Ōtūwharekai/Ashburton Lakes lessons learnt report

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Delete/add Ministers as appropriate	Action sought:
To/CC Hon David PARKER, Minister for the Environment	For noting only

Actions for Minister's Office Staff	Provide this report to the Minister so that he has it in advance of his visit to Canterbury. Note: Officials will work with you to find a time that suits the Minister to discuss the report findings.
Number of appendices and attachments # 2	**Appendix 1:** Ōtūwharekai/Ashburton Lakes lessons learnt report **Appendix 2:** Ōtūwharekai Lessons learnt for Ministry of Environment, - Papatipu Rūnanga and Te Rūnanga o Ngāi Tahu (letter sent 25 March 2022 to MfE about their role and view at the lakes).

Key contacts

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Ōtūwharekai/Ashburton Lakes lessons learnt report

Purpose

1. The purpose of this aide memoire is to provide you with the Ōtūwharekai/Ashburton Lakes lessons learnt report and set out the plan for public release and next steps.

Background and Content

2. In September 2021 you requested officials investigate the decline of the lakes. One of the recommendations in BRF-487 was to, '*provide a 'lessons learnt' report using the Ashburton Lakes as a case study examining why the system currently in place have failed to protect the lakes' water quality, including examining the regional plan nutrient limits and associated rules, consenting, farm planning system, and use of Overseer'.*

3. This report identifies freshwater system vulnerabilities that contributed to the lakes' decline and identifies any of these system vulnerabilities that could persist into the national regulatory system and may need further investigation and resolution by the Ministry.

Report Findings

4. Whilst Environment Canterbury's (ECan) Land and Water Regional Plan (LWRP) was innovative for its time (notified in 2012 and adopted in 2015), it is apparent, and acknowledged by ECan, that the LWRP's rules and management system, have not been adequate to control nutrient levels to the extent required to protect the lakes.

5. The report found that vulnerabilities were present at multiple different points within the freshwater management system, not just in the planning framework. The main vulnerabilities stemmed from:
   - ECan's setting of an N-loss limit that was too high to drive the necessary reductions,
   - the use of output controls and Good Management Practices (GMPs) were not well linked to achieving lake outcomes or targets and provided little certainty of achieving the limit,
   - flaws with the tools used by farmers, advisors, contractors, and auditors to calculate and check compliance with the limits (i.e., Farm Environment Plans (FEPs)[1], GMP, Overseer),
   - a lack of transparency and access to regulatory data as well as a lack of data on catchment land use change trends making verification of any concerns around compliance and land use changes difficult,

[1] The refers to FEPs under the Ecan system. This does not refer to the upcoming Freshwater Farm Plan regulations.

- and critically, problems with the processes used to implement, audit, and oversee these measures, including the lack of regulatory options to adjust course when outcomes were not being met.

6. Work to address many of the vulnerabilities in the system is underway now. ECan and other councils are on tight timeframes to update the freshwater provisions of their plans by 2024 to give full effect to the National Policy Statement for Freshwater Management 2020 (NPS-FM), the National Environmental Standards for Freshwater 2020 (NES-F), and other freshwater regulations. The NPS-FM provides much clearer direction on setting limits, and MfE 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 Te Mana o te Wai approach which prioritises the health of the waterbody first.

7. The report also identifies where issues may persist in the new national freshwater system post the 2020 changes to the NPS-FM, depending on freshwater management decisions by regional councils. The RM reform, nutrient tools work and Freshwater Farm Plans regime represent opportunities to rectify system vulnerabilities. Findings from the report have already been passed on to officials in the relevant teams.

Next Steps

8. You will be meeting with ECan officials, councillors, and mana whenua on 20 April 2023 to check on progress towards improving the lakes' outcomes. The councillors will not have seen the report, but this is an opportunity to hear from ECan and mana whenua as to measures they are putting in place to achieve the lakes' outcomes. A meeting brief will be provided to you ahead of this.

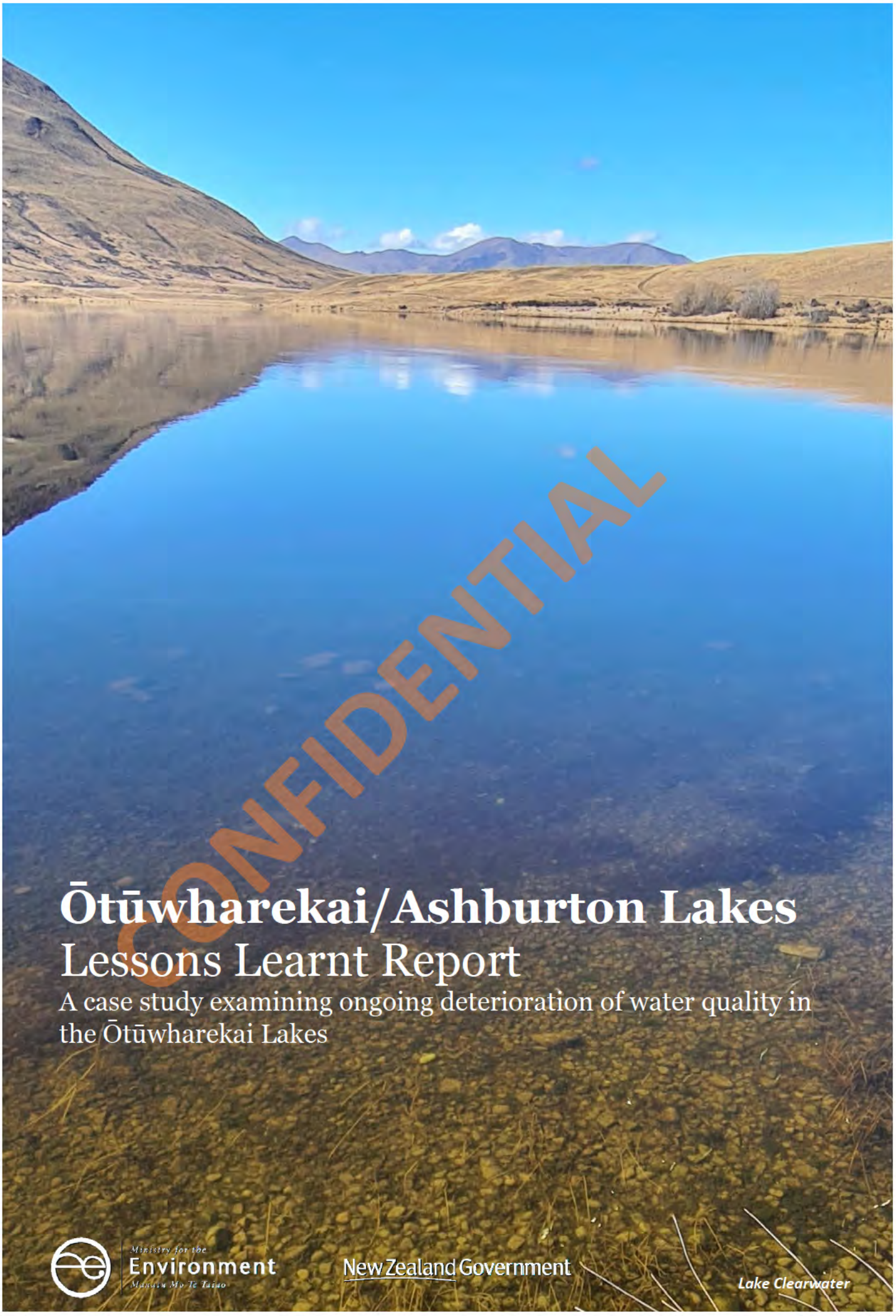
9. After the Canterbury visit, we intend to make the report publicly available on our website, but without a media release. There has been high media interest in the report. David Williams has requested the report and we intend to provide it to him. We will work with your office to ensure you have messages to draw from to answer likely questions.

