Developing catchment information

Waikato and Waipā catchments

Waikato Regional Council
Te Kaunihera ā Rohe o Waikato

Background

Proposed Waikato Regional Plan Change 1 (PC1) is the first step in an 80-year journey to achieve *Te Ture Whaimana o Te Awa o Waikato, the Vision and Strategy for the Waikato River*. Te Ture Whaimana is the primary direction-setting document for the rivers and their catchments, and regional plans, policies and decisions must give effect to it. Its vision is the restoration and protection of the health and wellbeing of the Waikato and Waipā rivers so that, over time, they are safe for people to swim in and take food from along their entire length.

PC1 takes a staged approach to achieving this long-term goal. As the first stage, it requires actions to be implemented within 10 years of becoming operative, intending to deliver 20 per cent of the total water quality improvement needed to achieve the 80-year target.

To support this work, Waikato Regional Council would make catchment information available to help farmers understand the issues affecting their local waterways and support the development of farm environment plans. This aligns with an objective of Te Ture Whaimana, which calls for communities and landowners to be empowered with the knowledge and tools needed to restore and protect the health and wellbeing of the rivers.

The Government's new Planning Act and Natural Environment Act are now law and will eventually replace the Resource Management Act (RMA). The Planning Act includes specific provisions affecting PC1. The key change for farmers and growers is that PC1 farm environment plans (FEP) and associated resource consent requirements are being deferred until 31 December 2032. However, the need for catchment information has not gone away. Councils are still required to prepare and publish this information under national regulations for Freshwater Farm Plans. This means the catchment information developed by the council will continue to support efforts to improve water quality and freshwater outcomes, but through the national freshwater farm plan system rather than through PC1.

Development

Two-page catchment information sheets were developed and prioritised for farmers and growers in Waikato and Waipā catchments to assist with farm planning as a requirement of PC1. Its content was informed by legislative and policy requirements, alongside a user needs assessment that gathered insights from farmers, growers, rural professionals and other stakeholders. The sheets were designed to be clear, practical and easy to use, while underpinned by a robust technical process drawing on a range of scientific and spatial data.

These catchment information sheets cover the information most relevant to farm planning. They do not cover everything PC1 required, or everything the Freshwater Farm Plan system may require once the new regulations are settled. As regulatory requirements are clarified and implemented, additional resources will be developed to capture the required additional information and made available.

Example



14 Matahuru catchment

Use these insights to develop a farm environment plan that reduces impacts on fresh water and protects what matters in your catchment. For more details or support, call 0800 800 401 or visit waikatoregion.govt.nz/farm-environment-planning.

Prioritise these actions in your farm plan to improve water quality:

- Manage or retire erosion-prone hill country.
- Manage livestock around **critical source areas.**
- Keep stock away from waterbodies.
- Stabilise stream banks and provide habitat through planting.

Actions to include in a farm environment plan
Farm menus

1

Matahuru is one of seven catchments that flow into the internationally important Whangamarino Wetland, which is rich in native plant and bird species. Contaminants from surrounding rivers and streams degrade the wetland and Lake Waikare, which suffers toxic algal blooms and frequent health warnings. Flood control schemes and pest fish like koi carp further disrupt natural process, making care for our waterways critical.

Areas along the Matahuru and Mangapiko Streams provide recreational opportunities and support community wellbeing. The catchment, including Lake Waikare and its surrounding environment, holds profound cultural and spiritual value for Waikato-Tainui, the primary iwi of this region, and local hapū and marae. Waikato-Tainui regard its coastal areas, rivers, lakes and streams as living ancestors whose mauri (life force) and mana (authority) must be actively protected and restored. Hapū and marae act as kaitiaki (guardians) at a local level to preserve and sustain the water bodies and taonga (treasured) species for future generations.

