Catchment context, challenges and values for Aparima and Pourakino

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Te Ao Marama Inc.

environment SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga

Aparima and Pourakino

Ki uta ki tai (from mountains to sea)

The Aparima zone extends from the Takitimu Mountains west of Mossburn to the Jacobs River Estuary at Riverton. The Pourakino drains the eastern slopes of the Longwood Ranges and is a short and steep catchment that discharges into the western arm of the Jacobs River Estuary.

The Aparima River and its estuary are Ngāi Tahu Statutory Acknowledgement Areas, which recognise the relationship of Ngāi Tahu with specific sites and areas, providing for this to be reflected in their management. There is also a Tōpuni for Tākitimu, which is another Ngāi Tahu settlement mechanism intended to protect the ranges.

Historical clearance and altered drainage of land for farming and settlements has made the area more prone to erosion, with greater and faster water runoff and river flood flows, reduced area of wetlands and riparian habitat, and increased loss of contaminants to waterbodies (e.g. sediment, nutrients and microorganisms).

The Jacobs River Estuary merges the Aparima and Pourakino catchments and is a complex ecological system comprised of a diverse range of habitats such as shallow open water, sandy beaches, salt marshes, intertidal sand and mud flats, coastal wetlands and riparian and landward vegetation. In the Jacobs River Estuary, there is detailed ecosystem health monitoring available for all these indicators across several sites.[1] In summary, it shows that the Jacobs River Estuary is in a fair condition with regard to nutrients within bed sediment and sea grass loss but in poor condition on other measures such as soft mud, macroalgae cover and condition, oxygen in sediment and extent of gross eutrophic zone condition.

The Riverton/Aparima township was established as the second European settlement in the South Island (1837). It became a whaling station that thrived for at least a decade from the late 1830s. The Riverton/Aparima township was designated as a port of entry by 1862 and used for commerce until a railway opened to Invercargill in 1879. Since then, it has been used for fishing, recreation and tourism.

Groundwater is managed within the Upper Aparima and Lower Aparima groundwater zones.

Approximately 4,000 people live rurally and in the three main settlements in the catchment (Nightcaps, Ōtautau and Riverton/Aparima). The relatively high proportion of people living rurally in these catchments is reflective of Southland and highlights strong urban and rural connections.

Of the 157,000 hectares of land in the Aparima and Pourakino catchments, approximately 65% (102,000 hectares) is used for farming. Approximately 17% (27,000 ha) is Department of Conservation estate and approximately 80 ha is Māori Freehold land.

[1] See: https://www.lawa.org.nz/explore-data/southland-region/estuaries/jacobs-river-estuary/

Te Mana o Te Wai

Mauri 1: Maintaining the quality of water from the headwaters to the coast

Mauri 2: Protecting and restoring springs and the quality of spring fed waters to the coast

Mauri 3: Protecting, restoring and re-establishing wetlands

Mauri 4: Protecting groundwater quality

Mauri 5: Protecting estuaries from contamination, while protecting and restoring estuary margins

Hauora

A state of hauora and healthy resilience in the Aparima and Pourakino catchments will be supported when:

- sources of *E. coli* from human activity are prevented from reaching waterbodies as much as possible
- erodible lands and waterbody margins are stabilised
- sediment is prevented from reaching waterbodies as much as possible
- the flow of water is slowed by reintroducing sinuosity, pools and wetland margins to straightened and channelised waterbodies
- wetlands are protected and re-established or restored
- nitrogen and phosphorus have been reduced to levels that restore water quality to within the natural range for waterbodies
- natural habitat and biodiversity are abundant in riparian margins and instream

Aparima and Pourakino catchments – key freshwater issues

(not in order of priority)

