



# He rīpoata akoranga mō ngā roto o Ōtūwharekai/Ashburton Ōtūwharekai/Ashburton Lakes lessons-learnt report

A case study examining ongoing deterioration of water quality in the  
Ōtūwharekai lakes



Ministry for the  
**Environment**  
Manatū Mō Te Taiao



**Te Kāwanatanga o Aotearoa**  
New Zealand Government

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This report is not about the actions or intentions of the people who operate within the system. The Ministry recognises that farmers, advisors and council officers are all doing their best to operate within the current regulatory system. The farmers in the catchment are compliant with the regional plan, and are working with Environment Canterbury and multiple agencies to find solutions for the lakes.

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# Abbreviations

ADC	Ashburton District Council
CFEPA	Certified FEP auditor
CME	Compliance, monitoring and enforcement
CWMS	Canterbury Water Management Strategy 2009
DOC	Department of Conservation
ECan	Environment Canterbury
ECan Act	Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010
FEPs	Farm Environment Plans
FMU	Freshwater Management Unit
FPP	Freshwater planning process
FWFP	Freshwater Farm Plan
GMPs	Good management practices
LGOIMA	Local Government Official Information and Meetings Act 1987
LINZ	Land Information New Zealand
LWRP	Land and Water Regional Plan
MfE	Ministry for the Environment
N	Nitrogen
NBA	Natural and Built Environment Act
NBE	Natural and Built Environment Bill
NES-F	National Environmental Standards for Freshwater
N-load	Nitrogen load
N-loss	Nitrogen loss
NPS-FM	National Policy Statement for Freshwater Management
NRRP	Natural Resources Regional Plan
P	Phosphorus
P-loss	Phosphorus loss
RMA	Resource Management Act 1991
RPS	Regional policy statement
TLI	Trophic Level Index

# Background and context

This report draws lessons from the concerns raised about the Ōtūwharekai/Ashburton Lakes. This network of wetlands and small to medium-sized lakes in the Canterbury high country is of national ecological significance,<sup>1</sup> highly vulnerable<sup>2</sup> and has significant cultural value.<sup>3</sup>

Despite endeavours to support lake health since 2007,<sup>4</sup> the lakes show increased evidence of *eutrophication*<sup>5</sup>. Once a lake becomes highly eutrophic, restoration to a healthier trophic state<sup>6</sup> is difficult and costly.<sup>7</sup>

The Essential Freshwater reform package<sup>8</sup>, launched in 2020, sets out new national direction to protect and improve Aotearoa New Zealand's rivers, streams, lakes and wetlands. It aims to: stop further degradation of freshwater, start making immediate improvements so water quality improves within five years, and reverse past damage to bring waterways and ecosystems to a healthy state within a generation.

Given this, the Minister for the Environment, on learning of the degraded condition of the Ōtūwharekai/Ashburton Lakes,<sup>9</sup> asked the Ministry for the Environment (Ministry) to report back on any regulatory system vulnerabilities that may have contributed to the lakes' decline.

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- <sup>1</sup> Department of Conservation (DOC) (2022) **About Ōtūwharekai**. Department of Conservation. Retrieved from <https://www.doc.govt.nz/our-work/freshwater-restoration/arawai-kakariki-wetland-restoration/sites/otuwharekai/about/>.
  - <sup>2</sup> David Kelly, Lisa Floerl, Paula Cassanovas (2021) **Updating CLUES nutrient load predictions for Ashburton Basin and Waimakiriri high country lakes**. *Cawthron Report No. 3589*. Prepared for Department of Conservation and Environment Canterbury. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4217986>
  - <sup>3</sup> Te Rūnanga o Arowhenua, Craig Pauling, Takerei Norton (2010) **Ō Tū Wharekai Ora Tonu: Cultural Health Assessment of Ō Tū Wharekai / The Ōtūwharekai/Ashburton Lakes**. Prepared for the Department of Conservation. Retrieved from <https://pdf4pro.com/amp/tag/9dcbe/wharekai.html>.
  - <sup>4</sup> In 2007 Te Rūnanga o Arowhenua and DOC began collaborating with other partners on wetland restoration projects around the lakes.
  - <sup>5</sup> Eutrophication, or enrichment with nutrients, occurs when excess nitrogen and phosphorus enter a waterway, sometimes accompanied by sediment. In 'eutrophic' lakes, these nutrients enable algae to proliferate and crowd out aquatic plant life. Micro-organisms feed on the dead plants, multiply, and use up the oxygen in the water, causing fish and invertebrates to also die. This can result in algae-dominated, cloudy, water with few plants or animals. In contrast, 'oligotrophic' lakes are clear with rich plant and animal life. 'Mesotrophic' lakes are in an intermediate trophic state.
  - <sup>6</sup> Trophic state refers to the extent to which nutrients in a lake are fuelling algal growth. A high Trophic Level Index (TLI) score equates to a eutrophic state with algal proliferation and reduced water quality for aquatic plants and animals.
  - <sup>7</sup> Jonathan M Abell, Deniz Özkundakci, David Philip Hamilton, Paula Reeves (2020) **Restoring shallow lakes impaired by eutrophication: Approaches, outcomes, and challenges**. *Critical Reviews in Environmental Science and Technology* 52(7): 1199–1246. Retrieved from DOI: 10.1080/10643389.2020.1854564.
  - <sup>8</sup> Ministry for the Environment (2020) **Essential Freshwater Factsheet**. Retrieved from <https://environment.govt.nz/publications/essential-freshwater-overview-factsheet/>
  - <sup>9</sup> Amber Allott (2021) **Urgent action needed to stop Ōtūwharekai/Ashburton Lakes 'turning to sludge'**. *Stuff*. 28 July 2021. Retrieved from <https://www.stuff.co.nz/environment/125893890/urgent-action-needed-to-stop-ashburton-lakes-turning-to-sludge>.

Ministry officials reviewed written sources, including planning, policy and technical documents, academic papers, and other publications. They also interviewed or received written feedback from participants in the catchment's resource management system. This included landowners and staff from Environment Canterbury (ECan), Te Rūnanga o Ngāi Tahu,<sup>10</sup> Land Information New Zealand (LINZ), Department of Conservation (DOC), Ashburton District Council (ADC), Central South Island Fish and Game, and Ministry officials with relevant knowledge.

This report summarises what was learnt. Its focus is on vulnerabilities in the regulatory system including any that could persist within the national regulatory system and that may need further investigation and resolution by the Ministry.

The report is structured as follows:

- overview of the lakes
- summary of core findings
- summary of the past and present regulatory measures affecting the lakes, in particular:
  - the statutory context, including the RMA and the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 (ECan Act)
  - the planning system
  - the consenting and farm plan systems
  - system monitoring, including ECan's compliance, monitoring and enforcement (CME) and the certified contractors' auditing of Farm Environment Plans (FEPs).
- a table containing: a concise analysis of system vulnerabilities; an assessment of whether those vulnerabilities will persist post the 2020 Essential Freshwater reforms; and recommended actions
- conclusions and officials' next steps to ensure the ongoing effectiveness of the freshwater management system.

## Ōtūwharekai/Ashburton Lakes

The Ōtūwharekai/Ashburton Lakes are a network of wetlands and lakes in the Ashburton high country (figure 1). The area has one of New Zealand's best remaining inter-montane wetland systems. The ponds, tarns and lakes that dot its landscape of bare hills and open grassland provide habitat for nationally significant species. The area is included in Arawai Kākāriki, DOC's flagship wetland programme to research and restore five nationally significant sites.<sup>11</sup>

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<sup>10</sup> Te Rūnanga o Ngāi Tahu, **Ōtūwharekai Lessons learnt for Ministry for Environment – Papatipu Rūnanga and Te Rūnanga o Ngāi Tahu**. Letter sent 25 March 2022 to the Ministry for Environment (Ministry) about its role and views at the lakes.

<sup>11</sup> DOC (2022) **Arawai Kākāriki wetland restoration programme**. Department of Conservation website. Retrieved from <https://www.doc.govt.nz/our-work/freshwater-restoration/arawai-kakariki-wetland-restoration/>.

The lakes have high cultural value for Ngāi Tahu.<sup>12</sup> Ōtūwharekai is a statutory acknowledgement area in the Ngāi Tahu Settlement Act 1998 and has historical and contemporary nohoanga (temporary settlements) associated with a seasonal trail linking mahinga kai sites. Mana whenua is held by three papatipu rūnanga: Te Rūnanga o Arowhenua, Te Taumutu Rūnanga and Te Ngāi Tūāhuriri Rūnanga.

**Figure 1: Aerial photo of the Ōtūwharekai/Ashburton Lakes and surrounding catchments showing public conservation land in grey and the catchment boundaries of the lakes in dark blue**



Eight of the twelve lakes<sup>13</sup> are monitored by the regional council.<sup>14</sup> The monitored lakes range from the two shallow and small Māori Lakes to the largest, Lake Heron, with a maximum depth of 37 metres and surface area of 6.3 square kilometres. Before the arrival of humans, the lakes were clear (ie, oligotrophic) and surrounded by forest with low inputs of sediment and nutrients.<sup>15</sup>

<sup>12</sup> Te Rūnanga o Arowhenua, Craig Pauling, Takerei Norton (2010) **Ō Tū Wharekai Ora Tonu: Cultural Health Assessment of Ō Tū Wharekai / The Ōtūwharekai/Ashburton Lakes**. Prepared for the Department of Conservation. Retrieved from <https://pdf4pro.com/amp/tag/9dcbe/wharekai.html>.

<sup>13</sup> The eight monitored lakes are Lake Heron, Lake Emily, the two Māori Lakes (West and East), Lake Clearwater, Lake Camp, Lake Emma and Lake Denny, though nutrient accumulation also affects other lakes and wetlands (eg, Lake Roundabout, Lake Trinity and the Spider Lakes).

<sup>14</sup> Tina Bayer, Adrian Meredith (2020). **Canterbury high-country lakes monitoring programme – state and trends, 2005–2019**. *Environment Canterbury Report No. R20/50*. Retrieved from <https://api.ecan.govt.nz/TrimPublicAPI/documents/download/3952519>.

<sup>15</sup> Craig Allan Woodward, James Shulmeister, Atun Zawadzki, Geraldine Jacobsen (2014) **Major disturbance to aquatic ecosystems in the South Island, New Zealand, following human settlement in the Late Holocene**. *The Holocene* 24(6): 668–678. Retrieved from DOI: [10.1177/0959683614526935](https://doi.org/10.1177/0959683614526935).

The most important nutrients are nitrogen and phosphorus. At elevated levels, they act together to promote algal growth at the expense of other organisms. Today, excess nitrogen comes mostly from animal urine, which leaches into water through soil. Excess phosphorus comes from sediment and animal waste, which are carried into the lakes and their tributary streams by surface water run-off.

The lakes are now partly eutrophic, with elevated sediment and nutrient levels, algal growth, and reduced clarity.<sup>16</sup> None met the objectives in the Land and Water Regional Plan (LWRP) for the Trophic Level Index (TLI) score in the period between 2017 and 2021<sup>17</sup> and some are failing to meet national bottom lines.<sup>18</sup>

This decline coincides with an upsurge in pastoral farming from around 1990 to 2010 involving increases in cattle and deer numbers,<sup>19</sup> fertiliser use,<sup>20</sup> winter forage grazing<sup>21</sup> and vegetation change<sup>22</sup> (from indigenous shrubs and tussock to shallow-rooted pasture grasses<sup>23</sup>).

These changes reflect both local decisions and wider drivers, such as commodity markets, district, regional and national economic growth policies, and the Crown's programme of tenure reviews and land swaps, which privatised many areas of high-country land between 1998 and 2022.