Signature

Sara Clarke **Director - Implementation**	
Date: 11 April 2023	

Appendix 1: Ōtūwharekai/Ashburton Lakes lessons learnt report

Appendix 2: Ōtūwharekai Lessons learnt for Ministry of Environment, - Papatipu Rūnanga and Te Rūnanga o Ngāi Tahu (letter sent 25 March 2022 to MfE about TRONT's role and view at the lakes).



Ōtūwharekai/Ashburton Lakes
Lessons Learnt Report
A case study examining ongoing deterioration of water quality in the Ōtūwharekai Lakes

Ministry for the Environment
Manatū Mo Te Taiao

New Zealand Government

Lake Clearwater

Contents

Background/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,[1] highly vulnerable,[2] and has significant cultural value.[3]

Despite endeavours to support lake health since 2007[4], the lakes show varying degrees of *eutrophication*[5] (nutrient enrichment), reflected in increased algal growth. Once a lake becomes highly eutrophic, restoration to a healthier trophic state[6] is difficult and costly.[7]

The Essential Freshwater reform package, promulgated in 2020, sets out new national direction to protect and improve our 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, on being alerted to recent research findings at the Ōtūwharekai/ Ashburton Lakes[8], asked the Ministry for the Environment (MfE) to investigate the lakes' decline.

To form a comprehensive understanding, MfE officials have reviewed a range of written sources, including planning, policy, and technical documents, academic papers, and other publications, and have also interviewed or received written feedback from participants in the environmental management system, including Environment Canterbury (ECan) officials, Te Rūnanga o Ngai Tahu[9], landowners, Land Information New Zealand (LINZ), Department of Conservation (DOC), Ashburton District Council (ADC), South Canterbury Fish and Game (Fish and Game), and MfE officials with relevant knowledge.

This report summarises what was learned from that work. Its focus is on the regulatory system because the regulatory measures for managing freshwater in the lakes catchment are similar to some of those enabled in the Essential Freshwater reform package. A key aim of this report is to identify any system vulnerabilities in the Ōtūwharekai/Ashburton Lakes example that could persist into the national regulatory system and may need further investigation and resolution by the Ministry.

This report is structured in the following way:

- Overview of the lakes
- Summary of core findings
- A summary of the past and present regulatory measures affecting the lakes, in particular:
    - the statutory context, including the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 (ECan Act)
    - the planning system
    - the consenting and farm planning systems
    - system monitoring including the council's compliance, monitoring and enforcement (CME) and the certified contractors' auditing of Farm Environment Plans (FEP).
- A table containing: a concise analysis of system vulnerabilities; an assessment of whether those vulnerabilities will persist or require monitoring post the 2020 changes to the National Policy Statement for Freshwater Management (NPS-FM); 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 wide 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.[10]

The lakes have high cultural value for Ngāi Tahu whose name for the area is Ōtūwharekai.[11] It 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 (rūnanga).

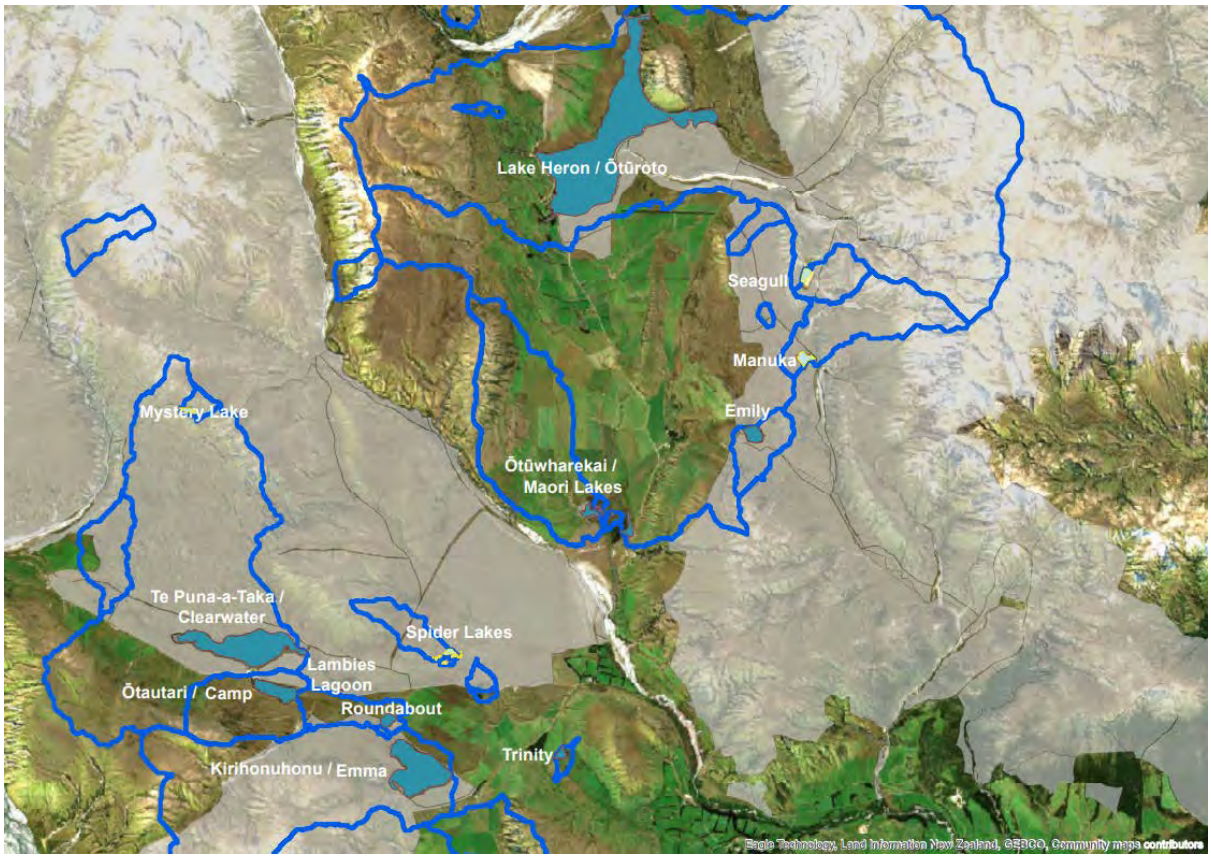


Figure 1: Aerial photo of the Ōtūwharekai/Ashburton Lakes and surrounding catchments showing public conservation land in grey and the lakes catchment boundaries in dark blue.

Eight of the twelve lakes[12] are monitored by the regional council.[13] They range from the two very shallow and small Māori Lakes to the largest, Lake Heron, with a maximum depth of 37 metres and surface area of 6.3 km^2. Prior to human arrival, the lakes were clear (i.e., oligotrophic) and surrounded by forest with very low inputs of sediment and nutrients.[14]

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

Today, the lakes are partly eutrophic, with elevated sediment and nutrient levels, algal growth, and reduced clarity.[15] None met the LWRP's objectives for the Trophic Level Index (TLI) score in the period between 2017 and 2021[16] and some are failing to meet national bottom lines (NBLs).[17]

This decline coincides with an upsurge in pastoral farming from around 1990 to 2010 involving increases in cattle and deer numbers,[18] fertiliser use,[19] winter forage grazing,[20] and vegetation change[21] (from indigenous shrubs and tussock to shallow-rooted pasture grasses[22]).

These changes reflect both local decisions and wider drivers, such as commodity markets, district, regional, and national 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, Ngai 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 NZ, ADC, Forest and Bird, Rangitata Landcare Group, LINZ, LEARNZ, Cawthron Institute, Lake Clearwater bach owners, the landowners, and the recreational groups),[23] and to ECan including Ōtūwharekai/Ashburton Lakes in the Lake Zone section of its proposed Land and Water Regional Plan (LWRP) in 2012. However, in the years that followed, it became clear that the lakes were not improving.

