

# Proposed new rules and regulations Roxburgh Rohe

This summary provides an overview of the provisions relating to the Roxburgh Rohe (area). 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.

If you are unsure of any particular terms, there is a glossary of terms.

### Recent content updates:

- 13 October 2023:  
Amended information on cultivation in Table 2 for clarity
- 25 September 2023:  
Added Roxburgh Rohe boundary map
- 24 September 2023:  
Added timeframe for achieving the environmental outcomes for target attribute states

A map of the Roxburgh 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 Roxburgh Rohe. An environmental outcome statement describes the desired future state that communities in the Roxburgh 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 Roxburgh Rohe.

Table 1: Draft environmental outcomes

Value	Environmental	Attributes to measure and monitor
<b>NPSFM compulsory values (apply to every FMU/rohe)</b>		
	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.	Rivers: Ammonia Nitrate Suspended fine sediment E. Coli Dissolved reactive phosphorus Periphyton Macroinvertebrates (MCI/ASPM) Fish IBI E. Coli primary contact sites Macroinvertebrates (QMCI) score* <sup>1</sup> Deposited fine sediment* Dissolved oxygen* Ecosystem metabolism*  Lakes: Phytoplankton (Chlorophyll-a) Total nitrogen Total phosphorus Ammonia Cyanobacteria* Submerged plants (natives)* Submerged plants (invasive)* Lake-bottom dissolved oxygen* Mid-hypolimnetic dissolved oxygen*

<p><b>Fishing</b></p>	<p>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>	<p>z</p> <p>Rivers:</p> <ul style="list-style-type: none"> <li>E. Coli</li> <li>Suspended fine sediment</li> <li>Periphyton</li> <li>E. Coli primary contact sites</li> </ul> <p>Lakes:</p> <ul style="list-style-type: none"> <li>Phytoplankton (Chlorophyll-a)</li> <li>Cyanobacteria (Biovolume cubic millimetres per litre)*</li> </ul>
<p><b>Threatened species</b></p>	<p>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>	<p>All the attributes listed for Ecosystem Health above.</p> <p>Recency of presence</p> <p>National conservation category and status</p> <p>Regional conservation category and status</p> <p>Number of sub-populations</p>
<p><b>Mahika kai (food and resource gathering)</b></p>	<p>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.</p> <p>Mana whenua are able to safely access, harvest and use these resources now and in the future.</p>	<p>All the attributes listed for Ecosystem Health above.</p>
<p><b>Other values (apply to every FMU/rohe)</b></p>		

<p><b>Natural form and character</b></p>	<p>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.</p>	<p><b>Rivers:</b> Suspended fine sediment Periphyton Macroinvertebrates (QMCI) score* Deposited fine sediment*</p> <p><b>Lakes:</b> Phytoplankton (Chlorophyll-a) Cyanobacteria* Submerged plants (natives)* Submerged plants (invasive)* Lake-bottom dissolved oxygen* Mid-hypolimnetic dissolved oxygen*</p>
<p><b>Natural form and character</b></p>	<p>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.</p> <p>Activities do not introduce or increase the concentration of contaminants in water, so that, after existing treatment, it no longer meets drinking water standards</p>	
<p><b>Wāhi tūpuna (sites of significance to iwi)</b></p>	<p>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.</p>	<p>Information available soon.</p>
<p><b>Fishing</b></p>	<p>Fish are safe to eat; and</p> <p>Insofar as it is consistent with the protection of indigenous and threatened species, the spawning and</p>	<p><b>Rivers:</b> E. Coli Suspended fine sediment Periphyton Nitrate Suspended fine sediment Macroinvertebrates (MCI/ASPM) Fish IBI Macroinvertebrates (QMCI) score*</p> <p><b>Lakes:</b> Phytoplankton (Chlorophyll-a) Cyanobacteria (Biovolume cubic millimetres per litre)*</p>

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

## 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 Taiari/Taieri FMU, the environmental outcomes are to be achieved by 2050. 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 Roxburgh 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.)

An interactive map is available online for you to view:

[www.orc.govt.nz/landwaterproposedchang](http://www.orc.govt.nz/landwaterproposedchang)

## 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. However, for the Roxburgh Rohe a number of specific rules are proposed that are needed to make sure the environmental outcomes for this rohe are achieved overtime. These additional rules, which will be included in the Roxburgh Rohe chapter of the new Land and Water Regional Plan, are shown in the table below.

