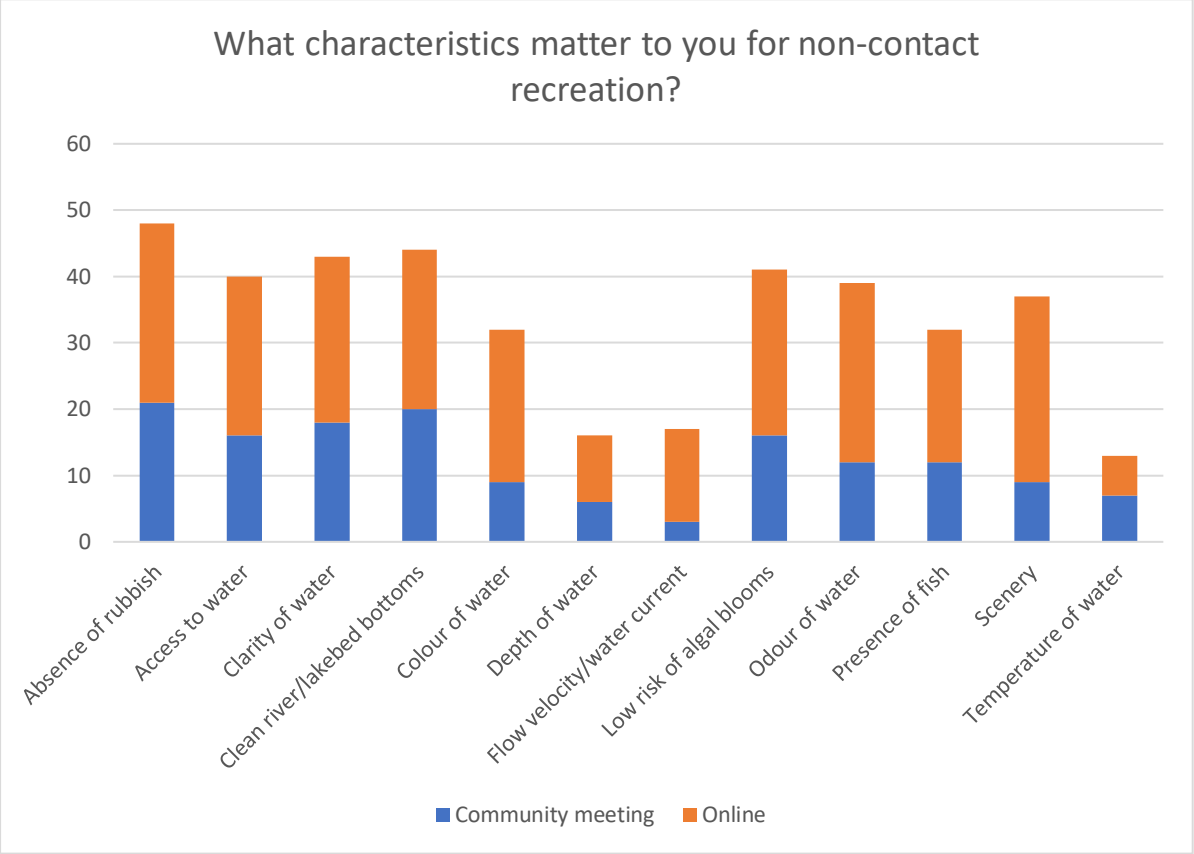
- I want to fish in an environment that is as natural as possible.
- Remove pest species and return water bodies to a state that the native fish can once again thrive.
- Lake snow is an issue at certain times. It stinks when hauled up on lines and can make fishing impossible.

3.2.4 Locations identified for value: fishing

The map below shows fishing locations identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.3 Non-contact recreation



	Do you think this characteristic for non-contact recreation is OK (community meeting)?		How would you rate the condition of this non-contact recreation characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Absence of rubbish	3	3	4	17	5
Access to water	2	1	8	13	3
Clarity of water	3	2	13	10	2
Clean river/lakebed bottoms	2	4	8	12	5
Colour of water	2	0	13	9	2
Depth of water	1	1	11	13	1
Flow velocity/water current	1	0	8	16	0
Low risk of algal blooms	0	3	7	10	8
Odour of water	2	0	14	10	1
Presence of fish	3	2	4	15	6
Scenery	3	0	19	7	0
Temperature of water	1	2	9	15	0

3.3.1 Comments from participants on specific characteristics

Nil.

3.3.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- Peace and quiet.
- Presence of waterfowl.
- Shores – e.g. loss of foreshore for picnicking/family recreation to commercial recreation – or even lupins/growth is happening at Frankton Beach – taken little to fix.
- Presence of boats
- Noise pollution
- Run off from farmland contamination
- Farm irrigation/ levels of water affected
- Stock access and presence of invasive animal species, namely Canadian Geese, swans and an abundance of mallards.
- Seeing others also enjoying contact and or non- contact recreation of the water way and surrounding areas.

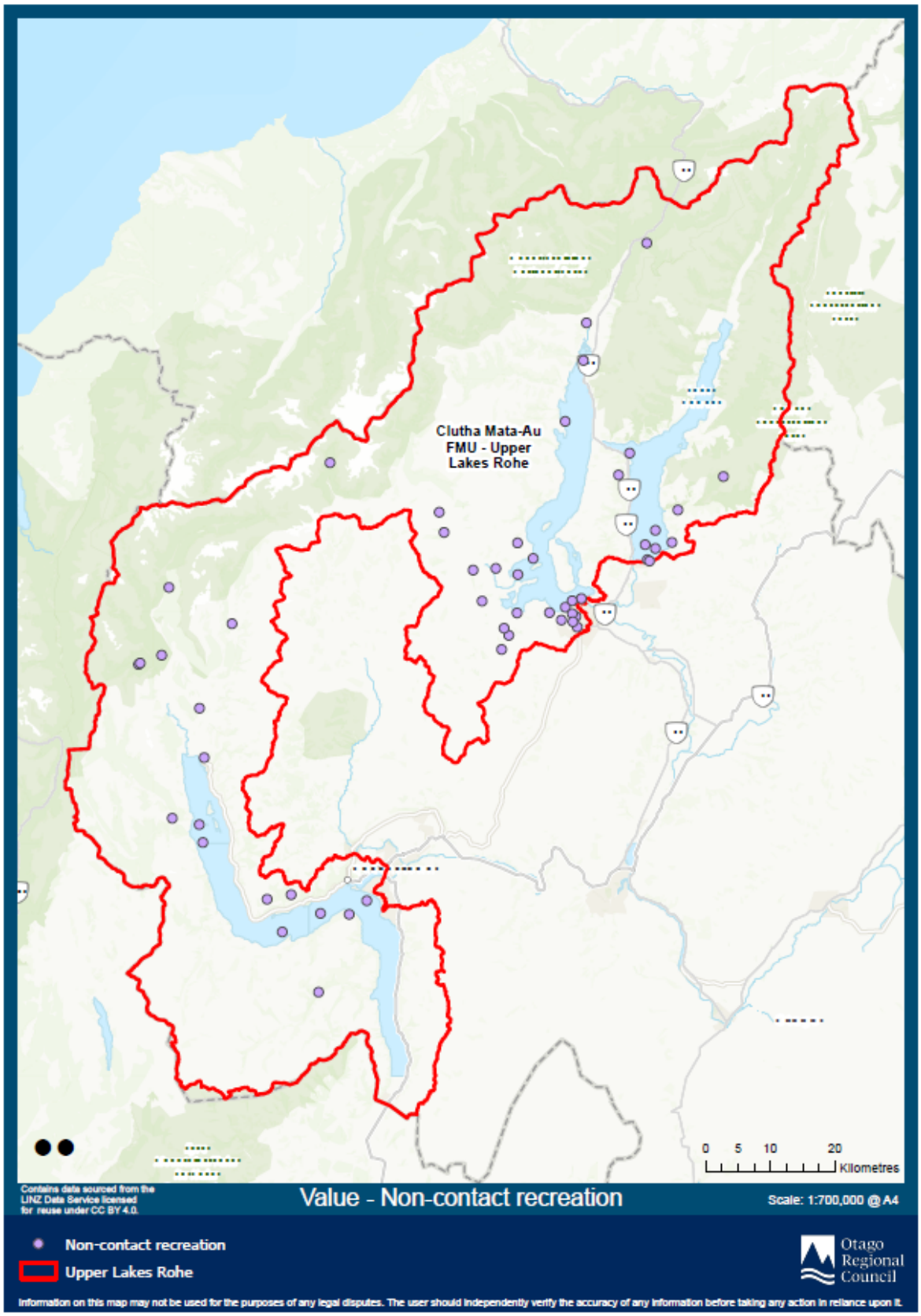
3.3.3 Other comments

Other comments made by respondents:

- Presence of fish is rated poor due to too many trout and salmon and a shortage of native fish.
- Responses vary are depending on which waterway you are walking near.
- I want to walk through an environment that is as natural as possible. For instance I considerably enjoying walking along diamond creek or around Moke Lake for pleasure, rather than along the Kawarau with jet boats, vehicle access etc.
- Canadian Geese foul the water tremendously and cause a racket, discourage other bird life and are generally a nuisance.
- Bird life needs tall trees. Don't chop all of them down. Even if they're not a native. At least get the natives established first.

3.3.4 Locations identified for value: non-contact recreation

The map below shows locations for non-contact recreation identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



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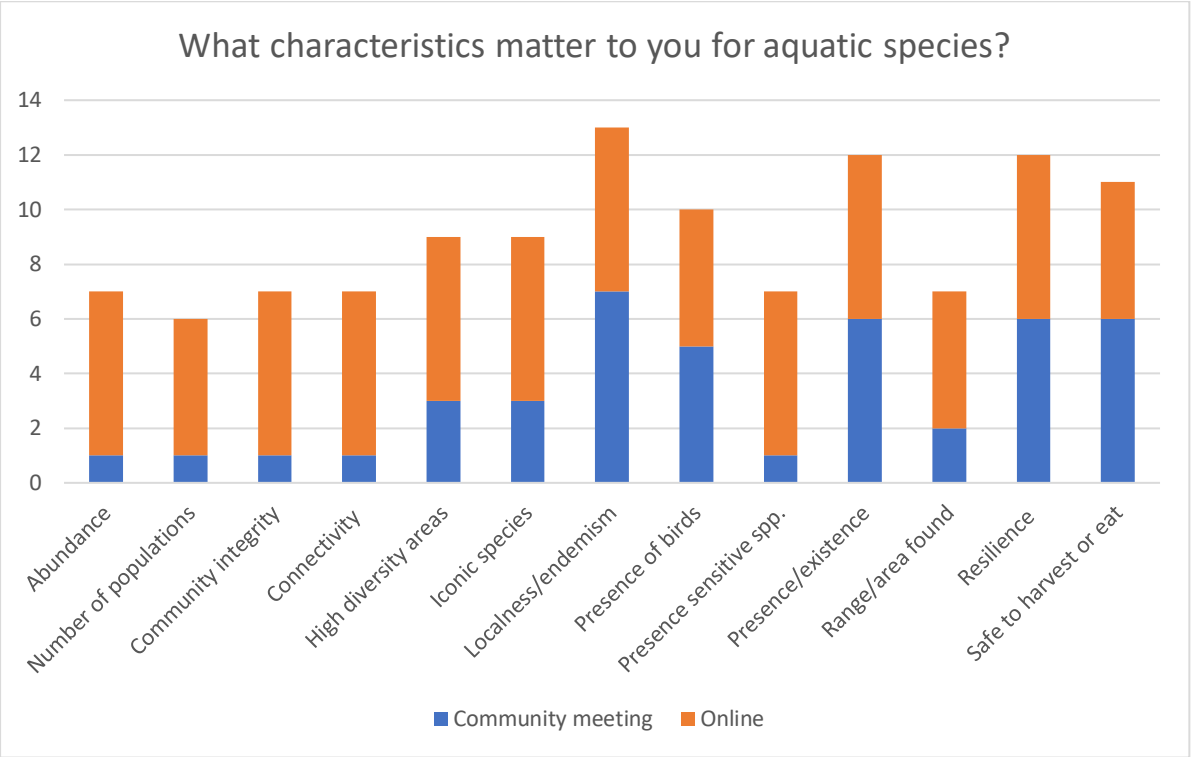
3.4 Aquatic species



	Do you think this characteristic for aquatic species is OK (community meeting)?		How would you rate the condition of this aquatic species characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Abundance	1	2	1	12	11
Commonness/number of populations	0	2	2	13	9
Community integrity/similar to natural state	0	2	2	11	11
Connectivity (e.g., the ease of species being able to move between habitats)	0	3	3	12	9
High diversity areas	0	3	1	13	9
Iconic species	1	4	2	13	9
Localness/endemism	0	4	2	10	12
Presence of birds / waterfowl	1	2	6	18	0
Presence of sensitive species	1	4	1	12	11
Presence/existence	0	4	2	13	9
Range/area found	0	1	2	13	9
Resilience (i.e. capacity to recover)	0	2	2	8	14
Safe to harvest or eat	2	3	8	11	5

3.4.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Commonness/number of populations	• Not enough trout.
Abundance	• Not enough trout + salmon.
Resilience (i.e. capacity to recover)	• Capacity of invertebrate and fish populations to recover has been impaired in regions subject to repeated poisoning for weeds (Lagarosiphon). • Bike trails ruin habitats for birds and animals no frogs albert town lagoon.
Connectivity (e.g., the ease of species being able to move between habitats)	• Eels, whitebait and salmon cannot migrate due to dams. Connectivity to this area has been cut. • Difficult for aquatics species to migrate through farmland.
Presence of birds/waterfowl	• Canada geese Scaup- too many. Grebes – too many. • Canadian geese are a problem. Geese causing high e.coli levels in summer
Iconic species	• Trout & salmon + game birds

3.4.2 Additional characteristics

Additional characteristics that were identified by respondents:

- Tuna can't get passed Clutha Dams.
- Presence and range of undesirable species.
- Presence of boats, noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected.

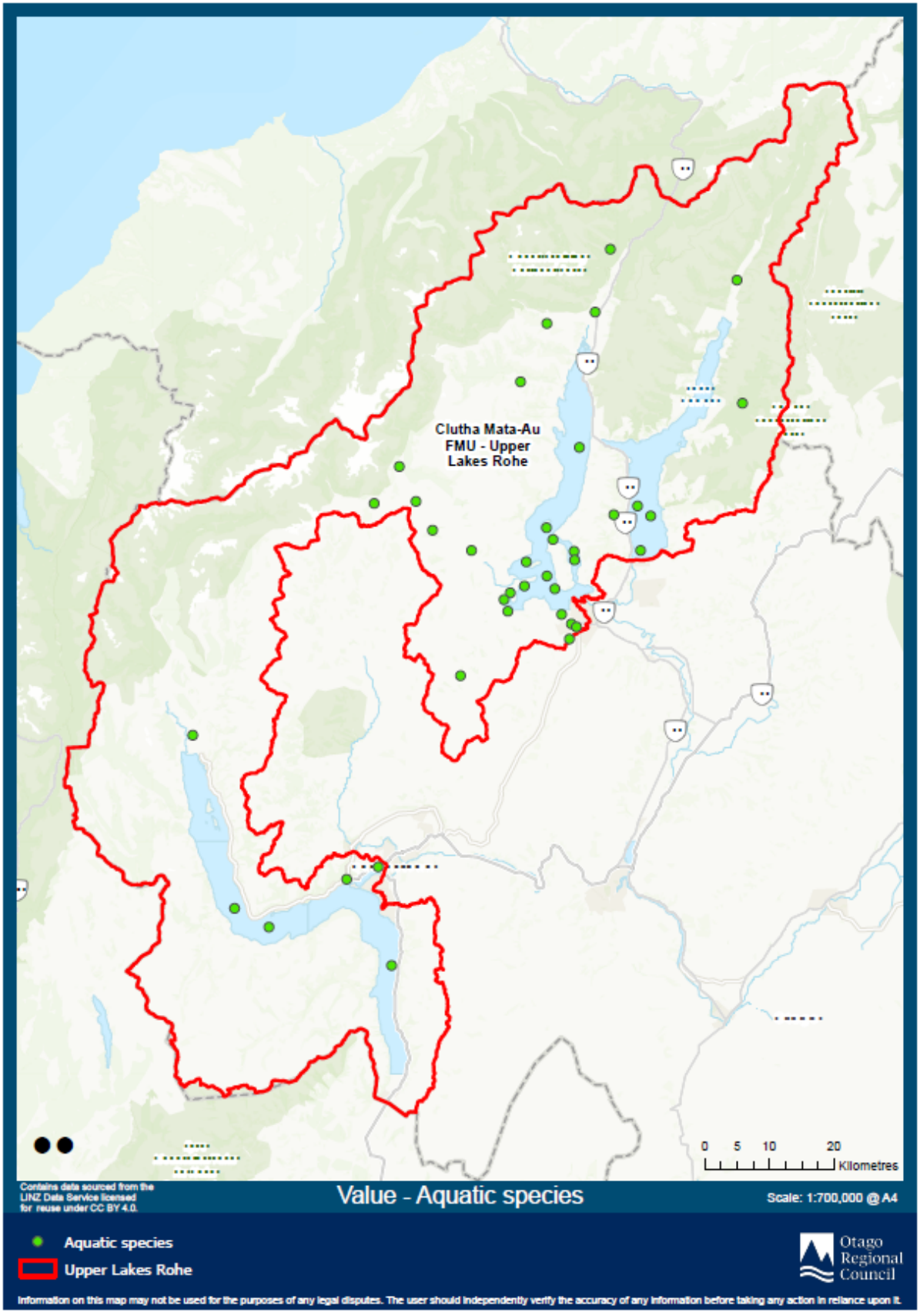
3.4.3 Other comments

Other comments made by respondents:

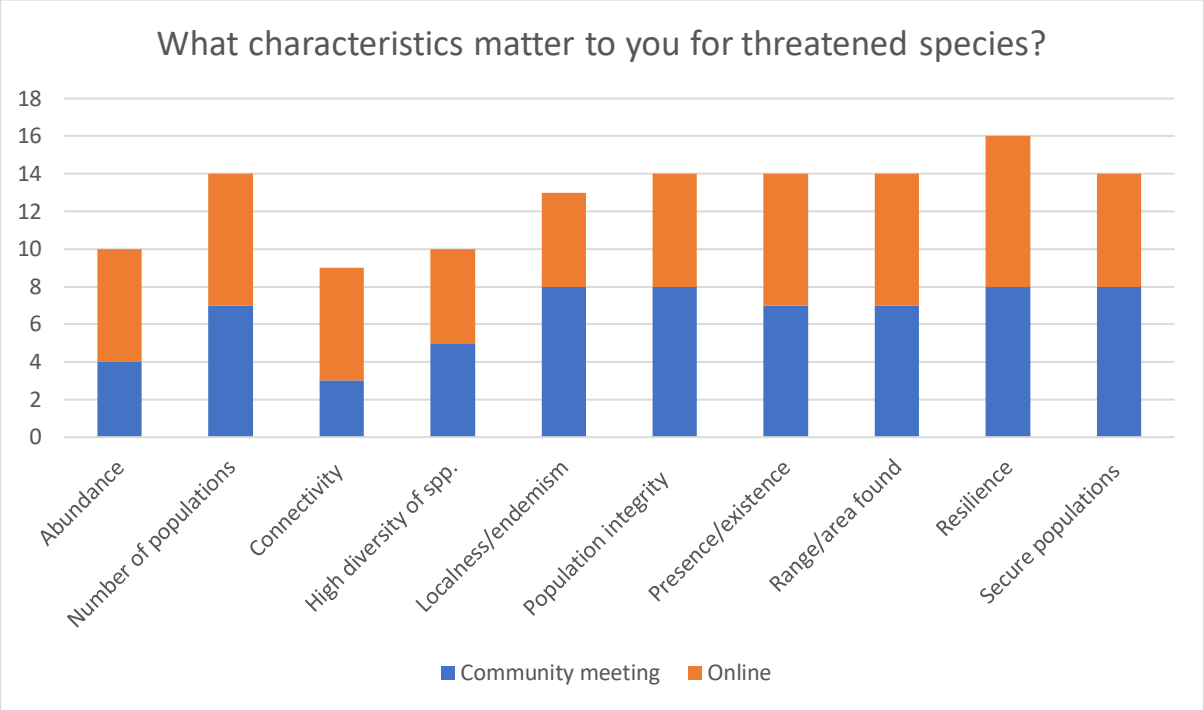
- Most native species are under high threat due to introduced fish and water birds.
- Didymo in rivers is ruining waterways.
- Galaxia species that inhabit the streamlets are unprotected from the depredations of stock, agricultural activity and water abstraction for irrigation.
- Indigenous aquatic species in the Upper Clutha area in general are severely depleted - especially with regards to galaxiids and eels.
- I enjoy seeing aquatic species in their natural environments.
- Protect and restore populations of all endemic species, remove the exotic predator fish like trout salmon, perch.
- The questions make no reference between indigenous or introduced species and the 'naturalness' of an area. Many areas are heavily modified by farming activities and the character is altered by stock and vegetation clearance.

3.4.4 Locations identified for value: aquatic species

The map below shows locations with aquatic species identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.5 Threatened species



	Do you think this characteristic for threatened species is OK (community meeting)?		How would you rate the condition of this threatened species characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Abundance	0	4	1	4	13
Commonness/number of populations	0	3	1	5	12
Connectivity (e.g., the ease of species being able to move between habitats)	0	4	2	5	11
High diversity areas/overlap of multiple threatened species	0	3	1	6	11
Localness/endemism	0	2	1	5	12
Population integrity	0	2	1	5	11
Presence/existence	0	6	1	6	11
Range/area found	0	3	1	5	12
Resilience (i.e. capacity to recover)	0	3	1	5	12
Secure populations (e.g. predator free)	0	3	1	5	12

3.5.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Presence/existence	• Survival of tuna

3.5.2 Additional characteristics identified

Additional characteristics identified by respondents:

- Removal of pest species (stoats, rats, rabbits) because they impact on threatened species.
- Presence of boats, noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected.
- Isolation - many species require a high degree of high isolation, free from human disturbance to breed and thrive. Ensuring that these populations are protected and given the freedom to do so is critical.

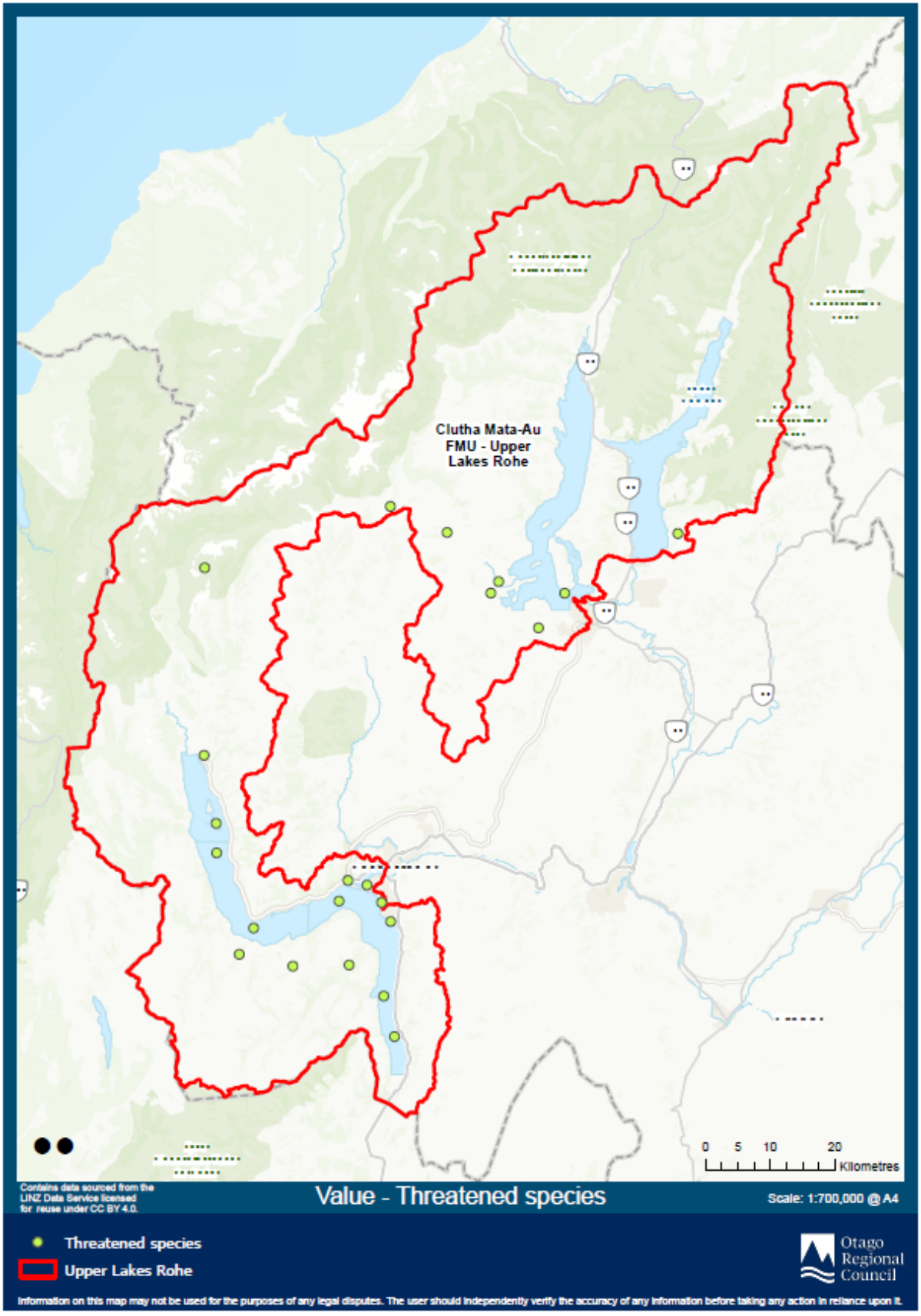
3.5.3 Other comments

Other comments made by respondents:

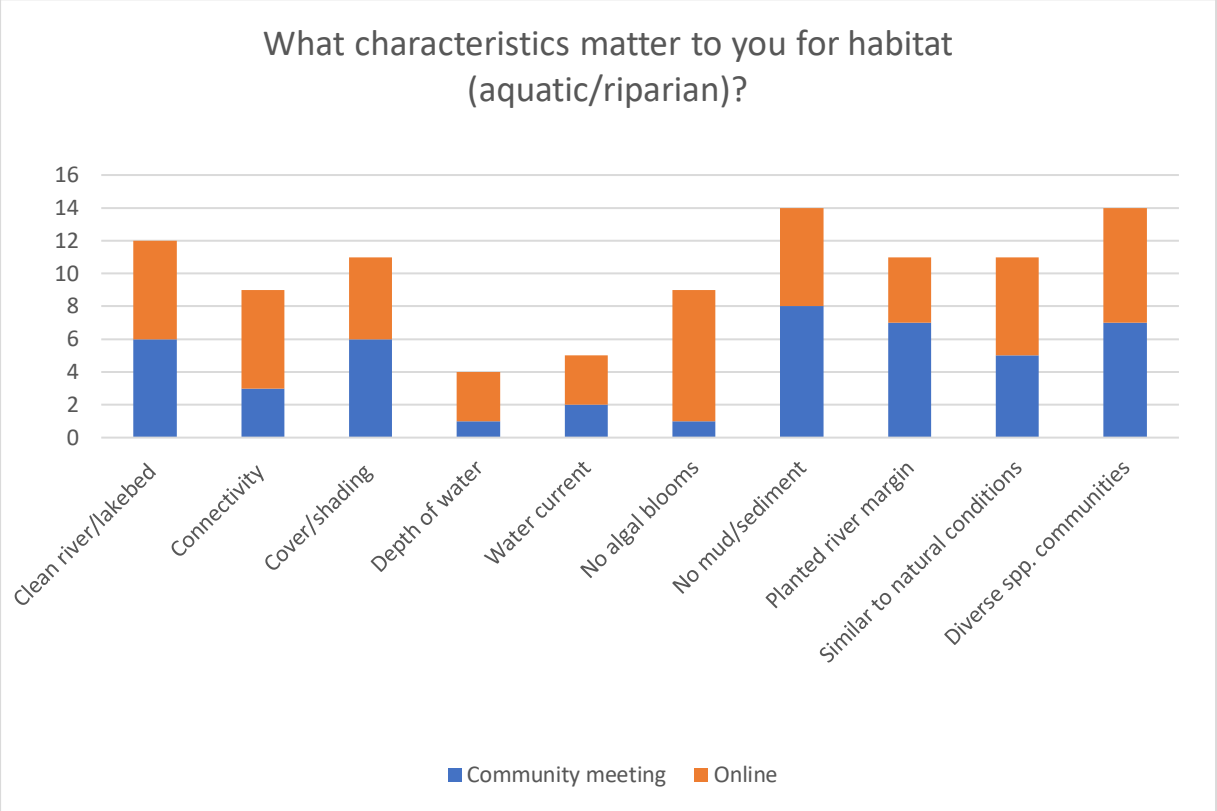
- Keeping poor connectivity is an asset while trout and salmon are still out there unless barriers are installed to restrict the trout and salmon range.
- Natives, including native plants, are particularly susceptible to herbicide and fertiliser.
- Native species must be given high priority over invasive exotic pest species such as predatory trout, salmon and perch.

3.5.4 Locations identified for value: threatened species

The map below shows locations with threatened species identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.6 Habitat (aquatic/riparian)



	Do you think this characteristic for habitat (aquatic/riparian) is OK (community meeting)?		How would you rate the condition of this habitat (aquatic/riparian) characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Clean river/lakebed bottoms	1	1	4	7	13
Connectivity (e.g., the ease of species being able to move between habitats)	1	3	4	12	8
Cover/shading of streams	0	0	3	12	7
Depth of water	0	1	7	12	5
Flow velocity/water current	0	1	8	12	3
No algal blooms	0	6	4	5	15
No mud/sediment	0	3	5	12	7
Planted river margin/riparian margin	0	6	4	10	10
Similar to natural conditions	0	3	5	13	6
Supports diverse species communities/variability	0	1	3	7	13

3.6.1 Comments on specific characteristics

Nil

3.6.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- River sedimentation is clean. Overland flows carrying sediment is bad.
- pollutants, turbidity.
- Presence of boats, noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected.
- General natural environment.
- Contamination levels, unmodified.
- Absence of introduced fish species which are essentially protected under the RMA but yet prey on endemic and native species.

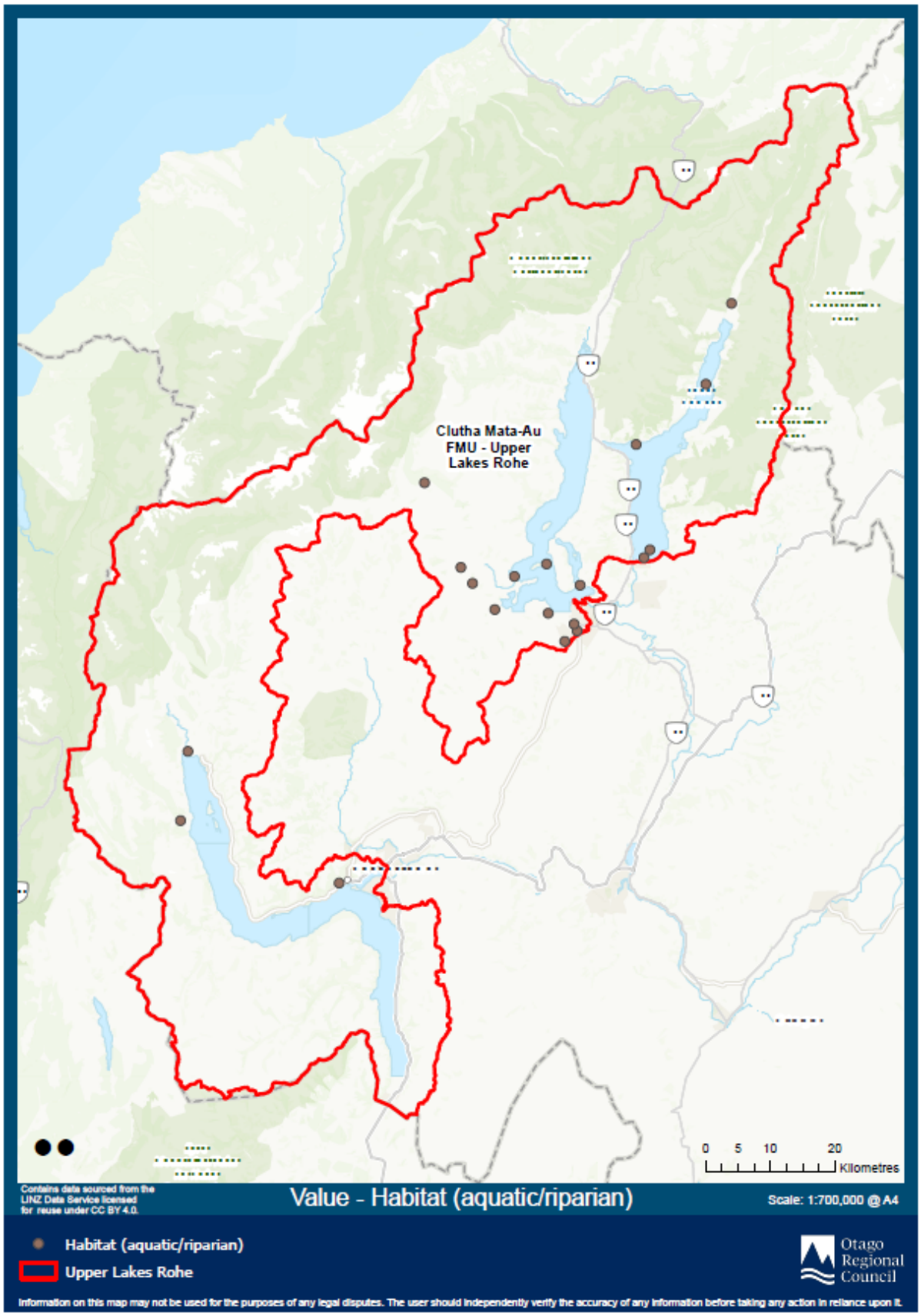
3.6.3 Other comments

Other comments made by respondents:

