Future of Possum Management in Otago

An Assessment of Delivery Approaches and Programme Options for the Otago Region



Image: Possum in a tree. Credit: Nga Manu Ngā Manu Nature Reserve.
Source: https://www.tuiatetaiao.nz/resources-library/photos/introduced-predators

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Executive Summary

Otago Regional Council (ORC) is facing a significant strategic decision regarding the future management of possums across the region. The planned withdrawal of OSPRI from landscape-scale possum control by 2028/29 marks the end of more than three decades of sustained investment in suppressing possum populations to support bovine tuberculosis (TB) eradication. While the primary driver for OSPRI's programme has been animal health, this programme has also delivered biodiversity benefits across large parts of Otago.

OSPRI has been completing possum control operations in the Otago region, in a staged manner over the last 12 years. In areas where TB eradication has been achieved OSPRI operations have ceased over time. However there are some areas still being managed by OSPRI where ORC could effectively continue the control efforts. ORC has a range of drivers for undertaking possum control, that include protecting production (economic), environmental, social and cultural, and human health values.

Experience from elsewhere in New Zealand demonstrates that possum populations can recover rapidly following the cessation of sustained control, resulting in increased browsing pressure on indigenous ecosystems, reduced biodiversity outcomes, and the erosion of previous public investment. ORC is therefore faced with a strategic choice:

1. Do nothing accept the gradual recovery of possum populations across the region or
2. Invest in possum management (the level of which is yet to be determined).

This report assesses a range of possum management approaches operating in New Zealand and evaluates their suitability for the Otago context. The analysis details the operational effectiveness, affordability, scalability, implementation risk of each approach and assesses the potential alignment of each against the following investment objectives identified by ORC staff.

ORC Investment Objectives

	Investment Objective Description
Investment Objective 1	• Ensure the programme is efficient and effective in supporting communities and landowners to achieve agreed biodiversity outcomes at identified high-value areas.
Investment Objective 2	• Ensure the programme has the potential to maintain the gains that OSPRI have made within TB Management Areas (TMAs) within the Otago region once they are transitioned out of the OSPRI programme.
Investment Objective 3	• Ensure the programme generates maximum return on investment from operational expenditure.

Delivery Approaches

The analysis has identified the following regional council delivery approaches used by the regional councils:

- Approach A: Landowner or occupier led programmes, where responsibility for ongoing control rests primarily with individual landowners/occupiers;
- Approach B: Contractor-based programmes, where councils coordinate and fund professional possum control operations;
- Approach C: Community-led programmes, supported through grants, partnerships, and other local initiatives.
- Approach D: Internal delivery through council operational staff.
- Approach E: A mixture of the above (as per table 6).

While all of the above approaches can contribute to biodiversity outcomes, they differ substantially in their ability to deliver consistent possum control results at landscape scale.

The evidence gathered from other regional councils indicates that contractor-led programmes provide the highest level of certainty that agreed possum density targets will be achieved and maintained. The resourcing and direct cost of this approach is however generally higher than landowner led approaches. Where RTCI targets are below 5%, community-led approaches have a high cost per hectare and generally these programmes cover smaller land areas than the landowner or contractor approaches. While the landowner-led and community-led approaches result in lower direct costs for council, they experience ongoing challenges associated with participation, compliance, monitoring, and maintaining long-term control effort.

The review also found that, for ORC, establishing capacity would require significant upfront investment or a shift of resourcing from other priority pest species and programmes, should ORC wish to add possum management to its current suite of biosecurity programmes.

Strategic Direction

This report concludes that a centrally coordinated contractor-based possum control programme provides the strongest alignment with ORC's objectives and offers the highest likelihood of achieving enduring biodiversity outcomes.

This approach would enable ORC to:

- Protect and maintain biodiversity gains achieved through previous OSPRI investment;
- Achieve and maintain agreed RTCI performance targets;
- Prioritise investment toward Otago's highest-value biodiversity assets;
- Deliver coordinated landscape-scale control across multiple land tenures;
- Retain flexibility to scale programme delivery in response to future funding and priorities; and
- Provide clear accountability for programme performance and outcomes.

Importantly, such an approach would not preclude community involvement in possum control. Rather, it could provide a strategic framework within which community groups, mana whenua, landowners, conservation organisations, and volunteers can continue to contribute to local biodiversity outcomes while professional contractors deliver the core landscape-scale control.

Key Strategic Risks

As ORC determines its potential future role in possum management, several risks have been identified through the analysis for further consideration:

- There is limited information regarding possum abundance and distribution across much of the region, including the total extent of reinvasion of former OSPRI control areas. This creates significant uncertainty around the scale of the work that may be required through a regional programme;
- There is limited contractor capacity nationally and within Otago and increasing contractor market concentration and associated cost escalation risks;
- There is ongoing uncertainty regarding the future availability of some pest control tools; and
- Any landscape scale programme will require substantial long-term funding commitment to sustain regional-scale possum control.
- The 'transition' of OSPRI areas to ORC would need to occur within three years of final OSPRI control (if not before), as such, any future possum programme would not be looking at covering historic areas.

These risks are considered manageable through further investigation but reinforce the need for early planning and a staged implementation approach.

Recommended Next Steps

Given the scale of the opportunity and potential investment required, it is recommended that ORC undertake further work focused on:

- Resolving the data gaps in relation to possum abundance and distribution including identifying and prioritising high-value biodiversity areas where investment will achieve the greatest ecological return.
- Engaging with Department of Conversation (DOC), Land Information New Zealand (LINZ), OSPRI, mana whenua, community groups, and key stakeholders to explore strategy/tactics and establish a coordinated regional approach.
- Investigate future funding mechanisms and consider Long Term Plan implications and develop a staged ORC implementation programme that aligns investment with available funding.
- Reviewing RPMP provisions to ensure an appropriate regulatory framework supports programme delivery.

Conclusion

The transition away from OSPRI-led possum control represents a significant biosecurity and biodiversity management challenge for Otago over the coming decade. While any future programme will require investment, the evidence gathered through this review indicates that a centrally coordinated contractor-based approach provides the strongest pathway for achieving durable biodiversity outcomes, maintaining low possum densities, and delivering long-term value for Otago communities.

