THE ROOT CAUSES OF WETLAND LOSS in NEW ZEALAND:

AN ANALYSIS OF PUBLIC POLICIES & PROCESSES

Karen Denyer and Monica Peters
October 2020

Prepared by the National Wetland Trust with funding from the Environmental Law Initiative Trust
Approved for release by Melanie Dixon, Deputy Chair, National Wetland Trust

Acknowledgements:
The authors would like to acknowledge and thank for their support, the Environmental Law Initiative Trust, Mike Britton, Shona Myers, Melanie Dixon, Marinus Boom and Pattle Delamore Partners, Joanna Druzbicka, Andrea Julian, and all of the regional and unitary authority staff who responded to our survey and request for interviews and information.

Images
Cover, Ship Creek Kahikatea forest, Monica Peters
Back cover, North Island fernbird, Lake Rotokare, Michelle Tyrell
All other images, Karen Denyer or Monica Peters

WETLAND TRUST
NATIONAL WETLAND TRUST OF NEW ZEALAND

FOREWORD

Wetlands are treasure-troves of plant and animal life and champions of carbon capture and storage. They are vital ecosystems that along with others underpin life as we know it on our planet. The future of humans and nature are inexorably intertwined.

I have fond memories of growing up immersed in the wetlands and the natural world. I see now that the wetlands in the backyard of my youth were my 'PlayStation'. They were my 'happy place', providing days on end of entertainment, exploration, learning and sense of belonging! Sadly, like many others, I have seen many of those beautiful quiet places cease to exist. Concurrently, I have also seen our community develop and adopt policies and processes designed to protect wetlands. This includes the Resource Management Act (RMA) in 1991, with strong provisions intended to end New Zealand's shameful record of wetland loss.

Yet the loss continued. The National Wetland Trust, in our mission to give a voice to New Zealand's wetlands, wanted to better understand the factors that have enabled this ongoing loss. Was it a lack of policy direction in RMA plans? Lenient rules? Lack of monitoring? Lack of enforcement? We are fortunate to have connected with the Environmental Law Initiative Trust, who had similar questions and funded our investigation. We now have robust information on the weak links in the policy process. While we think that the strong rules bought in by the Essential Freshwater programme in September 2020 will help, we now know that rules alone are not sufficient to halt wetland destruction.

David Attenborough observed in his latest film, A Life on Our Planet "*the natural world is fading. The evidence is all around, it's happened in my lifetime, I've seen it with my own eyes*." He also gave us hope as he said, "*if we act now, we can yet put it right*." This report helps shows us where things have gone wrong, so we can, collectively put it right. We hope this report is the catalyst to stop our wetlands fading away. They are too important to lose.

Don Scarlet MNZM, Chairperson, National Wetland Trust

EXECUTIVE SUMMARY

This document reports on a multi-pronged investigation into the root cause of wetland loss in New Zealand. Our aim was to identify the weak links in the public policy process that have enabled the loss of almost 5400 hectares of wetland since 1996.

Under the Resource Management Act (1991), regional councils and unitary authorities were tasked with controlling the use of land to maintain and enhance water quality and ecosystems in water bodies, and the protection of wetlands from inappropriate use and development. To assess how councils gave effect to this, we conducted research to:

- document the loss of wetland by region,
- assess the strength of polices and plan rules,
- investigate council consent processes,
- interview council ecologists for an 'insider perspective', and
- determine the 'back-story' for over 60 wetlands cleared since 1996.

Almost 5400 hectares of freshwater wetland vegetation and almost 140 hectares of saline wetland vegetation was destroyed through human actions in New Zealand between 1996 and 2018. Over 90% was converted to grassland for grazing. The greatest period of loss was between 2008 and 2012, with an average loss of 370 hectares of freshwater wetlands per year. The regions that experienced the greatest total area of loss were Southland, Northland, Waikato and the West Coast. Gisborne lost the greatest proportion of its 1996 extent of freshwater wetland vegetation (15%).

Most councils have appropriate policy objectives, and all regional plans have wetland drainage rules, however they vary in strength, with several failing to control wetland vegetation clearance, and some only providing for a sub-set of 'regionally significant wetlands'. These factors combined to create a loophole for wetland loss – vegetation could be cleared as a permitted activity, stripping the site of its significance and enabling drainage without the need for any resource consents.

Councils have rarely declined wetland-related consents (>50% approved), and the public have rarely been given a say (>50% consent applications non-notified and processed by council staff rather than elected representatives). There appears to have been an extraordinarily low level of public compliance. Of the 79 wetlands cleared since 1996 that we investigated, none were subject to a resource consent, yet most would have required one. Lack of enforcement appears to be a major contributing factor, with an apparently low risk of penalty for illegal drainage, and few 'example-setting' prosecutions to encourage compliance with rules and consent conditions.

It's clear that to stop further wetland loss councils need to do more than just write strong rules - they need to publicise and enforce them.

CONTENTS

1 INTRODUCTION

New Zealand continues to lose wetlands.

Despite being among our most depleted ecosystem types (90% lost nationwide) and a national priority for protection since the inception of the Resource Management Act in 1991, almost 5400 hectares of freshwater wetland and 60 hectares of saline wetland were lost to non-natural causes between 1996 and 2018[1].

We know that the main driver is conversion to pasture, and the regions where this is occurring. However, it is currently unclear which enabling factors are at play - inadequate policy provisions, inadequate policy application, inadequate monitoring, inadequate enforcement, or a combination of these.

This document reports on research to identify the weak links in the public policy chain, and looks at:

- The extent of wetland loss by region, time period and type
- Regional policies
- Regional rules
- Council consent processing systems and procedures
- Perspectives of council ecological staff
- The degree to which wetland loss has been consented or undertaken as permitted or illegal activities
- Any related mitigation requirements, enforcement actions or prosecutions

Detailed accounts of our investigations are reported separately (see Further Reading), with brief summaries presented here.

[1] Based on analysis of the Land Cover Database where areas were classified as Yes for Wetland Context and not high producing or low producing grassland in 1996 and were classified as a modified land cover type (e.g. pasture, exotic forestry, built landscape) or No for Wetland Context in 2018. We excluded sites that changed classification to an unvegetated unmodified land cover such as lake and pond, estuarine open water, or sand and gravel, to ensure we did not include losses to natural causes such as water level fluctuations or shifting dunes.

'Bloody important' wetland drained by digger during Alert Level 4

Marty Sharpe · 15:01, May 19 2020

2 OUR INVESTIGATION

2.1 Measuring wetland loss

We used the Land Cover Database (LCDB) to gather data on the change in wetland extent for each of four time periods (1996 to 2001, 2001 to 2008, 2008 to 2012, and 2012 to 2018) for each regional council area.

We calculated the area of wetland that was:

- Freshwater wetland vegetation in 1996, including those with non-native vegetation cover such as willow, but excluding damp pasture or plantation forest.
- Saline wetland vegetation (mangroves or saltmarsh) in 1996.
- Converted through human actions to an agricultural, forestry, industrial or built land cover type by 2018.[2]
- Created or re-created since 1996.

2.2 Checking policies and rules

We read through the national[3] and regional policy documents and plans and assessed the strength of their objectives and policies to protect and avoid further loss of freshwater wetlands.

We also looked at rules for freshwater wetland drainage, damage, loss, water damming or diversion, vegetation clearance, water discharge and stock exclusion for the most recent operative and proposed regional plans (as of August 2020), and assessed the relative strength those rules based on the type of consent required (i.e. Prohibited, Non-complying, Discretionary, Restricted Discretionary, Controlled, Permitted).

We compared the results with an analysis conducted by Myers *et al.* (2013) to see if rule strength had changed, and compared rule strength against the amount of wetland lost since pre-human times, and recently (between 1996 and 2018).

[2] We excluded loss of freshwater wetlands to open water or sand/gravel because those can be the result of natural causes, but we visually assessed saline wetlands lost to open water to calculate the area lost through deliberate mangrove clearance or to create marinas.

