

Proposed new rules and regulations Upper Lakes Rohe

This summary provides an overview of the provisions relating to the Upper Lakes Rohe (area) within the Clutha / Mata-Au Freshwater Management Unit (FMU). This includes environmental outcomes, target attribute states and area-specific rules and limits. The rules and limits are in addition to those in the region-wide rules covered in the other summaries.

Recent content updates:

13 October 2023:

Added proposed environmental flows, level and take limits for lakes, rivers and aquifers in the Upper lakes rohe and added information regarding whether further allocation of water is available.

25 September 2023:

Added Upper Lakes Rohe boundary map

24 September 2023:

Added timeframe for achieving the environmental outcomes for target attribute states

A map of the Upper Lakes Rohe boundary is shown below.



Environmental outcomes

In its new Land and Water Regional Plan ORC must set environmental outcomes for the freshwater values identified in the Upper Lakes rohe. An environmental outcome statement describes the desired future state that communities in the Upper Lakes rohe and tangata whenua would like to see for a specific value.

The environmental outcome statements are very similar across all FMUs and rohe in Otago, which reflects the fact that the aspirations that tangata whenua and the different communities have for the environment are largely consistent across the region. Table 1 sets out the draft environmental outcomes for the Upper Lakes Rohe.

Table 1: Draft environmental outcomes

Value	Environmental Outcome for Upper Lakes rohe	Attributes to measure and monitor
NPS-FM compulsory values (apply to every FMU/rohe)		
Ecosystem health	Freshwater bodies support healthy freshwater ecosystems with thriving habitats for a range of indigenous species, and the life stages of those species, that would be expected to occur naturally.	<p>Rivers:</p> <ul style="list-style-type: none"> Ammonia Nitrate Suspended fine sediment E. Coli Dissolved reactive phosphorus Periphyton Macroinvertebrates (MCI/ASPM) Fish IBI E. Coli primary contact sites Macroinvertebrates (QMCI) score*1 Deposited fine sediment* Dissolved oxygen Ecosystem metabolism <p>Lakes:</p> <ul style="list-style-type: none"> Phytoplankton (Chlorophyll-a) Total nitrogen Total phosphorus Ammonia Cyanobacteria* Submerged plants (natives)* Submerged plants (invasive)* Lake-bottom dissolved oxygen* Mid-hypolimnetic dissolved oxygen*
Human contact	Water bodies are clean and safe for human contact activities and support the health of people and their connections with water bodies.	<p>Rivers:</p> <ul style="list-style-type: none"> E. Coli Suspended fine sediment Periphyton E. Coli primary contact sites <p>Lakes:</p> <ul style="list-style-type: none"> Phytoplankton (Chlorophyll-a) Cyanobacteria (Biovolume cubic millimetres per litre)

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Threatened species	The freshwater habitats of threatened species are protected and support the persistence and recovery of threatened species over time.	All the attributes listed for Ecosystem Health above. Recency of presence National conservation category and status Regional conservation category and status Number of sub-populations
Mahika kai (food and resource gathering)	Mahika kai resources are restored to a condition in which populations of valued mahika kai species are self-sustaining and plentiful enough to support cultural take. Mana whenua are able to safely access, harvest and use these resources now and in the future.	All the attributes listed for Ecosystem Health above.
Other values (apply to every FMU/rohe)		
Natural form and character	Freshwater bodies and their riparian margins, and any connected receiving environment including any estuaries and hāpua (lagoon) are able to behave in a way that reflects their natural form and character to the greatest extent practicable, and the natural form and function of unmodified water bodies is protected.	Rivers: Suspended fine sediment Periphyton Macroinvertebrates (QMCI) score* Deposited fine sediment* Lakes: Phytoplankton (Chlorophyll-a) Cyanobacteria* Submerged plants (natives)* Submerged plants (invasive)* Lake-bottom dissolved oxygen* Mid-hypolimnetic dissolved oxygen*
Drinking water supply	Provided the health and wellbeing needs of water bodies and freshwater ecosystems are met, source water from water bodies (after treatment) is safe and reliable for the drinking water supply needs of the community. Activities do not introduce or increase the concentration of contaminants in water, so that, after existing treatment, it no longer meets drinking water standards	
Wāhi tūpuna (sites of significance to iwi)	Cultural associations with wāhi tūpuna are maintained, visible, and whānau are able to access, use and relate to wāhi tūpuna now and in the future.	Information available soon.
Fishing	Fish are safe to eat; and Insofar as it is consistent with the protection of indigenous and threatened species, the spawning and juvenile rearing waters for trout and salmon are provided for.	Rivers: E. Coli Suspended fine sediment Periphyton Nitrate Suspended fine sediment Macroinvertebrates (MCI/ASPM) Fish IBI Macroinvertebrates (QMCI) score* Lakes: Phytoplankton (Chlorophyll-a) Cyanobacteria (Biovolume cubic millimetres per litre)*

Irrigation, cultivation and production of food and beverages	Provided the health and wellbeing of water bodies and freshwater ecosystems and human health needs are met, the cultivation and production of food, beverages and fibre is enabled.	Rivers: Suspended fine sediment Periphyton Water quantity
Wetlands	Wetlands are protected, and their ecosystem health, indigenous biodiversity, and hydrological functioning is restored where degraded.	Information available soon.
Taoka species (treasured species)	Thriving, connected habitats for indigenous species are restored and sustained for ever and their mauri is intact.	Information available soon.
Values that apply to specific FMU		
Hydro-electric power generation	Existing hydro-electric generation activities are developed, operated, maintained and upgraded in a way that meets the environmental outcomes to the greatest extent practicable.	

¹*Asterisk indicates that the baseline state of these compulsory attributes is not known, but monitoring is now being undertaken.

Target attribute states

Attributes are indicators that we can measure and monitor. Attributes tell us about the state of a river or lake. A target attribute state (TAS) is the state that an attribute must achieve to make sure that an environmental outcome is met. The timeframe for achieving the TAS for each FMU is set by the environmental outcomes for the FMU. For the Upper Lakes rohe, the environmental outcomes are to be achieved by 2030. By monitoring attributes and comparing their baseline state with their TAS we learn how well we are on track towards achieving the environmental outcomes for this FMU or rohe.

While the environmental outcome statements are largely consistent across Otago, baseline states and TAS are usually specific to each FMU and rohe. Attributes for each value and baseline states for those attributes have been identified along with trends derived from the Otago Regional Council's State of the Environment (SoE) monitoring data.

The baseline state and TAS for the Upper Lakes rohe are in the map below.

Zoom into an area and view the various locations of proposed monitoring sites in an area(s).

Select the yellow dot representing a proposed monitoring site to see the Target Attribute States.

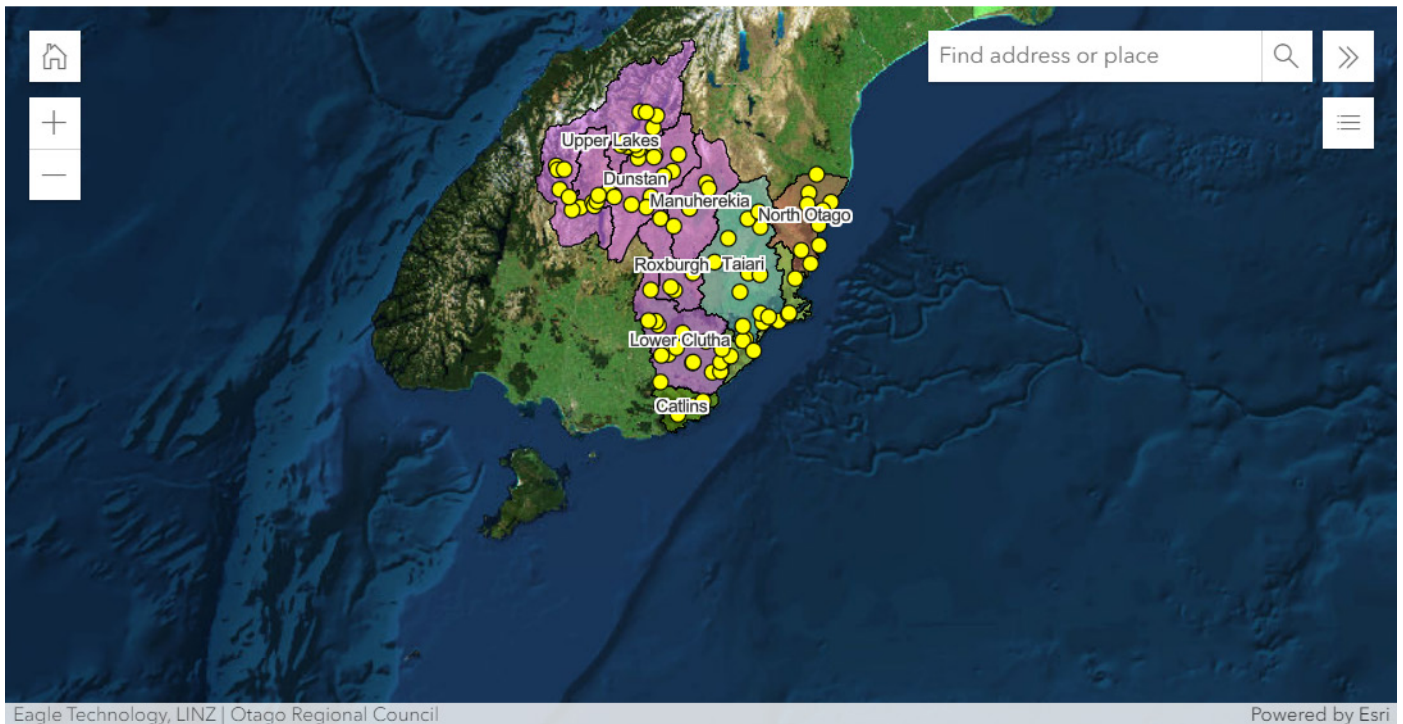
You can further select the Target Attribute States table to view a larger version of the table.

