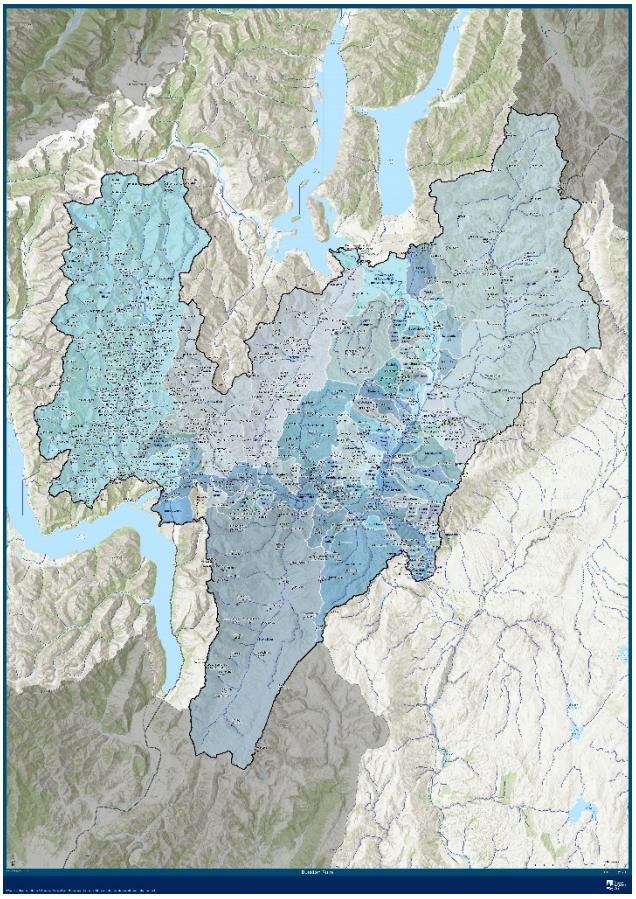
Dunstan Rohe Snapshot (Clutha/Mata-Au FMU)

This snapshot summarises what ORC knows about the Dunstan Rohe, to help create a vision for its freshwater.



The Rohe is part of the Clutha/Mata-Au FMU. In creating a vision for the Rohe, we also need to think about a vision for the whole Clutha/Mata-Au which encompasses Ki Uta Ki Tai – from the mountains to the sea – and how they fit together.

The Dunstan Rohe runs from the outlets of lakes Wanaka, Wakatipu and Hawea down to Clyde dam. This Rohe includes the Kawarau, Nevis, Shotover, Upper Clutha, Hawea, Cardrona, Arrow, and Lindis Rivers. Many smaller tributaries of the Clutha are also included such as the Lowburn, Amisfeild Burn, Bannock Burn and Luggate Creek. The outflows of Lakes Wanaka and Wakatipu are un-regulated whereas the outflow of Lake Hawea is controlled by the Hawea Dam. This Rohe also includes Lake Dunstan, a run of river hydro lake created by the Clyde Dam. These catchments contain diverse landforms from the rugged Kawarau gorge, primarily native covered Shotover catchment to extensive agriculture and fruit growing areas.

Brief history

The Mata-au River takes its name from the earliest of peoples, the Waitaha, and features in early traditions and accounts of the taniwha such as Kopuwai whose domain of influence included the Mata-au . The river was part of the mahika kai[1] network that drew our tupuna inland and was also very important as a means of transporting people and resources such as pounamu from the interior to the coast. Rights to inland resources and mahika kai were obtained through traditional means such as discovery, original naming, through battle or strategic marriages, that underpin whakapapa connections and tribal identity. Numerous placenames, nohanga, tauraka waka,[2] mahika kai resources and traditions associated with the river are located along the river and contribute to the importance of the wāhi tūpuna[3] values associated with the river and surrounding lands.

The river and the areas around it that now lie under Lake Dunstan were important for mahika kai. The traditional name applied to Lake Dunstan is Te Wairere, which refers to the speed with which the river once ran at this point. The area is traversed by ara tawhito[4] leading as far as the West Coast.

[1] The customary gathering of food and natural materials, the places where those resources are gathered, and the transfer of knowledge, custom, and practice that goes along with it.
[2] Canoe landing places
[3] Cultural landscape, encompassing places where the tūpuna travelled, stayed, gathered and used resources, and the associated stories and traditions that transcend the generations.
[4] Old trails used for trade, transport, and resource gathering expeditions.