[3] The National Policy Statement for Freshwater Management 2020 and Resource Management (National Environmental Standards for Freshwater) Regulations 2020

2.3 Checking the 'back-story' for lost wetlands

Using the Land Cover Database, we created a map of wetlands that were lost between 1996 and 2018[4]. As case studies, we examined wetlands lost in two regions (Northland and Southland) using air photos and satellite images to verify their conversion to another land cover. For 61 wetlands in Southland and 18 in Northland that we considered likely to have been cleared since 1996, we checked with the relevant council and looked at their online maps and databases to find out if a consent had been issued for the wetland drainage, or if a prosecution had been taken if the works were unlawful.

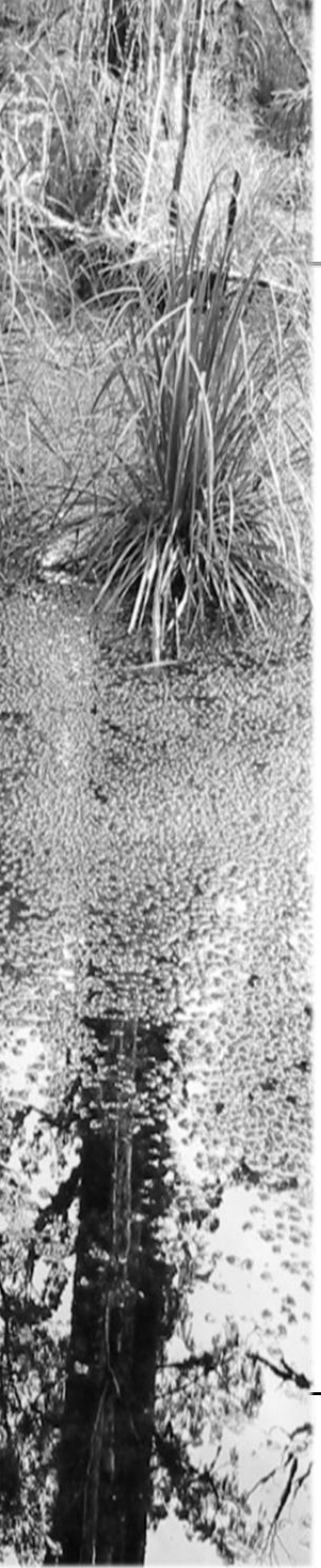
2.4 Talking to council ecologists, planners, and compliance staff

We conducted phone interviews with eleven council staff in environmental science, biodiversity or biosecurity roles. Participants were selected according to their level of knowledge and experience, and to ensure geographical representation. Their roles in councils around NZ included providing technical/expert advice to landowners and to other council staff and within the Environment Court, conducting scientific work (i.e. wetland survey, monitoring, mapping and ecological assessments), seeking funding for restoration and management as well as allocating environmental funding, developing biodiversity plans, providing RMA advice to planners consents and contributing to State of the Environment Reporting.

We also sent a 16-question online survey to staff in consent, monitoring and/or compliance positions in regional councils and unitary authorities around NZ. Twelve responded. To share and confirm our findings we held a feedback Zoom meeting with all interviewees and survey respondents.

We also looked on council websites for publicly accessible resource consents databases and checked them to determine how many consents related to wetland drainage or clearance have been issued since 1991.

[4] Using QGIS 3.14 software



3 WHAT'S HAPPENED TO OUR WETLANDS?

3.1 What have we lost since 1996?

- Between 1996 and 2018 almost 5400 hectares of freshwater wetland[5] was lost from New Zealand. The website "Our Environment"[6] allows users to see wetland change through time on a map of New Zealand.

- Over 90% of drained freshwater wetlands are now in high producing grassland, usually indicative of dairy farming. The most affected vegetation type was herbaceous freshwater wetland (mostly sedges and rushes) which accounted for 82% of all freshwater wetlands lost.

- Half of the freshwater wetlands lost were from Southland, most of it from lowlands near or adjacent to the internationally significant Ramsar wetland (Awarua-Waituna). Big losses are also reported from Northland, Waikato and the West Coast regions.

- The period of greatest loss occurred between 2008 and 2012 when on average, 370 hectares of freshwater wetland was lost every year, mostly from Southland (185 ha per year), Otago (53 ha per year) and the West Coast (43 ha per year). Waikato and Gisborne experienced their greatest losses between 1996 and 2001.

- Gisborne lost 15% of its 1996 freshwater extent, a far greater proportion than any other region, which is significant because the region already had very little wetland cover remaining in 1996. Southland lost almost 7% of its 1996 extent.

- Nelson and Marlborough lost no or very little freshwater wetland, although both lost areas of saltmarsh to sewage ponds (9 ha and 5 ha).

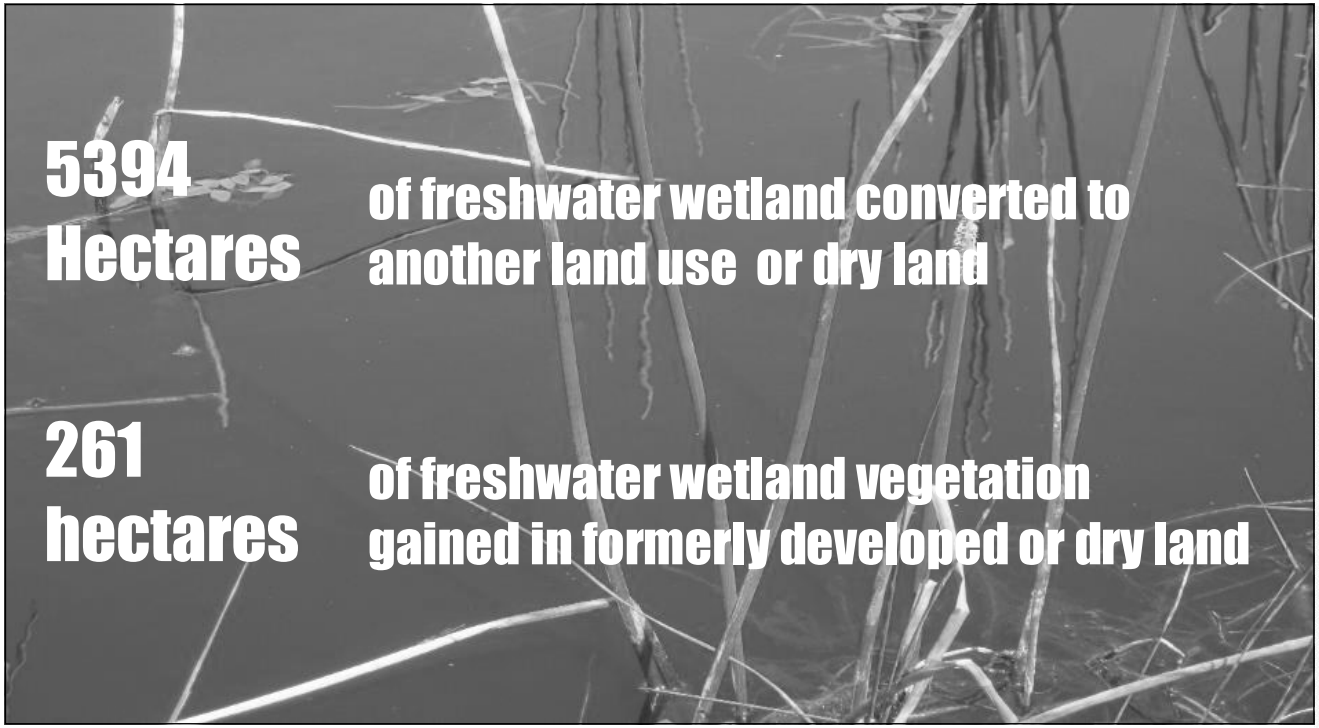
- Some losses were the result of natural processes or seasonal changes. In Northland for instance, almost 200 ha of the 780 ha of recorded wetland "loss" was the result of natural water level changes or dunes shifting across areas of wetland.

