



New report shows how regional plans could transform freshwater quality

8 June 2023

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Summary

This briefing highlights valuable and timely lessons for better ways of safeguarding and improving freshwater quality identified by a new report on the failure to protect high-country lakes from degradation.

The new report has received little attention, but its findings are relevant beyond high-country lakes and vital to the success of councils' next generation of regional plans, which are under development and must be completed by the end of 2024.

Regional plans have broad ecological, cultural, economic, and human health importance and, if the report's findings are well understood and applied by policy and decision makers, they would support communities moving towards healthier land use and waterways.

At the end of May, to little fanfare, the Ministry for the Environment (MfE) released the [Ōtūwharekai/Ashburton Lakes lessons-learnt report](#) (Ministry for the Environment, 2023). The Report is an investigation into the ongoing deterioration of this network of high-country lakes and wetlands. It identifies weaknesses in the relevant Council's regional planning and the action taken to protect these highly valued, ecologically significant waterbodies.

[Its findings](#) are applicable across regions and waterbodies, and critical to the success of upcoming regional planning, and efforts to protect and restore the country's waterways (see Core findings Appendix 1). Though infrequently acknowledged, regional plans are also fundamental to protecting public health. Regional plans are key to protecting source water required for our national drinking water systems. An estimated 18,000 and 34,000 people get sick each year in Aotearoa from contaminated drinking water (Ball, 2006), while excess nutrient pollution (nitrate contamination) has made some drinking water intermittently undrinkable (Prickett et al., 2023). These public health risks are partly attributable to poor development and implementation of regional plans (Prickett et al., 2023).

This Report should be high priority reading for regional councillors and council staff.

Each failure points to a solution

The Report's summary reads as a list of regulatory failures, particularly by Environment Canterbury (ECan – the regional council responsible for the lakes) but also central government. However, each failure highlights its own solution. [So while damning \(as the headline of the Report's only media coverage read\)](#), the Report's findings are ultimately constructive and provide a solid way forward. Through identifying and learning from mistakes made in the past, regional authorities can take meaningful next steps to restore the waterways their communities rely on and value so highly.

And right now is an essential time for regional councillors and staff to be identifying and learning from what hasn't worked before. All regional councils are required to produce a new regional plan by the end of 2024, to give effect to the [updated national freshwater policy](#) that came into law in 2020.

Changing a plan or planning for change?

In the last week, Bay of Plenty Regional Council has announced public consultation on its

regional plan under the headline “Change is coming” (Bay of Plenty Regional Council, 2023) . Importantly, as the *Lesson-learnt* report identified, council plans can be changed multiple times without achieving the on-the-ground action needed to restore and protect waterways. In the case of Ōtūwharekai/Ashburton Lakes, ECan’s Land and Water Plan 2015 has been amended seven times. However, as the report lays out, the building blocks of the plan were flawed. The Report found that the [limit on nitrogen movement into the lakes](#) was based on an idea of ‘holding the line’, and not on establishing the nitrogen concentration the lakes needed to be healthy (see Appendix 2). Excess nutrients (nitrogen and phosphorus) degrade the health of waterways by, among other impacts, driving excess algal growth. Because of this flaw, nitrogen leaching from land into the lakes was too high to protect them from further degradation. The plan’s poor nutrient limits failed to drive the necessary change to land use, farming systems and practices that would reduce nutrient loss over time. The report identified that 90% of the nutrient movement into the lakes came from the four farms in the catchment.

Setting instream nutrient limits that protect the health of waterways (or restore health, where nutrients are breaching national bottom lines for ecosystem health) is a foundation for regional plans. These limits establish what activity the land and water can manage and still be healthy. It is based on these limits that councils establish rules for each catchment to achieve restoring or protecting its health and achieving other community goals (like safe swimming, gathering mahinga kai or protecting a drinking water source). If councils set nitrogen and phosphorus limits too high, there is little regulatory impetus to drive the change necessary, as the Report found.

Reducing the drivers of high nutrient loss

The Report also identified an over-reliance on output-based (or effects-based) rules for the lakes’ catchment. This means that this Council regulated the modelled losses of nitrogen to the lakes using Overseer software, which after some years of criticism was found to be inappropriate for such regulatory use. In 2021, an expert panel reviewed Overseer on behalf of the NZ Government and found, “we do not have confidence that Overseer’s modelled outputs tell us whether changes in farm management reduce or increase the losses of nutrients, or what the magnitude or error of these losses might be” (Ministry for Primary Industries, 2021, p.5).