The immediate challenge for ORC is not whether all former OSPRI areas can be maintained, but where strategic investment can deliver the greatest ecological benefit and protect the region's most important biodiversity.

1. Introduction

OSPRI has maintained and managed an extensive programme of possum control in the Otago region to reduce the threat and spread of bovine tuberculosis (TB) over the last three decades. Having largely achieved its TB free objectives, OSPRI is currently in the process of reducing landscape scale possum control within the region. At present, the 2028/29 financial year is projected to be the last year of large scale OSPRI control.

Managing the transition from the OSPRI programme is a key strategic consideration for Otago Regional Council (ORC) to ensure that the biodiversity and animal health gains achieved under the OSPRI programme are not lost. ORC identified this issue in 2018, when developing the ORC Biosecurity Strategy. The strategy includes an action to:

"Develop a possum control programme focusing on OSPRI completed areas for long-term bovine tuberculosis eradication and biodiversity gains. A volunteer landowner programme is anticipated, starting with the Pest Management Plan site-led areas, informed by successful approaches in other regions."

ORC currently has a very limited possum control programme, focused on three small areas around Dunedin managed by Predator Free Dunedin (PFD). This site led approach has been established based on a lean network of AT220 self-resetting traps to maintain possum population levels to 5% Residual Trap Catch Index (RTCI) in the Kilmog/Karitāne areas adjacent to the main Halo Project area.

The Otago community is aware of the OSPRI transition issues and is requesting larger scale control of possums throughout the region. ORC has engaged this analysis to assess the range of regulatory and non-regulatory possum control programmes/delivery approaches utilised by other regional councils within New Zealand to inform decision-making on a potential future programme/delivery approach for possum control in the Otago region.

1.1. Purpose

This report:

- Explores the drivers for this review and the current state for possum management within the Otago region.
- Provides an independent review of the regional scale suitability of the approach deployed by PFD during the pilot programme.
- Sets out possum programme approaches used by other regional councils.
- Analyses the potential delivery approaches against the aspirations, constraints and limitations of the ORC context.
- Provides the high level implementation costs for each delivery approach based on information provided by other councils.
- Sets out a recommended possum management approach for further consideration by ORC and the next steps to test this approach.

1.2. Scope

The scope of this report is limited to the analysis of possum programmes and delivery approaches implemented by:

- Waikato Regional Council
- Hawkes Bay Regional Council
- Horizons Regional Council
- Taranaki Regional Council
- Environment Southland
- PFD
- OSPRI

While it is acknowledged that a significant amount of possum control is likely undertaken by DOC, other agencies and individual landowners/occupiers within Otago, this is not part of the scope of this analysis.

Bay of Plenty Regional Council was initially part of the scope of this report, however this council does not have a formal possum control programme, nor does it have regulatory controls for landowners/occupiers to undertake control and therefore was not included in the analysis.

The analysis did explore the availability of possum control cost information by terrain however limited data was provided by the councils approached on this matter. The cost analysis set in this report does account for terrain in the assumptions used.

1.3. Methodology

To arrive at the findings and recommendations presented in this report, the following methodology has been undertaken:

- Review and analysis of all relevant background information/reports, including reports prepared by PFD and OSPRI (refer to references, section 9), the 2023 Possum Control Delivery Models Business Case prepared by Place Group Limited, and information available on participating council websites in relation to possum control (RPMPs and non-regulatory programmes).

- Workshops and meetings with ORC staff to establish known community aspirations for possum control within the Otago region, the limitations and constraints within which the council must work, and develop investment objectives and critical success factors to assist in assessing delivery approaches.

- Survey and follow up interviews with the councils listed in the scope to understand the nuances of their current possum programmes and delivery approaches, and the potential suitability of these delivery approaches for the Otago region.

- Meetings/online interviews with OSPRI and PFD to understand their programmes, including the challenges faced.

- Assessment of the potential costs of implementing different delivery approaches, as well as assessment against investment objectives and critical success factors to inform a recommended option for further consideration.

2. Drivers for change

2.1. Legislative Context and Regional Council Responsibilities

Regional councils have a statutory responsibility to provide leadership for pest management within their regions under the Biosecurity Act 1993. This responsibility includes developing and implementing Regional Pest Management Plans (RPMPs), coordinating pest management activities, and determining the most appropriate mix of regulatory and non-regulatory tools to achieve desired outcomes.

Section 12B of the Biosecurity Act outlines the role of regional councils in providing leadership for pest management. The Act does not prescribe how councils must deliver pest management programmes or the extent to which councils should directly undertake pest control operations. Instead, it provides flexibility to determine the most appropriate response based on regional priorities, available resources, community expectations, and the nature of pest threat/s.

As a result, regional councils across New Zealand have adopted a wide range of approaches to possum management. Some councils play a direct operational role through contractor delivered control programmes, while others focus on supporting landowners, community groups, or industry-led initiatives. The diversity of approaches reflects differing regional objectives, funding arrangements, historical programmes, and biodiversity priorities.

Within Otago, ORC currently fulfils its statutory responsibilities for biosecurity management through a combination of regulatory measures contained within the RPMP and other non-regulatory support for community-led biodiversity initiatives. However, ORC does not currently operate a region-wide possum control programme. Historically, much of the large-scale possum control undertaken within the region has been delivered by OSPRI as part of its national TB eradication programme and smaller scale operations undertaken by community groups.

The planned withdrawal of OSPRI from possum control operations in Otago presents a strategic issue for ORC. While there is no legislative requirement for ORC to directly replace OSPRI's activities, the council must determine what role it wishes to play in maintaining the gains and reduced possum populations that have resulted from decades of TB-related control. This includes considering whether existing arrangements remain appropriate, or whether a new programme is required to support the long-term management of possums within the region.

2.2. Current Possum Management Arrangements - ORC

As noted above, ORC does not currently undertake direct delivery of possum control at a regional scale. Possum management arrangements are limited to site-led Regional Pest Management Plan (RPMP) areas, community-supported initiatives, and localised pilot programmes. While these

arrangements can provide important biodiversity benefits in specific locations, they are not designed to replace the scale of landscape-level possum control previously undertaken by OSPRI.