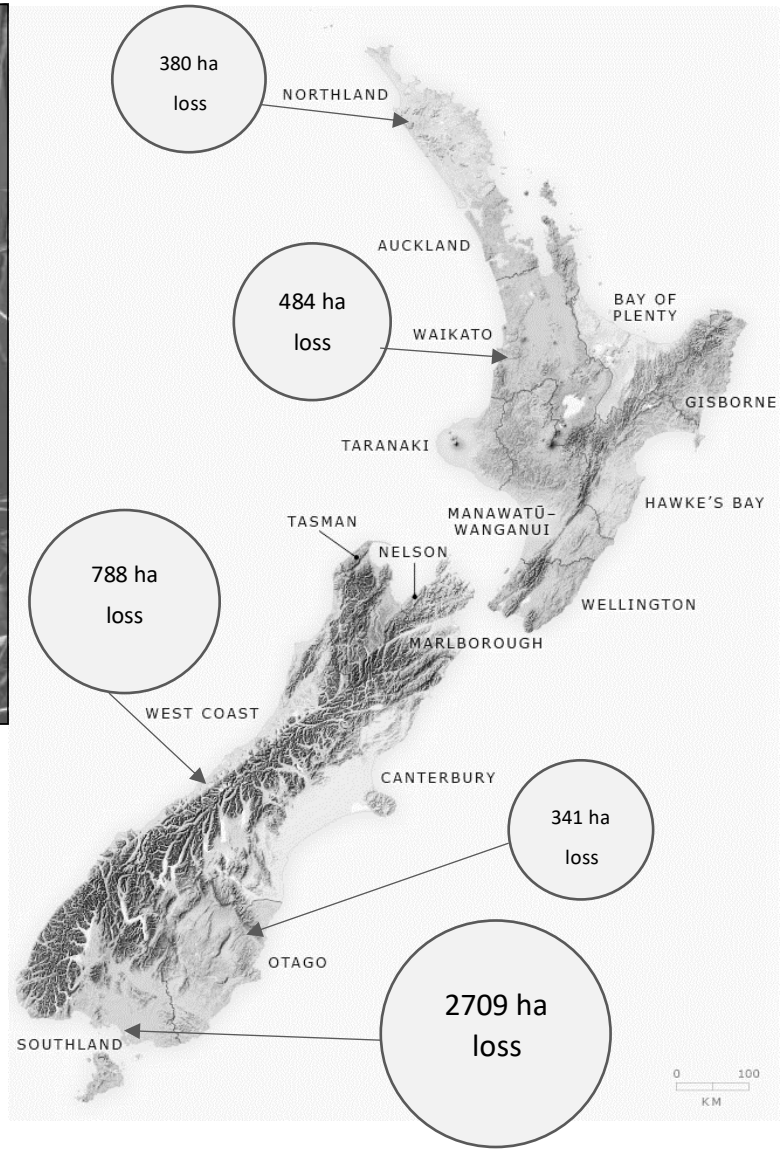
- There was a gain of 261 hectares of freshwater wetland in areas that were classified in 1996 as pasture, exotic forest, or a dryland exotic vegetation type.

- Almost 70 hectares of mangroves were cleared, most of it from a single site in the Kaipara Harbour which remained as bare mudflat as of August 2019. A small portion (6 ha) was cleared for a marina at Whangamata. A further 67 hectares of herbaceous saline vegetation was lost to grassland (44 ha), sewage ponds, mine pits or ornamental ponds (19 ha), or urban development (4 ha)[7].

[5] LCDB classes in 1996 where Wetland Context = Yes, excluding saline wetlands, wetlands in commercial land use (e.g. pasture), and that changed to a managed land cover type or dryland.
[6] https://vizbe.landcareresearch.co.nz/
7 Included for completeness, however our investigation of polices, rules and consenting processes is limited to freshwater wetlands.

NZ's wetland changes: 1996 TO 2018





Based on analysis of data generated from Landcover Database 5: Produced for the NZ Government by Manaaki Whenua Landcare Research released 30 Jan 2020. Excludes saline wetlands, wetlands that were in productive commercial land use (e.g. pasture), and wetlands that changed to lake and pond, gravel and rock, or sand and gravel. Figures in circles are gross loss (i.e. don't account for gains)
https://lris.scinfo.org.nz/layer/104400-lcdb-v50-land-cover-database-version-50-mainland-new-zealand/

Freshwater wetland loss by region

Region	Total in 1996_ha	Area lost since 1996_ha	% of 1996 extent lost	# patches lost	Average patch size lost_ha	Biggest patch lost_ha
Auckland	1310	11	0.8	2	5.4	7.1
Bay of Plenty	4235	32	0.7	7	4.5	10.1
Canterbury	18165	243	1.3	13	18.4	53.8
Gisborne	708	104	14.7	19	5.5	43.1
Hawke's Bay	1723	13	0.8	6	2.2	5.3
Manawatu-Whanganui	8537	92	1.1	22	4.2	5.9
Marlborough	873	4	0.4	1	3.5	3.5
Nelson	10	0	0.0	0	0	0
Northland	15420	380	2.5	40	9.5	87.7
Otago	24456	341	1.4	40	8.5	76.4
Southland	40936	2709	6.6	270	10	202.9
Taranaki	2615	83	3.2	56	1.5	7
Tasman	3572	15	0.4	4	3.7	6.5
Waikato	34275	484	1.4	39	12.4	221.1
Wellington	3325	100	3.0	22	4.6	23.6
West Coast	32562	788	2.4	77	10.2	65.7
Total	192722	5394	2.8	618	8.7	221.1

Derived from the Land Cover Database, see Denyer 2020

3.2 How are we losing them?

By looking on Google Earth timeseries and old air photos we could see that:

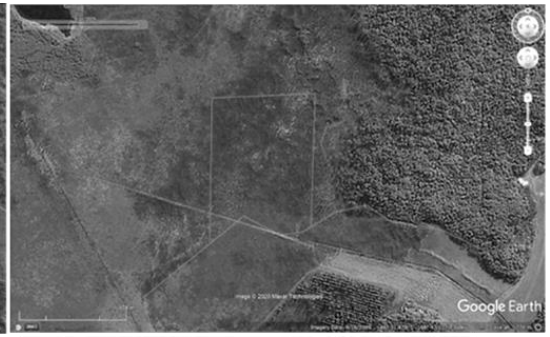
- Some wetlands were chipped away at over the years, others were cleared in a short time period.

- Some were cleared in the early '80s, then reverted but were later cleared again.

- Some were cleared in two steps – first the vegetation was cleared, then the drains were installed. That might be an attempt to destroy the quality of a wetland (under lax vegetation clearance rules) to allow people to skirt drainage rules based on 'significant' wetlands.

- Some wetlands appear to be at further risk of clearance, as we can see vehicle tracks through areas of wetland vegetation adjacent to formerly cleared areas on the same property.

Intact on 1 April 2005



Drain along southern edge by 16 Sept 2009

Vehicle tracks through vegetation on 29 August 2013

Most vegetation cleared by 30 Dec 2015

Fully gone by 2018, with more being cleared to the west (not yet showing as a loss in the LCDB). Appears to be in process of clearing right up to the DOC reserve boundary

4 ARE OUR LAWS AND POLICIES GOOD ENOUGH?

4.1 Resource Management Act 1991

The 1991 Resource Management Act (RMA) requires councils to preserve "*the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins"* and protect them from "*inappropriate subdivision, use, and development*" (s6a).

The responsibility for wetlands in sections 30 and 31 of the Act was divided up between regional and territorial (district and city) councils. The regions were required to (among other things) control the use of land to maintain and enhance water quality and quantity. This enabled them to write wetland drainage rules. However, wetland vegetation clearance was primarily the role of territorial authorities, having responsibility for controlling any effects of land use (potentially including wetland vegetation clearance, but not wetland drainage).

