

Southland Science Report

**Policy and Plan direction
and what it means for farmers**



**THRIVING
SOUTHLAND**



LANDPRO
Make the most of your land

7. Policy and Plan Direction

For both national government, and local authorities, there are several tools available to manage freshwater use. In Southland, Environment Southland has the primary responsibility for managing activities that may impact freshwater, through giving effect to both national and regional planning and regulatory tools.

7.1 National level

The following section outlines the various tools used by central government to manage freshwater resources. These include legislative tools such as the Resource Management Act 1991 (RMA), National Policy Statement for Freshwater Management 2020; National Environmental Standards for Freshwater 2020; additional regulations; and other relevant statutory requirements.

7.1.1 Legislative Tools

At a national level, land use and water quality are primarily managed through the RMA.

The RMA prevents any person using land in a way that contravenes a national environmental standard, a regional rule or a district rule, unless the land use is allowed by a resource consent or an existing use right. Simply put, any land use is permitted, unless controls are included in a planning document. Conversely, discharges and the abstraction/use of water must be specifically authorised by a regional rule, resource consent or National Environmental Standard/regulation.

The use of land is regulated by local government, including both territorial authorities (city and district councils) and regional councils. Territorial authorities and regional councils have different roles and responsibilities, and different policy and planning documents. Southland's territorial authorities are Invercargill City Council, Gore District Council, and the Southland District Council. They are responsible for the control of land use generally. The Southland Regional Council (Environment Southland) is responsible for the control of land relating to soil conservation, freshwater management, natural hazards, hazardous substances, the coastal marine area, and indigenous biodiversity.

In addition to the RMA, there are other laws that have direct or indirect implications for land use and/or water quality management. These include the Hazardous Substances and New Organisms Act 1996, Health Act, and the Ngāi Tahu Claims Settlement Act 1998. The latter is particularly important because it implements settlement provisions recognising the particular cultural, spiritual, historical and traditional associations of Ngāi Tahu with particular sites. These provisions include the identification of taonga species and the establishment of tōpuni (authority over an area), statutory acknowledgements and nohoanga (seasonal occupation) sites, to improve the effectiveness of Ngāi Tahu participation in resource management. Resource Management Act processes such as plan development and resource consent processing must have regard to statutory acknowledgements. See section 8 for an overview of Tangata Whenua perspectives and the Resource Management Act framework.

Under the RMA, there is a hierarchy of policy statements and plans that collectively seek to achieve the RMA's goal of sustainable management.

- **National Policy Statements** – state objectives and policies for matters of national significance relevant to achieving sustainable management, such as freshwater management, renewable electricity generation, and urban development.
- **Water conservation orders** – recognise and sustain outstanding amenity or intrinsic values of water in its natural state.
- **National Environmental Standards** – regulations that provide technical standards, methods or other requirements for environmental matters. They include standards for air quality, drinking water, and soil contaminants.

- **National Planning Standards** – set requirements relating to the structure, format or content of regional policy statements and plans. These standards must give effect to national policy statements and be consistent with national environmental standards.
- **Regional policy statements** – must give effect to national policy statements and empower regional councils to provide broad direction and a framework for resource management within their regions. They must not be inconsistent with water conservation orders. They must take into account any relevant planning document recognised by an iwi authority. In Southland this is “*Te Tangi a Tauira - The Cry of the People Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008*”¹¹
- **Regional plans** – must give effect to national policy statements and regional policy statements and must not be inconsistent with Water Conservation Orders. They must also take into account “*Te Tangi a Tauira - The Cry of the People*”.
- **District plans** – must not be inconsistent with regional plans, and must give effect to national policy statements and regional policy statements. They must also take into account “*Te Tangi a Tauira - The Cry of the People*”.

7.1.2 National Policy Statement for Freshwater Management 2020 (NPSFM)

The **National Policy Statement for Freshwater Management 2020 (NPSFM)** came into force on 3 September 2020. The NPSFM provides local government with updated direction on how they should manage freshwater under the RMA.

This NPSFM manages freshwater through a framework that considers and recognises Te Mana o te Wai¹² as an integral part of freshwater management. The meaning of Te Mana o te Wai is different for each community, being based on their unique relationship with freshwater in their area or rohe. Te Mana o te Wai directs the content that regional councils must include in their regional plans, in consultation with their communities. In turn, regional plans direct what activities require a resource consent, and set a key framework for considering resource consent applications (see section 7.2.1).

Te Mana o te Wai is an important concept for how water is managed and utilised in New Zealand. It is now the fundamental concept driving the NPSFM 2020 and councils must give regard to this when setting policy for freshwater management. Te Mana o te Wai recognises the fundamental importance of water in that protecting the health of freshwater protects the health and well-being of the wider environment. It is an approach that protects the Mauri (life-force) of the water. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community (MfE, 2020). The framework for implementing Te Mana o te Wai in the NPSFM 2020 is reproduced here:

“Te Mana o te Wai encompasses 6 principles relating to the roles of tangata whenua and other New Zealanders in the management of freshwater, and these principles inform this National Policy Statement and its implementation.