Taonga (treasured) species found in the Matahuru catchment

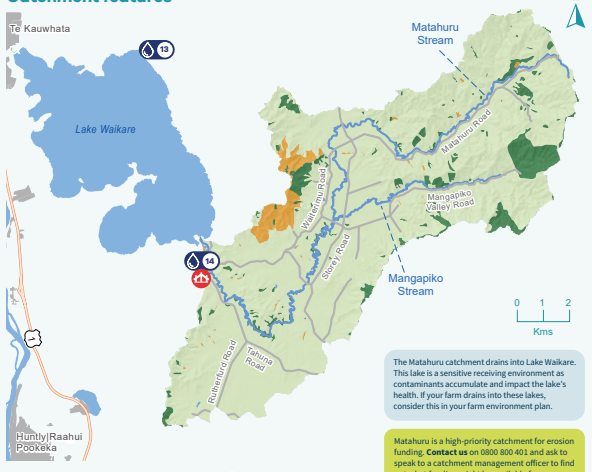


2 Consider your farm's location in the catchment

The table shows how landform and soil characteristics shape primary risks and contaminant losses specific to the Matahuru catchment.

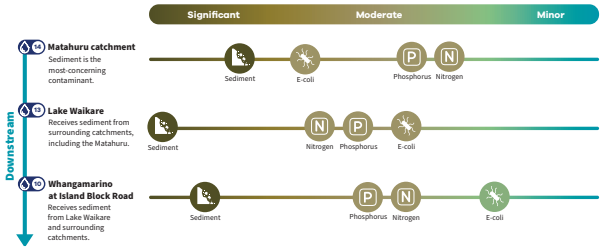
Landform	Main soils + properties	Primary risks	Primary contaminant loss
Flat to undulating land (0-7 degrees) 32% of catchment	**Gley:** Poorly to very poorly drained and clayey	Pugging and soil compaction Surface water run off Streambank erosion along incised stream channels	*E. coli* Nitrogen if cropped
	Recent: Imperfectly drained if clay loam		
	Granular: Well drained		
	Organic: Very poorly drained but may dry out, difficult to rewet	Unstable substrate Drainage contributes to ongoing peat subsidence including land level lowering	*E. coli* Phosphorus
Rolling land (8-20 degrees) 30% of catchment	**Brown:** Well drained but imperfectly drained if silt loams	Surface erosion from cultivated land Erosion on unstable slopes Pugging and soil compaction	Sediment Phosphorus *E. coli*
	Allophanic: Well drained, light texture		
	Ultic: Imperfectly drained, clayey		
Steep land (>20 degrees) 38% of catchment	**Brown:** Well drained	Moderate to severe gully erosion Moderate to severe surface erosion and shallow landslides Livestock access to small streams	Sediment Phosphorus
	Recent: Moderately well drained, young soils, weak development, low fertility		

Catchment features



3 Water quality improvement for the four contaminants

This diagram shows the level of collective effort needed to positively impact water quality in the Matahuru catchment and further downstream. Focus on best practices within your farm and catchment, while keeping your neighbours downstream in mind.



❶ Suggested priority actions to improve water quality

Each catchment information sheet suggests priority actions based on the key water quality issues in the catchment and the farming activities most likely to contribute to them. These priority actions draw on the catchment's soil and landform characteristics and nationally recognised good farming practice principles (**Good farming practice action plan for water quality**) known to help reduce the identified contaminants in a practical and cost-effective way. They are intended as guidance rather than mandatory requirements. The actions taken on farm will ultimately be determined by the farming system and the risks of contaminant loss from the farm.

❷ Landforms and soil

A key component of each catchment information sheet is an overview of the landforms and dominant soil types, and the primary contaminant loss risks associated with each. This information is provided at catchment scale – not farm scale – and does not quantify the magnitude of contaminant loss.

Soil and land information was compiled from a range of spatial datasets and models (Table 1) and grouped into broad landscape units. These units are based on slope classes defined in the New Zealand Land Resource Inventory (NZLRI) and were mapped using LiDAR data for the Waikato region. The landscape units include flat to undulating land (0-7 degrees), rolling land (>7-20 degrees) and steep land (>20 degrees).

For each landscape unit, the dominant soil types and their associated characteristics were identified using S-map, New Zealand's national digital soil mapping system. The datasets and models outlined in Table 1 were then used to assess the relative risk of nitrogen, phosphorus, sediment and *E. coli* loss from land to water within each landscape unit.

Based on the model outputs, each contaminant was assigned a 'low', 'medium', or 'high' risk ratings. Where multiple soil types occurred within a single landscape unit and the risk rating varied between them, separate risk profiles were developed. The risk assessments were checked against internal catchment reports to improve understanding of soil types, geology, and management factors within each catchment. This helped link inherent contaminant risk (often modelled) with the likelihood of contaminants reaching waterways.