Table 2: Overview of proposed additional provisions for Roxburgh rohe

Contaminants of concern	Draft LWRP
<p><b>Rivers</b></p> <ul style="list-style-type: none"> <li>Periphyton (TNTP)</li> <li>E. Coli</li> <li>Suspended fine sediment</li> </ul> <p><b>Lakes</b></p> <ul style="list-style-type: none"> <li>Nitrate</li> </ul> <p><b>Groundwater</b></p> <ul style="list-style-type: none"> <li>Arsenic</li> <li>Nitrate</li> </ul>	<ul style="list-style-type: none"> <li>Cultivation permitted subject to conditions relating to setbacks from waterbodies, depending on slope. 5m on a slope of less than 10 degrees 10 metres on slopes between 10 and 20 degrees</li> <li>Cultivation on slopes over 20 degrees, only permitted if the following conditions are met: for the renewing or establishing of pasture only, using no tillage or direct seed drilling only 10 m setbacks from water bodies and wetlands.</li> <li>If the permitted activity conditions cannot be met the activity requires a discretionary consent.</li> </ul>

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

The Roxburgh 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 lakes in the Roxburgh rohe are shown in the table below. Because the lakes in the Roxburgh rohe are a result of the damming of rivers or streams, these lakes have been classed as controlled lakes.

Lakes Roxburgh and Onslow will continue to be managed in accordance with their consented lake level conditions, while any takes from these lakes will be subject to the take limits that will apply to the river catchments within which these are located.

Other controlled lakes, such as Butchers Dam, Conroys Dam and Pinders Pond, will be subject to both the minimum flow and take limits take limits that will apply to the river catchments within which these are located.

Name	Environmental level(s)	Take limit
<b>Controlled lakes</b>		
Lake Onslow (Teviot River catchment)  Lake Roxburgh (Clutha River/ Mata-Au catchment)	Consented levels	Subject to the take limit of the river catchment that the lake is located within
Butchers Dam (Butchers Creek catchment)  Conroys Dam (Fraser River catchment)  Frasers Dam (Fraser River catchment)  Pinders Pond	Lake level managed by the minimum flow of the river catchment that the lake is located within	Subject to the take limit of the river catchment that the lake is located within

## River catchments

Environmental flows and take limits for rivers in the Roxburgh rohe are shown in the table below.

For some rivers in the Roxburgh rohe, such as the Bengier Burn and Fraser River, Otago Regional Council proposes to set interim take limits and environmental flows according to the default method above. These will be implemented through the resource consent replacement process. However, prior to this resource consent replacement process Council will assess whether there is a need to set bespoke minimum flows and take limits for these rivers through a plan change process. Given the current level of water use and allocation, these rivers will in effect be either fully allocated or over-allocated and any new taking of water will not be available.

For some river catchments where a transition may be needed to achieve the environmental outcomes of the catchment and phase out over-allocation it is proposed to set a common consent duration expiry date for any new consent granted under the LWRP framework, the proposed common catchment date for rivers where this will apply in the Roxburgh rohe is 2032.

For some other rivers with a mean flow of 5,000 litres per second or less, a total take limit will be set as 20% of the 7-day MALF of these rivers (the 7-day MALF is a flow statistic that provides an indication of how low the flow gets in a typical year). Restrictions on consented and some permitted water takes, diversions and damming activities in these river catchments will be triggered when recorded or observed flows are at 90% of the 7-day MALF.

Table 4 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

Name	Environmental flow (l/s)	Take limit (l/s)	Further allocation available (estimate based on best available information)
<b>River catchments with a mean flow <math>\leq</math> 5,000 l/s and managed by default limits</b>			
<ul style="list-style-type: none"> <li>• Minimum flow set as 90% of 7-day MALF</li> <li>• Take limit set as 20% of 7-day MALF</li> </ul>			
Beaumont River	440	98	Yes
Belle Burn	163	36	Yes
Black Jacks Creek	350	78	Yes
Butchers Creek (2)	365	81	Yes
Canadian Creek	272	60	Yes
Cave Creek	249	55	Yes

# Draft Land and Water Regional Plan: Roxburgh Rohe

Colmans Gully Creek	219	49	Yes
Craig Creek	195	43	Yes
Donaldsons Creek	172	38	Yes
Fergusons Gully	68	15	Yes
Fourteen Mile Creek	192	43	Yes
Fruid Burn	608	135	Yes
Island Block	161	36	Yes
Judge	208	46	Yes
Little Minzion Burn	162	36	Yes
McNeish	213	47	Yes
Minzion Burn	202	45	Yes
Mt Benger Creek	119	26	Yes
Oven Hill Creek	197	44	Yes
Pringle Road Creek	16	4	Yes
Raes Junction Creek	38	9	Yes
Roxburgh East Creek	386	86	Yes
Ruby Creek	62	64	Yes
Shanty Creek	308	14	Yes
Shellbacks Beach	129	69	Yes
Three Brothers Gully	31	29	Yes
Tima Burn	178	7	No
Waikerikeri Creek	282	40	Yes