In 2019, Ngāi Tahu called a hui of all the Statutory Agencies (as Treaty Partners) with responsibilities in the area. From this, a working group was formed, with others invited to join in 2021.[24] A scientific report was commissioned which confirmed that the lakes are still nutrient enriched with some in danger of "flipping" into a more severe eutrophic state.[25, 26] The main nutrient source across all lakes was identified as pastoral land use. Additional minor sources are, at Lakes Clearwater and Camp, potential seepage of human wastewater and, at Lakes Emma and Emily, waterfowl waste. Large reductions in catchment nutrient loads (including estimated 67 -99% nitrogen load reductions in six lakes and 33-99% phosphorus reductions in three[27]), are now required to meet the LWRP objectives for the lakes.

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 RMA until its replacement application is decided. The fourth is operating without a consent as it awaits the outcome of its 2018 consent application.

All farms, however, have Farm Environment Plans (FEPs) that are considered by their auditors to be compliant with the requirements set down in the LWRP. Given this, ECan's position is that the LWRP does not empower it sufficiently to require additional changes to farm management.

Catchment farmers are now working with ECan and others to identify voluntary actions that will reduce the nutrient load entering the lakes. ECan officers carried out an analysis of the nutrient assimilation capacity of each paddock against the risks from farm activities and factored in inherent risks to water quality. This work provided recommended actions, including changes in land use, such as shifting high risk Intensive Winter Grazing further away from the lakes.

NIWA assessments that were commissioned to inform this work point towards a raft of mitigations, with livestock removal in winter and autumn generally being the most cost-effective way to reduce the nutrient outcomes for most of the lakes.[28] A key question is whether these actions will be sufficient to meet the LWRP objectives, or whether longer term land use changes might be necessary.

Summary of core findings

The freshwater management system established for the lakes catchment led to insufficient protection of the lakes. The main vulnerabilities found within the system included:

- **The nitrogen loss (N-loss) limit set out in the LWRP was set 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 in 2009-2013. As a result, it does not correspond to the lake outcomes and targets.
- **An outputs-control regime, using the N-loss limit rule, was the primary lever to control nitrogen.** It 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,** including 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 GMP practices 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. Whilst measures to address this were taken, vulnerabilities exist.
- The FEP system is **overly focussed 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.
- Whilst 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 the potential land use pressures could not be verified without this data.
- Because resource consent conditions are locked in for the duration of a consent, **the council 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)[29]. While there are rules in Plan Change 7 to minimise P impacts the plan is not able to quantify farm specific limits and lacks a catchment load for P, although it does now have generic rules to provide some protections. Because the impacts of P on algal growth occur in the presence of N it is all the more important that nitrogen is managed effectively.
- **A complex set of wider system challenges were 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 underway now. ECan, together with the Ōtūwharekai Working Group, is establishing the evidence base required for better limits and working with the farmers on actioning non-regulatory measures.

ECan, along with other 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, the NES-F 2020, and other freshwater regulations. The NPS-FM 2020 provides much clearer direction on setting limits, and MfE has produced guidance on how to implement these national policies and regulations.

Further guidance is being prepared setting out expectations around limit setting and providing advice around appropriate control options, including 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 this.

The new national FWFP system has similarities to the ECan FEP system. MfE 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 that these are considered in the system design and implementation.

Opportunities exist within the RM 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. Prior to 2004, the lakes were covered by the Resource Management Act's 1991 (RMA) 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 Land and Water Regional Plan (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.

The diagram below shows the main elements of a resource management system on the left and the Ōtūwharekai/Ashburton Lakes resource management system on the right.

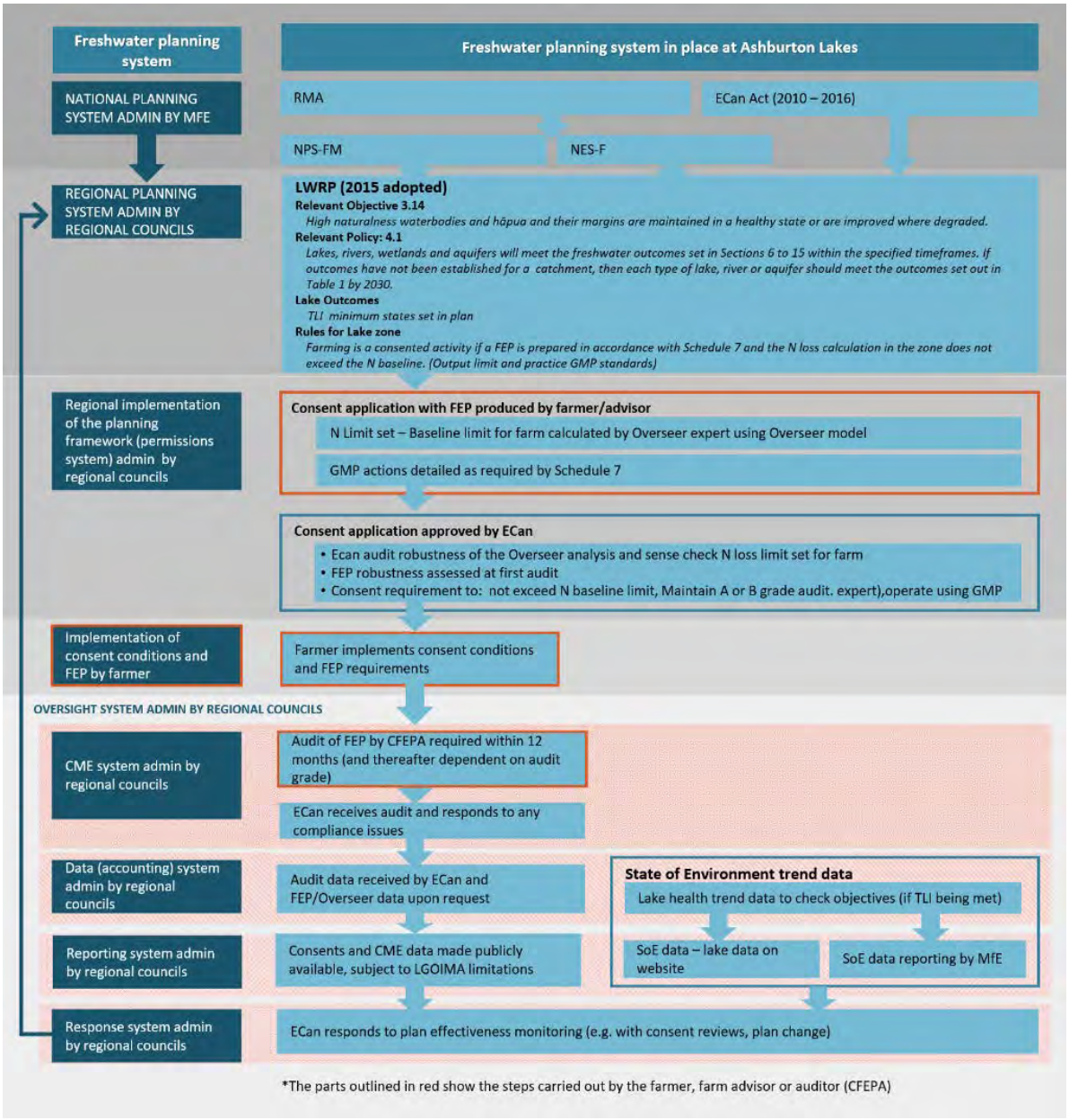


Diagram 1: Elements of the freshwater management system in place for Ōtūwharekai/Ashburton Lakes

Statutory instruments

RMA (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.[30,31]

Recent amendments to the RMA establish a Freshwater Planning Process (FPP) and require all regional councils, by December 2024, to notify freshwater plans that give effect to the 2020 National Policy Statement for Freshwater Management (NPS-FM).[32]

Additionally, resource management reform is currently underway to address many of the recognised limitations of the RMA, including 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.