## Action taken so far

Concerns raised by DOC, Ngāi Tahu and ECan's own monitoring unit, led to DOC and Te Rūnanga o Arowhenua beginning wetland restoration projects in 2007 with other partners (ECan, Fish and Game New Zealand, ADC, Forest and Bird, Rangitata Landcare Group, LINZ, LEARNZ, Cawthron Institute, Lake Clearwater bach owners, the landowners and recreational

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<sup>16</sup> David Kelly, Lisa Floerl, Paula Cassanovas (2021) **Updating CLUES nutrient load predictions for Ashburton Basin and Waimakiriri high country lakes**. *Cawthron Report No. 3589*. Prepared for Department of Conservation and Environment Canterbury. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4217986>

<sup>17</sup> Tina Bayer, Adrian Meredith, Tom Drinan, Hugh Robertson (2021) **CLUES Nutrient Load Predictions for the Ashburton Basin Lakes – 2021 Cawthron report – Supplementary Memorandum**. Environment Canterbury, June 2021. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4219613>.

<sup>18</sup> For example, Lake Heron and Lake Clearwater did not meet the National Policy Statement for Freshwater Management (NPS-FM) 2020 national bottom line for algal biomass in 2020/21.

<sup>19</sup> No statistics are available on historical livestock trends at Ōtūwharekai. However, the farmers interviewed for this report said the main pasture improvements and stock increases occurred in the 1990 to 2010 period, with minor changes since then, mostly within areas that had already been intensified.

<sup>20</sup> No statistics exist on historical fertiliser use at Ōtūwharekai, but fertiliser is integral to the pasture improvements reported by the farmers. During the 1991 to 2019 period, nitrogen fertiliser use increased nationally by more than 600 percent. Source: Stats NZ, 15 April 2021, **Fertilisers – nitrogen and phosphorus**. Retrieved from <https://www.stats.govt.nz/indicators/fertilisers-nitrogen-and-phosphorus>.

<sup>21</sup> From comments made by Environment Canterbury (ECan) staff interviewed on 25 August 2021 by the Ministry team (Claire Graeme, Rowan Taylor, Carly Waddleton, Shannon Wallace).

<sup>22</sup> Philip Grove, Mark Parker, Tina Bayer, Duncan Gray (2021) **Agricultural land use change in mid-Canterbury hill and high country, 1990-2019: implications for indigenous biodiversity and ecosystem health**. *Environment Canterbury Report No. R20/62*. Retrieved from <https://api.ecan.govt.nz/TrimPublicAPI/documents/download/4017664>.

<sup>23</sup> From comments made by ECan staff interviewed on 1 March 2022 by the Ministry team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rollinson).

groups).<sup>24</sup> It also led to ECan, in 2012, including Ōtūwharekai/Ashburton Lakes in the Lake Zone section of its proposed LWRP. In the years that followed, however, it became clear the lakes were not improving.

In 2019, Ngāi Tahu called a hui of statutory agencies (as Treaty of Waitangi partners) that have responsibilities in the area. The Ōtūwharekai Working Group was formed, with others invited to join in 2021.<sup>25</sup> A scientific report was commissioned. This confirmed that the lakes are still nutrient enriched with some in danger of ‘flipping’ into more severe eutrophic states.<sup>26, 27</sup>

The main nutrient source (90% or more) across all lakes was identified as pastoral land use. Additional minor sources (less than 10%) are potential seepage of human wastewater, at Lake Clearwater and Lake Camp, and waterfowl waste, at Lake Emma and Lake Emily. Large reductions in catchment nutrient loads are now needed to meet the LWRP objectives for the lakes<sup>26</sup> (eg, six lakes need nitrogen load reductions of 67 per cent or more and three lakes need phosphorus load reductions of 33 per cent or more).

Two of the four farms in the catchment have a current consent to farm. Another is operating on an expired consent that has been extended under section 124 of the Resource Management Act 1991 (RMA) until its replacement application is decided. The fourth farm is operating without a consent as it awaits the outcome of its 2018 consent application.

All farms, however, have FEPs that are considered by their auditors to meet the requirements set down in the LWRP. Given this, ECan’s position is that it has no additional regulatory options to impose further requirements on the farms. Instead, ECan is now working with the farmers and others to identify voluntary actions that can reduce the nutrient loads entering the lakes.

For this, ECan officers analysed the nutrient assimilation capacity of each paddock and the risks from farm activities and factored in inherent risks to water quality. The recommended actions arising from this include some changes in farm practice, such as shifting high risk intensive winter grazing further away from the lakes.

Scientific assessments commissioned to inform this work identified several mitigations. For most lakes, livestock removal in winter and autumn would generally be the most cost-effective.<sup>28</sup> The important question is whether these actions would be sufficient to meet the LWRP objectives, or whether longer term land use changes might be necessary.

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<sup>24</sup> DOC (2022) **Arawai Kākāriki wetland restoration programme**. Retrieved from <https://www.doc.govt.nz/our-work/freshwater-restoration/arawai-kakariki-wetland-restoration/>.

<sup>25</sup> The Ōtūwharekai Working Group comprises farmers in the area, ECan, DOC, Land Information New Zealand (LINZ), Te Rūnanga o Arowhenua, Te Ngāi Tūāhuriri Rūnanga, Te Taumutu Rūnanga, Te Rūnanga o Ngāi Tahu, Ashburton District Council, Central South Island Fish and Game and the Ministry for Primary Industries. The Ministry for the Environment participates as an observer and has commissioned some of the research and modelling.

<sup>26</sup> David Kelly, Lisa Floerl, Paula Cassanovas (2021) **Updating CLUES nutrient load predictions for Ashburton Basin and Waimakiriri high country lakes**. *Cawthron Report No. 3589*. Prepared for Department of Conservation and Environment Canterbury. Cawthron Institute. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4217986>

<sup>27</sup> Tina Bayer, Adrian Meredith, Tom Drinan, Hugh Robertson (2021) **CLUES Nutrient Load Predictions for the Ashburton Basin Lakes – 2021 Cawthron report – Supplementary Memorandum**. Environment Canterbury, June 2021. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4219613>.

<sup>28</sup> Yvonne Matthews (2022) **Ōtūwharekai Potential Actions: Task 4 – Cost Effectiveness Analysis**. *Client Report 2022367HN*. Prepared for Environment Canterbury, December 2022. National Institute for Water and Atmospheric Research Ltd.

# Summary of core findings

Several intersecting vulnerabilities in the freshwater management system led to insufficient protection of the lakes. The main vulnerabilities included the following factors.

- **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.** Phosphorous 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).<sup>29</sup> While Plan Change 7 contains

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<sup>29</sup> David Kelly, Hugh Robertson, Craig Allen (2014) **Nutrient loading to Canterbury high-country lakes for sustaining ecological values.** *Cawthron Report NO. 2557.* Prepared for Department of Conservation and Environment Canterbury. Retrieved from <https://api.ecan.govt.nz/TrimPublicAPI/documents/download/2993014>

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.

Work to address some of the system vulnerabilities is now underway. ECan, together with the Ōtūwharekai Working Group, is establishing the evidence base required for better limits and is working with the farmers on actioning non-regulatory measures.

ECan, along with other regional and unitary councils, is on a tight timeframe to update the freshwater provisions of its plan by 2024, to give full effect to the NPS-FM 2020 as well as the National Environmental Standards for Freshwater (NES-F) 2020 and other freshwater regulations. The NPS-FM 2020 provides clear direction on setting waterbody target states and resource limits (rules). For additional clarity, the Ministry has produced guidance on how to implement these national policies and regulations. Further guidance will outline the expectations around limit setting and provide advice on appropriate control options. This guidance will include the need to consider whether simpler, more direct measures, including input, activity and land use controls, might be more effective in sensitive catchments such as Ōtūwharekai.

The new national Freshwater Farm Plan (FWFP) system has similarities to the ECan FEP system. The Ministry is working to build in more safeguards against the risks identified in the FEP regime. Learnings from this case study relating to farm plans, data systems and nutrient tools will be passed to the relevant teams, to ensure they are considered in the system design and implementation.

Opportunities exist within the resource management reform programme of work to consider how council consenting and planning could more rapidly and flexibly respond to unexpected environmental outcomes.

# Regulatory system put in place to manage the lakes

There are no regulatory provisions specifically tailored for the lakes. Before 2004, the lakes were covered by the RMA's generic provisions for freshwater. From 2004 to 2012, the lakes came under the freshwater provisions of ECan's Natural Resources Regional Plan (NRRP). Since 2012, they have been covered by the generic Lake Zone provisions of the LWRP, which apply to all nutrient sensitive lakes in Canterbury. The lakes are also subject to the lake surface activity and vegetation clearance rules in the Ashburton District Plan 2014. Two farms in the catchment are managed under pastoral leases and are subject to land use permits issued by LINZ. Parts of the catchment are Crown conservation land administered by DOC.

Figure 2 shows the main elements of a freshwater planning system on the left and the Ōtūwharekai/Ashburton Lakes freshwater planning system on the right.

## Statutory instruments

### Resource Management Act 1991

The RMA's core components include sustainable management, integrated resource management, devolved decision-making, public participation, a preference for 'effects-based' (rather than activity or inputs based) rules, and the use of guiding principles and policies to frame those rules.

For freshwater, section 15 of the RMA states that no person may discharge any contaminants unless the discharge is expressly allowed by a national environmental standard or other regulation, a rule in a regional plan, or a resource consent. Where a discharge or an activity that generates discharge is not permitted in a plan, the RMA enables councils to permit it on a bespoke basis via a resource consent. If consent is granted, it is usually on condition that the consent-holder avoids, remedies, or mitigates the effects that the council is seeking to control. As interpreted in case law, consents must be granted on a 'first come first served' basis.<sup>30, 31</sup>

Recent amendments to the RMA established a freshwater planning process (FPP) and require all regional councils, by December 2024, to notify freshwater plans that give effect to the 2020 NPS-FM.<sup>32</sup>

Additionally, resource management reform is currently underway to address many of the recognised limitations of the RMA. These reforms include moving from an effects-based system to an outcomes-based system that helps consider and manage the cumulative impact of effects from multiple individual consents.