(Note: If you are on a mobile device, tap on the arrow next to the 'X' icon for the table to show.)

FMU provisions

National direction requires Council to set limits as rules or action plans (as appropriate) to achieve the environmental outcomes. This can be done at a region-wide level or at FMU/rohe level. The draft region-wide rules are set out in different briefing papers, including the briefing papers Primary Production, Wastewater, Stormwater, Earthworks, Water Quantity and various others.

For the Upper Lakes rohe, there are no additional rules needed to make sure the environmental outcomes for this rohe are achieved.



Environmental flows and levels and limits on take, diversion and damming of water

The Upper Lakes Rohe chapter will also include take limits and environmental flows and levels for rivers, lakes and aquifers in this rohe.

Take limits reflect the total quantity of water that can be taken, dammed or diverted from a stream, river, lake or aquifer. Once the combined rate of take for all consented water takes, diversion or damming activities from a water body matches this take limit no further water can be allocated in new consents.

Environmental flows (for rivers or streams) or environmental levels (for lakes and aquifers) include minimum flows or levels that when reached all consented (and some permitted) takes, diversions and damming activities must cease. These restrictions on water taking, diversions or damming activities typically occur during dry periods and are needed to make sure after important values, such as threatened fish, drinking water supply or mahika kai (food and resource gathering) values, are looked after.

Lakes

Environmental levels and take limits for the lakes in the Upper Lakes Rohe are shown in the table below.

Given their high naturalness values, it is proposed that a narrative take limit is set for most of the natural lakes in this rohe. This limit will prohibit any new takes, damming or diversions that could impact water levels of these natural lakes (except for takes that are permitted under the Resource Management Act 1991) and will ensure they will continue to behave in their natural or near natural state. Specific take limits and levels are proposed for Lake Wānaka and Lake Whakatipu.

These limits will allow for more water to be allocated from Lake Wānaka and Lake Whakatipu and their tributaries, recognising that these water bodies are located near fast-growing urban settlements. However, the proposed take limits are small enough to avoid any changes to the lakes' hydrology and specific minimum levels are proposed for both lakes to restrict water takes when lake levels are low.

Lake Hawea will continue to be managed in accordance with its consented lake level conditions. Any takes from this lake will be subject to the take limits that apply to the Clutha River/Mata-Au take limit.

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Table 2: Environmental levels and take limits for lakes

Name	Environmental level(s)	Take limit	Further allocation available (estimate based on best available information)
Natural lakes (unmodified)			
Alta Tarn, Arethusa Pool (associated with Mou Waho) Crucible Lake Diamond Lake, Glenorchy Diamond Lake, Wanaka Glenorchy Lagoon Lake Castalia Lake Diana Lake Harris/ Te Hokauputu Lake Hope Lake Isobel Lake McKellar/Ōtākaha Lake Mystery Lake Ned Lake Nerine Lake Nigel Lake Reid Lake Rere Lake Sylvan Lake Unknown Lake Wilson Lindsays Tarn Lucidius Lake Three Lagoons	Natural minimum water level	Narrative- no new taking, diversions, damming or discharges from the lake or upper catchment	No
Natural lakes (with current consents)			
Lake Dispute (Lake Dispute river catchment)	Lake level managed by the minimum flow of the Lake Dispute river catchment	Narrative - no new taking, diversions, damming or discharges from the lake or upper catchment. Existing takes subject to the take limit of the river catchment that the lake is located within	No
Natural lakes (with environmental levels and take limits)			
Lake Wānaka	276.14 m based on the Dunedin datum (mean annual low lake level)	3,000 L/s	Yes
Lake Whakatipu	309.54 m based on the Dunedin datum (mean annual low lake level)	3,000 L/s	Yes
Controlled lakes			
Lake Hāwea	Consented levels	Subject to the Clutha River/Mata-Au take limit (TBC)	Yes

River catchments

Environmental flows and take limits for the Upper Lakes rohe's rivers and streams are shown in the table below. Take limits and environmental flows are often set as a percentage of the 7-day Mean Annual Low Flow (7-day MALF). The 7-day MALF is a flow statistic that provides an indication of how low the flow gets in a typical year.

For smaller rivers or streams with a mean flow of 5,000 litres per second or less, such as the Kidds Creek and Quartz Creek, a total take limit is set as 20% of the 7-day MALF. For larger rivers with a mean flow of more than 5,000 litres per second, such as the Matukituki River and the Rees River, a larger take limit is set at 30% of the 7-day MALF.

Restrictions on water takes, diversions and damming activities in catchments of smaller rivers or streams are triggered when flows are at 90% of the 7-day MALF, whereas for larger rivers these restrictions will not kick in until flows are at 80% of the 7-day MALF.

Bespoke limits and environmental flows are proposed for Bullock creek.

Table 3 provides estimates of the actual minimum flows and take limits for different catchments based on the default method using the best available information to determine the 7-day MALF of each catchment. The numeric minimum flows and take limits will not be included in the LWRP. Instead, the LWRP will refer to the relevant % of 7-day MALF.

Table 3: Rivers managed by default minimum flows and take limits

Name	Environmental flow (l/s)	Take limit (l/s)	Further allocation available (estimate based on best available information)
River catchments with a mean flow \leq 5,000 l/s and managed by default limits			
· Minimum flow set as 90% of 7-day MALF			
· Take limit set as 20% of 7-day MALF			
Afton Burn	899	200	Yes
Albert Burn (2)	126	28	Yes
Bay Burn	177	39	Yes
Bee Burn	103	23	Yes
Beethams Creek	113	25	Yes
Bells Creek	750	167	Yes
Black Gorge Creek	1017	226	Yes
Bobs Cove Creek (1)	269	60	Yes
Bobs Cove Creek (2)	300	67	Yes
Boundary Creek (1)	422	94	Yes
Boundary Creek (2)	187	42	Yes
Bricks Gully Creek	187	42	Yes
Buckler Burn	1012	225	Yes
Collins Creek	811	180	Yes
Craigie Burn	325	72	Yes
Dinner Creek	102	23	Yes
Dooleys Creek	103	23	Yes
East Wanaka Creek	261	58	Yes
Eight Mile Creek	159	35	Yes
Estuary Burn	860	191	Yes
Fast Burn	680	151	Yes
Fern Burn	794	177	Yes
Five Mile Creek (2)	315	70	Yes

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Frankton Arm Creek (1)	189	42	Yes
Frankton Arm Creek (2)	259	58	Yes
Geordies Creek	130	29	Yes
Georges Creek (E)	361	80	Yes
Georges Creek (W)	171	38	Yes
Grindstone Creek	49	11	Yes
Halls Creek	114	25	Yes
High Burn	183	41	Yes
Horn Creek	809	180	Yes
Kidds Creek	114	25	Yes
Lake Dispute	417	93	Yes
Lake Face Creek	113	25	Yes
Little Hopwood Burn	828	184	Yes
Little Stony Creek	112	25	Yes
Lumberbox Creek	123	27	Yes
Marshall Creek	204	45	Yes
McGregor Creek	130	29	Yes
McKinlays Creek	952	211	Yes
Mick Creek	198	44	Yes
Mill Creek	199	44	Yes
Minaret Burn	4179	1567	Yes
Mount Burke Creek	776	172	Yes
One Mile Creek	218	48	Yes
Pink Gate Creek	43	10	Yes
Quartz Creek	739	164	Yes
Rocky Point Creek	129	29	Yes
Rods Creek	159	35	Yes
Rough Burn	749	166	Yes
Roys Peak Creek	94	21	Yes
Rumbling Burn	810	180	Yes
Sawyer Burn	144	32	Yes
Seven Mile Creek	159	35	Yes
Sheepskin Creek (2)	245	54	Yes
Shepherds Hut Creek	103	23	Yes
Silver Burn	109	24	Yes
Staircase Creek	1120	249	Yes
Station Creek	138	31	Yes
Stony Burn	114	25	Yes
Stony Creek (1)	276	61	Yes
Terrace Creek	707	157	Yes
The Neck Creek	119	26	Yes
Twelve Mile Creek	899	200	Yes
Twenty Five Mile Creek	118	26	Yes
Twenty Four Mile Creek	842	187	Yes