A 2003 amendment to s30 gave regions the ability to make and enforce rules to maintain ecosystems in water bodies[8] and to maintain indigenous biodiversity (enabling them to write wetland vegetation clearance rules). However, regions could (and some did) delegate the biodiversity role to district councils. To further complicate matters for wetlands, many councils focused their attention on s6c (significant sites), and did not provide for s6a (preserving the natural character of all wetlands). As a result, wetland management under the RMA has been something of a grey area, with the potential for neither council to adopt rules for wetland vegetation clearance, and for wetlands not deemed 'significant' to be excluded from any drainage or vegetation clearance rules.

4.2 National Policy Statement 2020

In August 2020, the coalition government released a National Policy Statement for Freshwater[9] Management (NPS-FW). The policy aims to ensure that natural and physical resources are managed in a way that prioritises, firstly, the health and well-being of water bodies and freshwater ecosystems, secondly the health needs of people, and thirdly social, economic, and cultural well-being. This is a very strong statement which admits that 30 years after the RMA was enacted, New Zealand has failed to maintain the basic ecosystem functioning of our freshwater systems and now needs to put ecological needs ahead of economic needs.

[8] Section 30(1)(c)(iiia) was inserted, on 1 August 2003, by section 9(1) of the Resource Management Amendment Act 2003 (2003 No 23). It gives regional councils the powers to control (i.e. via rules) the "*use of land for the purpose of… (iiia) the maintenance and enhancement of ecosystems in water bodies and coastal water"*

[9] The NPS FW does not apply to wetlands in the coastal marine area or to geothermal wetlands, because these are outside the RMA definition of freshwater.

The NPS-FW requires each regional council and unitary authority to add a policy to their plan along the following lines: "*The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted…",* although there are a number of exclusions, such as for infrastructure development and, oddly, for restoration activities.

Definitions are one of the most important sections of any policy document – in other words, the pointy end of public policy. In the NPS-FW, a natural wetland means a wetland that is not: "*constructed by artificial means (unless it was constructed to offset impacts on, or restore, an existing or former natural wetland); or any area of improved pasture that, at the commencement date, is dominated by (that is more than 50% of) exotic pasture species and is subject to temporary rain-derived water pooling."*

We believe excluding constructed wetlands creates a grey area and opens potential loopholes. What if a naturally occurring wetland was unintentionally expanded, for instance by constructing a road that blocks natural stream flow? It could be difficult to distinguish the natural from the constructed portion. The policy is also silent about *when* the wetland was constructed. What about wetlands that formed after European settlers deforested hillslopes, inadvertently filling streams with sediment and creating swampy gullies (a common origin for many modern-day farmland wetlands)? Would these be treated as 'non-natural' wetlands? Some of these questions will require court decisions to clarify how the law should be applied.

4.3 Regional policy statements

When councils developed their plans under the 1991 RMA, they would have been aware of the drastic reduction in extent of wetlands nationwide[10]. As of October 2020, there was a range of policy wording and rules for protecting wetlands across the 16 regional councils and unitary authorities.

- Most councils adopt the RMA definition of wetlands, although some explicitly exclude areas of damp pasture, rushland, and constructed wetlands.
- All but one acknowledge the considerable loss, ecological value of and threats to wetlands, 11 quantify the loss of wetlands in their region.
- All have policies regarding wetland protection in their policy statements and plans, but some, e.g. Southland and Otago have restricted their policies to only significant values of wetlands. Others have broad policies but narrow their focus to significant wetlands when it comes to rules in their plans.
- Nine plans contain schedules of significant wetlands to which policies or rules apply. Some include hundreds of wetlands, while others e.g. Gisborne and Taranaki, have fewer than 100. Taranaki's schedule covers just over half of the amount of freshwater wetland that remained in 1996.
- Definitions of significance may vary - some councils (e.g. Marlborough, Taranaki) set a quality threshold or sustainability filter, likely capturing only a portion of their remaining wetlands. Others (e.g. Wellington, Waikato) are more embracing, recognising that with fewer than 10% remaining wetlands *per se* are a threatened ecosystem and worthy of protection irrespective of their current condition or relative value.

While all councils have responded to RMA Section 6(a) and Section 30 requirements, and developed policies for wetland protection, many will require significant review and updating to give effect to the NPS-FW.

[10] E.g. Stephenson 1983

5 ARE OUR RULES STRONG ENOUGH?

5.1 Regional rules

All regional councils and unitary authorities have some wetland drainage rules in their current plan, but these vary across agencies.

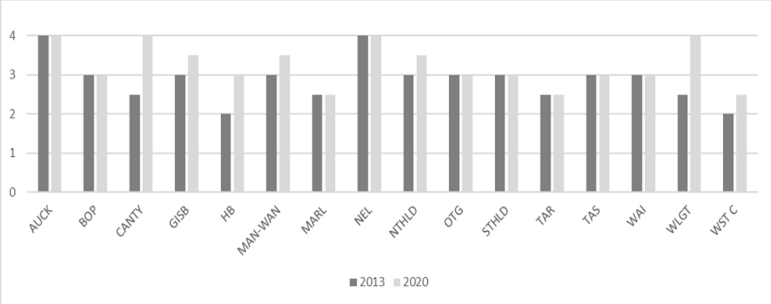
- Four councils have a non-complying activity status for any wetland drainage – meaning councils can only grant the consent under limited circumstances, including where effects are minor.
- Three plans have non-complying drainage rules, but only for a sub-set of wetlands (e.g., those deemed regionally significant).
- Another four have non-complying rules for significant wetlands and discretionary rules for other wetlands – this means council can exercise its full discretion when choosing whether to approve or decline a drainage consent application for non-significant wetlands.
- The remaining five only have discretionary rules for wetland drainage.
- Six councils strengthened their wetland drainage rules between 2013 and 2020. None weakened their rules.
- Not all councils chose to write rules about wetland vegetation clearance following the 2003 RMA amendment to section 30.

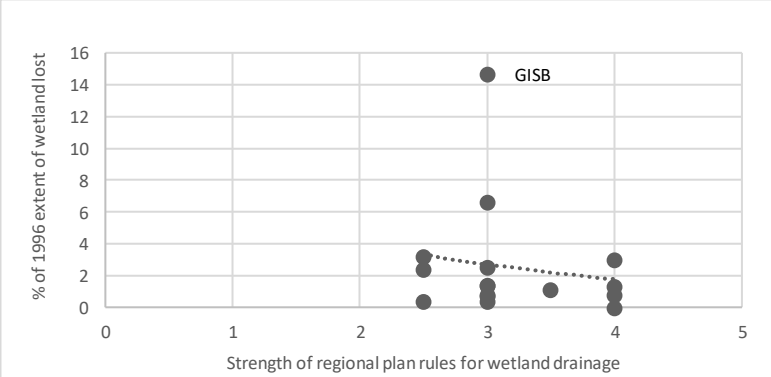
The regions that lost the most of their original wetland extent tended to be more protective of what remains, with stronger rules. However, in recent times, having strong rules did not appear to affect the amount of wetland loss. Gisborne, with moderately strong drainage and wetland vegetation clearance rules, and very little of its original wetland left, lost the greatest proportion of its remaining wetlands between 1996 and 2018 (15%).

The weak link between regional plan rules and the amount of recent wetland loss suggests that other factors, such as compliance and/or council monitoring and enforcement, are more significant contributors to wetland loss than weak policy or rules.

It's clear that to stop further wetland loss councils need to do more than just write strong rules - they need to publicize and enforce them.

Rule strength over time and compared with wetland loss





5.2 Loopholes

Rules in plans are often complex, multi-layered, frequently cross-referenced, and can be significantly narrowed through exclusions or tight definitions of terms like significant wetland or vegetation clearance. Council ecologists told us that loopholes in the rules have allowed wetlands to be destroyed.