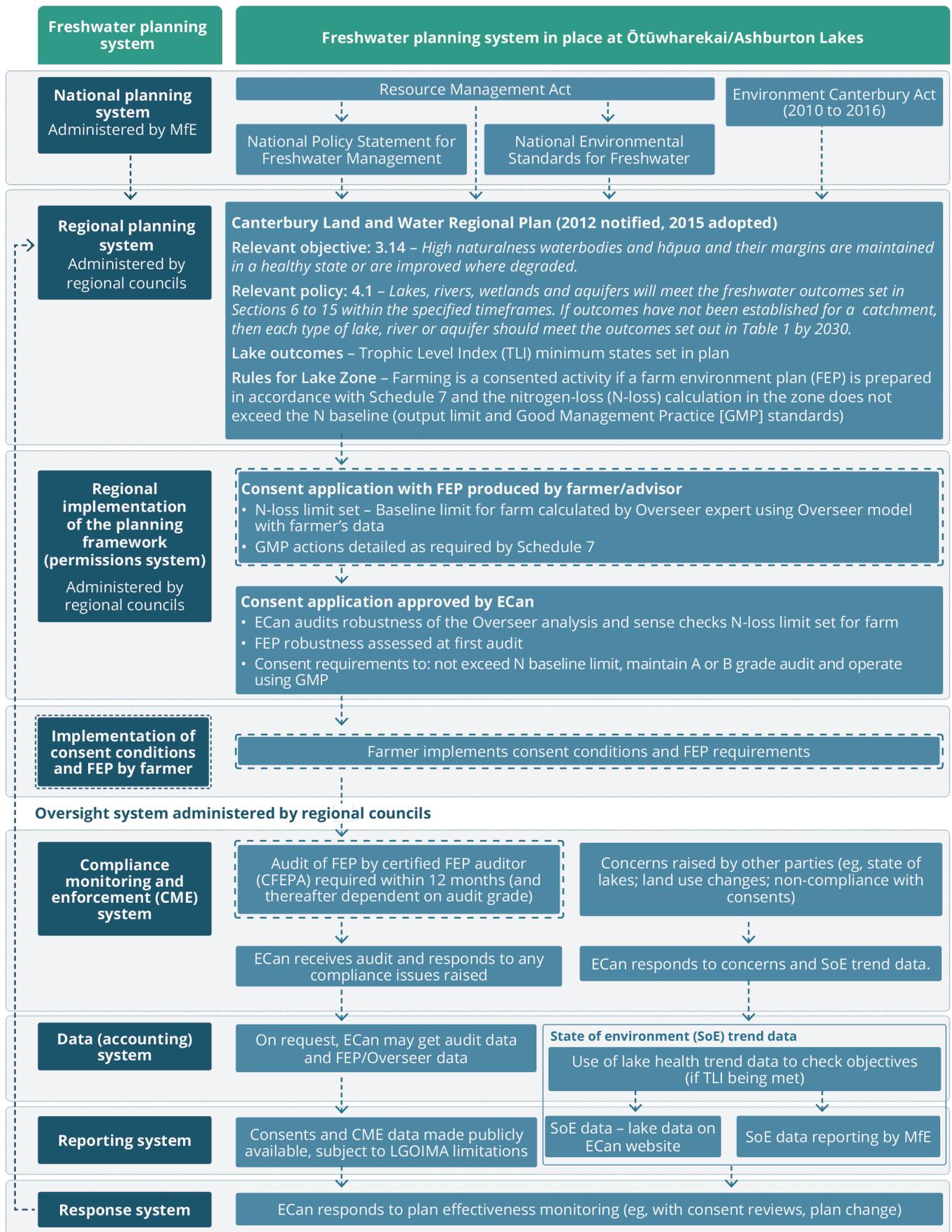
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<sup>30</sup> Mike Doesburg (2022) **Under the covers of RMA reform – changes to planning, consenting and much more.** *Insight* 16 November 2022. Retrieved from <https://www.wynnwilliams.co.nz/insights/environment-and-planning/under-the-covers-of-rma-reform-changes-to-planning-consenting-and-much-more/>.

<sup>31</sup> Philip Milne (2005) **Allocation of Public Resources under the RMA: Implications of Aoraki Water Trust v Meridian.** *2005 Salmon Lecture*. Retrieved from [https://www.rmla.org.nz/wp-content/uploads/2016/09/milne\\_salmon05.pdf](https://www.rmla.org.nz/wp-content/uploads/2016/09/milne_salmon05.pdf).

<sup>32</sup> Resource Management Act 1991 (as at 28 September 2022), Subpart 4—Freshwater planning process – New Zealand Legislation.

**Figure 2: Elements of the regional freshwater management system in place for Ōtūwharekai/Ashburton Lakes**



**Note:** The boxes surrounded by a dashed line above show the steps carried out by the farmer, farm advisor or CFEPA.

## Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010

From 2010 to 2016, ECan was governed by commissioners appointed under the ECan Act. This Act, among other things, directed ECan to address the efficient, effective and sustainable management of freshwater in the Canterbury region. It also required ECan to have particular regard to the vision and principles of the Canterbury Water Management Strategy 2009 (CWMS) when developing or amending a regional policy statement (RPS) or plan.<sup>33</sup>

The ECan Act exempted ECan from some RMA Schedule 1 appeal provisions by limiting the grounds for appeal to points of law, thereby excluding any appeals on matters of substance. For the LWRP, and its predecessor, the NRRP, this resulted in a small number of appeals to the High Court and none to the Environment Court, enabling the plans to be adopted relatively quickly after the notification of their decision versions.

## National Direction 2011, 2014, 2017 and 2020

The first NPS-FM was published in 2011 and was replaced in 2014. The 2014 version was amended in 2017 and then replaced in 2020. The NPS-FM contains specific objectives directing councils to manage the over-allocation of water, both the quantity abstracted and the excessive discharge of contaminants. They are to do this by setting objectives, targets, policies and rules for each of the region's Freshwater Management Units (FMUs).

The timeframes for notification and adoption of the RPS and LWRP did not allow for full incorporation of the NPS-FM requirements because the 2014 version was published after the RPS had been adopted and when the LWRP was nearing adoption. Subsequent amendments to the LWRP (PC1 to PC7) have incrementally aligned parts of it with the recent versions of the NPS-FM.<sup>34</sup> To be fully consistent with the NPS-FM by 2024, a full plan review is needed to update the objectives, targets, policies and rules, and include the hierarchy of obligations under Te Mana o te Wai, which prioritise freshwater health and ecosystems over human activities.

## Regional planning measures

From 1991 to 2004, freshwater in Canterbury was managed directly under the RMA. ECan granted or refused consents as they came in. This method did not address cumulative effects, resulting in both abstraction and discharge over-allocation in many catchments.<sup>35</sup>

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<sup>33</sup> Section 63 of the [Environment Canterbury \(Temporary Commissioners and Improved Water Management\) Act 2010](#).

<sup>34</sup> David F Sheppard, Robert van Voorthuysen, Raewyn Solomon (2021) **Report and Recommendations of the Hearing Commissioners in the Matter of Proposed Plan Change 7 to the Canterbury Land and Water Regional Plan and Plan Change 2 to the Waimakariri River Regional Plan** (pp 23 and 33–37). Retrieved from <https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-land-and-water-regional-plan/change-7/>.

<sup>35</sup> Bryan Jenkins (2007) **Water allocation in Canterbury**. New Zealand Planning Institute Conference 2007. Retrieved from [https://www.researchgate.net/publication/341094870\\_WATER\\_ALLOCATION\\_IN\\_CANTERBURY](https://www.researchgate.net/publication/341094870_WATER_ALLOCATION_IN_CANTERBURY).

## Natural Resources Regional Plan (notified 2004, adopted 2011)

The proposed NRRP, drafted by ECan between 1998 and 2004, had a large and complex freshwater chapter in which the rules and requirements to reduce over-allocation of nutrient outputs and water lacked an over-arching vision and strategy.<sup>36</sup> In the seven years between its notification, which attracted 800 submissions, and eventual adoption, decisions “were delayed by conflicts and an almost insatiable desire for more information upon which to base any decision”.<sup>37</sup>

Following the ECan Act 2010, the NRRP was adopted in June 2011. A month later, the NPS-FM 2011 arrived requiring a new strategic approach to freshwater management. The NRRP was reviewed, deemed not fit-for-purpose, and the decision was made to prepare a new plan, the LWRP.<sup>38</sup>

## Canterbury Water Management Strategy 2009

The CWMS was initiated in 1999 by ECan (with support from the Ministry for the Environment and Ministry for Primary Industries) as a research project on the region’s irrigation potential. It was developed into a strategy by the Canterbury Mayoral Forum in the hope of making progress on freshwater allocation while the NRRP was caught up in conflict and delays. To avoid similar impediments, the Forum used a collaborative process that was facilitated by ECan and involved Ngāi Tahu and a wide range of stakeholder and community groups.

The CWMS was adopted in 2009 by all the councils as a non-statutory blueprint for managing water by working collaboratively through catchment-based zone committees. It acquired temporary regulatory weight when the ECan Act 2010 required ECan to have particular regard to its vision and principles during the period when the LWRP was being drafted and approved.<sup>39</sup>

Those principles include “first order priority considerations: the environment, customary uses, community supplies, and stock water” and “second order priority considerations: irrigation, renewable electricity generation, recreation, tourism and amenity”.<sup>40</sup> They also include the principle of ‘parallel development’. This seeks to achieve multiple outcomes simultaneously – economic, social, cultural and environmental – and, where that is not possible, allows ‘reasonable trade-offs after first order priorities are met’.

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<sup>36</sup> MG Miller and A Veltman (2004) Proposed Canterbury Natural Resources Plan for river and groundwater allocation policies and the implications for irrigation dependent farming in Canterbury. *Proceedings of the New Zealand Grassland Association* 66: 11–23. Retrieved from <https://www.nzgajournal.org.nz/index.php/ProNZGA/article/download/2559/2187/3952>.

<sup>37</sup> Peter Constantine, Paul Whyte, Matthew McCallum-Clark, Angela Fenemor (2014) **Integrated land and water planning in a challenging environment**. New Zealand Planning Institute website. Retrieved from [https://planning.org.nz/Attachment?Action=Download&Attachment\\_id=3108](https://planning.org.nz/Attachment?Action=Download&Attachment_id=3108).

<sup>38</sup> Peter Constantine, Paul Whyte, Matthew McCallum-Clark, Angela Fenemor (2014) **Integrated land and water planning in a challenging environment**. NZ Planning Institute website. Retrieved from [https://planning.org.nz/Attachment?Action=Download&Attachment\\_id=3108](https://planning.org.nz/Attachment?Action=Download&Attachment_id=3108).

<sup>39</sup> Section 63 of the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010.

<sup>40</sup> Canterbury Mayoral Forum (2009) **Canterbury Water Management Strategy – Strategic Framework**. (November 2009). Retrieved from: <https://www.ecan.govt.nz/document/download?uri=3701242>.

Today, the CWMS sits alongside the LWRP outlining various non-statutory freshwater goals and projects. It was updated in 2019, with goals added for 2025 and 2030. ECan's 2021 progress report on the CWMS goals identified that two out of more than 30 had been met.<sup>41, 42</sup>

## Regional Policy Statement 2013

The RPS provides the policy settings for regional and district plans and strategies. Following ECan's adoption of the CWMS 2009, and the directions of the ECan Act 2010 and NPS-FM 2011 to, respectively, have regard to the CWMS and address over-allocation, the Canterbury RPS was adopted in 2013 to provide the policy framework for this. Its principles included community collaboration and parallel development.<sup>43</sup> At the same time, work was underway to replace the NRRP with a new plan.

## Land and Water Regional Plan 2015

The LWRP was notified in 2012 and adopted in 2015. It was conceived of as a 'holding plan'<sup>44</sup> to prevent further freshwater degradation throughout the region while catchment-level evidence-gathering and consultation were undertaken to inform more targeted plan changes. To date, it has been amended seven times, including Plan Change 7 (for nutrient management). This was notified in 2019, and adopted in late 2021, but is still under appeal.

The LWRP was Canterbury's first strategic freshwater plan and was innovative for its time, setting targets and limits as well as tools and processes for achieving them. For the first time, farmers had to obtain a resource consent for their diffuse discharges, something implied by section 15 and section 70 of the RMA, but rarely put into practice by regional councils.

The LWRP explicitly incorporated many CWMS concepts, including parallel development and reasonable trade-offs, relabelled as 'parallel process' and 'gifts and gains'.<sup>45</sup> The plan also included strategically grounded objectives and policies, and collaborative water management through 10 zone-based advisory committees comprising regional and district council, community and iwi representatives.

The LWRP divides Canterbury into 10 freshwater management zones, or subregions, which roughly correspond to district boundaries. Overlaying these are six nutrient allocation zones, coloured areas on the map grouping catchments with similar nutrient contamination vulnerabilities. One of these, the Lake Zone, encompasses sensitive lake catchments including the Ōtūwharekai/Ashburton Lakes.

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<sup>41</sup> ECan (2021) **Measuring CWMS Progress**. Environment Canterbury: Christchurch. Retrieved from: <https://www.ecan.govt.nz/your-region/your-environment/water/measuring-cwms-progress/>.

<sup>42</sup> Amber Allott (2021) **Canterbury meets just two of more than 30 water quality goals set a decade ago**. *Stuff* 6 September 2021. Retrieved from: <https://www.stuff.co.nz/environment/126272898/canterbury-meets-just-two-of-more-than-30-water-quality-goals-set-a-decade-ago>.

