Otago Regional Council

Otago Regional Pest Management Plan 2019 - 2029
10 Year Review

High Complexity Species

Biosecurity Impact Assessments for Council Workshop

PLANNING DOCUMENT / NOT COUNCIL POLICY

Otago Regional Pest Management Plan Review
Biosecurity Impact Assessments

Introduction to Biosecurity Impact Assessments and how they should be used

[1] This document has been created as part of the Otago Regional Councils (ORC) review of the Otago Regional Pest Management Plan (RPMP). It contributes to the Section 70 Analysis required by the Biosecurity Act 1993 (The Act).

[2] These Biosecurity Impact Assessments collate relevant background research and knowledge to help ORC assess the risks a species may pose and possible options for management and regulation. The assessment covers:

a. The species name (common and scientific) and a description of the species.
b. The values that are at threat from the species (to inform a description about its adverse effects). The values include those but are not limited to those specified by the Act.
c. Effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the species being assessed
d. Options and objectives for management under a new Pest Management Plan.
e. An analysis of other relevant legislation and reasons as to why regulation maybe needed rather than relying on voluntary actions.
f. Opportunities for regional alignment with neighbouring council
g. Level of analysis required to undertake a cost benefit analysis (as defined by the National Policy Direction for Pest Management)

[3] Whenever possible scientific research and evidence have been used to inform the assessments, however where empirical evidence does not exist, staff and experts have utilised their knowledge and experience to make judgement calls.

[4] The information in this audit will be used to inform the development of a Proposed Otago Regional Pest Management Plan (RPMP) to replace the current Plan. These assessments evaluate background information and possible options; they are not a decision or a Proposal. **They should be read in conjunction with the Analysis of Costs and Benefits as well as the Proposal itself.**

Background Information to be read alongside the Options Analysis

[5] At least two options have been considered for each species or site. A non-regulatory option where the species is not included in the RPMP has always been considered and is referred to as an advisory species. The regulatory options are set by the intermediate outcomes and programme descriptions as outlined in the National Policy Direction on Pest Management 2015. All pests included in the RPMP must fit within one of these programmes.

[6] **Advisory Species:** This option is the baseline for most species and is a non-regulatory option. It recognises that the species is harmful and may have a negative impact on some of the assessed values but that a non-regulatory or voluntary action may be suitable.

This option may consider either:

a. A ‘no action’ approach where ORC would not do any work or allocate any resource or

b. Identify specific non-regulatory action(s) that such as education and advocacy that could be utilised to achieve a specified objective.

ORC could use measures such as education, advocacy, Catchment Action Plans, Pest Management Plans, community programmes and funding to support the community to manage the species. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes.

It is proposed that the list of Advisory Species lives on the ORC website, and that education and advice is provided around these species as, while they might not make it into the plan, they may be of interest to some sectors of the public.

Note: For species that cause harm to indigenous species and ecosystems this option should be read in conjunction with the Indigenous Biodiversity Strategy 2026

[7] **Exclusion Programme:** This option can only be considered if the species is not yet known to be found in Otago. Its objective is always to prevent the establishment of the species within Otago. Measures would include surveillance designed to identify an incursion early. ORC has an incursion response matrix in place to respond to any incursions. This process will be followed, should an incursion occur.

In general Exclusion Programmes include regulation to prevent the sale and distribution of the species, and to allow access to properties for surveillance and incursion response. Additional regulation around reporting and vector management may also be considered as part of this option.

[8] **Eradication Programme:** This option can only be considered if the species can be reduced to zero density within the short to medium term. These programmes will generally rely on ORC service delivery to ensure a high level of control. Measures would also include education and advocacy to increase awareness of the species and to promote public reporting of incursions.

In general Eradication Programmes include regulation to prevent the sale and distribution of the species, and to allow access to properties for surveillance and control. Additional regulation around reporting and control methods may also be considered as part of this option.

Note: For the purposes of this analysis short-medium term is considered to be within the life of the plan (10 years).

Zero density is considered to be that the species is absent from the region, with no self-sustaining population established and where surveillance provides reasonable confidence that the pest has been eradicated or is absent.

[9] **Progressive Containment:** This option is considered when the objective is to contain or reduce the geographic distribution of the species over the life of the plan. It is suitable for consideration when the distribution of the species varies geographically, examples include:

a. the species may only be found in one part of the region, and the objective is to prevent it from spreading to other areas,
b. the species can be removed from some areas of the region but not from the region as a whole.

ORC would focus on education and engagement with compliance and enforcement as needed.

In general, Progressive Containment Programmes options consider regulation to prevent the sale and distribution of the species, and to allow access to properties for surveillance and monitoring. Rules requiring landowners to do control and Good Neighbour Rules may be considered. For most species control by land occupiers will be appropriate however for some species the ability for ORC to do control may also be considered.

Note: Any maps and areas considered as part of the analysis are found within the Analysis of Benefits and Costs and are not included here.

[10] **Sustained Control:** This option is predominately considered for widespread species where containment or eradication is unachievable within the life of the plan. The objective of the programme will be reducing the impacts of the species on specific values. The option is often used to maintain the gains by previous work or to prevent the spread of a species between properties when neighbouring properties have different levels of voluntary control.

The objectives of this option including where possible scale of the reduction required will be set out in the analysis.

In general, Sustained Programmes options consider regulation to prevent the sale and distribution of the species, and to allow access to properties for surveillance and monitoring. Rules requiring landowners to do control may be considered and for most species control by land occupiers will be adequate however for some species the ability for ORC to do control may also be considered.

Due to the widespread nature of the species being assessed, enquiry response or Good Neighbour Rule enforcement may be suitable to ensure the resource and effort is targeted to areas with the highest impact or risk of spread to neighbouring properties.

[11] **Site-led:** This analysis looks at the values at a certain place and then considers a suite of species that puts those values at risk. It is used when the risk to the place or the objectives for the place differ to that of the wider region.

Site-led programmes may include several objectives depending on the species at the site being assessed. These sub-objectives will be framed as exclusion, eradication, progressive containment or sustained control to help align them to the wider plan, but they will apply only to the site in question.

Note: When a site-led programme is considered as an option in a species Biosecurity Impact Assessment it is there to consider if the impacts and distribution of a species could

be effectively managed at certain places rather than across the entire region. This would be considered if a regionwide rule is unlikely to be feasible or if a certain value has a different risk profile to the rest of the region. Further analysis of these options is completed using the Site-Led Assessment form and is not covered in detail in the species assessment.

[12] **Good Neighbour Rules (GNRs):** These rules are considered when a species is moving or spreading across a property boundary and causing unreasonable cost to the neighbouring or nearby properties. In general, they will include a distance where control is required and evidence that an impact is being caused.

They are the only rules that the Crown have to follow, GNR's can therefore consider when species are moving between the DOC/LINZ estate and private land.

When a GNR is considered as an option it is intended to apply to all land occupiers including the Crown unless otherwise stated.

[13] **Section 52 and Section 53 of the Act:** Once a species is named as a Pest within the Regional Pest Management Plan, Section 52 and Section 53 of the Act automatically apply. These sections prevent people from knowingly communicating, releasing, spreading, selling, breeding or propagating the species within the region (the full legal wording can be found within the Act). For some species these sections may be adequate to regulate the impacts of the pest, and no further regulation will be considered in the options analysis.

[14] **Staff recommendations:** Included in the report are staff expert opinions based on the information collated in the Biosecurity Impact Assessment, they are not a decision and do not cover the outcomes of the Analysis of Benefits and Costs

[15] **Proposed Rule:** Where a rule is proposed in the Biosecurity Impact Assessment it describes the type of rule or the intent of the rule proposed, it does not constitute the actual wording that would be used within the Regional Pest Management Plan

Candidate Pest Species Management Audit	
Pest Species	Feral Deer (Red, Whitetail, Fallow)
Species Names	*Cervus elaphus / Odocoileus virginianus borealis / Dama dama*
Author Name & Role	James Bradley; Community Coordinator Biosecurity
Audit Date	24 March 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	18 June 2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to Feral Deer within the Otago Region.

The assessment covers:

- The values that are at threat from the pest,
- Effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the pest,
- Options for management under a new Pest Management Plan.
- Opportunities for regional alignment with neighbouring council
- Level of analysis required to undertake a cost benefit analysis

This information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

Deer are declared feral wherever they are not: held behind fencing that meets the requirements of the Deer Farming Regulations; and identified as feral as required by those regulations. Wild populations of deer can be found throughout New Zealand. These animals are the descendants of deer that were imported and released from 1851. Feral deer (*Cervus elaphus, Odocoileus virginianus borealis, Dama dama)* are medium to large-sized ungulates ranging in weight from 40kg (female white tailed) to 215kg (red male). Red deer have a reddish-brown coat, while whitetail deer are light to grey-brown with a white underside. Fallow can vary in colour from black, dark brown, light red brown with white spots or cream with a distinctive cream rump.

In New Zealand feral deer have no natural predators. They can grow to large numbers without effective management. Red deer are prevalent across all of Otago, moving between forest, bush pasture margin and into farmland. Whitetail deer can be found at the head of Lake Whakatipu. Fallow deer can be found in many low-altitude forests and rural areas, partly the result of farm escapes and illegal releases around Whakatipu and the Blue Mountains.

POLICY

Risk Assessment

Value at Risk	Impact	Summary of Effect
Environmental Values		
Soil Resources	Medium	High population grazing pressure may lead to erosion in some vulnerable soil types.
Water Quantity & Quality	Medium	High population grazing pressure may lead to erosion in some vulnerable soil types which then may lead to runoff to water ways in rainfall events.
Threatened Species (survival & distribution)	Medium	Deer selectively graze highly palatable alpine species, often by preferring large-leaved herbs, snow tussocks, and nutrient grasses, this feeding behaviour can significantly modify plant communities. It can also drive some species to decline while favouring grazing-tolerant or unpalatable plant species.
Indigenous Species (survival & distribution)	High	High population grazing pressure may lead to displacement and destruction of indigenous spp. They consume large quantities of native seedlings and saplings which reduces vegetation biomass and leads to failure in recruitment of a range of woody and herbaceous species and alters habitat for native fauna. Heavy and selective browsing on trees and shrubs can change forest structure and the composition of the understorey.
Ecosystem Health & Biological Diversity	High	High population grazing pressure may lead to the effects described above impacting negatively on ecosystem health and biological diversity.
Other		No impacts known.
Economic Values		
Tourism	High	There is a strong tourist market for deer hunting.
Dairy	High	Deer carry Tuberculosis (TB). They graze on pasture and crops grown for stock. High population numbers can have a significant impact of farm production.
Sheep & Beef	High	Deer carry TB. They graze on pasture and crops grown for stock. High population numbers can have a significant impact of farm production.
Commercial Forestry	High	Deer can damage new plantings
Horticulture & Viticulture	High	Deer can damage trees and vines
Infrastructure		No impacts known.
Other		No impacts known.
Mana Whenua Values		

Taonga Species		Aukaha will provide this cultural impact statement
Cultural Harvest		Aukaha will provide this cultural impact statement
Other		Aukaha will provide this cultural impact statement
Social & Cultural Wellbeing		
Social & Cultural Values	Medium	Feral Deer are a source of food
Human Health	Low	Potential to spread Giardia
Recreation Values	High	Feral deer are a valued recreation resource for a large number of hunters.
Other		
Overall Impact		
Overall Impact	High	Given the effects described above, deer have the high impacts on multiple values.

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RPMP Evaluation and Review

Current RPMP Objectives & Rules

Feral deer are included in the Otago peninsula, West Harbour-Mt. Cargill, and Quarantine and Goat Islands site led programmes in the current RPMP. The objectives for each programme seek to preclude the establishment of feral deer over the duration of the plan in order to avoid, mitigate or prevent damage to the indigenous ecosystem values at these sites.

Plan Rules 6.5.4.1, 6.5.5.1, 6.5.6.1 state that no person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the relevant site identified in the plan any feral deer.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure.

A breach of this rule creates an offence under section 154N(19) of the Act.

Current Management

Nil.

Other Management Activities

Information on feral deer is provided on ORC's website.

ORC takes a lead role in supporting the goals of community groups and agencies in site-led areas in relation to feral deer. This may be through advice, education, funding, service delivery or requiring other land occupiers undertake to control when needed.

The Wild Animal Control Act 1977 is the key legislation in New Zealand that regulates the control of harmful species of introduced wild animals and the operations of recreational and commercial hunters. It aims to achieve effective wild animal control and includes provisions for the regulation of hunting areas, the sale of wild animals, and the issuance of permits or licenses for the capture or keeping of wild animals. The Act is administered by the Department of Conservation and is designed to ensure that the management of wild animals is conducted in a manner that is consistent with the conservation of the species and the protection of the environment.

No large-scale control operations are carried out by DOC within Otago. There is current effect to allow recreational hunters access to Crown land for hunting of deer, but this is not effective at keeping deer numbers at a sustainable level and is evident with a large spread across landscapes of deer numbers.

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme?	No, ORC has not completed any enforcement, inspections or service delivery However, the site led areas are currently deer-free areas and no support or collaboration requests have been sought from community groups in these site-led areas, to date. Advocacy and education is planned for 2026 as part of wider ungulate work.

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Have objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP?	Yes, there have been no reports of feral deer within the site-led area, however, there has been no active monitoring, so this relies on passive surveillance and is inconclusive. The site-led programmes within the RPMP have not been used or tested.
Pest control spend	Nil
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	Regionally, there is a high level of interest in deer management, particularly from land occupiers bordering public conservation land and commercial forestry blocks, which contain large areas of preferred habitat. Ungulates such as feral deer, were raised by stakeholders as pests that should be moved to one of the four RPMP programmes, such as sustained control, instead of site-led programme as under the current RPMP. This is due to the increased prevalence of, and damage caused by these pests across Otago. There is benefit in retaining deer as a named pest species in site led areas, to ensure these areas remain deer free.
Good Neighbour Rule	Nil

Regional Alignment Opportunities

Relevant Regions	Current Programme	Alignment Opportunity
Canterbury RPMP 2018-2038	Nil	
Otago RPMP 2019-2029	Site-led	
Southland RPMP 2019- 2029	Nil	
West Coast RPMP 2018-2028	Nil	
Other Comments	A national strategy would be necessary for alignment and would better support the management of highly mobile species such as feral deer.	

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.
Yes
Wild Animal Control Act 1977
Game Animal Council Act 2013

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?
Yes
If no, how would this be managed?

Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Feral deer were ranked the sixth highest issue as respondents highlighted deer populations in Otago are increasing and causing significant environmental, agricultural, and safety issues.

2. Featured as a dominant theme at the Catlins, Balclutha, and Queenstown community drop-in sessions, highlighting challenges with forestry and crown not managing deer and affecting land occupiers and farms. Support for including deer in RPMP with a Good Neighbour Rule to hold land occupiers accountable.

3. Discussion document feedback showed comparative support for the current site-led approach and a different programme with modified rules. Respondents considered current populations to be increasing and supported stronger control measures, occupier responsibilities, greater coordination between land occupiers and stakeholders, and clearer accountability for pest control.

4. Stakeholder workshops highlighted the challenges with enforcing a rule on feral deer at a regional scale, suggesting national direction for ungulates is needed to make a meaningful impact on populations.

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Options for a Proposal for a New Plan

The preliminary options identified for the management of this species in the proposal are:

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective:** Reduce the impacts of feral deer across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC could use measures such as education, advocacy, Catchment Action Plans and funding to support the community to manage feral deer. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. **List as an Advisory Species in the plan.** Regulation would remain solely with the Wild Animal Control Act 1977 and Game Animal Council Act 2013 *Benefit:* There would be no compliance and administration costs for ORC. A non-regulatory focus will allow ORC to focus on catchment level control with interested communities. This approach is aligned to most other regional councils. This option is flexible and does not bind ORC to a specific budget allocation, the scale of work can be adjusted with community need. *Risk:* Significant biodiversity impacts and increased agricultural impacts and damage is likely to continue. This option is likely to be unpopular with parts of the community that are struggling to manage impacts of roaming animals but may be supported by some recreational hunters who appreciate having high deer numbers to use as a resource. *Mitigations:* ORC could work with Te Uru Kahika, MPI and DOC on other national regulation options rather than rely on the RPMP.
Option 2	**Site-Led (Land Occupier Rules)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered feral deer for inclusion in the following Site-Led Programmes: ▪ Otago Peninsula ▪ Mt Cargill West Harbour ▪ Harbour Islands (Quarantine Goat) ▪ Catlins ▪ Sothern Lakes ▪ Mt Hikaroroa Mt Watkins **Objective:** Due to the impacts and distribution of feral deer it could be appropriate to manage the impacts at certain places rather than across the entire region. To do this a site-specific Site-Led programme would need to be considered and analysed.

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	Measure: Reduce the impacts of feral deer in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. *Benefits:* The benefits of a site-led programme would mean any regulation would be targeted to areas where specific values are at risk. This allows the approach to be applied to where it can be most efficient and effective. *Costs:* Managing feral deer through a Site-Led approach rather than a species led approach would mean it is not managed in the wider region and areas not in the Site-Led Programme would still be at risk from the impacts. *Risk:* There is no national standard to monitor impacts and to identify who is responsible for roaming animals making enforcement and compliance difficult and costly. *Mitigation:* Non-regulatory approach may be applied throughout the wider region. Additional site-led programmes could be added as budget allows. Council would need to develop a standardised monitoring (abundance) tool and carry out compliance/ inspections in site-led areas.
Option 3	**Sustained Control (Land Occupier Rules)** **Objective:** Suppress or maintain feral deer populations at levels that minimise impacts on neighbouring properties and reduce the spread of feral deer across property boundaries. **Measure:** Reduce the impacts of feral deer across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act: land occupiers to carry out control mustering or fencing. ▪ Council Inspections: Service Request response only ▪ Advocacy and Education ▪ Collaboration **Proposed Rule [1]:** Regionwide Good Neighbour Rule to control feral deer to a zero density within 2km of the property boundary. ▪ Due to the highly mobile nature of feral deer the rule would encompass a wide buffer zone to capture feral deer home range and allow rules to apply to transport corridors, rivers margins and paper roads. ▪ Rule would need to allow ORC to respond if an adjacent or nearby land occupier is contributing to deer issues on private land. ▪ ORC would response to Services Requests from the community rather than implement regionwide surveillance and compliance:

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	○ The complainant would need to be able to prove a negative impact (meets the unreasonable costs test in the NPD), that they are undertaking control and that the problem is coming from the neighbour. ▪ The rule would be constrained to rural land (due to the difficulties of control and enforceable and the lower impacts within the urban environment) *Benefit*: This option allows community members to raise concerns about feral deer issues from neighbouring properties, thereby addressing some community concerns and the issues raised by consultation. Some impacts will be mitigated. The Good Neighbour Rule will bind the Crown enabling control to be enforced on the DOC estate if necessary. If named as a pest species section 52 and 53 of the Biosecurity Act would apply. *Cost:* This is likely to be an expensive option with a high cost to land occupiers especially the Crown. ORC will need to decide what it will require as evidence when a service request is made (data, maps) and an appropriate level of control. *Risk:* There is no national standard to monitor impacts and to identify who is responsible for roaming animals making enforcement and compliance difficult and potentially costly. Remote sites with high biodiversity will continue to be at risk if there is no one to raise a service request. *Mitigation:* Council would need to develop a standardised monitoring (abundance) tool, and carryout out compliance/ inspections following a service request. Providing advocacy and education to encourage voluntary control alongside the RPMP will also mitigate some of the risks,
Option 4	**Site Led (ORC Service Delivery)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered feral deer for inclusion in the following Site-Led Programmes: ▪ Otago Peninsula ▪ Mt Cargill West Harbour ▪ Harbour Islands (Quarantine Goat) ▪ Catlins ▪ Sothern Lakes ▪ Mt Hikaroroa Mt Watkins **Objective:** Suppress or maintain feral deer numbers to reduce the impacts on at risk values. **Measures:** Reduce the impacts of feral deer within high values sites by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** through ORC funded and managed control efforts.

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	▪ Service Delivery: ORC will manage external contractors to deliver control to required levels and service delivery will include contract management, performance management, auditing, and result monitoring. ▪ Advocacy and Education. ▪ Collaboration. **Proposed Rule [1]:** Must allow ORC access to properties for management activities. *Considerations:* This option requires long-term (in perpetuity) commitment, a ring-fenced, annually adjusted funding pool and increased in-house or external project management capacity. The programme will need lead-in time to establish the required project framework and contractor capacity. Contracting pool will need to be established, including but not limited to: ▪ Expanding the ORC procurement panel to include professional, experienced ungulate control contractors. ▪ Development of internal performance management, field auditing and result monitoring capability, or resourcing to contract out to a consultant project manager. *Benefit:* Control can occur as and when required, on time and to standard. If named as a pest species section 52 and 53 of the Act would apply. *Risk:* Resourcing is not maintained, leading to difficulties in meeting targets. *Mitigation:* An agreed, long-term (30 year) plan with a robust framework that is supported by Council and adequately funded through the long-term plan.
Staff Recommendation	**Option 1** Due to the widespread and mobile nature of this species, the complexities of control, it's value to some as a recreational resource and the interaction with the WAC Act, staff believe that regional regulation would have limited affect and be hard to enforce. A national, cross boundary and tenure approach would be needed to effectively regulate this species. Staff therefore recommend that ORC should adopt a non-regulatory approach to region wide management and use ORC funding streams to: ▪ support community-based control works that benefit the region. ▪ Support DOC and MPI's national review of ungulate control and to advocate for a national programme similar to that of wallabies/wilding conifers. **AND** **Option 2**

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	In addition to the regional Advisory Species approach, ORC should include an assessment of feral deer in the Site-led Programme Analysis and manage them differently at place if appropriate.

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Level of Analysis Required for Analysis of Benefits & Costs

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	*Many different land users are affected by deer, very strong opposing viewpoints on responsibility, very high cost on control and enforcing rules. Limited to no monitoring data.*	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	*This has a high cost but a high benefit.*	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	*High understanding of impact, spread risk and effectiveness of measure but monitoring and acceptable value is less well known*	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	*The Department of Conservation holds national or regional data sets on deer distribution, densities and forest impacts. Impacts are well documented. High levels of anecdotal information on distribution and native forest / crop damage.*	

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References

Wild Animal Control Act 1977 Wild Animal Control Act 1977 | New Zealand Legislation

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Animal pests and threats A - Z: Threats and impacts

Biosecurity and Pests | Otago Regional Council pest hub

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Candidate Pest Species Management Audit	
Pest Species	Feral Goat
Species Name	*Capra hircus*
Author Name & Role	James Bradley; ORC Community Coordinator Biosecurity
Audit Date	24 March 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	18 June 2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to the named species within the Otago Region.

The assessment covers:

- The values that are at threat from the pest,
- effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the pest,
- Options for management under a new Pest Management Plan.
- Opportunities for regional alignment with neighbouring council
- Level of analysis required to undertake a cost benefit analysis

This information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

A feral goat is any goat that is not held behind effective fences or otherwise constrained, and identified in accordance with a recognised identification system (as described under the Animal Identification Act 1993). Feral goats are sheep-sized animals with short hair, pointed horns and a beard. Colour can be white, black, brown or a combination of these. Males average 39kg, are about 680mm tall and about 1.3m long. Females average 30kg, are about 620mm tall with a body length of 1.2m. Their hooves are leaved with pointed, slightly incurved tips and their eyes ae greenish blue. They are social animals, disperse slowly, and do not voluntarily cross large rivers. This results in patchy distribution. However, their high birth rates, when in good condition, enable population size to roughly double every two years. The major cause of mortality is hunting, although feral pigs may prey on young goats. Goats are browsing generalists and feed on woody species in forests.

Risk Assessment

Value at Risk	Impact	Summary of Effect
Environmental values		
Soil Resources	Medium	High population grazing pressure may lead to erosion in some vulnerable soil types.
Water Quantity & Quality	Medium	High population grazing pressure may lead to erosion in some vulnerable soil types which then may lead to runoff to water ways in rainfall events.
Threatened Species (survival & distribution)	High	Plant species are susceptible to grazing pressure.
Indigenous Species (survival & distribution)	High	High population grazing pressure may lead to displacement and destruction of indigenous spp.
Ecosystem Health & Biological Diversity	High	High population grazing pressure may lead to the effects described above impacting negatively on ecosystem health and biological diversity.
Other		No impacts identified.
Economic values		
Tourism	Nil	No impacts identified
Dairy		No impacts identified
Sheep & Beef	Low	They may occasionally compete with sheep for feed, and they have a wide range of parasites and diseases in common with sheep.
Commercial Forestry	Medium	Feral goats can damage new plantings
Horticulture & Viticulture		No impacts identified
Infrastructure		No impacts identified
Other	Medium	Feral goats can spread disease.
Mana Whenua Values		
Taonga Species		Aukaha will provide this cultural impact statement
Cultural Harvest		Aukaha will provide this cultural impact statement
Other		Aukaha will provide this cultural impact statement
Social & Cultural Wellbeing		
Social & Cultural Values	Low	Feral goats are a food source
Human Health		No impacts identified
Recreation Values	Low	May have some value as a hunting resource.
Other		No impacts identified
Overall Impact		
Overall Impact	Medium	Given the effects described above, goats have the potential to adversely impact environmental values due to their grazing habits.

RPMP Evaluation and Review

Current RPMP Objectives & Rules

Feral goats are included in the Otago peninsula, West Harbour-Mt. Cargill, and Quarantine and Goat Islands site led programmes in the current RPMP.

The objectives for each programme seek to avoid, mitigate or prevent damage to the indigenous ecosystem values at these sites and seek to:

- preclude the establishment of feral goats over the duration of the plan in the Otago peninsula, and Quarantine and Goat Islands site led programmes,
- implement sustained control of feral goats in the West Harbour-Mt. Cargill site led programme.

Plan Rules 6.5.4.1, 6.5.5.1, 6.5.6.1 state that no person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the relevant site identified in the plan any feral goats.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure.

A breach of this rule creates an offence under section 154N(19) of the Act.

Current Management

Nil.

Other Management Activities

Information on feral goats is provided on ORC's website.

ORC takes a lead role in supporting the goals of community groups and agencies in site-led areas in relation to feral goats. This may be through advice, education, funding, service delivery or requiring other land occupiers undertake to control when needed.

The Wild Animal Control Act 1977 is the key legislation in New Zealand that regulates the control of harmful species of introduced wild animals and the operations of recreational and commercial hunters. It aims to achieve effective wild animal control and includes provisions for the regulation of hunting areas, the sale of wild animals, and the issuance of permits or licenses for the capture or keeping of wild animals. The Act is administered by the Department of Conservation and is designed to ensure that the management of wild animals is conducted in a manner that is consistent with the conservation of the species and the protection of the environment.

Limited control operations are carried out by the Department of Conservation, or territorial authorities within Otago. There is current effect to allow recreational hunters access to Crown land for hunting of goats, but this is not effective at keeping goat numbers at a sustainable level and is evident with a large spread across landscapes of goat numbers.

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme?	**Partially.** Two of the three site led areas are feral goat free (Otago Peninsula and Harbour Islands). There has been no requirement to undertake enforcement, inspections or service delivery in these areas.

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	The third (Mt Cargill West Harbour) does have goats, and these are being managed by Dunedin City Council, on DCC reserves. Goat control may be occurring on private land, but the amount and quality is unknown. No support or collaboration requests have been sought from community groups in the site-led areas but there is a high level of interest in other parts of the region. Advocacy and Education is being planned for 2026 as part of wider ungulate work.
Have the objectives in the RPMP for Feral goats been achieved? Is this a result of implementing the rules in the RPMP?	**Yes.** There have been no reports of feral goats within the site-led area, however, there has been no active monitoring, so this relies on passive surveillance and is inconclusive. The site-led programmes within the RPMP have not been used or tested.
Pest control spend	Nil
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	**Partially.** Ungulates such as feral goats, were raised by stakeholders as pests that should be moved to one of the four RPMP programmes, such as sustained control, instead of site-led programme as under the current RPMP. This is due to the increased prevalence of, and damage caused by these pests across Otago. However, there is a large amount of work
Good Neighbour Rule	Nil

Regional Alignment Opportunities

Relevant Regions	Programme	Alignment Opportunities
Canterbury RPMP 2018-2038	Site-led	
Otago RPMP 2019-2029	Site-led	
Southland RPMP 2019- 2029	Site-led	
West Coast RPMP 2018-2028	Nil	
Other Comments	A national strategy would be necessary for alignment.	

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.
Yes
Wild Animal Control Act 1977
Game Animal Council Act 2013

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?
Yes
If no, how would this be managed?

Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Feral goats were ranked thirteenth in the initial survey, where goat populations in Otago are an increasing and resilient problem causing environmental damage and safety concerns.

2. Feral goats featured as an issue in the Catlins, Ranfurly, Wānaka, Queenstown. Support for rules to promote control in forestry and crown land, and Good Neighbour Rule. Discussion around browser and predator free Nugget Point and that control would reduce browsing pressure and have a significant impact on native forests.

3. Discussion document feedback showed comparative support for the current site-led approach and a different programme with modified rules. Respondents considered current populations to be increasing and supported stronger control measures, occupier responsibilities, greater coordination between land occupiers and stakeholders, and clearer accountability for pest control.

4. Stakeholder workshops highlighted the challenges with enforcing a rule on feral goats at a regional scale, suggesting national direction for ungulates is needed to make a meaningful impact on populations.

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Options for a Proposal for a New Plan

The preliminary options identified for the management of this species in the proposal are:

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective:** Reduce the impacts of feral goats across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures**: ORC could use measures such as education, advocacy, Catchment Action Plans and funding via the eco fund to support the community to manage goats. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. **List as an Advisory Species in the plan.** Regulation would remain solely with the Wild Animal Control Act 1977 and Game Animal Council Act 2013 *Benefit*: There would be no compliance and administration costs for ORC. A non-regulatory focus will allow ORC to focus on catchment level control with interested communities. This approach is aligned to most other regional councils. This option is flexible and does not bind ORC to a specific budget allocation, the scale of work can be adjusted with community need. *Risk*: Significant biodiversity impacts and increased agricultural impacts and damage is likely to continue. This option is likely to be unpopular with parts of the community that are struggling to manage impacts of roaming animals. *Mitigations*: ORC could work with Te Uru Kahika, MPI and DOC on other national regulation options rather than rely on the RPMP.
Option 2	**Site-Led (Land Occupier Rules)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered feral goats for inclusion in the following Site-Led Programmes ▪ Otago Peninsula ▪ Mt Cargill West Harbour ▪ Harbour Islands (Quarantine Goat) ▪ Catlins ▪ Southern Lakes ▪ Mt Hikaroroa Mt Watkins **Objective:** Due to the impacts and distribution of feral goats it could be appropriate to manage the impacts at certain places rather than across the entire. To do this a site-specific Site-Led programme would need to be considered and analysed.

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	Measure: Reduce the impacts of feral goats in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. *Benefits:* The benefits are a site-led programme would mean any regulation would be targeted to areas where specific values are at risk. This allows the approach to be applied to where it can be most efficient and effective. *Costs:* Managing feral goats through a Site-Led approach rather than a species led approach would mean it is not managed in the wider region and areas not in the Site-Led Programme would still be at risk from the impacts. *Risk:* There is no national standard to monitor impacts and to identify who is responsible for roaming animals making enforcement and compliance difficult and costly. Mitigation: Non-regulatory approach may be applied throughout the wider region. Additional site-led programmes could be added as budget allows. Council would need to develop a standardised monitoring (abundance) tool, and carryout out compliance/ inspections in site-led areas.
Option 3	**Sustained Control (Land Occupier Rules)** **Objective:** Suppress or maintain feral goat populations at levels that minimise impacts on neighbouring properties and reduce the spread of feral goats across property boundaries. **Measures:** Reduce the impacts of feral goats across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act: land occupiers to carry out control mustering or fencing. ▪ Council Inspections: Service Response only ▪ Advocacy and Education ▪ Collaboration **Proposed Rule [1]:** Regionwide Good Neighbour Rule to control feral goats to a zero density within 2km of the property boundary. ▪ Due to the highly mobile nature of feral goats the rule would encompass a wide buffer zone to capture feral goat home range and allow rules to apply to transport corridors, rivers margins and paper roads. ▪ Rule would need to allow ORC to respond if an adjacent or nearby land occupier is contributing to goat issues on private land. ▪ ORC would response to Services Requests from the community rather than implement regionwide surveillance and compliance:

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	- The complainant would need to be able to prove a negative impact (meets the unreasonable costs test in the NPD), that they are undertaking control and that the problem is coming from the neighbour. ▪ The rule would be constrained to rural land (due to the difficulties of control and enforceable and the lower impacts within the urban environment) *Benefit*: This option allows community members to raise concerns about feral goat issues from neighbouring properties, thereby addressing some community concerns and the issues raised by consultation. Some impacts will be mitigated. The Good Neighbour Rule will bind the Crown enabling control to be enforced on the DOC estate if necessary. If named as a pest species sections 52 and 53 of the Act would apply. *Cost:* This is likely to be an expensive option with a high cost to land occupiers especially the Crown. ORC will need to decide what it will require as evidence when a service request is made (data, maps) and an appropriate level of control. *Risk:* There is no national standard to monitor impacts and to identify who is responsible for roaming animals making enforcement and compliance difficult and potentially costly. Remote sites with high biodiversity will continue to be at risk if there is no one to raise a service request. *Mitigation:* Council would need to develop a standardised monitoring (abundance) tool, and carryout out compliance/ inspections following a service request. Providing advocacy and education to encourage voluntary control alongside the RPMP will also mitigate some of the risks.
Option 4	**Site Led (ORC Service Delivery)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered feral goats for inclusion in the following Site-Led Programmes: ▪ Otago Peninsula ▪ Mt Cargill West Harbour ▪ Harbour Islands (Quarantine Goat) ▪ Catlins ▪ Sothern Lakes ▪ Mt Hikaroroa Mt Watkins **Objective:** Suppress or maintain feral goat numbers to reduce the impacts on at risk values **Measures:** ▪ Service Delivery: ORC will manage external contractors to deliver control to required levels and service delivery will include contract management, performance management, auditing, and result monitoring. ▪ Advocacy and Education. ▪ Collaboration.

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	The programme would be targeted to high value locations only: ▪ Where ORC deems significant impact by pigs on identified values access must be granted for the purposes of control. ▪ ORC will need to determine fully funded targeted rate OR full cost recovery OR cost sharing (50/50). **Proposed Rule [1]:** Must allow ORC access to properties for management activities. *Benefit:* Communities issues addressed. *Risk:* High cost, reputational lost, roaming animal, difficult to monitor, limited accepted methodology including need to determine: ▪ What ORC will require as evidence when a complaint is made (data, maps). ▪ Fencing standards and how this would apply in relation to the Fencing Act 1978. ▪ Where the cost burden would lie and how cost sharing will apply. *Mitigation:* Where a complaint is made, require adequate fencing. Once a fence is erected, require some form of suppression.
Staff Recommendation	**Option 1** Due to the widespread and mobile nature of this species, the complexities of control and the interaction with the WAC Act, staff believe that regional regulation would have limited affect and be hard to enforce. A national, cross boundary and tenure approach would be needed to effectively regulate this species. Staff therefore recommend that ORC should adopt a non-regulatory approach to region wide management and use ORC funding streams to: ▪ support community-based control works that benefit the region, ▪ Support DOC and MPI's national review of ungulate control and to advocate for a national programme similar to that of wallabies/wilding conifers. **AND** **Option 2** In addition to the regional Advisory Species approach, ORC should include an assessment of feral goats in the Site-led Programme Analysis and manage them differently at place if appropriate.

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Level of Analysis Required for CBA

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for feral goats.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	Many different land uses are affected by goats, very strong opposing viewpoints on responsibility, very high cost on control and enforcing rules. Limited to no monitoring data.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	This has a high cost but a high benefit.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	High understanding of impact, spread risk and effectiveness of measure	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	Department of Conservation holds some national and regional data. Some goat impact monitoring has occurred in other regions, that could be extrapolated out to an Otago context. High levels of anecdotal sightings and effects on native forest and crop damage.	

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References

Wild Animal Control Act 1977 Wild Animal Control Act 1977 | New Zealand Legislation

Otago Regional Pest Management Plan. 2019-2029. ISBN 978-0-908324-57-6. Published November 2019. Minor edits 24 June 2021

Otago Biosecurity Strategy: To Protect What We Treasure. October 2019.

Dr Julius Ohrnberger, Lockie Woon, Dr Jamie O'Hare, Leané de Beer, Sally Wyatt. *Review into the effectiveness of the Otago Regional Pest Management Plan*: *Evaluation Report*. April 2025

King, C. M. *The Handbook of New Zealand Mammals*. Second Edition. 2005.Oxford University Press. ISBN 0-19-558477-5.

Animal pests and threats A - Z: Threats and impacts

Biosecurity and Pests | Otago Regional Council pest hub

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Candidate Pest Species Management Audit	
Pest Species	Feral Pigs
Species Name	*Sus scrofa*
Author Name & Role	James Bradley; ORC Community Coordinator Biosecurity
Audit Date	24 March 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	18 June 2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to this species within the Otago Region.

The assessment covers:

- The values that are at threat from the pest,
- effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the pest,
- Options for management under a new Pest Management Plan,
- Opportunities for regional alignment with neighbouring council,
- Level of analysis required to undertake a cost benefit analysis.

The information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

Feral pigs can measure 90-200cm in length and weigh 50-90kg. Their colour varies from dark grey to brown or black. Adult males develop tusks that protrude from their mouth. Sexually mature at two years of age, they breed once per year with litter size ranging from 4-6 piglets. Vegetation forms 70% of a pig's diet. Pig rooting can reduce the diversity of seedlings and saplings and cause a dramatic reduction in leaf cover on the forest floor. Feral pigs can have major effects on native flora and fauna. They eat the tops of native plants and dig up their roots, resulting in the decline of some species. Also eaten are many native invertebrates, native land snails and large quantities of native earthworms. Pig predation includes lambs on farms. Feral pigs are widespread across Otago however densities vary. Feral pigs are highly mobile, and mobs can move large distances, very quickly.

Risk Assessment

Value at Risk	Impact	Summary of Effect
Environmental values		
Soil Resources	Low	The extent of rooting can be severe and contribute significantly to soil erosion, although this is only in areas that harbour large populations.
Water Quantity & Quality	Low	Feral pigs in high numbers may significantly impact on water quality through sediment discharge from disturbed soil and damaged riverbanks resulting from wallowing and rooting damage. They may also impact water quality though distribution of faecal matter around water ways.
Threatened Species (survival & distribution)	Medium	Any threatened species would need to compete with feral pigs within suitable habitat; if the threatened species is vegetation, then it would be vulnerable to the Pigs' indiscriminate grazing habits and rooting.
Indigenous Species (survival & distribution)	Medium	In some areas where numbers of feral pigs are high, they can uproot most of the ground surface, as well as lower stature vegetation. This can affect the forest ecosystem because plants and invertebrates (such as earthworms) are being eaten. Pigs can also compete for food with native animals and pig rooting could damage kiwi feeding areas. Soil disturbance can encourage regeneration of beech tree species, but constant disturbance prevents this. Although the full extent to which feral pigs are damaging the Otago environment is unclear, pig rooting has the potential to impact long-term ecosystem processes such as nutrient cycling and the composition of plant species in forests. Feral pigs are also a significant predator of New Zealand's native land snails (*Powelliphanta spp.*), earthworms can comprise a significant proportion of feral pig diet (from 10-26% dry weight), and it is believed that control of pigs is critical for the long-term survival of mainland populations of the threatened carabid *Megadromus speciosus*. Pigs also eat other native wildlife, such as ground nesting birds and their eggs, and lizards and frogs, although adverse effects have not been well quantified in New Zealand. In the U.S.A they have been identified as a predator of lizards and amphibians.
Ecosystem Health & Biological Diversity	Medium	Feral pigs feed on both indigenous and exotic species and are well known for uprooting large areas of soil. This is only a significant problem if the suitable habitat is extensive and highly populated with feral pigs.
Other		No impacts identified
Economic values		

Tourism		No impacts identified
Dairy		No impacts identified
Sheep & Beef	Low	Feral pigs can damage pasture and crops and kill lambs and cast sheep. These impacts are usually quite localised and are worse on farms surrounded by native forest or scrub. Feral pigs can also carry bovine tuberculosis but are thought to be spill-over hosts i.e. the disease will not persist in feral pig populations alone if the disease is eradicated from possums in the area (possums are considered a reservoir host).
Commercial Forestry	Medium	They have also been known to dig up and eat the roots of young trees on forestry plantations. These impacts are usually quite localised. Numbers have increased due to higher areas of forestry and uncoordinated control.
Horticulture & Viticulture	Medium	Feral pigs will damage crops in localized areas. If they are left undisturbed the damage can become significant.
Infrastructure	Medium	They will damage all types of fencing by pushing underneath the fence, stretching the wires and eroding soil from underneath forming an animal crossing point. The cost of maintaining stock proof fencing is affected in localized areas. Wallabies will also damage rabbit proof fencing in the same way; this type of damage would interfere with rabbit management plans.
Other		No impacts identified
Mana Whenua Values		
Taonga Species		Aukaha will provide this cultural impact statement
Cultural Harvest		Aukaha will provide this cultural impact statement
Other		Aukaha will provide this cultural impact statement
Social & Cultural Wellbeing		
Social & Cultural Values	Low	Feral pigs are a source of food
Human Health		No impacts identified
Recreation Values	Low	Feral Pigs are considered a significant recreational hunting resource.
Other	Low	Some people consider the killing of Feral Pigs as cruel and unnecessary.
Overall Impact		
Overall Impact	Medium	Feral pigs can cause problems amongst hill country and forested land, but the damage is usually localised and can be dealt with via a number of successful control tools.

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RPMP Evaluation and Review

Current RPMP Objectives & Rules

Feral pigs are included in the Otago peninsula, West Harbour-Mt. Cargill, and Quarantine and Goat Islands site led programmes in the current RPMP.

The objectives for each programme seek to avoid, mitigate or prevent damage to the indigenous ecosystem values at these sites and seek to:

- preclude the establishment of feral pigs in the Otago peninsula, and Quarantine and Goat Islands site led programmes,
- iimplement sustained control of feral pigs in the West Harbour-Mt. Cargill site led programme.

Plan Rules 6.5.4.1, 6.5.5.1, 6.5.6.1 state that no person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the relevant site identified in the plan any feral pigs.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure.
A breach of this rule creates an offence under section 154N(19) of the Act.

Current Management

Nil.

Other Management Activities

Information on feral pigs is provided on ORC's website.

ORC takes a lead role in supporting the goals of community groups and agencies in site-led areas in relation to feral pigs. This may be through advice, education, funding, service delivery or requiring other land occupiers undertake to control when needed.

The Wild Animal Control Act 1977 regulates the control of harmful species of introduced wild animals and the operations of recreational and commercial hunters. It aims to achieve effective wild animal control and includes provisions for the regulation of hunting areas, the sale of wild animals, and the issuance of permits or licenses for the capture or keeping of wild animals. The Act is administered by the Department of Conservation and is designed to ensure that the management of wild animals is conducted in a manner that is consistent with the conservation of the species and the protection of the environment.

Limited control operations are carried out by DOC, and territorial authorities within Otago. There is current effort to allow recreational hunters access to Crown land for hunting of pigs, but this is not effective at keeping pig numbers at a sustainable level and is evident with a large spread across landscapes of pig numbers.

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Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme?	No, ORC has not completed any enforcement, inspections or service delivery No support or collaboration requests have been sought from community groups in the site -ed areas but there is a high level of interest in other parts of the region Advocacy and Education is being planned for 2026 as part of wider ungulate work.
Have the objectives in the RPMP for feral pigs been achieved? Is this a result of implementing the rules in the RPMP?	Yes, there have been no reports of feral pigs within the site-led area, however, there has been no active monitoring, so this relies on passive surveillance and is inconclusive. The site-led programmes within the RPMP have not been used or tested.
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	Ungulates such as feral pigs, were raised by stakeholders as pests that should be moved to one of the four RPMP programmes, such as sustained control, instead of site-led programme as under the current RPMP. This is due to the increased prevalence of, and damage caused by these pests across Otago.
Good Neighbour Rule	Nil
Pest control spend	Nil

Regional Alignment Opportunities

Relevant Regions	Organism of Interest	Alignment Opportunity
Canterbury RPMP 2018-2038	Nil	
Otago RPMP 2019-2029	Site Led	
Southland RPMP 2019- 2029	Site-Led	
West Coast RPMP 2018-2028	Nil	
Other Comments	A national strategy would be necessary for alignment.	

Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes

Wild Animal Control Act 1977

Game Animal Council Act 2013

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Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes

If no, how would this be managed?

Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species,' a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species', and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Feral pigs were ranked seventh in the initial survey, where pig populations in Otago are an increasing and serious problem causing significant agricultural, environmental and safety impacts.

2. Feral pigs featured as a key theme at the Catlins, Balclutha, and Alexandra community drop-in session. Support for rules to promote control in forestry and crown land, and Good Neighbour Rule, and raising concerns around the role of feral pigs in TB outbreaks.

3. Discussion document feedback showed comparative support for the current site-led approach and a different programme with modified rules. Respondents considered current populations to be increasing and supported stronger control measures, occupier responsibilities, greater coordination between land occupiers and stakeholders, and clearer accountability for pest control.

4. Stakeholder workshops highlighted the challenges with enforcing a rule on feral pigs at a regional scale, suggesting national direction for ungulates is needed to make a meaningful impact on populations.

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Options for a Proposal for a New Plan

The preliminary options identified for the management of this species in the proposal are:

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective**: Reduce the impacts of feral pigs across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC could use measures such as education, advocacy, Catchment Action Plans and funding via the eco fund to support the community to manage pigs. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. **List as an Advisory Species in the plan.** Regulation would remain solely with the Wild Animal Control Act 1977 and Game Animal Council Act 2013 *Benefit:* There would be no compliance and administration costs for ORC. A non-regulatory focus will allow ORC to focus on catchment level control with interested communities. This approach is aligned to most other regional councils. This option is flexible and does not bind ORC to a specific budget allocation, the scale of work can be adjusted with community need. *Risk:* Significant biodiversity impacts and increased agricultural impacts and damage is likely to continue. This option is likely to be unpopular with parts of the community that are struggling to manage impacts of roaming animals but may be supported by some recreational hunters who appreciate having high pigs numbers to use as a resource. *Mitigations:* ORC could work with Te Uru Kahika, MPI and DOC on other national regulation options rather than rely on the RPMP.
Option 2	**Site-Led (Land Occupier Rules)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered feral pigs for inclusion in the following Site-Led Programmes • Otago Peninsula • Mt Cargill West Harbour • Harbour Islands (Quarantine Goat) • Catlins • Sothern Lakes • Mt Hikaroroa Mt Watkins **Objective:** Due to the impacts and distribution of feral pigs it could be appropriate to manage the impacts at certain places rather than across the entire. To do this a site-specific Site-Led programme would need to be considered and analysed.

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	Measure: Reduce the impacts of feral pigs in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. *Benefits:* The benefits are a site-led programme would mean any regulation would be targeted to areas where specific values are at risk. This allows the approach to be applied to where it can be most efficient and effective. *Costs:* Managing feral pigs through a Site-Led approach rather than a species led approach would mean it is not managed in the wider region and areas not in the Site-Led Programme would still be at risk from the impacts. *Risk:* There is no national standard to monitor impacts and to identify who is responsible for roaming animals making enforcement and compliance difficult and costly. *Mitigation:* Non-regulatory approach may be applied throughout the wider region. Additional site-led programmes could be added as budget allows Council would need to develop a standardised monitoring (abundance) tool, and carryout out compliance/ inspections in site-led areas.
Option 3	**Sustained Control (Land Occupier Rules)** **Objective:** Suppress or maintain feral pig populations at levels that minimise impacts on neighbouring properties and reduce the spread of feral pigs across property boundaries. **Measures:** Reduce the impacts of feral pigs across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act: land occupiers to carry out control mustering or fencing. ▪ Council Inspections: Service Response only ▪ Advocacy and Education ▪ Collaboration **Proposed Rule [1]:** Regionwide Good Neighbour Rule to control feral pigs to a zero density within 2km of the property boundary. ▪ Due to the highly mobile nature of feral pigs the rule would encompass a wide buffer zone to capture feral pigs home range and allow rules to apply to transport corridors, rivers margins and paper roads. ▪ Rule would need to allow ORC to respond if an adjacent or nearby land occupier is contributing to feral pig issues on private land.

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	▪ ORC would response to Services Requests from the community rather than implement regionwide surveillance and compliance: ▪ The complainant would need to be able to prove a negative impact (meets the unreasonable costs test in the NPD), that they are undertaking control and that the problem is coming from the neighbour. ▪ The rule would be constrained to rural land (due to the difficulties of control and enforceable and the lower impacts within the urban environment) *Benefit:* This option allows community members to raise concerns about feral pig issues from neighbouring properties, thereby addressing some community concerns and the issues raised by consultation. Some impacts will be mitigated The Good Neighbour Rule will bind the Crown enabling control to be enforced on the DOC estate if necessary. If named as a pest species section 52 and 53 of the Biosecurity Act would apply *Cost:* This is likely to be an expensive option with a high cost to land occupiers especially the Crown. ORC will need to decide what it will require as evidence when a service request is made (data, maps) and an appropriate level of control. *Risk:* There is no national standard to monitor impacts and to identify who is responsible for roaming animals making enforcement and compliance difficult and potentially costly. Remote sites with high biodiversity will continue to be at risk if there is no one to raise a service request. *Mitigation:* Council would need to develop a standardised monitoring (abundance) tool, and carryout out compliance/ inspections following a service request. Providing advocacy and education to encourage voluntary control alongside the RPMP will also mitigate some of the risks.
Option 4	**Site Led (ORC Service Delivery)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered feral pigs for inclusion in the following Site-Led Programmes: ▪ Otago Peninsula ▪ Mt Cargill West Harbour ▪ Harbour Islands (Quarantine Goat) ▪ Catlins ▪ Sothern Lakes ▪ Mt Hikaroroa Mt Watkins **Objective:** Suppress or maintain feral pig numbers to reduce the impacts on at risk values **Measures:** Reduce the impacts of feral pigs within high values sites in Otago by enabling and supporting community-led management and stewardship through

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	effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Service Delivery: ORC will manage external contractors to deliver control to required levels and service delivery will include contract management, performance management, auditing, and result monitoring. ▪ Advocacy and Education. ▪ Collaboration. The programme would be targeted to high value locations only: ▪ Where ORC deems significant impact by pigs on identified values access must be granted for the purposes of control. ▪ ORC will need to determine fully funded targeted rate OR full cost recovery OR cost sharing (50/50). Proposed Rule [1] - Must allow ORC access to properties for management activities. Benefit: Communities issues addressed. Risk: High cost, reputational lost, roaming animal, difficult to monitor, limited accepted methodology including need to determine: ▪ What ORC will require as evidence when a complaint is made (data, maps). ▪ Fencing standards and how this would apply in relation to the Fencing Act 1978. ▪ Where the cost burden would lie and how cost sharing will apply. Mitigation: Where a complaint is made, require adequate fencing. Once a fence is erected, require some form of suppression.
Staff Recommendation	**Option 1** Due to the widespread and mobile nature of this species, the complexities of control, it's value to some as a recreational resource and the interaction with the WAC Act, staff believe that regional regulation would have limited affect and be hard to enforce. A national, cross boundary and tenure approach would be needed to effectively regulate this species. Staff therefore recommend that ORC should adopt a non-regulatory approach to region wide management and use ORC funding streams to: ▪ Support community-based l control works that benefit the region, ▪ Support DOC and MPI's national review of ungulate control and to advocate for a national programme similar to that of wallabies/wilding conifers. **AND** **Option 2**

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	In addition to the regional Advisory Species approach, ORC should include an assessment of feral pigs in the Site-led Programme Analysis and manage them differently at place if appropriate.

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Level of Analysis Required for CBA

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a medium level of analysis should be undertaken to support the decision on management programme for feral pigs.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	*Feral pigs are currently in many different landscapes but is most of the time a cross boundary issue from native forest and productive forests. They also effect high country tussock landscapes.*	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	*This has a high cost but a high benefit.*	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	*High understanding of impact, spread risk and effectiveness of measure, but no agreed monitoring method or target levels.*	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	*No national or regional data exists. High levels of anecdotal sightings and effects on native forest and stock damage.*	

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References

1. Wild Animal Control Act 1977 Wild Animal Control Act 1977 | New Zealand Legislation

2. Otago Regional Pest Management Plan. 2019-2029. ISBN 978-0-908324-57-6. Published November 2019. Minor edits 24 June 2021

3. Otago Biosecurity Strategy: To Protect What We Treasure. October 2019.

4. Dr Julius Ohrnberger, Lockie Woon, Dr Jamie O'Hare, Leané de Beer, Sally Wyatt. *Review into the effectiveness of the Otago Regional Pest Management Plan*: *Evaluation Report*. April 2025

5. King, C. M. *The Handbook of New Zealand Mammals*. Second Edition. 2005.Oxford University Press. ISBN 0-19-558477-5.

6. Animal pests and threats A - Z: Threats and impacts

7. Biosecurity and Pests | Otago Regional Council pest hub

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Candidate Pest Species Management Audit	
Pest Species	Feral Rabbits
Species Name	*Oryctolagus cuniculus*
Author Name & Role	Robert Win; Team Leader Biosecurity Programmes
Audit Date	15 June 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	16 June 2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to feral rabbits within the Otago Region.

The assessment covers:

- The values that are at threat from the pest,
- effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the pest,
- Options for management under a new Pest Management Plan,
- Opportunities for regional alignment with neighbouring council,
- Level of analysis required to undertake a cost benefit analysis.

The information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

Feral rabbits (wild European) are a small mammalian herbivore, grey-brown (or sometimes black) in colour ranging in length from 34 to 50cm and weighing approximately 1.1 to 2.5kg. First released in the 1800s rabbits soon became a significant agricultural pest as well as affecting native tussock ecosystems. Rabbits survive best in dry and semi-arid environments, where although their reproduction rate is lower than in more productive agricultural environments, mortality is significantly lower.

Rabbits have a life span of up to seven years but there are high rates of mortality among young animals. Rabbits have a high capacity for reproduction and females may be pregnant for 70% of a year. Early born does may breed in their natal year. They can produce a total of 20 – 50 young per adult doe. Females are also capable of adjusting litter sizes to food supply, so rabbit populations are capable of rebounding quickly from natural disasters or control pressures.

Feral Rabbits' preferred habitat is grassland below about 1000m altitude, with free draining soils, sunny aspect, and less than 1000mm annual rainfall. They are common throughout the rural areas of Otago with such habitat but may also be found in and around lifestyle blocks, rural townships and urban areas. Rabbits compete for pasture and crops with other farm animals and cause land degradation. Rabbits also graze on native vegetation, impacting ecological values. Loss of vegetation reduces soil organic matter, and soils with low organic matter have reduced water holding capacity and permeability, and therefore reduced soil fertility. Rabbit grazing can also cause soil erosion and stream bank erosion, which can in turn affect water quality. Rabbits may affect native invertebrates and birds by causing changes to habitat and altering predator- prey relationships.

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Risk Assessment

Value at Risk	Impact	Summary of Effect
		Environmental values
Soil Resources	High	High population grazing pressure may lead to erosion in some vulnerable soil types and areas such as stream banks and gullies, which can in turn, affect water quality.
Water Quantity & Quality	Medium	High population grazing pressure may lead to erosion in some vulnerable soil types which then may lead to runoff to water ways in rainfall events.
Threatened Species (survival & distribution) **Indigenous Species (survival & distribution)** **Ecosystem Health & Biological Diversity**	High	Native endangered plant species may be susceptible to grazing pressure such as the critically endangered *Craspedia argentea*. High population grazing pressure may lead to displacement and destruction of indigenous spp. High population grazing pressure may lead to the effects described above, impacting negatively on ecosystem health and biological diversity. Potential damage to biodiversity associated with high rabbit populations as rabbits browse on vulnerable native plant communities. High rabbit numbers can lead to high predator numbers such as mustelids and feral cats, which may prey switch when rabbit numbers decrease, thus impacting on native and other species.
Other- Climate Change	Medium	Due to climate change, warmer winters are expected in Otago, leading to lower levels of natural mortality of rabbits over winter. There is also a secondary effect of breeding beginning earlier in spring (August) leading to greater productivity. Wetter springs and early summers in Central Otago can also lead to greater grass growth for longer periods during spring, providing addition food for rabbits and supporting greater survival rates. However, wetter springs can also lead to lower juvenile survival rates due to wet conditions increasing likelihood of mortality of juvenile rabbits from disease and hypothermia.

Economic values		
Tourism	Low	Rabbits can cause amenity value (visual) impacts through perception. If tourists see high rabbit numbers and rabbit sign, (warrens, buck heaps) around the Otago. This could cause negative perceptions. Secondary impacts on tourism experience due to degraded native ecosystems including direct browser damage by rabbits on native plants and impacts to native bird populations from mammalian predators because of high rabbit numbers.
Dairy	High	Browsing can cause damage to pastoral agriculture through reduced pasture quality and animal intake. Anecdotally, rabbit populations have declined in some areas where pivot irrigators have been installed for dairy. Dairy operations modify the pasture to be less preferred by rabbits. Higher grass heights, wetter environment due to irrigation.
Sheep & Beef	High	Browsing can cause damage to pastoral agriculture through reduced pasture quality and animal intake.
Commercial Forestry	High	Rabbits can destroy new plantings and may ringbark older trees
Horticulture & Viticulture	High	Rabbits can destroy new plantings and may ringbark older vines. They also chew through bird netting, allowing birds to reach vines.
Infrastructure	High	Rabbits can cause impacts to infrastructure through browsing of vegetation, burrowing, and erosion. Infrastructure impacted by high rabbit populations include, flood banks, roading and public cemeteries.
Other		Uncontrolled rabbit grazing causes grasslands and shrub land to be replaced with low, herbaceous and mat-forming vegetation, affecting pastoral production and biodiversity. In general, rabbits compete for grass with other farm animals and cause land degradation. Loss of vegetation reduces soil organic matter, and soils with low organic matter have reduced water holding capacity and permeability, and therefore reduced soil fertility.
Mana Whenua Values		
Taonga Species		Aukaha will provide this cultural impact statement
Cultural Harvest		Aukaha will provide this cultural impact statement
Other		Aukaha will provide this cultural impact statement
Social & Cultural Wellbeing		
Social & Cultural Values	Medium	Rabbit management and control are topics which can cause significant debate. Toxins used to control rabbits are, in some instances, considered controversial, as is shooting. Some land occupiers also value rabbits on their properties to keep the grass low, e.g. in high fire risk areas. Where rabbits are in high numbers, the costs of control can impose significant costs on the land occupier which can be very stressful and make farming operations no longer viable.
Human Health	Medium	Rabbits can also significantly impact wellbeing through disturbing recreational and public areas, as well as graves within public cemeteries. High rabbit numbers can affect human health due to stress caused by cost and pressure to control rabbit populations and impacts farming operations, amenity values. Some potential to spread zoonotic diseases (Lough, 2009; Tsokana et al., 2020). Also potential for injuries relating to rabbit burrows as a hazard, and firearms-related injuries associated with hunting.

Recreation Values	Low	Recreational shooting, pet food market, employment through contractors being engaged to control rabbits.
Other		None known.
Overall Impact		
Overall Impact	High	High impact to economic values in Otago. Feral rabbits are well established in many parts of Otago.

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RPMP Evaluation and Review

Current RPMP Objectives & Rules

Feral rabbits are controlled through a sustained control programme in the current RPMP to ensure population levels do not exceed Level 3 on the Modified McLean Scale at a property scale.

Plan Objective 6.4.6
Over the duration of the Plan, implement sustained control of feral rabbits to ensure population levels do not exceed Level 3 on the Modified McLean Scale4 in order to minimise adverse effects on production and environmental values within the Otago region.

A breach of this rule creates an offence under section 154N(19) of the Act.

Plan Rule 6.4.6.1
An occupier within the Otago region shall control feral rabbit densities on the land they occupy to at or below Level 3 on the Modified McLean Scale.

Plan Rule 6.4.6.2
Note: This is designated a good neighbour rule
An occupier within the Otago region shall, upon receipt of a written direction from an Authorised Person, control feral rabbit densities on their land to at or below Level 3 on the Modified McLean Scale within 500m of the property boundary where the occupier of the adjoining property is also controlling feral rabbit densities at or below Level 3 on the Modified McLean Scale within 500m of that boundary.

A breach of this rule creates an offence under section 154N(19) of the Act.

Plan Rule 6.4.6.3
Other than under the instruction or supervision of an Authorised Person, no person shall discharge a firearm within or across a property prior to a control operation involving bait or where a control operation involving bait is being undertaken on the property to manage feral rabbits.

A breach of this rule creates an offence under section 154N(19) of the Act.

Current Management

Compliance Inspections
The Biosecurity Compliance Programme for Rabbit Management directs ~600 property inspections across Otago, annually. Inspections are generally targeted to areas of known rabbit prone areas. Compliance inspections are undertaken for several reasons: targeted compliance inspections on productive rural farmland (properties >4ha); targeted compliance inspections in peri-urban environments where rabbits are a social issue (properties 1-4ha); and reactive response to enquiries from the public who are seeking support to manage rabbits at place.

Prior to 2024, ORC was only applying the Modified McLean Scale (MMS) to properties 4ha or more in size. In 2024, this restriction was reassessed, resulting in inspections being able to be completed on properties of less than 4ha.

Community Rabbit Management Programmes

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Alongside the compliance programme, sit the Community Rabbit Management Programmes (CRMP). Since 2021, ORC have facilitated CRMP for six formal sites, including: Gibbston, Lake Hayes, Queensberry, Albert Town, Otago Peninsula, and Moeraki; and 2 informal sites, including Hidden Hills, and Black Peak Road. The aim of these programmes was to identify rabbit-prone areas within peri-urban areas bordering farmland and provide education and guidance on effective rabbit management. As of 2026, ORC is continuing to facilitate the formal programmes. These programmes were not created for specific compliance purposes, however, the number of non-compliant properties the Community Coordinators – Biosecurity are managing in these programme areas is now minimal.

The Otago Peninsula Community Programme has concluded, with a high level of collaboration and compliance achieved. The remaining non-compliant properties have been moved onto the compliance pathway.

A 'hybrid' community rabbit programme is being trialled, which is compliance-led and – where there is a high-level of community engagement indicated - supported by Community Coordinators Biosecurity with educations, advocacy and collaboration.

Community Programme Status as of October 2025 ***(update on status available November 30, 2026)***		
Formal Sites	**Compliant Properties**	**Non-Compliant Properties**
Gibbston	95%	5%
Lake Hayes	95%	5%
Queensberry	85%	15%
Albert Town	60%	40%
Otago Peninsula	78%	22%
Moeraki	96%	4%

Community Programme Status as of October 2025 ***(update on status available November 30, 2026)***		
Informal Sites	**Compliant Properties**	**Non-Compliant Properties**
Hidden Hills	Programme completed	Programme completed
Black Peak Road	100%	0%

Other Management Activities

Rabbit Haemorrhagic Disease (RHD)

The introduction of Rabbit Haemorrhagic Disease (RHD) in 1997 significantly reduced rabbit numbers to the point where they were no longer considered a significant problem but there is evidence that RHD is losing its effectiveness as some surviving populations become increasingly resistant to the disease. It is therefore important that alternative control techniques continue to be employed by land occupiers in tandem with RHD to minimise resistant build up.

Manaaki Whenua Landcare Research holds a database of 25 years of information on serum RHDV antibody status across New Zealand, with information provided by ORC (see *Otago Regional Council rabbit serology review, Jan 2025*). In 2018, ORC released RHDV K5, unfortunately due to the mode of action, this release had limited success. In 2025, serology data has been collected to measure the presence or absence of RHDV and variants across 10 key locations in Otago. It is likely immunity to the original strain RHDV1 is increasing since introduction in 1997.

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Rabbit Night Counts

Since the 1980's rabbit night counts have been carried out to capture long-term trends in rabbit numbers. In 2025, 31-night count routes were monitored in rural areas and found a reduction to 2.4 rabbits per km (route average) from 3.9 rabbits per km in 2024 (see *Analysis of 2025 Rabbit Night Counts*). The 2025 count showed there was a decrease in rabbit density in central Otago and an increasing density across coastal Otago.

Sustained Rabbit Management Incentives Funding

In 2022, ORC initiated the Sustained Rabbit Management Incentives Funding as a category of the ECO Fund. Since 2022, ORC has funded 20 projects for $499,033.14 to carry out rabbit-netted fencing, develop rabbit management plans, upskill community members with their Approved User for Pindone licences, and deliver community hui to promote education and awareness of rabbit management.

Communications & Engagement

Rabbits are also included in the biosecurity communication and engagement strategic approach document, with ORC carrying out community outreach through attending various event (A&P shows, Wild Dunedin, NZISF), educational posts on social media, and developing new resources (rabbit management folder and factsheets) to promote greater awareness of rabbit management. The biosecurity team support land occupiers with site-visits and advice on rabbit management options to suit the type and size of their property.

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme?	**Yes.** ORC has undertaken the following actions to implement the programme: • Undertaken compliance inspections, followed up with work requests and notice of directions. • Identified rabbit infestations and raised awareness, addressing gaps in community knowledge about the issue, regulatory requirements, and assessment scales. • Facilitated community engagement and hosted information meetings to assist collaboration and help initiate coordinated planning.
Have the objectives in the RPMP been achieved?	**No.** MMS Level 3 equates to 5 rabbits/km. Targeted compliance is showing between 70-80% non-compliance following first inspection of properties. Rabbit night counts provide data for the specific location that the count is undertaken. There is no monitoring in locations outside of these counts. The Sapere 2025 report considered ORC is partially effective in meeting the objective for feral rabbits in the RPMP. Since the 1980's rabbit night counts have been carried out to capture long-term trends in rabbit numbers. In 2025, 31-night

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Is this a result of implementing the rules in the RPMP?	count routes were monitored in rural areas and found a reduction to 2.4 rabbits per km (route average) from 3.9 rabbits per km in 2024 (see Analysis of 2025 Rabbit Night Counts). More specifically, there was a decrease in rabbit density in central Otago and an increasing density across coastal Otago. The extent to which ineffectiveness related to the RPMP objectives was not quantified because the RPMP relies on the Modified McLean Scale and there is no region wide monitoring of this type in place. Improved effectiveness focused on resourcing and targeted compliance approaches. **No.** To sustainably control rabbits to MMS Level 3 requires significantly more compliance resourcing than is currently available. KPIs have increased in the Biosecurity Operational Plan from 300 inspections in 25/26 to 600 inspections in 26/27. **Plan Rule 6.4.6.1.** The rule to sustainably control rabbits to MMS level 3 could be achieved for commercial productive land, but very challenging on public land and peri-urban and urban environments. To achieve outcome would require significant additional resourcing. It is also, not equitable for peri-urban rabbits to enforce level 3, as the tools to control rabbit are restricted. The rule also creates a social tension, where the driver of peri-urban properties to control rabbits is low compared to commercial productive land where the control of rabbits is protecting financial interests. **Plan Rule 6.4.6.2.** The rule is achievable but requires additional resourcing. **Plan Rule 6.4.6.3.** is unenforceable due to being unable to determine when this occurs without being on site at the time of non-compliance.
Pest control spend	$20,000 per annum. Fly trap monitoring and analysis and rabbit night counts. Plus, staff resource to manage and deliver Community Rabbit Programmes.
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	**Yes**. Rabbits should stay in the sustained control programme. However, the ability to manage rabbits to MMS level 3 across all land uses and types in Otago is unachievable without substantial resourcing and is therefore considered inappropriate.

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	There have been many changes since 2019 relating to the management of rabbits in Otago. For example, changes in land use across Otago, especially in central Otago, where productive land is being converted to peri-urban and urban environments. Where one land occupier was responsible for rabbit control, multiple property owners are now responsible. Leading to ineffective and fragmented rabbit management approaches across Otago. Rabbit proneness mapping may not represent true proneness across Otago, with climate change changing rabbit population distribution and breeding cycles. Effective rabbit management across Otago is hard to achieve with Crown Land given the limited ability to enforce rules to control rabbit populations.
Good Neighbour Rule	Control feral rabbits to at or below MMS level 3 within 500m of the property boundary, where a neighbour is doing the same. Plan Rule 6.4.6.3 is still relevant but requires more resourcing.

Regional Alignment Opportunities

Relevant Regions	Programme	Alignment Opportunity
Wellington	Sustained control MMS level 5	Could align with peri-urban land use types
Marlborough	Sustained control MMS level 3 – level4	Aligns with MMS 3
Canterbury RPMP 2018-2038	Sustained control programme, GNR	Aligns with MMS 3
Otago RPMP 2019-2029	Sustained control programme, GNR	Aligns with MMS 3
Southland RPMP 2019- 2029	Sustainable control programme, no GNR	Aligns with MMS 3
West Coast RPMP 2018-2028	No programme	No alignment
Other Comments		

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.
No
Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?
Yes
If no, how would this be managed?

Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Feral rabbits were ranked as the number one priority pest in the initial survey. Respondents highlighted impacts on biodiversity, ecosystem regeneration, agricultural productivity, and fire risk, and called for more coordinated, proactive, and enforceable management.

2. Feral rabbits featured as a dominant theme at the Catlins, Oamaru, Alexandra, Queenstown and Ranfurly community drop-in sessions. Community called for ORC to carry out stronger compliance and enforcement, surveillance and monitoring and invest in new technology.

3. Discussion document feedback generally supported retaining a sustained control programme with revised rules and a continued regulatory approach. While respondents favoured changes to the current rules, there was also strong support for maintaining the existing Modified McLean Scale compliance threshold (Level 3). Most respondents supported applying the programme across all of Otago, with Central Otago and urban and peri-urban areas identified as key areas of concern due to high rabbit populations.

4. Rabbits ranged from high to moderate priority in five of the stakeholder workshop. Stakeholders called for stronger compliance, education and enforcement, and there was support for a compliance based approach, including Good Neighbour Rules, as well as a non-regulatory, community programme based approach.

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Options for a Proposal for a New Plan

The preliminary options identified for the management of this species in the proposal are:

Please note: 'MMS' referenced below is 'Modified McLean Scale'. The current rule requires feral rabbits to be managed to Modified McLean Scale (MMS) Level 3.

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective:** Reduce the impacts of rabbits across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding to support the community to manage rabbits. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. **List as an Advisory Species in the plan.** *Benefit*: There would be no compliance and administration costs for ORC. A non-regulatory focus will allow ORC to focus on catchment level control with interested communities. This option is flexible and does not bind ORC to a specific budget allocation, the scale of work can be adjusted with community need. *Risk*: Based on the increasing rabbit populations in some areas of Otago and the current levels of non-compliance, a non-regulatory approach is unlikely to be effective at managing the impacts of rabbits. There is a risk of rabbit numbers increasing further and of more properties struggling with invasion from neighbouring properties. *Mitigations:* Provision of support to the community can be scaled up as required.
Option 2	**Site Led (Land Occupier Rules)** **Objective:** Manage rabbit populations to zero density where communities are undertaking control to support mustelid management. **Measures:** Reduce the impacts of feral rabbits in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act – land occupiers to carry out control. ▪ Service Delivery ▪ Council Inspections and enforcement – all properties ▪ Advocacy and Education ▪ Collaboration

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	Proposed Rule [1]: Land occupiers must control rabbits to zero density OR allow access to ORC to undertake management activities. The rule would include a prescribed cost share or cost recovery function. **Proposed Rule [2]:** Good Neighbour Rule to bind the Crown. *Benefit:* Supports Predator Free Dunedin objectives. Supports other community initiatives to reduce rabbit numbers, irrespective of objectives. *Risk:* High cost to land occupiers and will require robust enforcement procedures. ORC may have to deliver the service. *Mitigation:* Robust education campaigns and prioritisation to direct resources to highest need sites. The timing of the rules could be staggered to align with Predator Free mustelid control.
Option 3	**Sustained Control (MMS Level 4 – Land Occupier Rule)** ***Active rabbits and a good amount of sign seen during inspection.*** **Objective:** Manage rabbits to MMS Level 4 regionwide. Update objective to include the 'social' aspect of rabbit impacts, nuisance rabbits. **Measures:** Reduce the impacts of feral rabbits across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act: land occupiers to carry out control. ▪ Council Inspections and enforcement: all properties on a roster or priority basis ▪ Advocacy and Education ▪ Collaboration **Proposed rule [1]:** An occupier within the Otago region shall control feral rabbit densities on the land they occupy to at or below Level 4 on the Modified McLean Scale. **Proposed rule [2]:** Note: This is designated a good neighbour rule. An occupier within the Otago region shall, upon receipt of a written direction from an Authorised Person, control feral rabbit densities on their land to at or below Level 4 on the Modified McLean Scale within 500m of the property boundary where the occupier of the adjoining property is also controlling feral rabbit densities at or below Level 4 on the Modified McLean Scale within 500m of that boundary. *Benefit:* Reduction in resourcing required to administer programme. Current capacity can be shifted to other, higher priority activities. There is a lower cost to land occupiers. Reduces enforcement requirements.

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	Risk: Increased rabbit numbers are likely to occur may increase the concern of community resulting in more public enquiries. MMS Level 4 may have larger negative impacts on high value production land than in other places. *Mitigation:* Develop clear implementation plans. Increase education activities. Develop MOU with Crown and other agencies to manage rabbits to appropriate levels, as directed. Implement increased compliance and high-level enforcement for good neighbour rules. Implement an agreed transition process for community programmes to the compliance pathway.
Option 4	**Sustained Control (MMS Level 3 – Land Occupier Rule)** ***No active rabbits and some sign seen during inspection.*** **Objective:** Manage rabbits to MMS Level 3 regionwide. Update objective to include the 'social' aspect of rabbit impacts, nuisance rabbits. **Measures:** Reduce the impacts of feral rabbits across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act – land occupiers to carry out control. ▪ Council Inspections and enforcement – all properties on a roster or priority basis ▪ Advocacy and Education ▪ Collaboration **Proposed rule [1]:** An occupier within the Otago region shall control feral rabbit densities on the land they occupy to at or below Level 3 on the Modified McLean Scale. **Proposed rule [2]:** Note: This is designated a good neighbour rule An occupier within the Otago region shall, upon receipt of a written direction from an Authorised Person, control feral rabbit densities on their land to at or below Level 3 on the Modified McLean Scale within 500m of the property boundary where the occupier of the adjoining property is also controlling feral rabbit densities at or below Level 3 on the Modified McLean Scale within 500m of that boundary. *Benefit:* Builds on current programme, maintain the gains and provides clarity for land occupiers. A regionwide rule is simple to administer. This option supports catchment groups and communities doing large scale management. *Risk:* High costs to land occupiers who have to do extensive control. The current programme has not been able to maintain this objective throughout Otago. *Mitigation:* Develop clear implementation plans. Increase education in pre-urban locations. Implement increased compliance and high-level enforcement, particularly for good neighbour rules. Implement an agreed transition process for

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	community programmes to the compliance pathway. Develop MOU with agencies to manage rabbits to appropriate levels.
Option 5	**Sustained Control (MMS Level 2 – Land Occupier Rule)** ***No active rabbits and very infrequent sign seen during inspection.*** **Objective:** Manage rabbits to MMS Level 2 regionwide. Update objective to include the 'social' aspect of rabbit impacts, nuisance rabbits. **Measures:** Reduce the impacts of feral rabbits across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act – land occupiers to carry out control. ▪ Council Inspections and enforcement – all properties on a roster or priority basis ▪ Advocacy and Education ▪ Collaboration **Proposed rule [1]:** An occupier within the Otago region shall control feral rabbit densities on the land they occupy to at or below Level 2 on the Modified McLean Scale. **Proposed rule [2]:** Note: This is designated a good neighbour rule An occupier within the Otago region shall, upon receipt of a written direction from an Authorised Person, control feral rabbit densities on their land to at or below Level 2 on the Modified McLean Scale within 500m of the property boundary where the occupier of the adjoining property is also controlling feral rabbit densities at or below Level 2 on the Modified McLean Scale within 500m of that boundary. *Benefit:* Provides a clear direction from ORC. Will reduce rabbit numbers to very low levels. Provides an increased focus on this production pest. A regionwide rule is simple to administer. This option supports catchment groups and communities doing large scale management. *Risk*: Very high cost to land occupiers. Will require robust enforcement processes by ORC. Potential for many land occupiers being unable to fund management to this level, which is likely to create social licence issues. *Mitigation:* Develop clear implementation plans. Increase education in pre-urban locations. Potentially, include a transition period in the objective. Develop MOU with agencies to manage rabbits to appropriate levels. Implement increased compliance and high-level enforcement, particularly for good neighbour rules. Implement an agreed transition process for community programmes to the compliance pathway.

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Option 6	**Sustained Control (MMS Level 3 – ORC Service Delivery)** **Objective:** ORC will manage rabbits to MMS Level 3 regionwide through a service delivery model. ORC will manage external contractors to deliver rabbit control to required levels and service delivery will include contract management, performance management, auditing, and result monitoring. **Measures:** Reduce the impacts of feral rabbits across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** through ORC funded and managed control efforts. ▪ Service Delivery ▪ Council Inspections and enforcement – all properties on a roster or priority basis ▪ Advocacy and Education ▪ Collaboration **Proposed rule [1]:** A land occupier must allow access to ORC to carry out monitoring and control. This option requires long-term (in perpetuity) commitment, a ring-fenced, annually adjusted funding pool and increased in-house or external project management capacity. The programme will need lead-in time to establish the required project framework and contractor capacity. Contracting pool will need to be established, including but not limited to: ▪ Expanding the ORC procurement panel to include professional, experienced rabbit contractors. ▪ Design and development of industry training and certification. ▪ Development of internal performance management, field auditing and result monitoring capability OR resourcing to contract out to a consultant project manage. *Benefit:* Control can occur as and when required, on time and to standard. *Risk:* Resourcing is not maintained, leading to difficulties in meeting targets. Some land occupiers may not support ORC accessing land for control purposes. *Mitigation:* An agreed and funded long-term (30 year) plan with a robust framework would be required.
Staff Recommendation	**Option 4** Staff recommend maintaining rabbits to Modified McLean Scale Level 3. This allows ORC to maintain the gains of the current programme while developing initiatives to improve education, advocacy, collaboration and compliance and activities.

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Level of Analysis Required for CBA

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for feral rabbits.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	Rabbits are one of the highest profile animal pests in Otago with a wide distribution across the district. As such, public interest in rabbit management is high and it is expected that there will be significant input around this issue. High cost to the region if left unmanaged and high management cost.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	Costs associated with control of rabbits is high in conjunction with the costs of implementing and monitoring the RPMP rules. However, benefits to the region of rabbit management is moderate.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*

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Explanation:	There has been significant work done on the impacts of rabbits over many years. One of the most studied pests in the country.

Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	There is currently a significant amount of historical data available in relation to rabbits.	

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Candidate Pest Species Management Audit	
Programme	Lagarosiphon (*Lagarosiphon major*)
Author Name & Role	Anna Kluibenschedl; Biosecurity Specialist – Freshwater Marine
Audit Date	11 June 2026
Revised Version	16 July 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	16.6.2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to Site Led Programme for lagarosiphon within the Otago Region.

The assessment covers:

- effectiveness and efficiency of the rules in the current Pest Management Plan and other activities,
- Options for management under a new Pest Management Plan,
- Opportunities for regional alignment with neighbouring council,
- Level of analysis required to undertake a cost benefit analysis.

This information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

Lagarosiphon is a submerged, perennial macrophyte that forms rhizomes anchored in the sediment. It has long, slender, brittle stems that are sparsely branched and can grow up to 5 m in clear water. Where water depth allows, plants may reach the surface and form dense, surface matting that can occupy the full water column. The leaves are 6-20 mm long and 2-3 mm wide and arranged in alternate spirals along the stem. Leaf tips are typically tapered and curve backwards towards the stem, giving the plant a distinctive hooked appearance. The three-petalled female flowers are very small, clear-white on the surface, and grow on very thin white to almost translucent filament-like stalks. To date only female plants have been recorded in New Zealand.

Lagarosiphon produces minute, white, three petalled female flowers that float on the water surface on slender, filament like stalks. Only female plants have been recorded in New Zealand and sexual reproduction does not occur. As a result, the species reproduces entirely vegetatively through the fragmentation of stems. Reproduction is vegetative by stem fragments and dispersal between waterbodies is human mediated (e.g. via watercraft and trailers, fishing nets or drainage machinery contaminated with lagarosiphon fragments). Lagarosiphon is not known to fruit in New Zealand. It rapidly invades fast flowing to still flowing water bodies of varying clarity, temperature, light and nutrient levels. It grows from the shallows to 6-7 m depth in clear lakes.[1] It is widely naturalised in North Island, locally abundant in the South Island.[1]

Lagarosiphon is present in Lakes Dunstan and Roxburgh and parts of Lake Wanaka as well as in the Kawarau River. Isolated, individual plants are regularly removed from Frankton Arm and Kingston in Lake Wakatipu, which is thought to be a result of weed transfer by boats from other waterways in the region. Surrounding waterways such as the Albert Town Oxidation ponds as well as smaller drainage canals are also affected by lagarosiphon. It is also established in the Clutha River/Mata-Au and the Pūerua River. Wider surveillance is ongoing, and some parts of the region are data deficient.

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Risk Assessment

Value at Risk	Impact	Likelihood	Summary of Effect
Environmental values			
Soil Resources			No impacts identified
Water Quantity & Quality	High		Dense lagarosiphon beds restrict water movement and reduce light availability and can locally alter water chemistry in undesirable ways. Observed effects include changes in pH, creating increasingly stressful growth conditions and increase in fine, organic particulate matter.[2]
Threatened Species (survival & distribution)	High		Forms dense stands and rapidly displaces native submerged aquatic vegetation that from habitat for threatened species such as threatened freshwater mussels.[3]
Indigenous Species (survival & distribution)	High		Lagarosiphon crowds out other submerged plants and can form dense, surface reaching weed beds replacing native vegetation.[4] It is ranked as one of the highest priority aquatic weeds in New Zealand, with an AWRAM score of 60, making it the eighth worst aquatic weed nationally.
Ecosystem Health & Biological Diversity	High		The simplified structure of lagarosiphon weed beds reduces habitat complexity and biodiversity and can impact movement of fish and kākahi.[2] Over time, the native vegetation seed bank, which provides an

		important source of multiple plant species and genetic diversity, is progressively lost from invaded sites.[5]
Other	High	Lagarosiphon can change the abiotic conditions of waterways, collapsing the food web of the native community.
Economic values		
Tourism	Medium	Often surface reaching growth that affects the aesthetics of a waterbody, altering water flow, blocking and impeding access, and producing bad odours when the plant material decays.[6,7]
Dairy		Little or no effect
Sheep & Beef		Little or no effect
Commercial Forestry		Little or no effect
Horticulture & Viticulture		Could affect water storage and is already affecting drainage ponds.
Infrastructure	High	Alters water flow, blocks waterways, increases flooding risk and threatening hydro-electric dams.
Other - Hydropower	High	Aquatic weeds such as lagarosiphon have shown impacts on hydro-electric lakes including shutdown of one power station [8] and now need ongoing management.[2,9,10]
Mana Whenua Values		
Taonga Species		The simplified structure of lagarosiphon weed beds reduces habitat complexity and biodiversity and can impact taonga species such as kākahi.[2] Consult local mana whenua representatives.
Cultural Harvest		Alters water flow, blocks waterways, and hence could affect access to cultural harvest sites. Consult local mana whenua representatives
Other		Consult local mana whenua representatives
Social & Cultural Wellbeing		
Social & Cultural Values	Medium	In other areas of NZ, such as lake Rotorua, decomposing and washed-up mats of aquatic weeds including lagarosiphon have repeatedly caused bad odours.[6,7] Oxygen depletion can cause fish mortality further compounding such issues. Social and cultural wellbeing is negatively affected by changes to access and use of waterways as well as mahinga kai.
Human Health	Medium	Lagarosiphon, like other invasive weed beds, has been linked to 'swimmers itch.'[11]
Recreation Values	High	Infestations impede recreational access and aesthetic qualities of water bodies. This impacts on activities such as boating, fishing and swimming. Further, aquatic weeds are expensive to control and often require application of aquatic herbicides, which can lack support in the general population.
Other		No impacts identified
Factors that may Alter the Above Effects		
Climate Change		Climatically 90% of New Zealand's freshwater systems are already viable for lagrosiphon.[1] However, climate models have shown that predicted changes in water temperature will not change potential distribution patterns. Notably, the limited climatic overlap between native and invaded ranges indicates its broad environmental tolerance.[12]
Horticultural Trade / Aquarium Trade		This is a decorative species that is recommended as aquarium and ornamental pond plant overseas.
Exotic Pet Trade		No impacts identified
Overall Impact		
Overall Impact	Lagarosiphon is a highly invasive weed nationally and internationally, with a wide distribution across New Zealand. In the Otago region, while it is well established in some water bodies, it remains absent from large areas. Without continued control, lagarosiphon has the potential to establish in many waterways beyond its current	

	restricted range in Otago, with severe consequences for economic wellbeing, native biodiversity, ecological values, water quality, and social, cultural and recreational values. A very invasive aquatic pest that is already established in some waterways in Otago region. Without ongoing management, the severe impacts on economic wellbeing, native biodiversity, ecology, water quality, social and cultural wellbeing and recreational value will increase. Lagarosiphon causes significant impacts on indigenous aquatic plant biodiversity. Dense growth can interfere with infrastructure and recreational activities. It is ranked as one of the highest priority aquatic weeds in New Zealand, with an AWRAM score of 60, making it the eighth worst aquatic weed nationally.

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RPMP Evaluation and Review

Current RPMP Objectives & Rules

Lagarosiphon is controlled through a Site Led Programme in the current RPMP. This programme applies to Lake Wanaka and the Kawarau River, Lake Dunstan and to prevent the re-establishment of lagarosiphon in Lake Wakatipu, or establishment in lakes, rivers and tributaries where it is not already present.

Plan Objective 6.5.7

Over the duration of the Plan actively manage lagarosiphon to:

a. reduce the extent of lagarosiphon in Lake Wanaka and the Kawarau River (Map 4 in Appendix 3) through progressive containment over the next 10 years;
b. implement sustained control of lagarosiphon in Lake Dunstan (Map 4 in Appendix 3);
c. prevent the establishment of lagarosiphon in Lake Wakatipu (Map 4 in Appendix 3);
d. prevent the establishment of lagarosiphon in lakes, rivers and tributaries where it is not already present

to avoid, mitigate or prevent effects on the environment, and amenity and recreational values.

Plan Rule 6.5.7.1 Any person leaving the waters of Lakes Dunstan, Wanaka or Roxburgh or from the Clutha River/Mata-Au and the Kawarau River must immediately remove and safely dispose of all fragments of lagarosiphon from boats, equipment and all other items in their possession. A breach of this rule creates an offence under section 154N(19) of the Act.

Plan Rule 6.5.7.2 Occupiers must destroy and safely dispose of all lagarosiphon in any pond or aquarium on their land. A breach of this rule creates an offence under section 154N(19) of the Act.

Current Management

The RPMP provision support the LINZ led programme with the above rules for lagarosiphon control in Lake Dunstan, Wanaka and Wakatipu -from now central lakes-, but not in other water bodies such as the Pūerua River. Unmanaged, these infestations pose a threat to the region as source populations mediated through human activities.

Lagarosiphon management in the central lakes has undergone several changes since the establishment of this species in lake Wanaka in 1973 with multiple agencies playing a role. Since 2006 LINZ has managed lagarosiphon with intensive work through dedicated 10-year plans. Currently (2024-2026) ORC directly contributes financially with a small proportion (< 5 % of the total spend by LINZ) to the on-going control works but does not enforce any of the above rules in the RPMP.

Since 2019, ORC has scaled up efforts in the management of lagarosiphon and other freshwater pests. ORC conducted frequent outreach meetings with LINZ and other stakeholders (13 in FY2023/24),[13] engaged with other programmes (Check, Clean, Dry programme: 830 in person interactions in FY2024/25),[14] as well as carried surveillance inspections for lagarosiphon monitoring priority water bodies (33 of 18 planned in FY2023/24)[13] and for secondary water bodies (50, planned target for FY2023/24 was 40).[13]

Other Management Activities

Education information is available via the ORC website.

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Lagarosiphon has established beyond the site-led areas and is now present in drainage ponds surrounding these sites, forming thick surface-reaching mats in the Albert Town Retention Ponds and can be found in Bullock Creek. We also know of surface-reaching beds in the Puerua River. However, it is likely that additional infested sites will be identified as surveillance and monitoring activities increase.