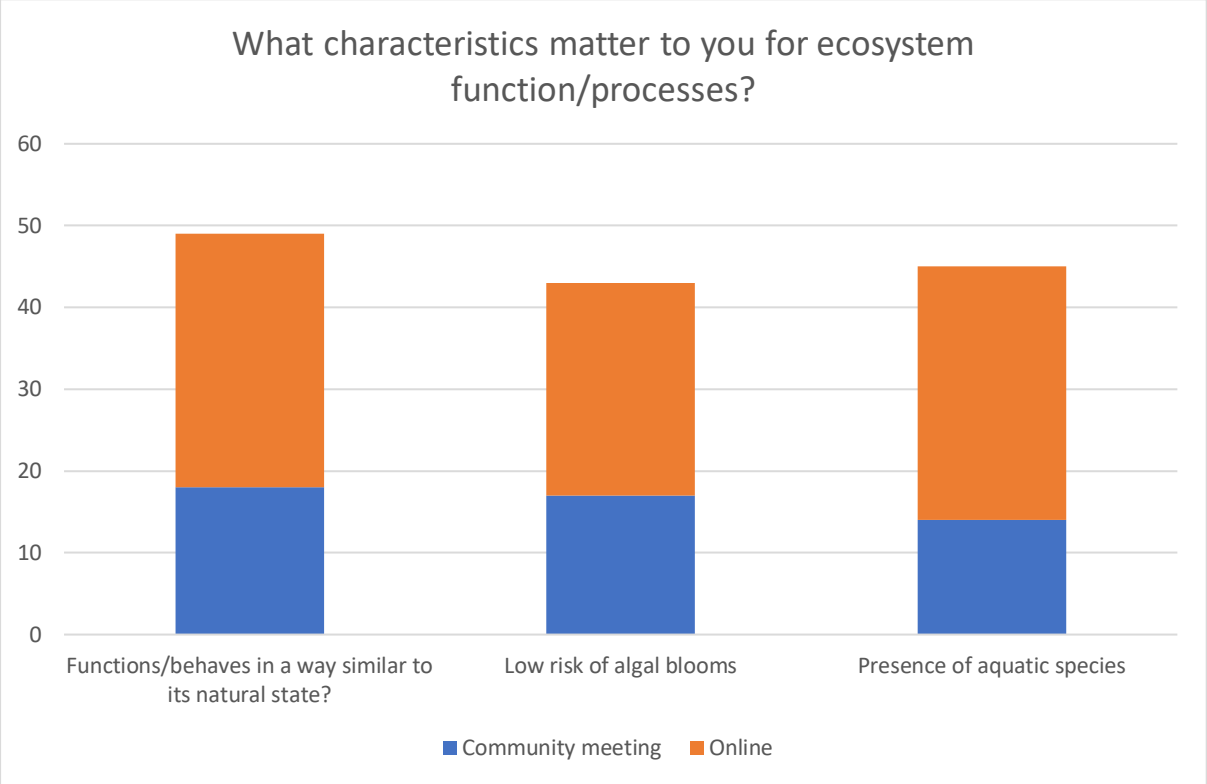
- Remove willows and lupin as these are changing the natural character and flow of rivers.
- Willows are a blight upon the waterways and should be declared a noxious weed. Access to waterways is severely restricted by this weed. Willows suck water up at a humongous rate.
- Not clear who is responsible for monitoring riparian margins and use of it. Stock are accessing waterways (Matukituki River).

3.6.4 Locations identified for value: habitat (aquatic/riparian)

The map below shows locations providing aquatic and riparian habitat identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.7 Ecosystem function/processes



	Do you think this characteristic for ecosystem function/processes is OK (community meeting)?		How would you rate the condition of this ecosystem function/processes characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Functions/behaves in a way similar to its natural state	1	13	6	13	12
Low risk of algal blooms	0	12	12	7	12
Presence of aquatic species	1	4	8	11	12

3.7.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Low risk of algal blooms	• Lake snot is quite bad at the moment, I would regard this as a minor algal bloom.

3.7.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- Diversity and resilience of the ecosystem.
- Productive capacity of aquatic ecosystems.
- Lakes Hayes ecosystem function.
- Regular spills into lake – emergency response nowhere?
- Access to see them
- Presence of boats**,** noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected
- Unmodified
- The mauri / life force of waterways - ecological integrity.
- Native riparian margins with now willow or lupin or trout and salmon

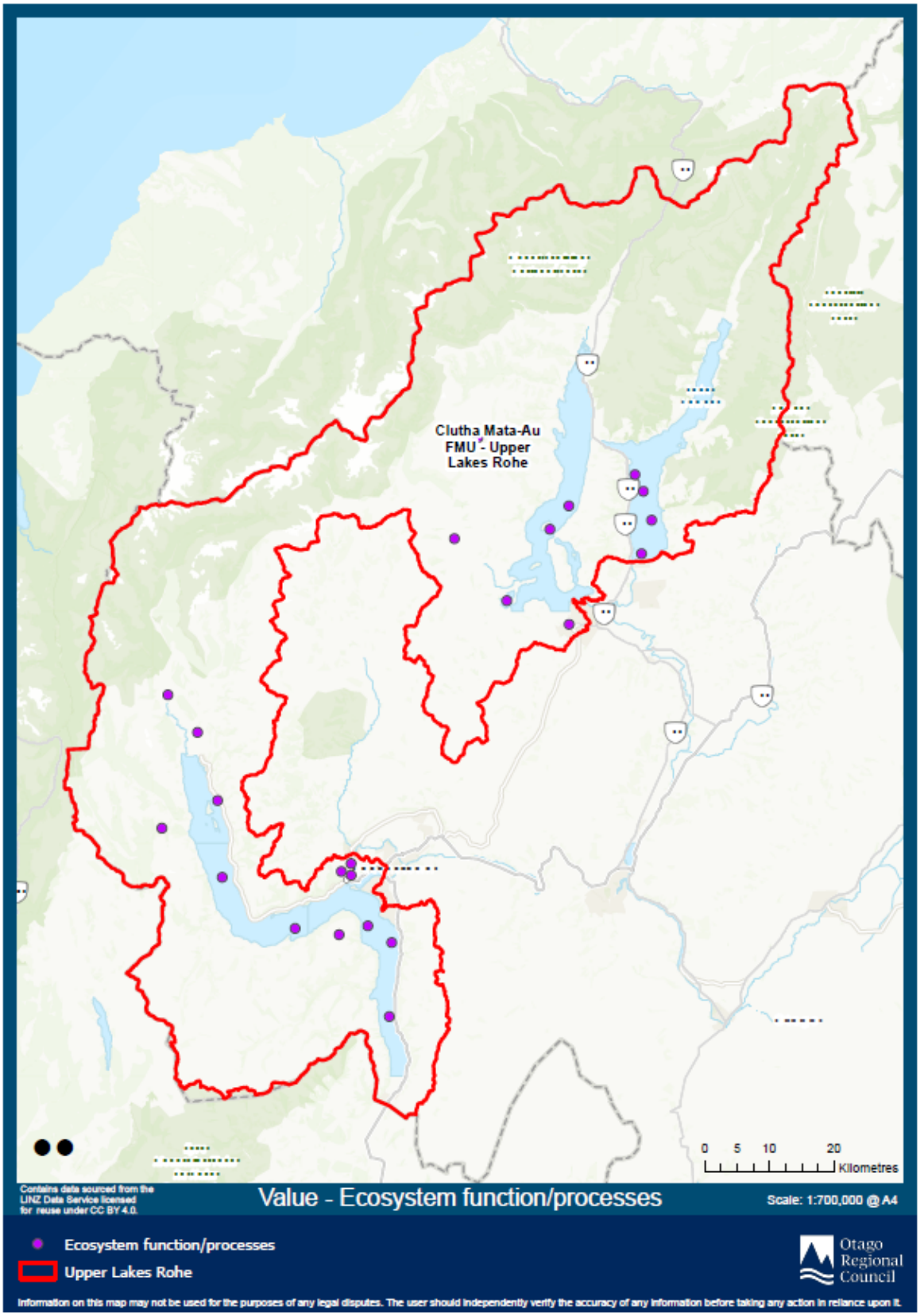
3.7.3 Other comments

Other comments made by respondents:

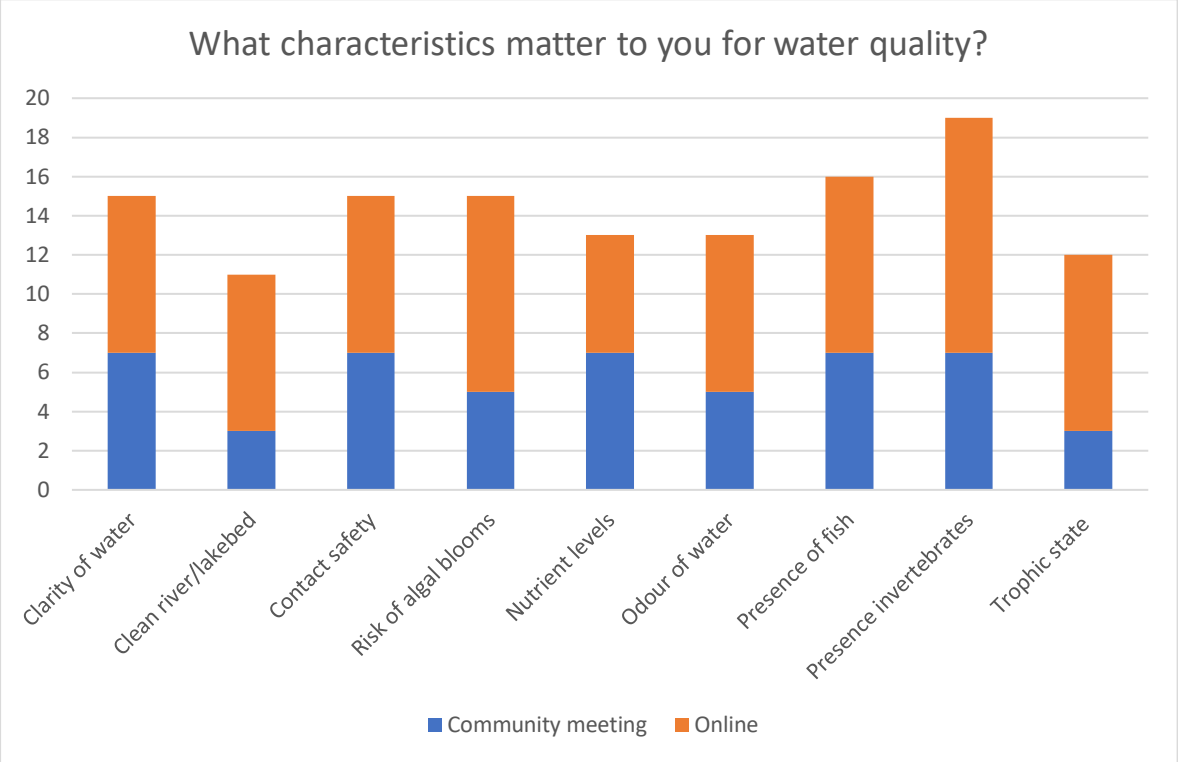
- There are a few areas with koura and freshwater mussels. To disclose the locations would be detrimental.
- All rivers and Lakes are important

3.7.4 Locations identified for value: ecosystem function/processes

The map below shows locations with an ecosystem function or providing for ecosystem processes identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.8 Water quality



	Do you think this characteristic for water quality is OK (community meeting)?		How would you rate the condition of this water quality characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Clarity of water	3	6	17	10	5
Clean river/lakebed bottoms	2	1	12	10	10
Contact/immersion safety	2	0	13	10	3
Low risk of algal blooms	0	6	12	8	12
Nutrient levels	0	2	10	10	11
Odour of water	3	1	20	10	2
Presence of fish	1	2	11	8	13
Presence of invertebrates	0	0	11	10	9
Trophic state (e.g., the biological productivity of the water)	1	1	11	8	10

3.8.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Clarity of water	• Water clarity of the upper Clutha River is often strongly affected by sediment laden Cardrona River. The cause is poor land use in the lower Cardrona valley. • Its slowly getting worse year on year.
Contact/immersion safety	• Not for Lake Hayes, getting quite slow leaks/blocks making QN & FN bays unsafe at times.
Low risk of algal blooms	• Cardrona River in late summer often toxic

3.8.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- Presence of poisons – e.g. poisoning of weed, tanalised timber structures.
- Flow volumes especially many rivers/streams are depleted.
- Keeping riparian strips – cattle out of rivers/water bodies.
- Being able to swim
- Presence of native species
- No animal runoff
- Public access along and to

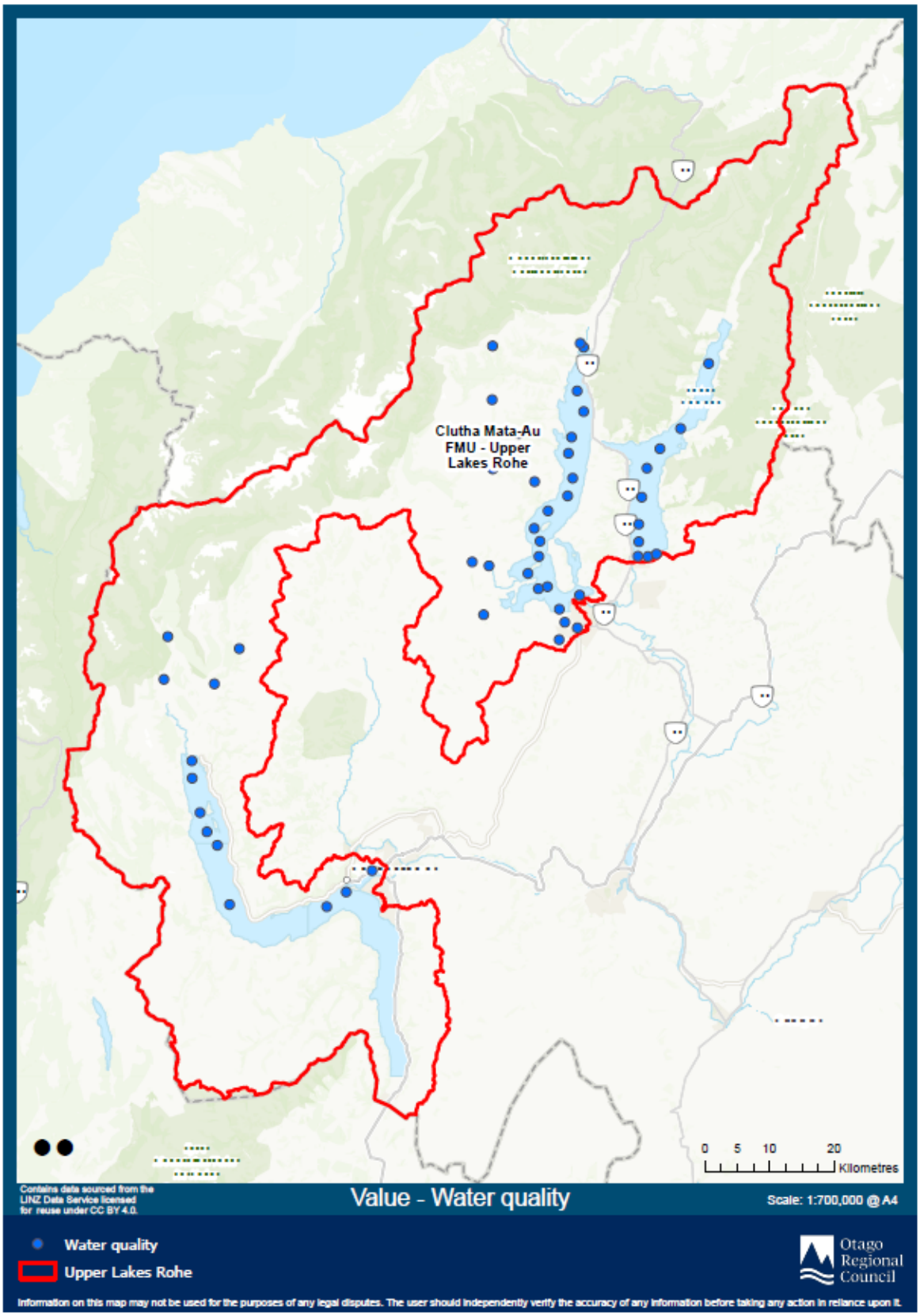
3.8.3 Other comments

Other comments made by respondents:

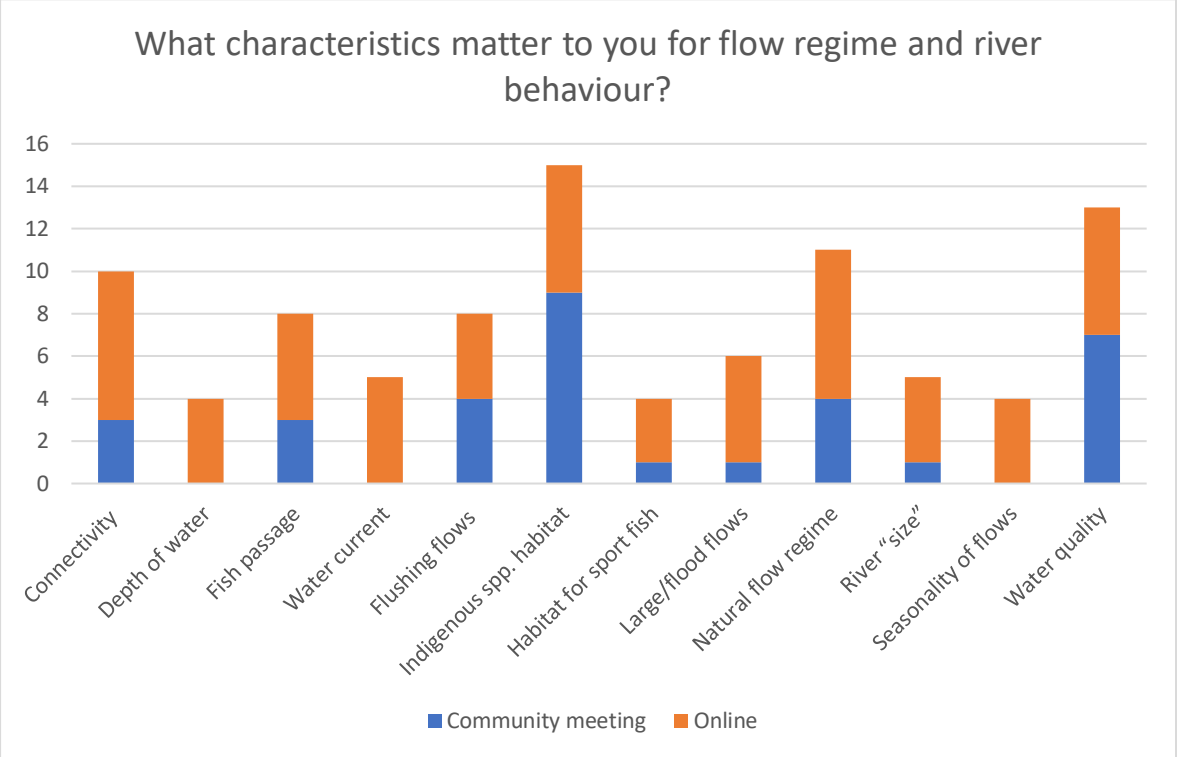
- If we are looking “regionwide” then we cannot link values or attributes to a waterway or waterbody.
- The scientific summary when dealing with water quality says "water quality is the best in Otago" and "The Lake monitoring sites at Wanaka, Hawea and Wakatipu also have excellent water quality results.” However the ORC Water quality report for 2015 t0 2020 shows that the Matukituki River, an alpine fed large river, on average exceeds the Water Plan limits for Nitrogen and Ammonia and lake Wanaka reaches 60% of the limit for Nitrogen. These cannot be considered excellent and should be addressed. These are also 5-year averages and do not show the trend which is probably upwards given the comparatively recent intensification of farming in the area. The description of quality as excellent should be removed and these real issues addressed before serious and possible irreversible problems arise.
- Management of water quality for recreational purposes must be balanced with the needs of commercial sector.

3.8.4 Locations identified for value: water quality

The map below shows locations with important water quality values identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.9 Flow regime and river behaviour



	Do you think this characteristic for flow regime and river behaviour is OK (community meeting)?		How would you rate the condition of this flow regime and river behaviour characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Connectivity with other water bodies	0	3	5	9	5
Depth of water	0	1	5	10	3
Fish passage	0	2	4	9	6
Flow velocity/water current	0	1	5	10	3
Flushing flows to get rid of algae	0	2	4	6	8
Habitat for indigenous species	0	5	5	5	10
Habitat for sport fish	0	1	8	7	5
Large/flood flows	0	1	5	9	4
Natural flow regime/behaviour	0	3	6	9	5
River "size"	0	3	8	8	4
Seasonality of flows	0	3	5	8	5
Water quality	1	8	6	8	4

3.9.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value.

Characteristic	Comment
Habitat for sport fish	• Less sport fish = more indigenous species
Flushing flows to get rid of algae	• Better not to have algae!!

3.9.2 Additional characteristics identified

Additional characteristics that were identified by respondents:

- Sound- the sound of a river, a waterfall, a lapping lake – all part of the overall "natural experience". On the negative – not being overran by scenic flights & helicopters.
- Presence of boats, noise pollution, run off from farmland contamination, farm irrigation/ levels of water affected

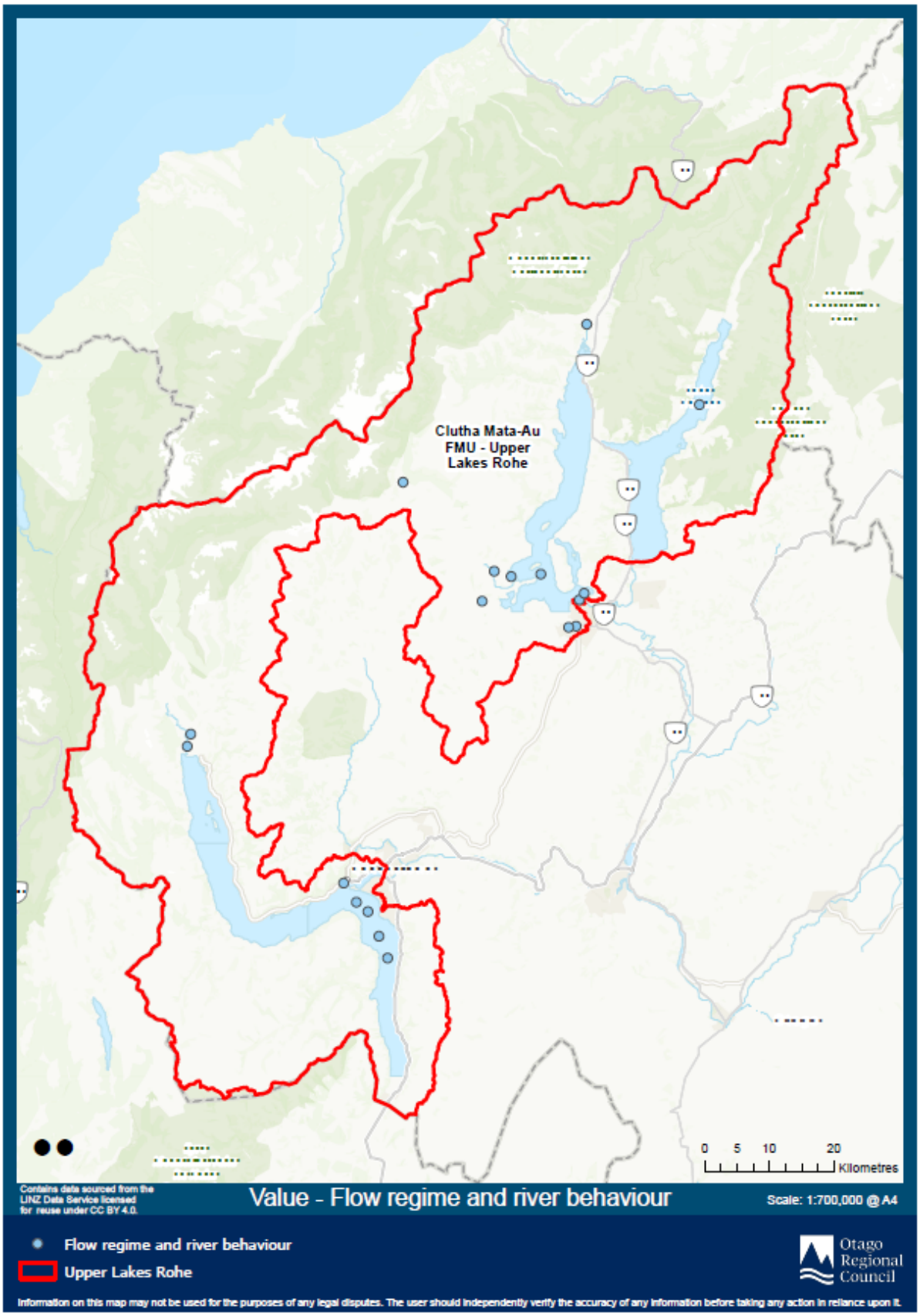
3.9.3 Other comments

Other comments made by respondents:

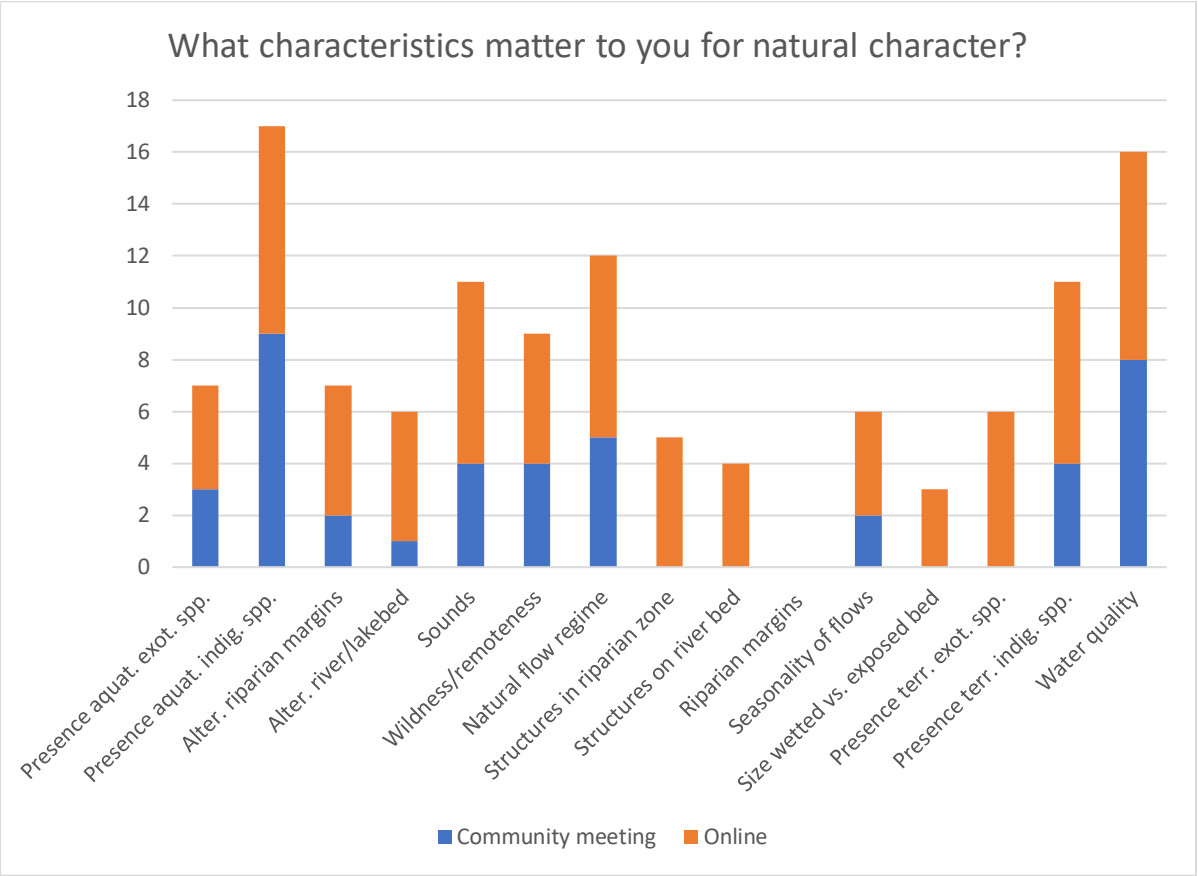
- River flow is impeded by willows.
- Almost no fish/eel ladders, completely isolated populations, functional extinction of eel breeding.
- Improved flow in small streams subject irrigation take.

3.9.4 Locations identified for value: flow regime and river behaviour

The map below shows locations with important flow regime and river behaviour values identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.10 Natural character



	Do you think this characteristic for natural character is OK (community meeting)?		How would you rate the condition of this natural character characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Aquatic ecology - Presence of exotic species	0	3	2	7	8
Aquatic ecology - Presence of indigenous species	0	9	3	8	6
Degree of modification of riparian margins	1	4	2	8	7
Degree of modification of river channel/lakebed	0	4	3	10	4
Experiential - Sounds	0	1	5	9	3
Experiential - Wildness/remoteness	2	4	4	9	4
Natural flow regime/behaviour	4	2	5	8	4
Presence of structures in riparian zone	0	1	4	11	1
Presence of structures in the riverbed/on the lakebed	1	4	2	11	4
Riparian margins	0	9	3	9	6
Seasonality/variability of flows	1	2	5	9	3

Size of the wetted bed vs exposed bed	1	0	4	9	4
Terrestrial ecology - Presence of exotic species (i.e. pest plants)	0	8	2	6	9
Terrestrial ecology - Presence of indigenous species	0	3			
Water quality	1	12	6	9	2

3.10.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value. [11]

Characteristic	Comment
Water quality	• Urban development water quality can be a problem. • Water quality is not a stand-alone characteristic
Degree of modification of riparian margins	• Albert Town cycle trail above the Albert Town bridge. This work has made a road along the river changed the direction & has changed the character of the river.
Riparian margins	• Very unclear in Matukituki valley where the riparian margin is – they are not fenced
Terrestrial ecology – Presence of exotic species (i.e. pest plants)	• Lupins along waterways, willows, broom.
Experiential- Sounds	• Some areas where the importance of sound is actually silence!!

3.10.2 Additional characteristics identified

Additional characteristics that were identified by respondents:[12]

- Landscape / visual
- Less toxic algae (Cardrona), less farm run off of nitrates and other farm pollutants
- Views without housing in areas of Outstanding Natural Beauty

3.10.3 Other comments

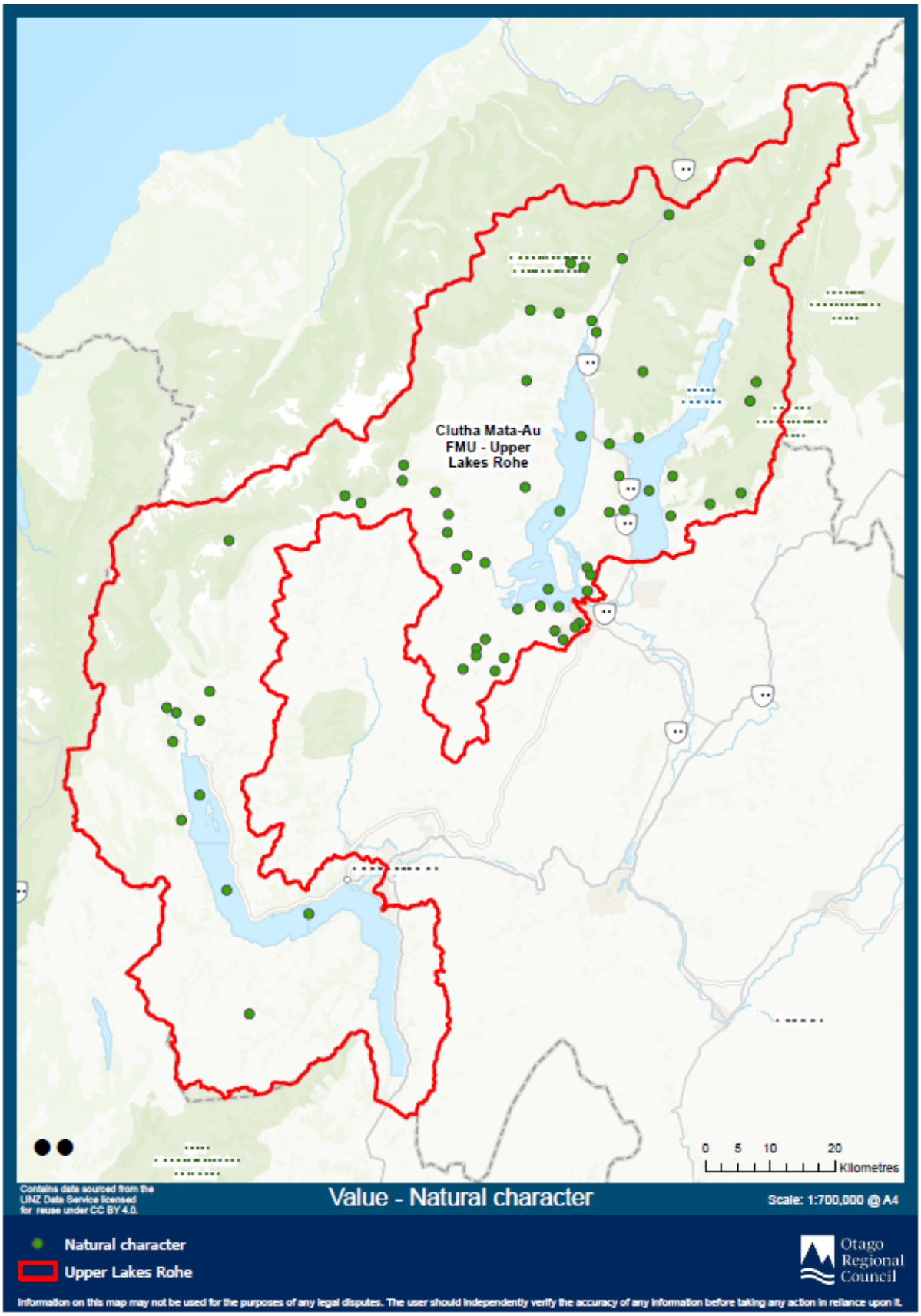
Other comments made by respondents:[13]

- Natural rock features are fast disappearing - taken away to serve as garden features.
- Endless clearing of 'scrub' manuka, kanuka, matagauri and bracken fern. The character of the area is being destroyed.
- Moths (poisoned for agricultural reasons) and manuka beetle have suffered a decline.
- Disgusted to see the lake and surrounds damaged by the water park at Lowburn.
- Non-native trees are good for birdlife to a degree as they provide a refuge/habitat.