<sup>43</sup> ECan (2013) **Canterbury Regional Policy Statement 2013**. Environment Canterbury: Christchurch (see explanation p 101). Retrieved from: <https://www.ecan.govt.nz/document/download?uri=4218008>.

<sup>44</sup> Peter Constantine, Paul Whyte, Matthew McCallum-Clark, Angela Fenemor (2014) **Integrated land and water planning in a challenging environment**. NZ Planning Institute website. Retrieved from [https://planning.org.nz/Attachment?Action=Download&Attachment\\_id=3108](https://planning.org.nz/Attachment?Action=Download&Attachment_id=3108).

<sup>45</sup> ECan (2018) **Canterbury Land and Water Regional Plan – Vol 1**. Environment Canterbury: Christchurch. Retrieved from: <https://www.ecan.govt.nz/document/download?uri=3552692> (see discussion on p 27).

The Lake Zone policies include outcome states for lakes, which vary according to the lake's trophic status and must be met or bettered by 2030, the default timeframe for all LWRP outcomes unless otherwise specified. These minimum outcomes for lakes are not being met at Ōtūwharekai/Ashburton Lakes.

From 2012 to 2013, farming in the Lake Zone was a permitted activity for existing farms, provided certain conditions were met. These included keeping a record of the farm's estimated N-losses, as calculated by Overseer, and having an externally audited FEP containing an N-loss limit based on the estimated average N-loss from the Lake Zone parts of the farm during 2009 to 2013 (the baseline N-loss rate).

From 2013 to mid-2019, farming in the Lake Zone became a controlled activity requiring a resource consent. Councils must grant a controlled activity consent but may attach conditions to it. In this case, the consent conditions were similar to the permitted activity conditions, centred on FEPs, GMP and the N-loss limit. Then, in July 2019, as a result of Plan Change 5, farming in the Lakes Zone became a restricted discretionary activity (see next section).

ECan officers interviewed for this report have indicated that hard choices had to be made when sequencing the plan change programme for setting more accurate and specific targets and limits in each FMU. Based on the intensification risks, ECan prioritised the Plains first and the over-allocated areas (ie, red zones). However, ECan staff consider that achieving the new targets and limits with the currently available set tools will be challenging. They expect only incremental improvements and consider that new economic tools are required. These could sit alongside the planning framework to support landowners in transitioning to more sustainable land uses.

## Implementation of regional planning measures

### Consenting

Since July 2019, farming in the Lake Zone has been a restricted discretionary activity. This gives ECan the option of approving or declining any new consent applications, unlike the previous controlled activity consents. All of the Ōtūwharekai/Ashburton Lakes consenting occurred pre-2019 and were controlled activity consents.

The new consent requirements are similar to the pre-2019 ones with the additional requirement that farmers must recalculate their N-loss limit to reflect what the baseline N-loss rate might have been under GMP. The consents also require each farm to: (1) operate in accordance with their FEP, (2) maintain an A or B audit grade for their FEP, and (3) configure their farm system in a way that does not result in their N-loss limit being exceeded.

At present, only two of the Ōtūwharekai/Ashburton Lakes farms have current consents ([table 1](#)). A third is farming under a recently expired consent while awaiting a council decision on its new consent application. The fourth is farming without a consent while awaiting a decision on its 2018 application.

**Table 1: Ōtūwharekai/Ashburton Lakes consent (including Farm Environment Plan (FEP)) and consent compliance status**

Station	Consent details	Status	Audit
Mount Possession Station CRC180059	Resource consent granted September 2018	Consented Issued-active 7-year duration Expires 30 June 2025	2x consecutive independent FEP audits (A Grade)
Mt Arrowsmith Station CRC166953	Resource consent granted May 2016	Consented Issued-active 15-year duration Expires May 2031	2x consecutive independent FEP audits (A Grade)
Castleridge Station CRC213738	Expired Renewal application lodged Section 124 continuance in place	Expired on 19 September 2021, being continued under s124	2x consecutive independent FEP audits (A Grade)
Lake Heron Station CRC190617	Resource consent lodged on 30 July 2018	The application has been on s92 hold since 19 June 2020	No independent audit of FEP has occurred because consent application has not yet been considered and decided. Recent on-farm assessment by ECan staff indicates high likelihood of compliance with FEP audit programme.

## Farm Environment Plans

The FEP system at Ōtūwharekai/Ashburton Lakes is the same as that used throughout Canterbury to manage on-farm environmental risks to water quality and biodiversity and, since 2017, mahinga kai (as a result of a Ngāi Tahu submission on Plan Change 5). Through the FEP, the farmer and their FEP consultant set out a programme of GMPs tailored to each property's local climate and soils, farming operation, resource consent or environmental management strategy requirements, and the goals and aspirations of the land user.<sup>46</sup>

Schedule 7 of the LWRP requires FEPs to specify GMPs that are consistent with the objectives and targets of the Schedule and to comply with the farm N-loss limit. FEPs are authored by farmers and/or their advisors and submitted to ECan alongside their consent application. While the GMP actions committed to in an FEP are selected from those prescribed in Schedule 7, the actions and farm inputs used to comply with N-loss limits and these GMP requirements are largely determined by the farmer and their FEP consultant.<sup>47</sup>

To meet the conditions of the rule, the consent applicant must provide, with their consent application, a completed FEP on an approved Schedule 7 template. ECan officers have advised

<sup>46</sup> ECan (2020) **Canterbury Certified Farm Environment Plan Auditor Manual**. Environment Canterbury: Christchurch. Retrieved from: <https://www.ecan.govt.nz/your-region/farmers-hub/fep/information-for-auditors/>

<sup>47</sup> From comments made by ECan staff interviewed on 15 Feb 2022 by the Ministry team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rolinson).

that the consenting process confirms the validity of the information within the FEP but does not assess the robustness or sufficiency of the FEP.<sup>48</sup>

On receiving a consent application, the council officer's role is to carry out a desktop assessment of whether the FEP is consistent with Schedule 7. The assessment of FEP content for robustness or sufficiency (eg, risk identification, enforceability of FEP actions) is made during the first FEP audit by a certified FEP auditor (CFEPA), who is contracted by the farmer.<sup>49</sup> ECan officers advised they rarely ground-truth the adequacy of an FEP before granting consent because the determination and expertise of the CFEPAs is accepted.<sup>50</sup>

Farmers can make changes to their FEP at any time after they have received their consent to respond to changes in circumstances and the environmental risk profile on farm. Any changes must be within the scope of Schedule 7, which their consent specifies. These changes are not reviewed or signed off by ECan. Any assessment of their robustness or compliance with the LWRP is undertaken at the next audit. Farmers choose their own auditors from a pool of accredited auditors.<sup>51</sup> The three consented farms at Ōtūwharekai/Ashburton Lakes have all received A-grade audits.

## Nitrogen-loss limit

Schedule 7 of the LWRP requires that all FEPs must contain an Overseer-derived N-loss limit for those parts of the farm that fall within the Lake Zone (and any other nutrient allocation zone).

This was intended as an interim, 'hold the line' limit to prevent further intensification until more effective, catchment-specific, limits and targets were developed and introduced through plan changes.

Being based on past practice, rather than on ecological requirements, the Lake Zone farm N-loss limits do not correspond to the LWRP's lake outcomes and targets nor to the catchment's sustainable nitrogen load (ie, the maximum N-loss from land to water that the lakes can tolerate without a decline in their ecological health or water quality).

Instead, the limit corresponds to the farm's estimated average N-loss, within its Lake Zone areas, during the baseline period of 2009 to 2013. This period was chosen because earlier periods had too little information on which to base an N-loss calculation.<sup>52</sup>

At the Ōtūwharekai/Ashburton Lakes, the decline in lake quality was already underway before this period. The period also happened to be the culmination point of two decades of gradually increasing livestock production, when N-loss would have been at a historical high point. It

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<sup>48</sup> From comments made by ECan staff interviewed on 15 Feb 2022 by the Ministry team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rolinson).

<sup>49</sup> ECan (2020) **Canterbury Certified Farm Environment Plan Auditor Manual**. Environment Canterbury: Christchurch. Retrieved from: <https://www.ecan.govt.nz/your-region/farmers-hub/fep/information-for-auditors/>

<sup>50</sup> From comments made by ECan staff interviewed on 15 Feb 2022 by the Ministry team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rolinson).

<sup>51</sup> From comments made by ECan staff interviewed by the Ministry team on 23 Feb 2022 (Alison Grayston, Rowan Taylor, James Rolinson).

<sup>52</sup> From comments made by former Land and Water Regional Plan lead planner, Peter Constantine, interviewed by Ministry staff on 1 November 2022 (Rowan Taylor).

follows that any output limit based on the average N-loss in this period was ‘holding the line’ at a level that exceeded earlier N-loss levels and was already harming the lakes.

The Overseer modelling used in calculating the limit is generally conducted by experts employed by the farmer. It is informed by the farmer’s records, recollections and estimates of historic farm inputs and practices within the Lake Zone parts of the farm before the zone existed.

ECan officers have indicated that the council conducts a sense check of the input data used to populate the Overseer model (eg, stocking rates, fertiliser rates, grazed area) but does not usually undertake a comprehensive check for its accuracy.

From July 2019, Plan Change 7 requires the N-loss limit in any new consent application to be adjusted to approximate what the N-loss rate (in the Lake Zone parts of the farm) might have been if prescribed GMPs had been used from 2009 to 2013.

This adjusted rate, which is referred to as the Baseline GMP Loss Rate, has yet to be implemented in the Ōtūwharekai/Ashburton Lakes consents but will be brought in as the consents are reviewed or replaced. Importantly, this GMP adjustment is not linked to, nor likely to produce, the 67 per cent to 99 per cent nitrogen load reductions required to meet lake outcomes.

Furthermore, until Plan Change 7, there was no in-lake target, catchment contaminant limit for phosphorus loads to the lakes, or any specific rules or limits at farm level, despite phosphorus being a powerful catalyst for algal growth in the presence of nitrogen. Plan Change 7 introduced rules to “actively manage” and “minimise” phosphorus loss (P-loss) through farm plans but sets no catchment load limit or farm level phosphorus limit. A farm level P-loss limit is generally not considered practical. However, without some measure of phosphorus load, it is not possible to know if, or to what extent, these measures are actually limiting phosphorus loss. Large reductions in phosphorus loads are estimated to be required for several Ōtūwharekai lakes to meet their LWRP objectives for algal biomass (chlorophyll a).<sup>53</sup>

## Overseer

The Overseer nutrient modelling tool is the main means by which nitrogen loss is estimated in the LWRP. It is used to both set farm N-loss limits and demonstrate compliance with those limits for the FEP audit. ECan compliance staff confirmed that Ōtūwharekai/Ashburton Lakes farms have remained compliant with their Overseer-derived N-loss limits. The averaging function in Overseer allows N-loss to be spread across a farm system or nitrogen allocation zone meaning a farmer can intensify areas within the farm boundary, provided deintensification occurs elsewhere on the farm without breaching average N-loss limits.

The Ōtūwharekai/Ashburton Lakes consents were some of the first land use consents to be issued under the LWRP. ECan officers have indicated that, over time, the assessment of consent applications elsewhere in the region has become more sophisticated and applicants are generally asked to demonstrate localised effects, not just the average N-loss.

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<sup>53</sup> David Kelly, Hugh Robertson, Craig Allen (2014) **Nutrient loading to Canterbury high- country lakes for sustaining ecological values**. *Cawthron Report NO. 2557*. Prepared for Department of Conservation and Environment Canterbury. Retrieved from <https://api.ecan.govt.nz/TrimPublicAPI/documents/download/2993014>

In response to the 2021 Overseer technical review,<sup>54</sup> ECan now uses an alternative inputs-focused approach to assessing compliance with the N-loss limit. Key farm inputs known to influence N-loss (eg, stocking rate and cropping area) are used to indicate any risk of the nitrogen limit being breached, triggering further scrutiny at audit.

