Otago Regional Council

Document Id:

MEMORANDUM

To: **Matthew McCallum-Clark and Kirstie Wyss**

From: **Sami Khan and Tom Dyer**

Date: **03/05/2024**

Re: **Technical advice on circumstances in which stock grazing can be used to enhance wetland values**

Name	Role	Date Completed
Dr Peter Johnson	Reviewer 1	8 May 2024
Dr Bill Lee	Reviewer 2	7th May 2024

Purpose

Technical advice elucidating circumstances in which stock grazing can be allowed to manage natural wetland values, including whether this differs based on the type of wetland and/or the type of stock.

Context/Background

Resource Management Stock Exclusion Regulations 2020 (Stock Exclusion Regulations) requires exclusion of **stock** from **natural wetlands**, including different timeframes for implementation in relation to the current legal status (wetlands included in any district or regional plans), and natural wetlands that occur in low slopes or known to be habitat for threatened species.

The decisions on the proposed Otago Regional Policy Statement (pORPS) have recently been released. The key policy on wetlands has been changed, and now reads:

> *LF-FW-P10A – Managing wetlands*
>
> *Otago's wetlands are managed:*

(1) in the coastal environment, in accordance with the NZCPS in addition to (2) and (3) below,

(2) by applying clause 3.22(1) to (3) of the NPSFM to all wetlands, and

(3) to improve the ecosystem health, hydrological functioning and extent of wetlands that have been degraded or lost by promoting:

(a) an increase in the extent and condition of habitat for indigenous species,

(b) the restoration of hydrological processes,

(c) control of pest species and vegetation clearance, and

(d) ***the exclusion of stock, except where stock grazing is used to enhance wetland values.***

A key difference in the approach is the need to address all wetland types, not just natural inland wetlands, and the inclusion of management of coastal wetlands in accordance with the New Zealand Coastal Policy Statement.

Key definitions:

1. *In the Stock Exclusion Regulations,* ***natural wetland*** *has the meaning given to* ***natural inland wetland***[1] *in the National Policy Statement for Freshwater Management, except that the exclusion of wetlands in the coastal marine area (CMA) does not apply.*
2. *In the Stock Exclusion Regulations,* ***stock*** *means beef cattle, dairy cattle, dairy support cattle, deer, or pigs; and to avoid doubt, does not include any feral animal.*
3. *In the pORPS,* ***wetland*** *has the same definition as the RMA: includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.*

[1] **natural inland wetland** means a wetland (as defined in the Act) that is not:
(a) in the coastal marine area; or
(b) a deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or
(c) a wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or
(d) a geothermal wetland; or
(e) a wetland that:
(i) is within an area of pasture used for grazing; and
(ii) has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology (see clause 1.8)); unless
(iii) the wetland is a location of a habitat of a threatened species identified under clause 3.8 of this National Policy Statement, in which case the exclusion in (e) does not apply

Discussion

Natural wetlands and pastures

The Resource Management Stock Exclusion regulations direct that all stock must be excluded from natural wetlands following suggested timeframes. Exemption from the rules was granted to the Upper Taieri Scroll Plains wetlands with the condition that stock grazing in the designated landscape must be managed through a fit for purpose management plan (due to its complex nature), which must be included in the Land and Water Regional Plan no later than July 2025.

Before discussing whether stock grazing as a tool can be used to enhance wetland values it is important to understand the broader context of the history of natural wetlands and land reclamation in New Zealand. According to the Ministry of the Environment[2], the current extent of natural wetlands in Otago is 24 percent of the original extent at time of settlement, the remaining having been modified and used for urban development, pastureland, agriculture land, and infrastructures. At a national scale, approximately 10% of natural wetlands remain. In agricultural areas, wetland vegetation and associated hydric soil conditions were drained to lower the water table. Drainage provides improved growth conditions for palatable pasture species that are generally poorly adapted to submergence and soil saturation. In addition to *in-situ* drainage of natural wetlands, natural water courses and flooding regimes have been localised using bunds, berms, and diversion canals which have further diminished wetland extent. Currently, in reclaimed lands that were once natural wetlands (76% of original wetland extent in the region), drains and bunds are being regularly maintained and regulations allow these as permitted activities. In Otago, lower Taieri flood plains (East Taieri, Mosgiel and Outram townships) and coastal suburbs of the Dunedin city, are examples of benefits of such reclaimed lands. The Upper Taieri Scroll Plains wetland complex exemplifies many earlier mentioned practices where parts of the vast flood plain support hydrologically undisturbed wetlands, parts are grazed by stock, and other areas have been drained and converted to pasture. Vegetation on the surrounding hills, terraces and some flood plains in the landscape has been modified, largely through fire and mechanical clearance and converted into pastureland. However, the hydrology (due to periodic flooding and meandering river thalweg) of the Taieri River has been maintained, sustaining natural wetland and pasture values. Other such examples where wetland and pastoral values co-exist include several large lowland wetlands and some salt marshes

[2]Ministry for the Environment, Government of New Zealand Current wetland extent, 2013

alongside the major estuaries (opened and intermittently closed) in the coastal Otago (some reclaimed sections of the Pleasant River estuary marshes).