The 6 principles are:

(a) Mana whakahaere: the power, authority, and obligations of tangata whenua to make decisions

¹¹ [Te Tangi a Tauira - The Cry of the People. Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008](#)

¹² Te Mana o te Wai was introduced to the Freshwater NPS in 2014. Te Mana o te Wai is a concept for fresh water that encompasses several different aspects of the integrated and holistic health and well-being of a water body. When Te Mana o te Wai is given effect, the water body will sustain the full range of environmental, social, cultural and economic values held by iwi and the community. The concept is expressed in te reo Maori, but applies to freshwater management for and on behalf of the whole community. (source: Ministry for the Environment)

that maintain, protect, and sustain the health and well-being of, and their relationship with, freshwater

(b) Kaitiakitanga: the obligation of tangata whenua to preserve, restore, enhance, and sustainably use freshwater for the benefit of present and future generations

(c) Manaakitanga: the process by which tangata whenua show respect, generosity, and care for freshwater and for others

(d) Governance: the responsibility of those with authority for making decisions about freshwater to do so in a way that prioritises the health and well-being of freshwater now and into the future

(e) Stewardship: the obligation of all New Zealanders to manage freshwater in a way that ensures it sustains present and future generations

(f) Care and respect: the responsibility of all New Zealanders to care for freshwater in providing for the health of the nation.

There is a hierarchy of obligations in Te Mana o te Wai that prioritises:

(a) first, the health and well-being of water bodies and freshwater ecosystems

(b) second, the health needs of people (such as drinking water)

(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. “

There are several new significant requirements under the NPSFM 2020. The key changes include:

- Managing freshwater in a way that ‘gives’ effect to Te Mana o te Wai.
- Improving degraded water bodies, and maintaining or improving all others using bottom lines defined in the NPSFM.
- An expanded national objectives framework, including:
 - Threatened species, mahinga kai, ecosystem health, and human health as compulsory values, which council must develop plan objectives describing the environmental outcome sought for each value.
 - Attributes for ecosystem health (e.g. sediment, macroinvertebrates, dissolved oxygen), which councils have to develop action plans and/or set limits on resource use to achieve these attributes.
 - Tougher national bottom lines for ammonia and nitrate toxicity attributes to protect 95% of species from toxic effects.
 - A requirement to manage dissolved inorganic nitrogen and dissolved reactive phosphorus as they relate to periphyton (algae/bacteria) and other ecosystem health attributes, and to provide for the health of downstream ecosystems.
- Avoid any further loss or degradation of wetlands and streams, map existing wetlands and encourage their restoration.
- Identify and work towards target outcomes for fish abundance, diversity and passage.
- Set an aquatic life objective for fish and address in-stream barriers to fish passage over time.
- Monitor and report annually on freshwater; publishing a report every 5 years containing ecosystem health scores and respond to any deterioration.

The change to the national bottom line for nitrate nitrogen in the NPSFM will have significant implications for the management of nitrogen loss from land in some catchments, particularly in a catchment like the Waimatuku

Stream¹³ where the five year median nitrate nitrogen concentration of 3.4 g N/m³ at the end of 2019, is significantly higher than the NPSFM national bottom line of an annual median of 2.4 g N/m³.

Other potential changes to river flow regimes, fish passage and broader ecosystem health will need to be considered alongside initiatives to maintain and enhance water quality. This report does not address those wider water management issues.

7.1.3 National Environmental Standards for Freshwater 2020

National Environmental Standards are regulations issued under the RMA, prescribing technical standards, methods, or other requirements for environmental matters, which must be enforced by the relevant local authority. The **National Environmental Standards for Freshwater 2020** (NESFM) were released at the same time as the NPSFM 2020. This NESFM regulates the activities that pose risks to the health of freshwater and freshwater ecosystems. These standards are designed to:

- Protect existing inland and coastal wetlands.
- Protect urban and rural streams from in-filling.
- Ensure connectivity of fish habitat (fish passage).
- Set minimum requirements for feedlots and other stockholding areas (to take effect in winter of 2021).
- Improve poor practice intensive winter grazing of forage crops (to take effect in winter of 2021).
- Restrict further agricultural intensification until the end of 2024.
- Limit the discharge of synthetic nitrogen fertiliser to land to no more than 190kg per hectare per year, and require reporting of fertiliser use (to take effect in winter of 2021).

7.1.4 Regulations

Two additional regulations were released at the same time as the NPSFM and NESFM. Firstly, the **Resource Management (Stock Exclusion) Regulations 2020** were released. These regulations apply to anyone who owns or controls cattle, deer, or pigs (stock). Under these regulations:

- Stock must be excluded from specified wetlands, lakes, and rivers more than one metre wide.
- Dairy and dairy support cattle, and pigs must be excluded from water bodies.
- Beef cattle and deer must be excluded from water bodies whatever the terrain if they're break feeding, grazing annual forage crops, or irrigated pasture. Otherwise, these Regulations apply to beef cattle and deer only on mapped low slope land.
- Stock must be excluded from the beds of lakes, rivers, and wetlands, and must not be on land closer than three metres to the bed of rivers and lakes. However, stock doesn't need to be excluded from land within three metres of the bed if there is a permanent fence already in place.
- Stock (except deer) have to cross a river or lake by using a dedicated bridge or culvert, unless they cross no more than twice in any month. There are specific circumstances when cattle and pigs can cross without a dedicated culvert or bridge.

Secondly, the **Resource Management (Measurement and Reporting of Water Takes) Regulations 2010** were amended. Consent holders taking between 5 and more than 20 litres of water a second are now required to measure their water use every 15 minutes, store their records, and electronically submit their records to their council every day. These Regulations are applied in a staged approach, applying to consent holders with larger water takes first:

¹³ We have not assessed all rivers and lakes in Southland against all of the NPSFM provisions. However, in addition to the Waimatuku Stream, the Waihopai River at the Queens Drive monitoring site had a five year nitrate nitrogen median of 2.2 g N/m³ at the end of 2019, just below the NPSFM national bottom line of an annual median of 2.4 g N/m³.

- Takes of 20L/s or more must comply within two years (by 2 September 2022).
- Takes of more than 10 and less than 20L/s must comply within four years (by 2 September 2024).
- Takes between 5 and 10L/s must comply within six years (by 2 September 2026).