One substantial loophole relates to the separation of wetland drainage and vegetation clearance functions between regional and local councils (before the 2003 RMA amendment to s30[11]). Many regional councils (focussing on s6c rather than s6a) wrote drainage rules that apply only to wetlands that meet a certain level of ecological quality or degree of "naturalness", often assessed based on their vegetation cover. However, because vegetation clearance was originally a district council function, first generation regional plans did not write rules to protect wetland vegetation, leaving that to the districts. This has opened the door to wetland destruction via several scenarios that allow for clearance of the vegetation as a permitted activity, and then legal drainage once the wetland no longer meets the ecological quality criteria of the drainage rule.

- **Weak vegetation clearance rules**. Where vegetation clearance is permitted in either the regional or district plan, it can be actively cleared during dry periods, then legally drained once the site is no longer ecologically significant or viable.
- **Vegetation degradation by neglect**. Wetlands are inherently vulnerable to invasion by weeds like willow, blackberry or gorse. Where weeds are left uncontrolled, they can over time degrade the site to the state where it fails to meet drainage rules ecological quality thresholds.
- **Natural or accidental vegetation clearance**. Where severe floods, extended droughts, or accidental or natural fires or floods have stripped a wetland of its vegetation cover or significantly reduced its ecological quality, a landowner could potentially legally drain the site before it can restore itself[12]. Under climate change projections, extreme droughts, floods and fires are predicted to become more frequent and intensive. Peatlands are particularly vulnerable to these events.

We found many instances where vegetation had been cleared first and drains later installed[13].

In other cases, a lack of detailed maps, and/or poor wetland definitions or recognition that a site is or was a wetland, enabled clearance to occur with little ability for councils to prove loss (and take enforcement action) after the fact.

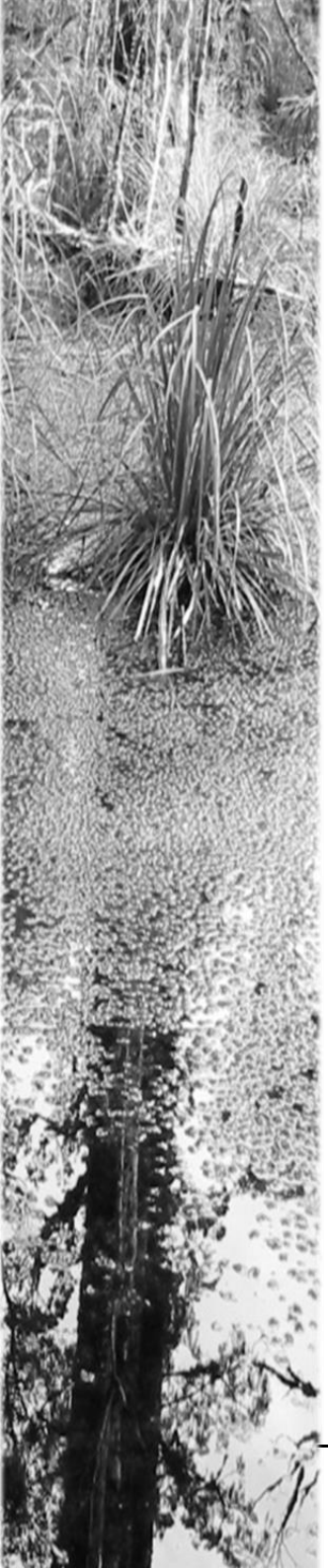
The 2003 RMA amendment allowed regional councils to write rules to protect ecosystems (presumably including vegetation) in water bodies, an important step towards closing the loophole. Some councils (e.g., Canterbury) updated their plans to include vegetation clearance rules, but others (e.g., Waikato) did not. Some already had vegetation rules or were in the process of introducing them (e.g., Northland). As of 2020, four councils (Hawkes Bay, Nelson, Taranaki and Waikato) had no rules to manage vegetation clearance within a wetland.

---

[11] Sections 30(1)(c)(iiia) and 30(1)(ga)

[12] "*Many New Zealand wetlands survive fire well, and recovery after recent fires shows that as a general rule fire will reset a wetland trajectory, but not alter it (Timmins 1992; Clarkson 1997; Johnson 2005).*" MS McGlone 2009 (See Further Reading).

[13] Some examples are reported in Denyer 2020 (see Further Reading)



5.3 New national rules

New national rules[14] came into force on 3 September 2020 and are effective immediately. All councils will need to review and if necessary, revise their plans. Among other things,

- drainage and earthworks within a natural wetland that are likely to damage it are now prohibited, and
- councils must now require a resource consent for any vegetation clearance within a natural wetland, or drainage and earthworks within a certain distance of a wetland that may drain all or part of it

These are powerful rules. It is now prohibited (you can't even ask) to dig drains in natural wetlands that would cause "*complete or partial drainage of all or part of a natural wetland*". Any works within 100 m of a natural wetland that would drain it is non-complying. This means that an application for a consent can be made, but the council can only grant it if the adverse effects are minor or if the activity will not be contrary to the objectives of the relevant plan or proposed plan.

The combination of drainage and vegetation clearance rules that all councils must now enforce will help close the loopholes that previously allowed people to skirt drainage rules by firstly removing vegetation cover and then legally draining the no longer 'significant' or 'natural' wetland.

Importantly, the national rules also control clearance of *non-native* vegetation. This closes another loophole that would otherwise permit the destruction of wetlands invaded by willow or gorse, even if they still have native plants in the understorey, or important habitat values or restoration potential.

These rules are an important step forward for protecting remaining wetlands. However, because many of the vegetation clearance rules are still discretionary (i.e. councils can decide whether or not to grant the consent) it remains a case of *when the rubber meets the road*. Our analysis has indicated that rule compliance and enforcement are significant weak points in the wetland protection chain.

[14] Resource Management (National Environmental Standards for Freshwater) Regulations 2020

IS OUR INFORMATION GOOD ENOUGH?

6.1 Wetland mapping

Wetlands are harder to map than dryland sites. Many are ever-changing systems - their water levels can fluctuate, increasing or decreasing their apparent size when viewed from the air. Good maps are important to help councils track wetland loss and gain, and to detect and, potentially, prosecute instances of illegal wetland drainage and clearance. But there are many issues with mapping and tracking wetland loss:

- Wetlands often exist as small sites, difficult to see or map at a national or regional scale.
- Many have short or scant vegetation which can look similar to pasture on older air photos, making wetlands hard to distinguish.
- Fluctuating water levels, including during floods can make vegetated wetlands seem to appear or disappear.
- Wetlands can be 'hidden' beneath taller forest or scrub vegetation.
- Wetlands can be destroyed through natural processes such as flooding or dune shifting.
- Older air photos may not exist, or have enough detail to confirm if a wetland was still present.

One council ecologist we interviewed said: "*We don't know how many wetlands we've got, so we don't know how many we're losing*"

We encountered many instances where the Land Cover database incorrectly classified as site as a wetland, suggesting the database overestimates the extent of wetland loss. However, we don't know how often the LCDB failed to correctly map a wetland in earlier years that may have later been lost, so until that analysis is done we can't be sure exactly how many hectares have been lost.

However, from our desktop exercise we were able to readily detect hundreds of hectares of wetlands that were cleared without a consent. We expect that many regional councils will have access to better data than we do. For instance, more frequent and better versions of air photographs and lidar (radar) images to find wet areas, as well as on-the-ground knowledge because their staff are out and about in their region. We think that many of the illegally cleared wetlands would have been able to be detected through regular scanning of recent satellite images or air photos. We believe the core issue may be that many Councils are simply not prioritising wetland monitoring, rather than the technical challenges inherent in identifying and monitoring wetlands.

6.2 Data transparency

Most councils now have an online map of consents issued (some include expired consents) and a downloadable spreadsheet. This enables members of the public to see how many consents related to wetland loss have been issued.

- Twelve councils had online consent databases (we could not find any for Auckland, Tasman, Nelson, or Gisborne).
- None of the consent databases had information on the amount (area) or scale of wetlands disturbed.
- Ten councils had good enough detail about the type of activities and whether wetlands were impacted for us to estimate the number issued.
- Two had scant information, making it impossible to identify which, if any, consents related to wetland drainage or clearance.
- Some used vague terms such as “Works to remove wetland plants”, or “Wetland modification”, so it was hard to determine if a given consent related to wetland destruction or enhancement.