- Nitrogen contamination of groundwater, rivers, streams and Jacob's River Estuary. This results in the growth of algae and plants that can have a negative effect on ecosystem health.
- High levels of groundwater nitrogen contamination in the Central Plains and Wreys Bush areas. Exceeding drinking water standards in some locations.
- Excessive sediment and phosphorus loads in some lowland waterbodies and accumulation within Jacobs River Estuary.
- Animal and human faecal contamination of some lowland surface waterbodies (as indicated by *E.coli*).
- Multiple river sites within the catchment with deteriorating Macroinvertebrate Community Index (MCI) score trends. This indicates deteriorating ecosystem health.
- Threats to culturally significant indigenous species, such as kanakana (lamprey), tuna (eels) and īnanga (whitebait), including loss of habitat required to support these species.
- Fish passage
- Wetland loss

Assessment of degradation

As part of regional plan development an assessment of which catchments are degraded has been undertaken for the Southland Region. The mapping tool will have generated whether your boundary is within a degraded catchment or not and attached the map in the appendices. The below assessment of degradation is relevant to your location:

Your land may sit within a degraded catchment

Actions must be included in the Farm Plan to demonstrate a reduction in contaminants contributing to this degradation. This definition of 'degraded' was set using a lower bar than what would be considered necessary to help achieve a state of hauora. The coming Plan Change Tuatahi will likely raise this bar to the level of hauora. To future-proof your operation you should incorporate actions that strive for a state of hauora. By default, doing this will also ensure the requirements of the Southland Water and Land Plan are met. Whilst the catchment context information provided here may give some guidance on what contaminants to focus on at a catchment scale, it is critical to utilise farm specific information when assessing contaminant loss risk and appropriate on farm mitigation actions.

Schedule X Maps

Schedule X is a new method that shows where water quality is degraded within a catchment. Using the catchment context online tool, schedule X maps (which show the status of degradation) for the following parameters are available for your farm boundary.

- Total phosphorus
- Total nitrogen
- Suspended sediment
- E-coli

The water quality in all areas needs to be maintained or improved. Not degraded catchments need farm plan actions that **minimise** contaminant losses to the smallest amount reasonably practicable. Degraded catchments need farm plan actions that **reduce** contaminant losses so as to cause a reduction in adverse effects on water quality.

Aparima and Pourakino contaminants

Supporting hauora outcomes

Modelling suggests that substantial nitrogen, phosphorus, sediment, and *E. coli* load reductions are required to support a state of hauora in the Aparima and Pourakino catchments.

There are uncertainties associated with the exact percentage reductions required.[2] What is clear is that the gap between current water state and hauora is large and that we need to take significant action to address this. Property actions should focus on mitigating the specific contaminant loss risks that exist on your land. Given we know these substantial catchment reductions are required, significant on farm actions are needed to head in the right direction towards achieving the desired outcomes for our freshwater.

This modelling uses the updated 2022 periphyton criteria released by the Ministry for the Environment. These results are specific to achieving draft hauora objectives, assumes a 20% spatial exceedance criteria for periphyton and that streams and rivers are shaded. Reported results indicate the reductions required to meet river nitrate toxicity, river periphyton, river *E. coli* (human contact), lake and estuary macrophyte and phytoplankton, river visual clarity, and river suspended sediment draft objectives only. All draft objectives referred to are those to achieve the bottom of the hauora band as described in Bartlett et al. (2020).[3]

Catchment Focus

- Reduce nitrogen, phosphorus, sediment and *E. coli* loss as much as possible.

[2] Specific load reduction estimates can be found in: Snelder et al. (2021a) [Snelder et al. (2021b) [and Neverman et al. (2021) [LandCare Report (es.govt.nz)].

[3] See: Draft Murihiku Southland Freshwater Objectives [http://www.es.govt.nz/murihiku-southland-freshwater-objectives]

Property specific information

Each farm has its unique characteristics, such as soil type, topography, climate, land use, and management practices. Using farm-specific information allows for a tailored approach to environmental management.

To address the issue of contaminant loss, it is crucial to begin by assessing farm-specific information on potential loss pathways and associated risks. In the absence of more detailed farm specific information, there are resources that can assist focusing mitigation efforts on your property. Considering your property's location and physiographic information, we consider that these contaminants and loss pathways must be given particular attention when choosing mitigation actions.