A significant risk factor that has previously been overlooked is the potential spread from the Waitaki Lakes and the Waitaki River. In 2025, large lagarosiphon infestations were discovered in Lakes Waitaki and Aviemore, which are managed by LINZ under programmes similar to the Central Lakes site-led programme. Lake Waitaki was managed under an exclusion programme, while Lake Aviemore was managed under an eradication programme. As a result, LINZ has had to reprioritise its management approach, as the existing programme objectives are no longer achievable, and is currently revising the 10-year management plans for both lakes.

With reduced management intervention, increasing quantities of lagarosiphon are likely to be transported downstream via the Waitaki River. The Waitaki River (Canterbury) feeds irrigation schemes such as the North Otago Irrigation Scheme, and the water from these irrigation ponds is frequently used to augment river flows within the Otago region. This may increase the risk of lagarosiphon spreading to previously unknown sites. The full extent of this risk may not become apparent until lagarosiphon stands have fully established within affected water bodies, creating greater opportunities for dispersal.

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Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme?	**ORC has partially implemented the principal measure for the site-led programme.** 1. ORC to work collaboratively with LINZ? Yes. Funding of 10-year plan. ORC is supporting LINZ in the delivery of lagarosiphon management in the central lakes, increases awareness through public engagement and the Check, Clean, Dry programme and conducts surveillance for lagarosiphon in new water bodies. ORC has established a "new" role for a Biosecurity Specialist Marine and Freshwater in 2023. Overall, ORC was found to only be partially effective in meeting the RPMP pest objective for lagarosiphon. This is largely as rules are not being enforced. However, increased performance from 2019 was noted.[13] 2. Council inspection. No 3. Service delivery. No 4. Collaborate, advocacy, education. Yes. 5. Requirements to Act. No, ponds have never been inspected for lagarosiphon . 6. Biosecurity Strategy? Strategy will not be renewed
Have the objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP? *Objective 6.5.7*	**Plan Objective 6.5.7 Partially fulfilled** a. Reduce extent of lagarosiphon in Lake Wanaka and the Kawarau River through progressive containment b. Implement sustained control of lagarosiphon in Lake Dunstan c. Prevent the establishment of lagarosiphon in Lake Wakatipu

	d. prevent the establishment of lagarosiphon in lakes, rivers and tributaries where it is not already present The objectives set for lagarosiphon in the RPMP for Lake Wanaka and Kawarau river, Lake Dunstan and Lake Wakatipu are on track to being achieved. This is a result of LINZ control programme in these water bodies and ORC effects to support this work. While some data gaps remain, a programme of regular surveillance and first inspections for freshwater weeds such as lagarosiphon has been established for 85 freshwater sites across the region, prioritised using a water use based risk profile, with 41 sites visited at least once to date and 11 sites visited annually. Staff have highlighted some of the limitation of the current rules to achieve the objectives. While the objectives cover all water bodies under 6.5.7 (d), rule 6.5.7.1 only applies to person leaving Lakes Dunstan, Wanaka or Roxburgh or from the Clutha River/Mata-Au and the Kawarau River and does not cover other lakes, rivers, or tributaries to prevent the spread. Additionally, the rule also only covers people who are leaving these water bodies and there is no rule to cover a person entering a protected water body. This limits the effectiveness of the rules in terms of proactive prevention as enforcement can only occur as someone is leaving and no preventative actions can be taken to prevent a person entering a protected water body with any fragments of lagarosiphon from boats, equipment and all other items in their possession. Further, enforcement is hard to undertake on boat owners due to the inability to hand out fines. The process of handing out a Notice of direction (NOD), given that the process is not on the spot and there are no official cleaning stations that can produce evidence of fulfilment of the NOD, would be ineffective in protecting the water ways. A two strike system could be employed until fines are a biosecurity tool, with a warning letter on the first encounter including an entry in a registry of inspection for the vessel/ trailer and a second strike with prosecution could be implemented. ORC was found to only be partially effective in meeting the RPMP pest objective for lagarosiphon. Numbers of new sites monitored regularly are limited, and there is a need to improve the number of new, first-time surveillance inspections to ensure early detection and timely action on further spread. Low prioritisation of enforcement means ORC is not meeting its targets, as shown by the analysis. Stakeholders also noted that the lack of enforcement undermines their efforts and the money and time they invest

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	in managing pests in line with the plan, creating risks for effective pest control at the local level.[13]
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	**Yes.** LINZ is undertaking lagarosiphon control nationally based on an eradication approach, prioritising areas where there is a high likelihood of successfully clearing aquatic weeds. However, there is no legal obligation binding LINZ to the management of aquatic weeds unlike terrestrial RPMP rules, with changes in funding likely over the lifetime of the 10-year plans. In this programme the site-led approach supports LINZ to administer control. Pathway management and improved rules to reducing re-infection and infestation of new water bodies across the whole region (addressing Lagarosiphon sites outside of site-led area) could lead to reduced effort and associated funding needs. Lagarosiphon is currently a Site Led programme, with sites identified in the plan. This limits ORC in applying regionwide rules for this species. A shift to Progressive Containment would allow regionwide rules to be established. <u>Recommended Amendments</u> 1. **Plan Rule 6.5.7.1:** When leaving waters of Lake Dunstan Wanaka Roxburgh Clutha River Kawarau River must remove and safely dispose of all fragments of lagarosiphon from boats equipment and other items: 2. **Plan Rule 6.5.7.2:** Lad occupier to destroy and dispose of lagarosiphon in any pond or aquarium. The current plan rules are not providing sufficient support for the management of lagarosiphon by LINZ. Lagarosiphon continues to be transferred within and between water bodies, increasing surveillance and control costs in areas already declared free. As the programme expands into higher use areas, there is also greater risk of conflict due to benthic matting and spraying, particularly in relation to social licence and boating activity. Stronger rules are needed to better support these activities. Given the seriousness and potential impacts of this species, it is essential that rules are included in the RPMP to ensure ongoing control.
Pest control spend	In the last two financial years ORC has contributed directly to the LINZ control budget with $50,000-60,000, which constitutes 5-10% of the overall project budget LINZ used for the management of lagarosiphon in the central lakes. In addition, ORC spends about $20,000 on co-funding the Check, Clean, Dry ambassador campaign together with BNZ,

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	increasing awareness on freshwater pests regionally. Some staff time (0.5 FTE) is allocated to conduct surveillance inspections for new water bodies to understand regional distribution and undertake stakeholder engagement.

Regional Alignment Opportunities

Relevant Regions	Current Programme	Alignment Opportunity
Canterbury RPMP 2018-2038	Site-Led To exclude, eradicate, contain, reduce or control a pest within a specific place to the extent that doing so protects the values of that place; and Where Lagarosiphon that occurs outside site led areas designated under the Canterbury RPMP 2018 – 2038 a land occupier is responsibility for its removal and is to be managed via a community led approach.	Improved pathway rules in Canterbury would reduce the risk of new incursions into Otago
Southland RPMP 2019- 2029	Progressive Containment Progressive containment programme, with rules requiring any person who detects or suspects the presence of lagarosiphon outside of the lagarosiphon containment area to immediately report the pest's presence and location to Environment Southland.	Improved pathway rules in Southland would reduce the risk of new incursions into Otago
West Coast RPMP 2018-2028	Progressive Containment No person shall intentionally distribute or dispose of any lagarosiphon, unless at a legal landfill.	Improved pathway rules in the West Coast would reduce the risk of new incursions into Otago
Other Comments		

Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.
No

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes

If no, how would this be managed?

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Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Lagarosiphon was ranked fourteenth in the initial survey, where they are increasingly impacting Otago's lakes and waterways, particularly Lake Dunstan. Many highlighted that the issue is worsening and call for more consistent control efforts maintain ecological and recreational values.

2. Featured at the Alexandra community drop-in session, calls for stronger education and advocacy for lagarosiphon.

3. Discussion document feedback strongly supported retaining the current site-led approach or strengthening it with modified rules. Feedback also supported stronger pathway rules, ORC-led programmes with ongoing funding, surveillance and control efforts.

4. Lagarosiphon was a key focus of the marine and freshwater stakeholder workshop. Stakeholders generally supported retaining the current site-led programme, with continued emphasis on containment, flexible management approaches, and stronger enforcement powers where voluntary compliance is insufficient.

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Options for a Proposal for a New Plan

The preliminary options identified for the management of this species in the proposal are:

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective:** Reduce the impacts of lagarosiphon across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC could use measures such as education, advocacy, Catchment Action Plans and funding via the eco fund to support the community to manage lagarosiphon. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. *Benefit:* There would be no compliance and administration costs for ORC. A non-regulatory focus will allow ORC to focus on catchment level control with interested communities. This option is flexible and does not bind ORC to a specific budget allocation, the scale of work can be adjusted with community need. *Risk:* This option puts the current work completed by LINZ at risk; voluntary action may not be adequate to maintain the gains. *Mitigation:* Provision of support to the community can be scaled up as required.
Option 2	**Site-Led (Pathway Rules)** **Objective:** Over the duration of the Plan actively manage lagarosiphon to avoid, mitigate or prevent effects on the environment, and amenity and recreational values by: a. reduce the extent of lagarosiphon in Lake Wanaka and the Kawarau River through progressive containment over the next 10 years, b. implement sustained control of lagarosiphon in Lake Dunstan, c. prevent the establishment of lagarosiphon in Lake Wakatipu, d. prevent the establishment of lagarosiphon in lakes, rivers and tributaries where it is not already present, **Measures:** Reduce the impacts of lagarosiphon in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** rules requiring management. ▪ Requirement to Act: land occupiers to carry out control ▪ Council Inspections ▪ Advocacy and Education ▪ Collaboration

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	Proposed rule [1]: All occupiers of vessels or craft entering any water body within the site-led area must check, clean and dry their vessels or craft (including trailers). * 1. No visible vegetation OR fouling on boats, equipment and all other items in their possession (trailers, fishing gear etc.), on leaving or entering any lake or waterbody in the site-led area. 2. All bilge tanks, ballast tanks, holding tanks, and any other areas capable of retaining water must be fully drained and free of pooled water on leaving or entering any lake or waterbody site-led area. **Proposed rule [2]:** Removing lagarosiphon manually is exempt from rule [1] *Benefit:* Low level of resource currently required for 'Check Clean Dry' and education campaigns. Supports LINZ *Risk:* The rule only applies when vessels are leaving a waterbody and does not apply when entering one, creating a management gap. As a result, it does not currently prevent the establishment of lagarosiphon in other waterbodies, with LINZ currently managing spread through its programme. If LINZ were to deprioritise this programme, ORC would need to take over management of the species to maintain current gains, at an estimated cost of $1.2 million per year. There is also a risk that increased vessel movements between waterbodies could alter the current spread factors. *Mitigation:* Maintain funding and resourcing. Support innovation in this programme.
Option 3	**Progressive Containment (Pathway Rules)** **Objective:** Align the three current objectives (exclusion, progressive containment, and sustained control) under a single objective to progressively contain and reduce the geographical extent of lagarosiphon, while retaining site-specific management objectives through the LINZ management programme. This approach aims to minimise further spread from known infestations across the region by enabling the application of the rules outlined below, while progressively containing and reducing lagarosiphon populations within Lake Whakatipu and Lake Wānaka. *Note: this is provided as an option as a step change to potential, future eradication.* **Measures:** Reduce the impacts of lagarosiphon across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** rules requiring management. ▪ Requirement to Act: land occupiers to carry out control

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	▪ Council Inspections ▪ Advocacy and Education ▪ Collaboration **Proposed rule [1]:** No visible vegetation OR fouling on boats, equipment and all other items in their possession (trailers, fishing gear etc.), on leaving or entering any Otago water ways. **Proposed rule [2]:** All bilge tanks, ballast tanks, holding tanks, and any other areas capable of retaining water must be fully drained and free of pooled water on leaving or entering any lake or waterbody site-led area **Proposed rule [3]:** Prohibit the sale of this species. Develop a rule that pet shops need to provide guides for proper aquarium "care". Compliance with the Check Clean Dry Protocol on the Biosecurity New Zealand website will meet some of these requirements. **A clear definition of 'water craft' is needed.** Rule 6.5.7.2 remains unchanged, however there will need to be a significantly higher level of resourcing directed into surveillance, inspections and compliance processes. Increase education and advocacy processes relating to the control and disposal process for this species. *Benefit:* Move the focus from one Site Led programme to one that is regionwide. Create common rules for all waterbodies, increased clarity for the public. *Risk:* More resource required to manage leading to increased costs of monitoring and enforcement. *Mitigation:* Support innovation in this programme.
Option 4	**Eradication (Pathway Rules)** ***A complete pathways management programme will need to be established in Year 1, to enable a successful eradication programme within the term of the plan. This programme will provide time at the tail-end of the term to undertake proof of freedom monitoring.*** **Major objective change.** Eliminate all lagarosiphon infestations to zero density over the life of the plan, within Otago. While the focus will be in areas where lagarosiphon is known to exist, there will be a need for an extensive surveillance programme, plus a process to stop lagarosiphon moving from Canterbury waterways into Otago. **Amend Rule 6.5.7.1:** ALL boats / trailers EVERYWHERE need to be cleaned prior to moving (CCD). Zero detected levels of vegetation OR fouling found through inspection.

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	Rule 6.5.7.2 remains unchanged, however there will need to be a significantly higher level of resourcing directed into surveillance, inspections and compliance processes. Increase education and advocacy processes relating to the control and disposal process for this species. **roposed rule [1]:** No visible vegetation OR fouling on boats, equipment and all other items in their possession (trailers, fishing gear etc.), on leaving or entering any Otago water ways. **Proposed rule [2]:** All bilge tanks, ballast tanks, holding tanks, and any other areas capable of retaining water must be fully drained and free of pooled water on leaving or entering any lake or waterbody site-led area **Proposed rule [3]:** Prohibit the sale of this species. Develop a rule that pet shops need to provide guides for proper aquarium "care". *Benefit:* Increased, significant focus is likely to reduce the potential spread to other, currently 'lagarosiphon free' waterbodies. *Risk:* Even with unlimited resources and time, the capital investment required to develop and manage infrastructure such as cleaning stations as well as undertake large scale aquatic weed control would be substantial. Achieving this objective is likely to be unrealistic within the lifespan of a ten-year plan. Particularly given the presence of habitat-saturated infestations in Lake Dunstan and infestations further upstream, as well as existing surveillance gaps that mean the full regional extent of lagarosiphon is not yet understood. In addition, increasing pressure from out-of-region source populations, including the Waitaki lakes and associated irrigation schemes, combined with greater population and vessel movements, increases the risk of new infestations and reinfestation. *Mitigation:* Increase timeframes for achieving the objective (10 to 30 years). Increase funding, resourcing, staffing and infrastructure. Restrict access, in part or in full, to some waterbodies to prevent lakeshore launching.
Recommendation	**Option 3** Is a practical step change to potential, future eradication. Creates clarity across the region, with the same land occupier rules and pathways rules applying to everyone, everywhere.

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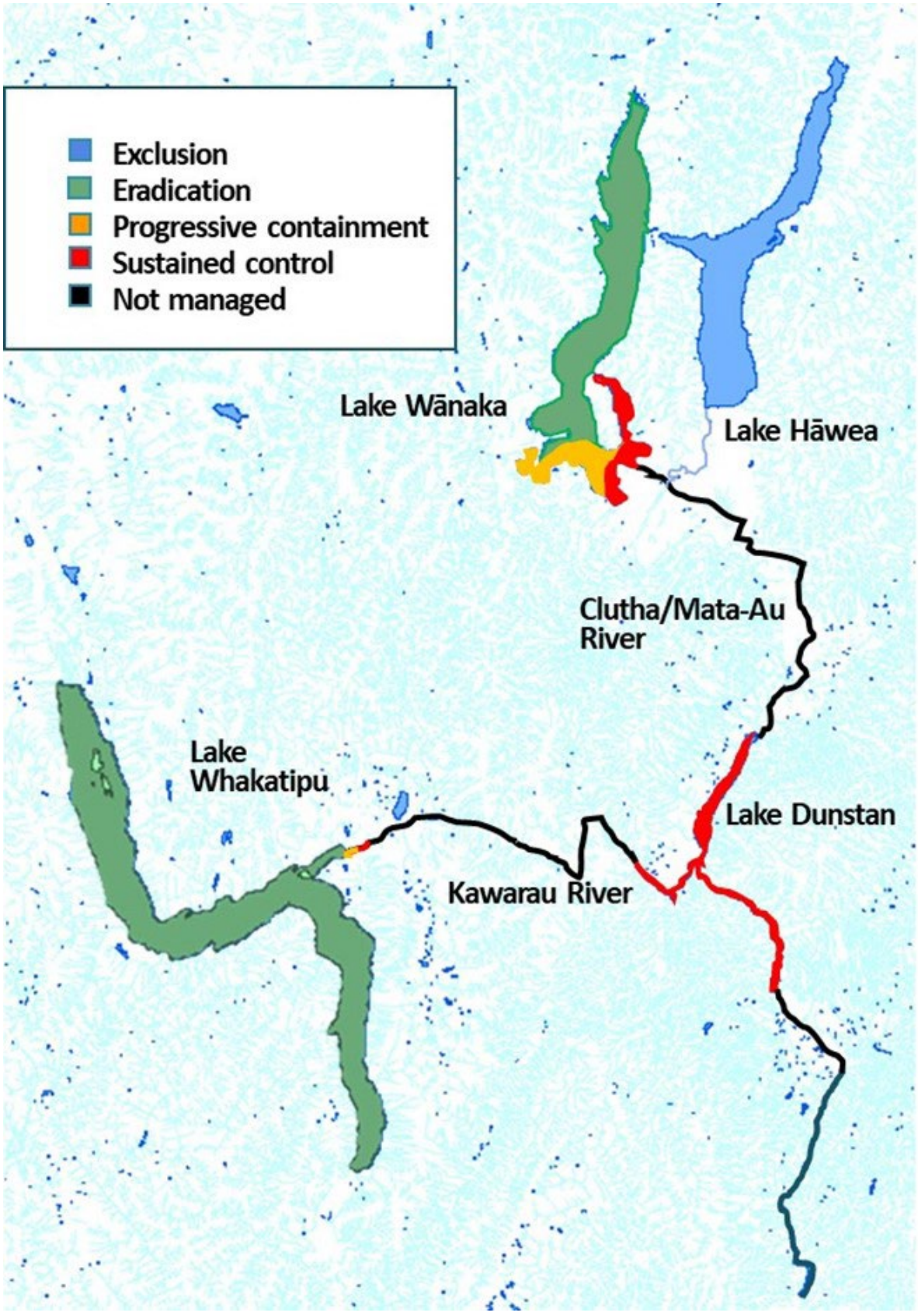


Figure 1: Map of different LINZ programme targets for the central lakes.[15]

Level of Analysis Required for CBA

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for lagarosiphon.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation: Lagarosiphon has been identified as a priority species (survey top 10) and the programme has been running at a high cost to LINZ supported by ORC. Change from site-led and some pathways rules could increase interest. Likely to be tens of thousands of boat owners would be affected including owners in southland and canterbury that use the Otago lakes		

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation: The cost of the programme are substantial and the benefits large.		

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or*	*Not much known about the pest's impacts. Measures are untested.*

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	measures have only been somewhat effective.

Explanation: We have substantial evidence of this pest species impacts on ecological, social, cultural and economic vales and many years of data on effectiveness of control.

Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*

Explanation: LINZ hold good data on cost of control measures. Distribution data is good to moderate with some regional gaps. Data on the exact number of people effected (boat users) is unknown

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Candidate Pest Species Management Audit	
Pest Species	Brushtail Possum
Species Name	*Trichosurus vulpecula*
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	15 June 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	24 June 2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to Brushtail possums within the Otago Region.

The assessment covers:

- The values that are at threat from the pest,
- effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the pest,
- Options for management under a new Pest Management Plan,
- Opportunities for regional alignment with neighbouring council,
- Level of analysis required to undertake a cost benefit analysis.

This information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

Introduced to New Zealand in the 1800's, possums are nocturnal, arboreal, marsupials. The males and females are similar in size; between 650 and 930mm, including a tail of 250 to 405mm. They weigh between 1.4 and 6.4kgs, have a furry body, a long prehensile, bushy tail, a pointed snout, pink nose, long dark whiskers and brown eyes. Primarily herbivores, possums feed on a variety of leaves, flower buds, fruit, ferns, and fungi. They also feed on invertebrates and opportunistically on the eggs and nestlings of birds. Juveniles disperse an average of 6km from their home range. They have no natural predators in NZ, leading to high survival rates. Possums begin breeding at one to two years of age and typically once a year (sometimes twice) between March and May. Females produce a single baby called a joey. Joeys stay in the pouch for about five months, then ride on the mother's back, becoming independent around 6–12 months.

Possums are widespread in NZ, occupying a diverse range of habitats including: native podocarp broadleaf forests, scrublands, forest-pasture margins, suburban gardens, orchards and exotic plantations.

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Risk Assessment

Value at Risk	Impact	Summary of Effect
Environmental values		
Soil Resources	Moderate	High populations of possums can contribute to soil erosion through the browsing of plantings for erosion control and when browsing results in canopy collapse and forest decline.
Water Quantity & Quality	Moderate	Possums contribute to faecal contamination of freshwater ecosystems, where control is not undertaken. They have been found to be a source of *E.coli* in New Zealand waterways.
Threatened Species (survival & distribution)	High	High population grazing pressure may lead to displacement and destruction of indigenous spp. Alpine shrubs may be susceptible to grazing pressure. Possums feed on threatened mistletoe *spp*. and predate the eggs and chicks of 'at risk' hole nesting birds such as Kākā.
Indigenous Species (survival & distribution)	High	Possums feed on the leaves, flower buds and fruit of native plants. They also feed on ferns and fungi and predate insect species, snails, and birds.
Ecosystem Health & Biological Diversity	High	Possums cause extensive defoliation of favoured plant species, causing progressive change in forest composition to less favoured species. Damage is not however uniform across habitats. Land occupiers in some areas complain about damage from possums that harbour in adjacent bush blocks.
Other – Carbon Sequestration	Low	Possums have been linked to reducing carbon sequestration potential through damage to forests.
Economic values		
Tourism	Low	Possums are known to damage natural assets that are a draw for tourists. Some tourists see them as interesting wildlife.
Dairy	High	Possums are a known vector for bovine tuberculosis. They eat winter feed, pasture and winter crops. Although small on a national scale, pasture losses to individual farmers can be quite substantial.
Sheep & Beef	High	Possums are a known vector for bovine tuberculosis. They eat winter feed, pasture and winter crops. Although small on a national scale, pasture losses to individual farmers can be quite substantial.
Commercial Forestry	Moderate	Possums can damage younger trees and plantings.
Horticulture & Viticulture	Moderate	Possums can damage plantings (trees, vines, fruit) and are a nuisance for some gardeners.
Infrastructure	Low	Possums climb and chew on a variety of different man-made materials causing damage to fences, woodwork and signage. They nest in roof cavities and disrupt insulation and wiring. They can cause power and telecommunications outages through climbing poles and interfering with cables.

Other – Repair Costs	Low	Chewing on cables can lead to expensive repairs.
Other – Fire Risk	Low	Chewing on wire cables can create a fire hazard.
	Mana Whenua Values	
Taonga Species	High	Possums pose significant threat to taonga species in New Zealand through habitat degradation, competition for resources, browsing and predation.
Cultural Harvest	Moderate	Fur and skins represent an economic resource.
Other		No other impacts identified.
	Social & Cultural Wellbeing	
Social & Cultural Values	Moderate	Possum fur and skins can be sold, and trapping provides employment opportunities. There can be opposition to possum control from animal rights activists. Methods of control can be unpopular (e.g., trapping, toxins, aerial control).
Human Health	High	Possums act as a vector for bovine TB, which is transmissible to humans. Water quality can be impacted in areas with high possum numbers.
Recreation Values	Low	Possum hunting for sport is a common practice among rural communities (e.g., night shooting).
Other		No other impacts identified.
	Overall Impact	
Overall Impact	High	Widely distributed across NZ. Currently one of New Zealand's most damaging animal pests and major biosecurity risk, threatening both the environment, human health and agricultural economy.

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RPMP Evaluation and Review

Current RPMP Objectives & Rules

Possums are included in the Otago peninsula, West Harbour-Mt. Cargill, and Quarantine and Goat Islands site led programmes in the current RPMP. The objectives for each programme seek to avoid, mitigate or prevent damage to the indigenous ecosystem values at these sites and to:

- eradicate possums in the Otago peninsula site led programme;
- progressively contain possums to achieve a 2% RTC (Residual Trap Catch) in the West Harbour-Mt. Cargill site led programme;
- preclude the establishment of possums in the Quarantine and Goat Islands site led programme.
-

Plan Rules 6.5.4.1, 6.5.5.1, 6.5.6.1 state that no person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the relevant site identified in the plan any possums.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure.

A breach of this rule creates an offence under section 154N(19) of the Act.

Current ORC Management Activities

Compliance Activities

There is no rule requiring land occupiers to control possums to a predetermined level, in any of the RPMP programmes.

Each of the Site Led Programmes has a 'harbour' rule (see 'Current RPMP Objectives and Rules, above) stating that no person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the Otago Peninsula any... possum.

The intent of the 'harbour' rule is to help achieve the exclusion, eradication or control of possums from the Otago Peninsula. The issue is how best to apply this rule. The sole time it was used in October 2025 to support the Otago Peninsula Site Led objective of 'eradicating possums', required ORC to seek independent legal advice prior to undertaking compliance measures. The issue was how the term 'harbour' is defined. For example, if a land occupier has one possum trap set on their property, can they be considered to be 'harbouring' possums?

The rule was eventually used to require the land occupier to allow access for ORC to undertake surveillance for possums, where community group access had otherwise been withheld. This access was used to determine a) whether there were possums present (there were) and b) whether the land occupier was undertaking actions to control possums to a level that would not achieve eradication, should possums be present (they were not). Using the rule to enable access to the property to measure compliance against the 'harbour' rule had a positive flow-on effect. The land occupier permitted access to the community group to undertake control in the areas that possum sign was found, and the peninsula has now been declared possum-free.

This specific example had a positive outcome, but without any real test of the rule. Improving the terminology and definitions used in the rules would make them easier to apply, increase certainty for occupiers and help ensure they are legally defendable.

To include a plan rule for possums, a rule would need to be designed around the management objective. For example, a rule to support possum eradication at place would need to be stronger than a rule to require sustained possum control across the Otago region.

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RPMP Site Led Programme; Direct Fund
ORC's key activity relating to possum management within Site-Led Programmes is through support of the goals of community groups and agencies in locations named in the plan. The most direct method is through the Site-Led Direct Fund. Funding is further supported by advice, education, or compliance (requiring land occupiers to undertake to control where needed).

In 2023, ORC formed a partnership with mana whenua and Council to deliver the Site-Led Programme, with representatives from Te Rūnanga o Ōtakōu and Kāti Huirapa Rūnaka ki Puketeraki. This Working Group provides guidance for the delivery and implementation of the Site-Led programme. To date the Working Group has:

- engaged community through a stocktake assessment,
- delivered community hui,
- carried out a site prioritisation process evaluating biodiversity and cultural values to select priority sites,
- developed site management plans for four priority sites (Aramoana, Sandymount – Sandfly Bay, Okia – Papanui – Taiaroa Hill, and Leith Saddle – Mihiwaka),
- allocated funds to community groups.

Other ORC Management Activities

ORC Catchment Action Plans (CAP)
A CAP is a plan for the management and conservation of an entire catchment or catchments. It is a long-term plan that builds on the work that communities and local government are already doing to protect and manage their place and serves as a focus for new actions and projects. Successful CAPs are 'owned' by the community, iwi and the ORC. This means they are developed with the community. ORC, key stakeholders, and subject experts will be working with communities and iwi to co-design these detailed catchment action plans for their area.

The first of the CAP, for the Catlins area, is in development. A pest management plan is due to be delivered to ORC on 15 June 2026. This pest plan will include a section on possum management.

Education & Advocacy
Information on possums is provided on ORC's website.

Management Activities by Other Parties

OSPRI New Zealand
Historically, possum control across the Otago region has been led by OSPRI through its TBfree programme, which focuses exclusively on managing possum populations in areas where bovine tuberculosis (TB) is present or poses a risk.[1] Otago is a focus area for the programme. This disease-driven approach means that OSPRI's operations are being progressively being scaled back as more areas are declared TB free. With no coordinated approach to 'filling the gap' as OSPRI operations cease, this has left large areas with minimal or no possum control, placing the onus on land occupiers or communities to manage the issue themselves. Without regional oversight, this has led to patchy control, rapid reinfestation, and growing frustration. ORC is increasingly being lobbied to implement a possum management regime, to maintain the gains, across Otago.

[1] https://www.ospri.co.nz/tb-and-pest-control

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Place Group (consultancy) has been tasked with a review of other regions possum programme delivery models. The following are excerpts from the final report:

> **Section 6:** The assessment undertaken as part of this review and finding from the comparative review of approaches across New Zealand indicates that a possum control programme delivered primarily through centrally coordinated contractors, will likely provide the strongest alignment with ORC's investment objectives and has the highest likely potential for achieving long-term biodiversity outcomes across the Otago region.
>
> **Section 6.1:** The primary objective identified through the workshop process was to ensure that any programme is effective in supporting biodiversity outcomes at high-value sites across the region. The evidence gathered from other regional councils demonstrates that contractor-delivered programmes consistently achieve target RTCI levels because delivery is tied to contractual performance requirements.
>
> **Section 6.3:** Experience from other regions indicates that possum populations can recover rapidly once active management ceases. Evidence from the Kilmog/Karitāne programme demonstrates that areas previously reduced to low RTCI levels can return to significantly higher possum densities within only a few years if control is not maintained. ES and HBRC both noted that in some parts of their regions OSPRI gains were lost before councils were able to establish successor programmes and therefore timing is important. Maintaining the gains of the OSPRI areas is most likely in areas where OSPRI is currently undertaking control. This is a small portion of the total area that OSPRI has historically managed.
>
> **Section 7.3: Recommended Next Steps**
>
> - Undertake engagement with DOC to ensure alignment on regional possum control management, and to define the scope of their operational capacity within PCL.
> - Undertake relevant assessments to determine the extent of the future programme and where effort is best focussed to achieve biodiversity gains, alongside community aspirations.
> - Engage OSPRI leadership to leverage their significant knowledge and regional expertise. Specifically, assess the potential for OSPRI to continue programme management under a new funding structure provided by ORC.
> - Consider potential re-wording of the "harbouring rule", and the addition of rules, such as the good neighbour rule, to the RPMP to ensure regulatory compliance, if needed, is as operationally streamlined as possible.
> - Ensure that any approach ORC decides to move forward with is suitable for the long-term management of possum control in the Otago region. Once started, it is unlikely that this approach will easily be able to be changed.

Department of Conservation

The DOC National Predator Control Programme protects native wildlife and forests at important conservation sites across New Zealand.[2] The goal is for healthy forests and thriving populations of unique native birds, bats, frogs, lizards and insects throughout New Zealand. Currently, DOC control predators (rats, stoats, and possums) on a sustained, rotational basis over about 1.8 million ha which is nearly 20% of public conservation land.

The amount of public conservation land receiving treatment for possums in New Zealand increased to 213,256ha in 2024/25. Otago operations equalled a little under 100,000ha (DOC Pesticide Summary).

[2] https://www.doc.govt.nz/national-predator-control-programme.

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Control methods include aerially applied 1080 and ground control tools, including traps and toxins in bait stations.[3]

DOC Tier 1 monitoring is undertaken across public conservation land (8km grid) and his includes a WTI at each plot for possum abundance. This data would be unlikely to provide the level of detail needed, to determine whether possum numbers are increasing on PCL. DOC Tier 2 monitoring occurs at place, where possum management is undertaken by DOC. This data is not publicly available, but can be obtained through formal channels, if required.

Territorial Local Authorities
Regional and District/City Councils allocate funding to pest management activities aimed at enhancing biodiversity values. To what level these funds support possum control specifically is unknown, and support is likely to be variable as applications for funding vary. A review of District/City Council pest management programmes did not produce any plans specific to possum control.

Predator Free 2025
DOC leads the Predator Free movement which brings together iwi and hapū, non-governmental organisations, businesses, government agencies, community groups, and New Zealanders from all walks of life.[4] Launched in 2016, the goal is to eradicate possums, rats, stoats, ferrets and weasels, some of the most damaging introduced predators that kill millions of native birds each year. Achieving this would drastically improve conditions for the thousands of native species currently threatened or at risk of extinction. Included in the management activities is a workstream that investigates and develops innovative methods and technologies for pest control (e.g., 'Spitfire' long-life toxin delivery device for possums).

Predator Free Dunedin (PFD)
PFD has a goal to create a predator-free Dunedin by 2050; this includes eradicating possums in the city.[5] Currently there is a lack of understanding of habitat use and movement behaviour of adult possums in urban and peri-urban environments. PFD has been working with Manaaki Whenua researchers to capture, track, mark and observe possums across the city. GPS data has been used to map possum home-ranges, monitor individual possum behaviour at different types of trap, determine optimal spacing for traps and monitoring equipment and identify movement patterns and corridors that could provide potential routes for reinvasions. This work is ongoing.

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme?	**Partially.** **Principal Measures to be Used (All Sites)** The Plan states Otago Regional Council will take a lead role in supporting community groups and agencies in bringing about the desired levels of environmental protection to this site. However, ORC does not lead possum management in any part of Otago. ***Collaboration:*** ORC provided significant direct funding to support the Otago Peninsula possum eradication over a

[3] https://www.doc.govt.nz/our-work/national-predator-control-programme/operations
[4] https://www.doc.govt.nz/nature/pests-and-threats/predator -free-2050/
[5] https://www.predatorfreedunedin.org

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	period of 5 years. ORC has provided direct finding to support possum control initiatives in the West Harbour/Mt Cargill site led area. Possums have been excluded from the Otago harbour islands; however, this is not due to any active management from ORC. ***Requirement to Act:*** Both the 'harbour' rule (as discussed above) and the sections 52 and 453 regulations create a requirement to act for land occupiers at all sites. ***Council Inspection:*** Council inspection occurred on one property on the Otago Peninsula to assess compliance against Plan Rule 6.5.4.1. No other inspections have occurred in relation to possums for any other site led programme. ***Service Delivery:*** ORC have not undertaken any service delivery related specifically to possums, to date. ***Advocacy & Education:*** ORC is perceived by some as lacking in support, community engagement and resource provision. ORC could play a more active role in educating land occupiers and providing practical resources to support pest control. Distrust among rural land occupiers creates barriers. [How the Otago Regional Council intends to deliver these objectives with the community is described more fully in the Biosecurity Strategy]. See 'Current ORC Biosecurity Strategy' section above. Actions included development of a possum control plan focusing on OSPRI completed areas. This work is underway, with a report to be delivered June 2026. **Sapere Effectiveness Report** *Terrestrial Site Led Programmes: Partially effective* *Island Site Led Programme: Inconclusive* The Sapere report outlines that community groups and volunteers have achieved significant success in reducing possum numbers in the Otago Peninsula with over 25,000 animals removed. This initiative has been supported by RPMP Objectives and rules, EcoFund funding and Site-Led Direct Funding.
Have the objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP? ***Objectives 6.5.4.a. / 6.5.5.a. / 6.5.6.a.***	**Partially.** ***Objective 6.5.4.a.*** Over the duration of the Plan: eradicate possums; on the Otago Peninsula to avoid, mitigate or prevent damage to the indigenous ecosystem values at this site. Otago Peninsula has recently been declared possum free by Predator Free Dunedin, and the site-led programme has supported this work.

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	Objective 6.5.5.a. Over the duration of the Plan: progressively contain possums to achieve a 2% RTC at West Harbour – Mt. Cargill to avoid, mitigate or prevent damage to the indigenous ecosystem values at this site. Possums are managed by Halo in the West Harbour – Mt Cargill area. ORC has no data to confirm that possums are being maintained to 2% RTC or lower. This data is not collected by ORC and is not requested or supplied by individuals or groups undertaking active management for possums in this location. ***Objective 6.5.6.a.*** Over the duration of the Plan: a) preclude establishment of possums to avoid, mitigate or prevent damage to the indigenous ecosystem values at this site. Possums have not been detected on Otago harbour islands. ORC does not undertake any active management at this site.
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	**Partially.** Historically, the responsibility for possum control has been led by OSPRI through its TBfree programme, which has focused exclusively on managing possum populations in areas where bovine tuberculosis (TB) is present or poses a risk. This disease-driven approach means that OSPRI's operations are geographically limited and are progressively being scaled back as more areas are declared TB-free. As a result, once OSPRI withdraws from an area having achieved its objective of reducing TB risk there is often no coordinated follow-up, and possum populations rapidly rebound. This leaves a gap in regional pest management, if at the end OSPRI's targeted efforts there is no replacement management programme. A wide scale programme/objectives and rules should be considered to counter the OSPRI Withdrawal The Peninsula Site-Led programme has been declared possum free so a change to Site-Led Exclusion rather than Site-Led Eradication is needed As mentioned above a legal opinion on the use of 'harbour' and the lack of occupier control rules has compromised compliance/ delivery and needs to be addressed Stakeholders, to the Sapere report, have raised that *possums should be moved to another of the RPMP programmes (such as sustained control)* due to perceived increases in, and impacts from, possums across Otago. This move would allow for stronger rules around management to be enforced.

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	Recent possum abundance data for Otago is not readily available, however OSPRI maintain an extensive data base for certain areas that are subject to TB vector control. This data could provide a picture of pre-control and post-control densities but is unlikely to provide information on increases in abundance in areas that OSPRI no longer manages, as monitoring no longer occurs in these areas. Other regions have seen a steep increase in possum numbers following a OSPRI withdrawal. A collective understanding of how possums interact and exist in New Zealand ecosystems implies that possum numbers will quickly increase, in possum preferred habitats, without active management.
Good Neighbour Rule	There is currently no GNR for possums in the current RPMP.
Pest control spend	2023/24: $146,200 to 5 groups 2025/26: $193,437 to 11 groups 2026/27: $197,000 to 11 groups

Regional Alignment Opportunities

Relevant Regions	Programme	Alignment Opportunities
Canterbury RPMP 2018-2038	• Site-Led Programme	
Otago RPMP 2019-2029	• Site Led Programme	
Southland RPMP 2019- 2029	• Sustained Control Programme	Regional boundary alignment
West Coast RPMP 2018-2028	• No Programme	
Other Comments	Nil	

Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

No (although the Wild Animal Control Act does allow for permits, licences and other authorities in relation to commercial take of possums).

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes.

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Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Possums were ranked the fourth highest pest as they are widespread and increasing pest, posing significant risks to agriculture through the spread of bovine tuberculosis and to biodiversity through browsing of native vegetation and predation of native wildlife.

2. Respondents highlighted rapid population growth and reinvasion from unmanaged areas, and supported more coordinated, long-term regional management.

3. Possums featured as a high priority for Catchment and environmental groups at the stakeholder workshops.

4. Views reflected that the current site-led programme approach is not enough and support for long-term, landscape-scale control is needed in alignment with Predator Free 2050 objectives.

5. Stakeholders acknowledged that compliance alone would not be enough to control possums, community collaboration is needed.

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Options for a Proposal for a New Plan

The preliminary options identified for the management of this species in the proposal are:

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective:** Reduce the impacts of possums across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC could use measures such as education, advocacy, Catchment Action Plans and funding via the eco fund to support the community to manage possums. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. *Benefit:* No change to current processes as ORC does not currently regulate region wide possum control. There would be no compliance and administration costs for ORC. A non-regulatory focus will allow ORC to focus on catchment level control with interested communities. This option is flexible and does not bind ORC to a specific budget allocation, the scale of work can be adjusted with community need. *Risk:* Reputational risk and TB Free lost investment as possum numbers in the region rebound. No ability to enforce possum management if densities increase to critical levels. No ability to align with other regions on landscape scale possum management. No ability to use compliance as a support tool where community groups wish to implement possum management plans. No Good Neighbour Rule to support work being done in high value areas and to reduce reinvasion levels. *Mitigation:* Develop a strong non-regulatory approach to possum management through Integrated Catchment Management, Catchment Action Plans and increased education and advocacy. ORC could increase collaboration, engagement and education metrics to provide required effectiveness.
Option 2	**Site- Led (Land Occupier Rule to Enable Access for Management Purposes)** **This analysis is completed using the Site-Led Assessment form and is not covered in detail here.** ORC has considered possums for inclusion in the following Site-Led Programmes ▪ Otago Peninsula ▪ Mt Cargill West Harbour ▪ Harbour Islands (Quarantine Goat) ▪ Catlins ▪ Sothern Lakes ▪ Mt Hikaroroa Mt Watkins **Objective:** Due to the impacts and distribution of possums it could be appropriate to manage the impacts at certain places rather than across the

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	entire. To do this a site-specific Site-Led programme would need to be considered and analysed. **Measure:** Reduce the impacts of possums in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. **Proposed Rule [1]:** Land Occupiers must reduce/maintain possums to < 5% or <10% Residual Trap Catch as mapped OR allow access to ORC to undertake management activities. The rule would include a prescribed cost share or cost recovery function. *Benefit:* The benefits are a site-led programme would mean any regulation would be targeted to areas where specific values are at risk. This allows the approach to be applied to where it can be most efficient and effective. For possums this also allows ORC to align rules to actively support Predator Free 2050 programmes such as Predator Free Dunedin. *Risk:* For possums this may require different rules for different sites, to support differing objectives. Possum numbers will increase to carrying capacity across the wider Otago region without management. *Mitigation:* ORC could increase collaboration, engagement and education metrics to provide required effectiveness. Consideration of a Good Neighbour Rule would need to be included.
Option 3	**Sustained Control (Land Occupier Rule)** **Objective:** To suppress or maintain possum's populations 5% or 10% Residual Trap Catch to maintain the gains made by the TB free programme and to minimise impacts on the environment and the economy. The 5 and 10% target areas will be mapped based on the values at risk. **Measures:** Reduce the impacts of possums across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Requirement to Act: land occupiers to carry out control ▪ Council Inspections: on a roster with a defined % of the region checked each year ▪ Advocacy and Education ▪ Collaboration **Proposed Rule [1]:** Land Occupiers must reduce/maintain possums to < 5% or <10% Residual Trap Catch as mapped OR allow access to ORC to undertake management activities. The rule would include a prescribed cost share or cost recovery function.

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	Benefit: A region-wide rule is simple to communicate and enforce. This option will support transition from the OSPRI programme and prevent a rebound in possum numbers. *Risk:* Extensive and regionwide monitoring would be required. There would be additional cost for land occupiers to manage possums to the required levels. Different areas may need a different level of management to see a positive impact on values (e.g., levels to maintain threatened species values may be harder to achieve, and more costly, than managing for other values). *Mitigation:* ORC can utilise an established, external contractor pool to support the monitoring and control of possums, where in-house capacity is low. ORC can improve on delivery of principal measures to improve effectiveness. A Good Neighbour Rule would be essential.
Option 4	**Sustained Control (ORC Service Delivery)** **Objective:** ORC will manage possums to 5% - 10% Residual Trap Catch or equivalent, regionwide through a service delivery model. **Measure:** Reduce the impacts of possums in high values sites within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Service Delivery – ORC responsible for control ▪ Council Inspections and enforcement – pre and post control monitoring. ▪ Advocacy and Education ▪ Collaboration ORC would manage external contractors to deliver possum control to required levels rather than employing possum control staff. Service delivery would include contract management, performance management, auditing, and result monitoring. **Proposed Rule [1]:** Land Occupiers must allow access to ORC to undertake management activities to reduce/maintain possums to < 5% -10% Residual Trap Catch as mapped. *Benefit:* Control can occur as and when required, on time and to standard. The whole region is treated to the same standard and all land occupiers receive a benefit. *Risk:* Expensive to manage and ORC will be responsible for missed targets. *Mitigation:* This option requires long-term (in perpetuity) commitment, a ring-fenced, annually adjusted funding pool and increased in-house or external project management capacity. The programme will need lead-in time to establish the required project framework and contractor capacity.