Waterfall Creek (1)	316	70	Yes
Waterfall Creek (2)	180	40	Yes
Wharf Creek	88	20	Yes
Whiskey Gully Creek	144	32	Yes
Wye Creek	273	61	Yes
Yards Gully Creek	187	42	Yes
River catchments with a mean flow > 5,000 l/s and managed by default limits			
· Minimum flow set as 80% of 7-day MALF			
· Take limit set as 30% of 7-day MALF			
Big Hopwood Burn	6564	2461	Yes
Dart River	13523	5071	Yes
Dingle Burn	7946	2980	Yes
Greenstone River	10453	3920	Yes
Hunter River	10635	3988	Yes
Lochy River	5339	2002	Yes
Makarora River	13521	5070	Yes
Matukituki River	6460	2422	Yes
Minaret Burn	4179	1567	Yes
Rees River	8510	3191	Yes
Timaru River	4832	1812	Yes
Von River	1008	378	Yes
Whiskey Gully Creek	144	32	Yes
Wye Creek	273	61	Yes
Yards Gully Creek	187	42	Yes

Table 4: Rivers managed by bespoke minimum flows and take limits

Name	Environmental flow (l/s)	Take limit (l/s)	Further allocation available (estimate based on best available information)
Bullock Creek	400	20	TBC

Aquifers

Environmental levels and take limits for aquifers in the Upper Lakes rohe are shown in the table below.

Take limits are set based on either as a proportion of the mean annual recharge of that aquifer or where the aquifer is closely connected to a river or stream, the take limit and minimum flow of the rivers or stream. For the Glenorchy and Kingston Aquifers a take limit is set as 35% of these aquifers' mean annual recharge, while any taking of water from the Rees-Dart or Matukituki Alluvial Ribbon Aquifers will be subject to the take limits and minimum flows set for these Rees-Dart and Matukituki rivers.

Table 5 provides an estimate of the actual takes limit for the aquifer based on the default method using the best available information to determine the aquifer's Mean Annual Recharge (MAR). The numeric take limit will not be included in the LWRP. Instead, the LWRP will refer to the relevant % of the MAR.

Table 5: Aquifers managed by default take limits

Name	Environmental level(s)	Take limit (volume in m3/ year)	Further allocation available (estimate based on best available information)
Aquifers managed by default limits · Take limit: 35% Mean Annual Recharge			
Glenorchy	Not required to be included in the new LWRP at this time	1,316,243	Yes
Kingston		378,586	Yes

For aquifers with a close hydraulic connection to a river or stream, such as the Rees-Dart and Matukituki alluvial aquifers, any water takes will be subject to the take limits and environmental flows set for these rivers.

Table 6 provides an overview of the environmental levels and take limits that apply to these aquifers.

Table 6: Alluvial Ribbon Aquifers

Name	Environmental level(s)	Take limit	Further allocation available (estimate based on best available information)
Alluvial Ribbon Aquifers			
Rees-Dart	Subject minimum flow for Dart River catchment	Subject to take limit for Dart River catchment	Yes
Matukituki	Subject minimum flow for Matukituki River catchment	Subject to take limit for Matukituki River catchment	Yes

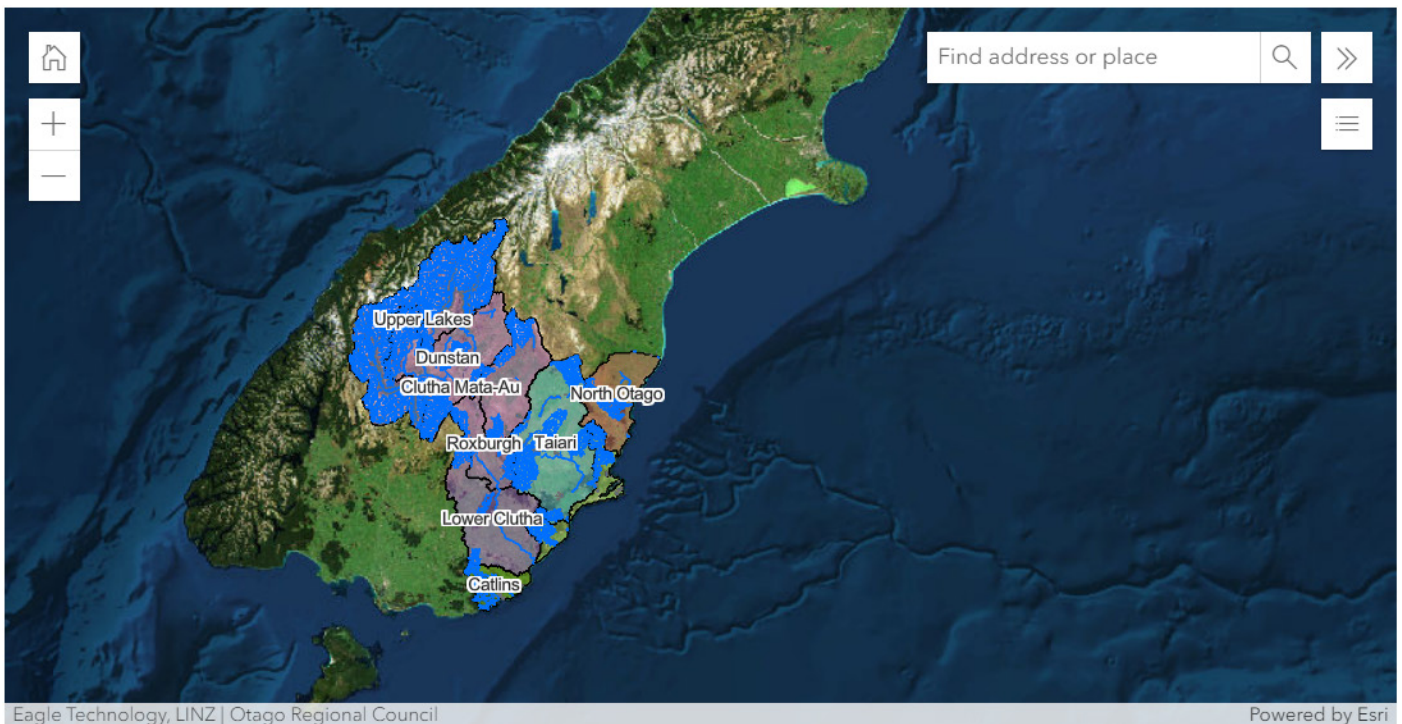
Outstanding water bodies

Outstanding water bodies are water bodies that have one or more outstanding values. National direction requires the Otago Regional Council to identify outstanding water bodies and protect their important values. The table below lists the outstanding water bodies in this rohe and describes their outstanding values.

Below is a map featuring all the water bodies in Otago. You can zoom in and view the various water bodies in an area(s).

Water bodies are shown in a blue colour. Select an area to view the water body name.

(Note: if you are on a mobile device, after selecting a water body, tap on the arrow next to the 'X' icon to view more information.)