There is a need for a national protocol to improve consent reporting, including nationally consistent column headings, activity descriptions, consent conditions terminology, and inclusion of the extent of affected area and declined applications.

Such protocols should include:

- A nationally standardised set of attributes and column headings.
- An attribute on the extent of area subject to drainage and/or clearance as a numerical attribute (allowing for quick summation and statistical analysis).
- Inclusion of all declined consents.
- A national, standardised set of key words to define activities (e.g. Wetland drainage, Wetland vegetation clearance, Wetland weed control, Wetland construction).
- A national, standardised set of key words to record consent conditions (e.g. Animal pest control, Weed control, Fencing natural area, Legal protection, Offsite replacement habitat).
- An attribute column for relevant rules (and plan date) that triggered the consent decision.
- The relevant property details (address and /or specific parcel identification number) to which the consent applied (not just the address of the consent holder which may be unrelated to the location of the activity).
- Associated protocols to integrate online maps and allow users to combine any of the council data layers, including, for instance, consent locations and wetlands (flagging scheduled wetlands), and to ensure points showing locations of authorisations on the online maps are correctly positioned.

7 ARE THE RULES BEING IMPLEMENTED?

7.1 Public compliance

Over 5400 hectares of wetlands have been lost during a time when most councils had some rules in place that would require a consent for their destruction. It would appear that council rules have been flouted for many wetlands.

- None of the 61 wetlands lost in Southland or the 18 lost in Northland that we checked were subject to a resource consent.

- In Northland, a council ecologist agreed that most of the 18 wetlands we investigated were illegal losses. Three may have been legally cleared either because they were drained before rules were written in 2003, or because they did not meet the minimum 50% native plant cover threshold.

- Southland has had region-wide drainage rules for natural wetlands since at least 2010, with some drainage rules in earlier catchment board plans. Southland lost over 2700 hectares of wetlands, yet in their database of nearly 6000 resource consents issued by the council we found just four consents that clearly relate to wetland loss. Some of them may have been legally drained following clearance of vegetation via loopholes outlined above.

- Across ten council consent databases, we found 177 consents that appeared to relate to wetland loss (119 were from just two councils). Hawkes Bay had just 1, Southland and West Coast had 4 each – a very low number given over 3500 ha of wetlands was lost from these regions.

- We found more consents (362) granted for wetland creation or enhancement such as weed control, than for wetland destruction. Given the significant disparity between the extent of wetland loss versus wetland gain, these figures suggests that people who wish to create or enhance a wetland have been more likely to follow the rules than those who wish to clear them. The extent to which rules are a barrier to wetland creation and restoration is an area worthy of future study.

We also found some instances of retrospective consents, which means that rather than prosecuting an illegal clearance, the council asked the perpetrator to apply for an "after the fact" consent. This may provide an incentive to some landowners to adopt the adage that "it's easier (and possibly cheaper) to ask for forgiveness than permission".

One retrospective consent we investigated failed to consider a restoration option, instead deciding that "*because the damage has already occurred, the Council considers it appropriate to complete the works to convert the marginal land into pasture and acknowledges that while some habitat and species diversity may be lost, the requirement to fence will provide some protection to a small area that still remains.*"

The apparent rarity of prosecutions, and weak penalties for breaches may facilitate and encourage weak public compliance with wetland rules.

7.2 Assessing consent applications

- Councils generally have good systems in place to check if a resource consent application is likely to harm or destroy a wetland. Most consent staff we surveyed regularly seek advice from their in-house ecologists and use maps and air photos to see if a wetland is likely to be impacted through a consent application.
- Council staff told us that over half of resource consent applications involving activities that would likely harm or destroy a wetland were processed by staff (rather than elected officials) without any public input (non-notified). This has resulted in wetland loss going "under the radar" so the public may be unaware of the loss of wetlands and have been unable to indicate their level of support or opposition to wetland damage.
- Council staff told us that fewer than half of consent applications for wetland destruction were declined over the past five years. However, pre-application meetings with council staff may have deterred some would-be applicants if there was a low likelihood of gaining consent (e.g., for high quality wetlands).

>50% of consents granted

- Most council staff told us that when consents were granted, they regularly include conditions requiring consent holders to make up for the loss they are causing or minimise further damage. The most frequently applied conditions were around minimising effects, which generally means not causing any more damage (e.g., to nearby streams), while clearing the wetland.
- Compensation (off-setting) conditions were mostly in the form of protecting another wetland site on the property (in effect allowing someone to clear one area of wetland if they promise not to clear the other bit later). Fencing off a natural area or undertaking some pest or weed control were also common. Pest control is usually of temporary benefit rather than an adequate offset for permanent habitat loss. Some councils, e.g., Waikato, have a no net loss policy, and require like-for-like mitigation – so if a wetland must be destroyed, destroyed e.g., to construct a highway, the consent holder has a responsibility to create a similar or better site somewhere else.
- Council consent planners felt that better maps and definitions of wetlands would improve the process.

7.3 Are the rules enforced?

<50% checked for compliance

- Half of the councils who completed our survey told us that fewer than 50% of consents granted for wetland loss were followed up to ensure they complied with the consent conditions (such as fencing, pest control or legal protection of a compensation site).
- Of the 79 cleared wetlands we investigated, none had a consent, and none have been investigated or prosecuted. Northland Regional Council staff told us they were unaware of the loss of the 18 wetlands in their region we investigated.
- While we did not set out to investigate prosecutions, we came across two Environment Court decisions related to prosecutions taken by Environment Southland following illegal wetland drainage.
- One court order signed in 2010 required remediation of the site back to wetland. Based on a visual inspection via Google Earth in 2018, eight years later the site does not show visible signs of having been restored.
- In the second case, an Environment Court order was issued in 2017 in relation to a dairy conversion that went beyond works authorised by a resource consent issued by Environment Southland in 2014. The unconsented works destroyed two patches of wetland totalling 21 ha. The Court ordered that enforcement orders sought by the council to implement an Ecological Restoration Plan be implemented. As of February 2020, there is no visible evidence of remediation on Google Earth images.

These prosecution case studies have raised a new area of investigation around the degree of enforcement of Environment Court orders.

We also found one example of apparent wetland loss on Department of Conservation (DOC) land, to establish a gold mine near Riverton. No consents were issued for wetland drainage or vegetation clearance, although drains are visible of Google Earth in part of the land that has been cleared since 2015. The DOC Access Agreement included some conditions that appear, from a visual inspection on Google Earth, to have been breached. This, includes a requirement to ensure no adverse effects on the water take pond (which on Google Earth has drastically changed in colour since the works began), and a 3 hectare clearance footprint any one time (at least 6 hectares was bare in 2019).

To what extent have wetlands on public conservation land been affected, or are threatened by, active mining leases in other parts of NZ? Such an assessment was beyond the scope of this project, but it also raises questions around compliance monitoring and enforcement undertaken by the Department of Conservation in relation to concessions and access permits.

8 WHAT ARE COUNCIL ECOLOGISTS SAYING?

All of the council ecologists we interviewed reported that ongoing wetland loss was likely in their respective regions. They told us the key factors allowing this to happen were:

- lack of monitoring to identify illegal works,
- lack of acknowledgement that the site currently is, or was a wetland, and
- lack of enforcement or prosecution.

"The lack of comprehensive wetland inventories for small-medium size, poor-moderate quality, and naturally uncommon ecosystem wetlands is a major impediment to their protection, it's pretty hard to do a good job of protecting something when you don't know where it is".

Five of 11 interviewees said that their council had strong policies in place to protect all wetlands, while 6 said they had strong policies but only for a subset of wetlands (e.g. regionally significant ones).

"…the policy framework around wetlands and indigenous biodiversity per se, is more than just stopping the loss of what remains. There is a much wider expectation… to "maintain indigenous biodiversity", and… restore wetland extent and function. When it comes to these wider policy directions… councils are not even close, they haven't even got on top of stopping ongoing losses. The council mindset… is too conservative… stuck in a 1970's model where only the very best sites warrant concern, and even then, compromise is the default position for any development proposal affecting even the best sites."