The Rohe later supported gold mining and agricultural endeavours, creating a rich cultural heritage of structures and sites. Several deemed permits (historic mining rights authorising the taking of water) are still in use.

Situated around the bottom of Lake Dunstan, Cromwell is the largest urban centre. The modern economic focus of the area is largely tourism and agriculture, the latter ranging from internationally recognised viticulture and orchards to sheep and beef farming.

The Rohe encompasses drier catchments where water use is often high and areas where there are water quality pressures associated with agricultural use and high urban growth.

The area also supports a range of recreation activities, including snow sports, mountain biking, 4-wheel driving, hunting and fishing, hiking, water sports, gold panning, camping, photography and painting.

Geography and hydrology

Hot dry summers and cold dry winters approximate a semi-arid 'continental' climate, resulting in some waterways (Cardrona River) naturally drying in the summer. This has made irrigation important for agricultural production, and the remaining upland tussock and wetland areas are important for regulating catchment water yield.

The valleys and flat areas have a preponderance of free or moderately free draining soils, which leach readily. Soils vary considerably, including old mining tailings, remnants of Lake Manuhereikia, and glacial outwash terraces and fans, as well a range of previous management histories.

Water Quality[5]

The Dunstan rohe covers a range of river types from snow fed rivers like the Lindis, Nevis, Arrow and Cardrona, the outlets from the glacial fed Lakes Wānaka, Hāwea and Wakatipu and increasingly urbanised catchments such as Mill Creek which flows into the iconic Lake Hayes.

As is common across Otago, the less developed the catchment, the better the water quality. The upper reaches of the Dunstan Rohe rivers generally have excellent water quality, however as the rivers flow across an increasingly urbanised or agricultural landscape the water quality becomes poorer.

Lake Hayes is considered eutrophic with high nutrient concentrations, that fuel algae blooms.

Some of the rivers, such as the Shotover River, have a naturally high suspended sediment load, due to glacial melt.

The Dunstan rohe contains several aquifers: Wanaka & Cardrona Basin, the Wakatipu Basin, Cromwell Terrace Aquifer, Lowburn Alluvial Aquifer, and Lower Tarras aquifer. Groundwater quality monitoring results from the Dunstan rohe suggest generally good quality, with low E. coli and nitrate concentrations. However, groundwater quality in some bores, shows elevated E. coli, nitrate, and DRP, associated with the rapid development in the rohe. Due to the prevalent schist lithology, it is important to continuously test bore water to ensure dissolved arsenic concentrations are below the Drinking Water Standards.

Freshwater values and challenges

	What's special about Dunstan Rohe:	What isn't working so well:

[5] SOE Monitoring Report 2006 to 2017

Kāi Tahu values	• The significance of the Mata-au/ Clutha River in Kāi Tahu traditions and history • The ongoing relationship of mana whenua with wāhi tupuna6 • Mahika kai values	• Loss of connections to wāhi tupuna from modification of water bodies and land • Dams interrupting continuity of flow from the mountains to the sea • Effects of water body modification and environmental degradation on mauri and on mahika kai • Loss of access to mahika kai and other significant areas
Environment	• Scenic values, e.g. Shotover, Nevis • Ecological values, including Nevis and Clutha Flathead Galaxiid, Koaro • Areas with low human impact • Upland wetland areas • Good quality water e.g. Upper Clutha, Upper Arrow, and Lake Dunstan • High natural character values in upper catchments e.g. Bannockburn, Cardrona, Arrow • Kawarau Water Conservation Order	• Compromised water quality in Mill Creek and Lake Hayes, from development in upper catchment • Leachate from waste disposal • Pests, including Rabbits and Lagarosiphon in Lake Dunstan, upper Clutha and Kawarau • Urban and growth impacts on Arrow River and on aquifers in Wakatipu and Wānaka Basins • Increasing contamination trends in places • Wastewater infrastructure and disposal • Little data on some waterbodies, e.g. Lowburn, Bendigo basin aquifer
Economy	• Agriculture, e.g. Cardrona Valley and Wakatipu and Wānaka Basin • Viticulture and Orcharding • Hydro on Roaring Meg, Hydro storage in lake Dunstan • Tourism and recreation	• Covid-19 restrictions • Resilience to Climate Change impacts
Social	• Recreation e.g. lake Dunstan, Arrow, Cardrona • Amenity values, e.g. Arrow, Cardrona • High heritage values, including mining, old race networks	• Cost of living • Housing availability

[6] Cultural landscape, encompassing places where the tūpuna travelled, stayed, gathered and used resources, and the associated stories and traditions that transcend the generations.