This possum control is supported through a combination of regulatory and non-regulatory mechanisms. The RPMP identifies possums as one of a range of pest species managed through site-led programmes. The relevant site-led programme areas include the Otago Peninsula, West Harbour-Mt Cargill, and Quarantine and Goat Islands, as seen in figure 1.

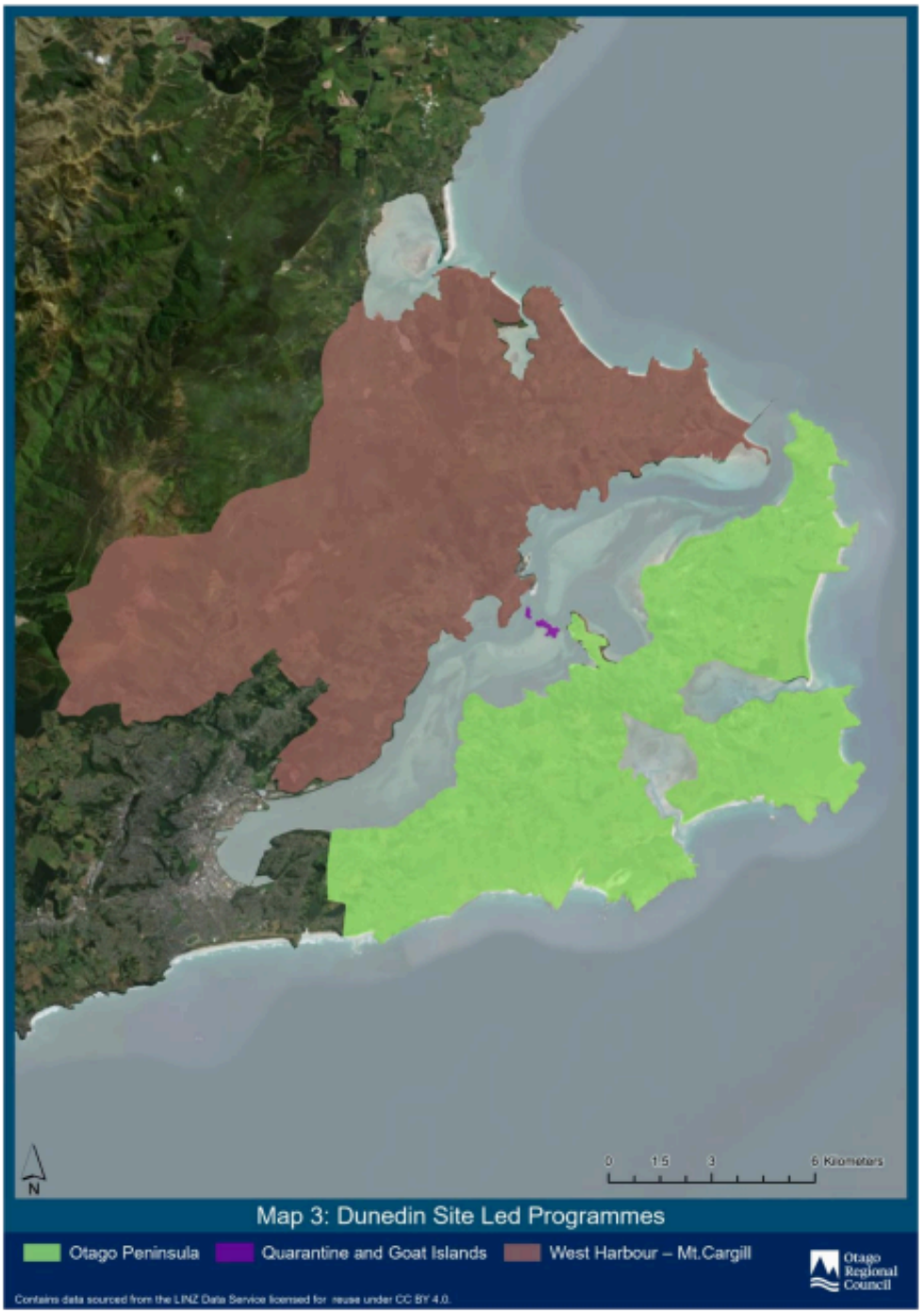


Figure 1: Dunedin Site Led Possum Control Programmes. Note. Source data from Otago Regional Council, Regional Pest Management Plan.

The RPMP currently includes a rule that no person shall keep, hold, enclose, or otherwise harbour possums in the identified site-led programme areas. ORC and Predator Free Dunedin (PFD) staff interviewed for this review noted that the harbouring rule has limited practical effectiveness as a compliance tool. This is because the word “harbouring” can create interpretation issues, potentially limiting the ability of the council to enforce compliance in support of possum control or eradication outcomes.

ORC also supports possum control through non-regulatory initiatives. The ECO Fund provides contestable funding to support community-led projects that enhance or protect Otago’s environment. In 2026, the total contestable environmental grant funding available through the ECO Fund was $919,800. This funding has supported a number of community groups undertaking possum control and related biodiversity work across the region.

The ECO Fund Kilmog/Karitāne programme is particularly relevant to this review because it was designed to maintain possum population levels to 5% Residual Trap Catch Index (RTCI). This differs from other Predator Free Dunedin programmes, which generally target lower RTCI levels or eradication outcomes in line with Predator Free 2050 aspirations.

2.3. Otago Context

Otago is New Zealand's second-largest region, covering approximately 3.2 million hectares or 12 percent of New Zealand’s total land mass (Means, 2024). Land use within the region is dominated by dry stock grazing, which covers approximately 60 per cent of the region, including extensive areas of lowland, hill country, and high country (Pearson 2025). Notably, approximately half of all drystock grazing occurs in the high country. The second largest land use is conservation and other non-developed land use classes, accounting for 24% of the region.

The region encompasses a diverse range of landscapes, including coastal environments, indigenous forests, high-country grasslands, alpine ecosystems, productive farmland, and extensive areas of public conservation land (PCL). This diversity creates a range of pest management challenges and requires different approaches depending on local environmental conditions and management objectives.