Only 5 of the 11 interviewees agreed that their council had strong rules to protect wetlands from inappropriate use or development, and 4 said they didn't.

"The rules are so inadequate – this is no direct and simple clear rule to stop wetland drainage, and there should be. We have to interpret how rules relating to soil disturbance and anything to do with water quality can be applied to wetlands, which is insufficient."

Multiple challenges exist around defining and mapping wetlands. There was general agreement among interviewees that *"…narrow and poor definitions complicate things from a compliance and consenting point of view".* In one council, there appears to be *"Ambiguity around what is or isn't a wetland – this relates to lay persons interpretations of definitions and the rules pertaining to wetlands".*

Another highlighted the limited scope of definitions in their plan: *"Our plan identifies a wetland as an indigenous wetland community and is based on vegetation type, not soil type or moisture levels. This creates issues with wetlands that have a high weed burden. The definition excludes wet paddocks – specifically if they have Juncus or Carex geminata. It also potentially excludes seeps and coastal turfs. It's a struggle when [definitions centre on plant] community not water level and when [surrounding activities] are actually having an effect."*

One interviewee described landowners or developers using "get out" clauses in the plan wetland definition *"…to argue the site was not a wetland and therefore not covered by plan provisions*". Another interviewee pointed to examples of existing use rights provisions and loopholes being *"cynically exploited"* by developing *"…huge drains compared to what was there originally – under guise of it being a permitted activity".*

Most interviewees felt their council did not adequately deal with cumulative and/or smaller-scale losses/activities, and lack of enforcement was also a major issue:

> *"Enforcement is considered too expensive, so that's why it doesn't get done. Consents are not monitored; monitoring and enforcement resourcing is too low…Penalties for enforcement are insufficient – it's probably cheaper to pay a penalty fee"*
>
> *"The biggest problem is that we are reactive. We have a huge problem with monitoring – we don't do it. Because there is no monitoring, reporting doesn't occur. There is a disjunct among directorates, particularly compliance monitoring and enforcement/ consenting and science"*
>
> *".. [councils] will typically send out enforcement staff who have no ecological training and have no understanding of ecology or native plants. They will come back saying they don't have enough information (but don't seek it from an ecologist either), or because they didn't have detailed info on what was there beforehand, they determine that there was no breach".*
>
> *"Some things aren't worth having a huge battle over and spending a lot of money on. The outcome is never good for the wetlands [anyway], but a successful prosecution can be used a deterrent for other people."*

One interviewee said: "*.. the ideology around impinging on private property rights is a barrier. As a result, staff are often reluctant to say "NO" to developments, will readily ignore rules, and turn a blind eye to unconsented loss. And they are very reluctant to undertake compliance when clear breaches occur… [they] are afraid of upsetting landowners"*.

The wider implication of lack of enforcement, or retrospective consent issuing is that *"…it empowers people to destroy biodiversity values with impunity as there will be little or no repercussions. Generally, enforcement is slap on wrist and no monitoring to follow up"*

Even when prosecuted, one said *" Fines were delivered and mitigation specified, which never occurred."*

9 WHAT ARE THE WEAK LINKS?

REGIONAL POLICIES

- generally good
- will be strengthened in response to new NPS-FM

REGIONAL RULES

- variable, some very strong, some weaker
- improvements since 2013
- new stronger rules are in effect under the new NES

PUBLIC COMPLIANCE

- no consents issued for the 79 lost wetlands we investigated
- few consents issued for the scale of wetland loss recorded

CONSENT PROCESSING

- generally permissive, few notified, most granted
- good use of in-house ecological knowledge
- some very good consent databases, but room for improvement

MONITORING/ ENFORCEMENT

- fewer than 50% of wetland-related consents monitored for compliance by half of councils that responded to our survey
- thousands of hectares of wetlands cleared without council knowledge
- very few prosecutions
- possible flouting of court orders to restore illegally cleared wetlands

10 IMPLICATIONS & RECOMMENDATIONS

It has been well known since at least the 1980s that the extent of wetlands in NZ has been drastically reduced. Despite the development of relatively strong policies and increasingly strong rules to protect wetlands, there has been ongoing wetland loss since the inception of the Resource Management Act in 1991. This investigation indicates that the root cause is not lack of policies or rules, but an apparently low level of public compliance regarding the need to apply for consent, and inadequate incentives to do so.

The newly enacted National Environmental Standards for Freshwater include clear rules regarding clearance of vegetation (including non-native vegetation) from a wetland. If properly enacted, this should close loopholes that have allowed clearance of vegetation under vegetation rules followed by legal drainage of wetlands that no longer meet significance or natural wetland status thresholds.

Rules are not the only tool councils can use to halt and reverse New Zealand's dismal record of wetland loss and degradation. Most councils have provided grants or funding to help purchase wetlands from willing sellers and secure them as reserves. Many have education programmes to encourage wetland protection and management, and offer advice and/or grants to help community groups and landowners with fencing, planting, pest control, and even wetland creation. These are important and commendable actions that should continue. However, they need to complement, not replace regulations if we are to prevent further loss of one of our most depleted ecosystems. The land cover data has shown that the scale and pace of wetland reconstruction is not enough to compensate for the loss – for every 1 hectare restored between 1996 and 2018, 20 hectares were destroyed. Reconstructed ecosystems can take decades or centuries to come close to replacing the complexities of the former naturally established site, restoration is a poor substitute for protecting existing sites.

Our analysis suggests the need for:

A: Ministry for the Environment to:

- Develop and implement standardised consent reporting databases, and ensure all councils make these publicly available.
- Monitor and report on council performance regarding policy and plan reviews under the new NPS, and consent processing under the NES rules.
- Consider whether an independent body, e.g. the EPA should be delegated responsibility to analyse and report on policy effectiveness, rather than leaving councils to report on their own performance.
- Commission research into alternate land uses that have a lesser impact on adjacent wetlands, including the potential in New Zealand for paludiculture (re-wetting peatlands and cultivating wet-tolerant plants to reduce carbon loss and pollution).

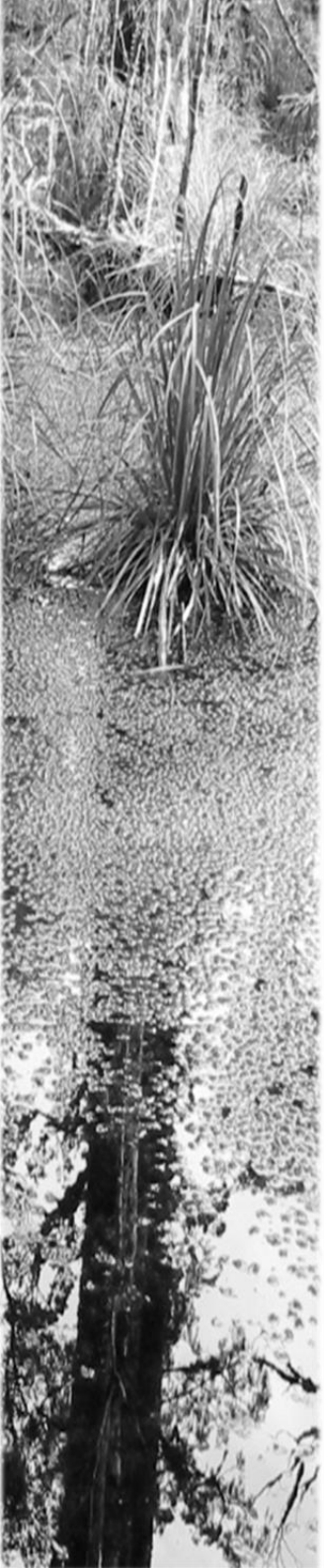
- Consider whether there is a need for process to ensure that Environment Court orders are adequately implemented, for instance via a court-signed certificate of compliance.
- Provide guidance on, and monitor the interpretation of NPS/NES definitions of crucial terms, such as “natural wetland”, to ensure they do not generate loopholes enabling further wetland loss.