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	Contracting pool will need to be established, including but not limited to: ▪ Expanding the ORC procurement panel to include professional, experienced possum control contractors. ▪ Development of internal performance management, field auditing and result monitoring capability OR resourcing to contract out to a consultant project manage.
Staff Recommendation	**Option 2** Staff recommend that the inclusion of possums within site-led programmes, where the values of the place are at risk from possums is the most effective management options for possum and to support community objectives.

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Level of Analysis Required for CBA

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for possums

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	Significant interest in possum management exists, particularly from community groups interested in protecting environmental values and land occupiers wanting to protect against disease. May be strong opposing views on ground-based methods from some individuals and communities, for the Options that choose to go ahead with possum management. Costs vary depending on the option chosen, but there will be a large increase in resource required from ORC to support planning, compliance monitoring, education and collaboration if a regulatory or service delivery option is chosen.	

Assessment Criteria 2: Likely costs relative to likely benefits

Low Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	High Cost to Benefit Ratio
Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.	*Costs for the programme are likely to be similar/lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.*
Explanation:	The cost of possum management (planning, monitoring and control) will vary depending on the option chosen, however the benefits from maintaining possums to low levels has been well documented (see DOC, OSPRI, Manaaki Whenua Landcare Research websites). To be confirmed through the CBA.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty

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Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	There are decades of scientific study into possum impacts and the effectiveness of control to varying levels.	

Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	OPSRI New Zealand and DOC have decades of possum monitoring and control data for Otago. Trap NZ collates community group catch data.	

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Candidate Pest Species Management Audit	
Pest Species	Wilding Conifers
Author Name & Role	Will McBeth, Project Delivery Specialist
Audit Date	2 June 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	14 July 2026

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Introduction

This audit provides an assessment of the pest management activities of Otago Regional Council in relation to all species of exotic conifer that pose a wilding conifer risk in Otago. This includes, Contorta (lodgepole) pine, Corsican pine, Scots pine, Mountain and dwarf mountain pine, European larch, Douglas Fir, Bishops, Maritime, Ponderosa, Radiata and Attenuate cross.

The assessment is not limited by the species currently contained in the Otago RPMP as more is now known about the impacts of other species.

The assessment covers the:

- values that are at threat from the pest,
- effectiveness and efficiency of the rules in the current Pest Management Plan and other activities in managing the pest,
- Options for management under a new Pest Management Plan,
- Opportunities for regional alignment with neighbouring council,
- Level of analysis required to undertake a cost benefit analysis.

The information in this audit will be used to inform the development of a Proposed Regional Pest Management Plan (RPMP) for Otago to replace the current Plan.

Species Description

Wilding conifers and the associated analysis refer to plants that have spread naturally, with low economic benefits and with potential to spread further in an uncontrolled manner. It is appropriate to group these species because they behave similarly, occupy similar habitat, and in some cases occur as mixed stands that must be controlled together.

Wilding and the spread of conifer species is often associated with plantation forestry and trees planted for other commercial, land management and aesthetic reasons. To understand the impacts of these species all forms of these trees are considered as part of this impact assessment, including:

- Contorta (lodgepole) pine,
- Corsican pine,
- Scots pine,
- Mountain and dwarf mountain pine,
- European larch
- Douglas Fir
- Bishops,
- Maritime,
- Ponderosa,
- Radiata
- Attenuata cross

The biology of these species is included in https://www.wildingpines.nz/assets/Documents/Wilding-Conifer-Quick-ID-Guide-2023-HR-PRINTER-FRIENDLY-VERSION.pdf

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Risk Assessment

Value	High/Med/Low	Explanation
Environmental values		
Soil resources	High	Soil structure, acidity and soil fauna are altered when wilding conifers replace native ecosystems. They reduce the productivity of primary industries and damage the environmental, social, cultural and landscape values that New Zealand is renowned for.
Water quantity and quality	High	In areas where there are long-term, seasonal soil moisture deficits, dense wilding conifers can contribute to reductions in surface water flows, potentially impacting on water availability and aquatic ecosystems. Large plantations of established wildings retain and utilise a lot of water reducing the runoff into our natural catchments and rivers.
Threatened species	High	Potential to invade a wide range of habitat and permanently displace all native fauna and flora and exotic species.
Survival and distribution of indigenous species	High	Potential to invade a wide range of habitat and permanently displace all native fauna and flora and exotic species. Most wilding conifer species do not pose a significant threat to established native forests; However some species are adapting to new areas and in particular, Douglas fir has a higher shade tolerance than other introduced conifer species and can consequently spread into shrublands, regenerating native forest and mature forest where there are canopy gaps and a relatively sparse understory.
Ecosystem health and biological diversity	High	Potential to invade a wide range of habitat and permanently displace all native fauna and flora and exotic species. Particularly at risk is Otago's high country and tussock

		grasslands Potential for significant impacts on native ecosystems, particularly those with low-stature vegetation. Wilding conifers grow faster and taller than low-stature native plants and so can shade out many of these species. Dense wilding conifer growth, can lead to local extinction of native plant communities, the drying of wetlands and riparian areas, and resulting impacts on native fauna through the loss of habitat.
Other	N/A	
Economic values		
Tourism	High	Can adversely affect amenity and landscape values. Particularly where the valued landscapes are characterised by extensive low-stature vegetation such as high-country tussock grasslands. Wildings have the potential to completely transform our iconic landscapes. Otago landscapes are a huge drawcard that attracts thousands of tourists to New Zealand every year. If the landscape was significantly altered, it may well lose a lot of the appeal that it currently holds and result in less tourists.
Dairy	Low	In areas of extensive pastoral farming, wilding conifer infestations adversely impact economic wellbeing by reducing available grazing land and limiting future land use options due to the high costs of control. Wilding species pose a low risk to well managed intensive grazing systems such as dairy operations.
Sheep and beef	High	In areas of extensive pastoral farming, wilding conifer infestations adversely impact economic wellbeing by reducing available grazing land and limiting future land use options due to the high costs of control. Extensive grazing operations, particularly in the high country, are a very high risk as wildings have the potential to completely dominate the landscape.
Forestry	Medium	Some wilding species within production forestry cause issues with establishment and spread into areas where they are not desirable.
Horticulture, viticulture	Low	Wilding species pose little risk to well managed vineyards and orchards.
Infrastructure	N/A	Wildings can cause extensive winter shading on roads, leading to increased risk of black ice or unsafe road conditions.
Other – Honey Production	High	Potential to impact honey production from replacement of manuka shrublands and shading of flowering species.
Other - Hydro	High	Potential impacts on hydro generation and irrigation through a reduction in available water.
Mana whenua values		
Taonga Species	N/A	Consult local iwi
Cultural Harvest	N/A	Consult local iwi
Other	High	Impact on historic buildings and structures, and earthworks and urupa and grave sites from conifer trees and their roots.
Social and cultural wellbeing		
Human Health		No impact identified
Social and cultural wellbeing	High	Adverse effects on amenity and landscape values, particularly where the valued landscapes are characterised by extensive low -stature vegetation such as high-country tussock grasslands. Otago's iconic landscape is vulnerable to the invasion of wilding conifers.
Recreation values	High	Dense wilding conifer spread can impact water availability lead to the blocking and/or changing of valued views and

		vistas. Can impede access to, and enjoyment of, recreational areas. Wildings have the potential to completely transform our iconic landscapes
Other	High	Wilding conifers can also increase the risk posed by wildfires. May also increase insurance premiums and require maintenance in the form of firebreaks and access control. Impacts on drinking water supply from reduction in available water.
Overall Impact		
Overall impact	High	The impacts of allowing wildings to establish would result in major environmental and aesthetical changes that would affect production, tourism, and our native flora and fauna and desirable exotic species over a range of landscape types. For full details on the Otago specific impacts and costs see *Benefits and Costs of Additional Investment in Wilding Conifer Control - Otago. Sapere 12 October 2023* High risk of impacts in many areas where there is no control of wilding conifers.

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RPMP Evaluation and Review

Current management

National Wilding Conifer Control Programme

Wilding conifer control across Otago is delivered through participation in the National Wilding Conifer Control Programme, alongside a range of localised control initiatives. Community-led wilding conifer groups provide strategic direction and undertake land occupier engagement within their respective areas, while ORC supports delivery through fund administration, operational oversight, and ensuring alignment with national programme requirements.

Wilding Conifer Control is the largest pest control programme in Otago. The National Wilding Conifer Control Programme led by Biosecurity New Zealand in partnership with regional councils, including ORC, coordinates collaborative wilding conifer management across New Zealand. This programme has carried out control works focusing on removing coning trees in key areas at an average cost of $1.5M per annum. This budget is likely to increase in 2026/27 to ~4$M (Please Note: this figure is yet to be confirmed).

Land occupiers with priority conifer infestations are engaged by community groups and invited to participate in the National Programme. Those who actively engage and demonstrate a willingness to receive funding and undertake control activities are generally considered to be compliant with, or demonstrating an intention to comply with, the Regional Pest Management Plan (RPMP) rules. Consequently, they are not normally subject to active compliance action under the RPMP.

The limited availability of National Programme funding frequently results in control work being deferred or progressing more slowly than desired. However, where a land occupier has a history of participation in the programme and remains willing, in principle, to continue control activities should funding become available, ORC does not generally pursue RPMP compliance action.

The Department of Conservation is a delivery partner to ORC, undertaking activities as directed by the national programme.

Current RPMP Objectives & Rules

Wilding Conifers are controlled through a Progressive Containment programme under the current RPMP. Wilding conifers are managed in the progressive containment programme. Land occupiers are responsible for controlling wilding conifers on their land and have a legal obligation to prevent their spread. There are specific rules in the RPMP that require land occupiers to remove wilding conifers, both wild (self-established) and planted (specific pest classified conifer species in planted situations, such as gardens and shelterbelts). There are also pest agent conifer rules that require land occupiers (other than forestry, which is managed by national regulations) to control any other planted conifers that are clearly causing adverse wild spread across property boundaries. There is also a good neighbour rule to help prevent wilding conifers spreading from one property onto neighbouring properties by requiring neighbours to remove wild and planted pest conifers from within 200 metres of the boundary.

Plan Objective 6.3.4
Over the duration of the Plan, progressively contain and reduce the geographic extent of wilding conifers within the Otago Region to minimise adverse effects on economic well-being and the environment. This may involve the destruction of contorta, Corsican, Scots, mountain and dwarf mountain pines and larch.

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Plan Rule 6.3.4.1

Within the Otago Region occupiers shall eliminate all wilding conifers, contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch present on land that they occupy prior to cone bearing, if:

a) the wilding conifers, contorta, Corsican, Scots, mountain and dwarf mountain pines, and/or larch are located within an area which has had control operations carried out to eliminate wilding conifers since January 2016;and

b) the control operations were publicly funded (either in full or in part).

Plan Rule 6.3.4.2

Within the Otago Region occupiers shall eliminate all wilding conifers, contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch present on land they occupy within 200m of an adjoining property boundary prior to cone bearing, if;

a) wilding conifers, contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch have previously been eliminated through control operations on the adjoining property; and

b) the control operations on the adjoining property were within 200m of the boundary and were undertaken since January 2016.

Plan Rule 6.3.4.3

Within the Otago Region occupiers shall eliminate all wilding conifers, contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch present on land they occupy within 200m of an adjoining property boundary prior to cone bearing where:

a) the adjoining land has previously been cleared through control operations since January 2016; and

b) the occupier of that adjoining land is taking reasonable steps to manage wilding conifers, contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch on their land, within 200m of the boundary. (Note: This is designated a good neighbour rule)

Plan Rule 6.3.4.4

Within the Otago region occupiers shall, on receipt of written direction from an Authorised Person, eliminate any Pest Agent Conifer that is present on land they occupy within 200m of an adjoining property boundary prior to cone bearing where:

a) wilding conifers; contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch have previously been eliminated through control operations on the adjoining property; and

b) the control operations on the adjoining property were within 200m of the boundary and were undertaken since January 2016.

(Note: This is a pest agent rule)

Otago Regional Policy Statement 2021

The Otago Regional Policy Statement 2021 (RPS) provides policy direction to manage pests and to reduce the impact of pests, including wilding conifers. The RPS identifies a list of conifer species that cannot be planted or replanted within certain areas, including areas identified as outstanding natural features, outstanding natural landscapes, or significant natural areas.[1]

[1] Otago Regional Policy Statement 2021, LF-LS-P18.

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The RPS also require territorial authorities to prepare or amend and maintain their *district plans* to manage land use change and wilding conifer risk in accordance the policy direction and list of species.[2]

The relevant RPS policies, methods and list of species is in attachment 1.

Other Management Activities

ORC

ORC provides information on wilding conifers through the Pest Hub section of its website, supported by local community groups that promote wilding conifer awareness, control activities, and educational material through their own websites and social media channels. This regional information is complemented by national guidance, tools, and resources provided by MPI and the National Wilding Conifer Control Programme.

The ORC Pest Hub provides information on identifying pest conifer species, understanding the environmental impacts of wilding conifers, and selecting appropriate control methods. The website also explains the requirements of the Otago Regional Pest Management Plan (RPMP), including land occupier responsibilities and regulatory obligations. In addition, it provides guidance on reporting infestations, accessing control resources, and understanding why wilding conifers represent a significant threat to Otago's biodiversity, landscapes, productive land, water resources, and cultural values.

Territorial authorities

Most territorial authorities in Otago have policies for wilding control and rules for the planting of wilding conifer species in their district plan. Below is a summary of the rules that apply.

Central Otago District Council (CODC)

The CODC Wilding Conifer Control Policy and Tree Policy aims is to actively works to eradicate wilding conifers on council-owned or managed land and manages spread from commercial forestry blocks.

The CODC District Plan and policies and rules enforce strict resource consent requirements for planting spreading conifer species as follows:

- Discretionary Activity for Douglas fir, European larch, Ponderosa pine, Bishop's pine, Maritime pine, and Radiata pine[3] and for Corsican pine[4] planting that exceed 2 hectares.
- Non-Complying Activity for Scots pine and/or Swiss Mountain pine.[5]
- Prohibited Activity for Planting of Lodgepole pine (Pinus contorta) is completely banned with no option to apply for consent.[6]

Queenstown Lakes District Council (QLDC)

The Proposed Queenstown Lakes District Plan (Chapter 34 – Wilding Exotic Trees) contains specific provisions and objectives designed to protect the district's landscape, biodiversity, water, and soil resources from the spread of wilding exotic trees. The plan contains rules for the planting of conifer species with an exemption applying for Commercial Forestry where the Resource Management (Resource Management (National Environmental Standard for Commercial Forestry) Regulation 2023 prevails. The

[2] Otago Regional Policy Statement 2021, LF-LS-M14 – *District plans,*
[3] Central Otago District Plan 4.7.4.viii
[4] 4.7.7. Ix.
[5] 4.7.5.v.
[6] 4.7.5A.i.

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rules set out that the planting of Radiata pine (Pinus radiata) is a discretionary activity[7] and the planting of the following conifer species is a prohibited activity:

- Contorta or lodgepole pine (*Pinus contorta*),
- Scots pine (*Pinus sylestris sylvestris*),
- Douglas fir (*Pseudotsuga menziesii*),
- European larch (*Larix decidua*),
- Corsican pine (*Pinus nigra*),
- Bishops pine (*Pinus muricate*),
- Ponderosa pine (*Pinus Ponderosa*),
- Mountain pine (*Pinus mugo uncinata*),
- Dwarf Mountain pine (*Pinus mugo*),
- Maritime pine (*Pinus pinaster*).[8]

The QLDC Parks and Open Spaces Strategy sets out that the council will collaborates with regional bodies and the Central/Queenstown conifer control groups on district-wide pest management and removal actions.

Dunedin City Council

The DDC District Plan rule 10.3.4 Tree Species sets out that Forestry and shelterbelts and small woodlots must not include any of the following conifers species:

- *Scots pine (Pinus sylvestris)*
- *Douglas fir (Pseudosuga menziesii)*
- *Corsican pine (Pinus nigra)*
- *Larch (Larix decidua)*
- *Ponderosa pine (Pinus ponderosa)*
- *Maritime pine (Pinus pinaster)*

The plan also sets out that:

- Forestry that contravenes rule 10.3.4 for tree species is a restricted discretionary activity, except in an Outstanding Natural Landscape or Natural Coastal Character overlay zones where it is a non-complying activity,
- Shelterbelts and small woodlots that contravene the performance standard for tree species are a restricted discretionary activity, except in an Area of Significant Biodiversity Value or an ONF, Outstanding Natural Features, Outstanding Natural Landscape, High Natural Coastal Character, Outstanding Natural Coastal Character, or Natural Coastal Character overlay zone where they are a non-complying activity.

Waitaki District Council

Under the proposed Waitaki District Plan:

- The planting of wilding conifer species (trees that spread easily and invade unwanted areas like lodgepole or Corsican pine) are prohibited activity within sensitive landscapes such as Outstanding Natural Landscapes (ONLs) and Outstanding Natural Features (ONFs).

[7] Queenstown Lakes Proposed District Plan 34.4.1.
[8] 34.4.2.

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- The General Rural Zone Rules specific that Amenity tree plantings, shelterbelts, and forestry cannot involve species that can become wilding conifers.

Clutha District Council

There are no specific rules in the Clutha District Council Plan for the planting of wilding conifer species.

Effectiveness and efficiency evaluation

Has ORC done what it said it would do to implement the programme?	**Partially effective.** Requirements to Act: No, due to the National Programme ORC has not needed to carry out any requirements to act, however, there is some enforcement work underway. Collaboration, Advocacy and Education: Yes, The majority of wilding conifer management activity undertaken by ORC has been delivered through the National Programme and by support for local community groups, which have played a leading role in raising awareness, engaging land occupiers, and facilitating on-the-ground control operations. Council Inspections: Yes. Twelve properties were inspected for wilding pines in 2021/22, and five (42 per cent) were found to be compliant. One re-inspection was conducted with an unclear outcome. Inspections increased over the course of the RPMP. 103 inspections for wilding conifer compliance were carried out in the financial year 2023/24, however, the report does not state how many of those inspections identified compliant and non-compliant properties. ORC notes in the report that the complexity of rules posed a challenge to determining compliance. Service Delivery: Yes, via the National Programme
Have the objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP? ***Objective 6.3.4.***	**Partially effective.** The progressive containment objective has been partially effective. Significant progress has been achieved in some areas, with extensive infestations cleared and subsequently maintained free of wilding conifers. In several locations, control efforts have reduced the spread from major seed sources through fringe control and the removal of selected pest trees. However, insufficient and inconsistent funding has limited progress in other areas, while deferred maintenance has resulted in reinvasion and the loss of previously achieved gains. Significant seed source plantings of commercial conifers remain across the region and continue to present an ongoing challenge to achieving long-term containment objectives. The achievements realised to date have not primarily resulted from the implementation of pest management rules. Rather, they have been driven by the sustained commitment of local community groups and land occupiers, supported by investment and coordination through the National Wilding Conifer Control Programme.

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	The rules have likely only contributed “indirectly or partially/ or had limited contribution” to achieving objectives, and most of the progress is driven mainly by the National Programme and voluntary/community action, rather than active rule enforcement. The ORC operating model has relied on complaints to identify areas and issues rather than proactive surveillance throughout the region. As a result, the rules are rarely tested or enforced. In most cases, community groups prefer to maintain positive working relationships with land occupiers and encourage voluntary participation, rather than escalating matters through a formal compliance. There is also significant confusion surrounding the rules themselves. For example, there is considerable uncertainty around the distinction between "wilding conifers" and the listed pest conifer species. The plan contains internal inconsistencies that further undermine its effectiveness. In the rule introductions, it states that the rules are not intended to apply to shelterbelts, yet the wording of the rules does not provide such an exclusion. Instead, the rules clearly capture planted specimens of the listed species, creating a direct contradiction within the plan. The rule requiring ongoing management where public funding has previously been invested in wilding conifer control has had some unintended negative consequences. In several cases, land occupiers have been reluctant to participate in control programmes or accept external assistance because they perceive the rule as creating a permanent obligation to undertake future control work at their own expense. To improve this process there needs to be more streamlining/understanding with ORC and long-term obligations. Improved transition planning processes are needed. The boundary rule is also ineffective due to ambiguities in its wording. The use of the term "adjoining" rather than "adjacent" means that where property boundaries do not physically touch, the rule may not apply. The enforceable distance of 200 metres is inadequate and does not reflect the known dispersal characteristics of wilding conifers. Wilding conifers spread far beyond this distance, meaning that even if the rule were consistently enforced, it would have limited effect in preventing spread. The pest agent conifer rule is intended to address planted trees, but exemptions and explanatory statements relating to existing plantings and shelterbelts substantially reduce its effectiveness. The absence of Douglas fir from the pest species list creates substantial challenges for management and limits the effectiveness of the rules in addressing one of the region's most significant sources of wilding spread. The broad exemptions afforded to forestry activities create significant gaps. There are numerous examples where neighbouring land occupiers experience substantial wilding conifer spread originating from commercial

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	forestry plantations, yet the existing rules provide no mechanism to require or encourage forest owners to undertake management actions. Following the introduction of the RPMP in 2019/20, where active work is happening Wilding Conifer infestations are reducing but the exact status throughout the region is unknown as new areas of concern and new species are emerging. The Sapere 2025 report considered ORC is partially effective in delivering the RPMP objective for wilding pines. The Sapere 2025 report consider the decline is likely a combination of the RPMP acting alongside the National Wilding Conifer Control Programme, and various community groups involved. However, the decline in wilding pines is noticeable comparing before-and-after RPMP inception observation numbers. This can suggest efficiencies of ORC in contributing to progressively containing wilding pines in Otago.
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	The programme needs to be changed to make it more effective see commentary above.
Pest control spend	A targeted rate is applied for Wilding Conifers across Otago land occupiers. The funds raised are used to support the Wilding programme through 1.5 FTE and funding grants to community groups. The majority of funding used in the programme is sourced from the National Programme - $350k ORC funding $250k for steering group and 1Mill from National Control programme.

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Regional Alignment Opportunities

Wilding conifers, Contorta, Corsican, Scots, Mountain and dwarf mountain pines and Larch are managed in neighbouring regions as follows:

Relevant Regions	Programme	Alignment Opportunities
Canterbury RPMP 2018-2038	Progressive containment Rules relating to conifers apply to sites within a mapped Wilding conifer containment zone	The National wilding conifer control programme has identified the need for National Pest Management Plan for Conifers (NPMP).
Otago RPMP 2019-2029	Progressive containment	

Southland RPMP 2019- 2029	Progressive containment for Wilding conifers, all other species are considered introduced conifers that when not lawfully established are pests. Southland plan specifically targets Contorta, Mountain, and Dwarf Mountain pines, with land occupiers having a "requirement to act" upon receipt of a written direction from an Authorised Person. Rules relating to conifers apply to sites within a mapped Wilding conifer containment zone.	This is intended to provide national alignment. Apart from the mapped wilding conifer containment zone, Canterbury rules are mostly identical to Otago rules. Consider alignment with Southland by including specific rules for Contorta, Mountain, and Dwarf Mountain pines, with land occupiers having a requirement to act regardless of past control or adjoining land activities.
West Coast RPMP 2018-2028	No programme.	

Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes

The potential spread risk from new commercial forestry and afforestation activities is managed through the RMA and the NES-CF, which includes the Wilding Tree Risk Calculator to assess the suitability and spread risk of forest species in relation to surrounding environments. Most district plans in Otago contain rules for the planting of wilding conifers set under the RMA. However, these regulations have limited ability to address existing plantations and established seed sources.

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes

If no, how would this be managed?

Engagement Outcomes

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species,' a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather

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feedback on the management of the 'spotlight species', and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

Species summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Wilding (pest) conifers were ranked as the third-highest priority in the initial survey and were consistently identified as one of Otago's most significant environmental threats. Respondents highlighted their impacts on indigenous ecosystems, landscape values, water yield, fire risk, tourism, agriculture, and hydroelectric generation, and called for sustained investment, stronger controls on planting and spread, and clearer land occupier accountability

2. Featured as a dominant theme in Dunedin, Balclutha, Alexandra, Queenstown and Ranfurly community drop-in sessions. Community highlighted threats from local forestry, and calls continued control supported by effective and enforceable rules with increased distances for the Good Neighbour Rule.

3. Discussion document feedback strongly supported retaining the current progressive containment programme or strengthening it with modified rules. Feedback supported continued control and follow-up, removal of seed sources, protection of previous investment, stronger regional coordination, and ensuring management efforts extend beyond Central Otago to emerging problem areas across Otago.

4. Stakeholders outlined the current rule are not fit-for-purpose, and support rules (including Good Neighbour Rule) for everyone that include shelter belts, forestry, carbon forests, and crown land. Calls for stronger control for Pinus mugo, Pinus contorta and Pseudotsuga menziesii (Douglas fir).

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Options for new RPMP

The preliminary options identified for the management of this species in the proposal are:

Option 1	**Non-Regulatory Approach (Not in the Plan | No Land Occupier Rules Apply)** **Objective:** Reduce the impacts of wilding conifers across Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC could use measures such as education, advocacy, Catchment Action Plans and funding via the eco fund to support the community to manage wilding conifers. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. *Benefit:* Reduced compliance and administration costs. *Risk:* Increased wilding conifer spread, significant biodiversity impacts, increased long-term management costs, loss of previous investment, and reduced ability to protect high-value sites. *Mitigation:* Rely on the development of future national rules. Voluntary control, public awareness, and reliance on other regulatory mechanisms.
Option 2	**Progressive Containment (Minor Update | Land Occupier Rules)** **Objective:** Over the duration of the Plan, progressively contain and reduce the geographic extent of wilding conifers within the Otago Region to minimise adverse effects on economic well-being and the environment. This may involve the destruction of contorta, Corsican, Scots, mountain and dwarf mountain pines and larch. **Measure:** Reduce the impacts of wilding conifer within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Service Delivery ▪ Requirement to Act: land occupiers to carry out control ▪ Council Inspections: on a roster with a defined % of the region checked each year ▪ Advocacy and Education ▪ Collaboration But amend the plan to improve its effectiveness, including: ▪ the current rules to address ambiguity and improve the enforceability. ▪ Make it clearer that rules apply to both wilding and some planted conifers.

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	▪ Clear definition of terminology in rules *Benefit*: Retains the intent of the current programme while addressing known weaknesses in the rules. Improves clarity, consistency, consolidation of duplicate rules, and enforceability without fundamentally changing programme objectives. *Risk:* Plan review and implementation would require additional policy development, consultation, and administration. Some proposed amendments may be opposed by affected stakeholders, particularly where they affect Shelterbelts and existing plantations less than 1ha or introduce additional obligations. *Mitigation:* Improved definitions, objective and rules will reduce risk.
Option 3	**Progressive Containment (Moderate Update | Land Occupier Rules)** **(Retain the current Progressive containment objective and include Additional Rules).** **Objective:** Over the duration of the Plan, progressively contain and reduce the geographic extent of wilding conifers within the Otago Region to minimise adverse effects on economic well-being and the environment. This may involve the destruction of contorta, Corsican, Scots, mountain and dwarf mountain pines and larch. **Measure:** Reduce the impacts of wilding (pest) conifer within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Service Delivery. ▪ Requirement to Act: land occupiers to carry out control ▪ Council Inspections: on a roster with a defined % of the region checked each year. ▪ Advocacy and Education. ▪ Collaboration. **Additional Rules** 1. <u>Introduce new 'non-forestry planting rules'</u> *As per the improvements noted below in Attachment 2: Change Recommendations; Application of Wilding Tree Risk Assessment Beyond Forestry; page 14.* **New Plan Rule: Non-Forestry Conifer plantings** Outside of plantation forestry, new planting or establishment of Pest Agent Conifer species is prohibited and shall be eliminated prior to cone

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bearing, unless an assessment has been undertaken that demonstrates that the planting or establishment presents an acceptable level of risk of contributing to the establishment or spread of wilding conifers, having regard to:

a) the spread characteristics of the introduced conifer species; and
b) the vulnerability of the surrounding landscape within 2 kilometres to the establishment of wilding conifers.

2. Provide explanatory note for rule

Explanation of Rule
Introduced conifer species that are capable of contributing to the establishment and spread of wilding (pest) conifers can present a risk to the effectiveness of wilding (pest) conifer management.

This rule ensures that, over the duration of the Plan, the risk of wilding (pest) conifer spread is considered before new conifer plantings are established, so that plantings presenting an unacceptable level of risk are prevented. The rule applies to conifer plantings outside plantation forestry, as afforestation activities in plantation forestry is regulated through the National Environmental Standards for Commercial Forestry (NES-CF).

3. Introduce a proactive species-specific plan rule
As per the improvements below in Attachment 1: Change Recommendations; Species-Specific Proactive Provisions; page 12. Aligns with Southland RPMP

New Plan Rule
Owners and/or occupiers shall, upon receipt of a written direction from an Authorised Person, eliminate all Contorta, Mountain and Dwarf Mountain pine plants from the land they occupy prior to cone-bearing. This rule does not apply where the occupier of the affected property is actively implementing an agreed programme for the control and elimination of Contorta, Mountain and Dwarf Mountain pine on that property.

4. Provide explanatory note for rule

Explanation of rule
Contorta is an unwanted organism and was declared a noxious pest as early as 1983, while Mountain Pine and Dwarf Mountain Pine are high-risk species which are challenging to control and have little to no commercial value. These species pose a significant risk to the effectiveness of wilding (pest) conifer management and should therefore be removed. While their presence in existing plantings and shelterbelts may require transitional arrangements, this should not result in these species being left unmanaged. At a minimum, measures

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	should be underway to progressively work towards their removal. A 'do nothing' approach should not be permitted. 5. Remove forest plantation exemptions for Mountain and Dwarf Mountain pine from Table 2 of the plan. *Benefit:* Improves ability to proactively manage wilding spread and prevent new Wilding seed sources without fundamentally changing programme objectives. *Risk:* Plan review and implementation would require additional policy development, consultation, and administration. Some proposed amendments may be opposed by affected stakeholders, particularly where they affect Shelterbelts and existing plantations less than 1ha or introduce additional obligations. *Mitigation*: Improved definitions, objective and rules will reduce risk.
Option 4	**Progressive Containment (Full Update | Land Occupier Rules)** **(Improvements to Current Programme PLUS Additional Rules PLUS Improvement to Pest Agent Conifer Rule, Amended Conifer Species List and Forestry Provisions)** **Objective:** Over the duration of the Plan, progressively contain and reduce the geographic extent of wilding conifers within the Otago Region to minimise adverse effects on economic well-being and the environment. This may involve the destruction of contorta, Corsican, Scots, mountain and dwarf mountain pines and larch. **Measures:** Reduce the impacts of Wilding (pest) conifer within Otago by enabling and supporting community-led management and stewardship through effective non-regulatory interventions **AND** land occupier rules requiring management or allowing access. ▪ Service Delivery ▪ Requirement to Act: land occupiers to carry out control ▪ Council Inspections: on a roster with a defined % of the region checked each year ▪ Advocacy and Education ▪ Collaboration **Improvements to Current Programme** 1. All improvements as noted in Option 2 above **Additional Rules** 2. Introduce new 'non-forestry planting rules' plus new explanatory note

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3. Introduce a proactive species-specific plan rule plus new explanatory note

4. Remove forest plantation exemptions for Mountain and Dwarf Mountain pine from Table 2 of the plan.

Improvements to Pest Agent Rule [Option 1]

5. Improve the definition of Pest Agent Conifer (page 20 & 46 of the RPMP).

   Pest Agent Conifer Means any introduced conifer species that is capable of contributing toward the establishment and spread of wilding conifers ~~and is not located within a plantation forest~~ *including conifers located within a plantation forest where they are contributing materially to the establishment or spread of wilding conifers beyond the plantation forest*. ~~This may include but is not limited to the conifer species listed in Table 3.~~

6. Add additional clause to Plan Rule 6.3.4.4
   A*s per the improvements noted in below in Attachment 1: Change Recommendations; Consistent Treatment of Commercial Species; page 13*.

   Plan Rule 6.3.4.4 (Note: This is a pest agent rule)
   Within the Otago region occupiers shall, on receipt of written direction from an Authorised Person, eliminate any Pest Agent Conifer that is present on land they occupy within 200m of an ~~adjoining~~ *adjacent* property boundary prior to cone bearing where:
   a) ~~wilding conifers; contorta, Corsican, Scots, mountain and dwarf mountain pines and/or larch~~ Wilding (pest) conifers have previously been eliminated through control operations on the ~~adjoining~~ *adjacent* property; and
   b) the control operations on the ~~adjoining~~ *adjacent* property were within 200m of the boundary and were undertaken since January 2016.
   c) ***New clause**** *Commercial plantations are exempt from this rule where the occupier is actively implementing or contributing to an agreed programme of wilding (pest) conifer control that includes measures to manage the effects arising from Pest Agent Conifers contributing to the establishment or spread of wilding conifers beyond the plantation boundary*.

Improvements to Pest Agent Rule [Option 2]

7. Improve the definition of Pest Agent Conifer (page 20 & 46 of the RPMP).

   Pest agent conifer - Means any introduced conifer species that is capable of contributing toward the establishment and spread of wilding

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conifers and is not located within a plantation forest. ~~This may include but is not limited to the conifer species listed in Table 3.~~

8. Define additional risk class "Pest Agent Plantation"

   Pest Agent Plantation - Means a plantation forest, or part of a plantation forest, that contains introduced conifers from which wilding conifers are establishing or spreading beyond the plantation property boundary.

2. Introduce a proactive species-specific plan rule
   As *per the improvements noted below in Attachment 2: Change Recommendations; Consistent Treatment of Commercial Species; page 13*.

   New Plan Rule: (Note: This is a pest agent rule)
   Where a plantation is determined to be a Pest Agent Plantation, the occupier shall actively implement or contribute to an agreed programme of wilding (pest) conifer control that includes reasonable measures to address the establishment or spread of wilding conifers for a distance of at least 200 metres beyond the plantation property boundary, where:
   a) Wilding (pest) conifers have previously been eliminated through control operations on the adjacent property; and
   b) the control operations on the adjacent property were within 200m of the boundary and were undertaken since January 2016.

Additional Considerations

3. This Option 4 should include analysis for a 'forestry' or 'Conifer Owner' levy to pay for the required work. Establish a mechanism to provide for collective contributions to long-distance spread and wilding conifer impacts where the sources cannot be determined or are disputed.

4. This Option 4 should also consider changing references to a control distance of 200m to 500m or further.

5. Include Douglas fir as a pest species listed in Table 2 but include reference to the footnote 5;" Does not include specimens used or intended to be used for plantation forestry purposes in a plantation forest."

Benefit: Retains the existing management objective while updating rules to improve clarity, consistency, and effectiveness. Inclusion of appropriate forestry obligations, review of regulated species, improved management of seed sources and nuisance effects, and stronger mechanisms for protecting neighbouring

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	properties from wilding spread. Inclusion of levy addresses appropriate contributions from exacerbators. Risk: Plan review and implementation would require additional policy development, consultation, and administration. Some proposed amendments may be opposed by affected stakeholders, particularly where they affect Plantation forestry or introduce additional obligations. Mitigation: Improved definitions, objective and rules will reduce risk.
Staff Recommendation	**Option 2** This option allows for immediate and urgent issues with the RPMP to be corrected whilst allowing MPI to work on the NPMP to fix the other concerns. If the NPMP is delayed or unsuccessful an RPMP amendment to option 4 is recommended.

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Level of Analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for wilding (pest) conifers.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There are opposing views between commercial forestry companies, people that appreciate historic trees/shelter belts and those that want to reduce the impacts of wildings. The costs for control are high and impossible for many land occupiers to meet without the support of the National Programme.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The benefits to cost ratio of wilding conifer control shows significant return for every dollar spent for the minimum option at 96:1, intermediate option at 93:1 and maximum option at 86:1, this is in line with previous analysis (Wyatt, 2018). Consideration of forestry levy to pay for the works – polluter pays option.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	Control methods and the risks are well known and understood. The risk of some species such as Douglas Fir is still emerging.	

Assessment Criteria 4: Level and quality of data available

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High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	Data exists and sits with community groups and ORC on the main infestations of species.	

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References

1. November 2023 review of the Otago Regional Pest Management Plan Wilding Conifer Programme rules, undertaken by Tamsin Page of Ned Norton Consulting ltd

2. Pest hub https://www.orc.govt.nz/environment/biosecurity-and-pests/plant-pests/wilding-conifers/

3. Wilding Tree Risk Calculator https://www.mpi.govt.nz/forestry/national-environmental-standards-commercial-forestry/wilding-tree-risk-calculator

4. The National Wilding Conifer Management *Strategy* 2015-2030 https://www.wildingpines.nz/national-control-programme/national-strategy

5. Review into the effectiveness of the Otago Regional Pest Management Plan. Sapere April 2025

6. October 2023 Cost benefit report by Sapere: Benefits and Costs of Additional Investment in Wilding Conifer Control - Otago.pdf

7. Boffa Miskell: Otago Regional Council Wilding Conifer Business Case 2024.pdf

8. Meeting the requirements of the Biosecurity Act 1993 and National Policy Direction for Pest Management 2015: Analysis of costs and benefits Report prepared for Otago Regional Council as part of the preparation of a Regional Pest Management Plan March 2018. Land Water People. Report # 2018-05.

9. Southland Regional Pest Management Plan 2019 – 2029. https://www.es.govt.nz/regional-plans/southland-regional-pest-management-plan/documents/

10. Canterbury Regional Pest Management Plan 2018-2038. https://www.ecan.govt.nz/document/download?uri=3420918

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Attachment 1: Otago Regional Policy Statement 2021

Policies

LF-LS-P18 – Managing *pests*

Reduce the impact of pests, including wilding conifers, by:

(1) avoiding afforestation and replanting of plantation forests with wilding conifer species listed in APP7 within:

  (a) areas identified as outstanding natural features, outstanding natural landscapes, or significant natural areas, and

  (b) buffer zones adjacent to the areas listed in (a) where it is necessary to protect those areas,

(2) if the spread risk of the species to be replanted is greater than the species in the existing forest because either the spreading vigour is greater or the species is less palatable, avoiding replanting of plantation forests with wilding conifer species listed in APP7 within:

  (a) outstanding natural features and outstanding natural landscapes, and

  (b) buffer zones adjacent to the areas listed in (a) where it is necessary to protect those areas,

(3) other than the afforestation or replanting of plantation forests, avoiding the planting of wilding conifer species listed in APP7 and any other pests in a way that is consistent with the Otago Regional Pest Management Plan 2019-2029,

(4) enabling the control of pests on land, and

(5) supporting initiatives to control or eliminate pests and limit or prevent their further spread.

LF-LS-M14 – *District plans*

Territorial authorities must prepare or amend and maintain their *district plans* to:

.....

(2) manage *land* use change by:

  (a) managing the planting of *pest plants* in accordance with LF-LS-P18, and, when identifying any need for and size of a buffer zone for the purposes of LF-LS-P18, *territorial authorities* must justify in the circumstances of each district the use of a buffer zone in addition to the NESCF to prevent the spread of *wilding conifer* species listed in APP7 into the area to be protected,

.....

NFL-M3 – *District plans*

Territorial authorities must prepare or amend and maintain their *district plans* to:

.....

(2) manage *wilding conifer* spread in accordance with LF-LS-P18, and

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APP7 – Conifer species with spread risk

For the avoidance of doubt, biologically sterile (including as a result of genetic modification) variants of the species listed below are considered to be excluded from this appendix because they do not pose a risk of wilding spread.

Table 5: Conifer species with spread risk

Common name	Botanical name
Big cone pine	*Pinus coulteri*
Bishops pine	*Pinus muricata*
Contorta (lodgepole) pine	*Pinus contorta*
Corsican pine, Black pine	*Pinus nigra*
Douglas fir	*Pseudotsuga menziesii*
Dwarf mountain pine	*Pinus uncinata*
Japanese cedar	*Cryptomeria japonica*
Japanese larch	*Larix kaempferi*
Larch	*Larix decidua*
Lawson's cypress	*Chamaecyparis lawsoniana*
Maritime pine	*Pinus pinaster*
Mountain pine	*Pinus mugo*
Norfolk Island pine	*Araucaria heterophylla*
Norway spruce	*Picea abies*
Patula pine	*Pinus patula*
Ponderosa pine	*Pinus ponderosa*
Radiata pine	*Pinus radiata*
Scots pine	*Pinus sylvestris*
Sitka spruce	*Picea sylvestris*
Slash pine	*Pinus elliottii*
Spruce	*Picea sp.*
Strobus pine	*Pinus strobus*
Western red cedar	*Thuja plicata*
Western white pine	*Pinus monticola*

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Attachment 2: Change Recommendations

Stakeholders pointed out significant inefficiencies of the RPMP in meeting its progressive containment targets, specifically relating to the lack of clarity of the rules, compliance and enforcement.

Despite the limitations, progressive containment remains the most appropriate management objective for wilding conifers in Otago. The widespread presence of legacy seed sources, including historic plantings, Shelterbelts, and commercial forestry, means that wilding conifer spread will continue to occur for many years.

In this context, complete eradication is not a realistic short- or medium-term objective across most of the region. The most pragmatic approach is to aim to progressively reduce infestations and contain major seed sources over time. While localised eradication may be achievable in some isolated areas where seed sources have been eliminated, ongoing management will be required wherever significant seed sources remain, in some heavily affected areas, sustained control may be the most we can achieve.

For the most part this is not influenced by the current rules, but rather the National Programme and local community initiatives. In their current form, the rules are only partly appropriate as since the plan was made there have been significant practical, legal, and design limitations that constrain their effectiveness and enforceability.

Where application of these rules has been sought, ambiguities within the RPMP wording have created significant barriers to their effective use. A November 2023 review of the Otago Regional Pest Management Plan Wilding Conifer Programme rules, undertaken by Tamsin Page of Ned Norton Consulting Ltd, identified a number of undefined terms and drafting ambiguities that contribute to uncertainty, differing interpretations, and limited uptake of the rules.

A key example is the reliance on a history of "control operations" as a prerequisite for enforcement, despite the term not being defined within the RPMP. Similarly, terms such as "area" in reference to previously controlled land are open to interpretation and can create uncertainty regarding the extent of land that qualifies for protection under the rules. The use of the term "adjoining" rather than "adjacent" has also constrained application of the rules, particularly where affected properties are separated by legal road corridors, rivers, reserves, or other intervening parcels of land.

Confusion regarding the interpretation and application of the three neighbouring property rules is widespread. While the rules are broadly similar in their intent, each contains distinct criteria, limitations, and thresholds for enforcement. The similarities between the provisions, combined with their subtle differences, have created a high degree of uncertainty among land occupiers, community groups, and compliance staff. This complexity has contributed to misunderstanding of the rules and, in many cases, a reluctance to pursue their application.

A significant limitation of the current RPMP rules is that they do not provide a mechanism for intervention in situations where there has been no prior public investment in control, where adjoining land occupiers have no history of control operations at or near the boundary, or where neighbouring land occupiers are unwilling to lodge a complaint. In these circumstances, the neighbouring property rules are not triggered and therefore cannot be applied.

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As a result, outside of these preconditions, there is no regulatory pathway under the RPMP to require control of wilding conifers in these situations.

Further uncertainty arises from the interaction between the specific conifer species classified as pests under the RPMP—namely Contorta, Corsican, Scots, Mountain and Dwarf Mountain pines, and larch—and the broader use of the term "wilding conifers" throughout the programme. While a plain reading of the rules suggests they may apply to planted pest conifers present in amenity plantings, shelterbelts, and other intentional plantings, the relationship between the listed pest species and the concept of a wilding conifer is not always well understood.

This uncertainty is compounded by the treatment of wilding conifers of species that are not themselves classified as pests under the RPMP, such as Radiata pine and Douglas-fir. Stakeholders frequently struggle to distinguish between the status of the parent tree and the status of the resulting wilding spread, creating uncertainty as to which rules apply and under what circumstances.

Additional complexity arises from the interaction with forestry operations, where the same conifer species may be present within commercial plantations that are effectively excluded from the neighbouring property rules due to forestry-related exemptions. This creates a further distinction that is difficult to reconcile in practice: identical species may be treated as pest plants when occurring in shelterbelts, amenity plantings, or other non-forestry settings, yet the same species are generally outside the practical reach of enforcement mechanisms when forming part of a forestry seed source. This inconsistency is not always clearly explained or understood by stakeholders, and the absence of explicit linkage between the forestry exemption and the pest classification framework has contributed to further uncertainty regarding the intent and scope of the rules.