The inverse of regulating the modelling of farm outputs (nutrient losses) is regulating their inputs. Inputs are drivers of losses, such as the amount of fertiliser applied, the stocking rate (number of animals per hectare) and irrigation. There is already a national cap on the amount of fertiliser that can be applied, but for some catchments this cap may need to be further limited. Implementing this requires renewed effort, however, as understanding of fertiliser use at a farm- and catchment-scale is currently held back by poor reporting and monitoring (Williams, 2023).

Councils will need to be prepared to see some pushback from the agricultural lobby, who may characterise controlling inputs as “bad for innovation” or as a kind of punishment. However, [leading farmers are already illustrating](#) how they can work within the natural limits of their land and catchment, and thrive (eg, (Ag Matters, n.d.)).

Healthy limits for nutrients and input rules for catchments are just two of the solutions the failures in the Report point to. There’s more, however. And, if well understood, councillors and council staff can be more confident in sidestepping past mistakes and support communities moving towards a healthier future.

What is new in this Briefing

- Highlights the importance of lessons learned for the protection and restoration of waterbodies in a recent report from Ministry for the Environment.
- Connects regional planning with its public health implications.

Implications for policy

- As regional councils develop the next generation of regional plans (due at the end of 2024), they must learn from past failures in regional planning to avoid making the same mistakes.
- Limits for nutrients (nitrogen and phosphorus) in regional plans need to establish what a waterbody needs to be healthy to drive protection and restoration efforts.
- Outputs (contaminant losses to waterways) can be hard to measure at a farm-scale and regulate through regional plans and, because of this, waterways continue to degrade. Inputs (fertiliser, stocking rates) restrictions should be used in new regional plans.

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Author disclosure: Marnie Prickett is involved in a not-for-profit campaign group called “Choose Clean Water” that works with other environmental groups on advocacy on freshwater policy to protect the environment and human health.

Appendix

Summary of key points from the MfE report: [Ōtūwharekai/Ashburton Lakes lessons-learned report](#) (Ministry for the Environment, 2023).

The table below lists the core findings from the report (emphasis in bold as it is in the original). We also describe additional important points for those who have special interest in the role of regional planning for improving freshwater quality.

Core findings

- **The nitrogen loss (N-loss) baseline limit, as set out in the LWRP, was too high to drive the necessary reductions in farm N-loss.** It was intended as an interim ‘hold the line’ limit to prevent further intensification beyond the high levels reached over 2009 to 2013. As a result, it does not correspond to the lake outcomes and targets.
- **The system overly relied on an outputs-control regime** that used the N-

loss limit rule as the primary lever to control nitrogen. This was chosen to give farmers flexibility in how they achieved the limit but had the unintended effect of increasing the uncertainty of achieving lake outcomes.

- **Some critical decisions were devolved to farmers and their advisors.** These included the N-loss limit calculation, in which the LWRP's limit-setting methodology was applied to the farmer's input data, and the choice and implementation of good management practices (GMPs) and actions to stay within the limit.
- **The limitations of the tool relied on in this approach (Overseer) were not adequately accounted for,** with averaging of N-losses across the diverse landscape allowing within farm intensification to occur resulting in leaching hotspots near the lakes.
- **GMPs were also used** alongside the N-loss rule but were not able, on their own, to drive adequate reductions or provide a firm limit.
- ECan was **reliant on third party professionals** to deliver the FEP system and set farm N-loss limits, making it vulnerable to industry capture. While measures to address this were taken, vulnerabilities exist.
- **The FEP system is overly focused on process** rather than environmental outcomes. So long as FEP A or B grade audits were achieved, intensification of high-risk areas near the lakes were not monitored or controlled.
- **Transparency and access to regulatory data was also not always adequate** to give confidence in the regime or allow effective CME to occur.
- While data on the lakes' condition and on FEP audit grades was monitored and reported, **data on catchment land use change trends was not collected.** Concerns raised about the state of the lakes and potential land use pressures could not be verified without this data.
- Because resource consent conditions are locked in for the duration of a consent, **ECan has limited ability to change an FEP or N-loss limit until its consent expires.** This leaves ECan with few regulatory levers to rapidly improve nitrogen management practices without going through a plan change.
- **Managing both nitrogen and phosphorus inputs is important for lake ecosystem health.** Phosphorus is a more difficult contaminant to manage, nevertheless, large reductions in phosphorus loads are estimated to be required for several Ōtūwharekai lakes to meet their LWRP objectives for algal biomass (chlorophyll a). While Plan Change 7 contains rules to minimise phosphorus impacts, the plan is not able to quantify farm-specific limits and lacks a catchment load for phosphorus, although it does now have generic rules to provide some protections.
Because the impacts of phosphorus on algal growth occur in the presence of nitrogen, it is all the more important that nitrogen is managed effectively.
- **A complex set of wider system challenges was influential at the time the planning framework was established for the lakes,** including insufficient national direction along with national drivers, such as competing government and economic priorities and the tenure review process.