Unique identifier	Site identifier	Values and characteristics
Ecology		
ECL1	Whakatipu Waimāori / Lake Wakatipu	<ul style="list-style-type: none"> • Sightings of the Australasian crested grebe. • Data shows the lake has had outstanding bryophyte communities with high diversity, and they are present at depths well deeper than that recorded for bryophytes in most other lakes in Aotearoa and elsewhere in the world. • Whakatipu Waimāori/Lake Wakatipu is recommended as outstanding with intact plants communities extending from the water's edge to depths of 40-50 m deep. None of these lakes are subject to large water level fluctuations that can impact on shallow water plant communities (e.g., turf communities).
ECL2	Lake Wānaka	<ul style="list-style-type: none"> • Sightings of the Australasian crested grebe. • Vegetation surveys of Otago lakes have reported a number of charophyte species. Lake Wānaka has eight reported species. • Data shows the lake has had outstanding bryophyte communities with high diversity, and they are present at depths well deeper than that recorded for bryophytes in most other lakes in Aotearoa and elsewhere in the world. • Lake Wānaka is recommended as outstanding with intact plants communities extending from the waters edge to depths of 40-50 m deep. None of these lakes are subject to large water level fluctuations that can impact on shallow water plant communities (e.g., turf communities).
ECL3	Rock Burn / Te Komama / Routeburn	<ul style="list-style-type: none"> • Observations of Blue duck/whio are particularly common in Te Komama/Routeburn and Rock Burn

ECL4	Te Awamāeroero / Lochy River	<ul style="list-style-type: none"> • Te Awamāeroero/Lochy River and the Von River are the only Otago water bodies with Alpine galaxias ‘Southland’. The population located in the Lochy River catchment is estimated in size to be twice that of the estimated Von River population and comprises 5% of the total area occupied by Alpine galaxias ‘Southland’. The Lochy River population, while not large, is the fifth largest of the eleven known populations of this fish. The galaxiid is also restricted to four catchments, the Waiau, Oreti, Mataura and Clutha. • The Von and Te Awamāeroero/Lochy rivers are the only rivers with populations of non-diadromous galaxias in the Wakatipu basin or further upstream in the Dart and Rees river catchments.
ECL5	Mātakitaki River	<ul style="list-style-type: none"> • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • Bird surveys report the presence of a range of threatened bird species: Wrybill, Banded dotterel, Black-fronted tern, Black billed gull, Black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: Paradise shelduck, South Island pied oystercatcher, Spurwing plover, Gray duck, Pied stilt, Pukeko, White heron, Australasian shoveler, Australasian bittern.
ECL6	Makarore River	<ul style="list-style-type: none"> • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • Bird surveys report the presence of a range of threatened bird species: Wrybill, Banded dotterel, Black-fronted tern, Black billed gull, Black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: Paradise shelduck, South Island pied oystercatcher, Spurwing plover, Gray duck, Pied stilt, Pukeko, White heron, Australasian shoveler, Australasian bittern.

ECL7	Hunter River	<ul style="list-style-type: none"> • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • Bird surveys report the presence of a range of threatened bird species: Wrybill, Banded dotterel, Black-fronted tern, Black billed gull, Black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: Paradise shelduck, South Island pied oystercatcher, Spurwing plover, Gray duck, Pied stilt, Pukeko, White heron, Australasian shoveler, Australasian bittern.
ECL8	Dart River / Te Awa Whakatipu	<ul style="list-style-type: none"> • Regarded as a braided river system. These provide highly important ecosystems as braided rivers are generally rare in Aotearoa and around the world. • Provide important breeding and feeding habitat to a range of native birds. • The Dart River/Te Awa Whakatipu from Kinloch upstream to the Rock Burn confluence is recommended as outstanding water bodies for Australasian bittern. • Dart River/Te Awa Whakatipu has resident breeding populations of blue duck/whio. • Bird surveys report the presence of a range of threatened bird species: Wrybill, Banded dotterel, Black-fronted tern, Black billed gull, Black back gull, and more recently occasional observations of black stilt/kaki. • Additional native water bird species are also recorded in these areas: Paradise shelduck, South Island pied oystercatcher, Spurwing plover, Gray duck, Pied stilt, Pukeko, White heron, Australasian shoveler, Australasian bittern.

ECL9	Von River	<ul style="list-style-type: none"> • The Von River, a tributary of Whakatipu Waimāori/Lake Wakatipu, has a combination of native freshwater fish found nowhere else in Aotearoa. • Alpine galaxias 'Southland', Gollum galaxias, Southern flathead (non-diadromous galaxiids) and Upland bully have colonised the Von River. • The Von and Te Awamāeroero/Lochy rivers are the only rivers with populations of non-diadromous galaxias in the Wakatipu basin or further upstream in the Dart and Rees river catchments. • The presence of landlocked Kōaro in the Wakatipu basin has allowed this usually diadromous fish to establish populations in Lake Wakatipu tributaries including the Von River where it forms a unique suite of fish species with the other fish species there.
ECL10	Von Valley Wetland Management Area	<ul style="list-style-type: none"> • The site scored an outstanding weighted conservation rank of 1.0 within the FENZ/WONI analysis (highest rank). • The non-migratory - threatened southern flathead galaxias is likely in the streams connecting wetlands, and both the black and Gollum galaxias are likely within the wetlands here. • Large area with an outstanding diversity of habitat types. • High diversity of flora within the kettleholes and their margins. This is described by Johnson (1993). • Presence of internationally rare and threatened plant species Cardamine sp., Oreomyrrhis colensoi var. delicatula, Crassula multicaulis, Isolepis basilaris, Tufted hair – grass (Deschampsia caespitosa), Ranunculus ternatifolius and Brachyscome linearis.

Physical		
PHY1	Te Hokaputu / Lake Harris and staircase of cirques	<ul style="list-style-type: none"> Regionally Significant Excellent and easily accessible example of a cirque lake (Te Hokaputu/Lake Harris) as part of a staircase of cirques along Routeburn Track. Both sides of Te Komama/Routeburn Track, from Te Komama/Routeburn Falls hut to Te Hokaputu/Lake Harris on east side of Harris Saddle/Tarahaka Whakatipu, then further north up catchment to Lake Wilson cirque.
PHY2	Routeburn Falls glacial stairway	<ul style="list-style-type: none"> Nationally Significant <p>One of the two best examples of a glacial stairway in Aotearoa. It exhibits a range of glacial features including cirques and terminal moraine.</p> <ul style="list-style-type: none"> Te Komama/Routeburn Falls, north of Te Komama/Routeburn Falls Hut, Humboldt Mountains.
PHY3	Bridal Veil Stream pothole, Te Komama/Routeburn Track	<ul style="list-style-type: none"> Regionally Significant Excellent and readily accessible example of a large pothole scoured out cobbles in a stream. Visible just downstream of bridge over Bridal Veil Stream on Te Komama/Routeburn Track
PHY4	Dart River delta	<ul style="list-style-type: none"> Regionally Significant <p>Excellent example of a braided-river delta entering the head of a lake.</p> <ul style="list-style-type: none"> Northern end of Whakatipu Waimāori/Lake Whakatipu.

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PHY5	Bridal Veil Falls, Rob Roy Stream, Mount Aspiring/Tititea	<ul style="list-style-type: none"> Regionally Significant Spectacular 261m high waterfall plunges over vertical drop from small hanging valley. Waterfall plunges over vertical wall on side of Rob Roy Valley. On true right tributary of Rob Roy Stream, 3km up from junction with Mātakitaki River and 5km by tramping track from parking area at end of road.
PHY6	Makarore River delta	<ul style="list-style-type: none"> Regionally Significant Good example of a braided river delta entering a lake. North end of Lake Wānaka.
PHY7	Motatapu gorge	<ul style="list-style-type: none"> Nationally Significant <p>An extremely narrow, 2.5-metre-wide gorge.</p> <ul style="list-style-type: none"> Māpoutahi/Motatapu River, near Motatapu Station homestead, southwest Lake Wānaka.
PHY8	Twin Falls, Wānaka	<ul style="list-style-type: none"> Regionally Significant <p>Best example of waterfalls flowing over the vertical sides of Mātakitaki glacial valley. Readily visible.</p> <p>Two falls, 200 metres apart, flow over 200 metres near vertical cliffs.</p> <ul style="list-style-type: none"> West of Wanaka-Mt Aspiring Rd, 500 metres south of Treble Cone Skifield turnoff.
PHY9	Crucible Lake moraine-dammed lake	<ul style="list-style-type: none"> Nationally Significant. <p>An example of a moraine-dammed lake.</p> <ul style="list-style-type: none"> SSE of Mt Alba, 2 km west of Siberia Stream.
PHY10	Ōturu / Diamond Lake roche moutonee	<ul style="list-style-type: none"> Regionally Significant Complex landforms on the pluck side of a 775 metre high roche moutonee, including Ōturu/Diamond Lake. 2 square kilometre area of complex rocky knolls and depressions and rock faces. On northeast side of Wanaka-Mt Aspiring Rd, 1km west of an arm of Lake Wānaka and 500 metres northwest of

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		West Wanaka Rd junction.
Recreation		
REC1	Earnslaw Burn	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site
REC2	Ōturu / Diamond Lake	<ul style="list-style-type: none"> • Protected by a Water Conservation Order (fishery). • Within UNESCO World Heritage Site. • A range of assessments for angling value ranging from outstanding (ORC Regional Water Plan for Otago) to local (RiVAS). • Nationally significant for angling (Sports F&G Management Plan for Otago, RiVAS).
REC3	Whakatipu Waimāori / Lake Whakatipu	<ul style="list-style-type: none"> • Protected by a Water Conservation Order (recreational purposes, fishery). • Recognised for fishery, recreational purposes, in particular boating. • Major tourism setting. • All lake and shore activities. • Scenic.
REC4	Te Awamāeroero / Lochy River	<ul style="list-style-type: none"> • Protected by a Water Conservation Order. • Recognised for fishery, recreational purposes, in particular fishing. • Nationally and regionally significant for angling (Sports F&G Management Plan for Otago, RiVAS). • Considered outstanding for packrafting.
REC5	Von River	<ul style="list-style-type: none"> • Protected by a Water Conservation Order. • Outstanding for recreation (fishery, recreational purposes, in particular fishing). • Regionally significant for angling (Sports F&G Management Plan for Otago and RiVAS) • Used for packrafting.
REC6	Greenstone River	<ul style="list-style-type: none"> • Protected by a Water Conservation Order.