Brief references to shelterbelts and other planted conifers within the explanatory notes accompanying the Wilding Conifer Programme have further contributed to differing interpretations. In some cases, these references have been interpreted as limiting the application of the rules upon intentionally planted trees, even where the species involved are themselves listed as pest plants under the RPMP. As a consequence, the use of the neighbouring property rules against planted pest conifers has been constrained, despite the apparent intent of the rules to address the spread of pest conifers across property boundaries.

Collectively, these ambiguities have reduced confidence in the enforceability of the provisions and created additional hurdles for both complainants and compliance staff seeking to apply the rules in practice.

Change recommendations

1. Retain the Existing Objective
    a. The overall progressive containment objectives of the current rules remain broadly appropriate.
    b. The primary focus should be on improving clarity, consistency, usability, and effectiveness, rather than fundamentally redesigning the framework.
    c. Greater emphasis should be placed on reducing ambiguity and improving the practical application of the rules. Recommendations for improvements made in the November 2023 report should be implemented

2. Improve Definitions and Terminology
    a. Review and clarify the definition of "wilding conifer".
    b. Clearly describe and/or distinguish between:

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- Planted pest conifer species, and
  Wilding conifers established through natural spread.
- Pest agent rule clarification
- Cone-bearing age definitions
- Wilding control operations definitions
- Site/Area/Land definitions
- Neighbouring – adjacent/adjoining definitions
- Reasonable steps definitions

c. Explicitly explain:
   - That certain species are considered pests when planted, while
   - Any naturally established wilding conifers are considered a pest regardless of species
   - The transition process from National Control to Land occupier Responsibility

d. Develop supporting explanatory material, examples, and guidance notes to improve interpretation.
e. Ensure all species are included in the objectives.

3. Consolidate and Simplify Rules
   a. Review opportunities to simplify the rule structure.
   b. Consider consolidating Rules 6.3.4.2 and 6.3.4.3, which currently address substantially similar matters.
   c. Simplification would improve readability, interpretation, and administration.
   d. Introduction of rules that protect land that is currently clear of Wilding Conifers (prevent new sites establishing)
   e. Introduction of rules that allow for action against plantation forestry spread

4. Public Expenditure and Programme Participation
   a. Retain provisions relating to protecting the public investment and funding.
   b. Provide additional guidance on how these provisions apply in practice, particularly where land occupiers participate in the National Wilding Conifer Control Programme.
   c. Maintain ability to enforce rules where work has been completed by others/private funding
   d. Address perceptions that programme participation may create indefinite future obligations without ongoing support.
   e. Clarify expectations around maintenance, cost-sharing, and future management responsibilities.

5. Enable Proactive Regulation
   a. The operational framework should support proactive management rather than relying solely on complaints.
   b. Consider introducing provisions that allow intervention where high-risk species (particularly Contorta, Mountain, and Dwarf Mountain Pines) or emerging infestations are identified.
   c. Early intervention is generally more effective and substantially less expensive than responding to established infestations.
   d. Rules need to be enforceable regardless of national expenditure

6. Species-Specific Proactive Provisions
   a. Consider developing species-specific provisions for high-risk species, particularly Contorta, Mountain, and Dwarf Mountain Pines.
   b. The identification of these species through surveillance or observation should trigger a regulatory response without requiring a complaint. And to prevent their sale and propagation by nurseries s52 s53 should apply to all species named as pests in the plan.

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c. This would support rapid intervention and reduce long-term management costs.
d. Owners of shelterbelts and small plantings containing these high-risk species should be required to remove them or show a commitment to their removal or transition through agreed management plans.

7. Early Intervention for New Incursions
   a. Introduce provisions enabling intervention where new infestations are identified in previously controlled or uninfested areas and to require land occupiers to act in areas outside the containment areas
   b. Such provisions would:
      - protect previous investments in control;
      - support eradication and containment objectives; and
      - provide a clear basis for engaging with affected land occupiers.
   c. Appropriate thresholds and triggers would need to be developed.

8. Incorporating Forestry into the Framework
   a. Consider mechanisms to better incorporate commercial forestry activities into the regulatory framework.
   b. Current reliance on regulation through the NES-CF may not adequately address off-site wilding spread risks.
   c. Forestry operators should be expected to act as good neighbours and manage significant spread risks arising from their activities.
   d. The objective is not to duplicate national regulations, but to address identified gaps.

9. Review of Pest Species
   a. Review the current list of pest conifer species.
   b. Consider inclusion or alternative regulation of:
      - Douglas fir, and
      - Radiata pine.
   c. These species represent significant sources of wilding spread but are currently treated differently due to their commercial value. Douglas fir presents a particular dichotomy: it is a species of high commercial value, while also having significant potential to establish and spread as an invasive species in suitable environments.
   d. Remove/review the use of the Introduced Conifer List and the 'including but not limited to' wording.

10. Consistent Treatment of Commercial Species
   a. Consider adopting a regulatory approach similar to that currently applied to species such as:
      - Corsican pine,
      - Scots pine, and
      - Larch.
   b. Under this approach:
      - commercially regulated forestry activities may continue to establish certain species;
      - non-commercial establishment of high-risk species would be restricted.
   c. This approach may provide a more consistent and defensible regulatory framework.

11. Nuisance and Off-Site Spread
   a. Strengthen provisions relating to nuisance effects and off-site spread impacts.

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b. Recognise the principle that those creating significant seed sources should bear reasonable responsibility for the impacts imposed on neighbouring land occupiers and public agencies.
c. Review existing boundary and pest agent provisions to determine whether they adequately address these effects.
d. Provide mechanisms to support land occupiers experiencing ongoing impacts from neighbouring seed sources.

12. Review Boundary Control Distances
    a. The current 200 m boundary control requirement appears insufficient to adequately manage wilding spread risks.
    b. Consider reviewing setback distances and receiving environment provisions to better reflect contemporary understanding of seed dispersal.
    c. The recently updated Wilding Tree Risk Calculator under the NES-CF now considers substantially larger receiving environments, including 2 km downwind.
    d. Potential approaches could include:
        - increased setback distances;
        - variable or risk-based buffers;
        - consideration of prevailing winds; and
        - alignment with contemporary spread-risk assessment methodologies.

13. Application of Wilding Tree Risk Assessment Beyond Forestry
    a. Consider requiring non-forestry plantings of high-risk species to undertake assessment using the Wilding Tree Risk Calculator, or a similar risk assessment framework. This could apply to:
        - shelterbelts;
        - amenity plantings;
        - farm forestry; and
        - other non-commercial plantings involving species such as Douglas fir and radiata pine.
    b. Although these activities may not fall directly under the NES-CF, applying the same risk assessment framework would:
        - promote consistency;
        - improve management of spread risk; and
        - provide a more robust and defensible basis for decision-making.

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Potential Site-led Management Audit	
Programme	Catlins
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	25 September 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	2.10.2026

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Introduction

This audit provides an assessment of a potential site-led programme to protect values in the Catlins South area in the Otago Region.

The assessment covers:

- The role of site-led programmes in regional pest management,
- A description of the potential site,
- The values at place within the site,
- The protection of these values, including the current management and management under a new Regional Pest Management Plan,
- A summary of the engagement outcomes,
- An assessment of the level of analysis required to undertake an analysis of cost and benefit of management options.

This information in this audit will be used to inform the development of a Proposal for a new Otago Regional Pest Management Plan (RPMP).

Role of a Site-Led Programme

A Site-led programme differs from species-led pest management in that its objective is to protect and preserve the values of a place, rather than targeting a specific species, and it targets the one or more critical pests that affect these values.[1]

Site-led pest management seeks to protect the values of a place or places. The values could be aesthetic, biological, cultural, ecological, economic, environmental, historic, recreational, or social values that are of significance to the general public or specific communities.

Site-led rules can be useful where a predominantly non-regulatory approach to pest management requires regulatory support to ensure pest management objectives are met and values are protected.

Planning a site-led pest programme involves:

- identifying places with values that are threatened by invasive pests and
- then identifying and carrying out control or other pest management activities necessary to protect these values.

Site Description

Under clauses 4(1)(d) and 4(2)(f) of the NPD, places to which the site-led programme applies must be adequately identified.

The Catlins is situated in the southeastern-most corner of the South Island of New Zealand, extending from the mouth of the Clutha River in the north, to the Mataura River at Fortrose in the south, and inland to encompass Waiarikiki. Catlins South, the area proposed as a site led programme, is the southernmost project area in the mapped Catlins Catchment Action Plan (see Figure 3).

The specific area that the site led programme is proposed to cover is shown in Figure 1.

The Department of Conservation manage almost half of The Catlins landscape, on behalf of the Crown. Public conservation land consists of a variety of levels of protection, including conservation park, scenic reserve, scientific reserve, recreation reserve and marginal strip. With the exception of the MacLennan and Bersford Ranges, the remaining public conservation land is small, fragmented and scattered throughout the region. The surrounding land is held in private ownership, with Forest and Bird, commercial and carbon forestry and productive farmland being the majority of owners.

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[1] Meeting the requirements of the National Policy Direction for Pest Management 2015, Ministry for Primary Industries.

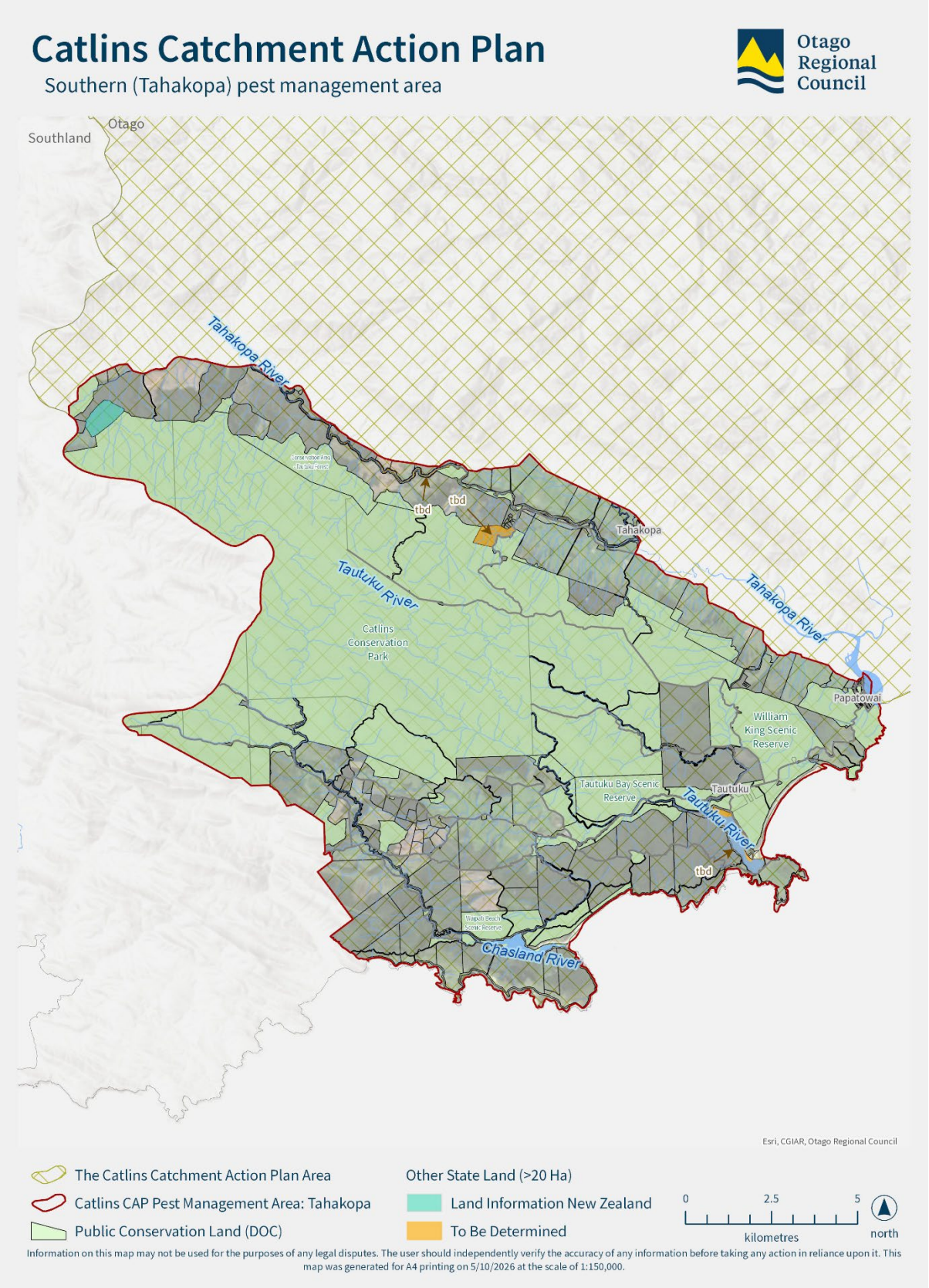


Figure 1. Area of proposed site led programme showing land tenure and site boundaries.

Values at Place

Wider Catlins Values

The Catlins has a temperate climate, averaging 10–13°C in winter and 18–20°C in summer. The Catlins rainforest, coastal wetlands and estuarine vegetation flourish in lengthy periods of drizzle (light, misty rain) and steady rainfall, with an annual average of 1300mm of rain falling over 150 rain-days each year[2].

Otago Regional Council Ecosystems and Habitat Mapping classify the ecosystems as 'CLF6.1: Kamahi, southern rata, podocarp forest[3].The lowland temperate rainforests found here are dominated by large and ancient podocarps (rimu, matai, totara, and kahikatea) with a rich and highly diverse understory of fern, moss, coprosma, broadleaf, marble leaf, lemonwood and peppertree[4]. Several of the wetlands within The Catlins are listed as Significant Wetlands in the Clutha District plan for water (Catlins Community Weed Management Plan 2026).

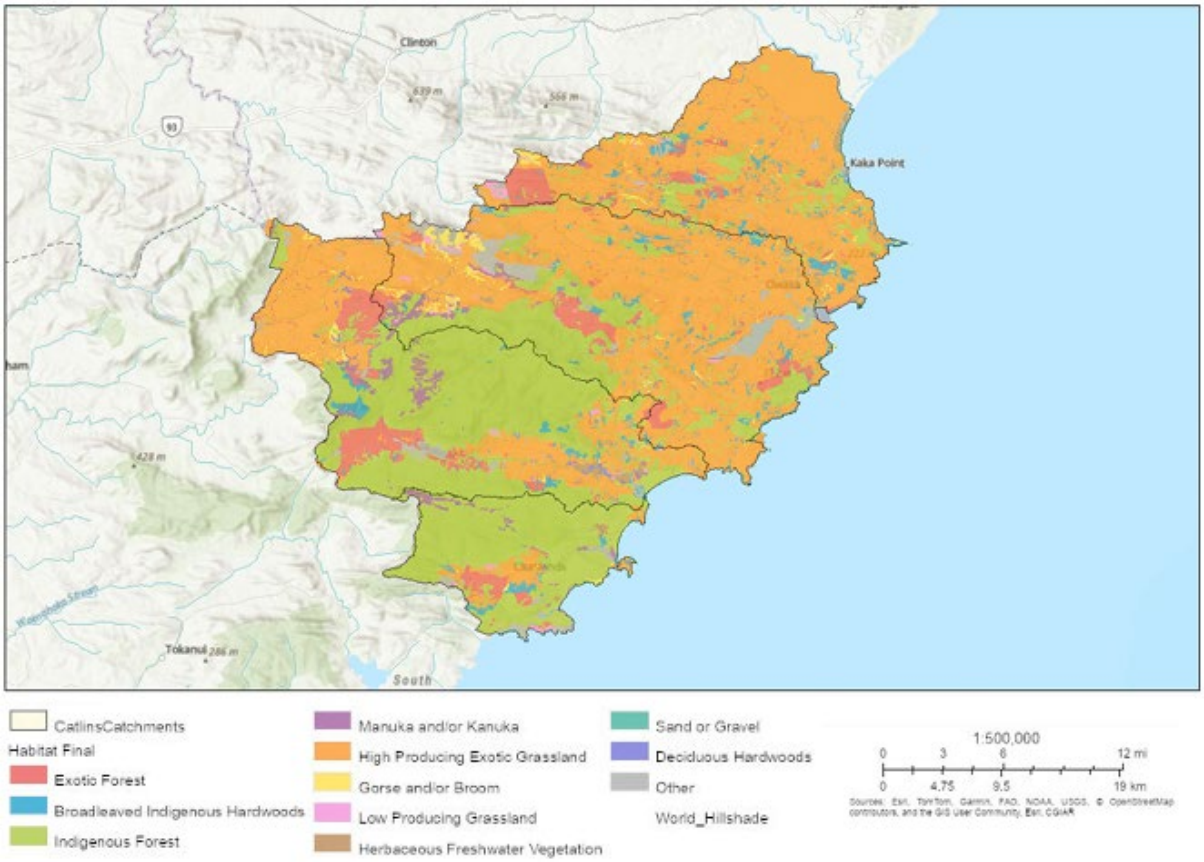


Figure 2. Habitat Types in the Catlins Catchments

The Catlins alpine and forest zones are home to several significant native fauna species such as the long-tailed bat/pekapeka (Nationally Critical), nationally important numbers of the endemic mohua/yellowhead (At Risk – Declining), New Zealand falcon/kārearea, yellow-crowned kākāriki and kererū and a rare mainland South Island population of red-crowned kākāriki (Catlins Community Weed Management Plan 2026).

[2] www.niwa.co.nz | Wikipedia. The Free Encyclopaedia: www.wikipedia. The Catlins | www.catlins.org.nz. Explore: Climate.
[3] maps.orc.govt.nz
[4] www.catlins.org.nz. Explore; Native Plants & Trees.

Fauna also includes large numbers of migratory wading birds within the Catlins Lake and other estuaries, including the critically endangered kōtuku/white-faced heron. Wetlands support the critically endangered matuku hūrepo/Australasian bittern and threatened pūweto /spotless crake, koitareke/marsh crake and mātātā/ South Island fernbird.

The native red mistletoe *Peraxilla tetrapetala* has been photographed on The Catlins roadsides by online nature enthusiasts.

The Catlins alpine and forest zones are home to several significant native species such as nationally important populations of the Tautuku Gecko (Nationally Endangered) and mokomoko/ Southland green skink.

The large expanses of rocky and sandy coastline provide habitat for pinnipeds including breeding endangered pakake/NZ sea lions. Additionally, many species of coastal and seabird frequent the coast with important breeding sites for the endangered hoiho/yellow-eyed penguin, threatened kororā/little-blue penguin and remnant mainland colonies of threatened tītī/sooty shearwater, whose burrowed seabird soil ecosystems are now critically endangered on mainland New Zealand (Catlins Community Weed Management Plan 2026).

There are also introduced species in the Catlins that are important for sport hunting and as a source of wild food. These include trout and perch, game birds and waterfowl, and mammals such as deer and pigs. Some of these species also threaten indigenous species and ecosystems through predation, browsing, disease, competition and habitat degradation.

Catlins South Values

Catlins South is dominated by indigenous native forest. Biodiversity values include coastal temperate forests, dune systems, coastal turfs, shrublands, beech forests, estuarine systems, river flats and swampland. The Catlins South site is contiguous to the wider Catlins area, and so can expect to hold similar values (described above).

Taoka species are culturally significant species that shape Mātauranga Māori (Māori knowledge) and whakapapa (genealogy). Kai Tahu, as the iwi (tribe) that has authority over this area, also have the authority to define their own taoka species. These are detailed in the Ngāi Tahu Claims Settlement Act 1998, which gives a non-exclusive list of birds, plants and marine mammals that are taoka to the iwi.

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Threats to Values at the Site

Site-led programmes target the species that affect the values of the site.

Introduced mammals, fish, birds and plants impact all of the values in the area, as well as unsustainable land use, litter and plastics. Poor tourism and recreation practices, poorly maintained septic systems, and overharvesting all contribute to degrading some of our values (Plan development).



Figure 2. Main Pressures Acting on the Catlins Values

Table 1. Weedy Plant Pressures in the Catlins. Catlins Catchment Action Plan.

Pest Plant	Dunes & Beaches	Estuaries	Freshwater	Soils	Wetlands	Native Terrestrial Ecosystems	Summary Pressure Rating
Gunnera	High	Medium	Low	Medium	High	Low	**High**
Boxthorn	High	Medium	Low	Medium	Low	Medium	**High**
Sycamore	Low	Low	Medium	Medium	High	High	**High**
Holly	Low	Low	Low	Medium	Medium	High	**High**
Darwin's Barberry	Low	Low	Low	Medium	Medium	High	**High**
Chilean Flame Creeper	Low	Low	Low	Medium	Medium	High	**High**
Banana Passionfruit	Low	Low	Low	Medium	Medium	High	**High**
Spanish Heath	Low	Medium	Low	Medium	High	Medium	**High**
Cotoneaster	Medium	Low	Low	Medium	Low	High	**Medium**

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Table 2. Animal Pressures in the Catlins. Catlins Catchment Action Plan.

Pest Animal Pressure	Dunes & Beaches	Estuaries	Freshwater	Soils	Wetlands	Native Terrestrial Ecosystems	Summary Pressure Rating
Possums	Low	Low	Low	Low	Medium	High	**High**
Rats (Ship, Norway, Kiore)	Medium	Medium	Medium	Low	Medium	High	**High**
Stoats	Medium	Low	Low	Low	Medium	High	**High**
Feral Cats	Medium	Low	Low	Low	Medium	High	**High**
Hedgehogs	Medium	Medium	Low	Low	Medium	Medium	**Medium**
Feral Deer	Low	Low	Low	Medium	Medium	High	**High**
Feral Goats	Low	Low	Low	Medium	Medium	High	**High**
Feral Pigs	Medium	Medium	High	High	High	Medium	**High**

Mana whenua identified a suite of mammalian invasive species of concern, which closely aligns with the land occupier survey:

a. Possums, rats, stoats, feral cats, and hedgehogs: due to predation on manu, invertebrates, and taonga species, and their contribution to "silent forests."
b. Ungulates (deer, pigs, goats): due to browsing pressure, canopy decline, suppression of forest regeneration, and damage to wetlands and riparian systems.
c. Pigs: specifically noted for habitat disturbance and impacts on mahika kai.

This is largely consistent with land occupier survey findings, where possums, rats, stoats, feral cats, deer, pigs, and goats were the most frequently reported species of concern (Otago Catlins Invasive Mammal Management Plan 2025-2035).

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Protecting Values at Place

Current management

A catchment action plan has been created for the wider Otago Catlins area. The Catlins South site is part of this wider planning area. Compliance inspections are undertaken for pest species named in the plan, such as rabbits. ORC has also provided non-regulatory support through technical advice on monitoring programmes and pest control operations.

Non-regulatory pest management and control activities

The wider Catlins is a priority location for Council, being the first location in Otago to be subject to the Catchment Action Planning process (Figure 3).

Otago Regional Council's (ORC) Integrated Catchment Management (ICM) programme arose from the adoption of the Long-term Plan 2021-31 in June 2021 which tasked the ORC to "Lead the development, implementation, and review of integrated Catchment Plans (ICP) in collaboration with iwi and community."

A Catchment Action Plan (CAP) is a plan for the management and conservation of an entire catchment or catchments. It is a long-term plan that builds on the work that iwi, communities and local government are already doing to protect and manage their place and serves as a focus for new actions and projects. The CAPs are not prescribed by regulation, nor are they making any rules (Catlins Catchment Action Plan; 2024).

Mana whenua are the tāngata whenua who hold traditional customary authority and maintain contemporary relationships within an area determined by whakapapa, resource use and ahīkāroa (the long burning fires of occupation). Kāi Tahu hold mana whenua status in the Otago region. The two rūnaka invited to have representation on the catchment group to ensure mana whenua values are recognised and upheld in this plan are Te Rūnaka o Awarua and Hokonui Rūnaka (Catlins Catchment Action Plan; 2024).

The government agencies involved in creating this CAP are: Clutha District Council (the territorial authority that includes the Catlins), Department of Conservation, Otago Regional Council. Community members involved in the group that has co-designed this CAP come from - or represent - interests from across the Catlins region and have expertise in agriculture, forestry, conservation, tourism and recreation.

Regulatory approach to pest management

The current Otago RPMP 2019-2019 provides a limited regulatory framework for managing the identified species of interest in the Catlins South site. Under the current RPMP, there are no rules that apply for the species named as target species in the Otago Catlins Invasive Mammal Management Plan (2026). Most of the management and control activities of unwanted species within or adjoining Catlins South are undertaken by land occupiers, on a volunteer basis.

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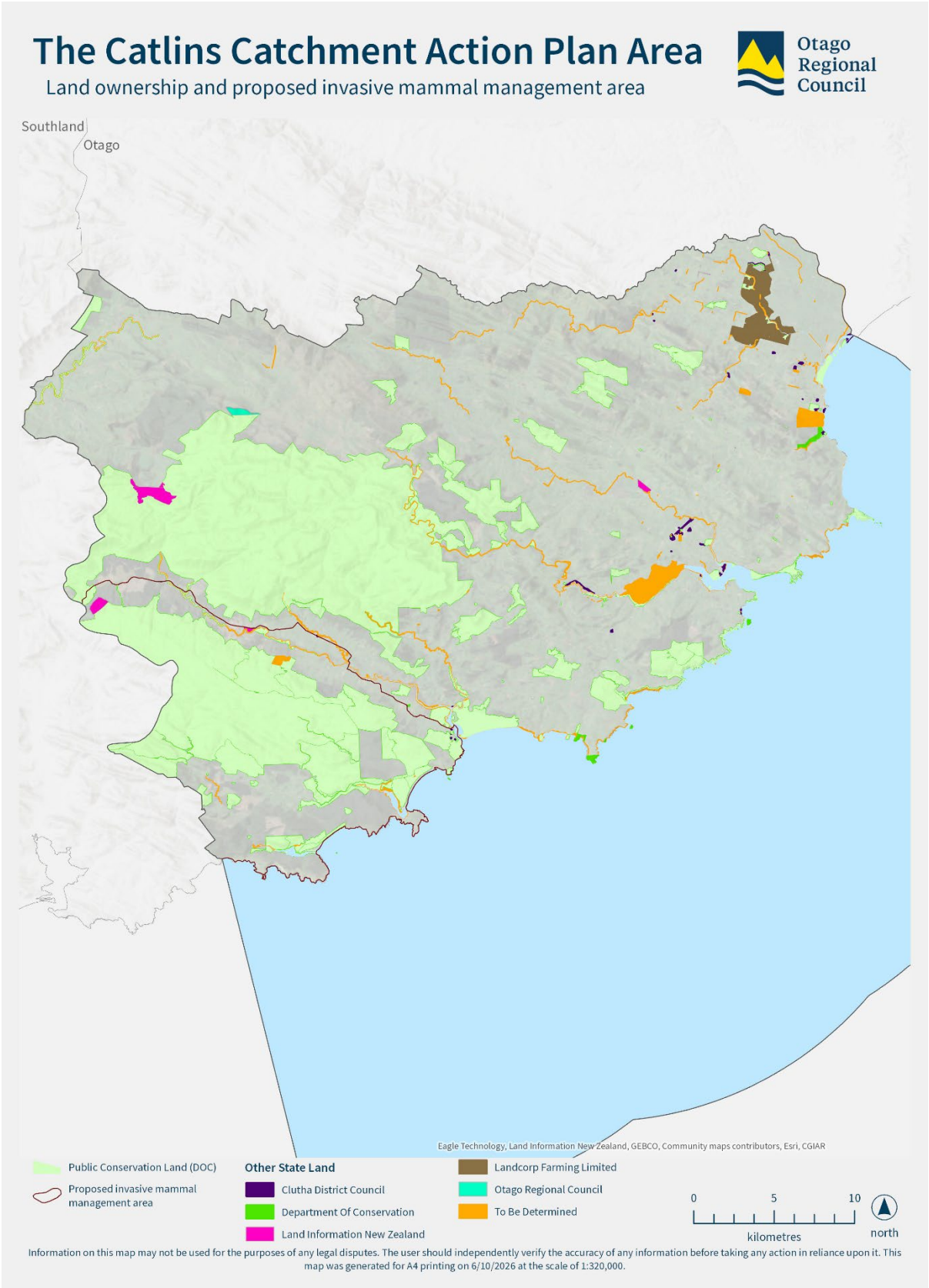


Figure 3: Catlins catchment action plan boundaries.

Engagement Outcomes

Early engagement feedback

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

The summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Site-led Programmes were consistently supported by land occupiers and stakeholders throughout the review as an effective tool for protecting biodiversity, cultural, and economic values through targeted, site-specific pest management.

2. Participants supported greater responsibility for land occupiers to manage pest plants, while noting that the term "harbouring" for pest animals may be difficult to interpret and enforce.

3. Discussion document feedback strongly supported retaining site-led programmes, yet respondents equally supported both region-wide rules and site-led programmes with rules, suggesting both programmes could be used to manage pests.

4. Site-led programmes featured as a main topic at stakeholder workshops with support for landscape-scale, multi-species pest management in high biodiversity areas to protect values, with clearer management objectives, flexible programme boundaries and measurable outcomes. Discussion questioned whether site-led should be values-led (e.g. biodiversity), or pest-led (e.g. possum free Peninsula).

Targeted engagement feedback

1. Pest management must be a collaborative effort, with land occupiers, Otago Regional Council, Environment Southland and Department of Conservation (DOC) working collaboratively to achieve outcomes.

2. There has historically been a high level of land occupier engagement in this site, however fatigue is setting in as pest management planning drags on.

3. The current objectives are to manage unwanted terrestrial plant and animal species to very low levels across Catlins South, to protect conservation and production values, with a particular focus on managing impacts stemming from reinvasion of pest species from neighbouring DOC land, into managed areas.

4. Neighbouring land, particularly where there is landscape-scale commercial or carbon forestry, is impacting on current pest management activities, as this land provides a sink for unwanted pest species and a threat to management results from ongoing reinvasion.

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What can Otago Regional Council do to support this work?

1. Work on building a collaborative approach to pest management with Environment Southland and Department of Conservation. Without a DOC presence at the table, there will be zero chance of maintaining the gains.

2. Financial support for:
   - Ongoing project management
   - Pest management infrastructure

Are land occupier rules needed?

1. There is some hesitancy over the introduction of land occupier rules at this stage of the project, as the site is not yet ready for this step in the process. There is still some work to do in the non-regulatory space to prepare the community and no determination, as yet, to what level pests would need to be managed within the site, to achieve the objective. There also needs to be a commitment to fund ongoing project management, for this project to be sustainable long-term.

2. Land occupier rules will be useful in the future, as the project expands and pest management operations are well established.

3. Good neighbour rules will be critical in defending boundaries and maintaining the gains *e.g., public conservation land, commercial or carbon forestry.*

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes.

Some of the animal species such as feral ungulates are covered by the Wild Animal Control Act

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes.

a. Regionwide rules, such as the current rabbit management rule, can be used to support community action at site.

b. Good neighbour rules, to require pest management in adjoining land parcels, could be used to slow reinvasion into managed areas.

Could site-specific rules protect the values in the Catlins?

Yes.

Site specific rules could play a role in protecting the values at the site. However, the effectiveness and efficiency of site-led rules will need to be evaluated against voluntary action, and regionwide rules.

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Options for a Proposal for a New Plan

The preliminary options identified for protecting the values at the Hikaroroa Reserve Mt Watkin area are:

Option 1	**Non-Regulatory Approach for Site Specific Species** **Objective:** Protect and preserve the values of a place by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. Regionwide rules for species declared pest would apply at the site. *Benefit:* Low cost, support the building of community capability and capacity, align with other community programmes in adjacent areas. Engagement levels are very high, and land occupiers are providing access for pest management through current non-regulatory approaches. *Risk*: Some members of the community have requested greater protection for the area so there is reputational risk and there would be no regulatory backstop should an invasive species cause damage to the place. *Mitigation*: Site specific rules requiring land occupiers to undertake pest management are likely unnecessary at this site to ensure control activities occur. Engagement levels are very high, and land occupiers are providing access for pest management through the current non-regulatory approach.
Option 2	**Add a Site-Led Programme into the RPMP** **Objective:** Protect and preserve the environmental values of Catlins South by applying site-led rules to specific species. ▪ Eradicate sycamore from the site-led area ▪ Sustainably control Boxthorn, holly, Darwin's Barberry, feral deer, feral goats, feral pigs, feral cats, possums and hedgehogs. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. This work would be voluntary. The addition of land occupier rule will provide a regulatory back stop to ensure objectives can be successfully met. The scale of work would be managed through annual planning and Long-Term Plan budget processes. **Proposed Rule [1]:** The transportation and release of any pest species into any Site-Led Area is prohibited. **Proposed Rule [2]:** Land occupiers must control the following pest species on their property to protect biodiversity values in this Site-Led area, where directed by an authorised person, only where a wider community pest control programme for that pest species is being undertaken:

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	- Possums (5%) **Proposed Rule [3]:** Land occupiers must progressively contain the following species on their property: sycamore **Note:** Regionwide rules for all other pest species will apply. *Benefit:* Provides a backstop rule to enforce compliance on properties that are not voluntarily undertaking control. *Risk:* This site may not yet be ready for site-led rules to be implemented; the animal pest management plan requires next-step to become functional. There is a high level of feedback from communities that public conservation land is t
Staff Recommendation	**Option 1** Recommended due to feedback through community and stakeholder engagement that the area may not be ready to move into a site-led programme. This can be revisited as the project progresses.

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Species	Regional Rules Adequate	Site-Led Exclusion	Site-Led Eradication	Site-Led Progressive Containment	Site-Led Sustained Control
Feral Deer	No This species is not proposed for management under regional rules	No	No	No	Yes Controlling this at site is possible and will protect site values
Feral Goats	No This species is not proposed for management under regional rules	No	No	No	Yes Controlling this at site is possible and will protect site values
Feral Pigs	No This species is not proposed for management under regional rules	No	No	No	Yes Controlling this at site is possible and will protect site values
Feral Cats	Maybe Dependant on whether a regional rule is implemented	No	No	No	Yes Controlling this at site is possible and will protect site values
Possums	Maybe Dependant on whether a regional rule is implemented	No	No	No	Yes Controlling this at site is possible and will protect site values
Mustelids	No This species is not proposed for management under regional rules	No	No	No	Yes Controlling this at site is possible and will protect site values
Hedgehogs	No This species is not proposed for management under regional rules	No	No	No	Yes Controlling this at site is possible and will protect site values

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Species	Regional Rules Adequate	Site-Led Exclusion	Site-Led Eradication	Site-Led Progressive Containment	Site-Led Sustained Control
Gunnera	Yes Progressive containment	No	No	No	No
Boxthorn	No This species is not proposed for management under regional rules	No		No	Yes Controlling this at site is possible and will protect site values
Sycamore	No This species is not proposed for management under regional rules	No	Yes – elimination from the site is possible and will protect the site values	No	No
Holly	No This species is not proposed for management under regional rules	No		No	Yes To reduce impacts on values
Darwin's Barberry	No This species is not proposed for management under regional rules	No	No	No	Yes To reduce impacts on values
Chilean Flame Creeper	Yes Progressive containment	No	No	No	No
Banana Passionfruit	No This species is not proposed for management under regional rules	No	No	No	Yes Controlling this at site is possible and will protect site values
Spanish Heath	No This species is not proposed for management under regional rules				Yes Controlling this at site is possible and will protect site values
Cotoneaster	No This species is not proposed for management under regional rules				Yes Controlling this at site is possible and will protect site values

Level of Analysis required for undertaking analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for this programme.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There will be a high level of support for the programme but there may also be concerns from affected land owners such as forestry organisations that neighbour the reserve and that have high ungulate numbers.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The cost is relatively low due to the work current underway but increasing the requirements for ungulate control could significantly increase the costs.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	The site is well studied and the impacts are understood.	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	A reasonable amount is known about the impacts and populations of the invasive species at the site.	

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References

[1] Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

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www.niwa.co.nz | Wikipedia. The Free Encyclopaedia: www.wikipedia. The Catlins | www.catlins.org.nz. Explore: Climate.

[1] maps.orc.govt.nz

[1] www.catlins.org.nz. Explore; Native Plants & Trees.

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ORC would like to acknowledge the contribution of key individuals who supported the development of this Site Led Biosecurity Impact Assessment. The RPMP Review Project Team would like to thank those below for their time, expertise and support during this process.

- **Vincent Leith**; Catlins Pest Management Limited

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Potential Site-led Management Audit	
Programme	Harbour Islands (Quarantine & Goat)
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	25 September 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	5.10.2026

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Introduction

This audit provides an assessment of a potential site-led programme to protect values in the Catlins South area in the Otago Region.

The assessment covers:

- The role of site-led programmes in regional pest management,
- A description of the potential site,
- The values at place within the site,
- The protection of these values, including the current management and management under a new Regional Pest Management Plan,
- A summary of the engagement outcomes,
- An assessment of the level of analysis required to undertake an analysis of cost and benefit of management options.

This information in this audit will be used to inform the development of a Proposal for a new Otago Regional Pest Management Plan (RPMP).

Role of a Site-Led Programme

A Site-led programme differs from species-led pest management in that its objective is to protect and preserve the values of a place, rather than targeting a specific species, and it targets the one or more critical pests that affect these values.[1]

Site-led pest management seeks to protect the values of a place or places. The values could be aesthetic, biological, cultural, ecological, economic, environmental, historic, recreational, or social values that are of significance to the general public or specific communities.

Site-led rules can be useful where a predominantly non-regulatory approach to pest management requires regulatory support to ensure pest management objectives are met and values are protected.

Planning a site-led pest programme involves:

- identifying places with values that are threatened by invasive pests and
- then identifying and carrying out control or other pest management activities necessary to protect these values.

Site Description

Under clauses 4(1)(d) and 4(2)(f) of the NPD, places to which the site-led programme applies must be adequately identified.

Quarantine and Goat Islands / Kamau Taurua and Goat Island (15 and 4.5 ha respectively) are located within the Otago Harbour between Port Chalmers within the West Harbour – Mt. Cargill area on the western side of the harbour and Portobello on the Otago Peninsula on the eastern side of the harbour. The islands provides a stepping stone between these two areas.

Quarantine Island (also known as Kamau Taurua and officially gazetted as Quarantine Island / Kamau Taurua), is the largest island in Otago Harbour, close to the city of Dunedin, New Zealand. The island covers an area of 15 hectares (37 acres) and is a publicly accessible **recreation reserve**. The buildings on the island are owned by Quarantine Island / Kamau Taurua Community Incorporated (QIKTC). Its management is shared between QIKTC and the Department of Conservation (https://en.wikipedia.org).

Goat Island / Rakiriri covers 4.5 hectares (11 acres) and is located to the northwest of the larger Quarantine Island / Kamau Taurua. Goat Island / Rakiriri is uninhabited and is designated as a **scenic reserve** and **Historic Area**.

The Harbour Island (Quarantine & Goat) are shown in Figure 1.

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[1] Meeting the requirements of the National Policy Direction for Pest Management 2015, Ministry for Primary Industries.

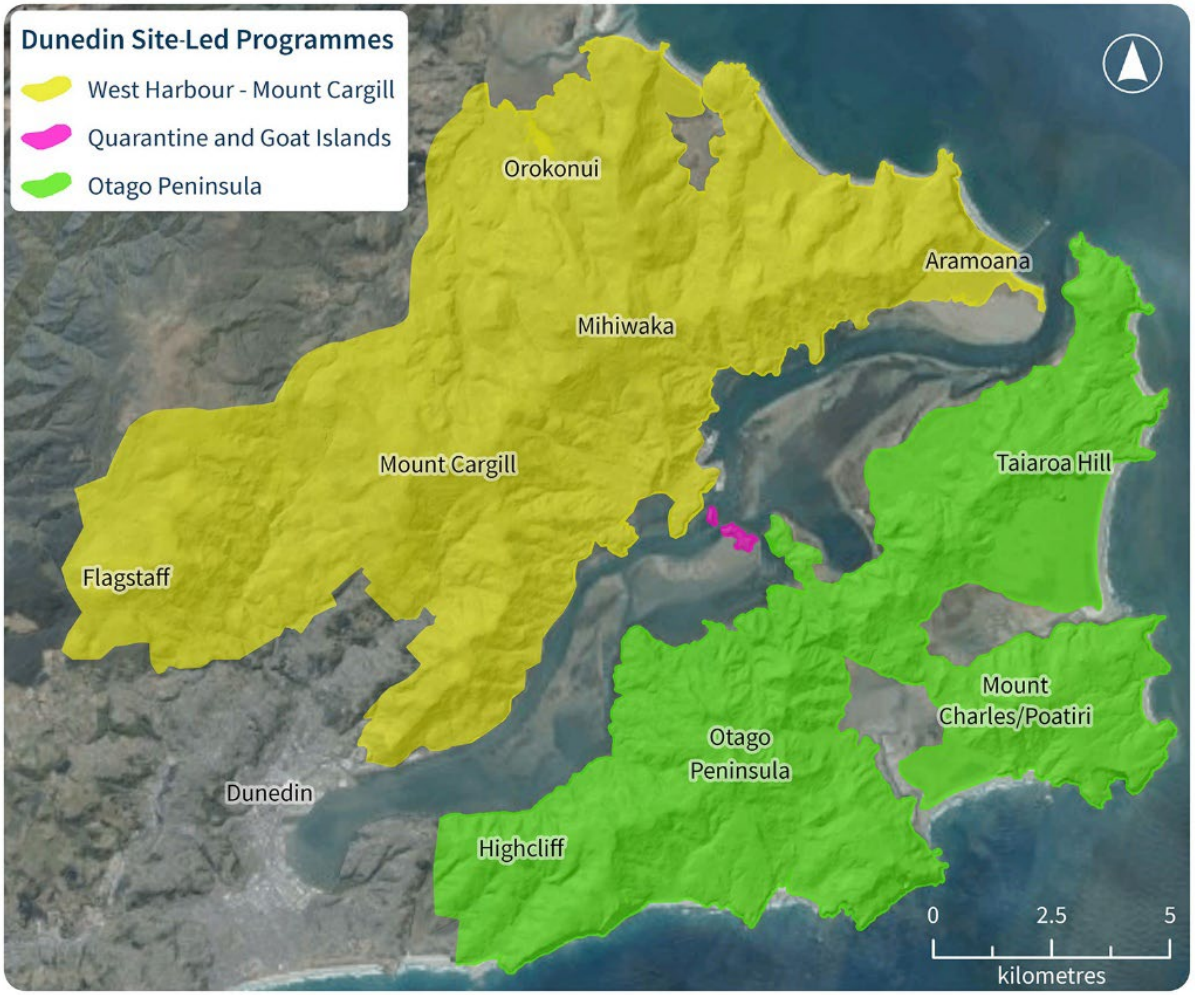


Figure 1. Area of proposed site led programme (pink).

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Values at Place

The Site-Led programme is part of the Otago Regional Pest Management Plan 2019-2029 (RPMP)[1] and seeks to manage Site-Led animal and plant pests to avoid, mitigate or prevent damage to the indigenous ecosystem values at specific sites: West Harbour – Mt Cargill, Otago Peninsula and Quarantine and Goat Island.

The Values, Threats and Impacts Assessment identified two sites in the Quarantine and Goat Island Site-Led Programme area with high biodiversity values (Table 1, Figure 2). Quarantine Island and Goat Island contain areas of significant biodiversity value, including important habitats for native coastal vegetation, seabirds, shorebirds, lizards, and invertebrates, making them key sites for the protection and restoration of biodiversity within Otago Harbour.

The site prioritisation process ranked Quarantine and Goat Island as the lowest priority of the 12 focus areas; therefore, no management activities have occurred at the Quarantine and Goat Island Site-Led Programme site.

Table 1. Key locations that encompass a range of biodiversity values within the Quarantine and Goat Island Site-led Programme. 'x' denotes presence of the particular biodiversity value for a given location. Table adapted from Values, Threats and Impacts Assessment4

	Quarantine and Goat Island	
Biodiversity Values	**5. Quarantine Island**	**6. Goat Island**
Naturally Uncommon Ecosystems	x	x
DOC Ecosystem/Species Management Unit		
Areas of Significant Biodiversity Value	x	x
Notable Threatened / At Risk Species		
Extensive Intact Native Habitat		
Protected Land	x	x
ORC Significant Habitats	x	x
Areas Undergoing Revegetation Efforts	x	

The Values, Threats and Impacts Assessment also identified the predicted impacts of the Site-led pest species at each of the six priority sites (Table 2).

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Table 2. Predicted impact (taking into account likelihood of pest occurrence) of target pests.