B: Councils to:

- Urgently implement publicity campaigns to ensure drainage and helicopter spray contractors, developers and landowners, are fully aware of the new NES requirements to obtain resource consent for works related to vegetation clearance and wetland drainage in and near wetlands.
- Significantly increase their resourcing and effort around consent compliance monitoring, using the revenue generated through consent fees and fines for issued for non-compliance.
- Undertake more rigorous environmental monitoring to detect illegal wetland destruction, including the use of regular satellite imagery for almost ‘real-time’ monitoring.
- Undertake more ‘example’ prosecutions to improve rule compliance, and review and enforce all active Environment Court orders.
- Continue education and awareness to highlight the role and value of wetlands, and the impacts surrounding land uses can have on them.
- Continue to work with and support landowners, restoration groups, iwi and others to protect and restore wetlands, including through provision of funding, advice.
- Improve coordination between teams in councils to improve information flow and sourcing in-house expert advice when needed, particularly regarding compliance and enforcement.

C: Community watchdogs to

- Urge councils and the MfE to implement the above recommendations.
- Monitor council performance regarding consent processing under the new NES rules, for instance by tracking their consent databases and policy and plan reviews, and asking for consent reports to determine if consent conditions are appropriate and adequate.
- Consider legal action to tighten definitions or encourage better compliance with rules and policies.



11 FUTHER INVESTIGATIONS

This investigation identified key weaknesses in the policy process regarding wetland protection, however some crucial areas of inquiry were beyond the scope of the project, and our findings raised other questions. Further research areas are recommended here.

1. Seek feedback from iwi

Discuss the implications of this report with iwi representatives from across New Zealand and seek feedback on their experiences, perspectives, concerns and aspirations regarding wetland management.

2. Look at wetland backstories in other regions

Visually check and investigate the backstory for wetland loss in other regions that lost a significant area or proportion of their 1996 wetland extent, including the West Coast, Gisborne, Taranaki, Otago, Waikato and Canterbury, to establish a baseline for performance.

3. Assess extent of wetlands at risk on public conservation land

Assess the extent, type and location of wetlands on public conservation land subject to mining leases and other access agreements.

4. Assess how councils respond to the new national rules and policies

Investigate how councils have responded to the National Environmental Standards and National Policy Statement Freshwater.

- Examine the websites and conduct surveys of each council to see the degree to which they have communicated the new rules to landowners and contractors.
- Survey councils to determine their plans to amend their policies and plans in response to the new national wetland rules.
- Assess changes to regional policy statements and plans against the NPS-FW requirements.

5. Assess submitter experiences

Investigate and report on the experiences of wetland advocates and other stakeholders in relation to policy development and consenting regarding wetlands.

6. Assess legal barriers to wetland enhancement or restoration

Survey people who have obtained consents for wetland enhancement or restoration works over the past 5 years, and community groups or landowners who are undertaking or planning to undertake such works, to identify legal and public policy barriers, including consent fees, professional fees, information requirements, and compliance costs.

7. Investigate consent compliance monitoring

Investigate and report on the extent and adequacy of council monitoring of wetland-related consent conditions, and enforcement actions.

8. Investigate prosecutions

Examine the state of prosecutions related to illegal wetland clearance or drainage, including:

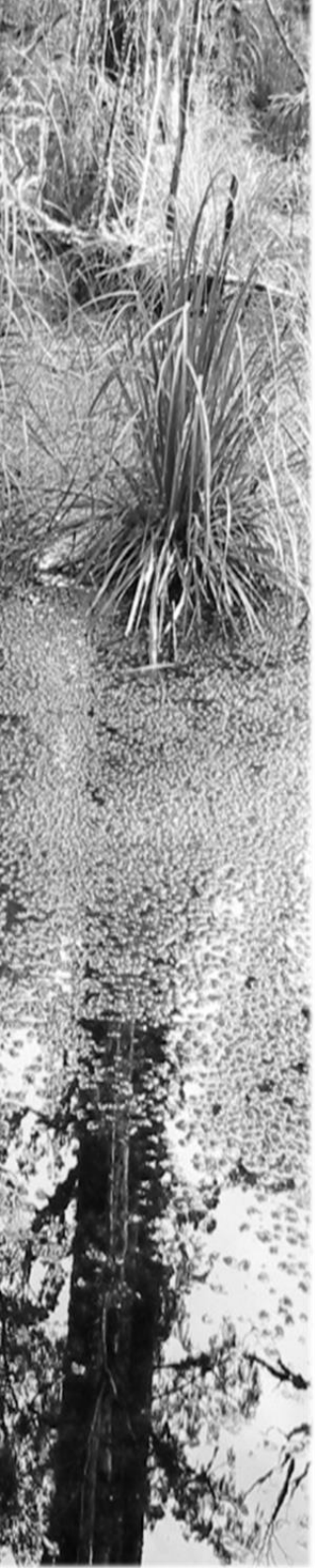
- Number of prosecutions per region
- Linking prosecutions to estimate of extent of illegal works
- Success rate of prosecutions (actions taken vs court decisions)
- Conditions applied
- Extent of compliance with court-imposed conditions
- Outcomes for affected wetlands

9. Assess policy effectiveness reporting

Investigate and report on the scope and adequacy of council's own assessments of policy effectiveness related to wetlands.

10. Assess policies and rules related to wetland degradation

This report focuses on wholesale wetland loss through drainage and/or vegetation clearance. Many other land uses controlled by local authorities can adversely affect wetlands, including fertiliser application and discharges of stormwater, sediment runoff, and effluent. Regional rules managing these activities also warrant investigation.



12 FURTHER READING

An analysis of wetland loss between 2001/02 and 2015/16. By Stella Bellis, JD Shepherd, P Newsome and J Dymond. 2017. Landcare Research Contract Report LC2798 for the Ministry for the Environment

Boggy patch or ecological heritage? Valuing wetlands in Tasman. By the Parliamentary Commissioner for the Environment. 2002. Available from www.pce.parliament.nz/publications/archive/1997-2006/boggy-patch-or-ecological-heritage-valuing-wetlands-in-tasman

Environmental Indicators: Wetland Extent. New Zealand's Environmental Reporting Series Te Taiao Aotearoa. By the Ministry for the Environment & Statistics NZ (2018) Available from: http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Fresh%20water/wetland-extent.aspx

Loss of wetlands since 1990 in Southland, New Zealand. By HA Robertson, A Ausseil, B Rance, H Betts and E Pomeroy. 2019. New Zealand Journal of Ecology (2019) 43(1): 3355

Postglacial history of New Zealand wetlands and implications for their conservation. By M McGlone. 2009. New Zealand Journal of Ecology 33(1)

The Root Causes of Wetland Loss in NZ: 1. Statistics & Backstories. By K Denyer. 2020. Prepared for the National Wetland Trust and the ELI Trust.

The Root Causes of Wetland Loss in NZ: 2. Regional Policies and Plans. By K Denyer. 2020. Prepared for the National Wetland Trust and the ELI Trust.

The Root Causes of Wetland Loss in NZ: 3. Council Processes. By MA Peters and K Denyer. 2020. Prepared for the National Wetland Trust and the ELI Trust.

The Root Causes of Wetland Loss in NZ: 4. Practitioner Perspectives. By MA Peters and K Denyer. 2020. Prepared for the National Wetland Trust and the ELI Trust.

Wetlands: A Diminishing Resource. By G. Stephenson 1983. Prepared for the Environmental Council. Water and Soil Division, Ministry of Works and Development for the National Water and Soil Conservation Organisation and the Environmental Council.

Wetland management in New Zealand: Are current approaches and policies sustaining wetland ecosystems in agricultural landscapes? By SC Myers, BR Clarkson, PN Reeves, and BD Clarkson 2013. Ecological Engineering 56 (2013) 107– 120.