Region-wide proposed new rules and regulations

Taiari/Taieri

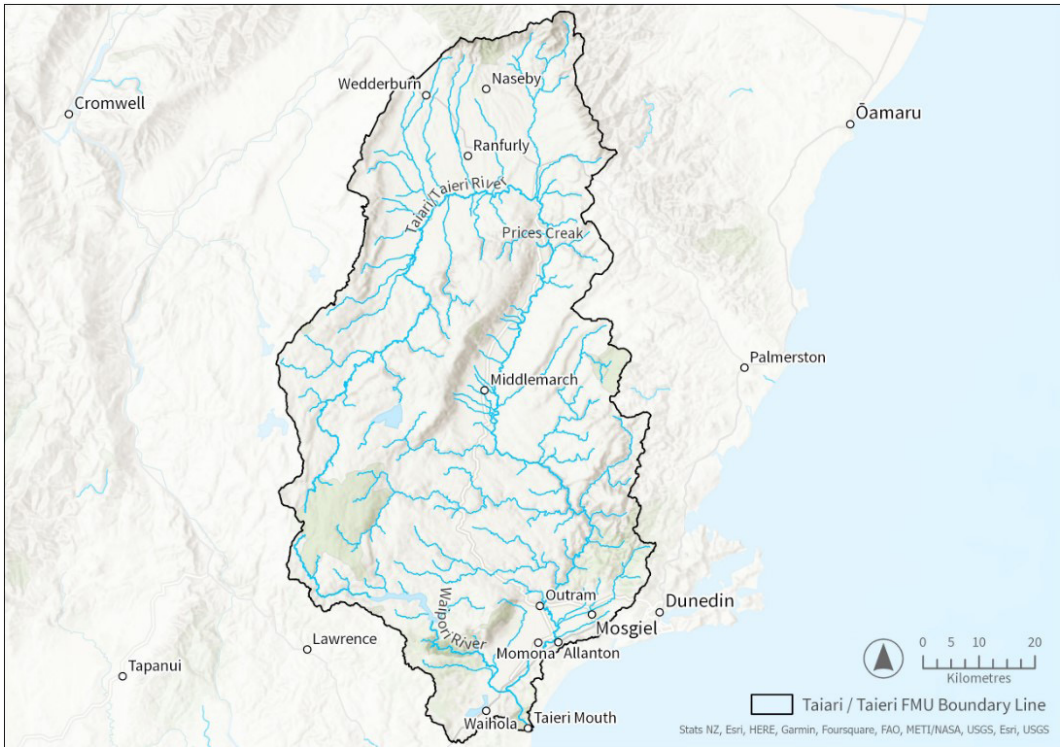
Otago Regional Council

This summary provides an overview of the provisions relating to the Taiari/Taieri 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:
Amended information on cultivation in Table 2 for clarity
25 September 2023:
Added Taiari/Taieri FMU boundary map
24 September 2023:
Added timeframe for achieving the environmental outcomes for target attribute states
Added information regarding 'matters of control' in table 2

A map of the Taiari/Taieri FMU 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 Taiari/Taieri FMU. An environmental outcome statement describes the desired future state that communities in the Taiari/Taieri FMU 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 Taiari/Taieri FMU.

Table 1: Draft environmental outcomes

Value	Environmental Outcomes for Taiari/Taieri FMU	Attributes
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.	**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*[1] 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*
Human contact	Water bodies are clean and safe for human contact activities and support the health of people and their connections with water bodies.	**Rivers:** *E. Coli* Suspended fine sediment Periphyton *E. Coli* primary contact sites **Lakes:** Phytoplankton (Chlorophyll-a) Cyanobacteria (Biovolume cubic millimetres per litre)*
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 waterbodies (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	Coming soon.
Wāhi tūpuna	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.	Coming 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.	Coming soon.
Taoka species (treasured species)	Thriving, connected habitats for indigenous species are restored and sustained for ever and their mauri is intact.	Coming soon.
Values that apply to specific FMU		
Commercial and industrial use	Provided the health and wellbeing of water bodies and freshwater ecosystems and human health needs are met, commercial and industrial activities are enabled.	**Rivers:** Suspended fine sediment Periphyton Water quantity
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.	