Key abbreviations

N-loss: Nitrogen loss to waterways

LWRP: Land and Water Regional Plan

GMP: Good management practice, a suite of farming practices

FEP: Farm environment plan

Additional commentary on report's finding

On nutrient limits/targets

Limits and targets have more specific meanings in policy than we have applied here. In this article, limits and targets have been used somewhat interchangeably to make it more understandable for a broad readership. Here, *Instream limits* have referred to the maximum nutrient concentration allowed in a catchment to support ecosystem health and the goals of the community. *Targets* referred to the nutrient concentration communities are aiming to achieve, to support ecosystem health and the goals of the community.

The Report identified that nutrient targets in the Land and Water Regional plan are too high to achieve required ecosystem health outcomes (ie healthy waterbodies). This is a common problem around NZ, due in part to a history of inadequate central government policy and intense pressure from private interests (Death et al., 2018; Joy & Canning, 2021; Koolen-Bourke & Peart, 2022).

The most recent National Policy Statement for Freshwater Management has established national bottom lines for aspects of ecosystem health. However, nutrient directives for ecosystem health still require interpretation by councils at regional (and catchment) scale. Interpretation must be evidence-lead, with the policy requiring councils to use "best information available" to develop their plans. Not all nutrient targets will be aiming for pristine waterways; the policy allows for some impact from land and water use. However, the Te Mana o Te Wai framework requires councils to prioritise ecosystem health, and bottom lines for other aspects of ecosystem health must inform nutrient limits and targets. National bottom lines are essential to drive councils and communities to achieving a level of ecosystem health in all waterways.

Though not mentioned in the report, climate change will amplify the effects of excessive nutrient loss into many waterbodies. Climate change brings greater risk to ecosystem health from nutrient impacts. Councils should be establishing lower nutrient limits to account for this increased risk.

On consenting

Two of the four farms in the lakes' catchment are operating without a consent due to a failure of the regulatory system (farms have had their applications put on hold). Additionally, the Report noted a major flaw in consenting process in that "resource consent conditions are locked in for the duration of a consent". When evidence shows that the environment is continuing to degrade under current consent conditions, councils have no way to react or reduce harm to environment until the consent period ends. Consenting periods could be limited by councils to allow for changes to their conditions where needed or adaptive management incorporated into consenting.

On farm environment plans

The Report found that despite all the farms having farm environment plans (FEPs) that meet requirements of the Land and Water Regional Plan (LWRP), water quality continued to decline. In the case of the two consented farms, both achieved an 'A' grade for their FEP.

The report found the FEP system was focused on process and not outcome. For example, meeting Good Management Practice (a suite of farm practices) was a requirement regardless of whether meeting these practices would be sufficient to achieve what was needed for the health of the water body. This meant that while a practice might be achieved, it could be a distraction from the farm system changes that were needed to meet the targets for the catchment.

The report also identified that critical decisions were devolved to farmers and their advisors'. Additionally, monitoring of farms' plans in Canterbury is reliant on third-party professionals. This left the regulator system "vulnerable to industry capture" (Table 1).

On the Overseer software

An additional issue with Overseer identified by the Report is that averages nitrogen loss across an entire farm, which means the smaller scale crucial hot spots, (more direct nutrient pathways to lakes, rivers and groundwaters) are missed.

On compliance, monitoring, and enforcement

One of the most crucial requirements for protecting freshwaters is Compliance Monitoring and Enforcement; as in many other regions, ECan was found to have failed in this crucial role. ECan were found to have been collecting information on farm plans but not on the state of the lakes themselves, so responding to the degradation of the lakes was even more challenging.

Councils and government should be giving far more thought (and resourcing) to enforcement as it is currently a major weakness in the implementation of environmental policy. Likewise monitoring.

Lead image: Shellie Evans Flickr

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Public Health Expert Briefing (ISSN 2816-1203)

Source URL:

<https://www.phcc.org.nz/briefing/new-report-shows-how-regional-plans-could-transform-freshwater-quality>