Conservation land and other non-developed land uses account for approximately 24 per cent of the region, with large areas managed by the Department of Conservation (DOC). The scale of PCL within Otago presents an opportunity for extensive collaboration on possum control throughout the region. The challenge is that DOC resources are limited and where control is not undertaken on PCL this could undermine possum control efforts elsewhere.

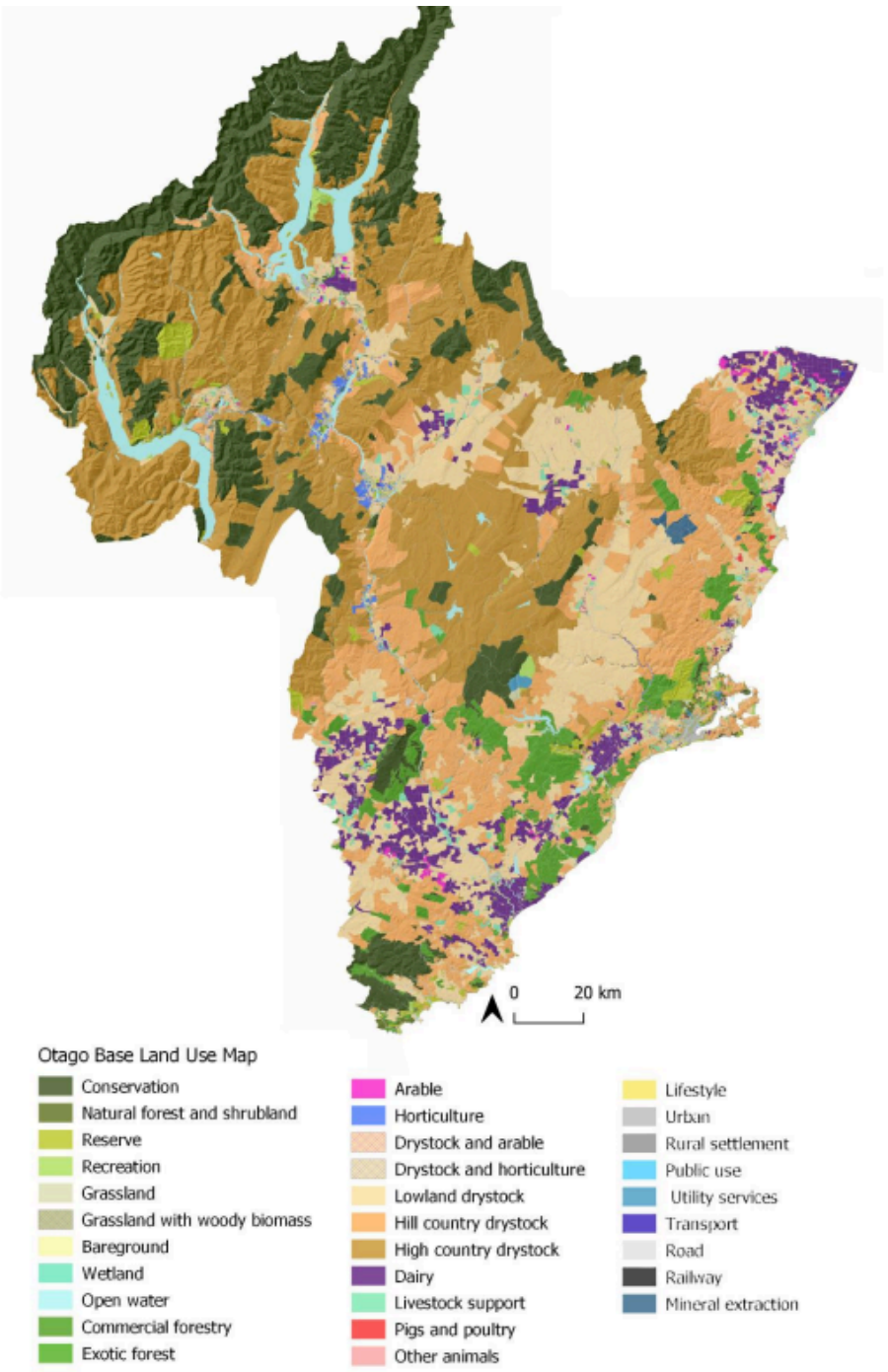


Figure 2: Otago base land use map. Map is symbolised to the primary land use in 2024. Note. Source data from Otago Regional Council, Land Use Mapping for the Otago Region.

These land use patterns, together with the scale and geography of Otago, create significant practical considerations for any future possum management programme.

Otago's biodiversity values are nationally significant and include extensive indigenous forest ecosystems, naturally uncommon ecosystems, and numerous threatened species habitats and communities. Many of these biodiversity values have benefited from possum suppression associated with OSPRI's bovine tuberculosis eradication programme and some are currently protected through

ecological restoration projects led by government agencies, mana whenua, community groups, and private landowners. Maintaining these gains will be an important consideration in determining the future role of possum management within the region.

The region's size and geography have important implications for programme delivery. Large distances between population centres, extensive areas of remote and rugged terrain, and relatively low population density across much of the region can increase the cost and complexity of implementing landscape-scale pest management programmes. A further complexity noted by OSPRI is the extent of possums throughout non-forested areas, in some cases comparable numbers of possums are being found in tussock lands and alpine. These factors can affect contractor mobilisation costs, operational logistics, monitoring requirements, and the ability to sustain regular control activities over large areas. Despite these challenges OSPRI has been able to deliver effective possum management at scale within the region.

The region contains a diverse mix of land ownership and management arrangements. Any future possum management programme will need to operate across PCL, private farmland, Māori land, lifestyle properties, and urban fringe environments. Achieving effective possum control at a landscape scale is therefore likely to require collaboration between multiple organisations, landowners, and communities. Additionally, ORC would need to include clear objectives and rules in their RPMP to enable access.

Feedback from councils and OSPRI during this review indicates that contractor availability is becoming an increasing constraint nationally. This may influence both the cost and feasibility of future delivery approaches and should be considered when assessing programme options.