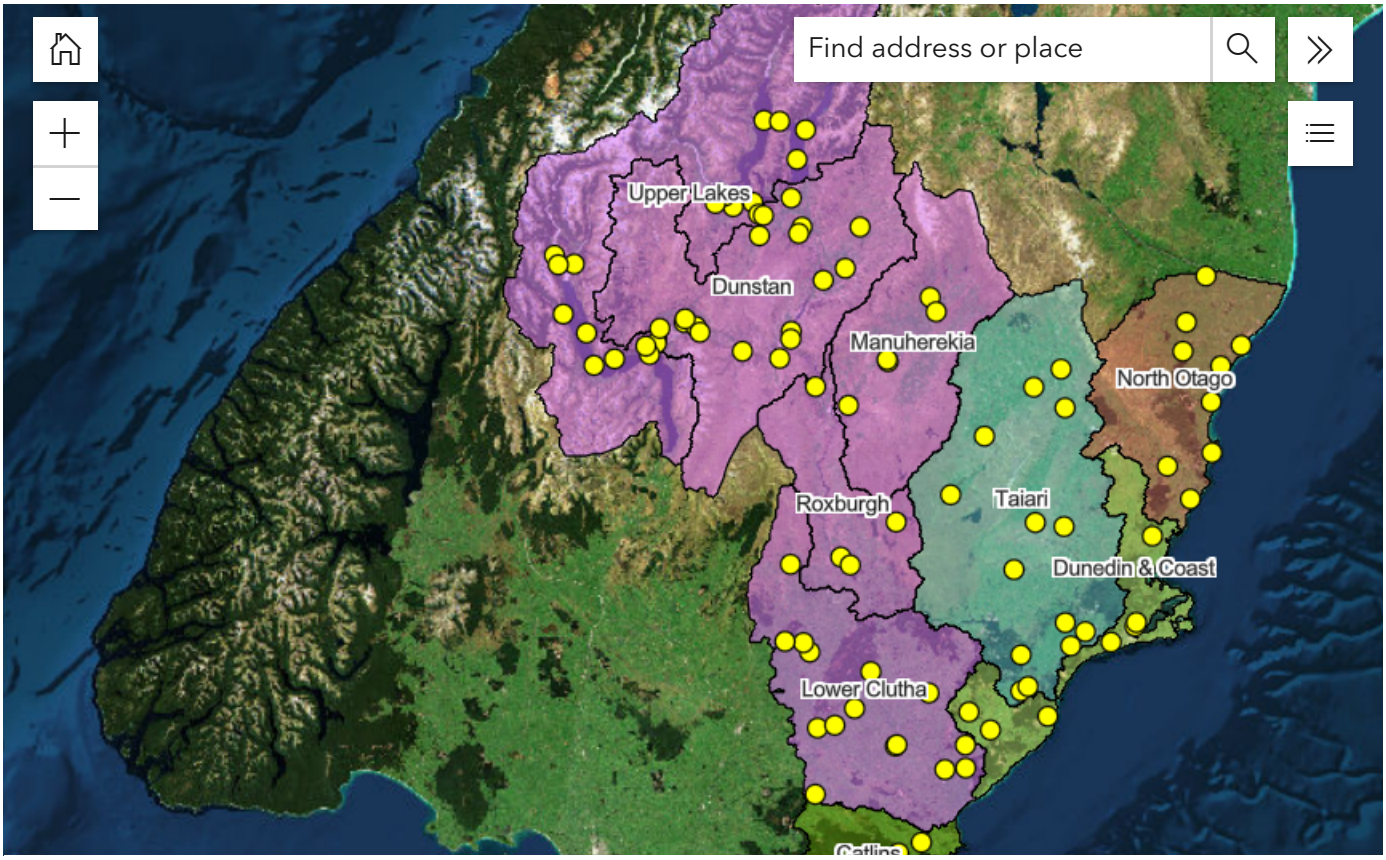
[1]*Asterisk indicates that the baseline state of these compulsory attributes is not known, but monitoring is now being undertaken.

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 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 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 Taiari/Taieri FMU 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.

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

Table 2: Overview of proposed additional provisions for Taiari/Taieri FMU

Contaminants of concern	Draft LWRP

Rivers:
• Periphyton (biomass and TNTP)
• *E. Coli*
• Suspended fine sediment
• NNN
 	
Lakes:
• *E. Coli*
 	
• Chlorophyll-a
 	
Groundwater:
• *E. Coli*
• Nitrate
	• Consent required for dairy farming and dairy support which allows all activities on farm to be considered in order to require reductions in contaminant losses. Controlled activity status with conditions:
	  ◦ the dairy farm is existing
	  ◦ has a freshwater farm plan
	  ◦ average stocking rate no greater than 2.5 cows per hectare
	  ◦ livestock are wintered on the land
	  ◦ synthetic nitrogen fertiliser cap of 100 kgs per hectare per year
	• Matters of control are:
	  ◦ the content of, and compliance with, the farm's certified freshwater farm plan
	  ◦ the timing of any actions or good management practices proposed to achieve the environmental outcomes for the FMU
	  ◦ methods to avoid or mitigate adverse effects of the activity on water quality
	  ◦ methods to reduce contaminant loss
	  ◦ stocking rates
	• If controlled activity conditions cannot be met, the activity requires a discretionary consent.
	
	• Increase setbacks for high-risk activities, such as intensive winter grazing and stock access near waterways.
	  ◦ all livestock (including sheep) on low slope land of 10 metres from the beds of wide rivers (over 1 metre) and 3 metres from smaller continually flowing rivers
	  ◦ with a transition time of 10 years for existing fences.
	
	• 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
	• 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.
	• If the permitted activity conditions cannot be met the activity requires a discretionary consent.

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

The Taiari/Taieri FMU chapter will also include take limits and environmental flows and levels for rivers, lakes and aquifers in this FMU.

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 any 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 Taiari/Taieri FMU are shown in the table below.

Given its uniqueness, it is proposed that a narrative take limit is set for Sutton Salt Lake that prohibits any new takes, damming or diversions that could impact water levels in this lagoon (except for takes that are permitted under the Resource Management Act 1991). As there are currently no consents for the taking, damming or diversion of water from this lake, the prohibition will ensure that this water body will continue to behave naturally.

Similar outcomes are sought for Lakes Waihola/Waihora and Waipori and three smaller lakes in the Waihola-Waipori wetlands. For these lakes new takes, damming or diversions will also become prohibited (except for takes that are permitted under the Resource Management Act 1991), while any existing takes from these lakes will be subject to the minimum flow of the Taiari/Taieri River.