ECan Act 2010

From 2010 to 2016, ECan was governed by commissioners who were appointed under the ECan Act. This Act, among other things, directed ECan to address the efficient, effective, and sustainable management of fresh water 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 or plan.[33]

The ECan Act exempted ECan from some of the 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 Regional Policy Statement (RPS) and the 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[34]. To be fully consistent with the NPS-FM by 2024, a full plan review will need to review and update the objectives, targets, policies, and rules, and include the Te Mana o te

Wai hierarchy of obligations which prioritises 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 overallocation in many catchments.[35]

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

The proposed NRRP, drafted by ECan between 1998 and 2004, had a large and complex freshwater chapter whose rules and requirements to reduce overallocation of nutrient outputs and water lacked an over-arching vision and strategy.[36] 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".[37]

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.[38]

Canterbury Water Management Strategy CWMS (2009)

Initiated in 1999 by ECan (with MfE and MPI support) as a research project on the region's irrigation potential, the CWMS was developed into a strategy by the Canterbury Mayoral Forum in the hope of making progress on freshwater allocation while the NPPR was caught up in conflict and delays. To avoid similar impediments, the Forum used a collaborative process which 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 LWRPS was being drafted and approved.[39]

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".[40] They also include the principle of 'parallel development' which 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'.

Today, the CWMS sits alongside the LWRP outlining a range of 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.[41,42]

Regional Policy Statement 2013 (RPS)

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 the NPS-FM 2011 to, respectively, have regard to the CWMS and address overallocation, the Canterbury RPS was adopted in 2013 to provide the policy framework for this. Its principles included community collaboration and parallel development.[43] At the same time, work was underway to replace the NRRP with a new plan.

Land and Water Regional Plan 2015 (LWRP)

The LWRP was notified in 2012 and adopted in 2015. It was conceived of as a 'holding plan'[44] 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 sections 15 and 70 of the RMA, but very 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',[45] together with strategically grounded objectives and policies, and collaborative water management through ten zone-based advisory committees comprised of regional and district council, community, and iwi representatives.

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

The Lake Zone policies include outcome states for lakes, which vary according to the lake's trophic status, that 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 that 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 Farm Environment Plan (FEP) containing a nitrogen output limit (N-loss limit) that was based on the estimated average N-loss from the Lake Zone parts of the farm during 2009-2013 (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 (PC5), 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 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 overallocated areas (i.e., red zones). However, ECan staff consider that achieving the new targets and limits with the currently available 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 application, unlike the previous controlled activity consents. All of the 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 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 Farm Environment Plan audits (A Grade)
Mt Arrowsmith Station CRC166953	Resource Consent Granted May 2016	Consented. Issued-active. 15-year duration Expires May 2031	2x consecutive independent Farm Environment Plan audits (A Grade)
Castleridge Station CRC213738	Expired. Renewal application lodged. s124 continuance in place	Expired on 19 September 2021, being continued under s124.	2x consecutive independent Farm Environment Plan 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 Farm Environment Plan 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 (FEPs)

The FEP system at Ōtūwharekai/Ashburton Lakes is the same one that is used throughout Canterbury to manage on-farm environmental risks to water quality, and biodiversity and, since 2017, mahinga kai (as a result of a Ngai 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 (EMS) requirements, and the goals and aspirations of the land user.[46]

Schedule 7 of the LWRP requires that FEPs specify GMPs that are consistent with the objectives and targets of the Schedule and also includes a requirement 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. Whilst the GMP actions committed to in an FEP are selected from those prescribed in Schedule 7, the actions/farm inputs used to comply with N loss limits and these GMP requirements are largely determined by the farmer and their FEP consultant. [47]

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 that the consenting process confirms the validity of the information within the FEP but does not assess the robustness or sufficiency of the FEP.[48]

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 (e.g., 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.[49] ECan officers advised that they rarely ground-truth the adequacy of an FEP prior to granting consent because the determination and expertise of the CFEPAs is accepted.[50]

Farmers can make changes to their FEP at any time after they have received their consent in order 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.[51] The three consented farms at Ōtūwharekai/Ashburton Lakes have all received A grade audits.

N-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 (i.e., 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 2009-2013. This period was chosen because earlier periods had too little information on which to base an N-loss calculation.[52]

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

The Overseer modelling that is 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 prior to that zone existing.

ECan officers have indicated that the council conducts a sense check of the input data used to populate the Overseer model (e.g., 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 in 2009-2013.

This adjusted rate, which is referred to as the Baseline GMP Loss Rate, has yet to be implemented in the Ashburton Lakes/Ōtūwharekai 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 67-99% nitrogen load reductions required to meet lake outcomes.

Furthermore, until Plan Change 7 (PC7), there was no in-lake target, catchment contaminant limit for phosphorus (P) loads to the lakes, or any specific rules or limits at farm level, despite P being a powerful catalyst for algal growth in the presence of nitrogen. PC7 introduced rules to "actively manage" and "minimise" P-loss through farm plans but sets no catchment load limit or farm level P limit. A farm level P-loss limit is generally not considered practical. However, without some measure of P load, there is no way of knowing if, or to what extent, these measures are actually limiting P-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)[53].

Overseer

The Overseer nutrient modelling tool is the primary means by which nitrogen loss is estimated in the LWRP. It is used to set farm N-loss limits and to 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 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.

In response to the 2021 OverseerFM technical review[54], ECan now uses an alternative inputs-focused approach to assessing compliance with the N-loss limit. Key farm inputs known to influence N-loss (e.g., stocking rate and cropping area) are used to indicate any risk of the N 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 a farm decision support tool to help farmers identify high-risk activities near the lakes and determine appropriate mitigations.

Compliance and FEP audit

FEP and consent compliance is primarily assessed during 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 nitrogen baseline 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 primarily 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 that this does not generally happen as the consent mechanism gives them insufficient grounds to investigate unless an auditor recommends further investigation (i.e., consents require little more than a certified farm plan and a nitrogen-loss limit).[55] 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, LAWA, and a website hosted by DOC .[56]

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 N losses are not.

Land use trend data

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

Analysis

The direct cause of the lakes' decline is too many nutrients entering the lakes from the surrounding land. Over 95 percent of this is due to leaching and run-off from **land use practices** on the adjacent pastoral farms. [58, 59,60] A suspected additional source, at Lakes Clearwater and Camp, may be seepage from lakeside toilets and campsites, which may account for around 3 percent of the nitrogen load to Clearwater.[61] A minor source at Lakes Emma and Emily is waterfowl waste.[62,63]

The effects of these pressures are augmented **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 MfE 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 were not adequately countered by the regional freshwater management system nor by the national system in place at the time. Whilst these other influences should not be viewed as mitigating circumstances, they do provide broader context and an understanding of the complex set of drivers at play. They include:

- **Competing government and economic priorities** e.g., 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 Ashburton District Council.
- **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"[64]. 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 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 referred to in Part 2 of the RMA (and 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 well-being. This approach was carried through to the consenting decisions.

The purpose of this report is specifically to identify if there are any systemic issues 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.

Diagram 2 below highlights the **likely points of vulnerability** that were identified in the freshwater management system.

Table 2 sets out the detail of these vulnerabilities and assesses whether the Essential Freshwater reforms address these vulnerabilities, or notes where local actions may do so, together with recommended actions for MfE to address system vulnerabilities that may persist.