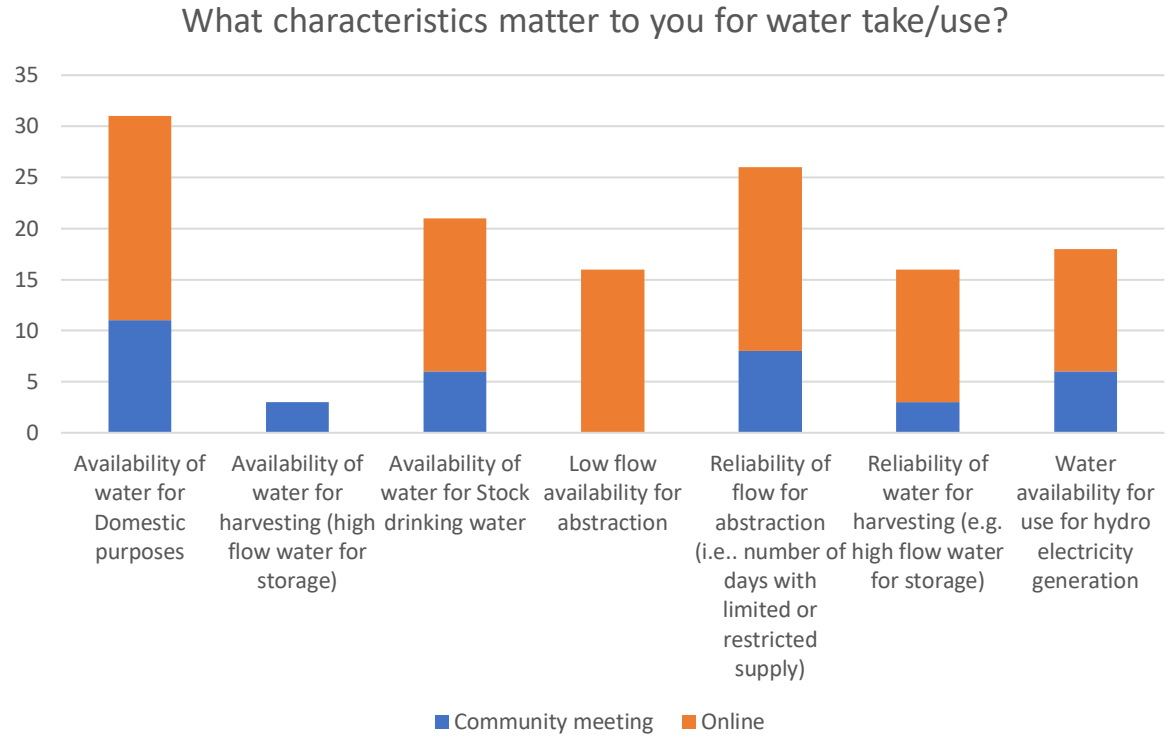
[11] Comments are unedited.
[12] Comments are unedited.
[13] Comments are summarised.

3.10.5 Locations identified for value: natural character

The map below shows locations with natural character values identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.11 Water take/use



	Do you think this characteristic for water take/use is OK (community meeting)?		How would you rate the condition of this water take/use characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Availability of water for Domestic purposes	0	1	12	8	1
Availability of water for harvesting (high flow water for storage)	0	1	11	7	2
Availability of water for Stock drinking water	1	0	12	7	1
Low flow availability for abstraction	1	0	9	7	4
Reliability of flow for abstraction (i.e. number of days with limited or restricted supply)	2	3	11	8	3
Reliability of water for harvesting (e.g. high flow water for storage)	0	1	10	7	3
Water availability for use for hydro electricity generation	1	1	10	6	3

3.11.1 Further comments on specific characteristics[14]

Nil.

3.11.2 Other characteristics identified

Any additional characteristics that were identified by respondents are listed below:[15]

- Retention of (or getting back) natural ecosystem/water habitat values i.e. not over-extraction
- All commercial use of water should be considered in the overall context of landscape and natural topography. Intensive farming (e.g. dairy) which require high water use, not necessarily appropriate in this region. With climate challenges we have, too many irrigation schemes not good as may have unintended consequences for local landscape and waterways survival
- physical availability, minimum environmental flows.
- sufficient water for fish spawning

3.11.3 Other comments

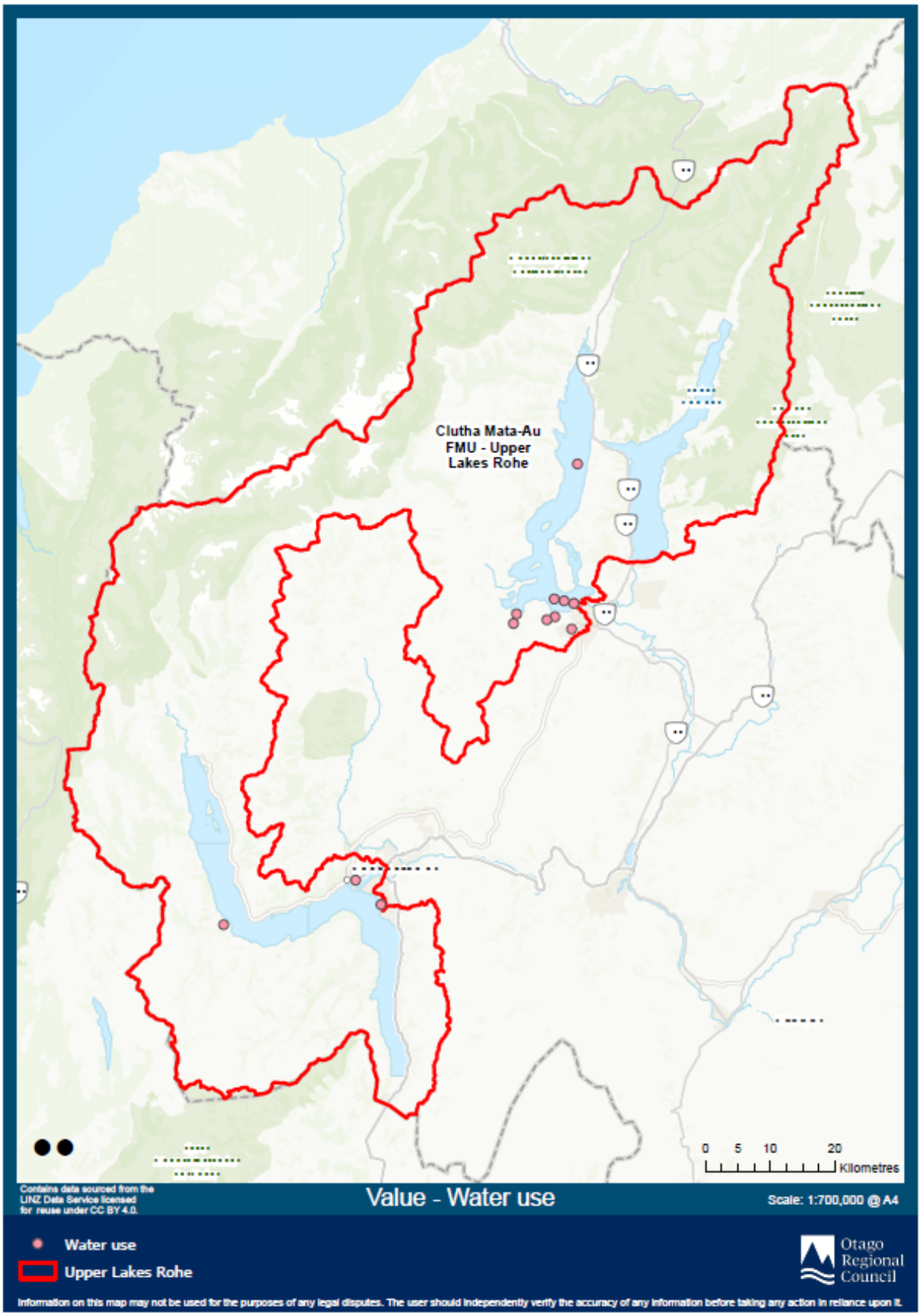
Other comments made by respondents:[16]

- The demand for water for agriculture will continue to increase. The political strength of Federated Farmers will make for little if any progress in improvement of waterways until there is a massive shift in representation on councils. In farmer publications there were articles encouraging farmers to stand and gain representation on these boards so that their views could be better put.
- Run off from farmland contamination is a big concern for waterway health, farm irrigation/ levels of waterways being affected is a major concern, too much is being taken without monitoring or consideration of the true environmental impacts.
- Rivers should run free!
- Any water abstraction must be within ecological limits and ecological function

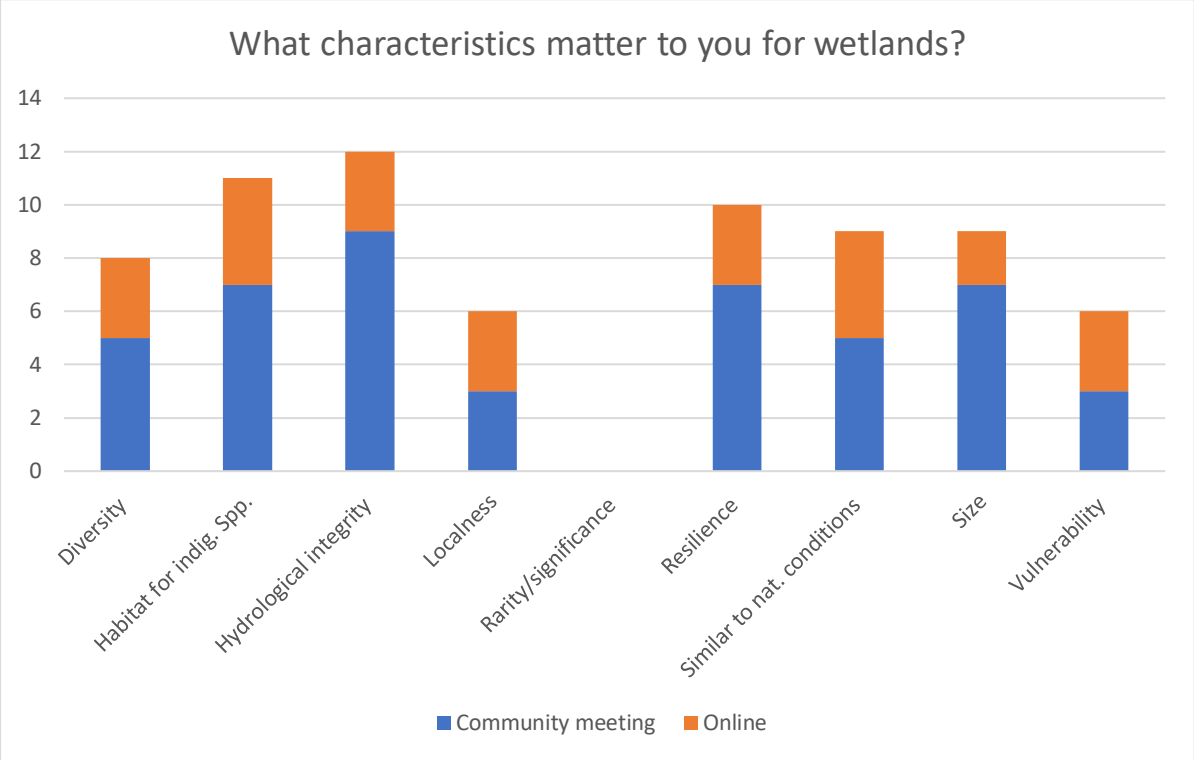
[14] The comments are unedited
[15] The comments included are unedited.
[16] Comments are summarised.

3.11.4 Locations identified for value: water take/use

The map below shows locations with water take or water use values identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.12 Wetlands



	Do you think this characteristic for wetlands is OK (community meeting)?		How would you rate the condition of this wetlands characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Diversity (e.g. of wetland types and species within)	1	1	4	6	9
Habitat for indigenous species	2	3	4	7	9
Hydrological Integrity (e.g., surface water level, groundwater level, and interactions between	0	1	3	7	7
Localness	0	0	5	9	5
Rarity/significance (regional, national, international)	1	1	4	8	7
Resilience (i.e. capacity to recover)	0	2	4	6	9
Similar to natural conditions (e.g. nutrients, pH, temperature, eutrophic/oligotrophic)	0	0	4	6	9
Size	0	1	4	6	8
Vulnerability (e.g., hydrological, dominance of native or invasive species, tenure, proximity to human pressures)	0	3	3	6	11

3.12.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value. [17]

Characteristic	Comment
Size	• Hard to answer. Not aware of current status, but it is very important to ensure wetlands are not encroached on or unduly impacted by development or intensification of farming + other commercial activity anywhere in vicinity

3.12.2 Other characteristics identified

Any additional characteristics that were identified by respondents are listed below:[18]

- Retention of habitat capacity.
- Retention of water purification/filtering capacity.
- Retention of flood-minimisation capacity
- Wetland productive capacity (fish & wildlife). Habitat for waterfowl/ game birds
- Presence of boats
- Noise pollution
- Run off from farmland contamination
- Farm irrigation/ levels of water affected

3.12.3 Other comments

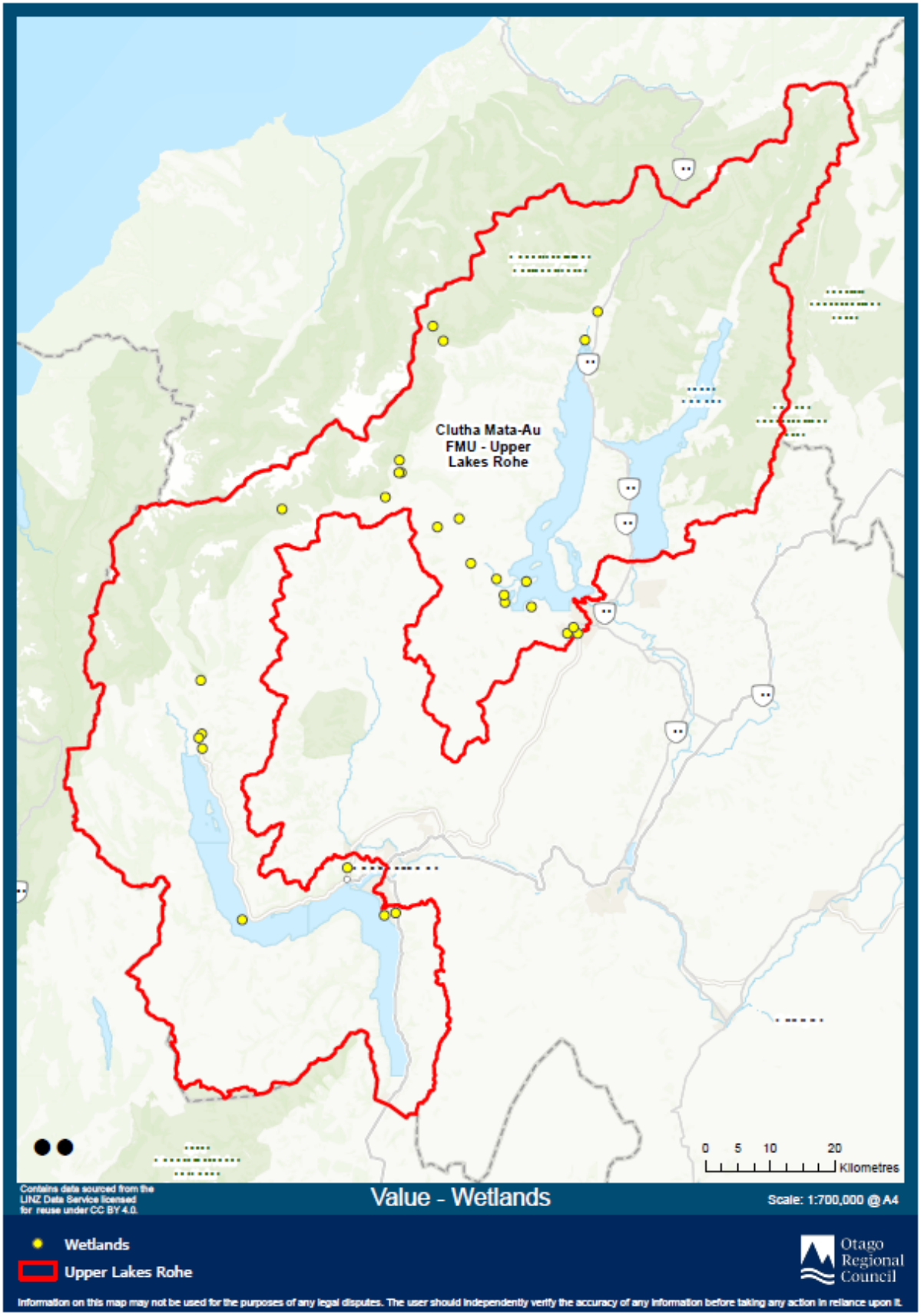
Other comments made by respondents:[19]

- Big Boggy has been partially drained by a very large drain at the outflow. Big Boggy is fed by immense upwellings of water out in the wetland. I have belly boated over/in it and floated over these upwellings. As blue as the sky on a brilliant day, 3m across and seemingly bottomless. There are a few trout in the bog which should be removed by electric fishing and a weir constructed in the draining ditch. Native fishes can climb - trout cannot- and the area could become a haven for native fishes. Only a matter of time before 'someone' has the idea of bottling this underground water supply and want to sell it as is happening in other parts of New Zealand. DOC and Ngai Tahu should ensure that this cannot not happen.
- Probably could do with a few more wetlands as when they are correctly constructed they are very effective with reasonably low up-keep.