The Taiari/Taieri FMU also includes various controlled lakes or reservoirs. Lake levels for most of these controlled lakes or reservoirs will be managed by the minimum flow that will apply to Taiari/Taieri River. The only exception is Lake Mahinerangi which will continue to be managed in accordance with its consented lake level conditions.

Any takes from these reservoirs and controlled lakes will be subject to the take limits that apply to the Taiari/Taieri River catchment.

Name	Environmental level(s)	Take limit (litres per second)
Natural lakes (unmodified)		
Salt Lake/Sutton Salt Lake	Natural minimum water level	Narrative - no new taking, diversions, damming or discharges from the lake or upper catchment

Natural lakes (with consents in the upper catchment)		
Lake Waihola/Waihora **(Taieri River catchment)** **Lake Waipōuri** **(Taieri River catchment)** **Three unnamed lakes in the Waihola-Waipori wetlands complex (Taieri River catchment)**	Existing takes subject to the minimum flow of the river catchment that the lake is located within	Narrative - no new taking, diversions, damming or discharges from the lake. Existing takes subject to the take limit of the river catchment that the lake is located within
Controlled lakes		
Lake Mahinerangi	Consented levels	Subject to the Taiari/Taieri River take limit
Coalpit Dam **Deep Stream Reservoir** **Hoffmans Dam** **Knight Dam** **Lake Edgar** **Loganburn Reservoir/Te Pariparu-a-Ta Kaunia** **Unnamed dam formed by Paerau Weir** **West Eweburn Dam**	Lake level managed by the minimum flow of the Taiari/Taieri river catchment	Subject to the Taiari/Taieri River take limit

River catchments

For the Taiari/Taieri River, whose hydrology has been modified by damming and water takes, “bespoke” take limits and environmental flows will be set in the new Land and Water Regional Plan. These bespoke limits will be informed by detailed scientific and technical investigations.

To achieve the environmental outcomes of the Taiari/Taieri catchment and phase out any over-allocation of water it is proposed to set a common consent duration expiry date for any new consent granted under the pLWRP framework, the proposed common catchment date for the Taiari/Taieri FMU is 2034.

Name	Environmental flow(s)	Take limit (litres per second)
River catchments managed by bespoke limits		
Taiari/Taieri river	Awaiting (technical) recommendation	

Aquifers

For some aquifers in the Taiari/Taieri FMU, such as the Maniatoto Tertiary Aquifer and Strath Taieri Aquifer take limits will be set based on a proportion (35%) of the mean annual recharge of that aquifer. For the Lower Taiari/Taieri Aquifer (West and East) bespoke limits will be set following technical recommendations.

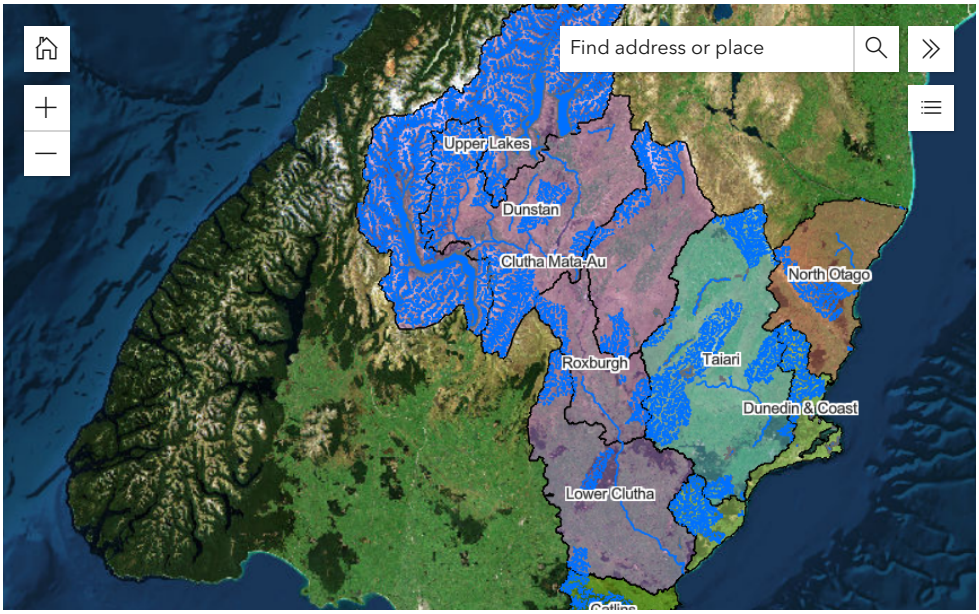
National direction requires Otago Regional Council also to set environmental levels for all aquifers. As the Otago Regional Council does not have sufficient groundwater level monitoring data to set environmental levels in the Land and Water Regional Plan when it will be notified, environmental levels for these aquifers will be set at a later date.