2.4. OSPRI Transition and Implications

OSPRI is a New Zealand not-for-profit partnership between primary industries and government (OSPRI, 2020a). OSPRI works with the farming industry to keep animals disease-free. One major disease they work to control is TB, which is primarily spread through possums.

The goal of the TBfree programme under the current National Bovine Tuberculosis Pest Management Plan (NPMP) is the biological eradication of TB from New Zealand by 2055, with milestone targets of livestock TB freedom by 2026 and possum TB freedom by 2040 (OSPRI, 2025b). Since its inception in 1994, this programme has been highly effective at reducing the incidence of TB in domestic cattle and deer herds by more than 95%.

OSPRI has undertaken a significant amount of possum control throughout Otago to eradicate TB and the programme areas are set out in Figure 1.

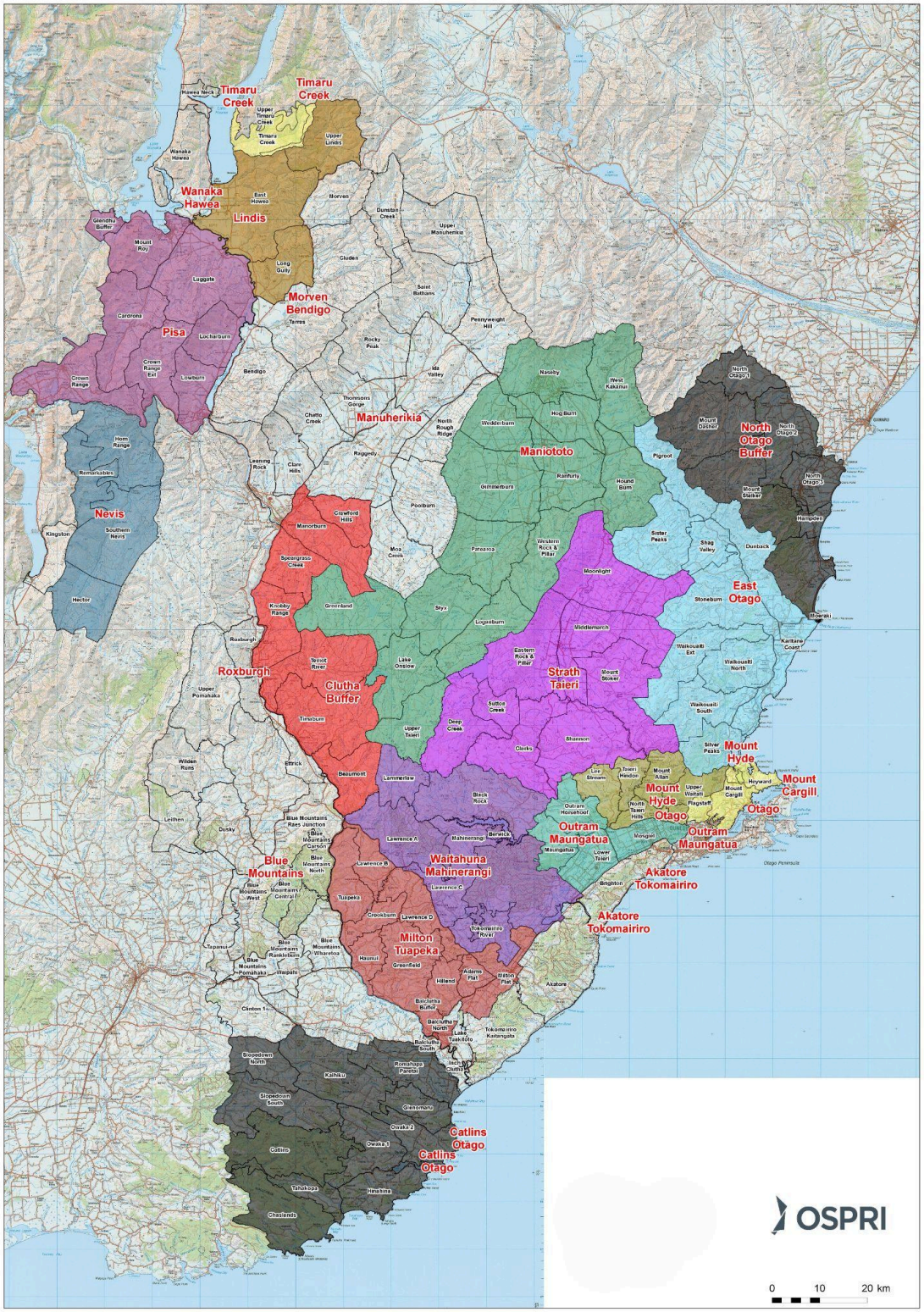


Figure 3: Displays OSPRI's TMA (TB Management Areas) map.

Due to the success of the programme, OSPRI is currently in the process of reducing the scale of its possum control in the Otago region and the 2028/29 financial year is planned as the last year of landscape scale control within the Otago region.

This planned withdrawal from possum control operations presents a significant issue for the future of possum management in Otago. While OSPRI's programme is designed to achieve TB eradication, it has also generated substantial biodiversity benefits over time. Without a successor programme, the gains made through the current possum control programme are likely to be lost through possum reinvasion.

Table 1 lists OSPRI's TB Management Areas (TMA) for the Otago region along with the last year of control. OSPRI is longer working in the Catlins (Otago), Blue Mountains, Roxburgh, Akatore Tokomairiro, Milton Tuapeka, Mt Cargill, North Otago, East Otago, Nevis, Wanaka, Hawea, and Mount Hyde.

Table 1: List of OSPRI's TMAs, area, and the last year of control.

OSPRI TMA's	Last year of control	Area of each TMA (hectares)
Akatore Tokomairiro	2014	63,481
Milton Tuapeka	2015	88,899
Catlins Southland	2016	60471
Blue Mountains	2016	64,358
Roxburgh	2016	16,558
Hokonui	2016	120,000
Wanaka Hawea	2017	23,836
North Otago	2018	149,990
Catlins Otago	2019	170,311
Nevis	2020	14,700
Mt Cargill	2024	5,340
East Otago	2024	147,210
Mount Hyde	2024	32,200
Pisa	2026	129,000
Stath Taieri	2028 (Expected)	175,170
Total		1,261,524

OSPRI is presently surveying the Luggate area (In the Pisa TMA) to test possums for TB. If no TB is found, then the only possum control carried out over the next 12 months will be from the current AT220 network. If the cattle herd becomes infected again, OSPRI will likely implement more possum control. With a large percentage of the Pisa TMA ready for Proof of Freedom[1], this leaves the Luggate Vector Control Zone, and Stath Taieri TMA in OSPRI's current programme as set out in Table 2.