Table 1. Overview of models and datasets used to assess the relative risk of contaminant loss within Waikato and Waipā catchments.

Contaminant	Datasets and models	Organisation
Nitrogen	**S-map** N leaching vulnerability	Manaaki Whenua
	LUCAS land use layer	MfE
	Waikato Prioritisation Framework and its use for soil conservation – development and methods **CLUES** **River Environment Classification (REC2) New Zealand**	Waikato Regional Council Earth Sciences NZ
Phosphorus	**Waikato Prioritisation Framework and its use for soil conservation – development and methods** **CLUES**	Waikato Regional Council Earth Sciences NZ
	SedNetNZ: **Application of SedNetNZ in the Waikato Region to support NPS-FM 2020 implementation**	Waikato Regional Council
	LUCAS land use layer	MfE
Sediment	LiDAR slope SedNetNZ: **Application of SedNetNZ in the Waikato Region to support NPS-FM 2020 implementation**	Waikato Regional Council (2024)
	Update to highly erodible land and estimated long-term soil erosion data sets for environmental reporting **Highly Erodible Land Layer**	Ministry for Cities, Environment, Regions & Transport MfE
	New Zealand Land Resource Inventory (NZLRI)	Manaaki Whenua
E. coli	**New Zealand Land Resource Inventory (NZLRI)**	Manaaki Whenua
	LUCAS land use layer	MfE

❸ Water quality

Improving water quality is a collective effort. Actions taken on individual properties and within local catchments contribute not only to the health of local waterways, but also to the health of downstream rivers and communities.

A simple diagram illustrating the collective effort needed to improve water quality is a key component of each catchment information sheet. A *significant* collective effort indicates that more than 20 per cent improvement is needed; a moderate collective effort indicates 1-20 per cent improvement is needed; and a *minor* collective effort indicates that little or no improvement is needed.

To calculate these percentages, the current water quality state for each catchment was compared to the water quality targets set under PC1. Where monitoring data was unavailable or incomplete for a catchment, data from the nearest downstream catchment was used (see Table 2).

Table 2. Waikato and Waipā catchments with missing 10-year targets and the catchments used for the illustrative purpose within catchment information.

Catchment with missing 10-year targets	Missing contaminant	Catchment used
Mangarama	Sediment	Mangapu
Torepatutahi	Sediment	Waikato at Ohakuri
Waikato at Mercer Bridge	Sediment	Waikato at Tūākau Bridge
Waiotapu at Homestead	Sediment	Waikato at Ōhākurī
Whirinaki	Sediment	Waikato at Ōhākurī
Waikato at Bridge Street Bridge	All contaminants	Waikato at Horotiu Bridge
Waikato at Port Waikato*	All contaminants	Waikato at Tūākau Bridge (nitrogen, phosphorus and sediment)

**For the illustrative purposes of catchment information for Waikato at Port Waikato, E. coli data was used from Maraetai Bay, which is part of Waikato Regional Council's summer recreational water quality programme.*

For the catchments within large lake systems (see Table 3), the collective effort shown is a more simplified representation of water quality improvement needed in total nitrogen and total phosphorus. This is because PC1 has long-term (80-year) water quality targets for lake catchments, recognising their particular vulnerability to the effects of diffuse discharge.

Table 3. Waikato and Waipā catchments included in their entirety in the large lake catchments.

Lake systems	Catchments included
Waahi	Awaroa – Rotowaro at Sansons Bridge
	Waahi Stream at Te Ōhākī Road
Waikare	Waikare
	Matahuru
Whangape	Whangape

The water quality improvement diagrams consider all four key contaminants: nitrogen, phosphorus, sediment and *E. coli*. In most catchments, nitrogen and phosphorus are represented by nitrate and/or ammonia and dissolved reactive phosphorus, respectively. For main stem (river), Whangamarino and lake catchments, nitrogen and phosphorus are represented by total nitrogen and total phosphorus. Sediment is represented by water clarity, and *E. coli* is used as an indicator of faecal contamination.

Where one contaminant requires more improvement than the others, it represents the largest gap to the relevant water quality target and is therefore likely to offer the greatest gain from targeted action. However, improvement is still needed across all four contaminants.