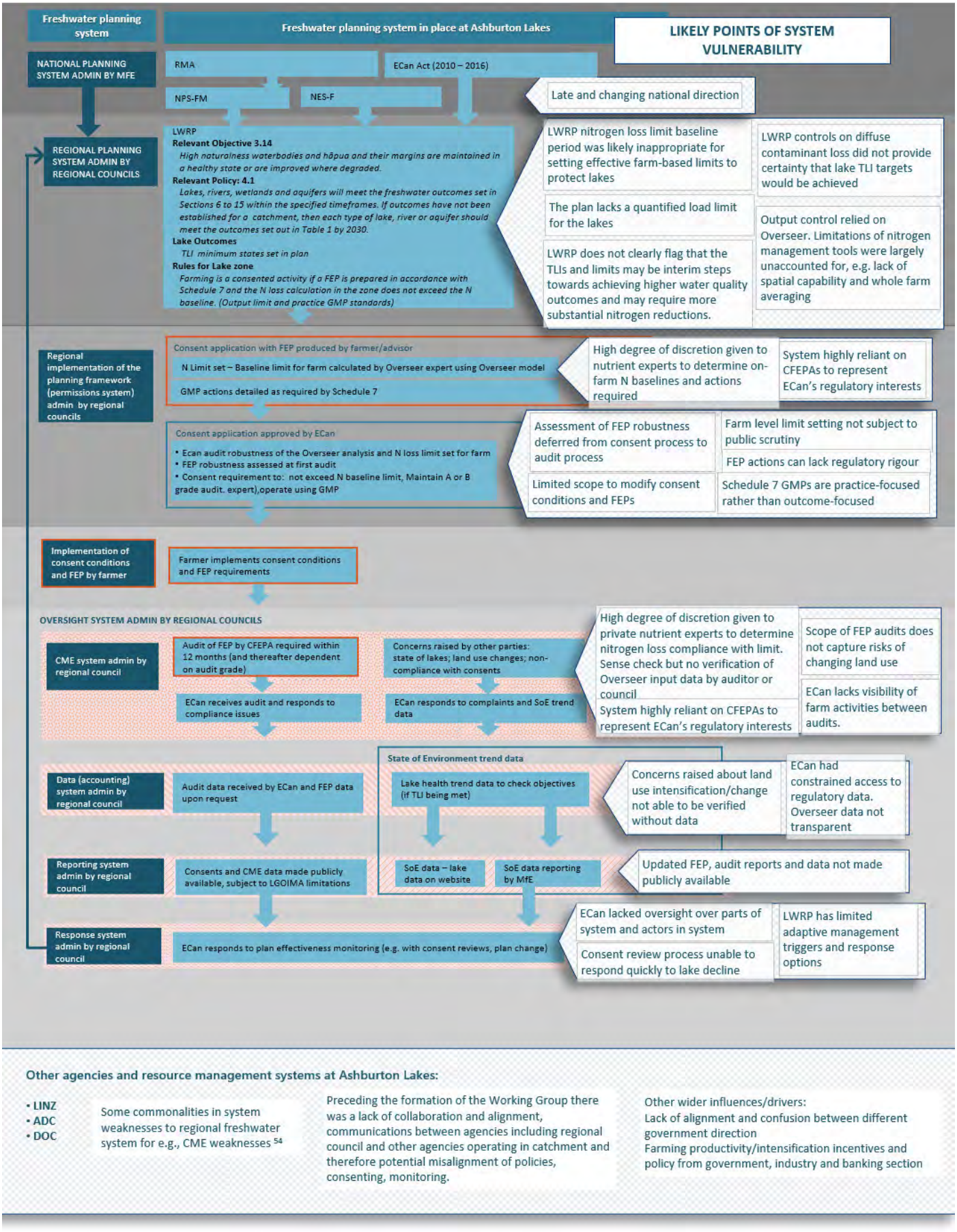


Diagram 2: Likely points of vulnerability in the freshwater management system in place at Ōtūwharekai/Ashburton Lakes[65]

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

Potential system vulnerabilities	Check for carry-over of vulnerabilities post Essential Freshwater reform	Actions for MfE
ECan Act		
• The 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 LWRP but some we spoke to during compilation of this report were concerned that 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 ten appeals which enabled the LWRP to become operative before the ECan Act expired. • In requiring ECan to have regard to the 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).	• 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.	• MfE officials to ensure there are checks and balances in the current FPP system and pass on reflections to NBA team given the planning provisions outlined in the NBA bill
National Direction		
• While the RMA enabled national direction, there were no National Policy Statements 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 and for ECan, the 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, which are 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 the updates to PC7 responding to the 2017 NPS-FM.	• 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. • The latest NPS-FM 2020 and new NES-F 2020 provide a clearer and more directive national planning framework. There have been changes to the current NES-F (wetlands and stock exclusion), but there are no plans for an update to the NPS-FM, so a more stable planning framework is anticipated going forward. • The NBA process includes the National Planning Framework so that current national direction can be preserved through to the new system.	• MfE has set up supporting functions for the FPP and released guidance on the NPS-FM and NES-F to support effective implementation with a focus on explaining the need to ensure effective and location appropriate limits are established that are well linked to target states, avoid cumulative effects and incremental over-allocation.
Regional planning framework		
• **'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 this 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 key pressures on the lakes (land use, stock numbers, farming intensity)	• **Te Mana o te Wai prioritises freshwater outcomes**. Councils must now take a "freshwater first" approach as required by the Te Mana o te Wai hierarchy in the NPS-FM 2020. In contrast to the more equal weightings given to economic, social, cultural, and environmental outcomes in the LWRP's 'parallel process' and 'gifts and gains' philosophy, which enable compromised outcomes and trade-offs, the Te Mana o te Wai hierarchy obliges councils to prioritise the water's ecological outcomes over all others. The Te Mana o te Wai approach provides greater certainty that the environment will be protected adequately.	• **MfE to clearly set out expectations so that councils understand and implement the TMOTW "freshwater first" approach in their plans and systems** and use the most effective control options (i.e., give consideration not just to output controls but also input, activity, or land use controls) to manage environmental risk, particularly in sensitive catchments like Ōtūwharekai/Ashburton Lakes. MfE National Objectives Framework guidance provides direction on this as well as direction on limit setting risks uncovered in this report. • **MfE 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.

- **N load not specified** – The LWRP does not specify a 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 that the farm N-loss limits are not calibrated to the lakes' N-capacity and, as the CLUES report indicates, cannot stop excessive N-loads from entering the lakes.
- **N-loss limit rule based on period 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 2009-2013. This period was chosen on the assumption that 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 that 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 GMP. The limitation of these tools to drive actions on-farm to achieve the N-loss limits appear to be insufficiently accounted for, and their assumed level of effectiveness unjustified. The N-loss limit rule was the primary lever to control nitrogen losses. However, Overseer allowed for averaging of N-loss meaning that 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 as they do not control land use extent or intensity. The full extent of Overseer limitations was not fully appreciated until the PCE and Government review[66].
- **The transition pathway appears to not be clearly signalled to end users.**- Whilst the LWRP does provide a signal that the current N-loss limits and FEP requirements may only be a first step towards more stringent measures in Policy 4.9(d) it does not specify the likely extent of N-loss reduction needed to achieve lake outcomes. Nor does it clearly signal to land users that they are on a transitional pathway towards greater reductions. Farmers expressed surprise and dismay on learning the extent of reductions likely needed. ECan indicated that greater visibility of long-term outcomes and reductions usually comes during catchment-scale limit setting that has not happened here yet for the lakes. With the CLUES report now showing that greater reductions are needed, a voluntary transition pathway is being discussed with the farmers and 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 NPS-FM provides stronger direction for councils to demonstrate that limits will meet waterbody targets.** However, councils are 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 Nutrients Tools below).
- The Freshwater Farm Plan system is a devolved system that councils can use to assist in the achievement of Freshwater Outcomes.
- The FEPs used in Canterbury and at Ōtūwharekai/Ashburton Lakes to a large extent, 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/risk on farm. FW-FP legislation empowers councils to set tougher rules (like individual farm discharge limits to achieve environmental outcomes) and by law these must be reflected in FWFP.
- 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 some 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 NES regulations on farm intensification should prevent the expansion of intensive land use. For instance, the NES-F controls the total area of IWG 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 FMU specific limits and rules).
  - reflections with ECan on the N-loss limit methodology used.
- **Findings to be shared with MfE's Nutrient Management tools team.** MfE are 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.
- There is currently work underway with Overseer to ensure there is more transparency – Overseer have published technical manuals outlining the mechanics of the model.
- Findings to be shared with the Freshwater Farm Plan team at MfE and MPI to support current thinking on the FWFP regulatory design and implementation.
- Officials to pass findings on to appropriate MfE 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 both protect waterbodies and in a managed way that allows for a just transition.