Table 5 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 5: Rivers managed by interim default minimum flows and take limits

Name	Environmental flow (l/s)	Take limit (l/s)	Further allocation available (estimate based on best available information)
Benger Burn*	82	18	No
Butchers Creek (2)	295	65	No
Chapmans	343	76	No
Coal Creek (1)	219	49	No
Coal Creek (2)	256	57	No
Elbow Creek	250	55	No
Fraser River*	538	120	No
Shingle Burn	347	77	No
Teviot River*	632	140	No

## Aquifers

For the Roxburgh East and West and South Ettrick Aquifers take limits will be set based on a proportion (35%) of the mean annual recharge of these aquifers. While national direction requires Otago Regional Council also to set environmental levels for this type of aquifers, we will not have sufficient groundwater level monitoring data to set environmental levels for these aquifers in the Land and Water Regional Plan when it will be notified. Therefore, environmental levels for these aquifers will be set at a later date.

Table 6 provides estimates of the actual takes limit for aquifers based on the default method using the best available information to determine the aquifers' Mean Annual Recharge (MAR). The numeric take limits will not be included in the LWRP. Instead, the LWRP will refer to the relevant % of the MAR.

Table 6: 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)
<b>Aquifers managed by default limits</b> <ul style="list-style-type: none"> <li>Take limit: 35% mean annual recharge</li> </ul>			
Dunstan flat aquifer	Not required to be included in the new LWRP at this time	1,290,00	Yes
Earnsclough aquifer		8,930,00	Yes
Roxburgh East Aquifer		1,050,000	Yes
Roxburgh West Aquifer		4,816,000	Yes
South Ettrick Basin Aquifer*		1,925,000	Yes

\*Requires further bespoke work to determine take limits

## 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.)

An interactive map is available online for you to view:  
[www.orc.govt.nz/landwaterproposedchang](http://www.orc.govt.nz/landwaterproposedchang)

Unique identifier	Site identifier	Values and characteristics
<b>Ecology</b>		
ECL16	<b>Talla Burn</b>	<ul style="list-style-type: none"> <li>The largest estimated area of occupancy of dusky galaxias is the Talla Burn which has 21.8% of the total estimated area of occupancy.</li> </ul>
ECL17	<b>Teviot River</b>	<ul style="list-style-type: none"> <li>Populations of Teviot flathead galaxias</li> </ul>
ECL18	<b>Fortification Creek Wetland Management Area</b>	<ul style="list-style-type: none"> <li>The Fortification WMA is a relatively large (526 hectares) upland (~740 metres elevation) fen with high site integrity (98% natural with 47% left).</li> <li>The site scored a weighted conservation rank of 5.0 within the FENZ/WONI analysis (Very High).</li> <li>One of the last remaining relatively uniform areas of red tussock (<i>Chionochloa rubra</i>) wetland combined with meandering streams.</li> <li>The area is considered a regionally significant habitat for waterfowl and harbours the threatened Banded Dotterel (<i>Charadrius bicinctus bicinctus</i>).</li> <li>The threatened plant species <i>Cardamine</i> sp. and <i>Ranunculus ternatifolius</i> are also present.</li> </ul>

<b>Physical</b>		
Physical		
<b>Recreation</b>		
REC47	<b>Clutha River / Mata-au (below Roxburgh)</b>	<ul style="list-style-type: none"> <li>Nationally significant for recreation (Greenaway 2018).</li> <li>Nationally significant for whitebaiting (RiVAS).</li> <li>Regionally significant for whitebaiting in DOC Otago Conservation Management Strategy 2016 and Clutha District Plan.</li> <li>Regionally significant as a fishery and for rafting and jet boating.</li> <li>Used for white water kayaking and packrafting.</li> <li>Nationally outstanding as a result of high significance for some activities and its use by a wide range of other significant activities.</li> </ul>
<b>Natural character</b>		
NAT15	<b>Old Man Range</b>	<p>Active Bed</p> <ul style="list-style-type: none"> <li>Intact and largely unmodified streams with intricate and steeply incised catchments.</li> <li>Water quality is high due to catchments largely being encompassed in conservation land.</li> <li>No structures and limited modifications, including stock access to lower slopes.</li> <li>Intact and extensive wetlands including bogs, seepages, and tarns in the upper reaches of the Fraser River.</li> <li>Unmodified flow regimes due to absence of bores or water takes in the upper reaches. Water abstraction is more prevalent on the lower slopes of the Kopuwai/Old Man Range (excluded from outstanding water body identification).</li> </ul> <p>Margin</p> <ul style="list-style-type: none"> <li>Margins are predominantly lined with tall tussock grassland dominated by <i>Chionochloa</i> spp. and cushion and herbfield communities.</li> <li>Limited structures and isolated modifications such as vehicle tracks, tramping tracks, and relic gold workings.</li> <li>Margins on the lower slopes are grazed, consisting of tussockland and low producing grassland.</li> </ul> <p><b>Context</b></p> <ul style="list-style-type: none"> <li>Located partially within the Kōpūwai Conservation Area, and Old Woman Range Conservation Area, the area is characterised by intact alpine tussockland from the headwaters to the mid slopes.</li> <li>The lower slopes are characterised by low producing grassland and isolated areas of exotic forestry.</li> <li>No settlements at higher elevation, however huts are scattered throughout the area associated with several tramping tracks.</li> <li>Overall the natural elements, patterns, and processes remain intact in the upper reaches of the catchment where outstanding water bodies were identified.</li> <li>Opportunities for exposed and remote experiences due to the open character of the natural mountain landscape.</li> </ul>