[1] Proof of Freedom is a modeling process used by OSPRI, to determine if an area has achieved a 95% or higher probability of TB eradication in possum populations.
https://www.ospri.co.nz/assets/ResourcePDFs/TBfree-Proof-of-freedom-from-bovine-TB.pdf

Table 2: List of OSPRI's active vector control zones in their Stath Taieri TMA, and the expected last year of control in each zone.

Vector Control Zone	26/27	27/28	28/29	29/30
Clarks	Possum Control	Survey (species TBC)	-	-
Deep Creek	Possum Control	Survey (species TBC)	-	-
Eastern Rock and Pillar	-	Possum Control	Possum Control	Survey (species TBC)
Middlemarch	-	Possum Control	Possum Control	Survey (species TBC)
Moonlight	-	Possum Control	Possum Control	Survey (species TBC)
Mount Stoker	-	Possum Control	Possum Control	Survey (species TBC)
Shannon	-	Possum Control	Possum Control	Survey (species TBC)
Sutton Creek	-	Possum Control	Possum Control	Survey (species TBC)

The year in which control was last taken in OSPRI's TMAs could have an impact on the level of gains ORC can expect to maintain in those same areas. For areas in which the last year of control was more than 3 years ago, it can be assumed that a significant portion of the gains made by OSPRI have already been lost.

The withdrawal of OSPRI does not create a statutory obligation for ORC to replace OSPRI's programme. However, it does pose an opportunity. Without ongoing control, the areas that have most recently benefited from sustained population suppression will experience increasing possum densities over time, through reinvasion and population recruitment. In general terms, the longer the area has not been controlled, the worse the extent of reinvasion.

ORC therefore needs to determine whether existing regulatory and community-based mechanisms are sufficient, or whether additional intervention is required to maintain biodiversity outcomes.

3. Objectives and Key Considerations

A workshop was held with key ORC biosecurity staff in May 2026 to explore council aspirations for the future possum management in the region. This workshop included an analysis of potential limitations and constraints.

Following the workshop, the aspirations for possum control in the Otago region were synthesised into a set of investment objectives. Investment objectives are used to define success by providing a clear set of outcomes that any investment in change aims to achieve. The developed objectives as set out in section 3.1 were reviewed with ORC staff to ensure accuracy and have been used as a basis to assess potential possum control programme options.

3.1. Investment Objectives

Table 3: Agreed Investment Objectives.

	Investment Objective Description
Investment Objective 1	● Ensure the programme is efficient and effective in supporting communities and landowners to achieve agreed biodiversity outcomes at identified high-value areas.
Investment Objective 2	● Ensure the programme has the potential to maintain the gains that OSPRI have made within TB Management Areas (TMAs) within the Otago region once they are transitioned out of the OSPRI programme.
Investment Objective 3	● Ensure the programme generates maximum return on investment from operational expenditure.

3.2. Critical Success Factors

To supplement the investment objectives, and allow a more robust analysis of regional approaches and potential options for Otago, the following critical success factors were also developed and utilised to assess each option.

Table 4: Critical Success Factors.

Proposal specific critical success factors	**Broad Descriptions**
Strategic fit	How well the option: ● Meets the agreed investment objectives, related business needs and requirements, ● fits with other strategies, programmes and projects, and ● contributes to social sustainability initiatives regarding upskilling and working with mana whenua.
Potential value for money	How well the option: ● Optimises value for money (i.e. the optimal mix of potential benefits, costs and risks).
Supplier capacity and capability	How well the option: ● Matches the ability of potential suppliers to deliver the required

	services, and ● is likely to result in a sustainable arrangement that optimises value for money over the term of the contract.
Potential affordability	How well the option: ● Can be met from likely available funding, and ● matches other funding constraints.
Potential achievability	How well the option: ● Is likely to be delivered given the organisation's ability to respond to the changes required, and ● matches the level of available skills required for successful delivery.

3.3. Limitations and Constraints

In addition to the above, ORC identified a number of constraints and limitations in relation to the implementation of a large scale possum control programme unique to its specific region as set out in Table 5. These challenges reinforce the importance of identifying a delivery approach that not only achieves required outcomes, but is also practical, affordable, and capable of being sustained over the long term.

Table 5: ORC's limitations and constraints affecting their delivery of possum control.

Limitation/ Constraint	Description
Rating base	Otago has a moderate rating base relative to the size of the region and the potential scale of a future possum management programme. The affordability of any future programme, and the extent to which costs can be recovered through rates, will be a key consideration in determining the scale and delivery approach of any intervention.
Equitable representation of districts	Population distribution within Otago is uneven, with larger population centres such as Dunedin, Wānaka, and Queenstown containing a significant proportion of the region's residents, while large geographic areas have comparatively small populations. Community-led delivery approaches may therefore result in uneven levels of participation and investment, with areas of high biodiversity value but lower population density potentially receiving less attention.
In-house expertise	ORC does not currently possess the operational staff, systems, or technical capability required to directly deliver possum control at a regional scale. Establishing an internal delivery function would require significant investment in staff capability, operational systems, equipment, and programme management.
Funding and tradeoffs	The establishment of a large scale possum management programme would require additional funding and organisational resources. Investment in possum control may therefore involve trade-offs with other council priorities and programmes, requiring careful consideration of the biodiversity outcomes sought relative to the cost of delivery.
Possum population data	Existing possum monitoring is largely concentrated within current site-led programme areas. Limited information is available regarding possum current abundance and distribution across much of the wider region.

Contractor Market Capacity	The availability of experienced possum control contractors within Otago is limited. Feedback from OSPRI and other regional councils suggests that contractor availability is becoming an increasing constraint nationally, creating risks around programme delivery, cost escalation, and long-term market capacity.