Impact on Biodiversity Values: Quarantine and Goat Island		
Species	**5. Quarantine Island** Basic cliffs, scarps, and tors	**6. Goat Island** Basic cliffs, scarps, and tors
Banana passionfruit	High	High
Chilean flame creeper	High	High
Darwin's barberry	High	High
Sycamore	High	High
Gunnera	Med	Med
Tradescantia	Med	Med
Bennetts wallaby	Low	Low
Feral cat	High	High
Feral deer	Low	Low
Feral goat	Low	Low
Feral pig	Low	Low
Hedgehog	High	High
Mustelids	High	High
Possum	High	High
Rats	High	High

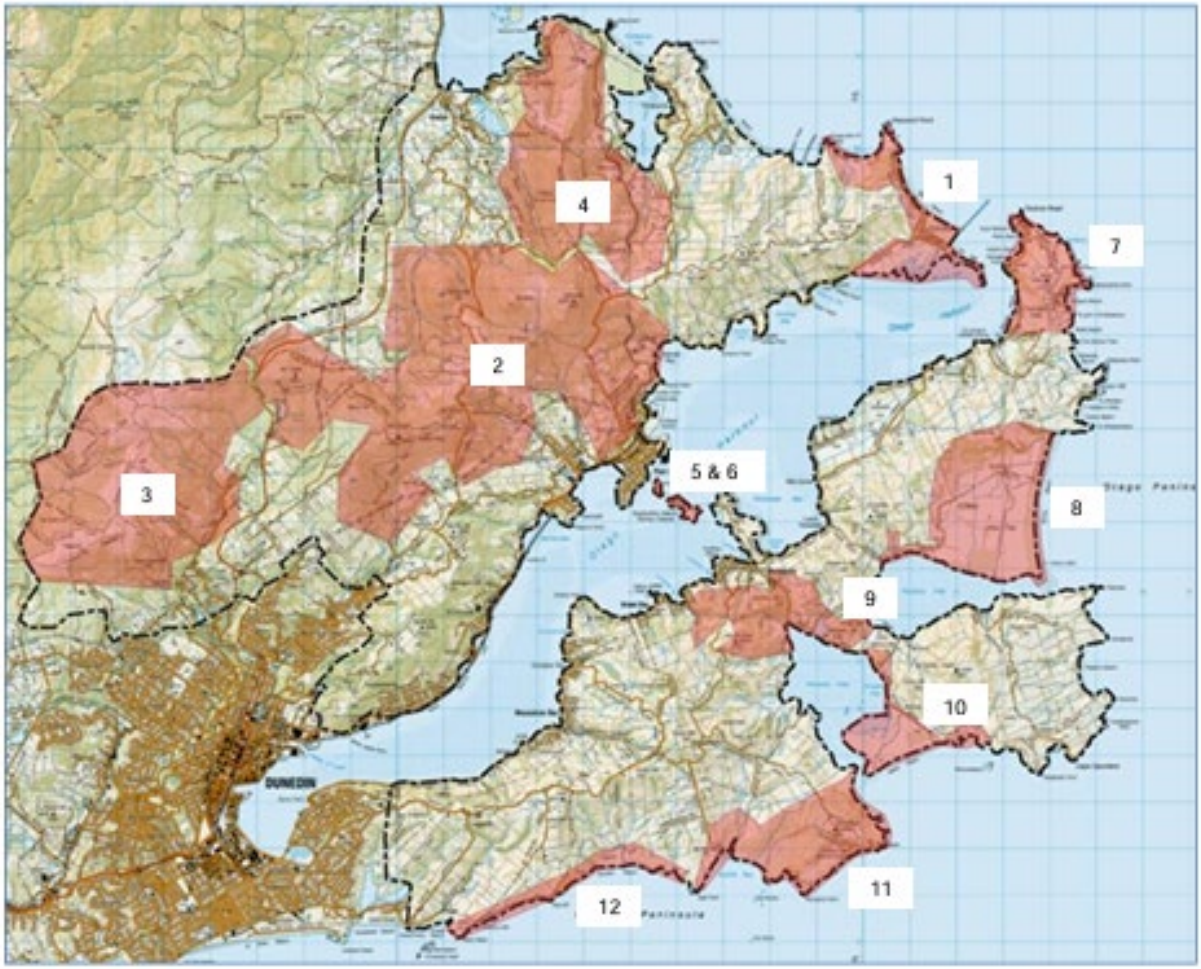


Figure 2. Map illustrating the two areas of high biodiversity and cultural values in the Quarantine and Goat Island Site-led Programme area as 5. Quarantine Island and 6. Goat Island. A total of 12 locations were identified in the Values, Threats and Impacts Assessment across the three Site-Led Programmes.

Threats to Values at the Site

A field visit was undertaken to Quarantine Island on 17 September 2026 to conduct surveillance for pest plant species and to engage with members of the local community restoration group regarding ongoing pest management and ecological restoration activities.

These plant species have not been assessed further as they are present on the island and therefore the responsibility of DOC not ORC.

Table 3. Weed and pest plant species present on Quarantine Island. September 2026.

Species	Common Name	Threat Status
Sea Buckthorn (Seaberry)	*Hippophae rhamnoides*	Present on the island.
Northern Hōheria	*Hoheria populnea* (likely species)	Being considered for removal due to invasive behaviour despite being native to the North Island.
Gorse	*Ulex europaeus*	Present.
Lupin	*Lupinus arboreus* (likely species)	Present.
Wallflower	*Erysimum cheiri*	Present.
Bomarea	*Bomarea multiflora*	Occasional plants recorded; not currently established.
Banana Passionfruit	*Passiflora tripartita* var. *mollissima*	Ongoing control by the community group.
Taupata	*Coprosma repens*	Active efforts underway to reduce populations; community members would like to see it formally recognised as a pest species.
Horehound	*Marrubium vulgare*	Present.
Hemlock	*Conium maculatum*	Present.
Rosehip	*Rosa rubiginosa*	Present.
Elderberry	*Sambucus nigra*	Present.
Darwin's Barberry	*Berberis darwinii*	Flowering plants observed; currently under close monitoring.
African Boxthorn	*Lycium ferocissimum*	Present.
Mallow	*Malva* spp.	Present.
Marguerite Daisy	*Argyranthemum frutescens*	Present.
Californian Thistle	*Cirsium arvense*	Present.
Chickweed	*Stellaria media*	Present.
Ragwort	*Jacobaea vulgaris*	Present.
English Ivy	*Hedera helix*	Present.
Periwinkle	*Vinca major*	Present.
Eel Grass	*Zostera muelleri*	Present.
Veldt Grass	*Ehrharta erecta*	Emerging grass species identified by MPI as potentially highly competitive, including beneath forest canopy.
Cotoneaster	*Cotoneaster* spp.	Present.
Wilding Pines	*Pinus* spp.	Present.

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Protecting Values at Place

Current management

The Site-led programme in the Otago Regional Pest Management Plan (2019-2029)[1] seeks to manage pests whose presence, at or nearby, threaten the values that are special to the Harbour Islands (Quarantine & Goat), protecting the values at place.

Under the current RPMP, there is only one rule that applies for the species named as target species in this area, that is the 'no harbour' rule. Management and control activities of unwanted species within or adjoining this site are undertaken by local community groups.

The site prioritisation process ranked Quarantine and Goat Island as the lowest priority of the 12 focus areas; therefore, no management activities have occurred at the Quarantine and Goat Island Site-Led Programme site.

Non-regulatory pest management and control activities

SWAT (a local community group) undertake semi-regular (weather dependent) trips to the islands to control weed and pest plant species on the islands.

Regulatory approach to pest management

The current Otago RPMP 2019-2019 provides a limited regulatory framework for managing the identified species of interest in the Harbour Islands (Quarantine & Goat) site.

- There are no land occupier rules requiring management of named pest plant species. Surveillance of the islands for pest plant species has occurred (see Table 3). A future surveillance trip is planned for Goat Island, in the near future.
- The only rule requiring land occupiers to manage named pest animal species is the 'no harbour ' rule. This rule has not been applied in this site.
- No other compliance processes have been undertaken as part of the Site-led programme.

Plan Rule 6.5.6.1 No person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on Quarantine and Goat Islands (identified on Map 3 in Appendix 3) any: a) Bennett's wallaby; b) feral cat; c) feral deer; d) feral goat; e) feral pig; f) mustelid; g) hedgehog; h) possum; or i) rat.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure. A breach of this rule creates an offence under section 154N(19) of the Act.

Sections 52 and 53 of the Biosecurity Act 1993, which prevent the communication, release, spread, sale and propagation of pests, must be complied with. These sections should be referred to in full in the Biosecurity Act 1993.

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Financial breakdown

Nil. There has been no direct funding allocated for this site.

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme? *Principal measures*	**Partially** ORC to lead: No, as there is no programme for Quarantine and Goat Island. Council inspection: No. Service delivery: No. Collaborate, advocacy, education: Yes. Requirements to Act: No
Have the objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP?	**Inconclusive** The Sapere Report was unable to assess Quarantine and Goat Island due to insufficient information. **Objective 6.5.6.a** • Preclude establishment of Bennett's wallaby, feral cats, feral deer, feral goats, feral pigs, mustelids, hedgehogs and possums – Yes, no incursions have been reported. • Eradicate rats – No, not implemented in this iteration of plan. **Objective 6.5.6.b** • Progressively contain a) banana passionfruit; b) Chilean flame creeper; c) Darwin's barberry; d) Sycamore e) Gunnera; and f) tradescantia – No, no pest plant control work has been implemented in this iteration of plan. No RPMP Rules have been used to support the Quarantine and Goat Islands Work
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	**Under review** If no work has happened to date - what will change in the next 10 years to complete the work? Is it a priority for the Council or could it be dropped for a more significant area? • One of the most significant issues is the difficulty in enforcing current pest control on private land. The current wording of the RPMP, particularly regarding "harbouring" pest species, has been too ambiguous, making it difficult to ensure compliance. (Quarantine Island is under a shared management arrangement with DOC and Quarantine Island Kanau Taurua Community Incorporated). (Goat Island is • There is a separate rule for wallaby that contradicts the eradication rule. • Exclusion of possums is required so rules to prevent release and establishment are appropriate.

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	• Exclusion of ungulates may require a rule to prevent release and establishment. • Feral cats are not present on the island, so preventing the release and establishment is important. There is increasing public support for feral cat management, and this species is now a named priority species within the National Predator Free 2050 programme • Mustelids are not present on the island, so preventing the release and establishment is important.
Good Neighbour Rule	Nil
Pest control spend	No projects are underway at the Quarantine – Goat Island sites.

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Engagement Outcomes

Early engagement feedback

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

The summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Site-led Programmes were consistently supported by land occupiers and stakeholders throughout the review as an effective tool for protecting biodiversity, cultural, and economic values through targeted, site-specific pest management.

2. Site-led Programmes were discussed at the Dunedin, Catlins, Balclutha, Wānaka, Oamaru, and Alexandra community drop-in sessions. Participants supported greater responsibility for land occupiers to manage pest plants, while noting that the term "harbouring" for pest animals may be difficult to interpret and enforce.

3. Discussion document feedback strongly supported retaining site-led programmes, yet respondents equally supported both region-wide rules and site-led programmes with rules, suggested both programmes could be used to manage pests. Respondents supported prioritizing site-led programmes in Otago's highest-value biodiversity areas, particularly the current Otago Peninsula, West Harbour/Mt Cargill, Quarantine and Goat Island site-led programmes.

4. Site-led programmes featured as a main topic at stakeholder workshops with support for landscape-scale, multi-species pest management in high biodiversity areas to protect values, with clearer management objectives, flexible programme boundaries and measurable outcomes. Discussion questioned whether site-led should be values-led (e.g. biodiversity), or pest-led (e.g. possum free Peninsula).

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes.

Some of the animal species such as feral ungulates are covered by the Wild Animal Control Act

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes – with some exceptions

a. The islands are Crown estate managed by DOC, the RPMP can therefore not be used to remove or manage any of the pests from the islands and rules can not be applied to the islands themselves.

b. The RPMP could be used to prevent the transport of invasive species to the islands

c. Site specific rules where exclusion is the objectives is the objective could be used to support the next steps in the Predator Free Dunedin programme.

Could site-specific rules protect the values at Otago Peninsula?

Yes.

Site specific rules could play a role in protecting the values at the site. However, the effectiveness and efficiency of site-led rules will need to be evaluated against voluntary action, and regionwide rules.

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Options for a Proposal for a New Plan

The preliminary options identified for protecting the values at the Harbour Islands area are:

Option 1	**Non-Regulatory Approach for Site Specific Species** **Objective:** Protect and preserve the values of a place by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. Regionwide rules for species declared pest would apply at the site. *Benefit:* Low cost, support the building of community capability and capacity, align with other community programmes in adjacent areas. Engagement levels are very high, and land occupiers are providing access for pest management through current non-regulatory approaches. *Risk*: Some members of the community have requested greater protection for the area so there is reputational risk and there would be no regulatory backstop should an invasive species cause damage to the place. *Mitigation*: Site specific rules requiring land occupiers to undertake pest management are likely unnecessary at this site to ensure control activities occur. Engagement levels are very high, and land occupiers are providing access for pest management through the current non-regulatory approach.
Option 2	**Site-led programme within the RPMP** **Objective:** Protect and preserve the values of a place by preventing invasive species from establishing on the islands, and control of those species that do exit there already. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. This work would be voluntary. Ongoing surveillance and monitoring would be required. **Proposed Rule [1]:** Exclusion rule for deer, goats, pigs, possums, cats, and mustelids. The transportation to and release is prohibited. This includes all feral and domestic forms of the species. *Benefit*: Supports Predator Free 2050 and Predator Free Dunedin programmes. Provides a back-stop rule to prevent the movement of species to the islands *Risk:* If Predator Free funding is not maintained, or priorities change, ORC will be required to maintain this programme for the term of the plan.

PLANNING DOCUMENT / NOT COUNCIL POLICY

Staff Recommendation	**Option 2** Recommended due to its inclusion in the Predator Free 2050 / Predator Free Dunedin programme area.

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Assessment of the requirement for rules

Species	Regional Rules Adequate	Site- Led Exclusion	Site – Led Eradication	Site – Led Progressive Containment	Site-Led Sustained Control
Bennett's Wallaby	Yes	Yes But only if regional rules are removed	N/A	N/A	N/A
Feral Cats	Yes If rules are introduced to require land occupier control If a Pest Agent Rule allows for the microchipping / neutering of all domestic cats	No	Yes If no region wide sustained control rule Land occupier Responsibility to control and Pest Agent to Microchip/neuter	Yes	
Feral Deer	No Feral deer are not present in this site led area. An exclusion rule is required to maintain current state.	Yes To prevent the transportation or establishment of feral deer.	No	No	No
Feral Goats	No	Yes To eliminate impacts on values in this site.	No	No	No
Feral Pigs	No Feral pigs are not present in this site led area. An exclusion rule is required to maintain current state.	Yes To prevent the transportation or establishment of feral pigs	No	No	No
Hedgehogs	No	Yes	No	No	No
Mustelids	No	Yes	No	No	No
Possums	No	Yes	No	No	No
Rabbits	No	Yes	No	No	No

Rats (kiore, Norway and Ship)	No	Yes	No	No	No

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Level of Analysis required for undertaking analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for this programme.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There will be a high level of support for the programme but there may also be concerns from affected land owners such as forestry organisations that neighbour the reserve and that have high ungulate numbers.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The cost is relatively low due to the work current underway but increasing the requirements for ungulate control could significantly increase the costs.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	The site is well studied and the impacts are understood.	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	A reasonable amount is known about the impacts and populations of the invasive species at the site.	

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References

Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

[4] Site-led Programme: Values, Threats and Impacts Assessment, Ahika Consulting, produced 26th July 2022.

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Potential Site-led Management Audit	
Programme	Hikaroroa Reserve Mt Watkin
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	25 September 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	2.10.2026

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Introduction

This audit provides an assessment of a potential site-led programme to protect values at Hikaroroa Reserve Mt Watkin area in the Otago Region.

The assessment covers:

- The role of site-led programmes in regional pest management,
- A description of the potential site,
- The values at place within the site,
- The protection of these values, including the current management and management under a new Regional Pest Management Plan,
- A summary of the engagement outcomes,
- An assessment of the level of analysis required to undertake an analysis of cost and benefit of management options.

This information in this audit will be used to inform the development of a Proposal for a new Otago Regional Pest Management Plan (RPMP).

Role of a Site-Led Programme

A Site-led programme differs from species-led pest management in that its objective is to protect and preserve the values of a place, rather than targeting a specific species, and it targets the one or more critical pests that affect these values.[1]

Site-led pest management seeks to protect the values of a place or places. The values could be aesthetic, biological, cultural, ecological, economic, environmental, historic, recreational, or social values that are of significance to the general public or specific communities.

Site-led rules can be useful where a predominantly non-regulatory approach to pest management requires regulatory support to ensure pest management objectives are met and values are protected.

Planning a site-led pest programme involves:

- identifying places with values that are threatened by invasive pests and
- then identifying and carrying out control or other pest management activities necessary to protect these values.

Site Description

Under clauses 4(1)(d) and 4(2)(f) of the NPD, places to which the site-led programme applies must be adequately identified. The potential Hikaroroa Reserve Mount Watkin site is situated north of Dunedin, between 7 and 15 km inland from the Otago coast at Waikouaiti. Its northwestern boundary borders onto Kerr Road and the southwest boundary border the Waikouaiti River. The toe of the Reserve is less than 1km from Bucklands Crossing Reserve (Figure 1). The Reserve comprises of 650.8051 ha being Part Lot 2, Deposited Plan 348568 and Sections 5 and 6, SO Plan 354509 and all CFR 199263. It encompasses the south-western face of the mountain and is of great significance as an island of extensive indigenous habitat in a largely pastoral landscape.

Land tenure is scenic reserve managed by Dunedin City Council (DCC), surrounded by private farmland (Figure 1). The reserve has an extensive and diverse complement of habitats and includes volcanic boulder fields of national importance. The forests incorporate large areas of dry coastal species, among which matai, totara, ribbonwood and kowhai are prominent. (DCC, 2011).

The specific area that the site led programme is proposed to cover includes the Hikaroroa Reserve Mt Watkins (Map 2), adjoining private land parcels, and a section of exotic forestry to the east (see Figure 1).

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[1] Meeting the requirements of the National Policy Direction for Pest Management 2015, Ministry for Primary Industries.

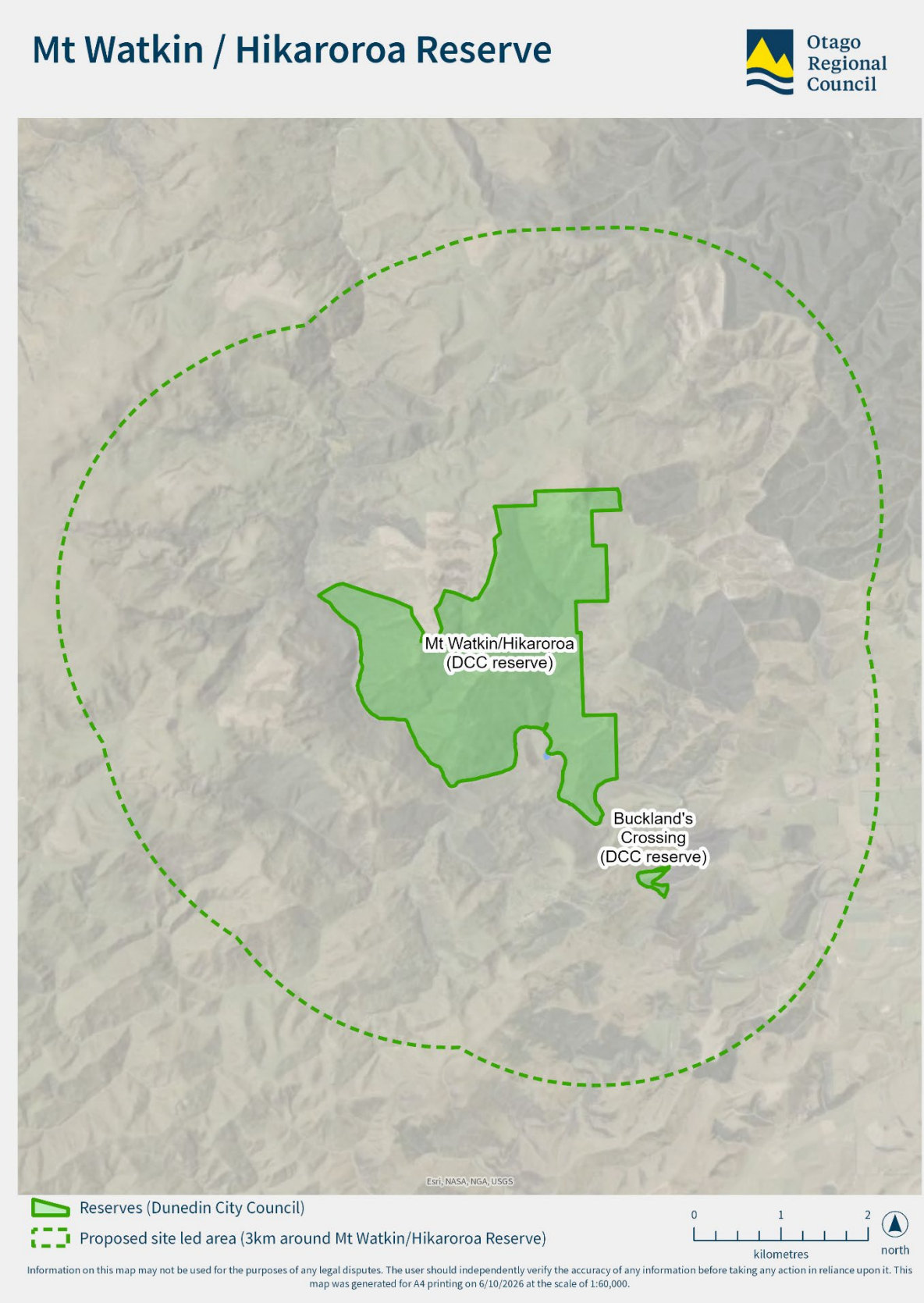


Figure 1. Area of proposed site led programme.

Values at Place

Hikaroroa Reserve Mt Watkin represents one of the most ecologically important forest remnants in North Otago. The reserve is a volcanic peak which has emerged through schist rocks. Rock outcrops and cliffs are a major feature, commonly occurring on the flanks of the main gullies. Wildlands Consultants (2011) identified and detailed the ecological values of the site and it Landcover classes which ae shown in Table 1 below.

Table 1. Landcover Classes Present in Hikaroroa Reserve Mt Watkins (Wildlands 2011).

Landcover Class	Area (ha)
Exotic vegetation	48,794.0
Indigenous forest	792.9
Freshwater wetland	18.4
Open space	512.9
Alpine grass / herbfield	0.0
Sub alpine shrubland	0.0
Tussock grassland	748.6
Plantation forest	9414.0
Riverine scrub	370.1
Indigenous secondary	7190.0
Urban	446.6

Several small, protected areas are located near Mt Watkin Scenic Reserve. Stoney Hill Run Covenant and Garden Bush are listed in Schedule 25.4 Areas of Significant Conservation Value in the Dunedin City District Plan (DCC 2006). An unprotected area of podocarp-broadleaved forest and kanuka forest (GPS Coordinates E2318590 N5509270) is located between Garden Bush Conservation Area and Mt Watkin Scenic Reserve (Allen 1986). There is also a Recreation Reserve at Bucklands Crossing, approximately 6 km down river of Mt Watkin Scenic Reserve (Wildlands, 2011).

Twenty-eight vegetation types have been recognised and mapped within the Reserve, and 180 native plant species are present, including six that are at risk nationally (Table 2).

Table 2. Native Plant Species of Note; Present in Hikaroroa Reserve Mt Watkins (Wildlands 2011).

Species	Common Name	Threat Status
Aciphylla subflabellata	Speargrass	At risk – declining
Brachyglottis sciadophila	Climbing groundsel	At risk - declining
Gingidia grisea		At risk – naturally uncommon
Korthalsella salicornioides	Dwarf mistletoe	At risk - declining
Pseudopanax ferox	Fierce lancewood	At risk – naturally uncommon
Tupeia antarctica	White mistletoe	At risk - declining

The site provides habitat for a numbers of common native forest birds (Table 3).

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Table 3. Common Forest Birds Present in Hikaroroa Reserve Mt Watkins (Wildlands 2011).

Species	Common Name	Threat Classification
Acanthisitta chloris	South Island rifleman	Not threatened
Anthornis melanura melanura	Bellbird	Not Threatened
Chalcites lucidus lucidus	Shining cuckoo	Not Threatened
Falco novaeseelandiae ("eastern")	Eastern falcon	Recovering
Gerygone igata	Grey warbler	Not Threatened
Rhipidura fuliginosa	South Island fantail	Not Threatened
Circus approximans	Swamp harrier	Not threatened
Hirundo tahitica	Welcome swallow	Not Threatened
Petroica macrocephala macrocephala	Tomtit	Not threatened
Larus dominicanus dominicanus	Black-backed gull	Not Threatened
Hemiphaga novaeseelandiae	Kererū	Not threatened
Todiramphus sanctus	Sacred kingfisher	Not Threatened
Zosterops lateralis	Silvereye	Not Threatened

Only one common species of skink has been observed in scientific surveys, and two lizard taxa have been recorded within 10km of the reserve. The reserve does provide good habitat for jewelled gecko.

Table 4. Herpetofauna present in Hikaroroa Reserve Mt Watkins (Wildlands 2011).

Species	Common name	Threat status
Oligosoma maccanni	McCanns skink	Not threatened

Streams within the reserve are of good quality and are likely to support populations of indigenous fish. Thirteen fish species have been recorded in the North Branch of the Waikouaiti River, its tributaries, and below its confluence with the South Branch (Table 17). It is highly likely that some of these species are present within the reserve, as permanent streams of sufficient size to support fish populations are present in the main gully and the smaller gully (Wildlands, 2011).

Table 5. Freshwater fish present in locations adjacent to Hikaroroa Reserve Mt Watkins (Wildlands 2011) and their threat classification from Conservation status of freshwater fisher (2023).

Species	Common name	Threat status
Anguilla australis	Shortfin eel	Not threatened
Anguilla dieffenbachii	Longfin eel	At risk - declining
Galaxias brevipinnis	Koaro	At risk - declining
Galaxias depressiceps	Flathead galaxias	At risk - declining
Galaxias fasciatus	Banded kokopu	At risk – naturally uncommon
Galaxias maculatus	Inanga	Nationally vulnerable
Geotria australis	Lamprey	Threatened – nationally vulnerable
Gobiomorphus breviceps	Upland bully	Naturally uncommon
Gobiomorphus cotidianus	Common bully	Naturally uncommon
Gobiomorphus gobioides	Giant bully	Naturally uncommon

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Gobiomorphus huttoni	Redfin bully	Naturally uncommon
Rhombosolea retiaria	Black flounder	Not threatened

The invertebrate fauna includes nationally and regionally important species. Eighty-four Lepidoptera taxa were identified in the Wildlands survey, including two which were classified as nationally threatened and one of regional importance in 2011 (Wildlands, 2011).

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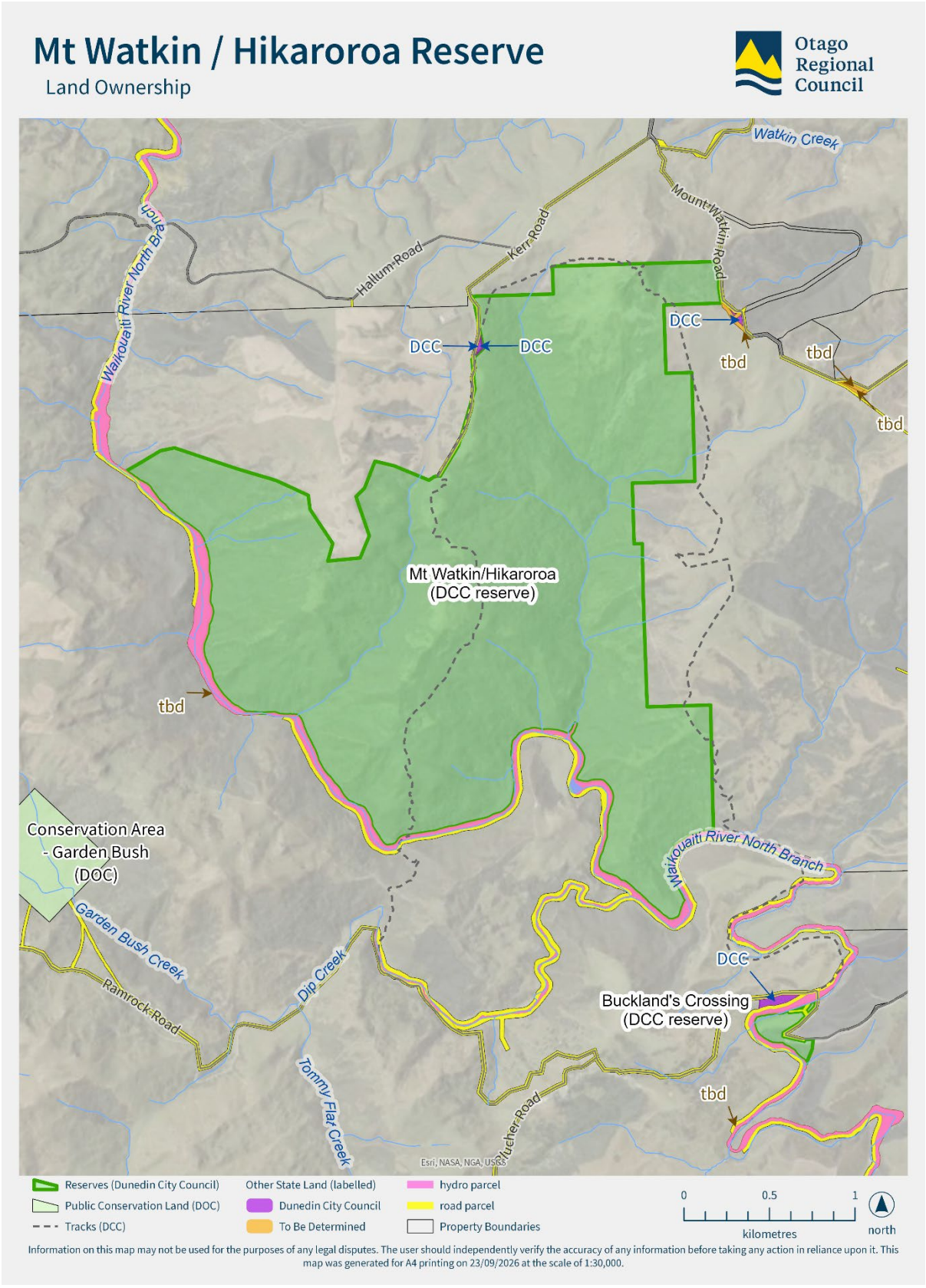


Figure 2. Hikaroroa Reserve Mt Watkin land tenure and reserve boundaries.

Threats to Values at the Site

Site-led programmes target the species that affect the values of the site. Of the invasive animal species, pigs and goats have a significant impact on the ecological values of the Reserve (DCC, 2011). Additionally, the predator species including possums, cats, ferrets, stoats, hedgehogs and rats impact the breeding success of native bird species and the populations of lizards and invertebrates within the reserve (DCC, 2011). A summary of the impacts of animal species on the values of the reserve is set out in Table 6 below. Further to this, the control of animals at the site is challenging as there are large expanses of suitable surrounding habitat, and highly mobile species (pigs, goats) can reinvade the Reserve rapidly.

Table 6. Impacts from Animal Pest Species on Hikaroroa Reserve Mt Watkins (MCU, 2024).

Animal Pest Species	Impacts on the Site
Feral red deer	Significant impact to native vegetation and at risk native plant species. Inhibit regeneration through seedling browse. Alter forest dynamics through preferential browsing, resulting in poor palatable species survivorship, reduced diversity and shifts in ecosystem composition.
Feral fallow deer	
Feral pigs	
Feral goats	
Bennet's wallabies	Not currently present in the reserve, this species has the potential to damage native vegetation and impact native species survivorship.
Possums	Target leaves, flowers, and fruits of native vegetation, preventing the growth and regeneration. Known to predate native bird eggs and chicks on the nest.
Feral cats	Can grow larger than domestic cats, they present a significant predatory threat, affecting native birds, lizards, and invertebrates. Known carrier of the infection toxoplasmosis.
Stoats	Direct predation on native fauna. They particularly impact skinks, geckos, giant weta, macro-invertebrate populations, and are known to threaten the long-term viability of several bird species.
Ferrets	
Weasels	
Hedgehogs	Opportunistic feeders that primarily consume insects but also eat a variety of animal matter and occasionally plants. Hedgehogs prey on native invertebrates and may impact lizard populations and ground nesting birds.
Ship rats	Cause nest disturbance and egg predation of native bird species. Consume a wide variety of native plant flowers and seeds, directly competing with native birds for food. Consume native invertebrates, causing declining diversity.
House mice	
Feral rabbits	Hinder the regeneration of native plants, contribute to soil degradation and erosion which can affect water quality.

Invasive plant species have less of an impact on the values of the reserve compared to the animal species described above. There are a relatively low number of invasive plants are present within the reserve. Gorse is widespread and, in places, dominant. Chilean flame creeper has a more limited distribution (DCC, 2011). Some of these species are managed through community projects, and some are named pest species under the current RPMP (Table 8).

Attempts to replace exotic species with newly planted native species require an effective animal control programme, particularly for pigs, goats, rabbits and possums. Weed and pest control will be carried as appropriate, particularly in conjunction with ongoing native planting programmes (DCC, 2011).

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Protecting Values at Place

Current management

The control of animals at the site is challenging as there are large expanses of suitable surrounding habitat and highly mobile species such as pigs and goats are able to reinvade the Reserve rapidly. This means that pest monitoring and/or control within the Reserve must be undertaken regularly. In addition to controlling animals within the Reserve, efforts will be made to consult and co-operate with adjacent landholders with the goal of achieving sustained control of pest animals in the surrounding area, thus reducing re-invasion rates in the Reserve. Attempts to replace exotic species with newly planted native species require an effective animal control programme, particularly for pigs, goats, rabbits and possums. Weed and pest control will be carried as appropriate, particularly in conjunction with ongoing native planting programmes (DCC, 2011).

Non-regulatory pest management and control activities

Current management and control activities in the Hikaroroa Mt. Watkin area are predominantly non-regulatory. The reserve is managed by the Dunedin City Council through a reserve management plan. The current plan (dated 2011) is due to be reviewed and updated, however, this process will not be complete in time to inform the RPMP review.

Kati huirapa ki Puketeraki runaka also play a significant community role in the Hikaroroa area and is involved in mana whenua consultation for conservation activities, project governance, and operational assistance for the Hikaroroa Mt. Watkin Conservation Group project. The runaka also run a nursery and are actively involved in replanting projects, freshwater, and marine projects in the wider Hikaroroa area (J. Hickling, pers. comm., 23 Sept 2026).

The Hikaroroa Mt. Watkin Conservation Group (hence referred to as 'the group') is an incorporated society of private land occupiers, whose properties surround the Hikaroroa Reserve Mt Watkin site.[2] This group is funded from the Department of Conservation's Community Fund project (DOC CF). The group's project expands upon DCC's reserve operations to include the surrounding farmland and remnant forest on private land, creating significant pest control buffers for the core area of the reserve. The group (and several reserve operations) use a mixed community and contractor delivery model for pest control and biodiversity monitoring. DOC CF also funds conservation education, community engagement, and free training and professional development opportunities (J. Hickling, pers. comm., 23 Sept 2026). The group has been awarded funding from ORC, DCC, and Waitaki District Council for possum and mustelid suppression around the reserve and will be working together with other conservation projects in the area including Predator Free Dunedin and the DCC's efforts inside the reserve. The focus of the group is the control of introduced predators and monitoring on the properties surrounding the reserve by local volunteers, with an expansion of scope to manage the remaining pest species, habitat restoration, and the re-introduction of taonga species in the future.

The East Otago Catchment Group is also actively involved in the Hikaroroa area, including freshwater and biodiversity work in the Waikouaiti and Te Hakapupu catchments that Hikaroroa flows into. Recently the East Otago catchment group developed a pest management strategy for the Pleasant River Catchment, bordering the north of the Hikaroroa project (M. Dale & J. Hickling, pers. comm., 23 Sept 2026). Catchment Action planning is facilitated by Otago Regional Council and brings together mana whenua, Waitaki District Council, Dunedin City Council, Department of Conservation, land occupiers, community representatives and environmental organisations to identify local priorities and actions. The Hikaroroa Reserve Mt Watkin site sits within both the North Otago Catchment Action Plan and Dunedin Coast Catchment Action Plan areas as shown in figure 2 below. The North Otago Integrated Catchment Group is being established in early

[2] www.predatorfreedunedin.org/hikaroroa-mt-watkin-conservation-group-hmwcg

2027 to co-develop a plan. Whereas, the Dunedin Coastal Integrated Catchment Group has been established and is now meeting regularly to co-develop a Catchment Action Plan.

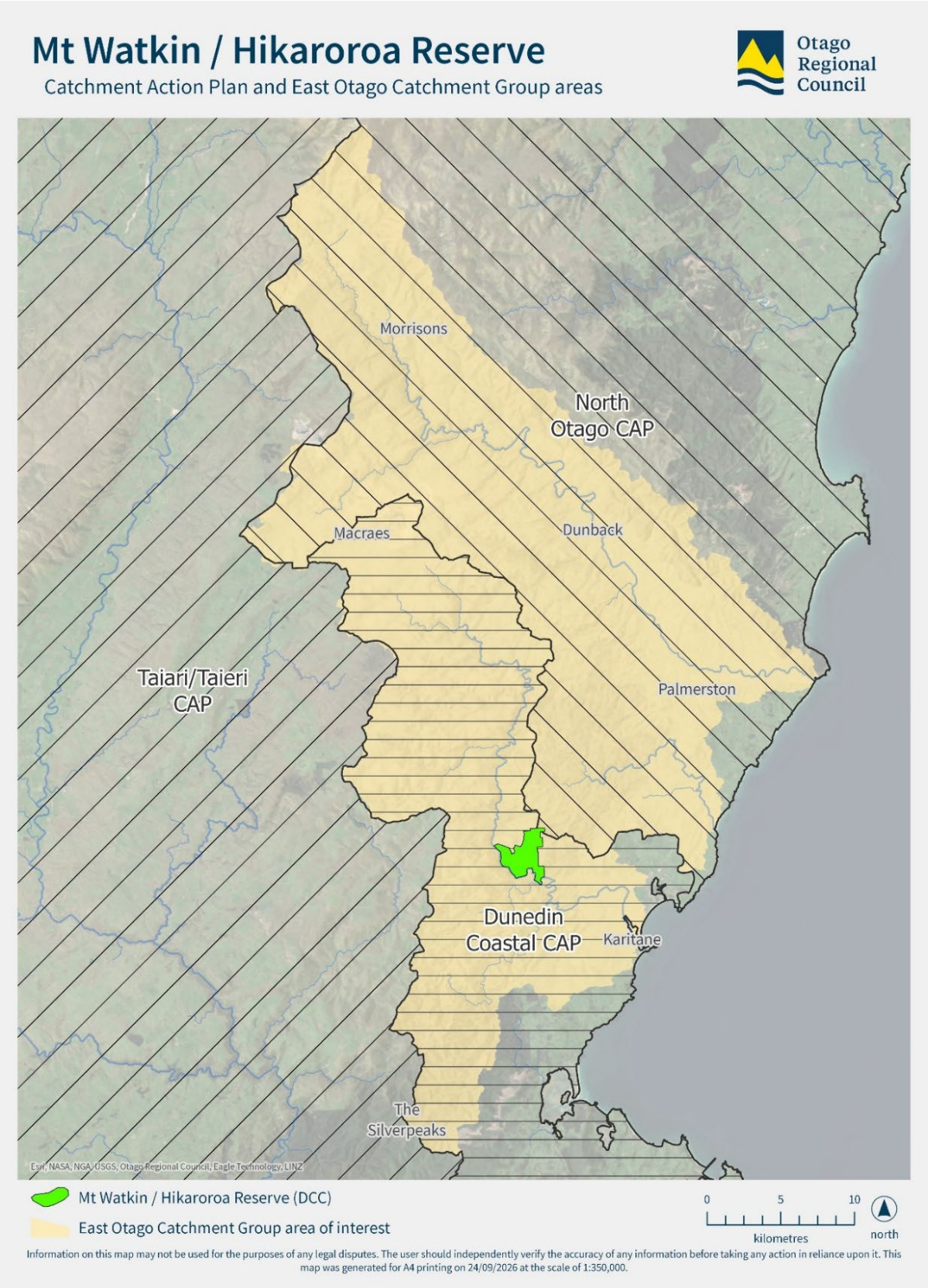


Figure 3: North Otago and East Otago catchment action plan boundaries.

Regulatory approach to pest management

The current Otago RPMP 2019-2019 provides a limited regulatory framework for managing the identified species of interest in the Hikaroroa Reserve Mount Watkin site. Under the current RPMP, rules only apply for feral rabbits, gorse and broom. Most of the management and control activities of species within or near the reserve are undertaken by volunteers.

Table 7. Current approach to animal pest and weed management.

Animal and plant species	DCC Management Plan	Community-Led Activities	Current RPMP
Feral ungulates (pigs, goats, deer)	Targeted for control	Ground hunting	Site-led but not at Hikaroroa Mt. Watkin
Feral cats	Targeted for control	Kill trapping	Site-led but not at Hikaroroa Mt. Watkin
Mustelids	Targeted for control	Kill trapping	Site-led but not at Hikaroroa Mt. Watkin
Possum	Targeted for control	Trapping, bait stations	Site-led but not at Hikaroroa Mt. Watkin
Hedgehog	Targeted for control	Kill trapping	Site-led but not at Hikaroroa Mt. Watkin
Rodents	Targeted for control	Bait stations	Site-led but not at Hikaroroa Mt. Watkin
Hares	Targeted for control	Nigh shooting	Not in plan
Feral rabbits	Targeted for control	Night shooting	Sustained control
Chilean flame creeper	Eradication		Not in plan
Elder	Eradication		Not in plan
Himalayan honeysuckle	Eradication		Not in plan
Tree lupin	Sustained control	Herbicide, hand pulling	Organism of interest
Gorse	Sustained control		Sustained control
Broom	Sustained control		Sustained control
Blackberry	Sustained control		Organism of interest

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Engagement Outcomes

Early engagement feedback

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

The summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Site-led Programmes were consistently supported by land occupiers and stakeholders throughout the review as an effective tool for protecting biodiversity, cultural, and economic values through targeted, site-specific pest management.

2. Participants supported greater responsibility for land occupiers to manage pest plants, while noting that the term "harbouring" for pest animals may be difficult to interpret and enforce.

3. Discussion document feedback strongly supported retaining site-led programmes, yet respondents equally supported both region-wide rules and site-led programmes with rules, suggesting both programmes could be used to manage pests.

4. Site-led programmes featured as a main topic at stakeholder workshops with support for landscape-scale, multi-species pest management in high biodiversity areas to protect values, with clearer management objectives, flexible programme boundaries and measurable outcomes. Discussion questioned whether site-led should be values-led (e.g. biodiversity), or pest-led (e.g. possum free Peninsula).

Targeted engagement feedback

1. Local rūnaka would like to make this a focus area through supporting pest management and values protection activities as appropriate.

2. The vision is to, over time, to a) connect Hikaroroa Reserve Mt Watkins with the Halo project via a land corridor and b) undertake future translocations of taoka species back into the site.

3. The current objectives are to manage unwanted terrestrial plant and animal species to very low levels across the site, to protect conservation and production values.

4. There is a high level of land occupier engagement in this site, with adjoining land occupiers all allowing access for pest management activities.

5. Neighbouring land, particularly where there is landscape-scale introduced tree planting, is impacting on current pest management activities, as this land provides a sink for unwanted pest species and a threat to management results from ongoing reinvasion.

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What can Otago Regional Council do to support this work?

1. Raise the profile of this site, within the catchment action planning space, to bring it in line with the Dunedin based Predator Free Dunedin sites. Increase the recognition of the values within this site, for Otago.

2. Financial support for:
   - Pest management projects e.g., management of Chilean flame creeper.
   - Innovative solutions to pest management e.g., the use of thermal drones to detect flowering weed species.
   - Planning and implementation of future species translocations.