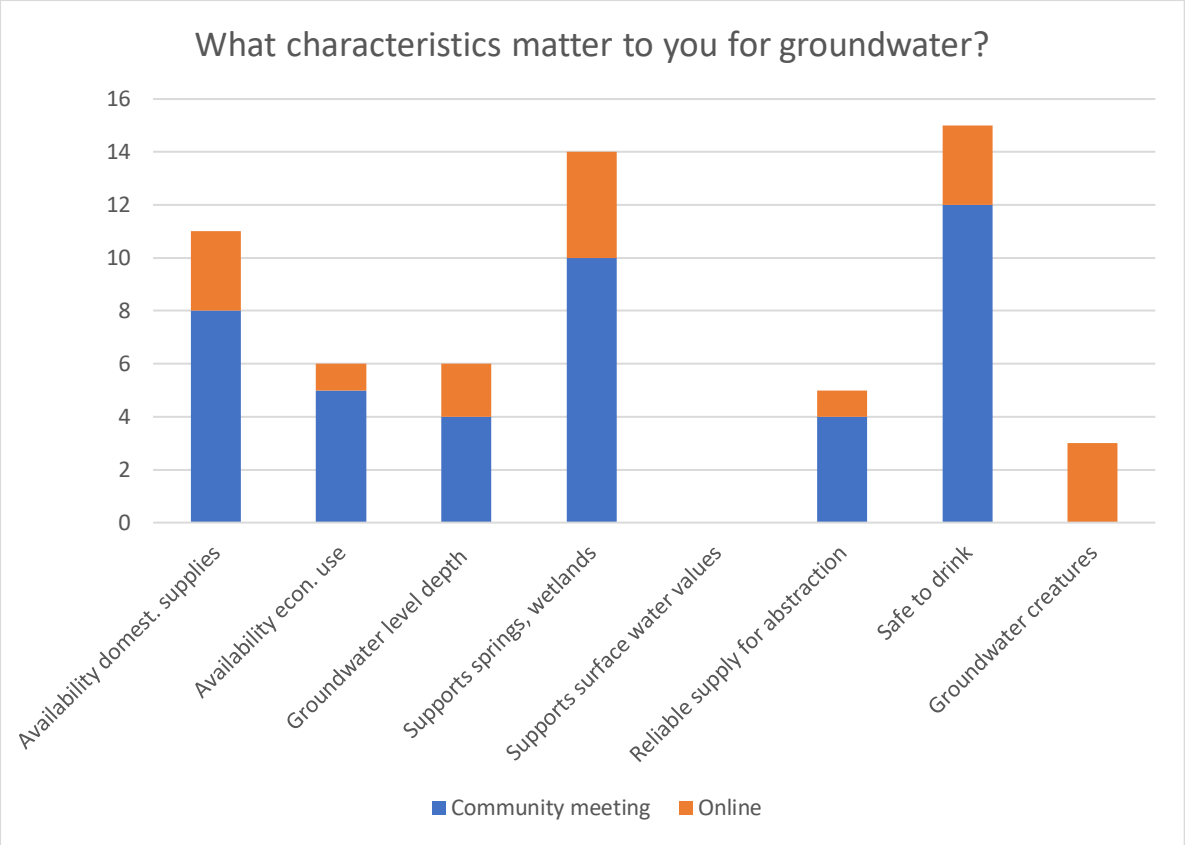
[17] Comments are unedited.
[18] The comments included are unedited.
[19] Comments are summarised.

3.12.4 Locations identified for value: wetlands

The map below shows locations with wetland values identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.13 Groundwater



	Do you think this characteristic for groundwater is OK (community meeting)?		How would you rate the condition of this groundwater characteristic (online survey)?		
Characteristic	**Yes**	**No**	**Good**	**Okay**	**Poor**
Availability for domestic supplies	0	0	8	8	1
Availability for economic use	0	0	7	8	1
Depth (e.g. level is high enough for bores have water?)	0	0	7	8	1
Groundwater-fed surface water feature (springs, wetland) – hydrological, cultural values	0	0	7	3	6
Provides for surface water values	0	0	7	7	4
Reliability of water for abstraction	0	0	6	8	1
Safe to drink	0	2	7	7	4
Stygofauna (i.e., groundwater creatures)	0	0	4	7	4

3.13.1 Comments on specific characteristics

The table below includes comments made by respondents on specific characteristics for this value. [20]

Characteristics	Comment
Reliability of water for abstraction	• more so - constraints on abstraction so that long term sustainability of groundwater is reliable • Input vs output education
Depth (e.g. level is high enough for bored to have water?)?	• Some bores put in place 20-30 years ago have run dry in the Ballantyne Rd area due to over abstraction for irrigation. (not related to Upper lakes FMU)

3.13.2 Other characteristics identified

Any additional characteristics that were identified by respondents are listed below:[21]

- Long term sustainability - i.e do not allow over-extraction. Protection from pollutants from fertiliser, mining activities, possible industrial/other uses
- Nitrates

3.13.3 Other comments

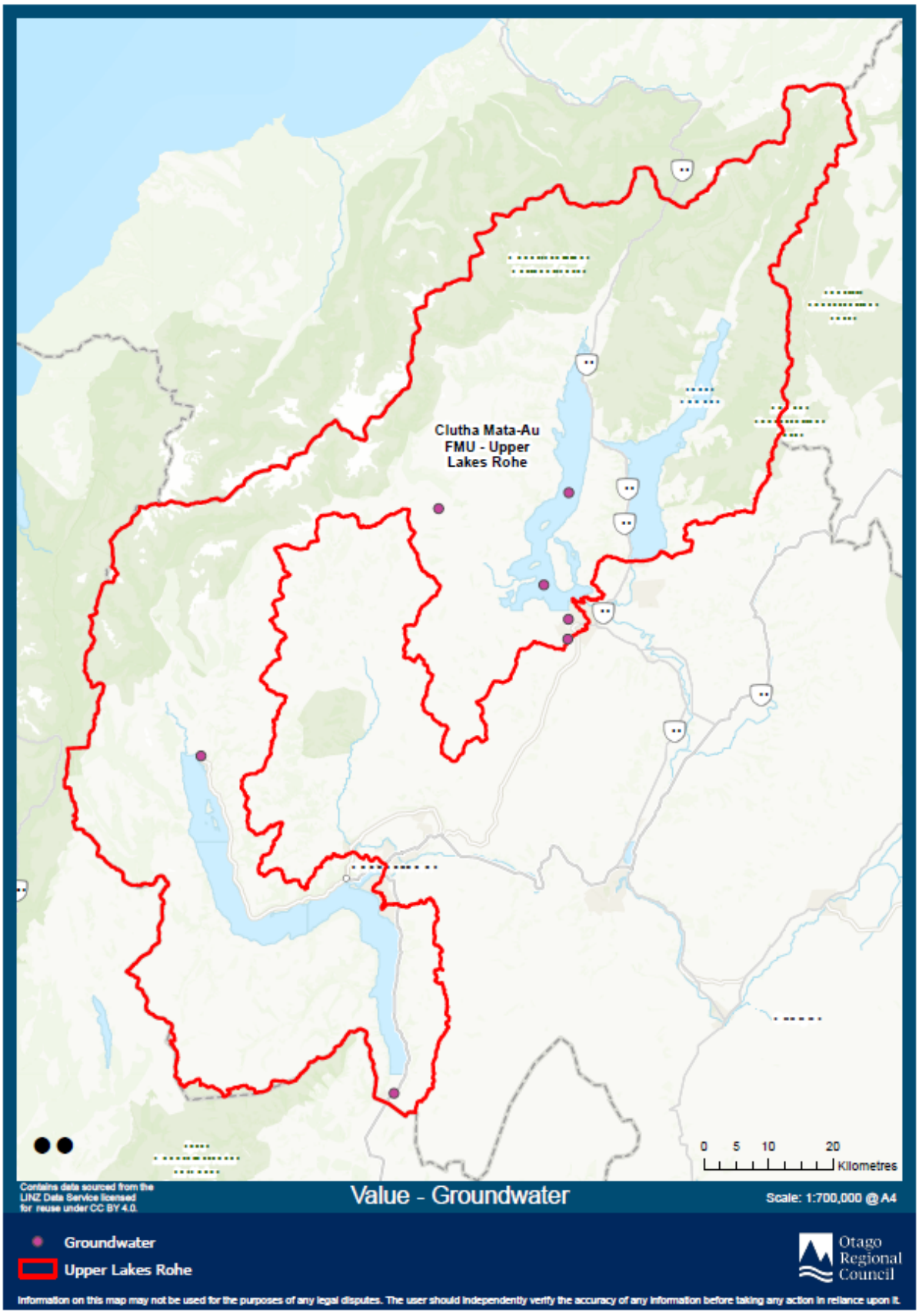
Other comments made by respondents:[22]

- We want the catchment area for the Glenorchy water take to have some protection as none currently exists.
- There has to be a better system for sharing the available groundwater. If an allocation is made and is not being utilised to the full then reallocation procedures should be instituted.

[20] Comments are unedited.
[21] The comments included are unedited.
[22] Comments are summarised.

3.13.4 Locations identified for value: groundwater

The map below shows locations with groundwater values identified by participants at the in-person interactive drop-in sessions and respondents to the online survey.



3.14. Other values that were identified

The table below lists other values that mattered to those participating in the online survey and interactive drop-in session.

What other values matter to you?	Is this value currently well looked after?		Comments
	Yes	No	
Gravel extraction riverbed	2	0	
Gold mining (suction dredge) Gold mining (hard tools)	3	0	
Recognition of habitat for waterfowl in wetlands	1	0	
Recognition of habitat for trout and salmon	0	0	Depends on waterway. Generally not too bad in lakes area.
Discoloured stormwater flows straight into lake during rain fall and is directly effecting. Need to understand cumulative pollution load occurring in Lake Wakatipu from this source then manage this out.	0	0	
Eutrophication from agriculture and golf courses e.g. Lake Hayes. There should be strict limits on application/year and mandatory riparian treatment to filtering	0	1	
Too little attention given to stormwater outfalls. These should have grills and filters. The "drainage wetland" beneath Remarkables Primary is pathetic. When the lake floods, it flows directly across the lake so no filtering.	0	0	
Water should be allocated to activities that do not increase baseline GHG emissions (excluding community supply). Water allocation should be leveraged to reduce GHG emissions.	1	0	
The degradation of water quality that is enabled by some users of water. Water allocation should be leveraged to reduce pollution and improve water quality.	1	0	
Policy changes by the ORC frequent and unexpected.	0	0	
2-Stroke outboard engines are massive polluters (emit 10-15X as much as family car per kilometre) and are banned in various countries (AUS, US, EU). In NZ they are not banned and can be used on lakes. This has to change to protect water quality	0	2	
Need areas for peace and quiet (no jet skis etc.)	3	0	

Should only allow electric powered watercraft in New Zealand lakes and rivers. Phase out internal combustion powered boats.	1	0	
Reduce powerboats on Clutha river, Matukituki river and lake Wanaka. Hugely pollutant, noisy, unsafe. The noise in Roys Bay in summer is terrible. Really enjoy Albert Town without jet skis and boats up and down the river. Could do better for lake Wanaka and other rivers. Access to all marginal strips - should be fenced	3	1	
Lagarosiphon programme needs review. The programme should be reduced in areas like paddock bay where it is doing more harm than good. It has become a mud desert devoid of life except of lagarosiphon regrowth!	2	0	
Use of diquat for lagarosiphon control especially in Paddock Bay should be discontinued. It has been used for many years but has had almost no effect on lake weed abundance. A waste of money and causes habitat degradation.	0	0	
Duck shooting is an important activity in the region.	0	0	
Stormwater run-off into rivers and lakes especially from urban developments, which are expanding at a massive rate.	1	0	

3.15 Other matters raised

The table below lists other matters that were raised by people participating in the online survey and interactive drop-in session.

• This survey has mainly focused on recreational and biodiversity values. These need to be protected but must also be balanced with the cost of achieving this and the need for the region to provide economic and "living" value through tourism, agriculture and horticulture.
• Didymo smothering lake edge and rivers killing native insects and plants
• What about recreational use of lakes and rivers? Control of discharges from boats? (i.e. oil, petrol, etc). And prevention of weed spread, especially in Lake Hawea? And what about controlling 4WD access to waterways? This is a major erosion + water quality issue.
• Clean waterways.
• Return waterways to natural ecosystem integrity as soon as possible and protect these for eternity.
• The scientific summary describes the catchments as "dominated by conservation land with much of the remainder managed by high country sheep farming. No mention is made of the intensive pastoral farming that occurs in places such as the Matukituki Valley, Makarora, Maungawhera and Glendhu Bay. There could be up to 100 sqkm of such land used for intensive sheep and cattle farming. This is effecting water quality. Quite small areas of such farming have had serious effects on North Island lakes such as Taupo and the Rotorua Lakes

where measures have had to be taken to reduce the intensity of farming to restore water quality. These intensive land uses should be recognised and appropriate action must be taken to limit their impact.
• The rural sector are able to still draw water as they have been doing for 100's of years as long as all of the above are looked after
• Trout numbers appear to be falling in Upper Clutha region
• Continued engagement with the people most affected by any proposed changes to the water ways they live near to.
• I am really concerned about the degradation of our waterways
• The Glenorchy Community Association is concerned that the catchment area for water supply has no protection and that activities such as mining / drilling could impact the supply
• Generally water quality in the upper lakes is high (except for some urban streams), so what is currently happening with the FMU should continue. There is limited irrigation and consumptive takes. In this rohe there is a huge amount of protection via national legislation, district and regional plans. A large amount of the QLDC area is ONF/L, and conservation land. Many landowners have QEII covenants, actively protecting biodiversity for perpetuity.
• Most of the questions are too black and white with no gauging of priority in people and community values and economic value
• It is important that this consultation process includes the people and groups that are actually working with our land and waterways to provide the protection we are talking about above e.g. Te Kakano trust, Wanaka & Cardrona catchment groups, Lake Wanaka swimmers etc.
• I could not answer any of the "how would you rate" questions. Did you mean generally or specifically? If "specifically" then I would need to name waterway, but this was not a requirement. I could not answer "generally" because of the differences between the various waterways. A confusing survey that has left me quite underwhelmed and disappointed.
• I would be pleased if ORC would read and think about the content of my previous emails in regard to arsenic levels in what is now prime farmland
• Minimum flows must put environment first. Use of water must be sustainable and within limits. You cannot take more than the environment can cope with.
• I get very concerned and upset at the reports of the deterioration of our waterways. Your questionnaire does not seem to address the causes of this or the information that the science provides us with. For example, I can't comment on river depth. It changes constantly and I don't know how that may have affected a threatened species? It seems to focus on how I may be affected personally. Not really the point. There are many reasons why this is happening, and those reasons are well documented. They need to be addressed and the practices that create runoff, nitrate leaching and dirtying of our waterways stopped. It is the regional council's job to do this.
• Generally, the waterways in the region are in good condition with a few notable exceptions. The Cardrona river suffers from a lack of public access, over abstraction and habitat destruction. I fear this will only get worse with increased development in the valley. I feel the Cardrona river is a lost opportunity with limited access to what could be if it were managed better a pristine high-altitude stream with excellent fishing, walking and bird watching opportunities. Instead, it is a small stream that runs dry much of the summer with limited access and farmland right up to its edges. In spite of this the fishing can actually be quite good and I have seen plenty of interesting wildlife along the limited areas that have some public access. • I often go fishing along the Upukerora river near Te Anau. This is a perfect example of the type of river the Cardrona could be if it were protected. There is a large riparian zone either side of the river itself that is not farmed. As a result, the river is allowed to braid naturally and I believe limited abstraction takes place that ensures the river maintains a natural flow

throughout the year. The fishing excellent and I regularly see plenty of birdlife such as terns, stilts etc. The Waiau Fisheries Trust have negotiated excellent access points enabling the public to fish or walk along large sections of a natural small mountain braided river system unhindered. I wish the Cardrona river could be managed in a way to mimic this and that it would add a whole new dimension and attraction to both humans and wildlife combined.
• Importance of boating, fishing and recreational use long term should be protected, not commercial enterprise damaging the lake and lake land with no remediation.
• Upholding the NPSFM and the values outlined is essential to maintaining the life supporting capacity of freshwater. This means that economic uses and farming activities need to be managed in a way that is secondary to the values of freshwater. This mindset is not yet present amongst the majority of society due to the debt cycle of the farming industry. The majority of the agricultural sector cannot see their operations as separate from water availability - the profitability of their operations relies on the availability of water to sustain their farming activities. Little effort is made to ensure the quality of the water, including the management of riparian zones as the seepage of nutrients from soil or the daily small amounts of sedimentation are difficult to comprehend at a catchment wide scale which collectively result in significant adverse effects. Whilst the majority of people do care about water quality, it is hard to prioritise water quality when it compromises profits and therefore debt servicing requirements. This is where regulation is critical coupled with support to change farming operations/systems over time to achieve the outcomes identified in the NPSFM. We need to draw the line and the time is now.
• Don’t make numbers-based decisions without input from those who are (directly) affected.
• I stopped ticking in this survey as it got so laborious. I am concerned at the overuse and pollution of Otago’s waterways. Changes to improve habitat and all ecosystem health is extremely important.
• Look after the native birds, including waterfowl, when doing any development to improve water quality of Lake Hayes. Don’t chop all trees down at once. Get native trees established first. Provide habitat for little native fish while development takes place. Development needs to allow for natives to use water ways naturally. It can be done :-) thank you for listening.
• I am not qualified enough to answer this survey