<p>NAT16</p>	<p><b>Lammerlaw Scroll Plains</b></p>	<p><b>Active bed</b></p> <ul style="list-style-type: none"> <li>• Intricate system of intact wetlands, and streams forming the upper catchment of Lake Onslow and a tributary of the Clutha River/Mata-au.</li> <li>• Water quality is high due to being in the upper reaches of the catchment with minor influence of stock.</li> <li>• Includes the Teviot Swamp, located in a small basin in the upper Teviot River catchment containing bog pools, string bogs, and meandering streams.</li> <li>• Includes the Fortification Creek Wetland Management Area, a large intact wetland spanning between Fortification Creek and Teviot River South Branch. The area is unique due to its associated oxbow lakes and ponds.</li> <li>• Unmodified flow regimes with no water takes or bores. Hydro generation and water abstraction on lower reaches of Beaumont River and Talla Burn are excluded from outstanding water body identification.</li> </ul> <p><b>Margin</b></p> <ul style="list-style-type: none"> <li>• Margins of tributaries in the headwaters are lined with alpine herbfield and tall tussockland.</li> <li>• The margins of Fortification Creek Wetland contain one of the last remaining uniform areas of red tussock (<i>Chionochloa rubra</i>).</li> <li>• Low intensity cattle and sheep grazing is present in areas.</li> <li>• No structures, but some vehicle tracks present.</li> </ul> <p><b>Context</b></p> <ul style="list-style-type: none"> <li>• Forms the upper catchment of the Teviot River and a southern tributary of man-made Lake Onslow.</li> <li>• The wider plateau area is characterised by intact tall tussockland and intermittent wetlands within the gullies due to poor drainage.</li> <li>• Included within the pastoral lease of Beaumont Station, therefore largely inaccessible to the public (apart from road to Lake Onslow outside the outstanding water body identification).</li> <li>• No settlements or large structures, only farm tracks associated with Beaumont Station.</li> <li>• Overall due to the lack of modification the natural elements, patterns, and processes dominate, remaining highly legible, in particular in relation to the scroll plains.</li> </ul>
--------------	---------------------------------------	--

NAT17	Waikerikeri	Refer to NAT13 (Manuherekia)
<sup>W</sup> Natural features and landscapes		
NAT16	Upper Fraser River	<ul style="list-style-type: none"> <li>• Very narrow, and rocky active bed with no structures and limited consents.</li> <li>• Margins are clad in grassland in the lower reaches, and tall tussockland in the upper reaches.</li> <li>• Distinctive and legible incised gully formed by the active bed of the Fraser River.</li> </ul>
NAT16	Butchers Dam	<ul style="list-style-type: none"> <li>• Located in the lower reaches of Butchers Creek, a small tributary of the Clutha River, and includes the artificial lake, Butchers Dam.</li> <li>• Vegetation within the margins and wider context comprises low producing grassland, with isolated areas of matagouri, coprosma propinqua and kowhai scrub and Glasswort herbfield.</li> <li>• The southern extent of the ONF also falls within the Flat Top Hill Conservation Area.</li> </ul>

## Economic profile and snapshot

While freshwater policies might be designed and applied specifically to the Roxburgh Rohe, their impacts may be felt beyond. Hence the Roxburgh Rohe, the neighbouring Manuherekia Rohe, and the northern part of the Taieri 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. The three areas combined are referred to as the 'Inland'.

In 2018, the area was home to around 13,000 residents (6% of Otago's population), which had increased by 15% since 2006. The economy of this area depends on the water-reliant agriculture sector (which provides for one in five jobs) and tourism related industries (15% of all jobs). Administrative Services (13%) is the third largest sector in the area; and the Employment Services sub-category provides 10% of all jobs. Together, all these industries account for around half of the employment in the 'Inland' area.

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. This work will be included in the economic impact assessment, available 2023.

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