7.1.5 Other relevant statutory requirements

Other than the NESFM, there are several other National Environmental Standards that are of relevance for farmers. Relevant National Environmental Standards include:

- **National Environmental Standard for Sources of Human Drinking Water** – This aims to reduce the risk of human drinking water sources becoming contaminated, requiring regional councils to ensure that the effects of activities on drinking water sources are considered in decisions on resource consents and in regional plans.
- **National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health** – This provide planning controls and soil contaminant values, to ensure that land affected by contaminants in soil is appropriately identified and assessed before being developed, and if necessary, remediate soil or contain the contaminants.
- **National Environmental Standards for Plantation Forestry** – This aims to maintain or improve the environmental outcomes associated with plantation forestry activities and to increase the certainty and efficiency in the management of those activities. These regulations permit core forestry activities including afforestation, earthworks and harvesting provided there are no significant adverse environmental effects.

The **New Zealand Coastal Policy Statement** is important. This document sets objectives and policies to achieve to promote the sustainable management of the natural and physical resources of the coastal environment. This document provides Environment Southland with direction how activities should be managed in Southland’s range of estuaries, and coastal lagoons and wetlands.

Water Conservation Orders are also important. Under Part 9 of the RMA, water conservation orders can be created to recognise and protect outstanding values that a water body provides (such as important fisheries, scientific and ecological values, or recreational, historical, spiritual or cultural values). Regional policy statements, regional plans and district plans must not be inconsistent with any order, and any resource consents granted must not be contrary to an order. In Southland, the Ōreti River and the Matāura River have water conservation orders.

7.2 Regional Level

In Southland, Environment Southland (the Southland Regional Council) is the relevant regulatory body that must give effect to national policy statements, national environmental standards, and national planning standards in their own regional plans and regional policy statements. Territorial authorities must ensure that their district plans are not inconsistent with the national and regional policy and planning documents.

7.2.2 Proposed Southland Water and Land Plan

The **proposed Southland Water and Land Plan** (pSWLP)¹⁴ is Environment Southland’s primary tool for water quality management. This plan was publicly notified in 2016 and brings together and updates the Regional Water Plan for Southland 2010, the Regional Effluent Land Application Pan 1998, and the Transitional Regional Plan

¹⁴ The pSWLP is currently (late 2020) under appeal and the Environment Court has released a series of decisions that is expected to continue in early 2021. Updates on the status of the pSWLP can be found on Environment Southland’s website: <https://www.es.govt.nz/about-us/plans-and-strategies/regional-plans/proposed-southland-water-and-land-plan> The first four interim decisions have focussed on objectives. Subsequent decisions will address policies, rules and other aspects of the plan.

1991 (most of which has already been superseded).

Significant changes from previous plans included:

- The introduction of Te Mana o te Wai.
- An updated set of objectives.
- New objectives and policies setting out the freshwater management unit process to come.
- New controls for activities known to have a significant effect on water quality, such as land use intensification, wintering, cultivation and stock access to waterways.

In summary, the pSWLP provides direction and guidance for the sustainable use, development and protection of water and land resources in Southland, seeking to address activities that are known to have adverse effects on water quality, such as land use intensification, urban discharge, wintering, and stock access to water.

7.2.3 Regional Water Plan 2010

The **Regional Water Plan** was created to promote the sustainable management of Southland's rivers, lakes and water resources, as well as enabling the sustainable use and development of water. Once finalised, the proposed Southland and Water Land Plan will replace the Regional Water Plan.

This plan was developed to focus on water quality and quantity, groundwater, river and lake beds, and wetlands. This plan sets the framework for the use, development, and protection of the surface water and groundwater resources, and sets out the information required to deal with relevant matters raised.

7.2.4 Southland Regional Policy Statement 2017

The Southland Regional Policy Statement guides resource management policy and practice in Southland. This document provides a framework for Environment Southland to base decisions on the management of Southland's natural and physical resources, gives an overview of the significant resource management issues facing in the region, including issues of significance to Tangata Whenua, and includes objectives, policies and methods to resolve any identified issues. Environment Southland's regional plan must give effect to this policy statement.

7.2.5 Regional Coastal Plan for Southland 2013

The Regional Coastal Plan describes Southland's coastal values and identifies management issues. This plan sets out how Environment Southland will carry out its resource management responsibilities in Southland's the coastal area.

7.2.6 Regional Effluent Land Application Plan 1998

This plan includes some specific policies and rules that apply to the discharge of effluent. Once finalised, the proposed Southland and Water Land Plan will replace the Regional Effluent Land Application Plan.

7.2.7 Te Tangi a Taurira – The Cry of the People, Ngāi Tahu ki Murihiku Natural Resource and Environmental Management Plan 2008

This plan was developed by Ngāi Tahu ki Murihiku¹⁵, consolidating Ngāi Tahu ki Murihiku values, knowledge and perspectives on natural resource and environmental management issues. The purpose of the Plan is to:

- Describe the values underpinning the relationship between Ngāi Tahu ki Murihiku and the natural environment.
- Identify the primary issues associated with natural resource and environmental management in the

¹⁵ Murihiku refers to a large part of the lower South Island and includes the Southland region.

takiwā, from the perspective of Ngāi Tahu ki Murihiku.

- Articulate Ngāi Tahu ki Murihiku policies and management guidelines for natural resource and environmental management, wāhi tapu and wāhi taonga.

