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Prioritising action for Southland's water quality issues



Water is important to all of our community – Environment Southland is responding to the challenges of managing water through a long-term project, Water and Land 2020 & Beyond.

There are several local and national drivers for the Water and Land 2020 & Beyond project. These include issues identified through Environment Southland's own water monitoring and targeted investigations, and Government water reforms, particularly the National Policy Statement for Freshwater Management 2011.

Environment Southland's aim in the short term is to halt any further decline in water quality while it determines, in conjunction with the community, how to set catchment limits.

To address these requirements Environment Southland has identified where land and water issues exist across the region. This provides a basis for prioritising short term actions and limit setting processes.

Prioritising for action

A Water and Land Management Stratification has been developed to identify areas across Southland where action is required to address water quality issues. The stratification divides the region's waterways into smaller areas based on the number of water quality issues and the size of the contaminant load moving through the waterway. It will provide a starting point for prioritising action for management of water quality issues within Southland.

To develop the stratification scientists:

- Defined a set of water quality objectives.
- Described the current state of freshwater in the region using models based on monitoring data (e.g. streams, rivers and lakes).
- Assessed where the issues exist (i.e. where water quality objectives are not met).
- Estimated contaminant contributions upstream from problem areas.

Water quality objectives include nitrate toxicity, sediment, slime algae, clarity, in-stream animal life and faecal contamination.

The findings of this work will be used as one of the tools with which to base the regional framework for limit setting and consider which areas or issues could be given priority.

How can the stratification prioritise areas?

The Water and Land Management Stratification has divided the region based on two factors; the number of downstream issues and the estimated load of contaminants.

The stratification can be made more detailed or less complicated by subdividing the two factors into more or fewer categories. This means we can gain further understanding of the region by modifying the categories.

Several areas have been identified as having high contaminant loads and waterways with multiple issues.

These areas include:

- Lowland tributaries of the Aparima River.
- The Waimatuku catchment.
- Tributaries of the New River Estuary including the Waikiwi Stream, the Makarewa and Waihopai River, and lowland areas of the Oreti catchment.
- Parts of the Waimea and Five Rivers basin.

What issues were found?

The largest contribution of nitrogen and phosphorus to Southland's waterways comes from non-point source discharges of contaminants from agricultural land.

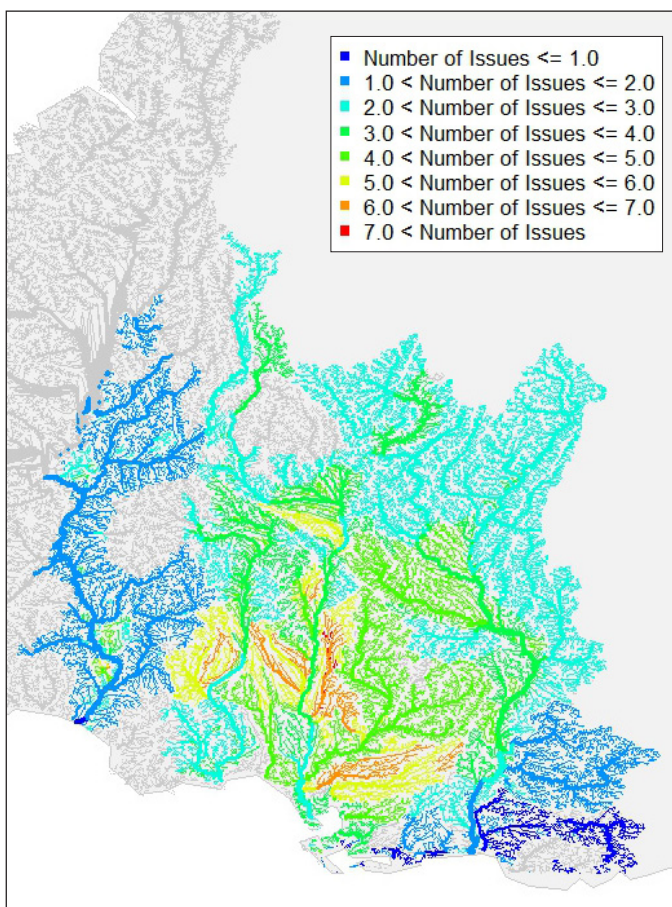
Non-point source contamination occurs as a result of water flowing through or over land and collecting nutrients (nitrogen and phosphorus), sediment (small soil particles) and faecal contamination (E.coli).

Point source discharges (where industrial and residential waste water discharges directly into a waterway) accounted for less than 10% of the estimated total nitrogen load and less than 25% of the estimated total phosphorus load.

The assessment found that the water quality objectives were not being met at some locations in Southland.

So what are our significant issues and where are they?

- Four estuaries do not meet water quality objectives. Those are New River Estuary, Waimatuku Estuary, Jacobs River Estuary and Waiau River Estuary. Given the increasing trend of nitrogen, these estuaries are at risk of further enrichment, which is a concern for ecosystem health.
- Nitrogen concentrations, particularly in lowland streams and some part of the region's groundwater exceed the criteria for ecosystem health. Where nitrogen concentration is already high, it was found to be increasing.
- A small number of lowland streams had faecal contamination at levels too high for recreational use.
- Slime algae is an issue in the main stem of the Mataura River and many lowland tributaries of other rivers.
- Water clarity is an issue across the region and in-stream animal life has been identified as an issue in most lowland streams.



Southland rivers grouped by overall downstream issues.

What next?

It is not in the scope of this project to consider what the responses should be. Before we look at formulating responses, we will need to consider wider community values and additional technical information, such as contaminant pathways, mitigation measures.

This will be one of the tools used to inform the Region-wide Framework Project, phase two of Water and Land 2020 & Beyond. This project will lead into the 'limit setting' process which proposes that catchments with the most significant land and water management issues be prioritised first.

Definitions

- *Model* – A tool used to explain and predict the behaviour of real systems, such as waterways.
- *Stratification* – A tool used to divide something into smaller groups based on similar characteristics.
- *Load* - The total amount (in kilograms or tonnes/per year) of a contaminant (e.g. nitrogen) that is carried by a waterway past a certain point.

For further information, or to read the **Regional Scale Stratification of Southland's Water Quality** report, go to www.es.govt.nz/water-quality-reports/.

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