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		<ul style="list-style-type: none"> • Outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Nationally significant for angling (Sports F&G Management Plan for Otago and RIVAS). • Fishery considered outstanding in the DOC Otago Conservation Management Strategy. • Considered outstanding for packrafting.
REC7	Caples River	<ul style="list-style-type: none"> • Protected by a Water Conservation Order (from Greenstone confluence to its source). • Previously assessed as outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Nationally significant for angling (Sports F&G Management Plan for Otago and RIVAS). • Fishery considered outstanding in the DOC Otago Conservation Management Strategy. • Considered outstanding for packrafting.
REC8	Lake McKellar	<ul style="list-style-type: none"> • Protected by a Water Conservation Order in association with the Greenstone River. • Outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). • Within UNESCO World Heritage Site • Has high associated recreation values.
REC9	Kay Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site. • Has high associated recreation values.
REC10	Fraser Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site. • Has high associated recreation values.
REC11	Dart River / Te Awa Whakatipu upstream Park boundary	<ul style="list-style-type: none"> • Protected by a Water Conservation Order but not for recreation values. • Within UNESCO World Heritage Site and Mount Aspiring National Park.

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		<ul style="list-style-type: none"> • Has high associated recreation values. • Considered outstanding for packrafting and regionally significant for white water kayaking and rafting (RiVAS).
REC12	Dart River / Te Awa Whakatipu downstream Park boundary	<ul style="list-style-type: none"> • Protected by a Water Conservation Order but not for recreation values. • Very high participation numbers for jet boating and outstanding largely for this value. • Considered outstanding for packrafting and regionally significant for white water kayaking and rafting (RiVAS).
REC13	Beans Burn	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC14	Rock Burn	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC15	Lake Sylvan	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC16	Snowy Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC17	Whitbourn Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC18	Puahiri / Puahere / Rees River upstream of Hunter Creek	<ul style="list-style-type: none"> • Largely within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Angling significance assessments range from national (Sports F&G Management Plan for Otago) to local (RiVAS). • Considered outstanding for packrafting.

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REC19	Diamond Creek	<ul style="list-style-type: none"> Protected by a Water Conservation Order (fishery). Outstanding for recreation. Within UNESCO World Heritage Site. Has high associated recreation values. Angling significance assessments include outstanding (ORC Regional Water Plan for Otago), national (Sports F&G Management Plan for Otago) and regional (RiVAS). Nationally significant for hunting (Sports F&G Management Plan for Otago).
REC20	Lake Reid	<ul style="list-style-type: none"> Protected by a Water Conservation Order (fishery) and previously assessed as outstanding for recreation in association with Diamond Lake and Diamond Creek. Within UNESCO World Heritage Site. Angling significance assessments range from national (Sports F&G Management Plan for Otago) to local (RiVAS).
REC21	Te Komama / Routeburn incl Left and North Branches	<ul style="list-style-type: none"> Protected by a Water Conservation Order. Outstanding for recreation (natural and physical qualities and characteristics that contribute to recreational attributes). Within UNESCO World Heritage Site and Mount Aspiring National Park. Has high associated recreation values. Regionally significant for angling (Sports F&G Management Plan for Otago and RiVAS), nationally significant for white water kayaking (RiVAS). Considered outstanding for packrafting.
REC22	Te Hokaputu/Lake Harris	<ul style="list-style-type: none"> Within UNESCO World Heritage Site and Mount Aspiring National Park. Has high associated recreation values.
REC23	Hunter River East and West Branch	<ul style="list-style-type: none"> Within UNESCO World Heritage Site and Mount Aspiring National Park. Has high associated recreation values.

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REC24	Ferguson Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC25	Long Flat Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC26	Scrubby Flat Creek	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC27	Lake Wānaka	<ul style="list-style-type: none"> • Protected by Lake Wānaka Preservation Act 1973, although the Act does not refer to recreation values. • Outstanding for a wide range of recreational uses (Greenaway 2018). • Nationally significant for angling (Sports F&G Management Plan for Otago and RIVAS). • Used for packrafting.
REC28	Mātakitaki River upstream Cameron Flat	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Considered outstanding for packrafting.
REC29	Mātakitaki River West Branch (upstream of Aspiring Campsite)	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Considered outstanding for packrafting.
REC30	Rob Roy Stream	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC31	Glacier Burn	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.

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REC32	Makarore River – upstream Gorge	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Nationally significant for white water kayaking, regionally significant for angling and rafting (RiVAS).
REC33	Makarore River – downstream Gorge	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Nationally significant for white water kayaking, regionally significant for angling and rafting (RiVAS).
REC34	Blue River	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Regionally significant for kayaking (RiVAS). • Used for packrafting.
REC35	Lucidus Lake	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC36	Ōtānenui / Wilkin River upstream Newland Stream, incl North & South Branch	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values. • Nationally significant for kayaking (RiVAS) and used for packrafting.
REC37	Ōtānenui / Wilkin downstream Newland Stream	<ul style="list-style-type: none"> • Nationally significant for white water kayaking, angling and jet boating.
REC38	Te Awamakarara / Young River South Branch	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
REC39	Siberia Stream	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site (with some exclusions) and Mount Aspiring National Park.

		<ul style="list-style-type: none"> • Has high associated recreation values. • Used for packrafting.
REC40	Albert Burn	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site. • Has high associated recreation values.
REC41	Kitchener River	<ul style="list-style-type: none"> • Within UNESCO World Heritage Site and Mount Aspiring National Park. • Has high associated recreation values.
Natural character		
NAT1	Dart River / Te Awa Whakatipu	<p>Active Bed</p> <ul style="list-style-type: none"> • Pristine or largely unmodified water bodies in Tititea/Mount Aspiring National Park and adjacent conservation areas, including glacial/ cirque lakes, alpine streams and rivers, and wetlands. • Braided rivers (mid reaches of Puahiri/Puahere/Rees River and Dart River/Te Awa Whakatipu) with weed-free and unrestricted river beds with natural braided form. Limited gravel extraction around Dart bridge. • Braided riverbed provides important bird habitat, nesting and breeding habitats for threatened birds such as ngutu pare/wrybill and tarapirohe/black-fronted tern, banded dotterel, black billed gull, South Island pied oystercatcher. • Some terrestrial weeds present within the riverbed including willows. • Very high water quality throughout the area, apart from agricultural influence on Dart River/Te Awa Whakatipu below Mill Flat and lower part of Greenstone and Caples Rivers. • Unmodified flow regimes apart from small scale groundwater abstraction below Dart Valley. • Jet boat access frequently occurs on the Dart River/Te Awa Whakatipu River below Beans Burn. <p>Margins</p> <ul style="list-style-type: none"> • Within Tititea/Mount Aspiring NP predominantly native vegetation along river banks with very small-scale modifications, such as walking tracks, footbridges and

		<ul style="list-style-type: none"> • Lower reaches of Dart River/Te Awa Whakatipu partially lined by willows and a road bridge, but natural braided pattern dominates, including delta at Whakatipu Waimāori/Lake Whakatipu. • Land use modification along part of Lower Dart River/Te Awa Whakatipu includes agriculture (below Chinamans Bluff) and limited flood protection structures around the road bridge. <p>Context</p> <ul style="list-style-type: none"> • Within Tititea/Mount Aspiring National Park and adjacent conservation areas pristine, highly natural landscape context from the mountainous headwaters to the valley floors. • Landscape Context along the lower reaches of Dart River/Te Awa Whakatipu below Chinamans Bluff includes limited agriculture interspersed with areas of native vegetation along the adjacent mountain slopes. • Settlement is very limited to individual station buildings within lower Dart Valley and access is confined to gravel roads as far as Te Komama/Routeburn, Greenstone and Dart Track shelters. • Overall natural patterns dominate even in areas with agricultural use. • Sensitive landscape due to its high natural character values and openness, visited by locals and tourists alike.
NAT2	Mātakitaki	<p>Bed</p> <ul style="list-style-type: none"> • Pristine or largely unmodified water bodies in Tititea/Mount Aspiring NP and adjacent conservation areas, including glacial/ cirque lakes, alpine streams and rivers, and wetlands, including the Mātakitaki Valley Wetland. • Braided riverbed of Mātakitaki River is largely weed-free apart from the islands within the delta. The largely unrestricted riverbed displays strongly its natural braided form. Limited gravel extraction and localised bank protection works around and below Raspberry Creek. • Braided riverbed provides important bird habitat, nesting and breeding habitats for threatened birds such as ngutu pare/wrybill, banded dotterel, black billed gull, and

tarapirohe/black-fronted tern.