Soil

A soil breakdown and map are included for your property as a part of this report.

Climate

The climate of the Aparima and Pourakino catchments spans the coastal, intermediate and inland climate zones. The coastal zone is subjected to cold, salt-laden winds from the south and west. The intermediate zone has a generally temperate climate with few severe frosts. It is subject to both southwest and northwest winds. The inland zone lies in the northern half of the catchment and experiences severe frosts and hot, dry north-westerly winds. Annual rainfall ranges from around 1,000 mm in the north of the catchment to 3,000mm in the Pourakino catchment.[4]

Freshwater data

Water quality results can be explored on the Land, Air and Water Aotearoa website. You can also look at Southland's Water Story[5] for more information.

Sites of community significance

There are three main settlements in the Aparima and Pourakino: Riverton, Otautau and Nightcaps. Approximately 4,000 people live rurally and within the settlements.

Significant species or ecosystems

Taonga species[6]

- Tuaki – cockles
- Pātiki – flounder
- Kūtai – mussels
- *Anguilla dieffenbachii* (longfin eel – Tuna) – At Risk, Declining
- Kakakana – lamprey
- Īnaka – whitebait

Threatened species

- *Anguilla dieffenbachii* (longfin eel – Tuna) – At Risk, Declining

[4] Environment Southland climate data

[5] See: https://waterstory.es.govt.nz/

[6] See: https://www.legislation.govt.nz/act/public/1998/0097/latest/DLM431337.html and https://www.legislation.govt.nz/act/public/1998/0097/latest/DLM431341.html

Recreational species

- Flounder
- Trout
- Kahawai

Cultural matters of importance to tangata whenua

The Aparima and Pourakino rivers are highly valued by Ngāi Tahu ki Murihiku, particularly due to their connection to the estuary that has provided reliable mahinga kai resources for many generations, over hundreds of years, including shellfish such as tuaki (cockles), pātiki (flounder), kūtai (mussels), tuna (eels), kanakana (lamprey) and īnaka (whitebait).[7] Protecting and restoring the health of the estuary is a priority for Ngāi Tahu ki Murihiku.

At the mouth of Aparima River was a permanent kaik (settlement) and there are associated urupā (burial sites) located in this area. Historically this was a busy tauranga waka, a launching and landing place for river going and sea going waka, evidenced by archaeological remains, including a tauihu or waka prow found in the estuary. Aparima Native Reserve is situated on the northeast of the estuary mouth, established in 1883 under the Murihiku Native Reserves Grants Act[8] to recognise lands set aside for Ngāi Tahu in earlier arrangements. Lands in this area retained in Māori freehold title provide for an unbroken Ngāi Tahu connection.

On the opposite side of the estuary is Pirioho, the narrows, at the mouth of the Pourakino River where migrating species, including kanakana and tuna, were harvested each season using constructed weirs. Pourakino is named after the traps used to catch these species and references their abundance. Harvestable populations of kanakana and tuna are an indicator of health in this catchment for Ngāi Tahu, so protecting and restoring the habitats they need at all stages of their life cycles is a priority.

Pūkorokio is the name for Moa Creek within the Pourakino catchment, referencing a type of native hebe known as korokio. This area was the last place that moa was harvested in Aparima, indicating ancient heritage in this catchment. Korokio wood was burned to cook moa, and so the presence of korokio in the catchment is a Ngāi Tahu indicator of health and a priority for restorative planting in association with the waterbody.

The Aparima River at its highest source comes off Takitimu, as does the Hamilton Burn, and these are sacred waters for Ngāi Tahu ki Murihiku, so it is a priority to protect their quality from the headwaters to the coast. Protecting springs and spring-fed waterbodies throughout the catchment is also a priority. Aparima is part of an ara tawhito (ancient trail) connecting the coast from Waiau to Matāura, as well as inland to the pounamu rich areas around Whakatipu Waimāori (Lake Wakatipu). Having the ability to harvest resources along the length of the waterbody, drink water, swim and bathe, are Ngāi Tahu indicators of health for Aparima.