Maniatoto Tertiary Aquifer **Strath Taieri Aquifer**	Not required to be included in the new LWRP at this time	35% mean annual recharge
Aquifers managed by bespoke limits		
West Lower Taiari/Taieri Aquifer	Not required to be included in the new LWRP at this time	Awaiting (technical) recommendation Available Friday September 15th
East Lower Taiari/Taieri Aquifer		

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 FMU 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		
ECL21	**Waipōuri River**	• Waihora/Lake Waihola tributaries and Lakes Waipōuri and their tributaries support a landlocked population of giant kōkopu, and this population is the most northerly major population on the east coast of the South Island. • There nine population fragments that make up between 4% and 8% of the dusky galaxias populations. Three of these are adjacent tributaries of the Waipori River in Te Papanui Conservation Park and a fourth is in a Queen Elizabeth II National Trust covenant in a Scenic Reserve also in the Waipori River catchment. The majority of the Waipori River catchment populations are in unmodified protected catchments.
ECL22	**Deep Stream/Deep Creek**	• Eldon's galaxias are located in Deep Stream and Deep Creek and comprise 29.6% and 28.5% of the total estimated area of occupancy.
ECL23	**Kye Burn**	• The largest population area of the Central Otago roundhead galaxias can be found in the Kye Burn mainstem which contains 25.3% of the occupied area. Within the Kye Burn catchment there are an additional eighteen population fragments. These populations are, for the most part, contiguous with the mainstem population and can be treated as a single population that accounts for 45.5% of the Central Otago roundhead galaxias occupied area. • Kye Burn catchment supports three small populations of Taieri flathead in Kye Burn tributaries in the Dansey Pass area and this includes a rare sympatry zone with both Taieri flatheads and Central Otago roundhead galaxias.
ECL24	**Nenthorn Stream**	• The two largest populations of Taieri flathead galaxias occur in the upper Taieri River and Nenthorn Creek with these populations comprising 19.7% and 18.3% of the estimated total area occupied. • The catchment is a low to moderate altitude area with high summer temperatures and low rainfall. • Nenthorn Stream is recommended as an outstanding water body due to the large Taieri flathead populations and also the area's environmental factors contrast strongly to the Upper Taieri outstanding water body area.

ECL25	**Upper Taiari/Taieri**	• The Central Otago roundhead galaxias, Clutha flathead, and dusky galaxias are found in the Taiari/Taieri River catchment. • The two largest populations of Taieri flathead galaxias occur in the upper Taieri River and Nenthorn Creek with these populations comprising 19.7% and 18.3% of the estimated total area occupied. • The upper Taieri area has additional ecological values with the area having small populations of dusky galaxias and Teviot flathead galaxias giving rise to high non-diadromous species diversity in this area.
ECL26	**Waihora / Lake Waihola tributaries**	• Waihora/Lake Waihola tributaries and Lakes Waipōuri and their tributaries support a landlocked population of giant kōkopu, and this population is the most northerly major population on the east coast of the South Island. • Waihora/Lake Waihola have additional fishery values with them being habitat for inanga and they provide inanga spawning areas in the tidal areas of the two lakes. Two of the un-named tributaries of the lakes with adult giant kōkopu populations also have populations of Eldon's galaxias in the upper reaches and longfin eel in the mid and lower reaches.
ECL27	**Waipōuri / Waihola Wetland Complex**	• Waipōuri/Waihola Wetland Complex has a significant bird fauna, that includes threatened species, with at least sixteen native waterfowl species reported (Australasian bittern, Australasian shoveler, Black backed gull, Black billed gull, Grey teal, Aotearoa scaup, Otago shag, Paradise shelduck, Pukeko, Royal spoonbill, Pied stilt, Sacred kingfisher, South Island pied oystercatcher, Spotless crake, Variable oystercatcher, White faced heron). • Large size (2000 hectares) and contiguous expanse provides habitat for a wide range of ecosystems and services. Considered the best remaining example of a lowland wetland remaining in Otago and one of the largest and most significant remaining in Aotearoa.

		• Scored a weighted conservation rank of 4.2 within the FENZ/WONI analysis. • This wetland satisfied 10 out of 11 APP2 criteria. • The area is nationally and internationally recognised as a refuge for threatened flora and fauna. • Internationally important bird habitat with counts of up to 10,000 ducks and swans recorded and habitat/breeding grounds for a large number of bird species. 55 species of birds have been recorded with several being endemic, including the Fernbird (Bowdleria punctata punctata). • Nationally important fish habitat with 12 species of native fish recorded. Both lakes contain giant kōkopu (Galaxias argenteus), banded kōkopu (Galaxias fasciatus), inanga, long and short finned eels (Anguilla dieffenbachia and Anguilla australis), bullies, common smelt, lamprey, flounder, mullet, perch and brown trout. • A considerable portion of the wetland is relatively undisturbed and contains a sequence of different vegetation types which adds to the botanical value. Plant communities are largely native including the Threatened swamp nettle and tufted hair-grass. Other vegetation noted includes a composition of Carex sinclairii, flax and coprosma. • Aquatic plants include blunt pondweed (Potamogeton ochreatus), red pondweed (P. cheesemanii), water milfoil (Myriophyllum triphyllum), and turfland plants Lilaeopsis novae-zelandiae and Glossostigma elatinoides. A remnant of mixed shrub and kanuka (Kunzea ericoides) forest contains species Coprosma crassifolia, and korokio (Corokia cotoneaster).
ECL28	**Upper Taiari/Taieri Wetlands Complex**	• Large size (2727 hectares) and contiguous expanse provides habitat for a wide range of ecosystems and services. This is the only scroll-plain in Aotearoa with a unique combination of wetland habitats and significant hydrologic values. It is considered the best remaining example of this type in Otago and the only significant inland/upland (600 metre max altitude) habitat of this type left in Aotearoa. • The Aotearoa Landform Inventory has given the Taiari/Taieri wetland a high rating, with scenic, scientific and educational