ECan continues to require Overseer nutrient budgets for regulatory purposes, including N-loss auditing. It is also using Overseer as a non-regulatory farm decision support tool to help farmers identify high-risk activities near the lakes and determine appropriate mitigations.

## Compliance and farm environment plan audit

FEP and consent compliance is mainly assessed during an FEP audit. CFEPAs engaged by the landowner or farmer undertake an audit of a farm's adherence to the actions specified in its FEP and the N-loss baseline limits at scheduled intervals. Auditors are required to report any significant non-compliance or gross pollution events to ECan.

Once an audit is completed, the audit grade, and in some instances the audit report, is provided to ECan by the auditor. Should a low audit grade be received, or compliance issues identified, ECan follows a mainly engagement and education approach. Should a second low grade occur, ECan may take more direct enforcement action.

The FEP audit process does not preclude ECan from undertaking onsite consent compliance monitoring, and ECan can take enforcement action at its discretion independent of the FEP auditing process. However, ECan staff have indicated this does not generally happen because the consent mechanism gives them insufficient grounds to investigate unless an auditor recommends further investigation (ie, consents require little more than a certified farm plan and an N-loss limit).<sup>55</sup> Additionally, were council officers to investigate N-loss compliance, they would find that the averaging function in Overseer makes it hard to detect any potential N-loss spikes or hotspots on intensively farmed parts of the Lake Zone.

## System monitoring and reporting

### State of the Environment data

In 2005, ECan began an annual high-country lakes sampling programme that includes lake water quality monitoring at Ōtūwharekai/Ashburton Lakes. DOC also monitors some biota in the lakes and water quality in the main tributaries leading into the lakes. The water quality results are published regularly on ECan's website, the Land, Air, Water Aotearoa website and a website hosted by DOC.<sup>56</sup>

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<sup>54</sup> Science Advisory Panel (2021) **Overseer Whole-Model Technical Review: Assessment of the Model Approach**. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/46360-Overseer-whole-model-review-Assessment-of-the-model-approach>.

<sup>55</sup> From comments made by ECan compliance, monitoring and enforcement officer interviewed by the Ministry in February 2022 (Joseph Edlin, Rowan Taylor, Claire Graeme).

<sup>56</sup> ECan (2022) **Water quality data**. Environment Canterbury: Christchurch. Retrieved from: <https://www.ecan.govt.nz/data/water-quality-data/> Also: DOC website containing ECan, DOC data. Retrieved from: <https://doc-app-dong.shinyapps.io/Water-Quality/>.

## Regulatory and compliance data

The original consents and farm plans, together with audit grades, are available on ECan's website, but updated farm plans and the content of audit reports and OverseerFM information on nitrogen losses are not.

## Land use trend data

Land use trends are not monitored. While Overseer collects farm-level input and land use data (eg, fertiliser and stocking rates), this has not been used to assess land use trends and only recently includes a geographic information system component enabling the location of land use change to be identified. In 2020, ECan undertook a one-off review of high-country land use<sup>57</sup> using 1980s ecology survey maps and various other geographic information system sources, including recent satellite photos. The review found that land use changes have occurred to varying degrees throughout the high country, including Ōtūwharekai/Ashburton Lakes.

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<sup>57</sup> Philip Grove, Mark Parker, Tina Bayer, Duncan Gray (2021) **Agricultural land use change in mid-Canterbury hill and high country, 1990–2019: Implications for indigenous biodiversity and ecosystem health**. Environment Canterbury Report No. R20/62. Retrieved from <https://api.ecan.govt.nz/TrimPublicAPI/documents/download/4017664>.

# Analysis

The direct cause of decline in the Ōtūwharekai/Ashburton Lakes is too many nutrients entering the lakes from the surrounding land. Over 95 per cent of this is due to leaching and run-off from land use practices on the adjacent pastoral farms.<sup>58, 59, 60</sup> A suspected additional source at Lake Clearwater and Lake Camp may be seepage from lakeside toilets and campsites. This may account for around 3 per cent of the nitrogen load to Lake Clearwater.<sup>61</sup> A minor source at Lake Emma and Lake Emily is waterfowl waste.<sup>62, 63</sup>

The effects of these pressures are increased by the nature of the lakes themselves. Being generally shallow and nutrient poor, with slow flush rates, the Ōtūwharekai/Ashburton Lakes are highly sensitive and vulnerable to any land use changes.

This Ministry analysis focuses on the components of the resource management system that have enabled the direct pressures to persist despite the relevant regulations aiming to prevent adverse environmental effects. In setting the context, however, those interviewed for this report have also identified several indirect pressures that may have either encouraged or inadequately constrained the in-catchment pressures.

These indirect pressures were not adequately countered by the regional freshwater management system nor the national system in place at the time. While these other influences should not be viewed as mitigating circumstances, they provide broader context and an understanding of the complex set of drivers at play. They include the following.

- **Competing government and economic priorities**, for example, the Government's 2014 'export double by 2025' goal for the agricultural sector and, related to this, the growth policies that regional and local councils were trying to balance with their resource management roles.
- **Multiple agencies with responsibilities in the catchment.** In addition to ECan, several other agencies also have responsibilities for land management at Ōtūwharekai/Ashburton Lakes including DOC, LINZ and the ADC.

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<sup>58</sup> Chris C Tanner, James PS Sukias (2022) **Ōtūwharekai Potential Actions: Task 3 – Catchment Interventions**. National Institute of Atmospheric and Water Research Ltd. Client Report 2022360HN. Prepared for Ministry for the Environment and Environment Canterbury.

<sup>59</sup> David Kelly, Lisa Floerl, Paula Cassanovas (2021) **Updating CLUES nutrient load predictions for Ashburton Basin and Waimakiriri high country lakes**. *Cawthron Report No. 3589*. Prepared for Department of Conservation and Environment Canterbury. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4217986>

<sup>60</sup> Tina Bayer, Adrian Meredith, Tom Drinan, Hugh Robertson (2021). **CLUES Nutrient Load Predictions for the Ashburton Basin Lakes – 2021 Cawthron report – Supplementary Memorandum**. Environment Canterbury, June 2021. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4219613>.

<sup>61</sup> Chris C Tanner, James PS Sukias (2022) **Ōtūwharekai Potential Actions: Task 3 – Catchment Interventions**. National Institute of Atmospheric and Water Research Ltd. Client Report 2022360HN. Prepared for Ministry for the Environment and Environment Canterbury.

<sup>62</sup> David Kelly, Lisa Floerl, Paula Cassanovas (2021) **Updating CLUES nutrient load predictions for Ashburton Basin and Waimakiriri high country lakes**. *Cawthron Report No. 3589*. Prepared for Department of Conservation and Environment Canterbury. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4217986>

<sup>63</sup> Tina Bayer, Adrian Meredith, Tom Drinan, Hugh Robertson (2021) **CLUES Nutrient Load Predictions for the Ashburton Basin Lakes – 2021 Cawthron report – Supplementary Memorandum**. Environment Canterbury, June 2021. Retrieved from <https://www.ecan.govt.nz/document/download?uri=4219613>.

- **The Government’s tenure review process from 1998 to 2022. According to LINZ:**

Tenure review is associated with land use intensification, primarily because the tenure review has usually resulted in retiring about 50% of the lease as it is transferred to the conservation estate (often at the higher elevations) and freeholding lower elevation land that is capable of more intensive economic use.<sup>64</sup>

This is what occurred in parts of the Ōtūwharekai/Ashburton Lakes catchment. However, intensification also occurred on pastoral lease land, so tenure review was not the only driver.

- **The prevailing case law and national direction.** The LWRP was developed before the King Salmon decision<sup>65</sup> and before the elevation of Te Mana o te Wai to be the overarching principle of national freshwater policy. Like other councils, ECan was still taking the ‘overall broad judgement’ and balancing approach by referring back to the purpose and principles in Part 2 of the RMA when interpreting and applying national policy statements (an approach reinforced in the CWMS). ECan embedded this in the LWRP as the ‘parallel process’ principle, which aimed to simultaneously provide for environmental, economic, social and cultural wellbeing. This approach was carried through to consenting decisions.

This report’s purpose is specifically to identify if any systemic issues exist within the remit of the Minister for the Environment and the Ministry that require attention, given the Government’s objective to turn water quality around.

Figure 3 highlights the likely points of vulnerability that were identified in the freshwater management system (refer to Figure 2 for full freshwater system planning detail).

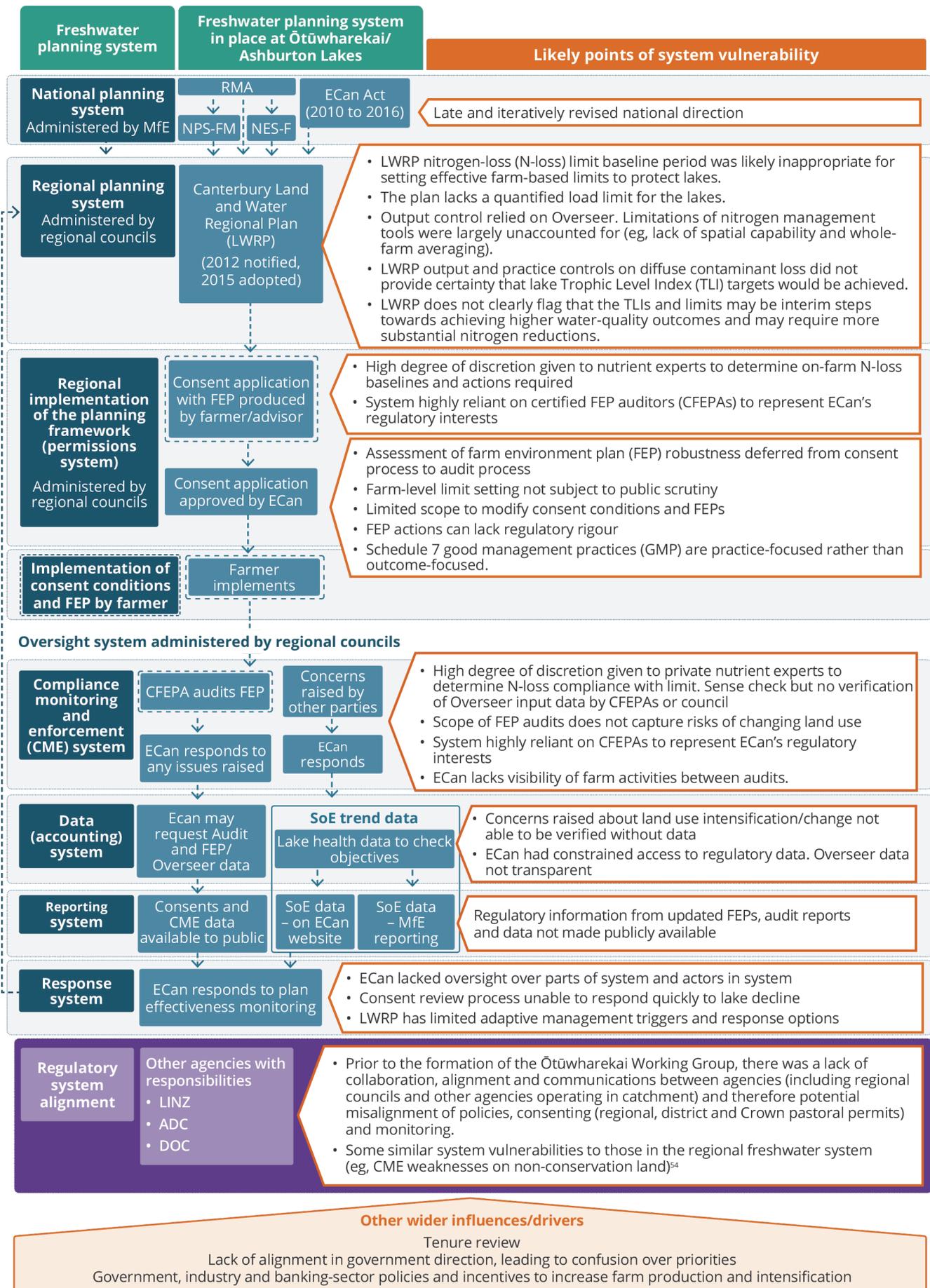
Table 2 details these vulnerabilities and assesses whether the Essential Freshwater reforms address them, it notes where local actions may do so and recommends actions for the Ministry to address system vulnerabilities that may persist.