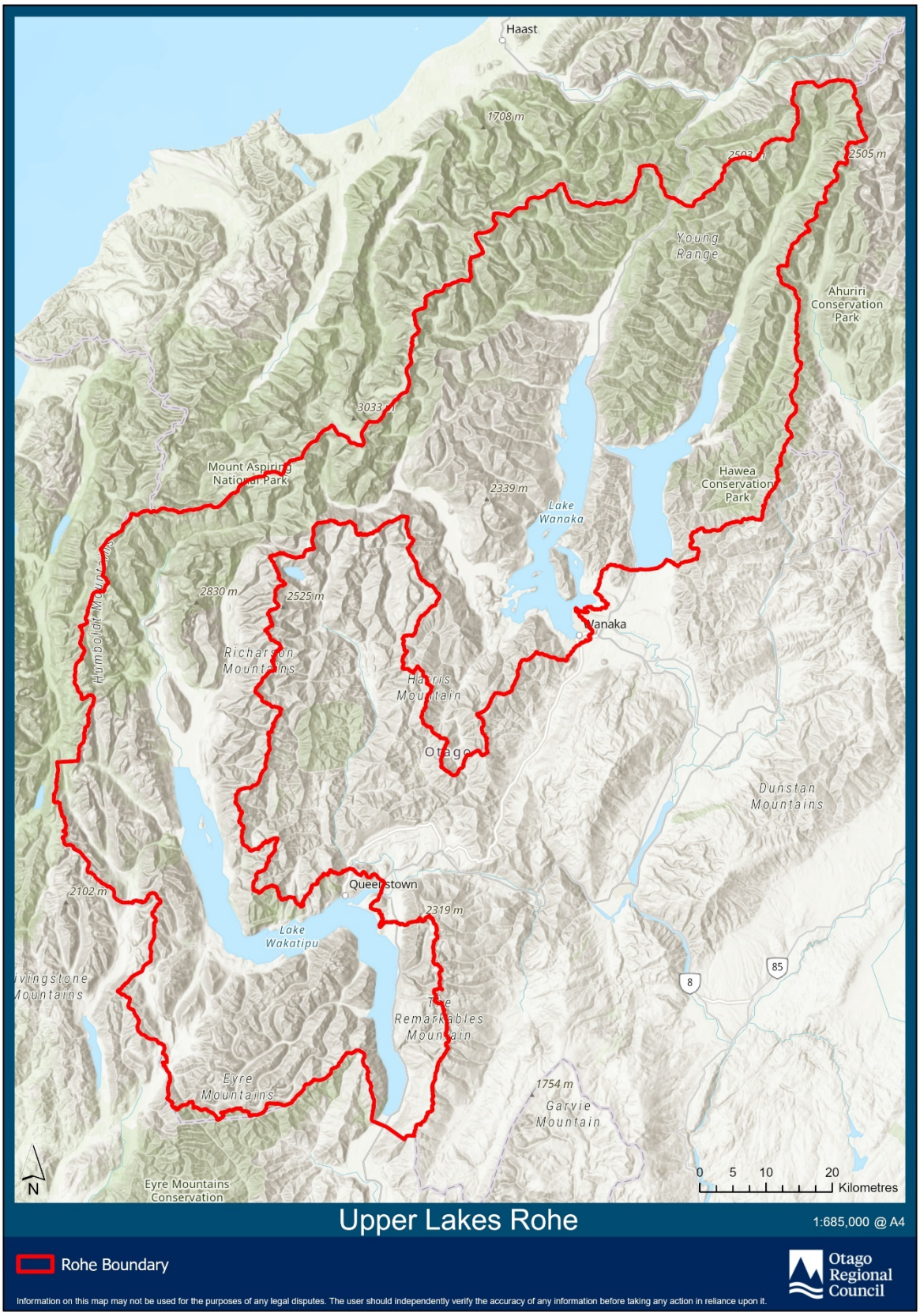
4 Feedback received by email

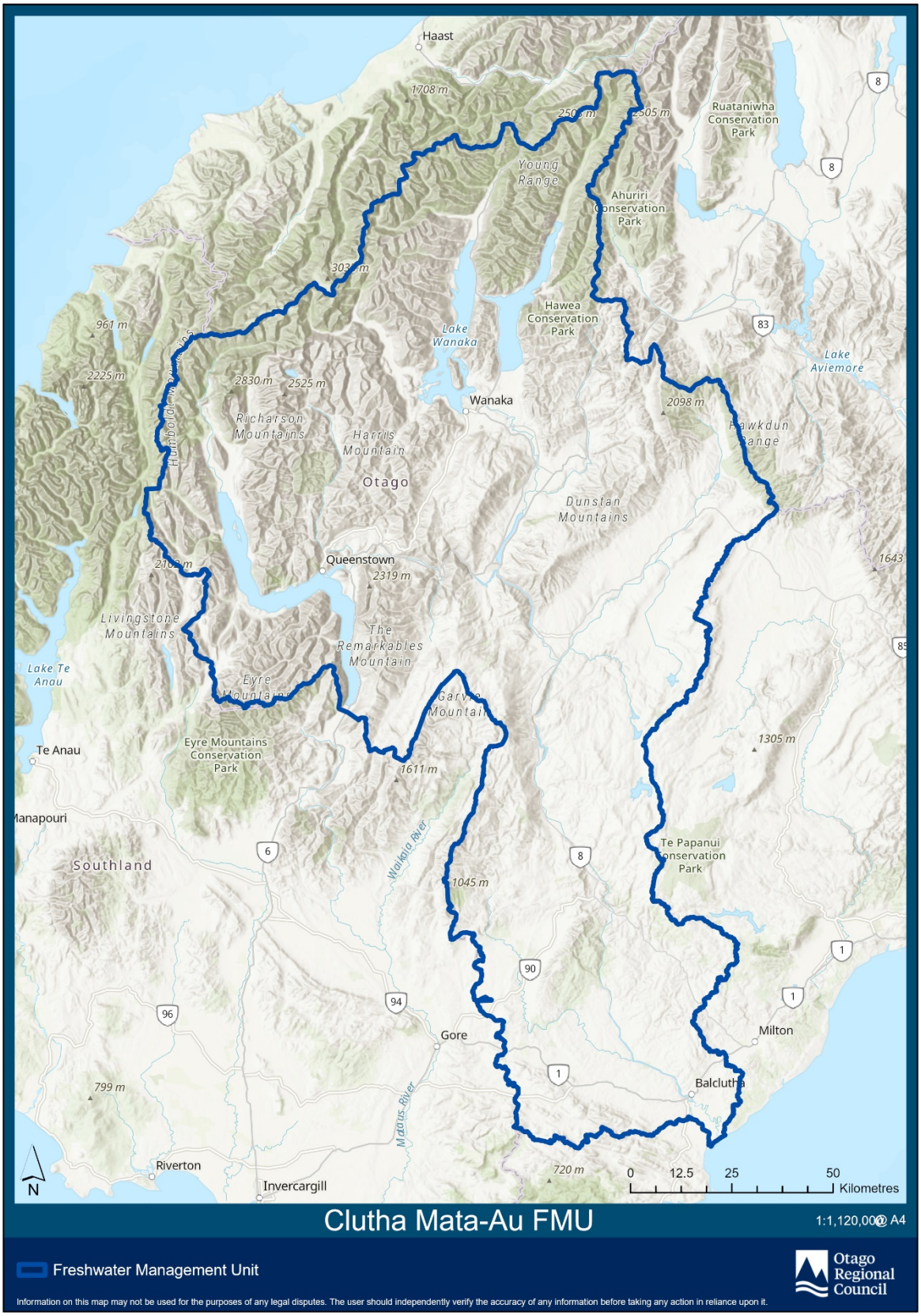
This section provides a summary of the feedback that was received via email over the period 17th November 2021 to 10 December 2021. Feedback via email was provided by three individuals/organisations

Value	Comment
Swimming / water recreation activities **Fishing** **Non-contact recreation**	• Recreational amenity values of waterways across the whole range from passive (walking, picnicking) to active (boating) are often neglected in water planning and should be given a high profile within the rohe. • Public access to waterways for recreation is an important value because it allows the public to use and enjoy natural resource opportunities. • The protection and enhancement of conditions for contact recreation including swimming, kayaking, fishing, and waterfowl deserve separate mention. We are concerned that ORC does not clearly categorise fishing as a contact activity when in our view it should be explicitly treated as one.
Harvesting of food from waterways	• Fishing, waterfowl hunting, mahinga kai gathering – is a specific category of value has a human health element to it.
Aquatic species	• Ecosystem values including sports fish, waterfowl including gamebirds, indigenous fish species (both threatened and non-threatened) are all important values. ORC should recognise valued introduced species such as trout as valid ecosystem components rather than attempting to relegate them down the priority order under 'fishing' activity as has been done on Manuherekia. This approach is ecologically unsound.
Threatened species	• Conservation of threatened species (particularly non-migratory galaxiids) is a priority value and may well require interventions by statutory agencies or interests where populations are at risk.
Biodiversity values	• The incredible biodiversity values of the rohe need to be recognised and protected with restoration undertaken where these are degraded.
Ecosystem functions and processes	• Waterway productivity is as equally important as a value as biological diversity. A focus on the productivity of micro-invertebrate populations as a value is required in this regard with later consideration of habitat requirements and drift/flow relationships.
Habitat	• Aquatic habitat is an important value. River and riverbed habitat and lake margins and wetland all deserve inclusion. Most waterways in the rohe are in something resembling a natural state but urban streams need rehabilitation along with smaller lake and river tributaries which have often been impacted by landscape grooming or channelisation for agriculture. Wetlands generally (not just regionally important wetlands) need to be identified and protected. There are wetlands in the Glenorchy area associated with the lower Rees and Dart which deserve special mention along with the remains of the once extensive Big Boggy Wetland and other wetlands in the Matukituki valley. • The waterways in the area are home to non-migratory galaxiids which are found no-where else in the world and need enhanced protection to ensure their on-going survival. • Habitat values for wildlife deserve a higher profile in the plan. Waterbird species including black-billed gulls, black fronted terns, pied stilt, shags, herons, crested grebe and waterfowl all need to be actively considered in waterway management.

	• When considering Te Mana o te Wai, the values that riparian habitats have for wider biodiversity value (such as avifauna) must be fully considered when assessing the health and wellbeing of waterbodies and freshwater ecosystems in addition to the attributes of the freshwater itself. • Invasive weeds are an increasing issue within aquatic environment and along the riparian areas. The plan must include strategies to tackle these and prevent further spread.
Water quality	• Water quality is generally very high as far as we are aware • Silt discharges in runoff from land development sites into waterways is a serious issue which needs to be much more tightly controlled in developed areas. This problem along with unauthorised discharges of pollutants is evident in urban waterways such as Bullock Creek and Horne Creek • Agricultural intensification is occurring on properties adjoining lakes Hawea, Wanaka and Wakatipu. Trends in nutrient and silt loss need to be closely monitored even though waterways discharge into large lakes. Land use effects need to be buffered from natural water as much as possible. • Growth of nuisance organisms mainly didymo and lake snow has seriously impacted on Upper Lakes Rohe waters and deserves a strong future focus. Toxic algae need to be monitored and managed. • While abstraction is less of an issue then it is in other parts of Otago, there is concern at the impact increasing pressures on land use from subdivision and development is having on indigenous biodiversity and resulting effects of sedimentation from earthworks and pollution from any increase in intensity of agriculture.
River flow	• Most waterways in the rohe have little abstraction and flow regimes are approaching natural in many cases. • Exceptions include some overallocated lake tributaries such as Quartz Creek (Lake Wanaka) where there have been deemed permits in place. These waters require flow restoration • Connectivity of waterways is an important value through the formal setting of flow regimes within the Land and Water Plan. • Setting of minimum flows at a high level of naturalised flow will help ensure aquatic ecosystems are resilient
Other comments	• A number of rohe waterways have been covered by the Water Conservation (Kawarau) Order 1997 as amended in 2013 and require either preservation in their natural state or protection of natural values. In both cases specific values or characteristics have been identified. The Trust considers the new Land and Water Plan must take a much more proactive approach to compliance with Water Conservation orders including monitoring and protection of their values • This rohe has incredibly significant lakes, braided rivers, streams and small fragile alpine wetlands and extensive valley floor wetlands (such as around Glenorchy on the lower Rees and Dart and on the true left of the Matukituki valley) which all need to be properly protected and restored where degraded • Where a Water Conservation Order is in place (Kawarau) a much more proactive approach is needed to properly protect the values identified and monitor compliance with the WCO. Further WCOs should also be considered where significant values are identified through this process.