		importance. • Scored a 1.0 (highest rank) within the FENZ/WONI analysis with a weighted conservation rank of 19.3 produced. • This was the only wetland assessed to meet all APP2 criteria. • Internationally important habitat for waterfowl and noted as one of the 10 most valuable habitats for waterfowl in Aotearoa. Noted presence of 52 bird species and several threatened species, including the Nationally Threatened Australasian Bittern and the Banded Dotterel. 27 of these birds are considered dependant on the wetland to meet specialized needs. • Native waterfowl that breed in the scroll plain include Aotearoa Shoveller (Anas rhynchotis variegata), Grey Teal (Anas gracilis), Grey Duck (Anas superciliosa), Black Swan (Cygnus atratus) and Paradise Shelduck (Tadorna variegata). Waders that have been recorded include Marsh Crake (Porzana pusilla affinis), Australasian Bittern (Botaurus poiciloptilus), White-faced Heron (Ardea novaehollandiae), Swamp Hen (Porphyrio melanotus), Pied Stilt (Himantopus himantopus) and South Island Pied Oystercatcher (Haematopus ostralegus finschi). • This area contains very high species diversity and provides critical habitat for the lifecycles of fauna, including many indigenous birds. • Native fish present include longfin eel (Anguilla dieffenbachii), lamprey (Geotria australis), common bully (Gobiomorphus cotidianus), upland bully (Gobiomorphus breviceps) and other non-migratory galaxiids. • Vegetation noted on site includes Lepidium sisymbrioides, the Threatened tufted hair-grass (Deschampsia cespitosa) and the Aotearoa mousetail (Myosurus minimus subsp. novae-zelandiae), a spring annual which has a threat status of Nationally Critical.
ECL29	**Te Paruparu-a-Te-Kaunia/Great Moss Swamp**	• The site scored a high weighted conservation rank of 29.7 within the FENZ/WONI analysis (high rank). • A large, but remnant wetland area (422.6 hectares), with outstanding site integrity (100% natural with 47% left). • One of the few remaining subalpine swamp areas in the Rock and Pillar Ecological District. • Recorded threatened plant species include the tufted hair-grass (Deschampsia caespitosa) and Carex secta var. tenuiculmus. Areas of red tussock (Chionochloa rubra), silver tussock (Poa cita), sedge tussock (Schoenus pauciflorus) and Sphagnum squarrosum.

		• The presence of Sphagnum porina (Heloxycanus patricki), a moth classified as in 'gradual decline', has been recorded. Hemiandrus 'Rocklands', a small ground weta, has also been recorded here.
ECL30	**Whawha-raupō/Swampy Summit Swamp**	• The area is somewhat small in size (48.4 hectares) but is high elevation (720 metres) and is recorded to have outstanding site integrity (99% natural with 15% left). • The site scored an outstanding weighted conservation rank of 1.0 within the FENZ/WONI analysis. • Listed as an Area of Significant Conservation Value in the Dunedin City District Plan of national and regional significance. • Presence of the carabid beetle (Oregus inaequalis), a Category B species of Aotearoa's threatened fauna. • Contains a high diversity of habitat types, with peat bogs and associated plant communities that provide important habitat for threatened South Island Fernbird (Bowdleria punctata punctata) and other species.
ECL31	**Sutton Salt Lake Wetland Management Area**	• Sutton Salt Lake is Aotearoa's only inland salt lake. • The lake has an important sequence of salt tolerant vegetation around its margin and there are five main vegetation zones that have been described at the lake: • A narrow fringe of salt tolerant vegetation at the lakes margin. • An algal zone submerged in winter or when lake is full. • Rough pasture with exotic grasses, hard tussock (Festuca novaezelandiae) and a few shrubs. • Communities on rock outcrops. • Shallow boggy depressions near the lake. • Threatened plant species Gratiola nana, Isolepis basilaris and Crassula peduncularis have been recorded on site. • A range of water birds and waders use the lake, feeding on the tiny shrimplike organisms which occur there. • The roundhead galaxiid (Galaxias anomalus) has been recorded on site. • Invertebrate species recorded at the site include Arctesthes catapyrrha, Eudonia sabulosella, Eudonia leptalea, Eurythecta zelaea, Lycaena boldenarum, Orocrambus corruptus and Phylacodes cauta.