In addition, this Plan provides a tool to:

- Enable Ngāi Tahu ki Murihiku to effectively and proactively apply cultural values to the management of natural resources, wāhi tapu and wāhi taonga.
- Assist regional, territorial and national authorities to understand Ngāi Tahu ki Murihiku values and perspectives, and thus fulfill their statutory obligations under the Resource Management Act 1991, Ngāi Tahu Claims Settlement Act 1998, Local Government 2002 and other relevant legislation.
- Recognise the importance of consultation, but does not replace the need for direct consultation with Ngāi Tahu ki Murihiku.

7.3 Future Direction

In response to declining freshwater quality in developed parts of New Zealand, central government announced changes to the National Policy Statement for Freshwater Management (NPSFM), the National Environmental Standard for Freshwater (NES) and changes to the Resource Management Act in August 2020. The following section outlines what changes might be expected over the coming months and years.

7.3.1 Resource Management Act Changes

It is expected that there will be significant reform of the RMA within the next five years. This will have flow-on consequences for territorial and regional planning in Southland. In July 2020, the Government released a report following a year-long review of the RMA. The report concluded that the RMA should be repealed and replaced with two new separate Acts:

1. **The Natural and Built Environments Act** – This would carry over appropriate key principles of the RMA, and would aim to enhance the quality of the environment, recognise the concept of Te Mana o te Taiao (to ensure Māori views are recognised, reflecting the fundamental importance of natural resources in sustaining all life), and achieving high-quality outcomes. It would set national standards for environmental outcomes, and would create 14 combined plans (replacing the 100+ regional and territorial policy statements and plans) to cover each region.
2. **The Strategic Planning Act** – This would set long-term strategic goals and facilitate the integration of legislative functions across the resource management system. This would include functions to enable land and resource planning to be better integrated with the provision of infrastructure as well as associated funding and investment. Regional spatial strategies would be a critical part of this legislation, identifying areas suitable for development as well as areas or features for protection.

It is likely that there will be significant changes made to the RMA in the coming years. Any proposed changes will go through a public consultation process, which will provide an opportunity for all stakeholders to submit on any new proposal.

7.3.2 Regional Plan Changes

Environment Southland in partnership with Te Ao Marama¹⁶ is in the process of developing a significant plan change (Southland Water and Land Proposed Plan Change, SWLPPC) to meet the NPSFM requirements,

¹⁶ Te Ao Marama is an incorporated society that represents four Papatipu Rūnanga (Oraka/Aparima, Waihopai, Awarua and Hokonui) within the Murihiku (which includes Southland) area of the Ngāi Tahu tribal area. Te Ao Marama works with local authorities on statutory planning and consenting processes.

<https://ngaitahu.iwi.nz/te-runanga-o-ngai-tahu/papatipu-runanga/>

particularly to set limits and target for water quality.

Environment Southland has indicated that a plan change to achieve this will be publicly notified in 2023 and the RMA requires that this plan is operative by the end of 2025. Environment Southland and Te Ao Marama Inc have established a community-based Regional Forum to consider and advise on limits, targets, and methods.

This plan change will focus on the five Fresh Water Management Units (FMUs) identified by Environment Southland: Fiordland and islands, Waiau, Aparima, Ōreti and Matāura (Figure 13). However, the Environment Court has recently issued an interim decision¹⁷ on the pSLWP that strongly indicates that the Waituna Lagoon/Waipārera will be made a separate FMU. In addition, as indicated in Section 8 below, the Environment Court has recently made some significant changes¹⁸ to the objectives of the pSLWP and decisions relating to policies and rules are expected in 2021.

Similar plan changes to set limits and targets for water quality have been developed in other regions such as Canterbury and the Waikato. These plan changes have generally proposed significant reductions in nutrient losses to water from land.

Environment Southland is in the process of plan development that will integrate Te Mana o te Wai in its approach to freshwater management. The Environment Court interim decisions on the pSWLP have clarified the roles of ki uta ki tai and Te Mana o te Wai. The pSWLP now states:

“Interpretation Statement

All persons exercising functions and powers under this Plan and all person who use, develop or protect resources to which this Plan applies shall recognise that:

Objectives 1 and 2 are fundamental to this plan, providing an overarching statement on the management of water and land, and all objectives are to be read together and considered in that context; and

- i) The plan embodies ki uta ki tai and upholds Te Mana o te Wai and they are at the forefront of all discussions and decisions about water and land.*

Objective 1

Land and water and associated ecosystems are sustainably managed as integrated natural resources, recognising the connectivity between surface water and groundwater, and between freshwater, land and the coast.

Objective 2

The mauri of water provide for te hauora o te taiao (health and mauri of the environment), hauora o te wai (health and mauri of the water body), and te hauora o te tangata (health and mauri of the people).”

8. An overview of Tangata Whenua perspectives

Water is a taonga and is held in the highest regard by Ngāi Tahu. The Māori world view (Te Ao Māori) acknowledges the interconnectedness and interrelationship of water and land. Cultural practices and the health and wellbeing of Murihiku rūnanga (tribal council or board) depends on the ability to express Kaitiakitanga (as

¹⁷ <https://www.environmentcourt.govt.nz/assets/Documents/Publications/2019-NZEnvC-208-Aratiatia-Livestock-Limited-v-Southland-Regional-Council.pdf>

¹⁸ [Environment Court Fourth Interim Decision on pSWLP, November 2020](#)

guardian and advocate).

Ki uta ki tai is a philosophy that reflects the Ngāi Tahu view of resource management. It is a traditional concept of kaitiakitanga (guardianship) from the mountains and inland lakes, down the rivers to hāpua/lagoons, wahapū/estuaries and to the sea (from the mountains to the sea). Ki uta ki tai recognises the need to manage the interconnectedness of the whole environment.