Appendix 1: Map of the Upper Lakes rohe and Clutha-Mata-au FMU




Haast
1708 m
2505 m
Ruataniwha Conservation Park
Young Range
Ahuriri Conservation Park
Hawea Conservation Park
Lake Wanaka
Lake Aviemore
961 m
2225 m
2830 m
2525 m
Wanaka
2098 m
Richarson Mountains
Harris Mountain
Hawkdun Range
Otago
Dunstan Mountains
Queenstown
2319 m
1643
Livingstone Mountains
The Remarkables Mountain
Lake Te Anau
Eyre Mountains
Garvie Mountains
Eyre Mountains Conservation Park
Te Anau
1611 m
1305 m
Manapouri
Southland
Waiau River
Te Papanui Conservation Park
1045 m
Gore
Milton
Balclutha
799 m
Mataura River
Riverton
Invercargill
720 m
N
0 12.5 25 50 Kilometres
Clutha Mata-Au FMU
1:1,120,000 @ A4
Freshwater Management Unit
Information on this map may not be used for the purposes of any legal disputes. The user should independently verify the accuracy of any information before taking any action in reliance upon it.
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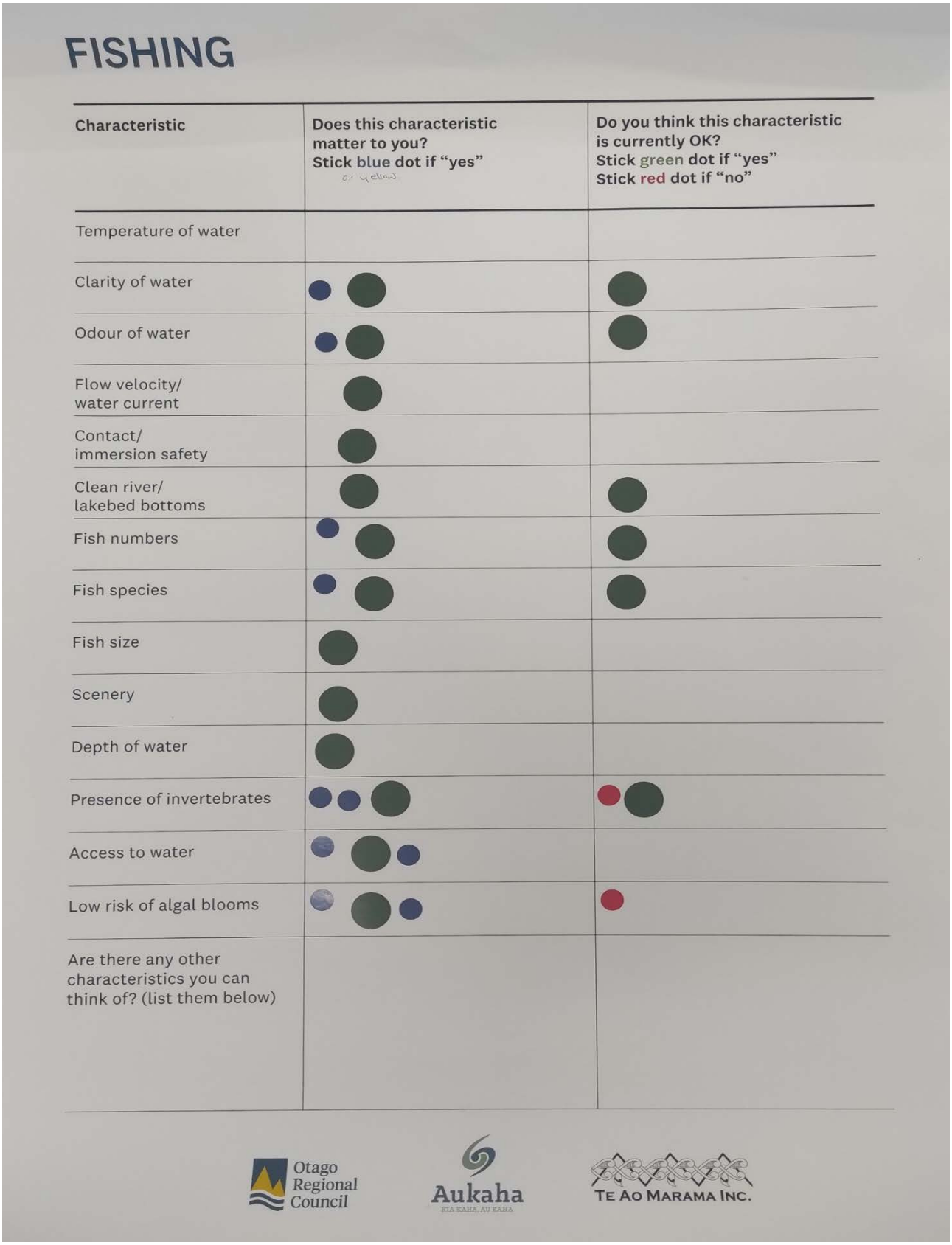
Appendix 2: Example of a values poster



FISHING

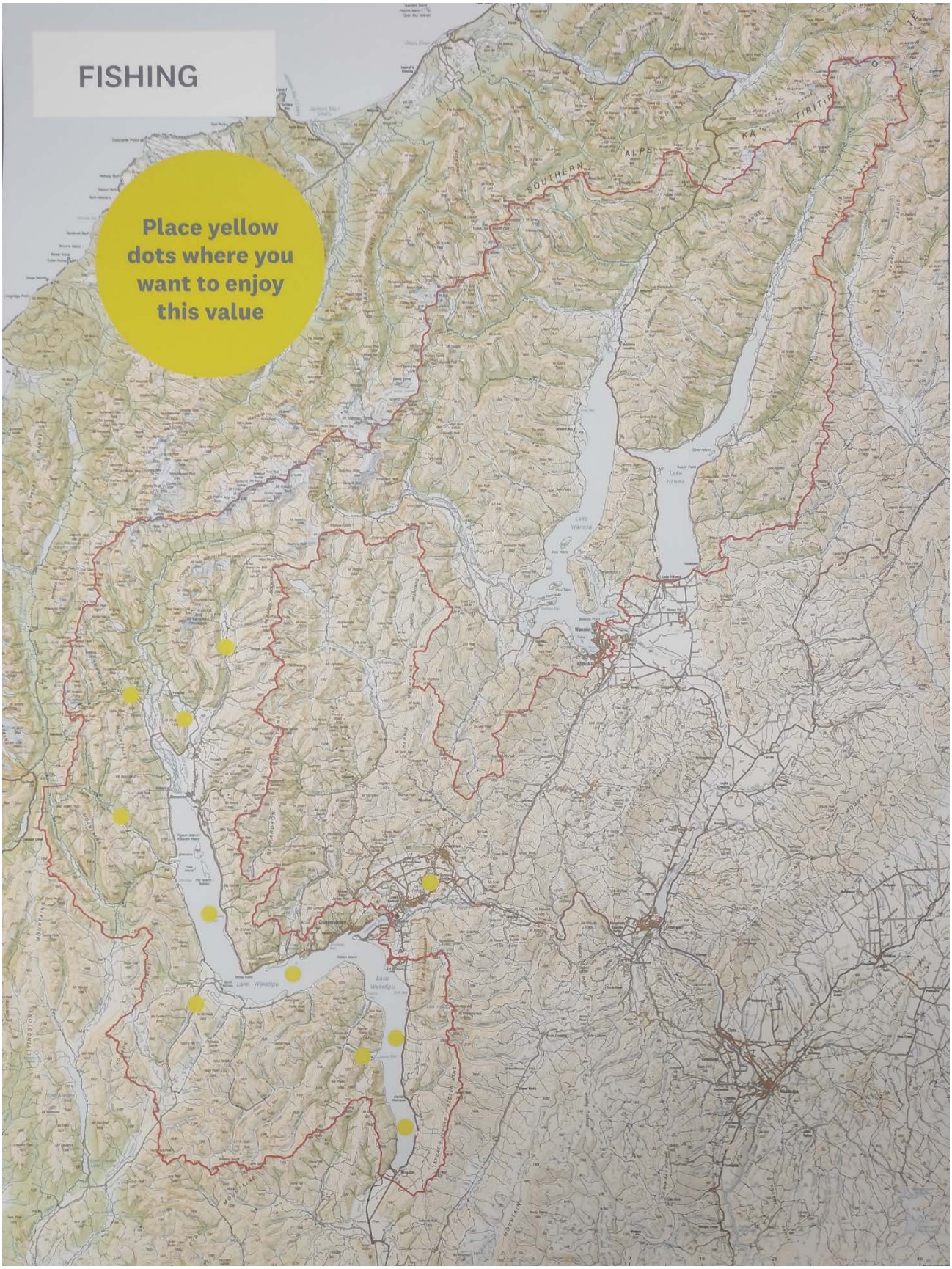
Characteristic	Does this characteristic matter to you? Stick blue dot if "yes"	Do you think this characteristic is currently OK? Stick green dot if "yes" Stick red dot if "no"
Temperature of water		
Clarity of water		
Odour of water		
Flow velocity/ water current		
Contact/ immersion safety		
Clean river/ lakebed bottoms		
Fish numbers		
Fish species		
Fish size		
Scenery		
Depth of water		
Presence of invertebrates		
Access to water		
Low risk of algal blooms		
Are there any other characteristics you can think of? (list them below)		

Otago Regional Council

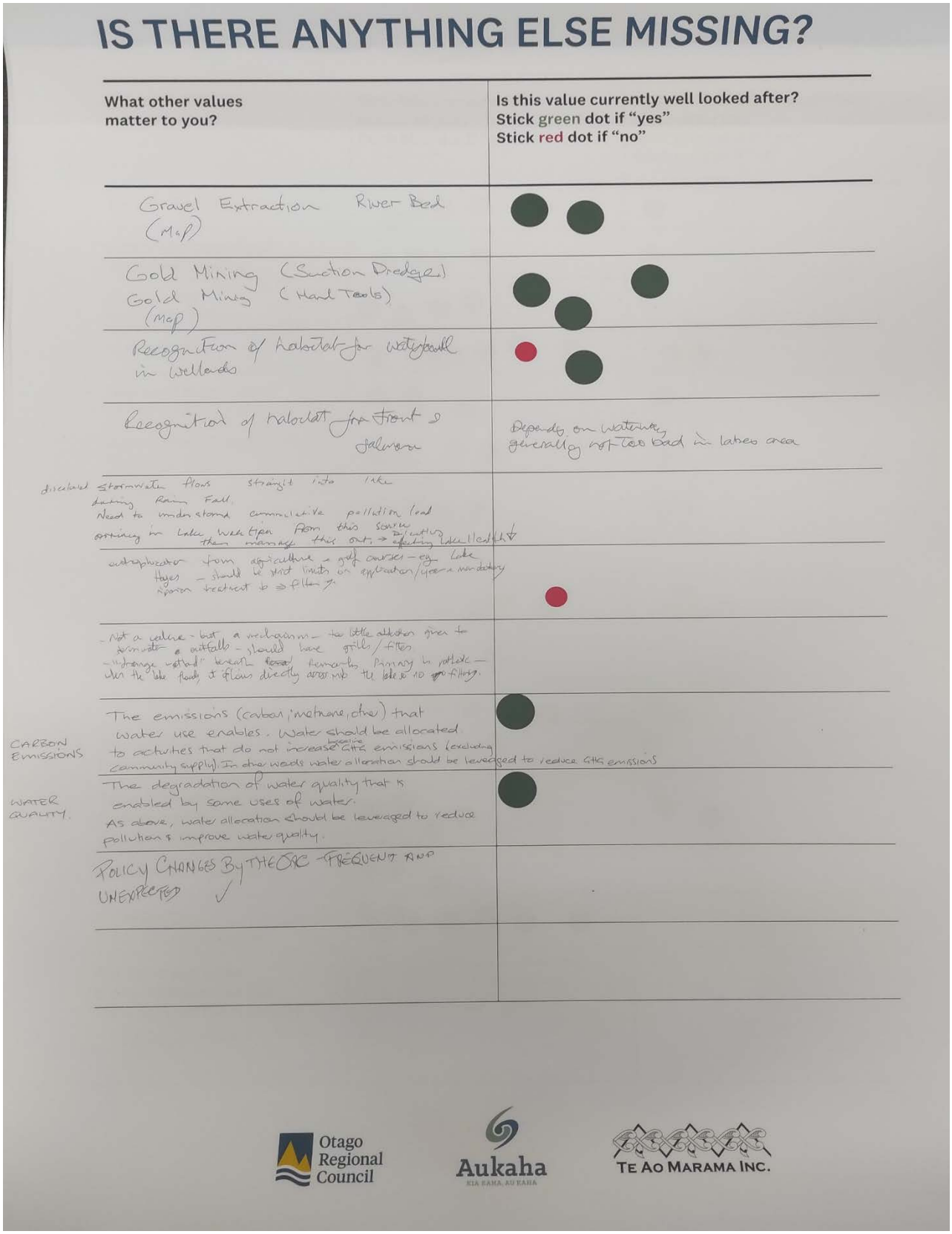
Aukaha

Te Ao Marama Inc.

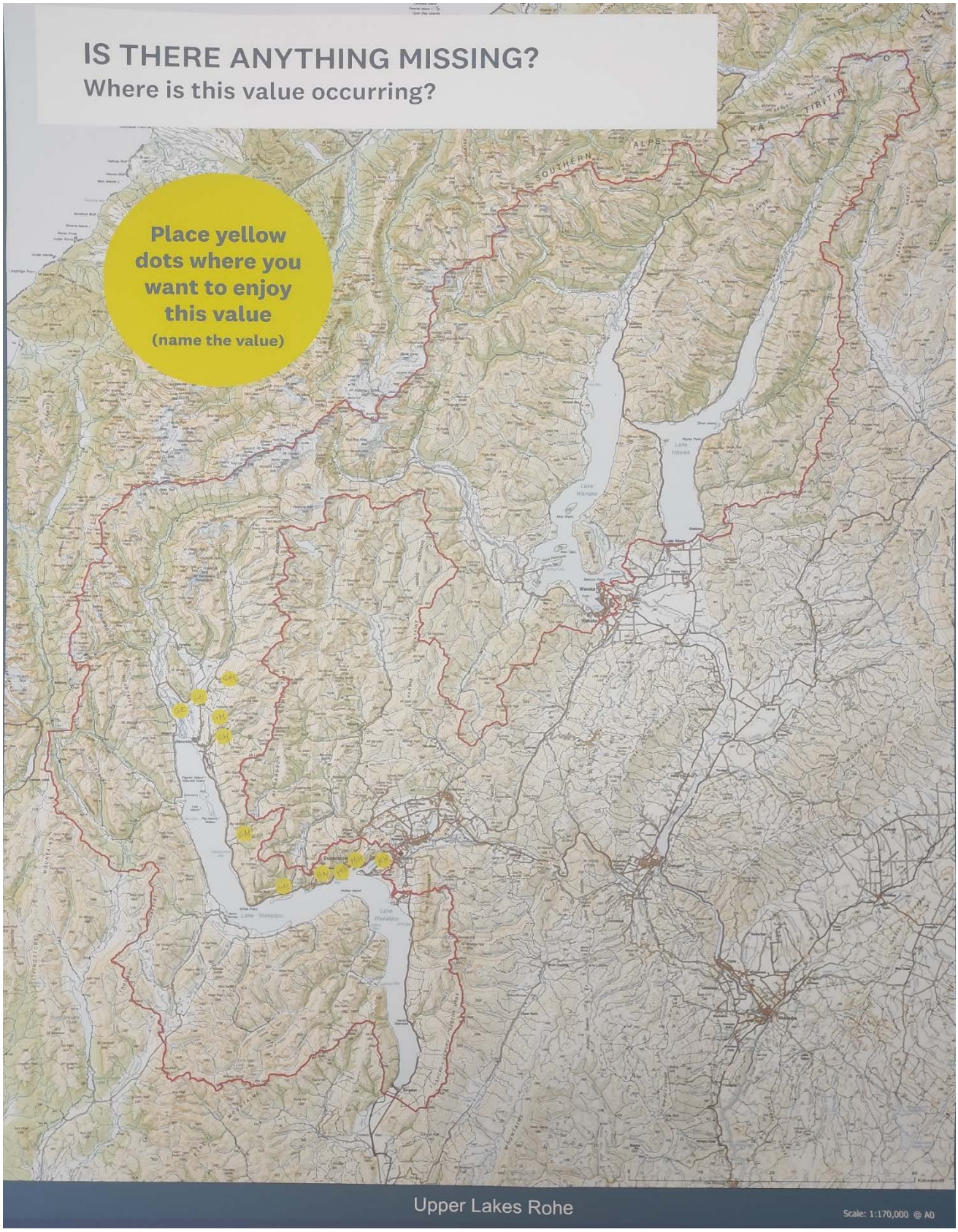
Appendix 3: Example of a values map



Appendix 4: Example of 'Is there anything else missing?' poster



Appendix 5: Example of ‘Is there anything else missing?’ map



Appendix 6: Online survey

Question 1[23]:

1. Select the things that matter to you.

- ☐ Swimming / Contact recreation (e.g., kayaking)
- ☐ Fishing
- ☐ Non-contact recreation (e.g., walking or biking near waterways)
- ☐ Aquatic species
- ☐ Threatened species
- ☐ River and riverbed habitat
- ☐ Ecosystems
- ☐ Water quality
- ☐ River flow
- ☐ Natural character
- ☐ Water use
- ☐ Wetlands
- ☐ Groundwater

Question 2[24]:

2. When swimming or using a waterway for recreation (such as kayaking), which of the following matters to you?

	Yes	No
Temperature of water	○	○
Depth of water	○	○
Clarity of water	○	○
Odour of water	○	○
Flow velocity/water current	○	○
Contact/immersion safety	○	○
Clean river/lakebed bottoms	○	○
Colour of water	○	○
Presence of fish	○	○
Scenery	○	○
Absence of rubbish	○	○
Access to water	○	○
Low risk of algal blooms	○	○

[23] Respondents were able to select as many values as they wished.
[24] Respondents were only able to select either 'Yes' or 'No'

Question 3[25]:

3. When swimming or using a waterway for recreation, how would you rate the conditions?

	Good	Okay	Poor
Temperature of water	○	○	○
Depth of water	○	○	○
Clarity of water	○	○	○
Odour of water	○	○	○
Flow velocity/water current	○	○	○
Contact/immersion safety	○	○	○
Clean river/lakebed bottoms	○	○	○
Colour of water	○	○	○
Presence of fish	○	○	○
Scenery	○	○	○
Absence of rubbish	○	○	○
Access to water	○	○	○
Low risk of algal blooms	○	○	○

Question 4:

4. Is there another swimming or recreational waterway characteristic that is important to you? If so, please list the characteristic(s).

Please add your comment here...

Question 5:

5. Where do you want to swim or do water-based activities? Please list names of swimming locations.

Please add your comment here...

[25] Respondents were only able to select either 'Good', 'Okay' or 'Poor'

Question 6:

6. Are there any other waterway related things that matter to you? If so, please enter them below.

Please add your comment here...

Question 7:

7. Let us know if there is anything else you would like to tell us.

Please add your comment here...

Question 8:

8. Would you be interested in keeping up to date with the latest Land and Water Regional Plan news for Upper Lakes?

- ○ Yes
- ○ No