• The planning system put in place in its entirety proved to be complex and there were multiple points where system failure could occur.		
Consenting		
• The devolution of limits to the farm level in the plan meant nutrient experts determined nitrogen baselines loss limits for each farm through the consent process (see nutrient 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 sets out 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 that consents potentially enable adverse effects from activities for longer periods of time than they should, and there is little that 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 audit section for detail).	• Consents will still exist as a way for councils to provide permission for either takes or discharges at farm level. • FWFP will be in force in Canterbury before the end of 2025 and so all FEPS/FWFP will move to a certify/audit framework. The FWFP process requires FWFPs to be certified prior to the first audit, not after. Provided the certification process is strong, it is anticipated that certified FWFP's will be robust from the outset.	• Officials will pass on findings to RM 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		
• Whilst Schedule 7 of the plan lists GMPs that farmers are expected to apply, as appropriate, to their farm, the 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 focussed on process rather than environmental outcomes. FEPs focus on implementing GMPs and operating within N limits. So long as FEP A or B audits grades were achieved, intensification of high-risk areas near the lakes was not monitored or controlled. • There is an unclear link 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[67, 68]. Measures have been taken to reduce this risk; however, vulnerabilities remain. • There is a tension 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.	• The national Freshwater Farm Plan (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 a FWFP. The certifier must be satisfied the FWFP has been developed in a way that meets the minimum content requirements including all effects/risks to freshwater and appropriate actions to address, 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 fresh water and particular farm system. • Certifiers and Auditors will be appointed by Regional Councils, with the assistance of a centralised Appointment Body, in accordance with an Appointment Process set out in the FWFP regulations. • FWFP auditors will audit that the actions in the FWFP have been undertaken in accordance 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/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/risk is addressed appropriately. Like the FEP tool, the FWFP system used in	**Officials from MfE 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 • Actors in the system being sufficiently trained 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 Oversight section for detail) • Recognition that adopting GMP may not be sufficient to meet freshwater outcomes in some catchments

	isolation, will have limitations on addressing issues of overallocation 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/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/targets.	
Nutrient Management Tools		
• The LWRP planning framework did not adequately account for Overseer limitations (many of which weren't 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 there is a verification check 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 nitrogen baseline 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 data/reporting section below).	• 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/actions, as well as providing for effective CME of the farm inputs/actions that underly the output results of the model.	• These findings will be passed on to the Nutrient management tools team to incorporate into key workstreams including guidance.
FEP auditing and Compliance Monitoring and Enforcement (CME)		
• 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 that might have alerted ECan to changes in environmental risk and that farm plan actions may be insufficient (see further discussion in the council oversight, data/reporting section below). • As regulatory documents, 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 ECan's oversight of the audit system and	• The national FWFP programme may adopt an A – D grading system however there are differences to 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. Part9A of the RMA also enables councils to request a copy of an FWFP from a farm operator. • The required skills and competency requirements of FWFP auditors will be defined in the FW-FP regulations. Note that a provider has been procured to deliver the Appointment Process to assist Regional Councils for FWFP certifiers and auditors. • Certifiers and auditors do not hold any CME delegations – these remain with Council staff and Councils will need to incorporate the FW FP system into	**Officials from MfE 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. • 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.

third-party auditors being robust. Provision of oversight appears 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 ECan. ECan do not routinely request FEPs and subsequently have 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.	their compliance programmes. There is a risk 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. MfE is developing training and guidance that will assist councils in improving CME, including considering how central government expectations and local government obligations can be conveyed.	
Regional council oversight, data/reporting and response system		
• ECan's monitoring data tracked the lakes' condition, 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 about the state of the lakes including concerns of some higher intensity land use from tangata whenua and other concerned parties 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 have an internal policy of limiting accessibility of this data to certain persons or teams. There is a tension between protecting the privacy of farmers and the value to the public of greater transparency around farm plan information. • There were not systems in place that allowed a timely response to the lakes' decline.	• 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 of this is to provide baseline data for TAS, flows and limits, to check if over-allocation is occurring and 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 3.30 of the NPS-FM requires that councils must investigate where an FMU or part of 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 that 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. • Whilst 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. There is scope for MfE to provide national consistency and support.	• 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: - Clear direction to collect land use trend data to monitor for intensity and extent change. - Work with the regional sector's Compliance and Enforcement Special Interest Group (CESIG) 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 set out a joint approach or roadmap for improving CME actions - Prioritise supporting 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. • Provide oversight of council's information and reporting systems to ensure they are adequate for achieving freshwater outcomes. • Officials will pass on findings to RM reform consents team to consider the implications for consent review in the implementation of the NBA. MfE to provide guidance to councils including: • Have 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. • Improve 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.

		• Ensure 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 e.g., 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 (e.g., a hold on intensification or extent) are occurring. ECan could also use this baseline data to show how/if the NES regulations are being complied with at the lakes. • In the oversight system, ensure that data, especially around land use trends, actions to achieve limits, and audit data, is provided, and that 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

The focus of this report is on regulatory system risks which 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 PC1-7, it has been increasingly aligned with more recent national direction.

While the LWRP brought new ambition and innovative approaches to freshwater management in Canterbury, 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.

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

However, work to address many of the risks in the system is underway now. 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 MfE 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 Te Mana o te Wai approach which prioritises the waterbody first.

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

We note that Ōtūwharekai/Ashburton Lakes farmers were complying with LWRP requirements, and all said that 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 necessary transition 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 that there may be situations 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 the 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 the council's choice of N-loss limit and the methods used to set and manage it, how well linked the limit is to the lake outcomes, the tools used by farmers, advisors, contractors, and auditors to calculate and check compliance with the limits (i.e., FEPs, GMP, Overseer), and critically, the processes used to implement, audit, and oversee these measures, including the 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, 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 bits of the system but also to the system as a whole, which is something MfE will need to monitor.

ECan is not the only agency with an important resource management role in the Ōtūwharekai/ Ashburton Lakes area. Although there are examples of collaboration, such as between DOC and Ngāi Tahu on wetland projects, for lake health to be fully safeguarded and improved, there needs to be better collaboration and alignment among all agencies and statutory bodies in the catchment, including DOC, LINZ, ADC, MPI, MfE, and F&G, together with Ngāi Tahu. The working group is providing the forum for this to occur.

Next steps

The Randerson Issues and Options paper noted that the RMA has not sufficiently protected the natural environment, and stated as key 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 MfE 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, we have 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.[44]

The next steps include:

- Sharing the evidence and insights in this report on key areas of the system to ensure they can be incorporated into the new systems including:

  - FEPs with FWFP team
  - Overseer with NMT team
  - Elements of monitoring and CME with RM reform team

- With the completion of this report and action plan work MfE's role here will be changing to one of clarifying our expectations and monitoring the continued progress as freshwater issues in other regions also require our attention.
- One of the questions that arose when compiling the report was MfE's role in regulatory stewardship and oversight. Officials will use lessons within the 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 statutory reporting (SOE and RMA Reporting) that will further assist to identify areas at risk and councils requiring greater support to manage freshwater bodies.
- MfE will also share these learnings with ECan to support their efforts towards transitioning the lakes to better health.

End notes

[1] DOC (2022) *About Otūwharekai*. Department of Conservation. Retrieved from https://www.doc.govt.nz/our-work/freshwater-restoration/arawai-kakariki-wetland-restoration/sites/otuwharekai/about/

[2] 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=4219613

[3] 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

[4] 2007 was when Te Rūnanga o Arowhenua and the Department of Conservation began collaborating with other partners on wetland restoration projects around the lakes.