Three overarching values have been identified by Murihiku iwi¹⁹:

- **“Te Mana o te Wai:** *The role of valuing the living expression of Māori cultural Mauri (energy and flow of life force) of water bodies and taonga species. Te Mana o te Wai is recognised in the National Policy Statement for Freshwater Management as: the health and wellbeing of water bodies; the health and wellbeing of people and the health and wellbeing of the environment. Te Mana o te Wai recognises that values setting within the community needs to underpin all regional authorities’ conservation and environmental management work.*
- **Kaitiakitanga:** *The actions of Māori cultural guardianship, advocacy and protection.*
- **Tino Rangatiratanga:** *The exercise of the Treaty of Waitangi, statutory rulings and cultural expression in the protection and restoration of the environment such that the social, health and economic development of the Māori community is integrated.”*

Ngāi Tahu ki Murihiku has significant concerns with how water has been managed in Southland. The document “Wai Ngāi Tahu ki Murihiku” (Te Ao Mārama Inc, 2019) provides an overview of Te Runanga o Ngāi Tahu ki Murihiku values with respect to freshwater.

Ngāi Tahu ki Murihiku have an approach of aiming for the highest possible standard of water quality that is characteristic of a place or waterway. This relates back to the way that a place or waterway was used and valued historically. To meet these aspirations Ngāi Tahu ki Murihiku believe that the resource management and in particular, the limit setting framework need to consider cultural values alongside scientific values. This approach is underpinned by the perception held by Māori that water is a “holistic sacred entity within which it holds its own life force or ‘Mauri’”. Māori world view follows that humans are “one” with the environment (Earth mother - Papatūānuku) and that water and rivers are the lifeblood of Papatūānuku. This also includes the approach of integrated management of the environment that is encompassed by the concept of Ki uta ki Tai (Mountains to the Sea), which includes:

- Integration across agencies and legislation.
- Integration across natural and physical resources (e.g. water, soil, the coast).
- Integration across outcomes for a given waterway.
- Integration of local with regional and national objectives.

Key areas of environmental concerns regarding freshwater management in Southland identified by Te Ao Mārama include:

- **Water drainage.** This is considered to be more of an issue than water abstraction and relates to the significant loss of wetlands and associated biodiversity and cultural values as a result of land development.
- **Water abstraction.** There is concern regarding the limited understanding of groundwater and surface water interactions, particularly where there is uncertainty about the impacts of groundwater abstraction on surface water bodies.
- **Discharge of wastewater (sewage and stormwater) to water.** This should be avoided due to the impact on cultural values and the preference for treatment and then discharge to land via wetlands and riparian areas.

¹⁹ <http://waterstory.es.govt.nz/ngai-tahu-ki-murihiku-values.aspx>

- **Preservation of mahinga kai and taonga species.** This is the preservation of the biodiversity and availability of traditional mahinga kai sources and the preservation of culturally valuable ecosystems.

Catchment groups need to appreciate and understand the concerns of Ngāi Tahu ki Murihiku, the significant importance of these concerns in RMA processes and the need to work with local rūnanga²⁰ as land use changes are being considered to maintain and improve catchment water quality.

9. Implications for catchment groups

Summary information on water quality demonstrates that no lowland river in Southland fully complies with all the relevant water quality guidelines/standards and some rivers are significantly degraded compared to national guidelines and/or regional water quality standards. This means that the limit and target setting process that Environment Southland is currently working on is almost certain to introduce new policies, rules and other initiatives to reduce losses of contaminants to water that will need some significant land use changes and/or farm system changes.

The purpose of this section is to summarise the background to this, identify the potential options to reduce contaminant losses from land use and suggest how to contribute to, and prepare for, the pending changes.

9.1 Land use and practices that result in the greatest loss of contaminants to water

The main contaminants of concern are N, P, sediment, and microorganisms of health significance (monitored using faecal indicator organisms). There is a significant amount of information available on N loss from a range of land uses in New Zealand and Southland. This is summarised below to provide one indication of relative contaminant losses:

- | | |
|-------------------------|---------------------|
| • Forestry | 1-5 kg N/ha/r, |
| • Sheep and beef | 6-40 kg N/ha/yr, |
| • Dairying | 25-100 kg N/ha/yr, |
| • Arable | 10-140 kg N/ha/yr |
| • Commercial vegetables | 100-300 kg N/ha/yr. |

This highlights that some of the relatively minor land uses such as arable and commercial vegetable growing can have relatively high losses of N. It is also important to appreciate that even in one sector the N loss rates can vary significantly.

It is also important to appreciate that while there is a considerable amount of quantitative information available on N losses, there are important water quality issues related to sediment, P and microorganisms that will also have implications for land use.

Catchment and site-specific characteristics are critical to determining the amounts and effects of contaminant losses on water quality, aquatic ecosystems and the uses and values of water.

Land use, catchment and site-specific characteristics will usually determine the most practicable options to reduce contaminant losses. For example, there is more potential to reduce N losses from a typical dairy farm than to reduce N losses for a dryland sheep and beef farm.

A significant amount of research has been undertaken in New Zealand and overseas into identifying effective

²⁰ <https://ngaitahu.iwi.nz/te-runanga-o-ngai-tahu/papatipu-runanga/>

measures to reduce contaminant losses from agricultural land. These provide a wide range of options to significantly reduce losses of contaminants.

It is important to appreciate that some contaminant loss mitigation measures will be effective in reducing a range of contaminants while some will be specific to one contaminant.