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<sup>64</sup> LINZ (2019) **Crown Pastoral Land Regulatory System – Regulatory System Assessment**. Toitū Te Whenua – Land Information New Zealand. Retrieved from <https://www.linz.govt.nz/resources/research/crown-pastoral-land-regulatory-system-regulatory-system-assessment>.

<sup>65</sup> **Environmental Defence Society Incorporated v The New Zealand King Salmon Company Limited & Ors** (17 April 2014) *NZSC 38, [2014] 1 NZLR 593*. The King Salmon decision was a significant Supreme Court judgment from 2012 that found that, when developing regional policy statements, regional plans or district plans, RMA decision-makers must implement relevant, clear and directive provisions of national policy statements as they are written, and must not exercise their “overall judgment” to balance those provisions against the purpose and principles in Part 2 of the RMA (even if intending to give effect to the national direction “as a whole”).

**Figure 3: Likely points of vulnerability in the freshwater management system in place at Ōtūwharekai/Ashburton Lakes**



**Table 2: Analysis of system vulnerabilities in the management of Ōtūwharekai/Ashburton Lakes and where further action is required**

<b>Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 (ECan Act)</b>
<p><b>Potential system vulnerabilities</b></p> <ul style="list-style-type: none"> <li>• The Resource Management Act 1991 (RMA) was the predominant legislation at the time, but the ECan Act was brought in and over-rode the plan-making provisions in Canterbury while it was in force. By restricting appeal rights, the ECan Act expedited the Land and Water Regional Plan (LWRP), but some we spoke to during compilation of this report were concerned it also removed an opportunity to address the plan’s vulnerabilities, such as the limit-setting method. Limiting appeals to points of law resulted in only 10 appeals, which enabled the LWRP to become operative before the ECan Act expired.</li> <li>• In requiring Environment Canterbury (ECan) to have regard to the Canterbury Water Management Strategy 2009 (CWMS), the ECan Act committed the LWRP to a collaborative process and to multiple-outcome freshwater objectives that, for Ōtūwharekai/Ashburton Lakes, were unable to be delivered through the plan’s methods, rules and tools (see below).</li> </ul>
<p><b>Check for carry-over of vulnerabilities post Essential Freshwater reform</b></p> <ul style="list-style-type: none"> <li>• The Freshwater Planning Process (FPP) is a streamlined planning process that, like the ECan Act, expedites the planning process by, among other things, omitting merit appeals.</li> </ul>
<p><b>Actions for Ministry for the Environment</b></p> <ul style="list-style-type: none"> <li>• Ministry officials to ensure checks and balances are in place in the current FPP system and to pass on reflections to the relevant RM reform team, given the planning provisions outlined in the Natural and Built Environment bill.</li> </ul>
<b>National direction</b>
<p><b>Potential system vulnerabilities</b></p> <ul style="list-style-type: none"> <li>• While the RMA enabled national direction, no National Policy Statements were in place for the first 20 years post-enactment. The lack of national direction to support RMA plans led to variable and slower establishment of regional planning frameworks. For ECan, the National Policy Statement for Freshwater Management (NPS-FM) 2011 version, which was in effect at the time the LWRP was developed, did not have the same clear hierarchy of obligations as the NPS-FM 2020. Updates to the NPS-FM, while an inevitable part of an evolving system, also may have hindered ECan’s ability to adaptively manage, review planning provisions, or complete roll-out programmes, as it adjusted its planning framework to meet the national direction updates. However, ECan was in a unique position to implement changes using the ECan Act and, as noted above, the CWMS also influenced the LWRP. Opportunities also existed to make changes to the LWRP protection measures for the lakes through updates to Plan Change 7 responding to the 2017 NPS-FM.</li> </ul>
<p><b>Check for carry-over of vulnerabilities post Essential Freshwater reform</b></p> <ul style="list-style-type: none"> <li>• The new freshwater planning process set out in the RMA requires freshwater components of plans to be notified by the end of 2024. This tighter deadline puts pressure on councils to produce freshwater limits but avoids continued delays in plans being produced and limits being set.</li> <li>• The latest NPS-FM 2020 and new National Environmental Standards for Freshwater (NES-F) 2020 provide a clearer and more directive national planning framework. Changes have been made to the current NES-F (eg wetlands and stock exclusion), but no plans are in place for an update to the NPS-FM, so a more stable planning framework is anticipated in the future.</li> <li>• The NBA process includes the National Planning Framework so that current national direction can be preserved through to the new system.</li> </ul>
<p><b>Actions for Ministry for the Environment</b></p> <ul style="list-style-type: none"> <li>• The Ministry has set up supporting functions for the FPP and released guidance on the NPS-FM and NES-F to support effective implementation. These focus on explaining the need to ensure that effective and location-appropriate limits are established that are well linked to target states, avoid cumulative effects and incremental over-allocation.</li> </ul>

## Regional planning framework

### Potential system vulnerabilities

- **‘Parallel process’ and ‘gifts and gains’.** The ECan Act’s requirement for ECan to have regard to the CWMS led to the LWRP adopting the ‘parallel process’ and ‘gifts and gains’ concepts for achieving multiple outcomes simultaneously and enabling trade-offs. Although the CWMS did have first order and second order priorities, as implemented through the LWRP output control (rules) regime, these did not translate into effective protection for the lakes.
- **Disconnect between rules and outcomes.** The LWRP has objectives and policies for maintaining or improving the naturalness of the region’s lakes, but the rules do not directly manage the significant pressures on the lakes (land use, stock numbers, farming intensity).
- **Nitrogen- (N-) load not specified.** The LWRP does not specify an N-load limit for protecting the lakes so does not signal the extent of N-loss reduction needed to achieve lake outcomes (which was not known when the LWRP was written). This means the farm N-loss limits are not calibrated to the lakes’ nitrogen capacity and cannot stop excessive N-loads from entering the lakes.
- **N-loss limit rule based on period of high farming intensity.** The LWRP requires farms to set an N-loss limit based on their estimated average annual N-loss in the Lake Zone parts of the farm during the baseline period of 2009 to 2013. This period was chosen on the assumption it would yield more reliable records and recollections of farm inputs and practices than for earlier years. However, this was also the period of high farming intensity at Ōtūwharekai/Ashburton Lakes, which means the high N-loss of that period is now locked into the farm N-loss limits, which, as acknowledged by ECan, are too high to drive the necessary reductions in farm N-loss.
- **Tool limitations not accounted for.** The LWRP rules related to farming brought in an outputs-based N-loss limit (using Overseer) and practice controls based on good management practices (GMP). The limitation of these tools to drive actions on-farm to achieve the N-loss limits appears to be insufficiently accounted for, and the tools’ assumed level of effectiveness unjustified. The N-loss limit rule was the main lever to control nitrogen losses. However, Overseer allowed for averaging of N-loss meaning within-farm intensification could occur, resulting in leaching hotspots near the lakes. GMPs improved land use practices but could not achieve or ‘hold’ the limit because they do not control land use extent or intensity. The full extent of Overseer limitations was not appreciated until the Parliamentary Commissioner for the Environment and Government review.<sup>66</sup>
- **Transition pathway is not clearly signalled to end users.** Farmers expressed surprise and dismay on learning the extent of reductions likely needed. While Policy 4.9(d) in the LWRP does signal that the current N-loss limits and FEP requirements may only be a first step towards more stringent measures, the plan does not convey the likely extent of N-loss reductions nor that the landowners are on a transitional pathway towards greater reductions. ECan staff have indicated that greater visibility of long-term outcomes and reductions usually comes during catchment-scale limit setting. This has not happened yet for the lakes. With the scientific reports now showing that greater reductions are needed, a voluntary transition pathway is being discussed with the farmers. However, a regulatory transition pathway will need to be established in the new land and freshwater plan to be notified in 2024.
- **The LWRP’s output-centred regime has not incentivised or directed the necessary changes in land use and farming practice to meet environmental objectives.** In this devolved system, farmers and their advisors are tasked with setting their own N-loss limits (following the method prescribed in the plan to set it for the baseline N-loss period) and practices. The intended aim is to maintain flexibility and reduce uncertainty for the landowners, but the unintended effect has been to increase uncertainty for the sensitive lakes.
- The planning system put in place in its entirety proved to be complex and multiple points existed where system failure could occur.

### Check for carry-over of vulnerabilities post Essential Freshwater reform

- **Te Mana o te Wai in the NPS-FM 2020 prioritises freshwater outcomes.** This contrasts with the more or less equal weightings given to economic, social, cultural, and environmental outcomes in the LWRP’s ‘parallel process’ and ‘gifts and gains’ policy settings. While the LWRP approach enabled compromised outcomes and trade-offs, the hierarchy of obligations in Te Mana o te Wai requires councils to prioritise the water’s ecological outcomes over all others. This “freshwater first” approach provides greater certainty that the freshwater environment will be protected adequately.

<sup>66</sup> Ministry for the Environment and Ministry for Primary Industries (2021) **Government response to the findings of the Overseer peer review report.** Ministry for the Environment and Ministry for Primary Industries. Retrieved from: <https://environment.govt.nz/publications/government-response-to-the-findings-of-the-overseer-peer-review-report/>.

- **The NPS-FM provides stronger direction for councils to demonstrate that limits will meet waterbody targets.** Councils are, however, given wide latitude for how to set and achieve a limit. It can be set at any scale, can apply to any activity or land use, and can be expressed as a land-use, input or output control. In sensitive catchments such as Ōtūwharekai/Ashburton Lakes, an approach that affords greater certainty of achieving freshwater outcomes will be required. Such certainty is best provided in the plan rather than devolved to individual decision-makers.
- Models, like Overseer, will continue to be used in regional planning to support the management of diffuse nutrient loss (see [Nutrient management tools](#) below).
- The Freshwater Farm Plan (FWFP) system is a devolved system that councils can use to help in the achievement of freshwater outcomes.
- FEPs used in Canterbury and at Ōtūwharekai/Ashburton Lakes largely relied on GMPs to achieve management objectives and targets in the plan. GMPs are a useful start but have not proven successful in achieving limits. In the FWFP system, there is a move towards identifying the actions that will best address the issues within a catchment and to each specific effect and risk on farm. FW-FP legislation empowers councils to set tougher rules (like individual farm discharge limits along with other kinds of limits to achieve environmental outcomes) and, by law, these must be reflected in FWFPs.
- The NPS-FM also requires councils to identify a transition pathway and interim timeframes for nutrient reductions to achieve the freshwater objectives and target states set out by the community in the long-term vision. This will have a significant influence on the new generation of land and water plan writing and should provide greater certainty that the environment will be protected adequately in Ōtūwharekai/Ashburton Lakes and elsewhere.
- The NES-F provides new, additional safeguards. Not all apply in this catchment or will be ready immediately. Until the new regional limits set by the plan under the NPS-FM 2020 come into force, the National Environmental Standards regulations on farm intensification should prevent the expansion of intensive land use. For instance, the NES-F controls the total area of intensive winter grazing for a farm and may control any further expansion of winter grazing near the lakes (until new plans are adopted that replace these controls with Freshwater Management Unit (FMU) specific limits and rules).