[5] Eutrophication, or enrichment with nutrients, occurs when excess nitrogen (N) and phosphorus (P) enter a waterway, sometimes accompanied by sediment. In e*utrophic* 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.

[6] 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.

[7] 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* (Dec 2020) Retrieved from DOI: 10.1080/10643389.2020.1854564

[8] 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

[9] 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 MfE about their role and views at the lakes.

[10] 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/

[11] 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

[12] 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 (e.g., Lake Roundabout, Lake Trinity, the Spider Lakes).

[13] 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

[14] 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 (May 2014) Retrieved from DOI: 10.1177/0959683614526935

[15] 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=4219613

[16] 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

[17] For example, Lakes Heron and Clearwater did not meet the NPS-FM 2020 NBL for algal biomass in 2020/2021.

[18] No statistics are available on historical livestock trends at Otuwharekai, but the farmers interviewed for this report said that the main pasture improvements and stock increases occurred in the 1990-2010 period, with minor changes since then, mostly within areas that had already been intensified.

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

[20] From comments made by ECan staff interviewed on 25 Aug 2021 by MfE team (Claire Graeme, Rowan Taylor, Carly Waddleton, Shannon Wallace)

[21] 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

[22] From comments made by ECan staff interviewed on 1 Mar 2022 by MfE team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rollinson)

[23] DOC (2022) *Arawai Kākāriki wetland restoration programme.* Retrieved from https://www.doc.govt.nz/our-work/freshwater-restoration/arawai-kakariki-wetland-restoration/

[24]The Ōtūwharekai Working Group is comprised of farmers in the area, ECan, DOC, LINZ, Te Rūnanga o Arowhenua, Te Ngāi Tūāhuriri Rūnanga, Te Taumutu Rūnanga, Te Rūnanga o Ngai Tahu, Ashburton District Council, Central South Island Fish & Game, and MPI. MfE participates as an observer and has commissioned some of the research and modelling.

[25] 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=4219613

[26] 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

[27] 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

[28] 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.

[29] 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.

[30] 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/

[31] 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

[32] Resource Management Act 1991 No 69 (as at 28 September 2022), Public Act Subpart 4—Freshwater planning process – New Zealand Legislation

[33] Section 63 of the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010

[34] 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/

[35] 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

[36]M.G. 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

[37]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

[38]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

[39] Section 63 of the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010

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

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

[42] Amber Allott (2021) **Canterbury meets just two of more than 30 water quality goals set a decade ago.** Stuff, 6 Sep 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

[43] 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

[44] 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

[45] 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)

[46] ECan (2020) **Canterbury Certified Farm Environment Plan Auditor Manual**. Environment Canterbury: Christchurch. Retrieved from: https://www.ecan.govt.nz/document/download?uri=3649541

[47] From comments made by ECan staff interviewed on 15 Feb 2022 by MfE team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rolinson)

[48] From comments made by ECan staff interviewed on 15 Feb 2022 by MfE team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rolinson)

[49] ECan (2020) **Canterbury Certified Farm Environment Plan Auditor Manual**. Environment Canterbury: Christchurch. Retrieved from: https://www.ecan.govt.nz/document/download?uri=3649541

[50] From comments made by ECan staff interviewed on 15 Feb 2022 by MfE team (Claire Graeme, Joseph Edlin, Rowan Taylor, James Rolinson)

[51] From comments made by ECan staff interviewed by MfE team on 23 Feb 2022 (Alison Grayston, Rowan Taylor, James Rolinson)

[52] From comments made by former LWRP lead planner, Peter Constantine, interviewed by MfE staff on 1 November 2022 (Rowan Taylor).

[53] 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.

[54] 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

[55] From comments made by ECan CME officer interviewed by MfE in February 2022 (Joseph Edlin, Rowan Taylor, Claire Graeme).

[56] 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/

[57] 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

[58] Chris C. Tanner, James P.S. 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.

[59] 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=4219613

[60] 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

[61] Chris C. Tanner, James P.S. 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.

[62] 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=4219613

[63] 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

[64] 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

[65] Brown B. 2017. *Last Line of Defence: Compliance, Monitoring and Enforcement of New Zealand's Environmental Law*. Auckland: Environmental Defence Society. Retrieved from: https://www.lawfoundation.org.nz/wp-content/uploads/2017/02/2016_43_2_Last-Line-of-Defence-FINAL-research-report-embargoed-till-5pm-28.2.2017.pdf

[66] 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/

[67] 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

[68] 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

Ōtūwharekai Lessons learnt for Ministry of Environment, - Papatipu Rūnanga and Te Rūnanga o Ngāi Tahu

Introduction:

1. The Ministry for the Environment (MFE) is developing a "**Lessons learnt report**" for the Minister regarding Ōtūwharekai/Ashburton Lakes. This report is "to review the current systems in place and understand the context of what has happened here at ngā roto . We can then take these learnings and apply them to current implementation and delivery"[1].
2. This document outlines the key high-level lessons that Papatipu Rūnanga with an interest in the roto, along with support from Te Rūnanga o Ngāi Tahu (collectively referred to as Ngāi Tahu) have observed over the many years of interaction with numerous parties. The two overarching themes are:
   - The undermining of Ngāi Tahu Rangatiratanga and Kaitiakitanga.
   - Lack of holistic considerations.
3. The document will also provide comments to points that the MFE team would like clarified around involvement. These were provided via email dated 7th March 2022.
4. Ngāi Tahu whānui and particularly the three Papatipu Rūnanga (Te Rūnanga o Arowhenua, Te Rūnanga o Taumutu and Te Ngāi Tūāhuriri Rūnanga) with shared interests in ngā roto have regular interactions with the agencies[2] involved in the management of Ōtūwharekai. This gives them a unique perspective on what has occurred. The three Papatipu Rūnanga representatives involved in this project are disappointed that:
   - given the importance of these roto to Ngāi Tahu; and
   - along with Te Rūnanga they called the Statutory agencies to urgent hui in July 2019 requesting urgent action;

   they were not approached to input into the lessons learnt report either at the same time or before Environment Canterbury.

Ngāi Tahu legal action:

5. Decades of Crown mismanagement and ongoing exclusion of Ngāi Tahu from the governance, regulation and allocation of wai māori have resulted in a claim being lodged in the High Court.[3] Te Rūnanga reserves the position of Ngāi Tahu in relation to this claim and nothing in this document overrides any pleading on the claim.

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[1]Presentation Ōtū Update on the Lessons Learnt Report – o4 February 2022.
[2] The Agencies are: Ashburton District Council; Environment Canterbury; Fish and Game New Zealand; Te Papa Atawhai Department of Conservation and Toitū Te Whenua Land Information NZ.
[3] *Tau & Ors v Attorney-General*, HC Ōtautahi/Christchurch CIV 2020-409-534.

Ngāi Tahu Association with Ōtūwharekai:

6. Ōtūwharekai are significantly important to Ngāi Tahu. Their importance has been recognised by the Crown in the Ngāi Tahu Claims Settlement Act 1998. Further information about the importance of these roto is also described in the "Ōtūwharekai ora tonu – Cultural Health Assessment of Ōtūwharekai/Ashburton Lakes report 2010" found at this link: https://www.takiwa.org.nz/docs/2010_AshburtonLakes.pdf.