9.2 Trends in land use change over the past 30 years

A key land use change that has occurred in Southland over the past 30 years has been the significant increase in dairying and the concurrent reduction in sheep and beef numbers. Dairy cow numbers started increasing significantly after 1990 and rose from less than 40,000 milking cows in Southland to just under 600,000 in 2019. This rate of increase flattened significantly in the last five years, as illustrated in Figure 17.

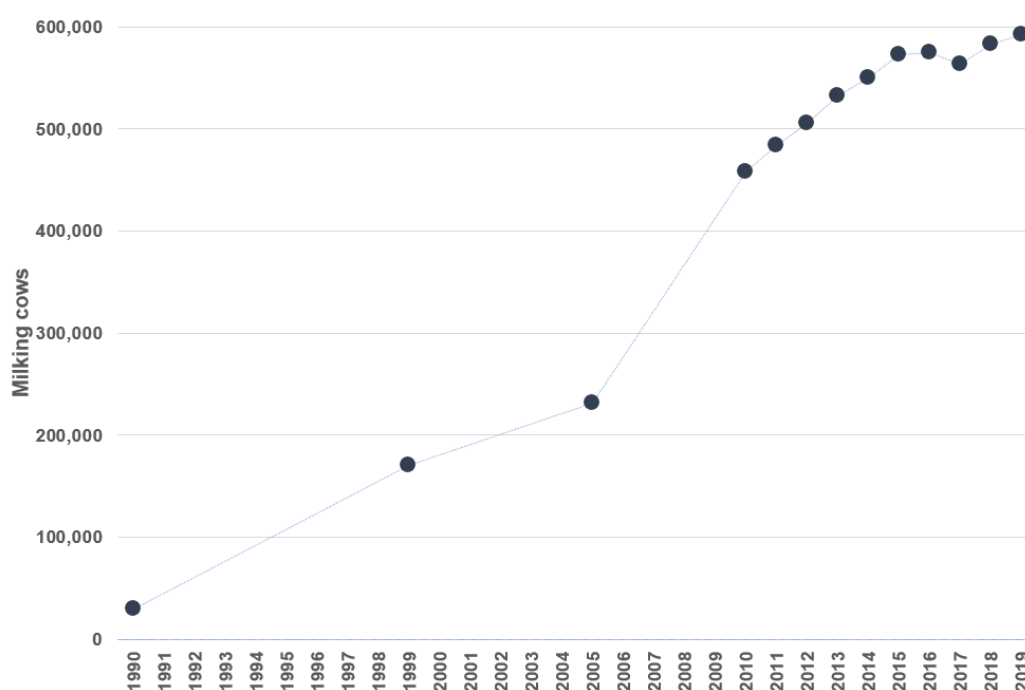


Figure 17: The number of milking cows in Southland 1990 - 2019

This change in land use means that there is potential for significant losses of contaminants to enter water. It is possible that in some locations these changes could mean that there is a significant nitrogen “load to come”, i.e., a significant lag time between nitrogen draining through to groundwater and that groundwater emerging in a surface water body. However, this possibility has to be critically assessed on a catchment by catchment basis. The water quality data summarised in this report and Southland specific research indicates that shallow groundwater in Southland generally responds relatively quickly to land use change and in general the lag time is years not decades. Catchment specific characteristics will dictate how quickly groundwater moves into surface waters.

Sheep and beef land use is still by far the predominant use of agricultural land on an area basis in Southland, with approximately 700,000 hectares, while dairying land uses approximately 300,000 hectares.

10. What Does this Mean for Farmers?

10.1 How will land use/system changes be implemented and what does this mean for farmers?

Environment Southland has stated that the proposed 'limits and targets' plan change (SWLPPC) will be notified in 2023. Environment Southland and Te Ao Marama Inc have established a community-based Regional Forum to consider and advise on limits, targets, and methods.

Plan changes will result in additional controls in Southland that will be focussed on reducing the loss of contaminants, specifically N and P, from land to groundwater and surface water. This means that in most parts of Southland there will be new rules that directly or indirectly will set limits on the amounts of N and P that can be lost to water. There are also likely to be new rules aimed at reducing discharges of sediment and microorganisms to water.

It is important to appreciate that groundwater quality and surface water quality vary across Southland. As an example, the Waiau River at Tuatapere, currently has a median nitrate-nitrogen concentration of 0.25 g/m³ while the Waimatuku Stream at Lorneville Riverton, had a five-year median nitrate nitrogen concentration of 3.4 g/m³ for the five years ending December 2019. However, it is also important to appreciate that other factors that may be relevant to a catchment such as the state of the downstream estuary. For example, the relatively poor status of the New River Estuary is highly likely to have implications for nutrient management of the Oreti River.

To obtain an early indication of one important driver for nitrogen loss reduction, concentrations can be compared to the new 'National Bottom Line' (NBL) for nitrate nitrogen in rivers of a median of 2.4 g/m³. For example, the water quality of the Waimatuku Stream does not comply with this NBL. The Waihopai River five-year median nitrate nitrogen concentration as at the end of 2019 was just below the NBL at 2.2 g/m³. Therefore, it should be clear that new policies and rules for these catchments will be aimed at achieving significant reductions in nitrogen losses to water.

It should also be appreciated that even if there are no significant catchment nitrate toxicity issues it is likely that nitrogen loss reductions will be required in most catchments to address nutrient enrichment issues such as estuary eutrophication.

It is not possible at this stage of the process to be sure about exactly what this will all mean for individual farmers. However, we are certain that to significantly reduce concentrations of contaminants in groundwater and surface waters to achieve the water quality being sought by the community will require major reductions in contaminant losses to water in most Southland catchments.