3. Provision of technical advice for future activities *e.g., planning and implementation of future species translocations*.

Are land occupier rules needed?

1. There is some hesitancy over the introduction of land occupier rules at this stage of the project. There is concern that this could have the potential to erode the goodwill that has been built up between group who are involved in this project.

2. Land occupier rules could be useful in the future, as the project expands to incorporate the proposed Halo – Hikaroroa Reserve Mt Watkin corridor.

3. Good neighbour rules may be helpful, provided the area to which they apply incorporates the areas of highest concern *e.g., commercial or carbon forestry*.

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes.

Some of the animal species such as feral ungulates are covered by the Wild Animal Control Act

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes.

a. Regionwide rules, such as the current rabbit management rule, can be used to support community action at site.

b. Good neighbour rules, to require pest management in adjoining land parcels, could be used to slow reinvasion into managed areas.

Could site-specific rules protect the values at Hikaroroa Reserve Mt Watkin?

Yes.

Site specific rules could play a role in protecting the values at the site. However, the effectiveness and efficiency of site-led rules will need to be evaluated against voluntary action, and regionwide rules.

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Options for a Proposal for a New Plan

The preliminary options identified for protecting the values at the Hikaroroa Reserve Mt Watkin area are:

Option 1	**Non-Regulatory Approach for Site Specific Species** **Objective:** Protect and preserve the values of a place by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. Regionwide rules for species declared pest would apply at the site. *Benefit:* Low cost, support the building of community capability and capacity, align with other community programmes in adjacent areas. Engagement levels are very high, and land occupiers are providing access for pest management through current non-regulatory approaches. Likely more effective than rules given that most of the site is on DCC land and only good neighbour rules can apply to council to manage boundary effects. *Risk*: Some members of the community have requested greater protection for the area so there is reputational risk and there would be no regulatory backstop should an invasive species cause damage to the place *Mitigation*: Site specific rules requiring land occupiers to undertake pest management are likely unnecessary at this site to ensure control activities occur. Engagement levels are very high, and land occupiers are providing access for pest management through the current non-regulatory approach.
Option 2	**Add a Site-Led Programme into the RPMP** **Objective:** Protect and preserve the environmental values of Hikaroroa Reserve Mount Watkin[3] by applying site-led rules to specific species. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. This work would be voluntary. The addition of land occupier rule will provide a regulatory back stop to ensure objectives can be successfully met. The scale of work would be managed through annual planning and Long-Term Plan budget processes. **Proposed Rule [1]:** The transportation and release of any pest species into any Site-Led Area is prohibited. **Proposed Rule [2]:** Land occupiers must eradicate Chilean flame creeper, elder, and Himalayan honeysuckle, where directed by an authorised person, only where a wider community pest control programme for that pest species is being undertaken.

[3] The geographical extent of the site is to be defined but may include the reserve and private land.

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	Proposed Rule [3]: Land occupiers must control the following pest species on their property to protect biodiversity values in this Site-Led area where directed by an authorised person, only where a wider community pest control programme for that pest species is being undertaken: - Feral cats (5% Camera Trap Index) - Possums (2%) - Mustelids (5% TCI) - Hedgehogs (5% TCI) - Rabbits (MMS Lvl 3) **Proposed Rule [4]: Good Neighbour Rule.** Land occupiers must control the following species within [50m for terrestrial plant species] [1km for terrestrial animal species] of their property boundary, to eliminate impacts on neighbours: wild Russel lupin, blackberry. **Note:** Regionwide rules for all other pest species will apply. *Benefit:* Provides a backstop rule to enforce compliance on properties that are not voluntarily undertaking control. *Risk:* If Dunedin City Council funding is not maintained, or priorities change, ORC would have to use compliance on DCC. Implementing rules could impact on land occupier goodwill.
Staff Recommendation	**Option 1** Recommended due to the effectiveness of the current non-regulatory work and the voluntary support of the community for control measures. This can be revisited as the project progresses.

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Species	Regional Rules Adequate	Site-Led Exclusion	Site-Led Eradication	Site-Led Progressive Containment	Site-Led Sustained Control
Feral Goats	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Feral Pigs	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Feral Cats	Maybe - If rules are introduced to require land occupier control If a Pest Agent Rule allows for the microchipping / neutering of all domestic cats	No	No	No	Yes To reduce impacts on values
Possums	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Mustelids	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Hedgehogs	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Rabbits	Yes – assuming a regional MMS of 3	No	No	No	Yes To reduce impacts on values
Hares	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Mice	No – rules for mice are not appropriate due to the difficult and cost of control				

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Species	Regional Rules Adequate	Site-Led Exclusion	Site-Led Eradication	Site-Led Progressive Containment	Site-Led Sustained Control
Chilean Flame Creeper	No – a higher level of control is required to protect the values at the place	No	Yes – elimination from the site is possible and will protect the site values	No	No
Elder	No – a higher level of control is required to protect the values at the place	No	Yes – elimination from the site is possible and will protect the site values	No	No
Himalayan honeysuckle	No – a higher level of control is required to protect the values at the place	No	Yes – elimination from the site is possible and will protect the site values	No	No
Wild Russell Lupin	No – a higher level of control is required to protect the values at the place	No		No	Yes To reduce impacts on values
Gorse	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Common broom	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values
Blackberry	No – a higher level of control is required to protect the values at the place	No	No	No	Yes To reduce impacts on values

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Level of Analysis required for undertaking analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for this programme.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There will be some support for the programme but there may also be concerns from affected land occupiers such as forestry organisations that neighbour the reserve and that have high ungulate numbers. Already engaged land occupiers may lose current goodwill.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The cost is relatively low due to the work current underway but increasing the requirements for ungulate control could significantly increase the costs.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	The site is well studied and the impacts are understood	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	A reasonable amount is known about the impacts and populations of the invasive species at the site.	

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References

[1] Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

[4] Site-led Programme: Values, Threats and Impacts Assessment, Ahika Consulting, produced 26th July 2022.

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- **Jaime Hickling**; Mammalian Corrections Unit & Mt Watkins Conservation Group Project Coordinator
- **Korako Edwards**; Kaiārahi Taiao Mana Taiao | Environmental Advisor Aukaha
- **Kate Tanner**; Dunedin City Council Pest Control Contracts Manager & City Sanctuary Project Manager

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Potential Site-led Management Audit	
Programme	Otago Peninsula
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	25 September 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	5.10.2026

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Introduction

This audit provides an assessment of a potential site-led programme to protect values in the Catlins South area in the Otago Region.

The assessment covers:

- The role of site-led programmes in regional pest management,
- A description of the potential site,
- The values at place within the site,
- The protection of these values, including the current management and management under a new Regional Pest Management Plan,
- A summary of the engagement outcomes,
- An assessment of the level of analysis required to undertake an analysis of cost and benefit of management options.

This information in this audit will be used to inform the development of a Proposal for a new Otago Regional Pest Management Plan (RPMP).

Role of a Site-Led Programme

A Site-led programme differs from species-led pest management in that its objective is to protect and preserve the values of a place, rather than targeting a specific species, and it targets the one or more critical pests that affect these values.[1]

Site-led pest management seeks to protect the values of a place or places. The values could be aesthetic, biological, cultural, ecological, economic, environmental, historic, recreational, or social values that are of significance to the general public or specific communities.

Site-led rules can be useful where a predominantly non-regulatory approach to pest management requires regulatory support to ensure pest management objectives are met and values are protected.

Planning a site-led pest programme involves:

- identifying places with values that are threatened by invasive pests and
- then identifying and carrying out control or other pest management activities necessary to protect these values.

Site Description

Under clauses 4(1)(d) and 4(2)(f) of the NPD, places to which the site-led programme applies must be adequately identified.

The Otago Peninsula is 9,000ha in area and stretches parallel to the Dunedin mainland along the southeast of the Otago Harbour. It joins to the mainland at its southwest end by a narrow isthmus of approximately 1.5km (Figure 1).

The Otago Peninsula area is shown in Figure 1.

The Otago Peninsula is a wonderland of wildlife, scenery and heritage. Many of the creatures and plants that give Dunedin the reputation of New Zealand's Wildlife Capital live and breed on the Peninsula or in surrounding waters (www.predatrofreepeninsula.nz). The Otago Peninsula Biodiversity Group, founded in 2008, supports over 100 volunteers undertaking a variety of activities in the site.

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[1] Meeting the requirements of the National Policy Direction for Pest Management 2015, Ministry for Primary Industries.

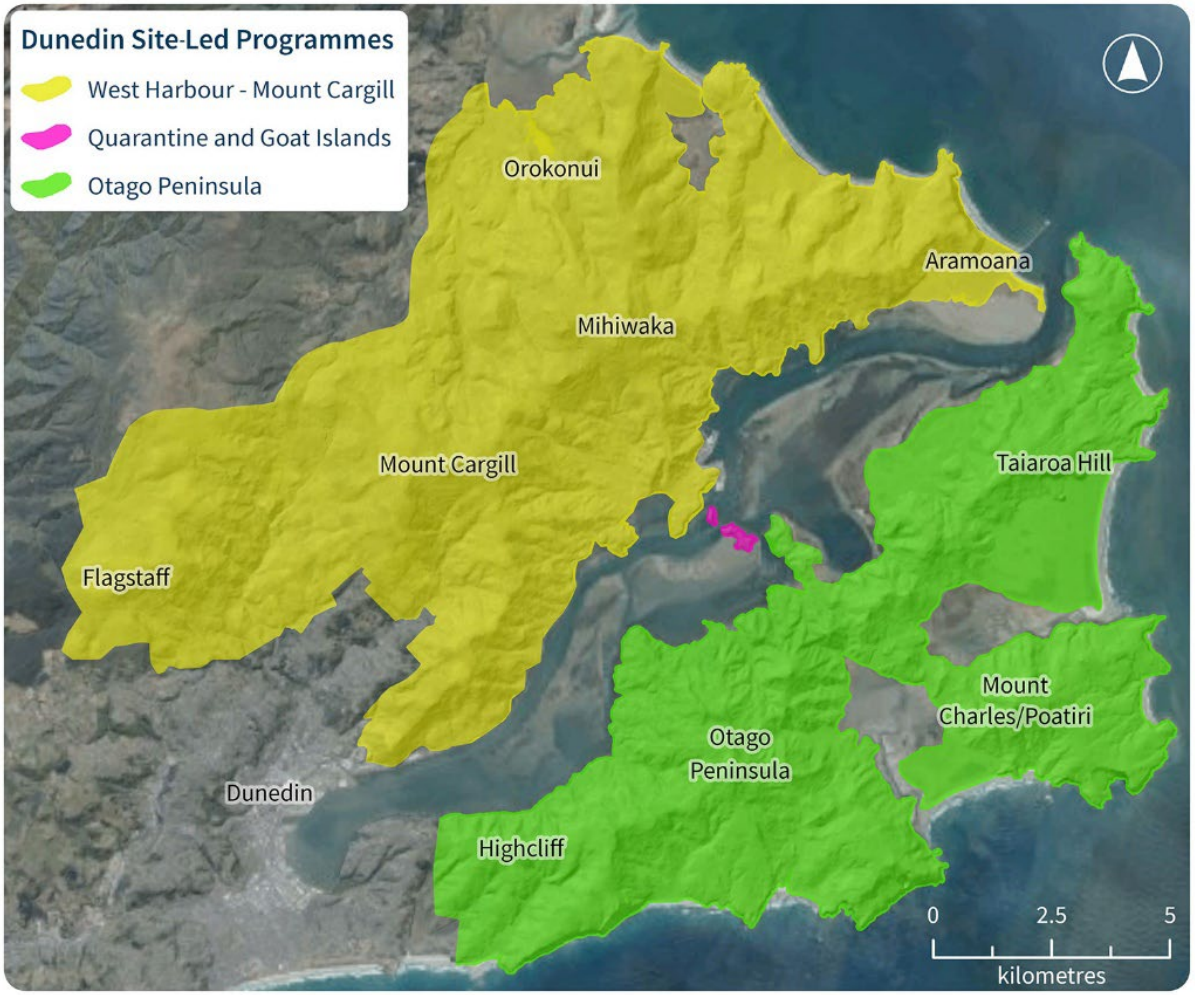


Figure 1. Area of proposed site led programme (green).

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Values at Place

The Site-Led programme is part of the Otago Regional Pest Management Plan 2019-2029 (RPMP)[1] and seeks to manage Site-Led animal and plant pests to avoid, mitigate or prevent damage to the indigenous ecosystem values at specific sites: West Harbour – Mt Cargill, Otago Peninsula and Quarantine and Goat Island.

The Values, Threats and Impacts Assessment identified six sites in the Otago Peninsula Site-Led Programme area with high biodiversity values (Table 1, Figure 1). These areas contain high biodiversity values, a range of ecosystem types and forest remnants, and habitat for diverse indigenous species, including rare and threatened Hoiho (Yellow-eyed Penguin), Pakake (New Zealand Sealion), and Toroa (Northern Royal Albatross). It is home to many other indigenous bird, reptile and invertebrate species. Its forest remnants are important habitats.

The priority sites for the Otago Peninsula Site-Led Programme were identified through a site prioritisation process that assessed biodiversity and cultural values. Sandymount–Sandfly Bay was selected in 2023, followed by Okia–Papanui–Taiaroa Hill in 2025, as the sites with the highest combined biodiversity and cultural significance.

Table 1. Key locations that encompass a range of biodiversity values within the Otago Peninsula Site-led Programme. 'x' denotes presence of the particular biodiversity value for a given location. Table adapted from Values, Threats and Impacts Assessment[4].

	Otago Peninsula					
Biodiversity Values	**7. Peninsula Tip**	**8. Okia - Papanui - Taiaroa Hill**	**9. Harbour Cone - Dicksons - Varleys Hill**	**10. Hoopers - Allans Beach - Papanui Beach**	**11. Sandfly Bay / Sandymount**	**12. Boulder Beach**
Naturally Uncommon Ecosystems	x	x	x	x	x	x
DOC Ecosystem/Species Management Unit	x	x		x	x	x
Areas of Significant Biodiversity Value	x	x	x	x	x	x
Notable Threatened / At Risk Species	x	x	x	x	x	x
Extensive Intact Native Habitat		x	x		x	x
Protected Land	x	x	x	x	x	x
ORC Significant Habitats	x	x	x	x	x	x
Areas Undergoing Revegetation Efforts	x	x	x	x		

The Values, Threats and Impacts Assessment also identified the predicted impacts of the Site-led pest species at each of the six priority sites (Table 2), and the predicted impacts of these pests on specific habitats and ecosystem types (Table 3).

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Table 2. Predicted impact (taking into account likelihood of pest occurrence) of the Site-Led Programme target pests at the Otago Peninsula Site-led Programme sites (red = high, orange = medium, green = low).

Biodiversity Values	Otago Peninsula					
	7. Peninsula IP	8. Okia - Papanui - Taiaroa Hill	9. Harbour Cone - Dicksons - Vallery's Hill	10. Hoopers - Allans Beach - Papanui Beach	11. Sandy Bay - Sandymount	12. Boulder Beach
Banana passionfruit	Med	High	High	Med	High	High
Chilean flame creeper	Med	High	High	Med	High	High
Darwin's barberry	High	High	High	Med	High	High
Sycamore	Med	High	High	Med	High	High
Gunnera	Med	Med	High	Med	Med	Med
Tradescantia	Med	Med	High	Low	Med	High
Bennetts wallaby	Low	Low	Low	Low	Low	Low
Feral cat	High	High	High	High	High	High
Feral deer	Low	Low	Low	Low	Low	Low
Feral goat	Low	Low	Low	Low	Low	Low
Feral pig	Low	Low	Low	Low	Low	Low
Hedgehog	High	High	High	High	High	High
Mustelids	High	High	High	High	High	High
Possum	High	High	High	High	High	High
Rats	High	High	High	High	High	High

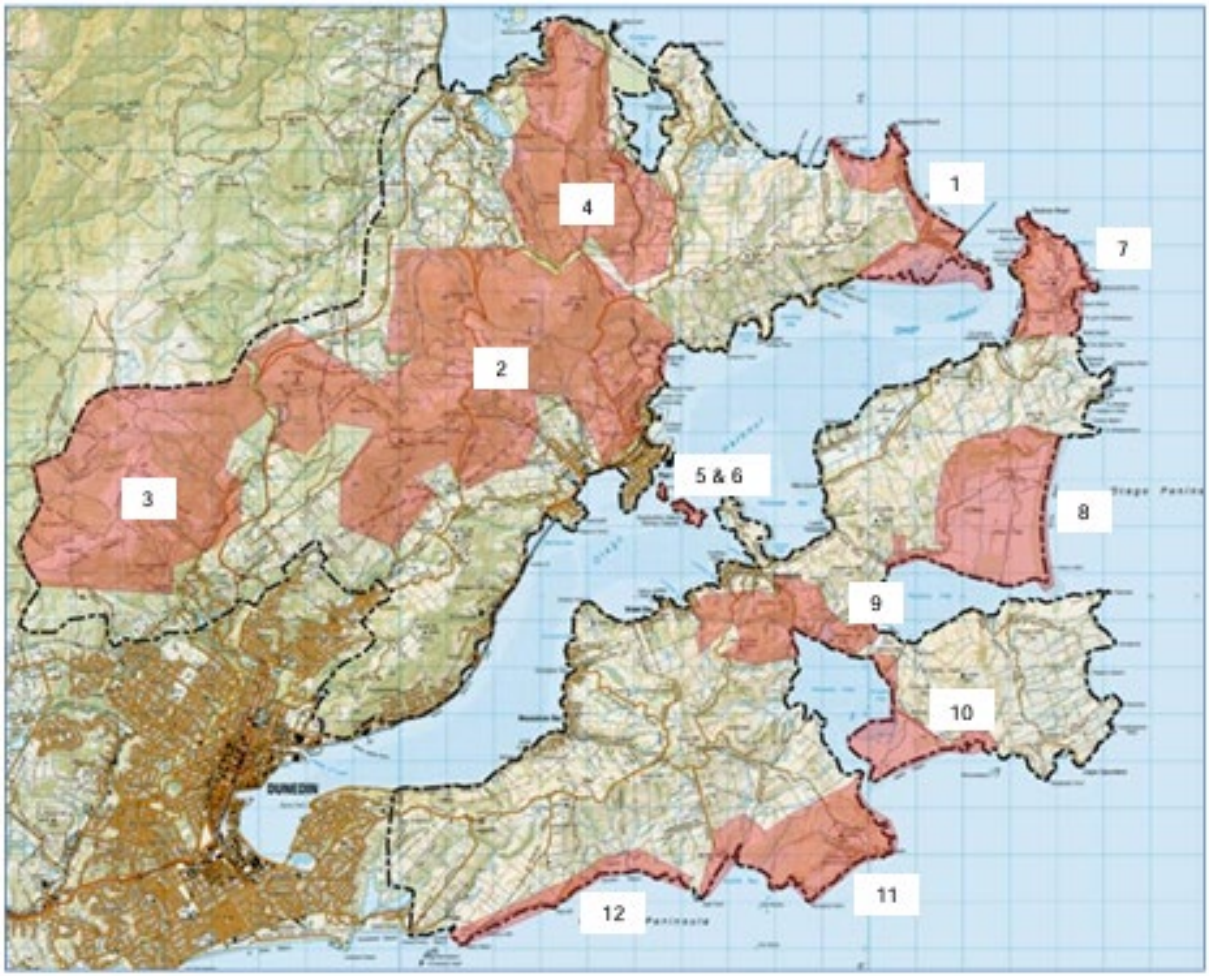


Figure 1. Map illustrating the six areas of high biodiversity and cultural values in the Otago Peninsula Site-led Programme area as 7. Peninsula Tip, 8. Okia - Papanui - Taiaroa Hill, 9. Harbour Cone - Dicksons - Varleys Hill, 10. Hoopers - Allans Beach - Papanui Beach, 11. Sandymount - Sandfly Bay, and 12. Boulder Beach. A total of 12 locations were identified in the Values, Threats and Impacts Assessment across the three Site-Led Programmes.

Threats to Values at the Site

Table 3. Predicted impact of threats on specified habitats (red = high, orange = medium, green = low). Data sourced from The Values, Threats and Impacts Assessment[4]. These ecosystem types are all found in the Otago Peninsula Site Led area.

	Ecosystem Types Present in this Site	Banana passionfruit	Chilean flame creeper	Darwin's barberry	Sycamore	Gunnera	Tradescantia	Bennetts wallaby	Feral cat	Feral deer	Feral goat	Feral pig	Hedgehog	Mustelids	Possum	Rats
Naturally Uncommon Ecosystem	Coastal turfs	Low	Low	Med	Low	Low	Low	Med	Med	Med	Med	Med	Med	Med	Med	Med
	Seabird burrowed soils	High	High	High	High	Low	Med	Med	High	High	High	High	High	High	High	High
	Seabird guano deposits (likely)	Med	Med	Med	Low	Low	Low	Med	Med	High	Med	Med	Med	High	Med	High
	Marine mammal haulouts	Low	Low	Low	Low	Low	Low	Med	Med	Med	Med	Med	Med	Med	Med	Med
	Active sand-dunes	Low	Low	Low	Low	Low	Low	Med	High	Med	Med	Med	High	High	High	High
	Dune slacks	Med	Med	High	Med	Med	Low	High	High	Med	Med	High	High	High	High	High
	Volcanic boulder fields	Med	Med	Med	Med	Med	Low	Med	High	Med	Med	Med	High	High	High	High
	Basic coastal cliffs	Med	Med	Med	Med	Med	Low	Low	High	Low	Med	Low	High	High	High	High
	Basic cliffs, scarps, and tors	Med	Med	Med	Med	Med	Low	Low	High	Low	Med	Low	High	High	High	High
Ecosystem types	Native forest	High	High	Med	High	High	High	High	High	High	High	High	Med	High	High	High
	Native shrubland/scrub	High	High	High	High	High	Med	High	High	High	High	High	High	High	High	High
	Native herb field	Low	Low	Med	Med	Med	Low	High	High	Med	High	High	Med	High	Med	High
	Freshwater wetland	Low	Low	Med	Low	High	Low	High	High	High	High	High	Med	High	Med	High
	Coastal wetlands	Low	Low	Med	Low	Med	Low	High	High	High	High	High	Med	High	Med	High
	Saltmarsh	Low	Low	Low	Low	Low	Low	Med	High	Med	Med	Med	Med	High	Med	High

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Protecting Values at Place

Current management

The Site-led programme in the Otago Regional Pest Management Plan (2019-2029)[1] seeks to manage pests whose presence, at or nearby, threaten the values that are special to the Otago Peninsula (protecting the values at the place). Under the current RPMP, there is only one rule that applies for the species named as target species in this area, that is the harbour rule. Most of the management and control activities of unwanted species within or adjoining this site are undertaken by the Otago Peninsula Biodiversity Group with the support of Predator Free Dunedin and Halo.

Non-regulatory pest management and control activities

Council's role in the Site-Led programme is to provide education, advocacy, and coordination to support collaboration between community groups, mana whenua, and agencies to achieve long-term environmental protection outcomes.

A Working Group was established in 2023 in partnership between mana whenua and Council, with representatives from Te Rūnanga o Ōtakōu and Kāti Huirapa Rūnaka ki Puketeraki to guide programme delivery and implementation.

On 8 February 2024, the Environmental Implementation Committee approved $146,200 from the 2023/24 budget for the programme. Using the approved site prioritisation process, the West Harbour – Mt Cargill site Aramoana, and the Otago Peninsula site Sandymount–Sandfly Bay were identified as priority sites for 2024/25.

Community hui in March 2024 informed development of site management plans, with funding allocated to five community groups in June 2024. Progress hui later in 2024 confirmed strong project delivery and the need for further funding in 2025/26 to maintain outcomes achieved.

In November 2024, Council endorsed a recommendation for the Site-Led Programme to operate independently from the ECO Fund, with $200,000 allocated.

In January 2025, Council supported Working Group recommendations for continued support for the existing sites, alongside funding for additional priority areas: Okia–Papanui–Taiaroa Head and Leith Saddle–Mihiwaka.

At the completion of the first round of the 2024/25 Site-Led Programme for the Sandymount – Sandfly Bay site, the following outputs were achieved:

- 314 ha of pest plants controlled
- 580ha of pest animals controlled
- 135 additional traps
- More than 270 pest animals controlled
- 64 community members involved
- Over 619 volunteer hours recorded

Regulatory approach to pest management

Regionwide rules for rabbits have been used, and inspections have been followed up with Work Requests, and in some cases Notice of Direction.

Regionwide rules for bomarea, cape ivy, bone seed and old man's beard have been used. Properties on the Otago Peninsula are regularly inspected under these progressive containment programmes.

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The current Otago RPMP 2019-2019 provides a limited regulatory framework for managing the identified species of interest in the Otago Peninsula site.

- There are no land occupier rules requiring management of named pest plant species.
- The only rule requiring land occupiers to manage named pest animal species is the 'no harbour ' rule. This rule has been successfully enforced on one occasion, to require a land occupier on the Otago Peninsula to provide access to a community group to carry out possums control on their property, as part of the possum eradication programme.
- No other compliance processes have been undertaken as part of the Site-led programme.

Plan Rule 6.5.4.1 No person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the Otago Peninsula any: a) Bennett's wallaby; b) feral deer; c) feral goat; d) feral pig; e) mustelid; f) feral cat; g) hedgehog; or h) possum.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure. A breach of this rule creates an offence under section 154N(19) of the Act.

Sections 52 and 53 of the Biosecurity Act 1993, which prevent the communication, release, spread, sale and propagation of pests, must be complied with. These sections should be referred to in full in the Biosecurity Act 1993.

Financial breakdown

Since the Site-Led Programme was initiated in 2023, Council has allocated funding through the Long-Term Plan to support delivery of Site-Led outcomes, including $146,200 in 2024/25, $200,000 in 2025/26, and $200,000 in 2026/27, for a total Council commitment of $546,200 (Table 4).
Of this funding, $283,474.21 has been distributed to the Otago Peninsula Site-Led Programme across the Sandymount–Sandfly Bay and Okia–Papanui–Taiaroa Hill sites, representing approximately 52% of the total Council allocation over this period.

Table 4. Total funding distributed as part of the Site-led programme to the Otago Peninsula sites: Sandymount - Sandfly Bay and Okia - Papanui - Taiaroa Hill in 2024/25, 2025/26 and 2026/27.

Financial Year	Council Allocation	Funding Distributed to Otago Peninsula Sites
2024/25	$146,200.00	$73,100.00
2025/26	$200,000.00	$105,716.00
2026/27	$200,000.00	$104,658.21
Total	**$546,200.00**	**$283,474.21**

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme? *Principal measures*	**Partially.** ORC to lead: Yes, the Working Group (ORC and mana whenua) have led this programme Council inspection. No Service delivery. No Collaborate, advocacy, education. Yes

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	Requirements to Act. Yes (possums) The RPMP talks directly to the 2019 Biosecurity Strategy however this strategy has not been renewed so this clause is no longer being met.
Have the objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP?	**Partially– the Sapere report notes the project is partially effective[3].** **Objective 6.5.4.a** • Preclude establishment of ungulates and wallaby: Passive monitoring has not detected ungulate species or wallaby, to date. • Eradicate possums: On track. • Sustained control of feral cats, rats, hedgehogs: Not implemented in this iteration of plan. • Progressively contain mustelids: As above. **Objective 6.5.4.b** • Progressively contain Banana passionfruit, Chilean flame creeper, Darwin's barberry, Sycamore, Gunnera, tradescantia: Direct funding provided. Partial progressive containment at some priority sites with high biodiversity and cultural values.
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	**Partially** • One of the most significant issues is the difficulty in enforcing pest control on private land. The current wording of the RPMP, particularly regarding "harbouring" pest species, has been too ambiguous, making it difficult to ensure compliance. • There is a separate rule for wallaby that is unnecessary given the regionwide eradication rule. • List of sites needs to be reviewed – choice of sites and species. Banana Passionfruit, Darwin's barberry, and Sycamore are not containable, Chilean flame creeper and tradescantia is in small numbers only so could be containable if aggressive control methods are used, gunnera is liked by the public making it hard to enforce removal. • Possums – maintenance of possum eradication programme is needed so rules are appropriate • Ungulate rules are best addressed by national and/or regional rules • Feral cats need to be reviewed and may still be appropriate – there is increasing public support, and these are now within the National Predator Free 2050 programme • Public support for the removal of hedgehogs – but unlikely to be enforceable • No longer appropriate to exclude land occupier control rules.

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	• Mustelid management may require an aligned and concurrent rabbit management programme. Control may be difficult as mustelids have an alternative food source.
Good Neighbour Rule	Nil.
Pest control spend	$283,474.21

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Engagement Outcomes

Early engagement feedback

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

The summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Site-led Programmes were consistently supported by land occupiers and stakeholders throughout the review as an effective tool for protecting biodiversity, cultural, and economic values through targeted, site-specific pest management.

2. Site-led Programmes were discussed at the Dunedin, Catlins, Balclutha, Wānaka, Oamaru, and Alexandra community drop-in sessions. Participants supported greater responsibility for land occupiers to manage pest plants, while noting that the term "harbouring" for pest animals may be difficult to interpret and enforce.

3. Discussion document feedback strongly supported retaining site-led programmes, yet respondents equally supported both region-wide rules and site-led programmes with rules, suggested both programmes could be used to manage pests. Respondents supported prioritizing site-led programmes in Otago's highest-value biodiversity areas, particularly the current Otago Peninsula, West Harbour/Mt Cargill, Quarantine and Goat Island site-led programmes.

4. Site-led programmes featured as a main topic at stakeholder workshops with support for landscape-scale, multi-species pest management in high biodiversity areas to protect values, with clearer management objectives, flexible programme boundaries and measurable outcomes. Discussion questioned whether site-led should be values-led (e.g. biodiversity), or pest-led (e.g. possum free Peninsula).

Targeted engagement feedback

1. Maintaining the peninsula as possum-free is critical to maintaining the gains of many years of intensive management effort.

2. Hedgehogs are of high concern for the Sustainable Otago Peninsula Group and the Otago Peninsula Biodiversity Group.

3. Removing Darwins barberry from the peninsula is a focus. Expert opinion is that this will become an issue in the future due to its ability to successfully establish under canopy, and the longevity of the seed source.

4. Weedy unwanted plant species, such as bomarea and banana passionfruit, remain a focus.

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What can Otago Regional Council do to support this work?

1. Financial support for:
   - Maintaining and expanding pest management infrastructure
   - Science and innovation, *e.g., drone surveillance programmes*
   - Pest plan next steps *e.g., hedgehog control, mustelid control, feral cat control*

2. More effective compliance for rabbits on the Peninsula. Established rabbit populations need to be managed to required levels.

3. More effective compliance around named pest plant species on the Peninsula. Some properties have very high levels of weedy species present, with established seed source. Without targeted work in this space, pest plant management will struggle to progress.

4. Rules to support feral cat management have been requested.

Are land occupier rules needed?

1. An exclusion rule for possums is required.

2. The regionwide rabbit rule to MMS Level 3 may not be low enough to support the next phase of mustelid management. This prey species will need to be removed from the landscape, to ensure success of those operations.

3. Land occupier rules will be needed to progress the desired hedgehog management project on the Peninsula. Access to properties will be important, as will the requirement for land occupiers to control this species, where they will not engage with community action.

4. Consideration on whether rules to support feral cat management on the Otago Peninsula, can be applied.

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes.

Some of the animal species such as feral ungulates are covered by the Wild Animal Control Act

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes.

a. Regionwide rules, such as the current rabbit management rule, can be used to support community action at site.

b. Good neighbour rules, to require pest management in adjoining public conservation land parcels, could be used to slow reinvasion into managed areas.

c. Site specific rules could be used to support the next steps in the Otago Peninsula pest management programme.

Could site-specific rules protect the values at Otago Peninsula?

Yes.

Site specific rules could play a role in protecting the values at the site. However, the effectiveness and efficiency of site-led rules will need to be evaluated against voluntary action, and regionwide rules.

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Options for a Proposal for a New Plan

The preliminary options identified for protecting the values at the Otago Peninsula area are:

Option 1	**Non-Regulatory Approach for Site Specific Species** **Objective:** Protect and preserve the values of a place by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. Regionwide rules for species declared pest would apply at the site. *Benefit: Low cost, support the building of community capability and capacity, align with other community programmes in adjacent areas. Engagement levels are very high, and land occupiers are providing access for pest management through current non-regulatory approaches.* *Risk: Some members of the community have requested greater protection for the area so there is reputational risk and there would be no regulatory backstop should an invasive species cause damage to the place.* *Mitigation: Site specific* rules requiring land occupiers to undertake pest management are likely unnecessary at this site to ensure control activities occur. Engagement levels are very high, and land occupiers are providing access for pest management through the current non-regulatory approach.
Option 2	**Site-led within the RPMP** **Objective:** To protect the values at the place by ▪ Preventing the establishment of feral deer, feral goats, feral pigs into the area ▪ Controlling possums to zero density ▪ Controlling feral cats, mustelids, hedgehogs and rabbits to low levels **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. This work would be voluntary. The addition of land occupier rule will provide a regulatory back stop to ensure objectives can be successfully met. The scale of work would be managed through annual planning and Long-Term Plan budget processes. **Proposed Rule [1]:** Exclusion rule for deer, goats, pigs, possums. The transportation to and release is prohibited. This includes all feral and domestic forms of the species. **Proposed Rule [2]:** Land occupiers must control the following pest species on their property to protect biodiversity values in this Site-Led area, where directed by an authorised person, only where a wider community pest control programme for that pest species is being undertaken: • Possums (0%)

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	• Feral cats (5% Camera Trap Index) • Mustelids (5% TCI) • Hedgehogs (5% TCI) • Rabbits (MMS Lvl2) **Rule [3]:** Land occupiers must progressively contain the following species to on their property: bomarea, Chilean flame creeper. **Rule [4]: Good Neighbour Rule.** Land occupiers must control the following species within 20m of their property boundary, to eliminate impacts on neighbours: Darwin's Barberry, banana passionfruit, tradescantia. **PLUS**: regionwide rules for all other pest species will apply. Benefit: Supports Predator Free 2050 and Predator Free Dunedin programmes. Provides a backstop rule to enforce compliance on properties that are not voluntarily undertaking possum control. Risk: If Predator Free funding is not maintained, or priorities change, ORC will be required to maintain this programme for the term of the plan. **Advisory Note:** Include pest agent rules for desexing / microchip as per the Southland Stewart Island Site-led rules. This would allow feral cat trapping to occur, whereby if a cat is live-captured and is found to have no microchip, it can be humanely euthanised. As a supporting note: education on responsible cat ownership should be strengthened. *Southland Regional Pest Management Plan Rule 27 Note: This is a pest agent rule. No person shall: (i) keep, hold, enclose or otherwise harbour in any place, either in transit to or present on the Stewart Island/Rakiura site (Map 8 - Appendix 1) any domestic cat, goat or pig; or (ii) release into the wild on the Stewart Island/Rakiura site any domestic cat, goat or pig. A breach of this Rule creates an offence under Section 154N (19) of the Act. For the purpose of this rule place includes - any building, conveyance, craft, land, or structure. The reason for this rule is to prevent domestic cats, goats or pigs being present or being released into the wild at the Stewart Island/Rakiura site. 83 Objective, Principal Measures and Rules Any person who is responsible for a domestic cat that is de-sexed and its identity microchipped is exempted from the provisions of Rule 27 (i).*
Staff Recommendation	**Option 2** Recommended due to the prior investment in the site and the need to maintain the gains. This site is a flagship site for Otago and is most likely to be a front runner for predator-free status in the future, given the highly defendable boundaries.

Assessment of the requirement for rules

Species	Regional Rules Adequate	Site-Led Exclusion	Site-Led Eradication	Site-Led Progressive Containment	Site-Led Sustained Control
Bennett's Wallaby	Yes	Yes But only if regional rules are removed	N/A	N/A	N/A
Feral Cats	Yes If rules are introduced to require land occupier control If a Pest Agent Rule allows for the microchipping / neutering of all domestic cats	No	Yes If no region wide sustained control rule Land occupier Responsibility to control and Pest Agent to Microchip/neuter	Yes	
Feral Deer	No Feral deer are not present in this site led area. An exclusion rule is required to maintain current state.	Yes To prevent the transportation or establishment of feral deer.	No	No	No
Feral Goats	No	Yes To eliminate impacts on values in this site.	No	No	No
Feral Pigs	No Feral pigs are not present in this site led area. An exclusion rule is required to maintain current state.	Yes To prevent the transportation or establishment of feral pigs	No	No	No
Hedgehogs	No	No	No	Yes Land occupiers to control	No
Mustelids	No	No	No	Yes Land occupier responsibility to 5% TCI	No

Possums	No	Yes Exclusion rule	No	No	No
Rabbits	Yes Depending on target level	No	No	No	Yes MMS Lvl2 or 3 with a Land occupier rule
Rats (kiore, Norway and Ship)	No	No	No	Yes Requirement to land occupier responsibility to control to 5% TCI.	No
Banana Passionfruit	No	No	No		Yes Good neighbour rule
Bomarea	No	No	Yes ORC to lead suppression Hand over to land occupier for maintenance control leading to eradication	No	No
Chilean Flame Creeper	No	No	Yes with land occupier rule to control		No
Darwin's Barberry	No	No	No		Yes Good neighbour rule
Gunnera	Yes Regionwide eradication rule	No	Yes With land occupier rule to control	No	No
Sycamore	No	No	No	No	Yes Good neighbour rule
Tradescantia	No	No	No	No	Yes Good neighbour rule

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Level of Analysis required for undertaking analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for this programme.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There will be a high level of support for the programme but there may also be concerns from affected land owners such as forestry organisations that neighbour the reserve and that have high ungulate numbers.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The cost is relatively low due to the work current underway but increasing the requirements for ungulate control could significantly increase the costs.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	The site is well studied and the impacts are understood.	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	A reasonable amount is known about the impacts and populations of the invasive species at the site.	

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References

[1] Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

[4] Site-led Programme: Values, Threats and Impacts Assessment, Ahika Consulting, produced 26th July 2022.

Predator Free Peninsula | Predator Free Peninsula's aim is to have a predator free Otago Peninsula, in order to protect the area's unique biodiversity values.

Otago Regional Council. Pests and Biosecurity. https://www.orc.govt.nz/environment/biosecurity-and-pests/ Accessed on 24 June 2026.

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Acknowledgements

ORC would like to acknowledge the contribution of key individuals who supported the development of this Site Led Biosecurity Impact Assessment. The RPMP Review Project Team would like to thank those below for their time, expertise and support during this process.

- **Hoani Langsbury**; Chairperson, Otago Peninsula Biodiversity Group
- **Rhys Millar**; Managing Director, Whirika

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Potential Site-Led Management Audit	
Programme	Southern Lakes Sanctuary
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	25 September 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	2.10.2026

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Introduction

This audit provides an assessment of a potential site-led programme to protect values in the Catlins South area in the Otago Region.

The assessment covers:

- The role of site-led programmes in regional pest management,
- A description of the potential site,
- The values at place within the site,
- The protection of these values, including the current management and management under a new Regional Pest Management Plan,
- A summary of the engagement outcomes,
- An assessment of the level of analysis required to undertake an analysis of cost and benefit of management options.

This information in this audit will be used to inform the development of a Proposal for a new Otago Regional Pest Management Plan (RPMP).

Role of a Site-Led Programme

A Site-led programme differs from species-led pest management in that its objective is to protect and preserve the values of a place, rather than targeting a specific species, and it targets the one or more critical pests that affect these values.[1]

Site-led pest management seeks to protect the values of a place or places. The values could be aesthetic, biological, cultural, ecological, economic, environmental, historic, recreational, or social values that are of significance to the general public or specific communities.

Site-led rules can be useful where a predominantly non-regulatory approach to pest management requires regulatory support to ensure pest management objectives are met and values are protected.

Planning a site-led pest programme involves:

- identifying places with values that are threatened by invasive pests and
- then identifying and carrying out control or other pest management activities necessary to protect these values.

Site Description

Under clauses 4(1)(d) and 4(2)(f) of the NPD, places to which the site-led programme applies must be adequately identified.

Southern Lakes Sanctuary is a large, landscape-scale biodiversity partnership working across a project area of approximately 850,000 hectares in the Southern Lakes.

Part of the project area lies within Te Wāhipounamu – Southwest New Zealand, a UNESCO World Heritage site recognised for its outstanding universal value. The Sanctuary also includes significant parts of Tititea (Mt Aspiring National Park), the third largest national park in New Zealand, and vast areas of intact, high-quality habitat, home to rare species and ancient ecosystems (The Sanctuary - Southern Lakes Sanctuary).

The Southern Lakes Sanctuary area is shown in Figure 1.

Defining a high-value site, within the wider Southern Lakes Sanctuary area, to propose as a Site Led Programme is difficult. Of the 850,000 hectares, more than three quarters is Crown owned and managed, and this is where the majority of the pest management activities are occurring. Rules are not considered appropriate in this space as there are no barriers to access, and there is no need to implement a rule to bind the Crown, as management is already occurring. Discussions with the Southern Lakes Sanctuary reinforced this position (see Engagement Outcomes below).

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[1] Meeting the requirements of the National Policy Direction for Pest Management 2015, Ministry for Primary Industries.

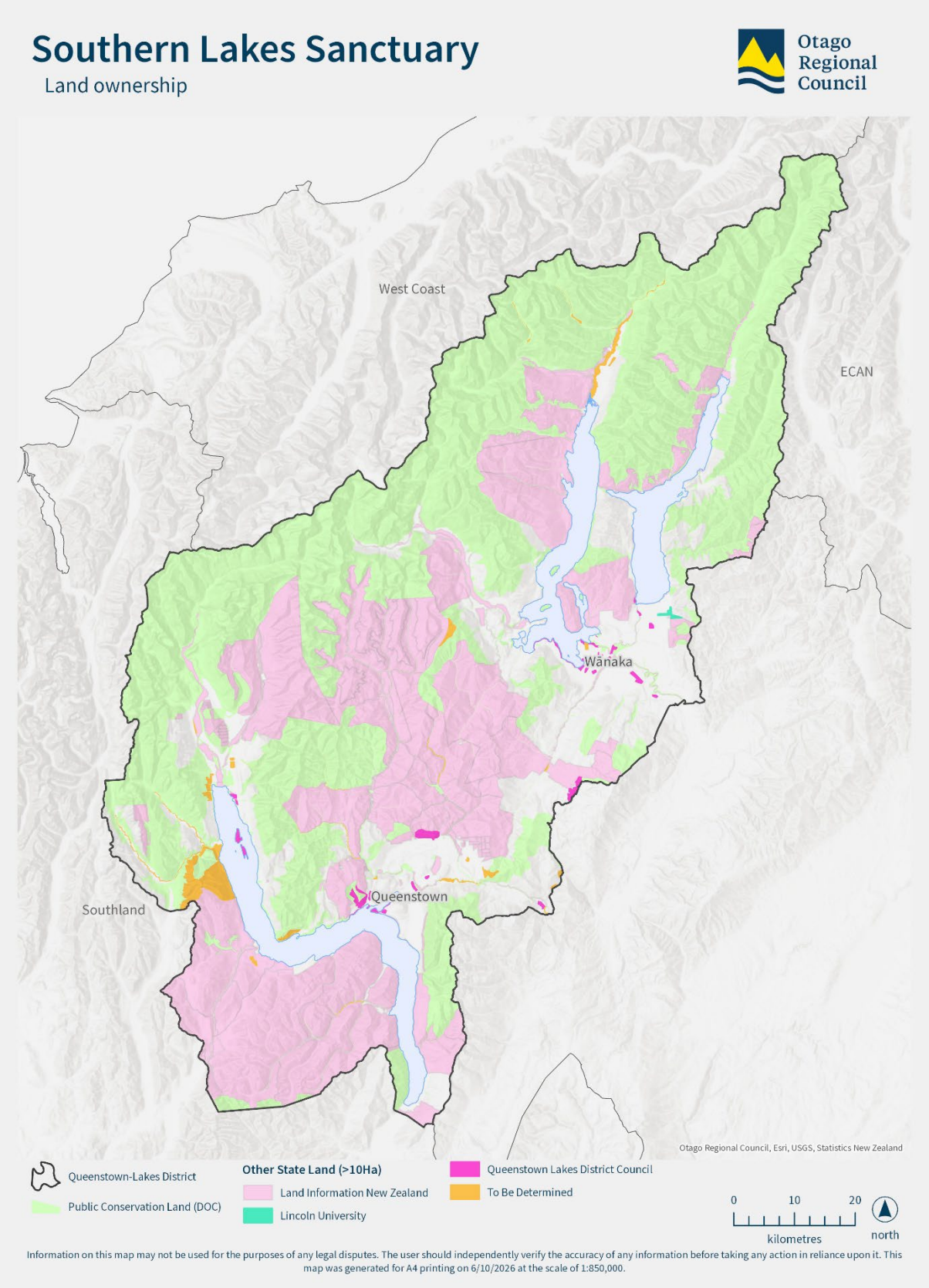


Figure 1. Southern Lakes Sanctuary.