Ngāi Tahu involvement and experience in the Ōtūwharekai Project to date:

7. Ashburton Zone Committee Papatipu Rūnanga representatives (reps) expressed concern regarding the handling of the Department of Conservation (DOC) report showing the degradation of the Ōtūwharekai roto to the Zone Committee in March 2019. An email was tabled at the following committee hui by Arapata Reuben, (Te Ngāi Tūāhuriri Rūnanga Zone Committee Representative) expressing "concerns with the DOC report … and the need for urgent preventative action to be undertaken"[4]. This was not the first time Papatipu Rūnanga had raised concerns with the state of ngā roto.
8. June/July 2019 Te Rūnanga o Ngāi Tahu on behalf of the Rūnanga zone committee reps sent a letter to the CEO, upper management of each of the statutory agencies with responsibilities within the catchment. This letter outlined the concern of Ngāi Tahu of the potential for the permanent degradation of the Mauri and intergenerational loss of mahinga kai if current regulatory and non-statutory interventions did not avoid the unknown "tipping" point being crossed. Each agency was invited to attend a hui to develop a "Preventative Emergency Response Plan". This hui occurred in August 2019.
9. Papatipu Rūnanga express their disappointment that under the watch of the agencies that the health of ngā roto had deteriorated. They also put out the challenge "what are you going to do about it".
10. January 2020, the agencies gathered again and outlined what powers they had under legislation to aid the process. For most it was either very little or would take too long. The remainder of the hui was about getting all possible solutions on the table for further evaluation.
11. Since then, there have been hui with the Farmers, individual and multiple agencies, Councillors and more recently other crown agencies.
12. Papatipu Rūnanga have put out the challenge multiple times that bold action is needed. They have also may it clear from their perspective that no one party is to blame that every agency has contributed. The farmers have been operating within the law and they need to be taken on the journey with Ngāi Tahu and the agencies.
13. It has taken a while for some agencies to get fully on board. Some needed to do their own research/investigations, before fully engaging. Most investigations have shown what Papatipu Rūnanga have been highlighting from the beginning.
14. Papatipu Rūnanga have been frustrated at times about the slow progress to date. The action plan developed at the multi-agency working group hui in Dec 2020, highlighted the limitations of what each agency could do on their own, or without buy in from upper management or other parties.

[4] Ashburton Water Management Zone Committee Agenda – 25 June 2019 page 4 Minutes from 28 May 2019 Committee meeting.

Key Lessons:

15. **Undermining of Ngāi Tahu Rangatiratanga and Kaitiakitanga:**

- Ōtūwharekai area has been managed by other agencies/parties:
    - Ashburton District Council,
    - Environment Canterbury,
    - Te Papa Atawhai DOC,
    - Fish and Game,
    - Toitū Te Whenua Land Information NZ and
    - Private landowners.
- The ability of mana whenua to exercise Rangatiratanga and Kaitiakitanga of this statutory recognised tribal taonga has been impacted by:
    - process failures,
    - restrictions/limitations within legislation,
    - decisions that affect ngā roto have often been made without (or very limited) mana whenua involvement, and
    - the level of participation by mana whenua into some work streams but until recently it has rarely been in a governance role.

  An example of this is that Papatipu Rūnanga have been informing parties that there was a problem with the health of ngā roto. Papatipu Rūnanga expressed concerns pre settlement (approx 30 years ago), in 2010, at various times to the Zone Committee and again in 2019. Until 2019, no one listened.
- Agencies not recognising or complying with Te Tiriti.
- Importance/value of mātauranga not always recognised.

  For example, Papatipu Rūnanga have reiterated for many years that ngā roto are in trouble based on mātauranga. Agencies have relied on western science only.
- Where mana whenua has been invited to be involved at a governance level the ability to influence decision making or exercise Rangatiratanga has been undermined by the makeup of the "governance group". Rarely has the representation be fairly split.

  For example: as outlined in paragraph 12, the Ashburton Zone Committee was presented information by DOC that showed ngā roto are in serious decline (March 2019). The voice of the Papatipu Rūnanga reps on the committee (Te Rūnanga o Arowhenua, Te Rūnanga o Taumutu and Te Ngāi Tūāhuriri Rūnanga) were outnumbered by community representation. (i.e. it was not a 50/50 split). The committee minutes show: "The Committee requested feedback from the Ashburton Zone team on compliance and other activities in the Ashburton Lakes area and consider visiting the area in September"[5]

  This is despite; the concerns expressed by Papatipu Rūnanga reps, DOC staff having a list of recommendations to action and the protection of Ōtūwharekai as a priority outcome listed in Ashburton Zone Implementation Plan.

16. Systematic failure across multiple agencies over time:

- The current issues identified within ngā Roto did not occur under the watch of one agency. Tenure review, pastural leases, RMA plans etc. have all contributed.
- Not looking at the wider picture – a holistic view of what the impacts of actions were not looked at either due to processes or restrictions within legislation.

[5] Ashburton Water Management Zone Committee Agenda – 28 May 2019 page 4 Minutes from 26 March 2019 Committee meeting.

- Agencies with responsibilities within the area not working together:
    - They may have been unable to due to processes, roles and responsibilities, internally or within legislation. As noted above there are multiple agencies that have responsibilities.
    - As a result of the agencies not working together Papatipu Rūnanga had to prioritise what they respond to, how they were involved or hui they attend. This could be because of capacity issues, or what influence they may or may not have within the process.
    - Resulted in inefficiencies or gaps in knowledge. Several agencies doing the same or similar monitoring, data not shared across agencies.
    - Agencies looking at their own piece of the puzzle only.
- Failure of the Regional Plan. Based on communication by Environment Canterbury to the Ōtūwharekai project working group, the landowners have all applied for resource consent and those who have obtained consent are working within the requirements of the plan and their resource consent.
- Multiple agencies/departments with different competing goals. This includes those that may not have a direct management responsibility for the area but has had a direct impact on the area.
- Change of priorities within organisations:
    - Ōtūwharekai ora tonu (2010) outlines a number of studies reports that have occurred within the catchment. A number occurred between 2000-2010. This report also lists a number of recommendations that were never actioned. There was a shift in priorities within DOC away from Ōtūwharekai around the time of the release of the report.
- Loss of Relationships:
    - Staff turnover and processes not in place to ensure the relationship can be re-established with new staff.
    - While DOC staff had good relationships in the past with Mana Whenua, a Department restructure in around 2010 resulted in the loss of these important relationships.

17. Legislation Failures:

- Narrow/Silo focus:
    - The legislation that each agency is working under is narrow in its focus and does not have a holistic view.
    - The majority of the high-country stations (in the area) have undergone Tenure Review. Thefocus of this was narrow and did not look at the wider implications of free holding parts of the Ōtūwharekai catchments. It resulted in intensification and development of the land near ngā roto which have contributed to the decline in water quality.
    - Pastural leases.
- RMA:
    - Emergency powers provisions are narrow. The is no ability within these provisions to stop an activity temporarily to allow a review of the situation in order

to determine the best course of action. Particularly when the community is complying with the relevant plan and consent requirements.

- Reviews – review of consents for environmental reasons are difficult especially when there are multiple consent holders and other factors that could be responsible.

18. Points to verify in email received 7th March 2022:

- The email asked: *"Points I have around their involvement that I'd like to check with them include:*
  - *"The high-country lakes and interconnected wetlands known as Ō Tū Wharekai have high cultural significance to Ngāi Tahu. There are a number of nohoanga (temporary settlements) associated with a seasonal trail linking mahinga kai sites. Recognition of the significance of the area is included in the Statutory Acknowledgement within the Ngāi Tahu Settlement Act."*

    Comment: Associations are wider than outlined here. See cultural report (link above for other associates).

  - *"The significant deterioration of the lakes was raised by Ngāi Tahu to Environment Canterbury in 2010 and again in 2018.*
  - *In August 2019, papatipu rūnanga with a connection to Ō Tū Wharekai (through TeRūnanga o Ngāi Tahu) called a hui with statutory agencies. "*

    Comment: See involvement to date section paragraph 12-19, and cultural report.

  - *"Following this hui Environment Canterbury initiated a programme of work including a series of meetings with each of the farmers in the basin, site visits and a review of science and modelling completed on the basin".*

    Comment: See involvement to date section, particularly paragraph 12. Not sure what clarification is being sort.

  - *"Environment Canterbury report to Tuia (a partnership between Environment Canterbury and Nga Runanga)."*

    Comment: Not sure what clarification is being sort here. This was an ECan paper that went to Te Rōpū Tuia.