10.2 Planning process for nutrient reduction

Regional councils take the following basic steps when undertaking the planning process for nutrient reduction:

1. Identify the water quality objectives that need to be achieved e.g., periphyton extent on a river bed.
2. Identify the water quality targets needed to support those objectives e.g., dissolved nutrient concentrations.
3. Identify the annual catchment load of N and P that would be consistent with those dissolved nutrient concentrations.
4. Identify the current annual catchment loads of N and P.
5. Identify the catchment reductions required to meet the catchment load targets (where objectives are not being met)

6. Use an allocation method to distribution reductions across resource users and determine a time period to achieve water quality objectives
7. Develop a suite of planning provisions: policies, rules and other implementation methods.

Some key steps in a simple hypothetical scenario are illustrated in Figure 18, which assumes all properties in a catchment would reduce nutrient losses by the same proportion.

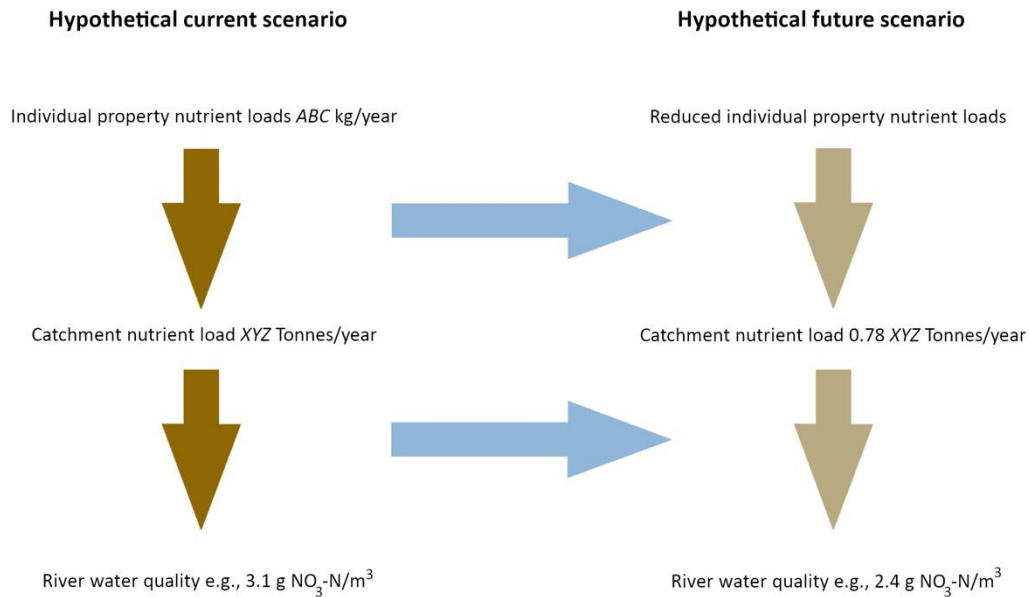


Figure 18: Diagrammatic representation of a simplistic change in catchment N loads and water quality

10.3 What can you do to help improve water quality?

There are many well established good management practices that clarify the general expectations to minimise contaminant losses to water. The industry specific guidelines are available on the relevant websites:

- [Beef + Lamb NZ](#)
- [Dairy NZ](#)
- [Deer NZ](#)
- [Foundation of Arable Research](#)
- [Horticulture NZ](#)
- [Irrigation New Zealand](#)
- [Pork NZ](#)

Environment Southland have published some high level [good management practices](#) (GMPs), as well as some [contaminant transport route specific guidelines](#).

The “[Industry-agreed Good Management Practices relating to water quality](#)” summarise the high-level general practices that should be adopted. These are summarised under the following headings.

10.3.1 Good Management Practices

GENERAL PRINCIPLES

1. Identify the physical and biophysical characteristics of the farm system, assess the risk factors to water quality associated with the farm system, and manage appropriately
2. Maintain accurate and auditable records of annual farm inputs, outputs and management practices
3. Manage farming operations to minimise direct and indirect losses of sediment and nutrients to water, and maintain or enhance soil structure, where agronomically appropriate

NUTRIENTS

4. Monitor soil phosphorus levels and maintain them at or below the agronomic optimum for the farm system
5. Manage the amount and timing of fertiliser inputs, taking account of all sources of nutrients, to match plant requirements and minimise risk of losses
6. Store and load fertiliser to minimise risk of spillage, leaching and loss into waterbodies
7. Ensure equipment for spreading fertilisers is well maintained and calibrated
8. Store, transport and distribute feed to minimise wastage, leachate and soil damage

WATERWAYS

9. Identify risk of overland flow of sediment and faecal bacteria on the property and implement measures to minimise transport of these to waterbodies
10. Locate and manage farm tracks, gateways, water troughs, self-feeding areas, stock camps, wallows and other sources of run-off to minimise risks to water quality
11. Exclude stock from waterbodies to the extent that is compatible with land form, stock class and stock intensity. Where exclusion is not possible, mitigate impacts on waterways

LAND AND SOIL

12. Manage periods of exposed soil between crops / pasture to reduce risk of erosion, overland flow and leaching
13. Manage or retire erosion-prone land to minimise soil losses through appropriate measures and practices
14. Select appropriate paddocks for intensive grazing, recognising and mitigating possible nutrient and sediment loss from critical source areas
15. Manage grazing to minimise losses from critical source areas

EFFLUENT

16. Ensure the effluent system meets industry-specific Code of Practice or equivalent standard
17. Have sufficient suitable storage available for farm effluent and wastewater
18. Ensure equipment for spreading effluent and other organic manures is well maintained and calibrated
19. Apply effluent to pasture and crops at depths, rates and times to match plant requirements and minimise risk to waterbodies

WATER AND IRRIGATION

20. Manage the amount and timing of irrigation inputs to meet plant demands and minimise risk of leaching and runoff
21. Design, check and operate irrigation systems to minimise the amount of water needed to meet production objectives
22. The following are often identified as key practices that can be modified to manage the loss of contaminants.