- Very high-water quality throughout the area, apart from agricultural influence in Mātakitaki River below Cascade Hut, in particular below East Branch confluence.
- Unmodified flow regimes with limited, small-scale bores in lower Mātakitaki River, and small-scale hydroelectricity consent in Niger Stream.
- Jet boat access frequently occurs on the Mātakitaki River below and in the east branch.

Margins

- Within Tititea/Mount Aspiring National Park predominantly native vegetation along riverbanks with very small-scale modifications, such as walking tracks, footbridges and huts.
- Lower reaches of Mātakitaki River partially lined by willows and poplars (below Raspberry Creek) but natural braided pattern dominates. Willows extend along most of the margins and islands of the delta at Lake Wanaka.
- Mātakitaki wetland reserve along northern riverbank is protected through conservation area.
- Land use modification along Lower Mātakitaki includes agriculture which increases in intensity in the lower reaches.

Context

- Within Tititea/Mount Aspiring NP and adjacent conservation areas pristine, highly natural landscape context from the mountainous headwaters to the valley floors.
- Landscape Context along the lower reaches of Mātakitaki River below Raspberry Creek includes agriculture on the valley floor with areas of tussockland along the adjacent mountain slopes and limited native forest in gullies.
- Settlement is very limited to individual station buildings within lower Mātakitaki Valley and access is mostly confined to gravel roads.
- Overall, highly natural landforms and natural patterns dominate, but less natural context below Mātakitaki East Branch confluence on valley floor due to agricultural use.

		<ul style="list-style-type: none"> • Sensitive landscape due to its high natural character values and openness, visited by locals and tourists alike.
NAT3	Motatapu	<p>Active bed</p> <ul style="list-style-type: none"> • The headwaters of the Motatapu River encompass pristine or largely unmodified water bodies in private (QE2) and public (DOC) conservation areas, including alpine streams wetlands. • Area includes streams that drain the Harris Mountains south of End Peak and Highland Saddle but excludes the lower Motatapu River below the confluence of the two branches. • Generally steep, deeply incised streams, some lined with beech forest in gullies. • Alpine wetlands on valley floor of Golspie Burn and adjacent to meandering Motatapu River. • Very high water quality throughout the area, apart from agricultural influence on Motatapu Valley floor. • Unmodified flow regimes, no water abstraction in upper Motatapu Valley and tributaries. <p>Margins</p> <ul style="list-style-type: none"> • Steep sided creeks with a mix of indigenous shrubland species and tussocklands along the margins. • Land use modification along Motatapu Valley floor includes agriculture where grazing occurs in areas covered in extensive pastoral grassland. <p>Context</p> <ul style="list-style-type: none"> • Headwaters include limited areas of public conservation land and large tracts of privately covenanted land where mountainous landscape context is highly natural. • No settlement and very limited man-made structures; extensive pastoral grazing on valley floor and lower slopes; gravel roads providing limited access along valley floor. • Relatively low weed infestation throughout the area. • Overall, highly natural landforms and natural patterns dominate with few fence lines and absence of shelterbelts and forestry.

		<ul style="list-style-type: none"> • Sensitive landscape due to its high natural character values and openness, visited along the Motatapu Track that traverses the area, providing access to small-scale tramping huts.
NAT4	Makarore	<p>Active Bed</p> <ul style="list-style-type: none"> • Pristine or largely unmodified water bodies in Tititea/Mount Aspiring and adjacent conservation areas (incl Hawea Conservation Park), including glacial/ cirque lakes, alpine streams and rivers, and wetlands. • Braided riverbed of lower Wilkin River is largely weed-free while modification (gravel extraction) and exotic vegetation is more noticeable within lower Makarore River bed which has been excluded from outstanding water body identification. • Very high water quality throughout the area as located within conservation land. • Breeding site for wrybill, banded dotterel, black fronted tern, and black billed gull. • Unmodified flow regimes throughout the area. • Jet boat access frequently occurs on the Makarore and Ōtānenui/Wilkin River below Kerin Forks. <p>Margins</p> <ul style="list-style-type: none"> • Within Tititea/Mount Aspiring NP and other conservation areas predominantly native vegetation along riverbanks with very small-scale modifications, such as walking tracks, footbridges and huts. • Extensive grazing on high-country stations along lower Minaret and Estuary Burn, the western shores and slopes of Lake Wānaka and the lower Ōtānenui/Wilkin River. • Near Makarore River confluence Ōtānenui/Wilkin River partially lined by willows but natural braided pattern dominates. • Land use modification along Lower Makarore River includes agriculture, terrestrial weeds (e.g., willow), settlement (incl wastewater and water takes) and State highway 6 with associated bridges, which led to exclusion.

		<p>Context</p> <ul style="list-style-type: none"> • Within Tititea/Mount Aspiring NP and adjacent conservation areas pristine, highly natural landscape context from the mountainous headwaters to the valley floors. • Landscape Context within high-country stations includes extensively grazed land on the valley floor with areas of tussockland along the adjacent mountain slopes and limited native forest in gullies. • Settlement is limited to Makarore Valley floor which is not included in outstanding water body identification. • Sensitive landscape due to its high natural character values and openness, visited by locals and tourists alike.
NAT5	Hunter	<p>Active Bed</p> <ul style="list-style-type: none"> • Pristine or largely unmodified water bodies in Hāwea Conservation Park which encompasses the upper Hunter catchment with small exclusions on the valley floor and some of the lower slopes, including alpine tarns, streams and rivers, and wetlands. • Braided riverbed of lower Hunter River is largely weed-free and free of man-made structures. • Very high-water quality throughout the area as located within conservation land with minor stock influence on lower Hunter River and lower sections of streams draining into Lake Hāwea. • Unmodified flow regimes throughout the area (lower Whakakea/Dingleburn River and Johns Creek with small irrigation takes excluded from outstanding water bodies). <p>Margins</p> <ul style="list-style-type: none"> • Within conservation areas predominantly native vegetation along riverbanks with very small-scale modifications, such as very few tracks and huts. • Land use modification includes extensive grazing and limited 4WD tracks on high-country stations along lower Hunter River and shores of Lake Hāwea. • Lower part of fans, created by streams draining into Lake Hāwea, are excluded due to more intensive grazing and higher level of weed infestation.

		<p>Context</p> <p>Within Hāwea Conservation Park pristine, highly natural landscape context from the mountainous headwaters to the valley floors.</p> <p>Landscape Context within high-country stations includes extensively grazed land on the Hunter River valley floor, some of its tributaries and streams draining into Lake Hāwea.</p> <p>Areas of tussockland on mountain slopes in mid and lower catchment and native forest on slopes and in valleys in upper catchment.</p> <p>Settlement very limited with few buildings associated with high-country stations.</p> <ul style="list-style-type: none"> • Sensitive landscape due to its high natural character values and openness. Upper catchment rarely visited while catchment around Lake Hawea forms a frequently viewed natural backdrop to the lake.
NAT6	Lochy	<p>Active Bed</p> <ul style="list-style-type: none"> • Largely unmodified water bodies in alpine areas of the Eyre and Thomson Mountains, including alpine tarns, streams and rivers, and wetlands. • Some smaller braided rivers, such as the Te Awamāeroero/Lochy River and Von Rivers with unmodified beds and notable gorge sections, in particular on the lower Von River. • Most riverbeds, including the Te Awamāeroero/Lochy River, are free of man-made structures, apart from small-scale gravel road bridges and flood protection works in localised areas of the Von River. • Very high-water quality throughout the area as with minor stock influence in lower sections of streams and rivers draining into Lake Wakatipu, in particular Von and Te Awamāeroero/Lochy River and Collins and McKinlays Creek. • The Von River contains several threatened and at risk galaxiids including Gollum galaxias, Galaxias ‘southern’, and Galaxias paucispondylus ‘Southland’, upland bully, and Kōaro. • Unmodified flow regimes throughout the area, apart from small-scale water takes at the lower Shortburn (lower Georges Creek excluded from outstanding water bodies).