		• Other aquatic fauna includes Brachionus plicatilis (very abundant), Microcyclops (Metacyclops), monacanthus (scarce), Diacypris spp. (abundant) and Ephydrella spp. (scarce), including an endemic species of Ephydrella novaezealandiae.
ECL32	**Mauka Atua Summit Wetland Management Area**	• The site scored an extremely high weighted conservation rank of 2.0 within the FENZ/WONI analysis (very high rank). • A large wetland area (1213 hectares), with very high site integrity (91% natural with 47% left). • Mauka Atua WMA is the only remaining example of high altitude wetlands on the eastern side of the Waipori Ecological District and has been described as 'a tarn, restiad bog, and tussockland cushion bog of national significance.' • Cushion-forming plants are confined to poorly drained areas on the summit ridge. Scattered tarns are surrounded by Sphagnum spp. and sedges. Small sized cushion bog areas occupy the poorly drained peaty depressions in snow-tussock grassland at a height of about 800 m ASL on the summit-ridge. Over 10 different cushion plant species can be found in the wetland, together with an insectivorous sundew (Drosera arcturi) and several lichens. The prominent rounded cushions are of Donatia novaezelandiae, a species confined to cool peaty wetlands between the Tararua Range and Stewart Island.
ECL33	**Patearoa Inland Saline Wetland**	• Because of its combined botanical and entomological values, Patearoa is considered the most important example of a saline wetland in Central Otago and Aotearoa. • The Department of Conservation considers the Patearoa Inland Saline Wetland to be a highly important site for biological conservation, where it was given a rank of #1 (1 being highest value to 11 lowest value). This is based on the geographical extent, relative representativeness (the extent to which the site represents the assumed 1840 condition), diversity and rarity of biota and soils. • Patearoa has been ranked as a soil site of international importance. • Patearoa scored yes in 8 out of 11 pORPS APP2 criteria – rarity ((d)(i), (d)(ii), (d)(iii), (d)(iv), diversity (e), distinctiveness (fii), and ecological context ((g)(ii), (g)(iv)). • Saline adapted invertebrate species recorded include Arctesthes catapyrrha, Capua semiferana, Crocydopora cinigerella, Eudonia sabulosella, Eudonia leptalea, Eurythecta zelaea, Loxostege sp. nov., Lycaena boldenarum, Orocrambus corruptus, Paranotoreas brephosata, Paranotoreas fulva, Phaeosaces sp. nov., Scopula rubraria, Scoriodyta suttonensis, Scythris triatma, Sporophylla oenospora, Stenoptilia celidota, Zizina oxleyi and the endemic

		grasshopper Sigaus campestris. • The plant community has been described as communities of low pH, low conductivity soils with short tussock grassland, depleted herbfield/shrubland, grassland/ herbfield, and exotic perennial grassland/ herbfields with communities of permanently moist or wet soils of near neutral pH and low salinity with sedgeland/ rushland plants, and communities of soil with relatively high pH and conductivity with salt meadow on slightly salty moist areas and salt grassland/ herbfield on dry salt pan. Presence of threatened plant.
Physical		
PHY15	**Taiari/Taieri River meanders**	• Nationally Significant Best example of a meandering river in Aotearoa. Has a high degree of curvature and shows all stages of ox-bow formation. • Upper Taiari/Taieri River - Serpentine Flats.
PHY16	**Taiari/Taieri River gorge**	• Regionally Significant Excellent example of a large, deeply incised, meandering river gorge. Of high scenic and aesthetic value. • Runs for c.30km between Pukerangi and Maka Kahikātoa/Outram.
PHY17	**Taiari/Taieri River mouth gorge**	• Internationally Significant Unmodified and well-defined coastal gorge. • Just inland from Taiari/Taieri River mouth.
PHY18	**Sutton Salt Lake and lowland tors**	• Nationally Significant Unusual inland saline lake and easily accessible example of lowland tors. Only salt lake in Aotearoa. Forms each year during rainy season and evaporates away during dry season. • locality 1-2km west of highway 87, 10km south of Middlemarch centre.
Recreation		
None identified.		
Natural character		

NAT18	**Ida Range**	**Active Bed** • Intact and largely unmodified streams with small and steep catchments. • Includes the headwaters of the Kye Burn and Swin Burn which provide important fish habitat. • Water quality is high due to no or very low intensity grazing in headwaters. • Largest population of Central Otago roundhead galaxias population in Kye Burn and second largest in Swin Burn, and significant habitat for the flathead galaxias. • Unmodified flow regimes due to absence of water takes in upper catchments. Lower catchments where water abstraction occurs excluded from outstanding water body. **Margin** • Margins of streams on steep slopes are predominantly lined with tall tussock grassland dominated by Chionochloa spp. Gullies contain matagouri scrub within scree slopes and gullies. • Limited structures. Some four-wheel drive and tramping tracks, as well Danseys Pass Road. • Margins below steep upper slopes are characterised by low producing grassland and tussockland associated with farming practices. • Crack willow common along Kye Burn main-stem and mid and lower reaches of Swin Burn. **Context** • Outstanding water body identification within the Oteake Conservation Park, which contains areas of highly intact tall tussock grassland. • Includes historic mining activities such as gold workings near Buster Hut. • Structures are limited to tramping huts and farm tracks in the upper reaches of the catchment, apart from Danseys Pass Road. • Overall, the natural elements, patterns, and processes of the water bodies remain intact in the upper catchments. • Sensitive landscape due to open and remote character. • Opportunities for wild and remote experiences.

NAT19	**Rough Ridge**	**Active bed** • Intact and largely unmodified streams with small catchments draining the tops. • Water quality is high due to no or very low grazing intensity in headwaters. • No structures or irrigation infrastructure present in upper reaches. Totara Creek excluded from outstanding water bodies due to dam. • Intact alpine wetlands and peat bogs near South Rough Ridge Hill and Old Dunstan Road. • Unmodified flow regimes due to absence of bores and water takes (where abstraction occurs on lower reaches of streams and all of Totara Creek excluded from outstanding water body identification). **Margin** • Margins are predominantly lined with tall tussock grassland dominated by Chionochloa spp. Gullies contain matagouri scrub. • Alpine wetlands and peat bogs contain sphagnum. • No structures and isolated modifications e.g. vehicle tracks. • Historic derelict gold digging remains on stream margins. **Context** • Located within the upper reaches of the Taiari/Taieri River catchment, the area remains largely unmodified. • Presence of low intensity stock grazing. • Characterised by intact areas of lowland short tussock, grading to mixed red and snow tall tussockland. Wheat grass occurs on Wairua-ā-pō/Rough Ridge. • Wider context includes the Poolburn and Greenland Reservoirs to the north and south (outside the outstanding water body identification). • No settlements and limited structures, however the area contains extensive four-wheel drive tracks (including Old Dunstan Road) and remote airstrips. • Opportunities for exposed and remote experiences, but predominantly private land.