Table 3: A summary of general farm practices, mitigation measures and the contaminants targeted

Farm practices and mitigation measures	Contaminant targeted
Fertiliser type and timing	N & P
Rate and method of fertiliser application	N & P
Cultivation practices, including timing	N & P
Soil and cover management	Sediment & P
Livestock type and stocking rate	N & microorganisms
Feed type, pasture choice, forage crop choices	N
Grazing practices and regimes	P, N & sediment
Soil fertility status	P and N
Irrigation practices	N, P, and sediment
Effluent practices	N, P, microorganisms, & sediment
Use of wetlands	N, P, microorganisms, & sediment
Riparian management	P, microorganisms, & sediment
Track, and laneway planning and management	N, P, microorganisms, & sediment
Reducing/removing point source risks	N, P & microorganisms

10.4 Implications for land use and water quality management

These changes that took effect on 3 September 2020 will have significant implications for land use and water quality management. The key changes and implications are listed in Table 4:

Table 4: Implications of new RMA provisions for contaminant loss management

New controls	Key implications
National Policy Statement for Freshwater Management (NPSPW)	Changes the National Bottom Line (NBL) for median nitrate-nitrogen concentration in rivers from 6.9 g/m ³ to 2.4 g/m ³ . This will eventually be implemented via a regional plan and reinforce the need for significant land use change in some catchments e.g., the Waimatuku and Waihopai where water quality currently does not comply with this requirement.
Regulations for stock exclusion and freshwater farm plans	Should have limited implications because most farms in Southland comply with stock exclusion requirements and existing farm environmental management plans required already under the pSWLP are equivalent to freshwater farm plans.
Freshwater National Environmental Standards (NESFW) <ul style="list-style-type: none"> • Stock holding area standards • Intensive winter grazing standards • Agricultural intensification restrictions • Limiting the application of synthetic nitrogen fertiliser to a maximum of 190 kg N/ha/yr 	These changes will have significant implications for some farms.

The detailed requirements are set out on the Ministry for the Environment and various industry organisation websites.

Many of these new requirements will over the next few years result in the reduction of some losses of contaminants to water in Southland. However, some of them are similar to initiatives that have been underway for a number of years in Southland. In addition, changes such as reductions in the maximum annual synthetic

fertiliser use will take some years before reductions are reflected in water quality. It is also possible that in some situations reductions in fertiliser use will result in substitution, for example feed used to replace a reduction in pasture production.

Taking all these factors into account, we consider that in Southland the effects of the new regulations and NESFW on water quality will be relatively minor, and are most likely to just assist in halting any further deterioration in those locations where water quality is degraded.

The NPSFW will require Environment Southland to develop and implement specific additional measures in those catchments where the current nitrate-nitrogen water quality does not comply with the new NBL. This means that it is likely that the most significant reductions in N losses may be required in these two catchments where water quality currently doesn't comply with the nitrate nitrogen NBL:

- Waimatuku Creek
- Waihopai River

In addition to consideration of nitrate-nitrogen as a potential toxicant it is also a nutrient and as such it is also highly likely that significant nitrogen loss reductions will be required in most catchments to address nutrient enrichment/accelerated plant growth issues.

10.5 Will GMP and new regulations/NESFW be enough?

The information summarised in this report strongly indicates that neither Good Management Practice (GMP) measures nor the new regulations/NESFW will be enough to significantly improve receiving water quality.

One of the issues with GMPs is that many of them are frequently not explicitly defined. For example, a wide range of practices for farm tracks management or fertiliser use could be GMPs but still be quite different and result in different levels of contaminant loss to water in different locations. Taking this into account and not knowing to what extent farms in Southland would 'comply' with all GMPs means that it is difficult to be confident about what the effect would be of all farms in Southland 'complying' with all the relevant sector and or physiographic zone GMPs. However, two aspects are clear:

- The majority of farms in Southland are likely to be already generally operating at 'GMP'.
- The water quality improvements that would occur with greater uptake of some 'GMPs' are likely to be relatively small.

We have not seen the detailed Environment Southland technical work that is currently underway but from our summary of the gaps between existing water quality and existing water quality standards including national bottom lines, it is clear that GMPs and new regulations/NESFW alone will not achieve that water quality.

Our very preliminary assessment is that most catchments will need nitrogen loss reductions from farming land of more than 15 % compared to current practices. While we understand that for the dairy sector nitrogen loss reduction of 15 % compared to 'good management practice' is generally considered achievable for most farms, it would still require significant farm system and management changes together with specific nutrient loss mitigation measures. However, our understanding of the scale of the water quality issues in most catchments, particularly in terms of estuary eutrophication, is that 15% reductions won't be enough to achieve the likely water quality targets.

It is also clear that there are differences: in catchment water quality, catchment characteristics and individual farms. This will mean that distinct individual catchment and farm approaches are likely to be needed to take account of these differences.

10.6 How accurate are predictions about the effectiveness of contaminant reduction strategies?

It is important to appreciate that all predictions of the effectiveness of contaminant loss predictions have inherent uncertainty. The extent of uncertainty depends on many factors such as the similarity of an individual situation compared to the information used to estimate the effectiveness. The information in the following sections is provided as an indication of the range of likely effectiveness.

The information in the following sections is an initial guide. A Certified Nutrient Management Advisor (CNMA) should be consulted to develop site specific strategies. Environment Southland land sustainability officers may also be available to provide advice.