#### **Actions for Ministry for the Environment**

- **Ministry to clearly set out expectations so councils understand and implement the ‘freshwater first’ approach of Te Mana o te Wai in their plans and systems** and use the most effective control options (ie, give consideration not just to output controls but input, activity or land use controls) to manage environmental risk, particularly in sensitive catchments like Ōtūwharekai/Ashburton Lakes. Ministry National Objectives Framework guidance provides direction on this as well as on the limit setting risks uncovered in this report.
- **Ministry officials to engage with ECan on:**
  - its progress towards its regional plan policy work including work being done to support a more accurate contaminant load for the lakes and associated reductions or changes to land use at a more granular level
  - the N-loss limit methodology used.
- **Findings to be shared with the Ministry’s Nutrient Management Tools team.** The Ministry is also currently drafting guidance on best practice in using models to support regulation, which will include direction on how to mitigate the risks that using models can present. The Nutrient Management Tools team are also writing guidance on which situations input controls should be considered, which could be useful in similar circumstances.
- Work is currently underway with Overseer to increase transparency. Overseer has published technical manuals outlining the mechanics of the model.
- Findings to be shared with the Freshwater Farm Plan team at the Ministry and Ministry for Primary Industries, to support thinking on the FWFP regulatory design and implementation.
- Officials to pass findings on to appropriate Ministry teams relaying ECan’s concerns around the limitations of the current planning tools in highly over-allocated catchments. This includes the need to explore new tools, including economic instruments, to complement existing planning measures and bring about land use change at scale and within the timeframes needed to protect waterbodies in a managed way that allows for a just transition.

## Consenting

### Potential system vulnerabilities

- The devolution of limits to the farm level in the plan meant nutrient experts determined N-loss baseline limits for each farm through the consent process (see [Nutrient management tools](#) for details).
- The resource consents in their current form do not provide sufficient flexibility to quickly respond to evidence of environmental decline. The RMA contains a relatively narrow set of triggers for the review of conditions, and a high bar for making significant changes to conditions and for cancelling consents. For Ōtūwharekai/Ashburton Lakes, ECan staff did not consider that the extent of these provisions provides sufficient scope and certainty to achieve the necessary changes at the scale required. This means consents potentially enable adverse effects from activities for longer periods than they should, and little can be done to reduce the timeframes or volumes of these effects until a plan change and incorporation of s68(7) review clauses. The plan change process is slow.
- ECan consent officers carried out a desktop check that the FEP is consistent with Schedule 7 of LWRP. A more detailed assessment of FEP content and sufficiency was deferred until first audit (see [FEP auditing and compliance monitoring and enforcement](#) below for detail).

### Check for carry-over of vulnerabilities post Essential Freshwater reform

- Consents will still exist as a way for councils to provide permission for either takes or discharges at farm level.
- FWFPs will be in force in Canterbury before the end of 2025 so all FEPs and FWFPs will move to a certify and audit framework. The FWFP process requires FWFPs to be certified before the first audit, not after. Provided the certification process is strong, it is anticipated that certified FWFPs will be robust from the outset.

### Actions for Ministry for the Environment

- Ministry officials will pass on findings to the Resource Management Reform team to consider how consents and council plans could more rapidly and flexibly respond to unexpected environmental outcomes. The ability to review consent conditions is a core component of responsive management.
- Officials to share findings with ECan:
  - consider changes to LWRP rules and consenting practices, to enable more frequent review and adjustment of consent conditions, or another mechanism to provide flexibility to respond to evidence of environmental decline
  - how consents with longer timeframes can be brought into alignment with plan changes to make new limits effective.
- Officials will pass on findings around consenting vulnerability that could also occur during FWFP certification to the FWFP team to consider.

## Farm Environment Plans

### Potential system vulnerabilities

- While Schedule 7 of the LWRP lists GMPs that farmers are expected to apply, as appropriate, to their farm, specific FEP actions are often determined by farmers and advisors, and it is not always clear what was committed to, by whom and by when. How a farmer complies with their N-loss limit is at their discretion and does not need to be detailed in the FEP.
- The FEP system is overly focused on process rather than environmental outcomes. FEPs focus on implementing GMPs and operating within nitrogen limits. So long as FEP A or B audit grades were achieved, intensification of high-risk areas near the lakes was not monitored or controlled.
- The link is unclear between the adoption of GMP actions and achieving lake targets.
- ECan is highly reliant on third party professionals to deliver the FEP system. Consequently, the FEP system is vulnerable to industry capture.<sup>67, 68</sup> Measures have been taken to reduce this risk, but vulnerabilities remain.
- Tension exists between the public's interest that FEP data is transparent and available upon request and the privacy of commercial information contained in the plans. ECan's internal policy is to decline public requests for FEPs and FEP audits.

<sup>67</sup> Jeroen van der Heijden (2022) **Regulatory failure: A review of the international academic literature. State of the Art in Regulatory Governance Research Paper – 2022.11.** Wellington: Victoria University of Wellington/Government Regulatory Practice Initiative. Retrieved from: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4050156](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4050156).

<sup>68</sup> Resource Management Review Panel (2020) **New Directions for Resource Management in New Zealand.** Retrieved from: <https://environment.govt.nz/assets/Publications/Files/rm-panel-review-report-web.pdf>.

### Check for carry-over of vulnerabilities post Essential Freshwater reform

- The national FWFP system uses a similar system whereby decisions on required actions are devolved from the council to farmers and their advisors, therefore similar vulnerabilities need to be addressed.
- The FWFP regulations will set out minimum content required in an FWFP. The certifier must be satisfied the FWFP has been developed in a way that meets the minimum content requirements, including all effects and risks to freshwater, and appropriate actions to address are identified. FWFP certifiers will have a degree of discretion in undertaking their role, to ensure the FWFP meets the needs of the individual and catchment, the effects on freshwater and particular farm systems.
- Certifiers and auditors will be appointed by regional councils, with the assistance of a centralised appointment body, in line with an appointment process set out in the FWFP regulations.
- FWFP auditors will audit that the actions in the FWFP have been undertaken in line with the plan, substantiated by appropriate evidence.
- GMPs will still be relevant in the FWFP system but their use will not be mandated. In certifying the FWFP, the certifier will need to be satisfied each action identified addresses each specific effect and risk to freshwater. In some cases, GMP might be used as a starting point, however, going further than an individual GMP may be required, to ensure the specific effect and risk is addressed appropriately. Like the FEP tool, the FWFP system used in isolation will have limitations on addressing issues of over-allocation in catchments, particularly for contaminants like nitrogen. Councils will need to rely on a combination of regulatory tools (such as setting catchment and farm-level limits and rules on resource use that align with achieving environmental outcomes) and interventions, alongside farm planning, specific to each catchment's needs and context, to meet water quality limits and targets.

### Actions for Ministry for the Environment

**Ministry officials to reflect on the FEP system with the FWFP team, including consideration that the system should be underpinned by:**

- clear lines of accountability between the regulator and regulated party
- management of any potential for third party bias and influence
- robust transparency of regulatory data
- sufficient training of actors in the system to be able to execute their role
- adequate oversight of third party actors and agents of the council, to ensure regulator and public interests are being upheld (see [Regional council oversight, data and reporting, and response system](#) below for detail)
- recognition that adopting GMP may not be sufficient to meet freshwater outcomes in some catchments.

### Nutrient management tools

#### Potential system vulnerabilities

- The LWRP planning framework did not adequately account for Overseer limitations (many of which were not visible at the time).
- Overseer's averaging approach to estimating farm nitrogen leaching provides scope for within-farm intensification without breaching the N-loss baseline limit and appears to have inadvertently enabled the intensification of land with more direct nutrient transport pathways near the lakes.
- As part of the consent application process, a verification check is done by the consent officer to sense check that Overseer data inputs are realistic. However, farmers are generally not required to provide evidence to support the farm system inputs used in Overseer to inform the N-loss baseline limit and audit assessments.
- Compliance with Overseer outputs is complex and difficult to assess. Concerns were raised regarding the practicality of enforcing these limits.
- Farmer reliance on certified expert Overseer users to model their farm systems necessitates council oversight of these individuals, to ensure modelling practices are consistent. This oversight has not always occurred.
- Accessibility of Overseer analyses and data was limited (see [Regional council oversight, data and reporting, and response system](#) below).

#### **Check for carry-over of vulnerabilities post Essential Freshwater reform**

- The nutrient management tools work programme is continuing to develop output-based and risk management tools for councils to use in managing diffuse contaminant loss.
- Nutrient management tools like Overseer will have inherent limitations that need to be appropriately managed when used to support regulatory outcomes.
- The independence of tool operators and owners remains a factor in confidence of these tools and effective use.
- Overseer has recently released its technical manuals, improving transparency around how the model works. However, consideration should also be given to how greater transparency can be built into the use of tools in regulatory situations to allow access to data around regulated inputs and actions, as well as providing for effective CME of the farm inputs and actions that underlie the output results of the model.

#### **Actions for Ministry for the Environment**

- These findings will be passed on to the Nutrient Management Tools team to incorporate into key workstreams including guidance.

#### **Farm Environment Plan auditing and compliance monitoring and enforcement**

##### **Potential system vulnerabilities**

- Ōtūwharekai farms are achieving A and B audit grades. Minimal compliance or land use monitoring is conducted by ECan between audits.
- FEP audits focus solely on compliance with FEP actions. They do not capture wider farm system data or land use intelligence, which might have alerted ECan to changes in environmental risk and that farm plan actions may be insufficient (see further discussion under 'Regional council oversight, data and reporting, and response system' below).
- FEPs are regulatory documents, so FEP actions should be written in a way that is clear, measurable, and able to be objectively assessed for compliance. This does not always occur and there seems to be little requirement for FEP authors and auditors to be skilled in regulatory condition writing.
- The FEP audit system is used in place of council-led compliance monitoring. This places high importance on the need for auditors to be qualified and capable of undertaking this role, and on ECan's oversight of the audit system and third party auditors being robust. Provision of oversight seems to not always have been adequate, and vulnerabilities appear to exist.
- Once consent is granted, farmers are not required to provide ECan with a copy of up-to-date FEPs at audit or any other time, unless requested by ECan. ECan does not routinely request FEPs and, subsequently, has limited visibility of FEPs across Canterbury.
- FEP auditors undertake a pseudo-compliance monitoring role but are not required to have any regulatory training comparable to a council compliance officer.
- Note that regulatory capture and data transparency risks also applied at audit but are addressed in other sections of the table.

#### **Check for carry-over of vulnerabilities post Essential Freshwater reform**

- The national FWFP programme may adopt an A–D grading system, however, differences exist between this and the FEP grading system.
- Certifiers under the FWFP system will be required to submit the FWFP action plan and associated certification details to the council upon the plan being certified. Auditors under the FWFP system will be required to submit the audit report and audit grade of the FWFP to councils at completion of the plan audit. Part 9A of the RMA also enables councils to request a copy of an FWFP from a farm operator.
- The required skills and competencies of FWFP certifiers and auditors, appointed by regional councils, will be defined in the FW-FP regulations.
- Certifiers and auditors do not hold any CME delegations; these remain with council staff, and councils will need to incorporate the FWFP system into their compliance programmes. A risk exists, however, that councils will use the FWFP process as a substitute for council-led compliance monitoring.
- The robustness and enforceability of FWFPs is dependent on the system design together with the skills and capability of the professionals certifying them.
- New CME tools and powers are proposed in the Natural and Built Environments Bill, which will give councils greater scope for intervention. The Ministry is developing training and guidance that will help councils in improving CME, including considering how central government expectations and local government obligations can be conveyed.

