



Overseer and regulatory oversight:

Models, uncertainty, and cleaning up our waterways

Frequently Asked Questions

What is this report about?

Overseer is a widely used farm management tool that can be used to model nutrient losses from farms. This report looks at whether Overseer is suitable for use in regulation to maintain and improve the quality of fresh water in New Zealand.

It outlines the steps the Government needs to take if it wants to see this model confidently used and developed further as a regulatory tool.

Why did the Commissioner decide to undertake this investigation?

Water quality is a serious environmental issue in Aotearoa New Zealand, and nutrient losses from farms have an impact on our rivers, lakes and estuaries.

As New Zealand looks to improve the state of its waterways, an important part of the regulatory puzzle is how we measure and place limits on sources of pollution.

Overseer is currently the most commonly used model for calculating nutrient losses in New Zealand. It is used by farmers to improve nutrient use on farms, and more contentiously by regional councils to help inform regulations around water quality.

The Commissioner considered that an independent investigation of this model could help inform the debate around its role in improving water quality, and identify how Overseer can be improved to be better suited for use as a regulatory tool.

What were the report's main findings?

It found there are important gaps and shortcomings in Overseer that undermine confidence in its use as a regulatory tool.

It recommends that if the Government wants to see Overseer confidently used as a regulatory tool, it needs to address these matters, as well as issues concerning its ownership, governance and funding.

Specific recommendations call for:

- the commissioning of a comprehensive evaluation to ensure the Overseer model is independently peer reviewed, and is subject to sensitivity and uncertainty analysis
- greater transparency about how the model works
- aligning Overseer's ownership, governance and funding arrangements with the transparency required for it to be used as a regulatory tool
- setting up a working group to provide guidance on how Overseer can be used by regional councils.

More broadly, the report recommends that the Government develops guidance for the development, evaluation and application of models in environmental regulation, as has been done in other countries such as the United States.

In terms of water quality, the report found that Overseer can only go so far in telling us what impact nutrient losses are having on the environment. It recommends that more work needs to be done to understand what happens to nutrients once they leave the farm.

Did the report look at whether Overseer is suitable for measuring agricultural greenhouse gas emissions?

No, this report has focused on Overseer's use as a tool to help regulate water quality. Other groups such as the Biological Emissions Reference Group and the New Zealand Agricultural Greenhouse Gas Research Centre have looked at the ability of Overseer to estimate greenhouse gas emissions from farms. However, the recommendations of this report that concern transparency apply to any regulatory use of Overseer.

Is Overseer suitable to be used as a regulatory tool for water quality?

Overseer can be a helpful tool for regional councils as long as they are aware of its limitations and factor this into how it is used. They also need to ensure that they can accommodate any future changes to the model, and respond to any guidance provided by the Government.

The issues raised in this report need to be urgently addressed so both farmers and regulators can rely on Overseer with greater confidence.

Does the report look at Overseer's use as a tool for making decisions on farms?

This report has not looked at Overseer's usefulness to farmers as an on-farm decision support tool. The report has focused on Overseer's suitability for use in regulation with respect to water quality.

Does Overseer generate uncertain results?

All models have assumptions and limitations, which lead to uncertainty. The issue is whether the level of uncertainty is an acceptable one. One of the reasons to conduct an uncertainty analysis and provide greater transparency about how Overseer works is to ensure that farmers and councils can have greater confidence in its results.

One potential source of uncertainty is the limited extent of research trials that have been conducted to enable the model to be calibrated to regional conditions. As an empirical model, Overseer tries to generate results that match real-world conditions, including soil, climate and management systems. Some parts of New Zealand have not been covered by trials, meaning uncertainty in some regions may be greater than in others. A comprehensive range of regionally specific calibration trials would support wider use of the model.