NAT20	**Rock and Pillar**	**Active bed** • Extensive and intricate network of minor streams and creeks on the Rock and Pillar, Lammerlaw and Te Papanui/Lammermoor Ranges which remain largely intact. • Water quality is high in the plateau areas where grazing is very extensive. • Includes the Te Paruparu-a-Te-Kaunia/Great Moss Swamp, an intact and extensive wetland and several peat bogs in the headwaters of Loganburn Reservoir and Teviot River South Branch/ Red Swamp/ Fortification Creek wetlands at the head of Lake Onslow. • No structures or water takes present in headwaters, although found within the lower reaches of creeks. outstanding water body identification excludes the Loganburn Reservoir and Lake Onslow which are both dammed. • Upper Taieri River only catchment in New Zealand with populations of Taieri flathead galaxias, Teviot flathead galaxias and dusky galaxias (full catchment from the base of the Canadian Flat rapids upstream to headwater sources of the Taieri River and all its tributaries). No introduced fish present. • Unmodified flow regimes due to absence of bores and water takes. **Margin** • Margins to the north are lined with short and sub-alpine tall tussockland, and Hebe odora shrubland. Further south intact areas of low to mid altitude short and tall tussockland is present including species such as Chionochloa rigida, red tussock, hard tussock. • No crack willow present in upper Taieri catchment. • Limited structures and modifications including vehicle tracks. **Context** • Located in the upper reaches of the Taieri River, Teviot River and Waipōuri River catchments, the area remains largely unmodified and intact. • Presence of low intensity stock grazing. • No settlements and limited structures and modifications present, including vehicle tracks, huts, and transmission lines.

		• Overall natural elements patterns and processes remain intact, regardless of isolated modifications and stock grazing. • Opportunities for wild and remote experiences due to sub alpine terrain. Large parts of the ranges included in Te Papanui Conservation Park and Rock and Pillar Conservation Area.
NAT21	**Silver Stream**	**Active bed** • Whakaehu/Silver Stream drains confined catchment with intact tributaries which form the upper reaches. • Includes Whawha-raupō/Swampy Summit Swamp located on the eastern ridgeline of the catchment. • Water quality is high as no grazing occurs in the upper part of the catchment. • Flow regime remains unmodified due to lack of structures, bores, and water takes in upper catchment (lower catchment exclude from outstanding water body identification due to surface water take as primary allocation from Whakaehu/Silver Stream for the purpose of providing a public water supply to Dunedin City. 500 metres upstream of the confluence of Whakaehu/Silver Stream and McQuilkans Creek, near Whare Flat). **Margin** • Margins are lined with dense silver beech forest within the gullies. • Higher altitude areas are lined with intact tall tussock grassland including Chionochloa spp and wetland species. • No structures present, with limited modifications in upper catchment. Several walking tracks are present within the margins of the Whakaehu/Silver Stream catchment and Whawha-raupō/Swampy Summit Swamp. **Context** • Located within the upper Whakaehu/Silver Stream catchment which forms part of the wider Taiari/Taieri River catchment. • Situated within dense beech and podocarp forest. Species present include matai, totara rimu, and mahoe. Areas near Swampy Summit Swamp predominantly contain Chionochloa spp. and isolated areas of kanuka and manuka. • There are no settlements and limited structures and modifications, as predominantly reserve. Includes Rollinsons Road to Whawha-raupō/Swampy Summit Swamp.

		• Overall natural elements, patterns, and processes dominate and remain intact. • Opportunities for remote and isolated experiences within the forest, most of which is included in Silverstream Water Supply / Timber Preservation Reserve. Silverpeaks Scenic Reserve to the north.
Natural features and landscapes		
LAN47	**Taiari/Taieri River Scroll Plains**	• Three distinctive serpentine sections of the upper Taiari/Taieri River with multiple intact river channels and wetlands. • Margins are clad in herbaceous freshwater vegetation including rushes, sedges, and flax, and immediately adjoined by farmland. • Habitat for several wetland bird and fish species. • Scroll plain pattern is a highly legible landscape feature and expressive of its formative processes.
LAN48	**Loganburn Reservoir**	• Artificial water reservoir completed in 1983 for irrigation purposes. • While artificially constructed, active bed remains devoid of structures with the exception of the Loganburn Dam. • The reservoir is surrounded by tall tussockland, grassland, and remnants of the Great Moss Swamp. • Highly memorable and legible features within the Rock and Pillar Range. • Te Paruparu-a-Te-Kaunia is the Māori name for the Loganburn Dam (previously the Great Moss Swamp prior to flooding). The swamp was recorded as a lagoon where pūtakitaki (paradise duck), pārera (grey duck), kukupako (black teal), pāteke (brown teal), whio (blue duck) and totokipio (New Zealand dabchick) were gathered.
LAN49	**Sutton Stream**	• Very narrow, incised, rocky creek with no structures or modifications. • Margins are clad in a mixture of grassland and willows. • Highly legible incised gully formed by the active bed.
LAN50	**Taiari/Taieri River Gorge**	• Incised, rocky, and narrow active bed. • Margins are clad in grassland and willows.