## Actions for Ministry for the Environment

**Ministry officials to reflect on the FEP and CME systems with the FWFP, CME and other relevant teams including consideration of the following.**

- The FWFP regulations will set the scope of the data provisions to councils from FWFPs. Monitoring of system implementation will help identify any potential data limitations for council reporting purposes. Councils may also look to rely on additional data gathering, where relevant, under associated relevant plan rules or national standards.
- The FWFP audit is not a complete substitute for council-led CME, which is needed to provide robust council oversight. Council-led compliance monitoring events, additional to audits, will be particularly important in more sensitive catchments where degradation can occur quickly and is difficult to reverse.

## Regional council oversight, data and reporting, and response system

### Potential system vulnerabilities

- ECan's monitoring data tracked the condition of the Ōtūwharekai/Ashburton Lakes, but land use changes (in pastoral extent and intensity) and land use trend data were not collected. This made detection of trends that might increase N-loss and undermine the farm baseline nitrogen limits difficult to detect.
- Compliance with the planning framework was presumed to be sufficient to protect the lakes. Multiple concerns from tangata whenua and other concerned parties (including DOC, anglers and hut owners, and environmental non-governmental organisations) about the state of the lakes, including higher intensity land use, were not able to be verified without land use data and did not trigger more in-depth investigations until 2019 when rūnanga requested an emergency hui.
- ECan has an internal policy of declining requests from the public for up-to-date FEPs, FEP audits, and Overseer data. ECan also has an internal policy of limiting accessibility of this data to certain people or teams. Tension exists between protecting the privacy of farmers and the value to the public of greater transparency around farm plan information.
- No systems were in place that allowed a timely response to the decline of the Ōtūwharekai/Ashburton Lakes.

### Check for carry-over of vulnerabilities post Essential Freshwater reform

- The NPS-FM 2020 has specific monitoring provisions (note these are carried over from the 2014 NPS-FM). Section 3.29 of the NPS-FM 2020 specifies that freshwater accounting systems must be operated and maintained for every FMU. The purpose is to provide baseline data for target attribute states and limits, to check if over-allocation is occurring and to track cumulative effects of activities, including increases in discharges and changes in land use. Councils are required to publish this information and record loads and concentrations of relevant contaminants as well as the proportion that has been allocated. They must also identify sources of contaminants and the amount attributable to each source.
- Section 3.29 and section 3.30 of the NPS-FM 2020 requires that councils must investigate where an FMU or part of an FMU is degraded or degrading and provide information on the known or likely causes as well as actions taken to address these.
- The NES-F intensification regulations will only be effective if ECan collects baseline land use data and regularly monitors land use so expansion can be detected and the regulations can be enforced. The Council's recent synthesis of historic aerial and satellite imagery may provide a useful starting point for this.
- While the national policy framework is in place for accounting systems and assessing and reporting, this work will take time to be implemented and has sometimes been implemented too coarsely spatially or temporally to assess effects at a fine enough scale. The scope exists for the Ministry to provide national consistency and support.

## Actions for Ministry for the Environment

- Ministry to provide further direction and support to councils on setting up catchment accounting systems and data provision, as required by the NPS-FM and NES-F. This should include:
  - setting clear direction to collect land use trend data, to monitor for intensity and extent of change
  - working with the regional sector's Compliance and Enforcement Special Interest Group, to collectively determine the data and form required that can be used for CME purposes to check land use actions, intensity, extent and practices are commensurate to achieving lake outcomes, and setting out a joint approach or roadmap for improving CME actions
  - prioritising support to councils to monitor land use change in extent and intensification as a trigger for closer attention being required in at-risk catchments
  - championing the merits of regulatory data transparency.

- Ministry to provide oversight of council's information and reporting systems, to ensure they are adequate for tracking change and achieving freshwater outcomes.
- Ministry to provide guidance to councils, including:
  - having more responsive and wider scoped investigation processes that look beyond consent compliance to root causes of problems, where broader water quality trends and concerns raised by tangata whenua and others are occurring despite no obvious implementation failure.
  - improving systems to involve tangata whenua in freshwater management. This includes responding to concerns, investigating the causes of problems identified by tangata whenua, collaboratively developing solutions, including identifying and enabling appropriate points of tangata whenua involvement throughout the process. This is a matter for tangata whenua and councils to explore collaboratively at-place.
  - ensuring greater and more active oversight of all parts of the freshwater management system, particularly where third party actors are tasked with undertaking a regulatory function, for example, certifiers and auditors.

**To share with ECan:**

- ECan should consider a regular programme to collect land use trend data to identify if expected land use trends (eg, a hold on intensification or extent) are occurring. ECan could also use this baseline data to show how and if the National Environmental Standards regulations are being complied with at the Ōtūwharekai/Ashburton Lakes.
- In the oversight system, ensure data, especially around land use trends, actions to achieve limits and audit data, is provided, and all relevant data is assessed together.
  - Data transparency is critical to ensure the freshwater management system can be trusted and for all parties to understand the basis for decision-making in the catchment. Discuss merits of making core regulatory data (regulatory requirements within the FEP, FEP audits, Overseer data) and aggregated land use change data publicly available.

# Conclusion

This report focuses on regulatory system risks that may have contributed to the continuing decline of water quality in the Ōtūwharekai/Ashburton Lakes catchment. At least some of the findings will be relevant elsewhere in the country. It is important to note that this report looks at decisions and actions taken in the past: farmers, advisors and council officers are working within the requirements, opportunities and constraints of the nutrient management system created by the LWRP.

The LWRP, in turn, was framed within the settings of the RMA at the time, the ECan Act, the NPS-FM 2011 and the CWMS. It was also influenced by the prevailing economic and policy drivers and newly available nutrient management tools and approaches (Overseer and GMP). Since then, through Plan Changes 1 to 7, the LWRP has been increasingly aligned with more recent national direction.

The LWRP brought new ambition and innovative approaches to freshwater management in Canterbury. However, it is apparent a decade on, and acknowledged by ECan, that the LWRP's rules, and the GMP approach brought in at the time, have not been adequate to reduce nutrient levels in the Ōtūwharekai/Ashburton Lakes.

Given the magnitude of the contaminant reductions required, land use change, such as livestock reductions in parts of the catchment, may be needed. However, other than audited FEPs, which are all being complied with, ECan has indicated that the LWRP has no other provisions enabling the regional council to require changes to current land management. ECan is therefore reliant on the voluntary actions of the catchment farmers, supported by the Ōtūwharekai Working Group.

Work to address many of the risks in the system is, however, now underway. Councils are on tight timeframes to update the freshwater provisions of their plans by 2024, to give full effect to the NPS-FM 2020, the NES-F 2020, and other freshwater regulations. The NPS-FM 2020 provides much clearer direction on setting limits, and the Ministry has produced guidance on how to implement these national policies and regulations. The changes in national policy reflect a philosophical shift in resource management away from balanced use and towards the approach in Te Mana o te Wai, which prioritises the waterbody first.

Table 2 identifies, for consideration, potential improvements to ECan's regulatory framework that would support an improvement in the Ōtūwharekai/Ashburton Lakes and other sensitive areas. ECan will need to ensure the freshwater management system is robust, follows regulatory best practice, and that good council oversight occurs of the system and various actors within it. The Ministry acknowledges that big challenges remain ahead for ECan and other councils with highly over-allocated catchments. Although the policy settings are clearer, resolving these challenges may require new tools along with consideration of the full suite of existing tools, ranging from input controls to new economic approaches.

We note that Ōtūwharekai/Ashburton Lakes farmers are complying with LWRP requirements, and all said they would make changes if necessary to help improve the lakes. Several, however, expressed fears that tighter limits could be placed on their farming operations, which could threaten their viability. We recognise that the implementation of change is not straightforward, and farmers will need support to make the transitions needed especially where the necessary actions are urgent.

We have also identified issues that may persist in the system post the 2020 changes to the NPS-FM, depending on decisions by regional councils. One of the findings is that the risk of not achieving lake targets is heightened by the complexity of the output controls management system and the fragmentation of responsibilities within it. This suggests situations may occur where more direct planning measures, such as input controls and land use controls, could provide greater certainty of outcome. This lesson will be picked up in guidance to councils.

Related findings are that the LWRP over-relies on performance-based output controls that are not linked to lake biophysical outcomes and are implemented largely out of ECan's sight. The estimation of the farm quantifiable N-loss limit, and management of these output controls, is devolved to various actors whose decisions appear to be neither tightly constrained nor well-monitored. This creates vulnerabilities at multiple pinch-points throughout the system, each having knock-on implications.

The vulnerabilities include:

- ECan's choice of N-loss limit and the methods used to set and manage it
- how well linked the N-loss limit is to the lake outcomes
- the tools used by farmers, advisors, contractors and auditors to calculate and check compliance with the N-loss limits (ie, FEPs, GMP, Overseer)
- critically, the processes used for implementing, auditing and ensuring sufficient oversight, including a lack of regulatory options to adjust course when outcomes are not being met.

The LWRP approach does not adequately account for these vulnerabilities, and the complexity of such an approach is amplified in the varied environment of the lakes' catchment. As such, it is important that, as we implement the Essential Freshwater package, we pay attention not just to the individual parts of the system but to the system as a whole, which is something the Ministry will need to monitor.

ECan is not the only agency with an important resource management role in the Ōtūwharekai/Ashburton Lakes area. Although examples of collaboration exist, such as between DOC and Ngāi Tahu on wetland projects, for lake health to be fully safeguarded and improved, better collaboration and alignment is needed among all agencies and statutory bodies in the catchment. This includes among DOC, LINZ, ADC, Ministry for Primary Industries, Ministry for the Environment and Central South Island Fish and Game, together with Ngāi Tahu. The Ōtūwharekai Working Group is providing the forum for this to occur.

# Next steps

The Randerson issues and options paper<sup>69</sup> noted that the RMA has not sufficiently protected the natural environment. It stated, as significant challenges and drivers, the lack of clarity about how the objective of sustainable management of natural and physical resources should be applied, and the role of insufficient provision of national direction along with implementation challenges in local government.

The challenges seen at the Ōtūwharekai/Ashburton Lakes are illustrative of these wider system challenges, which the Ministry is seeking to address through the Essential Freshwater and wider resource management reforms. This in-depth look at the Ōtūwharekai/Ashburton Lakes freshwater management system has yielded useful lessons for current and future freshwater management system design.

Alongside this analysis of the planning system, the Ministry has also been working with the Ōtūwharekai Working Group on other projects, including procuring research identifying the mitigations, actions and land use changes needed to reduce nutrient loads sufficiently to meet the lakes' water quality objectives.<sup>44</sup>

The next steps include the following.

- Sharing the evidence and insights in this report on specific areas of the system, to ensure they can be incorporated into the new systems including:
  - FEPs with the FWFP team
  - Overseer with the Nutrient Management Tools team
  - elements of monitoring and CME with the Resource Management Reform team.
- With the completion of this report and the mitigations assessments, the Ministry's role will change to one of clarifying its expectations and monitoring continued progress because freshwater issues in other regions also require attention.
- One question that arose when compiling this report was the Ministry's role in regulatory stewardship and oversight. Officials will use lessons from within this report to refine and scope what the Ministry's role should be in monitoring the system. A freshwater reporting framework is being developed to obtain more specific information on regional achievement of freshwater objectives. This framework provides additional information to support the current environmental reporting<sup>70</sup> that will further help to identify areas at risk and councils requiring greater support to manage freshwater bodies.
- The Ministry will also share these learnings with ECan, to support its efforts towards transitioning the Ōtūwharekai/Ashburton Lakes to better health.

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<sup>69</sup> [Transforming the resource management system: opportunities for change - Issues and options paper | Ministry for the Environment](#)

<sup>70</sup> [Environmental reporting | Ministry for the Environment](#)