[7] See: https://www.legislation.govt.nz/act/public/1998/0097/latest/DLM431337.html and https://www.legislation.govt.nz/act/public/1998/0097/latest/DLM431341.html

[8] See: http://nzlii.org/nz/legis/hist_act/mnrga188347v1883n5441.pdf

Ōtautau references a significant event involving the gifting of a tautau pounamu (long ear pendant) which indicates the place of this catchment as part of the pounamu trail. Ōpihu is the correct name for Opio Stream in the Ōtautau catchment. Priorities for Aparima are also priorities for Ōtautau.

Ngāi Tahu ki Murihiku identified a range of priorities in 2020 relevant to freshwater management in Aparima and Pourakino. Overall, Ngāi Tahu ki Murihiku seek to protect and enhance the mauri (life force) of freshwater resources so that future generations have the same or better access to healthy waterbodies, and that waterbodies are managed within a ki uta ki tai framework. This primary goal is supported by the fundamental concept of Te Mana o te Wai in the National Policy Statement for Freshwater Management and in the proposed Southland Water and Land Plan.

Glossary

Ki uta ki tai (from mountains to sea)

Ki uta ki tai is a concept that refers to the interconnectedness of the natural world, including the relationships of water and land, from the coast up to the hills and mountains.

Environment Southland, in partnership with Te Ao Mārama, seeks to manage water and land resources in a way that reinforces the Ngāi Tahu philosophy of ki uta ki tai (from mountains to sea). This integrated approach refers to the belief that all things are connected in the natural world and need to be managed that way. It is part of the foundation of regional planning in Southland, recognising the need to manage catchments as an integrated whole. This approach recognises the commitment of Environment Southland, in partnership with Te Ao Mārama, to manage the connections between people, water and land. This includes the impacts we have on the health of all types of waterbodies, including estuaries and coastal lagoons.

Te Mana o Te Wai

Te Mana o Te Wai is the fundamental concept that underpins all freshwater management.

Te Mana o te Wai recognises the fundamental importance of water in that protecting the health of freshwater protects the health and wellbeing of the wider environment. It is an approach that protects the Mauri (life force) of the water.

Protecting mauri as a priority is already a foundation of regional planning in Southland.

Hauora

Hauora means a state of health that could be described as fit and well. It reflects a level of healthy resilience we all want for our waterways. In other words, a waterway can take a knock and bounce back and still provide for uses that support people's health.

Users of water and land need to provide for hauora and in so doing, acknowledge and protect the mauri of water. This is a foundation of regional planning in Southland.

Environment Southland and Te Ao Mārama have identified a range of attributes that in combination provide for hauora, the health and wellbeing of waterbodies.

A change to the regional plan that is being developed, Plan Change Tuatahi, will guide what is needed to support healthy waterbodies in the catchments of Waiau, Aparima, Ōreti, Mataura and Waituna.

Mahinga kai

Mahinga kai refers to the customary gathering of food and natural materials, and the places where those resources are gathered by tangata whenua.

For Ngāi Tahu mahinga kai is about places, ways of doings things, and resources that sustain the people. It includes the work that is done (and the fuel that is used) in the gathering of all natural resources (plants, animals, water, sea life, pounamu) to sustain well-being. This includes the ability to clothe, feed and provide shelter.

Mahinga kai is a value that must be provided for when managing waterbodies.

Values

When we do a good job of managing freshwater then we provide for a range of values that matter to the communities of Southland.

When managing freshwater we must provide for certain kinds of values; including ecosystem health (water quality, water quantity, habitat, aquatic life and ecological processes), threatened species, mahinga kai, Māori freshwater values and human contact. These are compulsory values.

There are additional values that must be considered as well, and a range of values that have already been identified by Southlanders. Many of these values informed the current regional plan, and further values are being considered as part of Plan Change Tuatahi.

Document control

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Disclaimer: This catchment context contains key information to be included in farm environmental management plans. It should not be solely relied upon. The information contained is subject to change and updates.