4. Lessons from other regions

In 2023, Place Group completed an analysis of the effectiveness and efficiency of possum control delivery approaches in the same regions addressed in this report. A key driver for the review was to analyse whether the efficiency (level of input relative to output) and effectiveness (level of success relative to input) of possum control programmes (PCPs) in each region had been reducing over time. The review identified some key strategic drivers for change in each region, and recommended ways in which regional councils could increase the efficiency and effectiveness of their possum control programmes.

Despite this, to date, there has been limited implementation of the recommendations. Through engagement with the same councils in preparing this report, this appears to be primarily due to the difficulty of changing established delivery approaches, particularly where an alternative option involves a higher initial and longer term investment.

Several councils advised that their possum control programmes have been maintained primarily because they are longstanding programmes with established funding arrangements and community expectations. Some interviewees indicated that, if required to make the decision today, they would be unlikely to establish equivalent programmes due to the substantial cost of delivery and the increasing need to prioritise investment across a range of competing environmental outcomes. Specifically in TRC's view, alternative pest management or biodiversity initiatives may provide a greater return on investment in some circumstances.

4.1. Delivery approaches

The councils and organisations reviewed as part of this assessment operate the following broad approaches to possum control:

- Landowner or occupier-led delivery
- Contractor-based delivery
- Community-led delivery
- Internal delivery through council operational staff

While some councils utilise a single delivery approach, others apply a combination of approaches depending on local circumstances, programme objectives, and operational requirements.

Table 6 provides a summary of these delivery approaches by council including funding arrangements. An expanded version of Table 6 is provided in Appendix B to provide a complete overview of each organisation's service delivery model.

Table 6: Current service delivery approaches for possum control programmes.

Organisation	Delivery approach	Total Programme area (ha)	FTE Required to support programme	Funding mechanisms
Waikato Regional Council	100% Contractor	517,219	4-6	A combination of targeted rates and general rate
Horizons Regional Council	Mixed contractor/ council staff approach with a ratio of 67:33	1,476,691	17	A combination of targeted rates for properties greater than 4 hectares, and general rate
Taranaki Regional Council	Landowner/ occupier approach	232,000	4-6	General rate
Environment Southland	Contractor/ Landowner/ occupier approach with a ratio of 50:50	430,000	2-4	Targeted biosecurity rate on all land over 4ha
Hawkes Bay Regional Council	Landowner/ occupier approach	747,750	2-4	General rate
OSPRI	100% Contractor	1,261,524	-	-
PFD Kilmog/Karitāne	Community-led/ Contractor	6240	-	-

The following sections describe each delivery approach and outline how they are currently implemented by the participating councils.

4.1.1. Contractor-based Delivery Approach

Under a contractor-based delivery approach, possum control operations are undertaken by contractors engaged and managed by regional council staff. Contractors are responsible for completing control work to agreed standards and are typically engaged through performance-based contracts linked to achieving specified RTCI targets. The council / organisation is also responsible for appointing independent contractors to conduct pre and post RTCI monitoring. The cost of any rework and monitoring, if required, falls on the contractors. Furthermore, annual auditing of performance against issued contracts for control operations is undertaken.

All councils consulted utilise contractors to some extent; however, Waikato Regional Council (WRC) is the only organisation operating a fully contractor-delivered possum control programme. Under this approach, contractors are responsible for undertaking control operations and achieving agreed outcomes. Where target RTCI levels are not achieved, contractors are generally required to undertake additional work at their own cost until contractual performance standards are met.

A key characteristic of this approach is that it provides councils with flexibility to increase or decrease programme delivery in response to changing priorities or funding availability. It also avoids the need for councils to maintain specialist staff, operational equipment, and supporting infrastructure.

However, councils using this approach identified a high level of reliance on the contractor market. WRC noted that the number of suppliers capable of undertaking large-scale possum control is relatively limited, with much of the market concentrated among a small number of providers. This has contributed to increasing contractor costs and creates a risk to programme continuity should contractors exit the market. OSPRI's operations have identified that Otago also has a very limited number of contractors providing these services, which raises the same risks and issues in relation to the use of contractors.

4.1.2. Internal Council Delivery Approach

Internal delivery involves possum control operations being undertaken by council-employed operational staff. Of the councils reviewed, Horizons Regional Council is the only organisation that maintains a dedicated in-house possum control capability.

Horizons Regional Council delivers approximately one-third of its programme using council staff, with the remaining work undertaken by contractors. This mixed delivery approach allows the council to determine which areas are most appropriately managed internally and which are better suited to contractor delivery.

The viability of Horizons' internal delivery approach is closely linked to the maturity of its programme. Established in 2006, the council has developed specialist staff capability, operational systems, equipment, and institutional knowledge over nearly two decades. As a result, Horizons reports that its in-house delivery costs are broadly comparable to those of contractors operating in similar terrain.

Some other councils found that they did not have the resources or expertise to deliver possum control in-house. Due to the high overheads of many councils, along with the significant up front costs of the infrastructure required for in-house delivery of possum control, many councils find it more efficient to deliver these services through contractors.

4.1.3. Landowner/occupier Delivery Approach

Under a landowner/occupier-led approach, responsibility for ongoing possum control rests primarily with landowners, while the council provides varying levels of support, monitoring and compliance, education, and enforcement. Compliance is enforced under the rules in RPMPs, the content of those rules, and how they are applied is integral to achieving effective compliance. Often the council operates in the role of facilitator, assisting landowners to conduct possum control in a range of different ways. This approach is currently being used by the Taranaki Regional Council (TRC), Environment Southland (ES), and Hawke's Bay Regional Council (HBRC), although each council operates on a slightly different basis.

TRC conducts the initial possum control through contractors engaged to reduce possum numbers to at or below 5% RTCI. Landowners are then required to keep possum numbers below 10% as an incentive to maintain a minimum level of control following initial knockdown. TRC staff continue to monitor possum numbers to ensure maintenance work is being undertaken to the required standard, and if necessary, the council will enforce the requirement.