Margins

- Within mountainous headwaters predominantly native vegetation along riverbanks with very small-scale modifications, such as very few tracks and huts.
- Land use modification includes extensive grazing and limited 4WD tracks on high-country stations along the Von River and Te Awamāeroero/Lochy River and Collins Creek and shores of Lake Whakatipu.
- Lower -lying area around the shores of Lake Wakatipu between Fern Hills and Beach Bay are excluded due to more intensive grazing and land use modification.
- Von Road extending along the majority of Von River, sometimes in close proximity to the margin, requiring localised flood protection measures.

Context

- Within the alpine areas highly natural landscape context from the mountainous headwaters to the valley floors.
- Landscape Context within high-country stations includes more intensively farmed land along the lower Te Awamāeroero/Lochy River and Von River, and Collins and McKinlays Creek valley floor, and extensive grazing along streams draining into Whakatipu Waimāori/Lake Whakatipu.
- Areas of tussockland on mountain slopes in mid and lower catchment and native forest on slopes and in valleys in upper catchments.
- Large notable wetlands within the Von catchment.
- Settlement very limited with few buildings and roads associated with high-country stations around Whites Bay, Beach Bay, Collins Bay and Halfway Bay.
- Von Road is main access route into the area.
- Sensitive landscape due to its high natural character values and openness, but apart from Von Valley and Mt Nicholas/ Walter Peak station not visited by the public. Slopes and waterways along Whakatipu Waimāori/Lake Wakatipu, including more modified northern part, form a frequently viewed natural backdrop to the lake.

<p>NAT7</p>	<p>Remarkables</p>	<p>Active Bed</p> <ul style="list-style-type: none"> • Pristine or largely unmodified water bodies in Kawarau/the Remarkables Conservation Area which encompasses the tops of the Kawarau/the Remarkables Mountains and part of the Tāpuae O'Uenuku/Hector Ranges (western slopes within Whakatipu Waimāori/Lake Whakatipu catchment) including alpine tarns, streams and wetlands. • Steep upper catchments and streams largely weed-free and free of man-made structures. • Very high water quality throughout the area with minor stock influence on lower sections of streams draining into Whakatipu Waimāori/Lake Whakatipu (excluded from outstanding water bodies). • Unmodified flow regimes throughout the area (lower Wye Creek with small-scale hydro generation excluded from outstanding water bodies). <p>Margins</p> <ul style="list-style-type: none"> • Within conservation area and along incised steep streams predominantly native vegetation along margins with few small-scale modifications, such as tracks. • Land use modification includes extensive grazing and limited 4WD tracks on high-country stations along lower slopes around the eastern shores of Whakatipu Waimāori/Lake Whakatipu. • Lower part of fans and slopes, created by streams draining into Lake Wakatipu, are excluded due to more intensive grazing and higher level of weed infestation. <p>Context</p> <ul style="list-style-type: none"> • Within Kawarau/the Remarkables Conservation Area pristine, highly natural landscape context including the mountainous headwaters and alpine valley floors. • Landscape Context on lower slopes includes extensively grazed land and SH 6 in vicinity of Whakatipu Waimāori/Lake Whakatipu shores. • Areas of tussockland on upper and mid mountain slopes with native forest limited to few deeply incised, steep gullies.
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		<ul style="list-style-type: none"> • Settlement areas associated with high-country stations and Jacks Point urban area are excluded from the outstanding water bodies. • Sensitive landscape due to its high natural character values and openness. Conservation area in upper catchment visited by recreationists. Catchment around Whakatipu Waimāori/Lake Whakatipu forms a frequently viewed natural backdrop to the lake.
<p>Natural features and landscapes</p>		
<p>LAN1</p>	<p>Greenstone River and Caples River</p>	<ul style="list-style-type: none"> • Both the Caples and Greenstone Rivers are intact braided rivers formed from glacial outwash and river gravels. • Braided river channels within both rivers remain unimpeded or restricted by modifications and structures. • Includes Lake McKeller and Lake Rere. • Margins of both streams include a mixture of tussock and browntop within the open valleys, and beech forest within the upper reaches of the rivers and the narrow gorge towards the lower extent of the Greenstone River. • Fauna present include whio (blue duck) and pūtakitaki (paradise duck). • Vast and open river valleys defined by beech forest within the river margins. • Coherent braided river channels which are highly expressive of their formative processes. • Highly remote and scenic. • The Greenstone River valley was a traditional travel route between Lake Wakatipu to the Hollyford Valley for mana whenua. • Ōtākaha (Lake McKellar) is one of several kāinga mahinga kai areas on this travel route and was named after an ancestor.

LAN2	Puahiri/ Puahere/ Rees River	<ul style="list-style-type: none"> • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and farmland. • Coherent braided river channels are highly expressive of their formative processes.
LAN3	Earnslaw Burn	<ul style="list-style-type: none"> • Narrow, intact, and rocky incised stream. • No modifications to the active bed or margins including water flow and changes to the creek channel. • Margins clad in intact beech forest. • Memorable and steep catchment adjacent to Ōturu/Diamond Lake.
LAN4	Ōturu / Diamond Lake	<ul style="list-style-type: none"> • Glacially carved lake formed during the last ice age. • Margins contain a mixture of intact beech forest and farmland. • Lake is highly legible and expressive of its formative processes.
LAN5	Dart River / Te Awa Whakatipu	<ul style="list-style-type: none"> • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and in the lower reaches, farmland. • Coherent braided river channels are highly expressive of their formative processes.
LAN6	Komama / Routeburn	<ul style="list-style-type: none"> • Narrow, rocky, and intact semi-braided river. • Includes Lake Harris and Lake Wilson in the headwaters. • No modifications to the active bed. • Margins are clad in dense beech forest.

LAN7	Lake Sylvan	<ul style="list-style-type: none"> • Unmodified and intact glacially carved lake. • Margins are clad in dense beech forest. • Lake is highly legible and expressive of its formative processes.
LAN8	Rock Burn	<ul style="list-style-type: none"> • Narrow, intact, and rocky incised stream. • No modifications to the active bed or margins including water flow and changes to the creek channel. • Includes Lake Nerine in the headwaters of the catchment. • Margins clad in intact beech forest. • Highly legible and expressive of its formative processes.
LAN9	Lake Unknown	<ul style="list-style-type: none"> • Unmodified and intact glacially carved lake. • Margins are clad in coherent areas of subalpine and tussock communities. • Lake is highly legible and expressive of its formative processes.
LAN10	Von River	<ul style="list-style-type: none"> • Intact, and narrow braided river. • Incised gorge upstream of the mouth is a prominent feature. • Active bed remains unmodified in the upper reaches, with limited modifications in the lower reaches of the Von River. • Margins of the stream vary from brown top and tussockland and fernland in the upper reaches, to regenerating indigenous forest and high producing farmland in the lower reaches and on the shores of Lake Whakatipu. • The channel and formation of the river remains largely coherent and legible, although land use and vegetation within the margins varies throughout the catchment. • The Von River and Hut Burn gorge is a memorable feature within lower extent of the catchment. • The Von River was a traditional travel route for mana whenua between the shores of Lake Whakatipu within the mountain ranges of Te Waipounamu to the coastal settlements near Ōreti Estuary (Invercargill).

<p>LAN11</p>	<p>Te Awamāeroero / Lochy River</p>	<ul style="list-style-type: none"> • Incised stream transitioning to a braided river near Halfway Bay. • Active bed is narrow in the upper reaches, with a semibraided section near the confluence with Wither Peak. • No modifications to the active bed or margins including water takes, dams, or bores. • Margins within the upper reaches include a mixture of browntop and tussockland, matagouri scrub and shrubland, and beech forest, while the lower reaches are farmed and include a mixture of browntop and tussockland, and exotic shelter belts. • Geomorphic legibility of the water body remains intact and expressive of its formative processes, including the braided river patterns albeit surrounded by farmland in the lower reaches. • The Lochy River is a memorable and highly legible feature to the north of the Eyre Mountain Range. • Highly coherent in the upper reaches due to lack of structures and modifications. • The Lochy River and wider catchment is associated with Māeroero (wild men of the woods). These men occupied the forested area of the Lochy River and were known for their great strength and craftiness.
<p>LAN12</p>	<p>Whakatipu Waimāori / Lake Whakatipu</p>	<ul style="list-style-type: none"> • Intact glacially carved lake formed approximately 15,000 years ago. • Active bed of the lake remains largely unmodified, with the exception of surface water takes near Queenstown. • Several native aquatic flora present including deep water mosses (bryophytes), while the margins contain a spectrum of urban development near Queenstown, to intact areas of beech forest. • Water quality is considered 'very good' (based on LAWA scale of Very Good to Very Poor). Ecological condition is also considered excellent with limited impact from invasive species. • Flow of the water body towards the Kawarau River remains unimpeded due to the lack of structures (such as dams) within the active bed. • Highly legible glacial lake expressive of its formative processes.