Can stock grazing enhance wetland values?

The intent of the Resource Management Stock Exclusion Regulations is to protect the remaining natural wetland values (extent and condition) by excluding stock. The key natural values requiring protection, as outlined in the NPS-FM, include indigenous biodiversity, hydrological function, and ecosystem health. Stock have multiple impacts on a range of natural wetland values additional to the removal of herbage through grazing which consolidates dominance of exotic species, limits natural succession, and threatens many indigenous species. They also cause soil compaction, nutrient accumulation, weed seed dispersal, and interference with fauna inhabiting wetlands. Soil pugging creates establishment sites for weeds and facilitates nutrient and soil runoff during flood events.

The focus on enhancement of natural wetlands recognises that all of these remaining ecosystems in New Zealand have been modified by fire, grazing and drainage, even where the hydrology and vegetation appear fully intact or only slightly altered. The exclusion of stock will clearly benefit natural wetlands, increasing their resilience and potential benefits in catchments across the region. However, there are large natural wetlands that are accessible to stock around the margins at the interface between wetlands proper and pasture. Many of these areas over the past century have been grazed, especially by sheep. This grazing has provided an expanded niche for some common indigenous plants often naturally found in ephemeral wetlands and lake edge turfs.

The consequences of the stock exclusion regulation in these ecotone areas are context-dependent and in some areas may create in the medium term dense tall swards of exotic species, including a few weeds. It may therefore require decades before the natural hydrological regime, flood disturbance and establishment dynamics allow taller indigenous species back onto these sites. In the interim, taller exotic vegetation still contributes to enhancing some ecosystem health benefits including soil stability, reduced nutrient and bacterial spillover, and enhanced soil organic matter levels. Persisting with stock grazing rarely promotes habitat restoration in New Zealand which has always lacked mammals. The aim to enhance natural wetlands will require restoration in many ecotonal situations and considerable patience, given attempts are being made to reverse at least 150 years of modification.

The diverse range of natural wetland types in Otago are nationally significant and have evolved with selection pressures from birds and in coastal wetlands both birds and marine mammals. Ruminant ungulates were all introduced to New Zealand and their effects on wetland values depend on the size, population density and diet of the animals. Most consume a range of indigenous plants and indirectly reduce populations of birds and invertebrates through deteriorating habitat quality. The majority of natural wetlands also have a range of introduced mammal predators that consume indigenous birds and invertebrates, that also severely reduce habitat quality.

Following a long legacy of modification (altering hydrology and introducing novel biological communities), merely excluding one pressure (in this case stock), will not quickly return wetlands to a state where indigenous species dominate these complex ecosystems. Examples in New Zealand such as Tahakopa Marshes in the Catlins indicate that after being retired from stock grazing, natural wetlands have transformed into native vegetation dominated by woody species, gradually restoring structure and composition, and fostering successional change, previously truncated by cattle. Overseas, cattle grazing is occasional used as a wetland management tool to enhance biodiversity values by sustaining open areas devoid of woody vegetation. Those grazing animals are a part of the indigenous fauna, and their use avoids alternative techniques such as mechanical mowing, chemical spraying, and fire[3]. The New Zealand context is quite different, with birds the dominant herbivore, and the long-term use of stock to control the composition and retard succession of natural wetlands is unlikely to enhance wetland condition. Wetlands are dynamic and relatively resilient so long as the major hydrological drivers and a complement of indigenous species remain[3].

[3] C. M. Finlayson et al. (eds.), 2018. The Wetland Book, https://doi.org/10.1007/978-90-481-9659-3_60

Recommendation / Conclusion

1. Goats are extremely destructive in native habitats, including wetlands, and are currently being exterminated on forested public conservation land in many parts of New Zealand and horses if are in high density do have similar impact to cattle therefore farmed goats and horses should be included in the stock[4] definition.
2. To *enhance* habitat conditions all stock (including goats, sheep, and horses) should be excluded to sustain hydrological functions and restore ecosystem health, and in some cases may need to be accompanied by a pest species management plan and associated actions.
3. To maintain existing habitat conditions, or prevent further wetland loss, provisions that preserve hydrological function such as restrictions on drainage, discharges and cultivation should be implemented.
4. In some cases, stock grazing may be an appropriate tool to maintain natural values (e.g., weed control, exotic grass expansion) in selected wetland[5] margins for a period in the order of five years[6] after implementation of the plan or managed through alternative tools such as Freshwater Farm Plan, action plan or management plan.

[4] Stock as per the RM-SE regulations means beef cattle, dairy cattle, dairy support cattle, deer, or pigs; and to avoid doubt, does not include any feral animal.

[5] Modified natural wetland that fails the Pasture Exclusion Test but manifests wetland hydrology and hydric soil conditions (as per the Wetland Delineation Tools). In the draft LWRP the term used for such wetlands was Other Natural Wetlands.

[6] Five years is the timeframe that the Ministry for the Environment suggested in the RM-SE regulations for excluding stock from all natural wetlands and similarly are recommended here for exclusion of sheep. This is enough time for stakeholders to devise effective management plan for weed control and exotic grass expansion in natural wetlands using alternative techniques.