Values at Place

The Sanctuary protects a globally significant sweep of biodiversity, including at least 33 threatened or at-risk native species.

From the high alpine home of the kea and pīwauwau (rock wren), to braided riverbeds where ngutu pare (wrybill) and pohowera (banded dotterel) nest, to the forest strongholds of mohua and kākā, this is a living mosaic of rare and remarkable life.

Even one of two of Aotearoa's only native land mammals, the pekapeka (long-tailed bat), and unique reptiles like the grand and Otago skinks, call this place home (The Sanctuary - Southern Lakes Sanctuary).

Table 1. Native Plant Species of Note; Present in Southern Lakes Sanctuary.

Species	Common Name	Threat Status
Buff weka	*Gallirallus australis hectori*	At Risk – Declining
Kākā	*Nestor meridionalis*	Threatened – Nationally Endangered
Yellow-crowned parakeet (Kākāriki)	*Cyanoramphus auriceps*	At Risk – Declining
South Island robin (Kakaruai)	*Petroica australis australis*	Not Threatened
Black stilt (Kakī)	*Himantopus novaezelandiae*	Threatened – Nationally Critical
New Zealand falcon (Kārearea)	*Falco novaeseelandiae*	Threatened – Nationally Vulnerable
Kea	*Nestor notabilis*	Threatened – Nationally Endangered
Marsh crake (Kotoreke)	*Zapornia pusilla affinis*	At Risk – Relict
Fernbird (Mātātā)	*Poodytes punctatus*	At Risk – Declining
Australasian bittern (Matuku)	*Botaurus poiciloptilus*	Threatened – Nationally Critical
Mohua (Yellowhead)	*Mohoua ochrocephala*	At Risk – Declining
Wrybill (Ngutu pare)	*Anarhynchus frontalis*	Threatened – Nationally Vulnerable
New Zealand pipit (Pīhoihoi)	*Anthus novaeseelandiae*	At Risk – Declining
Rock wren (Pīwauwau)	*Xenicus gilviventris*	Threatened – Nationally Vulnerable
Banded dotterel (Pohowera)	*Charadrius bicinctus*	At Risk – Declining
Australasian crested grebe (Pūteketeke)	*Podiceps cristatus australis*	Threatened – Nationally Vulnerable
Takahē	*Porphyrio hochstetteri*	Threatened – Nationally Vulnerable
Black-fronted tern (Tarapiroe)	*Chlidonias albostriatus*	Threatened – Nationally Endangered
Black-billed gull (Tarāpuka)	*Larus bulleri*	Threatened – Nationally Critical
South Island pied oystercatcher (Tōrea)	*Haematopus finschi*	At Risk – Declining
Whio (Blue duck)	*Hymenolaimus malacorhynchos*	Threatened – Nationally Vulnerable
Cryptic skink	*Oligosoma inconspicuum*	At Risk – Declining
Kawarau gecko	*Woodworthia "Kawarau"*	Threatened – Nationally Vulnerable
Lakes skink	*Oligosoma sp. "Lakes"*	At Risk – Declining
Mountain beech gecko	*Mokopirirakau "Mossy"*	At Risk – Declining
Nevis skink	*Oligosoma toka*	Threatened – Nationally Vulnerable
Orange-spotted gecko	*Mokopirirakau "Roys Peak"*	At Risk – Declining

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Short-toed gecko	*Woodworthia cf. brunnea*	At Risk – Declining
Southern Alps gecko	*Woodworthia "Southern Alps"*	At Risk – Declining
Southern grass skink	*Oligosoma aff. polychroma*	At Risk – Declining
Tākitimu gecko	*Mokopirirakau tepukei*	Threatened – Nationally Vulnerable
Long-tailed bat (Pekapeka)	*Chalinolobus tuberculatus*	Threatened – Nationally Critical
Southern Alps giant wētā	*Deinacrida connectens*	At Risk – Naturally Uncommon

Threats to Values at the Site

In large part, Southern Lakes Sanctuary is focused on suppressing a suite of **predator** and pest species that are directly **impacting on native fauna,** across the site:

- Mustelids
- Rats
- Feral cats
- Hedgehogs
- Possums
- Mice

Weed control is not a core programme, but rather a supplementary activity, undertaken in some places alongside predator control.

Protecting Values at Place

Current management

Landscape scale pest management is occurring across the 850,000 hectares of the Southern Lakes Sanctuary.

The area is subject to coordinated predator control and ecological restoration through seven connected "project hubs" (i.e., Makarora, Mātakitaki/Matukituki, Dart/Rees/Greenstone, Motatapu, Wānaka-Hāwea, Whakatipu, Cardrona), with targeted programmes for taoka species such as mohua, whio, kea, takahē, rock wren and others (submission, 2025).

Non-regulatory pest management and control activities

In this area, a Catchment Action Plan (CAP) is in the process of being developed. The CAP is a long-term, non-regulatory plan to protect, enhance, and restore native biodiversity and freshwater quality (Upper Lakes Catchment Action Plan, 2025). An Upper Lakes CAP Governance Group has been established and is now meeting regularly to guide this work. The group brings together mana whenua, Otago Regional Council (ORC), Queenstown Lakes District Council (QLDC), and leaders from catchment and conservation groups. Alongside this, the Upper Lakes CAP community membership is continuing to grow, forming a wider network that provides collaboration, local knowledge, and advice to support the Governance Group (Upper Lakes Catchment Action Plan).

The Upper Lakes Catchment Action Plan (CAP) serves as a focus for environmental and natural resource management in the Queenstown Lakes district - including the catchments of lakes Whakatipu Waimāori, Wānaka, Hāwea and Waiwhakaata. The Upper Lakes Integrated Catchment group was established in 2024,

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to co-develop the CAP. A CAP Governance Group has been established, CAP boundaries set and the work is focussing on growing membership and networks to develop the plan

Non-regulatory means it focuses on guiding, coordinating, and supporting community actions rather than creating or enforcing rules. It builds on the work of mana whenua, communities, and local government, aiming for collective impact by aligning efforts around shared goals for environmental health and community wellbeing (Upper Lakes Catchment Action Plan, 2025).

The Southern Lakes Sanctuary works within the boundaries of this CAP, undertaking a range of pest management activities, with a focus on predator control to protect nationally threatened and other vulnerable fauna species.

Regulatory approach to pest management

The current Otago RPMP 2019-2019 provides a limited regulatory framework for managing the identified species of interest in the Southern Lakes Sanctuary site. Under the current RPMP, there are no rules that apply for the species named as target species in this area. Most of the management and control activities of unwanted species within or adjoining this site are undertaken by the Sothern Lakes Sanctuary Trust.

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Engagement Outcomes

Early engagement feedback

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

The summary contains information from:

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Strong themes collated during engagement were:

1. Site-led Programmes were consistently supported by land occupiers and stakeholders throughout the review as an effective tool for protecting biodiversity, cultural, and economic values through targeted, site-specific pest management.

2. Participants supported greater responsibility for land occupiers to manage pest plants, while noting that the term "harbouring" for pest animals may be difficult to interpret and enforce.

3. Discussion document feedback strongly supported retaining site-led programmes, yet respondents equally supported both region-wide rules and site-led programmes with rules, suggesting both programmes could be used to manage pests.

4. Site-led programmes featured as a main topic at stakeholder workshops with support for landscape-scale, multi-species pest management in high biodiversity areas to protect values, with clearer management objectives, flexible programme boundaries and measurable outcomes. Discussion questioned whether site-led should be values-led (e.g. biodiversity), or pest-led (e.g. possum free Peninsula).

Targeted engagement feedback

1. The majority of the area within the Southern Lakes Sanctuary boundary is public conservation land. Rules requiring the Department of Conservation to manage pests are unable to be applied in this area.

2. Feral cat management is fast becoming a critical priority for this site.

What can Otago Regional Council do to support this work?

1. Raise the profile of this site, within the catchment action planning space, to bring it in line with the Dunedin based Predator Free Dunedin sites. Increase the recognition of the values within this site, for Otago. Recognition for the alignment this site has with wider Predator Free work.

2. Financial support for:
   - Pest management infrastructure

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- Science and innovation, particularly in good monitoring systems.

3. Continue to provide education on the differences between feral, stray and domestic cats. Encourage local authorities to include microchipping and neutering in their bylaws. Encourage cat owners to keep their cats indoors at night.

Are land occupier rules needed?

1. Land occupier rules could be useful in the future, as the project expands from public conservation land into a larger proportion of privately owned land.

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes.

Some of the animal species such as feral ungulates are covered by the Wild Animal Control Act
The majority of the area is PCL and not subject to the RPMP.

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Maybe if the site expands on to private land in the future.

a. Good neighbour rules, to require pest management in adjoining land parcels, could be used to slow reinvasion into managed areas.

Could site-specific rules protect the values at Southern Lakes?

No

The majority of the area within the Southern Lakes Sanctuary boundary is public conservation land. Rules requiring the Department of Conservation to manage pests are unable to be applied in this area

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Options for a Proposal for a New Plan

The preliminary options identified for protecting the values at the Southern Lakes area are:

Option 1	**Non-Regulatory Approach for Site Specific Species** **Objective:** Protect and preserve the values of a place by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. Regionwide rules for species declared pest would apply at the site. *Benefit:* Low cost, support the building of community capability and capacity, align with other community programmes in adjacent areas. Engagement levels are very high, and land occupiers are providing access for pest management through current non-regulatory approaches. *Risk*: Some members of the community have requested greater protection for the area so there is reputational risk and there would be no regulatory backstop should an invasive species cause damage to the place. *Mitigation*: Site specific rules requiring land occupiers to undertake pest management are likely unnecessary at this site to ensure control activities occur. Engagement levels are very high, and land occupiers are providing access for pest management through the current non-regulatory approach.
Staff Recommendation	**Option 1** Recommended due to feedback through community and stakeholder engagement that the area is not ready to move into a site-led programme. The dominance of PCL land reduced the ability for the RPMP to be an effective tool. This can be revisited as the project progresses.

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Level of Analysis required for undertaking analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for this programme.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There will be a high level of support for the programme but there may also be concerns from affected land owners such as forestry organisations that neighbour the reserve and that have high ungulate numbers.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The cost is relatively low due to the work current underway but increasing the requirements for ungulate control could significantly increase the costs.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	The site is well studied and the impacts are understood.	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	A reasonable amount is known about the impacts and populations of the invasive species at the site.	

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References

[1] Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

Otago Regional Council. Pests and Biosecurity. https://www.orc.govt.nz/environment/biosecurity-and-pests/ Accessed on 24 June 2026.

Submission to Otago Regional Council Draft Indigenous Biodiversity Strategy on behalf of the Southern Lakes Sanctuary

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Acknowledgements

ORC would like to acknowledge the contribution of key individuals who supported the development of this Site Led Biosecurity Impact Assessment. The RPMP Review Project Team would like to thank those below for their time, expertise and support during this process.

- **Paul Kavanagh**; Chief Executive Officer, Southern Lakes Sanctuary

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Potential Site-led Management Audit	
Programme	West Harbour Mt Cargill
Author Name & Role	Michelle Ewans; Biosecurity Specialist - Terrestrial
Audit Date	25 September 2026
Independent Technical Review	
Consultant / Company Name	Ali Meade Consulting
Reviewer Name	Ali Meade
Review Date	5.10.2026

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Introduction

This audit provides an assessment of a potential site-led programme to protect values in the Catlins South area in the Otago Region.

The assessment covers:

- The role of site-led programmes in regional pest management,
- A description of the potential site,
- The values at place within the site,
- The protection of these values, including the current management and management under a new Regional Pest Management Plan,
- A summary of the engagement outcomes,
- An assessment of the level of analysis required to undertake an analysis of cost and benefit of management options.

This information in this audit will be used to inform the development of a Proposal for a new Otago Regional Pest Management Plan (RPMP).

Role of a Site-Led Programme

A Site-led programme differs from species-led pest management in that its objective is to protect and preserve the values of a place, rather than targeting a specific species, and it targets the one or more critical pests that affect these values.[1]

Site-led pest management seeks to protect the values of a place or places. The values could be aesthetic, biological, cultural, ecological, economic, environmental, historic, recreational, or social values that are of significance to the general public or specific communities.

Site-led rules can be useful where a predominantly non-regulatory approach to pest management requires regulatory support to ensure pest management objectives are met and values are protected.

Planning a site-led pest programme involves:

- identifying places with values that are threatened by invasive pests and
- then identifying and carrying out control or other pest management activities necessary to protect these values.

Site Description

Under clauses 4(1)(d) and 4(2)(f) of the NPD, places to which the site-led programme applies must be adequately identified.

The West Harbour – Mt. Cargill area is an area of approximately 12,500ha north of Dunedin City following the western side of the Otago Harbour, extending from Mt. Cargill and Ravensbourne to Blueskin Bay, Long Beach and Aramoana (Figure 1).

The West Harbour Mt Cargill area is shown in Figure 1.

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[1] Meeting the requirements of the National Policy Direction for Pest Management 2015, Ministry for Primary Industries.

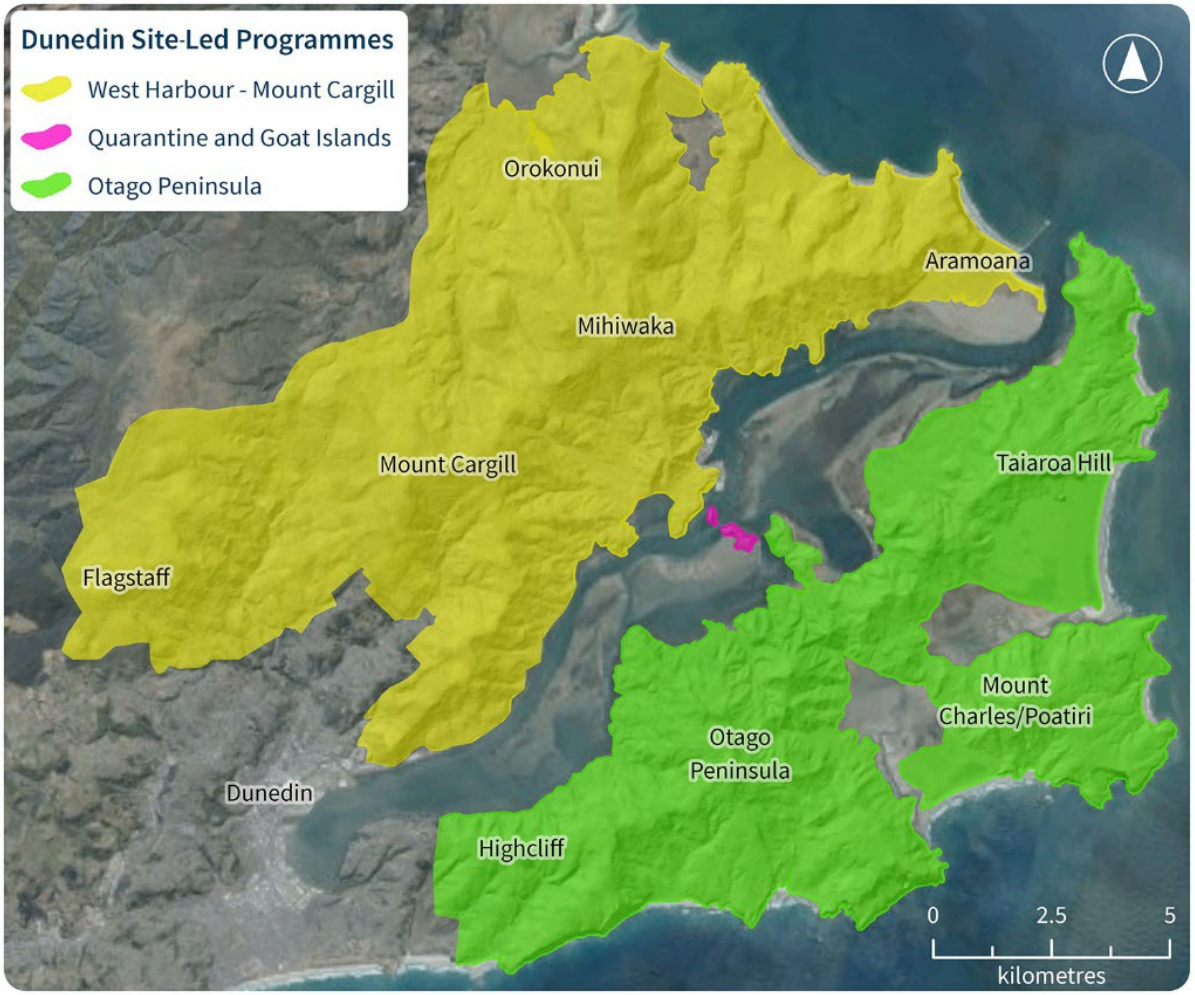


Figure 1. Area of proposed site led programme (yellow).

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Values at Place

The Site-Led programme is part of the Otago Regional Pest Management Plan 2019-2029 (RPMP)[1] and seeks to manage Site-Led animal and plant pests to avoid, mitigate or prevent damage to the indigenous ecosystem values at specific sites: West Harbour – Mt Cargill, Otago Peninsula and Quarantine and Goat Island.

The Values, Threats and Impacts Assessment identified the four sites in the West Harbour – Mt Cargill Site-Led Programme area with high biodiversity values were: 1. Aramoana - Heyward Point, 2. Leith Saddle – Mihiwaka, 3. Flagstaff – Swampy, and 4. Orokonui Ecosanctuary (Table 1, Figure 1). This area is home to 11 different ecosystem types containing diverse indigenous flora and fauna. This includes threatened and at-risk plant species, including nationally critical, endangered and at-risk bryophytes. The area is home to rare and threatened indigenous species including the yellow-eyed penguin, the New Zealand sea lion, and many other at-risk and threatened shore birds. It is also home to many other indigenous bird, reptile and invertebrate species, including the South Island kākā, South Island robin, and South Island fern bird.

The priority sites for the West Harbour – Mt Cargill Site-Led Programme were identified through a site prioritisation process that assessed biodiversity and cultural values. Aramoana was selected in 2023, followed by Leith Saddle – Mihiwaka in 2025, as the sites with the highest combined biodiversity and cultural significance.

Table 1. Key locations that encompass a range of biodiversity values within the West Harbour – Mt Cargill Site-led Programme. 'x' denotes presence of the particular biodiversity value for a given location. Table adapted from Values, Threats and Impacts Assessment[4].

	West Harbour - Mt Cargill			
Biodiversity Values	**1. Aramoana - Heyward Point**	**2. Leith Saddle - Mihiwaka**	**3. Flagstaff - Swampy**	**4. Orokonui Ecosanctuary**
Naturally Uncommon Ecosystems	x	x	x	x
DOC EMU/SMU				
ASBVs	x	x	x	x
Notable Threatened / At Risk Species	x			x
Extensive Intact Native Habitat	x	x	x	x
Protected Land	x	x	x	x
ORC Significant Habitats	x	x	x	x
Areas Undergoing Revegetation Efforts	x	x		x

The Values, Threats and Impacts Assessment also identified the predicted impacts of the Site-led pest species at each of the six priority sites (Table 2), and the predicted impacts of these pests on specific habitats and ecosystem types (Table 3).

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Table 2. Predicted impact (taking into account likelihood of pest occurrence) of the Site-Led Programme target pests at the West Harbour – Mt Cargill Site-led Programme sites (red = high, orange = medium, green = low). Data sourced from The Values, Threats and Impacts Assessment[4].

Biodiversity Values	West Harbour - Mt Cargill			
	1. Aramoana - Heyward Point	2. Leith Saddle - Mihiwaka	3. Flagstaff - Swampy	4. Orokonui Ecosanctuary
Banana passionfruit	High	High	Med	High
Chilean flame creeper	High	High	Med	High
Darwin's barberry	High	High	High	High
Sycamore	High	High	Med	High
Gunnera	Med	High	High	High
Tradescantia	Med	High	Med	High
Bennetts wallaby	High	High	High	Low
Feral cat	High	High	High	High
Feral deer	High	High	High	Low
Feral goat	High	High	High	Low
Feral pig	High	High	High	Low
Hedgehog	High	Med	Med	High
Mustelids	High	High	High	High
Possum	High	High	High	High
Rats	High	High	High	High

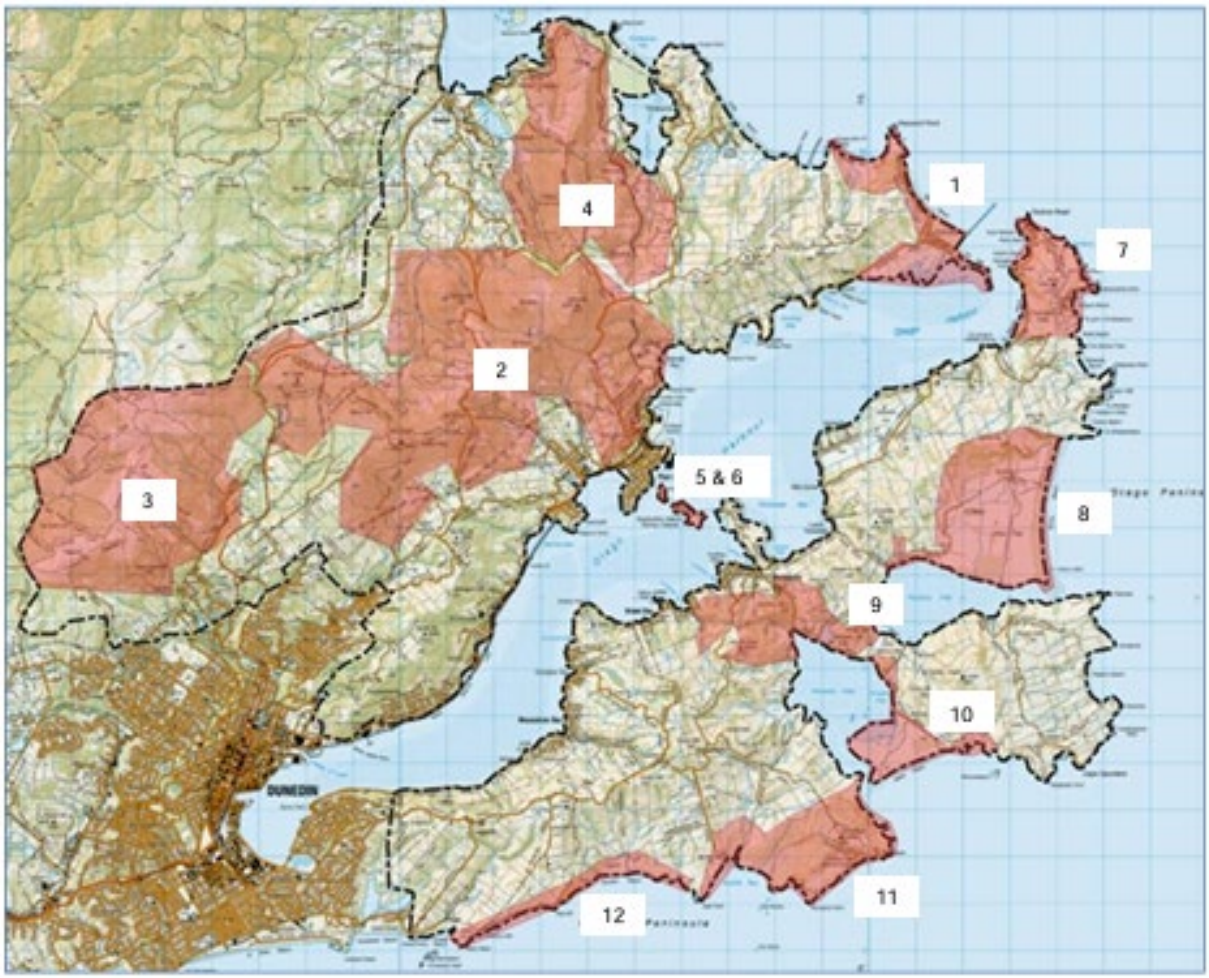


Figure 1. Map illustrating the six areas of high biodiversity and cultural values in the Otago Peninsula Site-led Programme area as 7. Peninsula Tip, 8. Okia - Papanui - Taiaroa Hill, 9. Harbour Cone - Dicksons - Varleys Hill, 10. Hoopers - Allans Beach - Papanui Beach, 11. Sandymount - Sandfly Bay, and 12. Boulder Beach. A total of 12 locations were identified in the Values, Threats and Impacts Assessment across the three Site-Led Programmes.

Threats to Values at the Site

Table 3. Predicted impact of threats on specified habitats (red = high, orange = medium, green = low). Data sourced from The Values, Threats and Impacts Assessment[4]. These ecosystem types are all found in the West Harbour Mt Cargill Site Led area.

	Ecosystem Types	Banana passionfruit	Chilean flame creeper	Darwin's barberry	Sycamore	Gunnera	Tradescantia	Bennetts wallaby	Feral cat	Feral deer	Feral goat	Feral pig	Hedgehog	Mustelids	Possum	Rats
Naturally Uncommon Ecosystem	Coastal turfs	Low	Low	Med	Low	Low	Low	Med	Med	Med	Med	Med	Med	Med	Med	Med
	Seabird burrowed soils	High	High	High	High	Low	Med	Med	High	High	High	High	High	High	High	High
	Seabird guano deposits	Med	Med	Med	Low	Low	Low	Med	Med	High	Med	Med	Med	High	Med	High
	Marine mammal haulouts	Low	Low	Low	Low	Low	Low	Med	Med	Med	Med	Med	Med	Med	Med	Med
	Active sand-dunes	Low	Low	Low	Low	Low	Low	Med	High	Med	Med	Med	High	High	High	High
	Dune slacks	Med	Med	High	Med	Med	Low	High	High	Med	Med	High	High	High	High	High
	Volcanic boulder fields	Med	Med	Med	Med	Med	Low	Med	High	Med	Med	Med	High	High	High	High
	Basic coastal cliffs	Med	Med	Med	Med	Med	Low	Low	High	Low	Med	Low	High	High	High	High
	Basic cliffs, scarps, and tors	Med	Med	Med	Med	Med	Low	Low	High	Low	Med	Low	High	High	High	High
	Cloud forest	High	High	Med	High	High	High	High	High	High	High	High	Med	High	High	High
Ecosystem types	Native forest	High	High	Med	High	High	High	High	High	High	High	High	Med	High	High	High
	Native shrubland/scrub	High	High	High	High	High	Med	High	High	High	High	High	High	High	High	High
	Native herb field	Low	Low	Med	Med	Med	Low	High	High	Med	High	High	Med	High	Med	High
	Freshwater wetland	Low	Low	Med	Low	High	Low	High	High	High	High	High	Med	High	Med	High
	Coastal wetlands	Low	Low	Med	Low	Med	Low	High	High	High	High	High	Med	High	Med	High
	Saltmarsh	Low	Low	Low	Low	Low	Low	Med	High	Med	Med	Med	Med	High	Med	High

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Protecting Values at Place

Current management

The Site-led programme in the Otago Regional Pest Management Plan (2019-2029)[1] seeks to manage pests whose presence, at or nearby, threaten the values that are special to the West Harbour Mt Cargill area (protecting the values at the place). Under the current RPMP, there is only one rule that applies for the species named as target species in this area, that is the harbour rule. Management and control activities of unwanted species within or adjoining this site are undertaken by Predator Free Dunedin with the support of Halo, plus a wide range of community groups.

Non-regulatory pest management and control activities

Council's role in the Site-Led programme is to provide education, advocacy, and coordination to support collaboration between community groups, mana whenua, and agencies to achieve long-term environmental protection outcomes.

A Working Group was established in 2023 in partnership between mana whenua and Council, with representatives from Te Rūnanga o Ōtakōu and Kāti Huirapa Rūnaka ki Puketeraki to guide programme delivery and implementation.

On 8 February 2024, the Environmental Implementation Committee approved $146,200 from the 2023/24 budget for the programme. Using the approved site prioritisation process, the West Harbour – Mt Cargill site Aramoana, and the Otago Peninsula site Sandymount–Sandfly Bay were identified as priority sites for 2024/25.

Community hui in March 2024 informed development of site management plans, with funding allocated to five community groups in June 2024. Progress hui later in 2024 confirmed strong project delivery and the need for further funding in 2025/26 to maintain outcomes achieved.

In November 2024, Council endorsed a recommendation for the Site-Led Programme to operate independently from the ECO Fund, with $200,000 allocated.

In January 2025, Council supported Working Group recommendations for continued support for the existing sites, alongside funding for additional priority areas: Okia–Papanui–Taiaroa Head and Leith Saddle–Mihiwaka. Community hui formed site management plans with projects currently underway, with final reporting due in July 2026.

At the completion of the first round of the 2024/25 Site-Led Programme for the Aramoana site, the following outputs were achieved:

- 421 ha of pest plants controlled
- 1,400 ha revegetated
- 124 additional traps
- More than 990 pest animals controlled
- 37 community members involved
- Over 398 volunteer hours recorded
- 10 community events delivered

Regulatory approach to pest management

Regionwide rules for bomarea, cape ivy, bone seed and old man's beard have been used. Properties on the West Harbour Mt Cargill are inspected under these progressive containment programmes.

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The current Otago RPMP 2019-2019 provides a limited regulatory framework for managing the identified species of interest in the West Harbour Mt Cargill site.

- There are no land occupier rules requiring management of named pest plant species.
- The only rule requiring land occupiers to manage named pest animal species is the 'no harbour ' rule. This rule has been successfully enforced on one occasion, to require a land occupier on the Otago Peninsula to provide access to a community group to carry out possums control on their property, as part of the possum eradication programme.
- No other compliance processes have been undertaken as part of the Site-led programme.

Plan Rule 6.5.5.1 No person shall keep, hold, enclose or otherwise harbour in any place, either in transit to or present at West Harbour – Mt. Cargill any: a) Bennett's wallaby; b) feral deer; c) feral goat; d) feral pig; e) mustelid; f) feral cat; g) hedgehog; or h) possum.

For the purpose of this rule place includes any building, conveyance, craft, land, or structure. A breach of this rule creates an offence under section 154N(19) of the Act.

Sections 52 and 53 of the Biosecurity Act 1993, which prevent the communication, release, spread, sale and propagation of pests, must be complied with. These sections should be referred to in full in the Biosecurity Act 1993.

Financial breakdown

Since the Site-Led Programme was initiated in 2023, Council has allocated funding through the Long-Term Plan to support delivery of Site-Led outcomes, including $146,200 in 2024/25, $200,000 in 2025/26, and $200,000 in 2026/27, for a total Council commitment of $546,200 (Table 4).

Of this funding, $252,128.40 has been distributed to the West Harbour–Mt Cargill Site-Led Programme across the Aramoana and Leith Saddle–Mihiwaka sites, representing approximately 46% of the total Council allocation over this period.

Table 4. Total funding distributed as part of the Site-led programme to the West Harbour – Mt Cargill sites: Aramoana and Leith Saddle – Mihiwaka in 2024/25, 2025/26 and 2026/27.

Financial Year	Council Allocation	Funding Distributed to West Harbour–Mt Cargill Sites
2024/25	$146,200.00	$73,100.00
2025/26	$200,000.00	$87,716.00
2026/27	$200,000.00	$91,312.40
Total	**$546,200.00**	**$252,128.40**

Effectiveness & Efficiency Evaluation

Has ORC done what it said it would do to implement the programme? *Principal measures*	**Partially.** ORC to lead: Yes, the Working Group (ORC and mana whenua) have led this programme Council inspection. No

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	Service delivery. No Collaborate, advocacy, education. Yes Requirements to Act. No Biosecurity Strategy. The RPMP talks directly to the 2019 Biosecurity Strategy however this strategy has not been renewed so this clause is no longer being met.
Have the objectives in the RPMP been achieved? Is this a result of implementing the rules in the RPMP?	**Partially – the Sapere report notes the project is partially effective[3].** **Objective 6.5.5.a** • Preclude establishment of feral deer and wallaby. Passive monitoring has not detected ungulate species or wallaby, to date. • Sustained control of feral cats, feral goats, feral pigs, rats, hedgehogs. Not implemented in this iteration of plan. • Progressively contain mustelids. Not implemented in this iteration of plan. • Progressively contain possums to achieve a 2% RTC. Not implemented in this iteration of plan. **Objective 6.5.5.b** • Progressively contain Banana Passionfruit, Chilean Flame Creeper, Darwin's Barberry, Sycamore, Gunnera, tradescantia. Direct funding provided. Partial progressive containment at some priority sites with high biodiversity and cultural values.
Is this programme still appropriate and has anything changed in relation to the issues the plan is managing?	• One of the most significant issues is the difficulty in enforcing pest control on private land. The current wording of the RPMP, particularly regarding "harbouring" pest species, has been too ambiguous, making it difficult to ensure compliance. • There is a separate rule for wallaby that contradicts the eradication rule. • List of sites needs to be reviewed – choice of sites and species. Banana Passionfruit, Darwin's Barberry, sycamore are not containable, Chilean flame creeper and tradescantia are in small numbers only so could be containable if aggressive control methods are used, gunnera is liked and hard to enforce removal • Possums – maintenance of reduced possums numbers is needed so rules are appropriate • Ungulate rules are best addressed by national and/or regional rules • Feral cats need to be reviewed and may still be appropriate – there is increasing public support, and these are now within the National Pred Free 2050 programme • Public support for the removal of hedgehogs – but unlikely to be enforceable • No longer appropriate to exclude land occupier control rules.

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	• Mustelid management will require an aligned and concurrent rabbit management programme. Control may be difficult as mustelids have an alternative food source.
Good Neighbour Rule	Nil.
Pest control spend	$252,128.40

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Engagement Outcomes

Early engagement feedback

The Regional Pest Management Plan (RPMP) review was informed by a comprehensive engagement programme involving mana whenua, stakeholders and the wider community. Engagement included an initial survey to identify priority pest species that informed the 'spotlight species', a series of community drop-in sessions across eight locations in Otago, a public discussion document and online survey to gather feedback on the management of the 'spotlight species,' and nine stakeholder workshops to gather sector-specific feedback on pest management priorities and programmes.

The summary contains information from:

a. Initial survey results
b. Community Drop-in session results
c. Discussion document and survey results
d. Stakeholder workshops

Strong themes collated during engagement were:

1. Site-led Programmes were consistently supported by land occupiers and stakeholders throughout the review as an effective tool for protecting biodiversity, cultural, and economic values through targeted, site-specific pest management.

2. Site-led Programmes were discussed at the Dunedin, Catlins, Balclutha, Wānaka, Oamaru, and Alexandra community drop-in sessions. Participants supported greater responsibility for land occupiers to manage pest plants, while noting that the term "harbouring" for pest animals may be difficult to interpret and enforce.

3. Discussion document feedback strongly supported retaining site-led programmes, yet respondents equally supported both region-wide rules and site-led programmes with rules, suggested both programmes could be used to manage pests. Respondents supported prioritizing site-led programmes in Otago's highest-value biodiversity areas, particularly the current Otago Peninsula, West Harbour/Mt Cargill, Quarantine and Goat Island site-led programmes.

4. Site-led programmes featured as a main topic at stakeholder workshops with support for landscape-scale, multi-species pest management in high biodiversity areas to protect values, with clearer management objectives, flexible programme boundaries and measurable outcomes. Discussion questioned whether site-led should be values-led (e.g. biodiversity), or pest-led (e.g. possum free Peninsula).

Targeted engagement feedback

1. The vast majority (87%) of respondents supported the inclusion of site-led programmes in the RPMP with West Harbour/Mt Cargill receiving the second highest level of support.

2. Feedback supported a flexible, integrated pest management framework that combines site-led programmes, regional-scale management, community involvement, and strong council leadership. While there was support for site-led programmes protecting high-value biodiversity areas, many submitters emphasised that mobile and widespread pests require coordinated landscape-scale management and long-term commitment to achieve meaningful outcomes.

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What can Otago Regional Council do to support this work?

1. Financial support
2. COntinue with the exsiting rules

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Need for Inclusion in Pest Management Programme

Is the pest subject to management under any other regulatory regime? E.g., Wild Animal Control Act, Resource Management Act.

Yes.

Some of the animal species such as feral ungulates are covered by the Wild Animal Control Act

Could a rule-based approach under the Biosecurity Act be reasonably used to remove / manage / mitigate the impacts of the pest? E.g., GNR, imposition of costs on exacerbators?

Yes.

a. Regionwide rules, such as the current rabbit management rule, can be used to support community action at site.

b. Good neighbour rules, to require pest management in adjoining public conservation land parcels, could be used to slow reinvasion into managed areas.

c. Site specific rules could be used to support the next steps in the West Harbour Mt Cargill pest management programme and Predator Free Dunedin programme.

Could site-specific rules protect the values at Otago Peninsula?

Yes.

Site specific rules could play a role in protecting the values at the site. However, the effectiveness and efficiency of site-led rules will need to be evaluated against voluntary action, and regionwide rules.

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Options for a Proposal for a New Plan

The preliminary options identified for protecting the values in the West-Harbour Mt Cargill area are:

Option 1	**Non-Regulatory Approach for Site Specific Species** **Objective:** Protect and preserve the values of a place by enabling and supporting community-led management and stewardship through effective non-regulatory interventions. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. All work would be voluntary, and the scale of work would be managed through annual planning and Long-Term Plan budget processes. Regionwide rules for species declared pest would apply at the site. Benefit: Low cost, support the building of community capability and capacity, align with other community programmes in adjacent areas. Engagement levels are very high, and land occupiers are providing access for pest management through current non-regulatory approaches. Risk: Some members of the community have requested greater protection for the area so there is reputational risk and there would be no regulatory backstop should an invasive species cause damage to the place. Mitigation: Site specific rules requiring land occupiers to undertake pest management are likely unnecessary at this site to ensure control activities occur. Engagement levels are very high, and land occupiers are providing access for pest management through the current non-regulatory approach.
Option 2	**Non Regulatory Approach with Regulatory Backstop** **Objective:** Protect and preserve the values of a place through enabling and supporting community-led management and stewardship through effective non-regulatory interventions PLUS rules to ensure compliance where significant investment and community coordination is occurring. **Measures:** ORC would use measures such as education, advocacy, Catchment Action Plans and funding via various funding streams. This work would be voluntary. The addition of land occupier rule will provide a regulatory back stop to ensure objectives can be successfully met. The scale of work would be managed through annual planning and Long-Term Plan budget processes. **Rule [1]:** The transportation and release of any pest species into any Site-Led Area is prohibited. **Rule [2]:** Land occupiers must control the following pest species on their property to protect biodiversity values in this Site-Led area, where directed by an authorised person, only where a wider community pest control programme for that pest species is being undertaken: - Possums (2%) - Feral cats (5% Camera Trap Index)

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	- Mustelids (5% TCI) - Hedgehogs (5% TCI) **Rule [4]:** Land occupiers must progressively contain the following species to zero density on their property: bomarea, Chilean flame creeper. **Rule [5]: Good Neighbour Rule.** Land occupiers must control the following species within 5m of their property boundary, to eliminate impacts on neighbours: Darwin's Barberry, banana passionfruit, tradescantia. **PLUS**: regionwide rules for all other pest species will apply. Benefit: Supports Predator Free 2050 and Predator Free Dunedin programmes. Provides a back-stop rule to enforce compliance on properties that are not voluntarily undertaking possum control. Risk: If Predator Free funding is not maintained, or priorities change, ORC will be required to maintain this programme for the term of the plan.
Staff Recommendation	**Option 2** Recommended due to the prior investment in the site and the need to maintain the gains. This site is a priority site for Predator Free Dunedin / Predator Free 2050.

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Assessment of the requirement for rules

Species	Regional Rules Adequate	Site-Led Exclusion	Site- Led Eradication	Site-Led Progressive Containment	Site-Led Sustained Control
Bennett's Wallaby	Yes	Yes But only if regional rules are removed	N/A	N/A	N/A
Feral Cats	Yes If rules are introduced to require land occupier control If a Pest Agent Rule allows for the microchipping / neutering of all domestic cats	No	No	No	Yes If no region wide sustained control rule Land occupier Responsibility to control and Pest Agent to Microchip/neuter
Feral Deer	No Feral deer are not present in this site led area. An exclusion rule is required to maintain current state.	Yes To prevent the transportation or establishment of feral deer.	No	No	No
Feral Goats	No	No	Yes To eliminate impacts on values in this site.	No	No
Feral Pigs	No Feral pigs are not present in this site led area. An exclusion rule is required to maintain current state.	Yes To prevent the transportation or establishment of feral pigs	No	No	No
Hedgehogs	No	No	Yes Land occupiers to control	Yes Land occupiers to control	No
Mustelids	No	No	No	Yes Land occupier responsibility to 5% TCI	No
Possums	No	No	Yes Land occupier responsibility rule to eliminate to 0% RTCI	Yes Land occupier responsibility rule to eliminate to 2% RTCI	Partially Land occupier responsibility rule to control to 5% RTC

Level of Analysis required for undertaking analysis

Clause 6 (1) of the National Policy Direction for Pest management 2015 outlines the factors that must be assessed when determining how much effort should be put into analysing the benefits and costs. These considerations are a pre-screening process for subsequent, more detailed analysis.

The initial assessment based on the criteria below indicates a higher level of analysis should be undertaken to support the decision on management programme for this programme.

Assessment Criteria 1: The likely significance of the pest or the proposed measures

High Significance	Moderate Significance	Low Significance
Potential for significant interest, or strong opposing viewpoints in community or high total costs.	*Potential for moderate interest, opposing viewpoints in some groups within community, or moderate total costs.*	*Not generally likely to be an issue for community public or organisations, or low total costs.*
Explanation:	There will be a high level of support for the programme but there may also be concerns from affected land owners such as forestry organisations that neighbour the reserve and that have high ungulate numbers.	

Assessment Criteria 2: Likely costs relative to likely benefits

High Cost to Benefit Ratio	Moderate Cost to Benefit Ratio	Low Cost to Benefit Ratio
Costs for the programme are likely to be similar to (or higher than) the benefits of the programme.	*Costs for the programme are likely to be lower than the benefits of the programme in most scenario*	*Costs for the programme are likely to be substantially lower than the benefits of the programme, even if the objectives are not fully achieved.*
Explanation:	The cost is relatively low due to the work current underway but increasing the requirements for ungulate control could significantly increase the costs.	

Assessment Criteria 3: Certainty of the impacts of the pest and/or the effectiveness of measures

High Certainty	Moderate Certainty	Low Certainty
Known to have significant impacts, spread risk known and the effectiveness of measures is well-known.	*Known to have impacts elsewhere in similar situations. Similar measures have been effective in other areas, or measures have only been somewhat effective.*	*Not much known about the pest's impacts. Measures are untested.*
Explanation:	The site is well studied and the impacts are understood.	

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Assessment Criteria 4: Level and quality of data available

High Quality	Moderate Quality	Low Quality
Very high-quality current distribution data; costs and impacts well established	*Some historical information or data from other sources (outside of the region or NZ). No specific targeted monitoring data. Costs and impacts capable of being estimated from case studies.*	*Little information available*
Explanation:	A reasonable amount is known about the impacts and populations of the invasive species at the site.	

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References

[1] Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

[4] Site-led Programme: Values, Threats and Impacts Assessment, Ahika Consulting, produced 26th July 2022.

Otago Regional Council. Regional Pest Management Plan 2019-2029.

[2] Meeting the Requirements of the National Policy Direction for Pest Management 2015. Version 1, September 2015. *Ministry for Primary Industries*.

[3] Review into the Effectiveness of the Otago Regional Pest Management Plan. 2025. *Sapere*.

[4] Site-led Programme: Values, Threats and Impacts Assessment, Ahika Consulting, produced 26th July 2022.

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Otago Regional Council. Pests and Biosecurity. https://www.orc.govt.nz/environment/biosecurity-and-pests/ Accessed on 24 June 2026.

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