		<ul style="list-style-type: none"> • Highly legible glacial lake expressive of its formative processes. • Highly coherent and memorable landscape feature within the wider Whakatipu basin. • Heightened sense of naturalness with a lack of structures and modifications to the active bed. • Lake Wakatipu or Whakatipu Waimāori is associated with the ancestor Rākaihautū who dug the lake with his kō (digging stick).
LAN13	Wye Creek	<ul style="list-style-type: none"> • Intact and rocky incised stream. • Active bed is narrow with a steep gradient. • Includes Lake Hope in the headwaters of the catchment. • Margins of the stream are lined with dense native conifer species and broadleaf forest. • Memorable and steep catchment adjacent to Wye Creek Settlement.
LAN14	Mātakitaki River	<ul style="list-style-type: none"> • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches include bore and gravel extraction consents. • Margins clad in a mixture of intact beech forest, in the upper reaches to highly modified farmland in the lower reaches. • Legible braided river channels are highly expressive of their formative processes. • The Mātakitaki (Matukituki) River was a traditional travel route for mana whenua between the shores of Lake Wānaka and Jackson Bay on the West Coast.
LAN15	Motatapu River	<ul style="list-style-type: none"> • Narrow, incised, and rocky river devoid of structures and modifications. Some vehicle crossings present near Motutapu Station. • Margins are clad in tall tussockland in the upper reaches and farmland in the lower reaches. • Memorable river within the Lake Wānaka catchment.
LAN16	Ōtānenui / Wilkin River and Siberia Stream	<ul style="list-style-type: none"> • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Includes Lucidious Lake and Lake Castalia in the headwaters of the Wilkin River, and Crucible Lake in the

		<p>headwaters of Siberia Stream.</p> <ul style="list-style-type: none"> • Active bed is highly expressive of its formative processes including braided river channels.
LAN17	Te Awamakarara / Young River	<ul style="list-style-type: none"> • Intact braided river with no structures, modifications or consents. • Margins are clad in extensive beech forest, tall tussockland, regenerating native forest (manuka and kanuka), and areas of grazed pasture in lower reaches of the catchment. • Active bed is highly expressive of its formative processes including braided river channels.
LAN18	Blue River	<ul style="list-style-type: none"> • Intact semi braided river in the upper catchment, turning to rocky, narrow, and incised river in the lower catchment. • Margins are clad in extensive beech forest, sub alpine communities, broadleaf forest, and grassland in lower reaches. • Active bed is highly expressive of its formative processes including braided river channels. • The Blue River formed the eastern extent of Māori Saddle, which was known to be a frequent traditional travel route between the Makarore River and the Okuru River mouth near Haast.
LAN19	Makarore River	<ul style="list-style-type: none"> • Intact braided river formed from glacial outwash and river gravels. • Braided river channels remain unimpeded or restricted by modifications and structures in the upper reaches. Some modifications in the lower reaches including a bore and discharge to water consents, and roading infrastructure associated with State Highway 6. • Margins clad in a mixture of intact beech forest, regenerating native vegetation, and in the lower reaches, farmland. • Coherent braided river channels are highly expressive of their formative processes.
LAN20	Lake Wānaka	<ul style="list-style-type: none"> • Identified in Lake Wanaka Preservation Act (1973). • Intact glacially carved lake which remains largely unmodified.

		<ul style="list-style-type: none"> • Margins are clad in a range of vegetation with varying degrees of modification. Northern extent includes areas of intact beech forest, fernland, and regenerating native vegetation (manuka and kanuka). Southern extent includes the township of Wānaka and areas of grassland and pastoral farming. • Water quality is considered 'very good' (based on LAWA scale of Very Good to Very Poor). Ecological condition is also considered excellent. Highly legible glacial lake expressive of its formative processes. • Highly coherent and memorable landscape feature within the wider Wānaka basin. • Lake Wānaka is associated with the ancestor Rākaihautū who dug the lake with his kō (digging stick). Several kāinga mahinga kai (food-gathering places) and kāinga nohoanga (settlements) were located around the lake where tuna (eels), aruhe (bracken fernroot), weka, pora ('Māori turnip'), mahetau, kāuru (cabbage tree root), harakeke (flax), and kākāpō were gathered.
LAN21	Lake Hāwea	<ul style="list-style-type: none"> • Glacially carved lake modified by the Hāwea Dam. • Margins are clad in a range of vegetation with varying degrees of modification. This includes dense beech forest, fernland, regenerating native vegetation (manuka and kanuka), grassland, pastoral farming and the township of Hāwea. • Water quality is considered 'very good' (based on LAWA scale of Very Good to Very Poor). Ecological condition is also considered excellent. • Highly legible glacial lake expressive of its formative processes, albeit with modified water levels. • Highly coherent and memorable landscape feature. • Lake Hāwea is associated with the ancestor Rākaihautū who dug the lake with his kō (digging stick). Several kāinga mahinga kai (food-gathering places) and kāinga nohoanga (settlements) were located around the lake where kea, kererū, kākā, kiwi, kākāpō, tūī, weka, pūtakitaki (paradise duck), pārerā (duck sp.), tuna (eel), kāuru (cabbage tree root), aruhe (bracken fernroot), and pora ('Māori turnips') were gathered.
LAN22	Hunter River	<ul style="list-style-type: none"> • Intact braided river system with no structures, or consents.

		<ul style="list-style-type: none"> • Margins include dense beech forest in the upper reaches transitioning to areas of grazed grassland, regenerating indigenous forest (manuka and kanuka) and fernland. • River is highly expressive of its fluvial formative processes with a highly distinctive braided river pattern.
LAN23	Dingle Burn	<ul style="list-style-type: none"> • Rocky, braided river, unimpeded by structures, and consents. • Margins are clad in dense beech forest in the lower reaches and tall tussockland, grassland and subalpine vegetation in the upper reaches. • Distinctive alluvial fan in at the confluence of Lake Hāwea.
LAN24	Timaru River	<ul style="list-style-type: none"> • Narrow, and rocky braided river devoid of structures and consents. • Margins are clad in areas of dense beech forest, regenerating native vegetation (manuka and kanuka), tall tussockland, grassland and sub alpine vegetation. • River is highly expressive of its fluvial formative processes with a highly distinctive braided river pattern. The Timaru River is recorded as a landing place for mōkihi (rafts), and a kāinga mahinga kai (food-gathering place) where tuna (eels) and weka were gathered.

Economic profile and snapshot

While freshwater policies might be designed and applied specifically to the Upper Lakes Rohe, their impacts may be felt beyond. Hence the Upper Lakes Rohe and the neighbouring Dunstan Rohe are combined when considering socio-economic information. These communities have close economic ties, i.e., residents are likely to live in one of the areas while working/spending in the other areas.

In 2018, the Upper Lakes Rohe and Dunstan Rohe were home to around 47,400 residents (21% of Otago's population). In the previous 12 years, the population in these Rohe increased by 19,300 people (or 69%) from 28,000 residents in 2006. This rapid population growth is putting increasing pressure on water use (water takes and discharges of pollutants or contaminants) and its infrastructure.

Overall, these Rohe have relatively low social deprivation, when considering factors such as income, home ownership, employment, access to transport and communications, and access to internet.

The local communities and the economy in the Upper Lakes and Dunstan Rohe are especially reliant on water resources. The most populated towns in this Rohe are built around the lakes. Tourism, the most important industry sector in the Rohe, relies on fresh water in some way or form (including snow, which is essential for the ski resorts

operating in the Rohe). Agricultural activities, mainly dry stock (incl. deer and with little/no dairy in the Upper Lakes Rohe) and horticulture/viticulture operations, are dependent on freshwater supplies.

An understanding of Māori history and the Māori economy is essential for policy development and policy impact assessment. Not only does pre-European Māori history help shape modern day New Zealand, but the Māori economy is also integral to the New Zealand economic system. ORC is partnering with Aukaha and Te Ao Marama to develop an overview of Kāi Tahu history and economy.

- [View the Upper Lakes Rohe economic snapshot that provides local economy information](#)
- [View more regional economic information](#)
- [View the media release for new Otago economic reports](#)