		• Canyons and gullies formed by the active bed are highly legible and expressive of their formative processes.
LAN51	**Nenthorn Stream**	• Very narrow, incised, rocky creek with no structures or consents. • Margins include matagouri scrub as well as areas of grassland and willows. • High sense of remoteness due to lack of structures, and consents.
LAN52	**Salt Lake**	• Enclosed, shallow basin with no outlet and a unique saline environment. • Margins are clad in salt tolerant species including herbs and grasses, and grassland beyond. • Seasonal loss of water during the summer months forming a dry lake bed, and refilling during the winter months is a key characteristic of this lake. • Highly expressive of its formative processes. • Located in proximity of a traditional travel route between the Taiari/Taieri River mouth and Middlemarch where weka and woodhen were gathered.
LAN53	**Taiari/Taieri River Gorge and Mouth**	• Naturally formed coastal gorge. • Margins are clad in a mixture of indigenous forest, regenerating indigenous vegetation including broadleaf species and manuka and kanuka, grassland and gorse. • Highly memorable landscape feature within the lower Taiari/Taieri River Catchment and expressive of its formative processes. • Taiari/Taieri is the correct spelling for the Taieri River and is an abundant mahika kai resource. The river mouth was an important area of occupation, with the true left of the gorge being allocated as an occupational reserve in 1884.

Upper Taiari/Taieri Scroll Plain information and FAQs

Background

The Scroll Plain is a major feature of the upper Taiari/Taieri basin and contains diverse wildlife and habitats. It's the largest landform of its type in New Zealand and due to its size and complexity, this makes it a unique landscape in a national context.

Stock Exclusion Regulations[1]

In 2020, the Government introduced regulations that require cattle, deer, and pigs to be progressively excluded from most rivers, lakes, and wetlands. For wetlands that form one continuous area, the regulations can be readily implemented. However, in wetland complexes implementing the regulations is very challenging. The Scroll Plain is likely to have a mosaic of wetland and non-wetland areas, which makes practical implementation of the Stock Exclusion Regulations very difficult as stock would need to be excluded, then not excluded, potentially multiple times within a paddock. In addition, while preventing stock grazing can protect native species growing in wetlands, beneficial grazing can also result in the spread of pest species such as weeds.

What has changed?

Early in 2023, ORC and the community provided feedback to the Minister for the Environment on the complexities of the Scroll Plain and some potential unintended consequences from excluding stock as required by regulations (such as the spread of pest species). In response, the Stock Exclusion Regulations were amended in August 2023 to exclude this area on the understanding that ORC and communities would instead develop a management plan to address stock grazing in the Scroll Plain.

What will a management plan do, and when?

ORC and the Minister have agreed that any management plan will:

Be developed in consultation with the local community and tangata whenua.
Be implemented as soon as reasonably practical through the Land and Water Regional Plan and no later than 1 July 2025.
Give effect to the National Policy Statement for Freshwater Management.
Be designed for the purpose of achieving improved outcomes for the wetlands.
Include a monitoring and evaluation plan.

ORC has already commissioned Manaaki Whenua Landcare Research to undertake vegetation and soil quality assessments of representative areas of the Scroll Plain, including areas being grazed and areas that have been retired to assist with establishing a better information base for the management plan.

Further information on next steps, including engagement with communities, will be available once the current engagement on the Land and Water Regional Plan has concluded. It is important to note that the NESF[2] will still apply in the Scroll Plain.

[1]Resource Management (Stock Exclusion) Regulations 2020
[2]National Environmental Standards for Freshwater 2020

Economic profile and snapshot

While policies might be designed and applied specifically to the FMU, their impacts may be felt beyond the FMU/Rohe boundary. Therefore, the Upper Taieri area is combined with the Roxburgh Rohe and the Manuherekia Rohe, and are referred to as the 'Inland' area. The Lower Taieri area is combined with the Dunedin & Coast FMU, and are referred to as Dunedin and Surrounds. 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 Taieri along with Roxburgh and Manuherekia 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.

In 2018, the area encompassing Dunedin and surrounds was home to around 130,000 residents (or nearly 60% of the population of Otago). In the 12 years between 2006 and 2018, there was a 7% (or 8,100 people) increase in population, which is lower than the Otago Region (+16%) and New Zealand (+17%). Most residents (nearly 80%) live in Dunedin City centre area, while the remainder is split fairly evenly between Mosgiel and surrounding area (10%), and smaller towns and rural areas (10%).

The economy in Dunedin and surrounds is more diverse than other parts of the Otago Region. Residents are likely to be working in Tourism Related industries, Health Care and Social Assistance, Education and Training, Construction, or Public Administration and Safety. Employment in the primary sector is relatively small, providing around 2% of jobs. The large residential population and approximate two million visitors annually (pre-COVID 19) has been putting increasing pressure on water use (water takes and discharges of pollutants or contaminants to water) and its infrastructure.

An understanding of Māori history and 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 New Zealand's economic system. ORC is partnering with Aukaha and Te Ao Marama to develop an overview of Kāi Tahu history and economy.

View the Upper Taiari/Taieri economic snapshot that provides local economy information
View the Lower Taiari/Taieri economic snapshot that provides local economy information
View more regional economic information
View the media release for new Otago economic reports