TRC has noted difficulty in ensuring landowners maintain their control areas below the 10% RTCI target. While some do a good job, some will only carry out control work when TRC identifies non-compliance through random monitoring. Roughly ⅓ of properties are monitored each year. In one outlier example, TRC saw one monitoring line come back at a 60% catch rate.

HBRC monitors the possum population in Hawke's Bay to identify areas requiring greater control, and carries out initial control on land that is being added into their landowner/occupier approach. Within eradication areas, HBRC's RPMP has rules enforcing a 0% RTCI. Possum Control Areas are enforced at or below 4%. If the landowner/occupier's land adjoins PCL, then HBRC manages the land due to the proportionally higher re-invasion rate. The majority of the Priority Possum Control Areas (PPCAs) in Hawkes Bay have a low percentage of habitat (bush), and are mostly farmland. If farmers have a higher than average percentage of habitat on their land, HBRC will cover the balance of the contractor costs for maintenance. The current average RTCI is 2.3% for the 2025/2026 financial year over the 146,000ha area that is monitored.

Within Possum Control Areas ES, through their RPMP, require landowners to maintain RTCI at or below 5%. Outside of Possum Control Areas this is increased to at or below 10%. ES offers a 100% subsidy on bait if a pre-approved contractor is used by the landowner. If the landowner chooses to fill the bait stations themselves, the Council supplies the bait at cost. Initial control efforts are limited to new Possum Control Areas (PCAs). General population trend monitoring is carried out over approximately 30% of the total area under possum control each year by students using wax tags. This means that PCA's are monitored every 3-4 years. An independent contractor is engaged to apply the standard trap-catch monitoring method for areas causing concern or where required for enforcement.

While the operational details differ between councils, all landowner-led programmes rely on ongoing engagement, monitoring, and support to ensure possum populations remain below target levels.

4.1.4. Community-led Delivery Approach

Community-led possum control approaches operate across New Zealand, many gaining support from their respective regional councils. All councils surveyed, have some means of funding/supporting communities to undertake biodiversity work, inclusive of possum control, that is separate to their centralised possum control programmes as described above.

PFD's Kilmog/Karitāne programme has been analysed as an example of a community-led approach. This programme was established based on a lean network of AT220 self-resetting traps to maintain possum population levels to 5% RTCI. This approach was designed to test the key objective of whether landowners supported the approach and whether a lean network of AT220 was effective.

The programme was designed to eliminate the need for landowners to undertake significant work; however, this required substantial upfront initial investment (refer Table 13). The intensive trapping network was supplemented with initial targeted work in high possum population areas.

PFD has stated in their most recent Kilmog/Karitāne project update (May 2026) that the combined RTCI in the area had reduced to 5%, from a pre-control level of 37.2% in December 2023. The RTCI was recorded as 4.5% for the Silver Peaks–Kilmog block and 5.7% for the Karitāne Coast block. These

results confirm that the AT220 self-resetting trap network is effectively maintaining low possum densities following initial knockdown operations.

After 5 years, the AT220 traps are noted to be working well, with a team checking them, and completing any necessary maintenance, every 6 months. At some future point, it is expected that the traps will need to be replaced.

While landowners are supportive of the PFD programme there is limited desire to take on the management and delivery of the programme.

The area for the trial is relatively small, with 242 AT220 traps deployed over 6,240 ha. Only 1,894 ha of habitat exists within the overall operational area, resulting in a trapping density of one device for every 8 hectares in the area of habitat. It was noted by other councils (ES & TRC), that this approach of possum control is prone to a significant loss of efficiency on a large scale, especially in areas of tussock or high country, where issues arise in relation to placement of traps and serviceability due to accessibility.

An additional issue highlighted by HBRC in relation to a trap led approach at landscape scale is where possums abundance may exceed the intended suppression threshold, for example, through re-invasion from adjacent PCL, then possums can overwhelm the network, causing the traps to lose effectiveness. This necessitates the need for further investment into initial knock-down control.

4.2. Comparative Assessment

The councils interviewed as part of this review have identified a range of advantages and disadvantages associated with their current possum control delivery approaches. In many cases, the strengths and weaknesses of each approach reflected trade-offs between cost, programme effectiveness, community engagement, and operational certainty.

While individual councils emphasised different aspects of their delivery approaches, several common themes emerged.

1. Certainty of achieving and maintaining the target RTCI.

Contractor-based and in-house approaches were consistently associated with greater certainty of achieving RTCI targets and maintaining biodiversity outcomes, whereas landowner-led and community-led approaches were generally viewed as less reliable in maintaining long-term control targets, particularly over larger areas. This is due to the lack of a central coordination, and reliance on landowners/community to carry out control where other competing priorities may exist. A mixed approach, that involves both contractor and landowners, can also be used effectively to achieve RTCI targets.

2. Preferred management approaches

A consistent theme emerging from the interviews was that no single delivery approach was universally preferred. While contractor-based approaches provided certainty they were also associated with higher delivery costs and increasing reliance on a limited contractor market. In contrast, landowner and occupier-led approaches were typically less expensive to administer and fostered stronger community ownership, but often required significant monitoring, support, and

enforcement to maintain control standards over time. Councils operating mixed delivery approaches reported benefits associated with flexibility, community engagement, and operational control, although these approaches also introduced additional complexity and management requirements.

3. Collaboration and Ongoing Landoccupier relationships.

Community engagement and strong relationships with landowners were identified as important benefits of both mixed and landowner-led approaches, although councils noted that participation and compliance often declined over time. These findings highlight the need to balance cost, operational effectiveness, and long-term sustainability when considering future possum management options for Otago.

Table 7 summarises the key advantages and disadvantages identified by each council in relation to current delivery approaches.

Table 7: Identified benefits and disadvantages of selected delivery approach.

Organisation	Advantages of delivery approach	Disadvantages of delivery approach
Waikato Regional Council 100% Contractor delivery approach	• Ensures that RTCIs are guaranteed to be met, and work is done to a high level. • Use of contractors is more cost-effective than in-house delivery. • WRC can turn contractors on or off, as required.	• Limited contractor pool, resulting in a duopoly that is causing increased prices. • Contractors carryover of control work is becoming more frequent. • Diminished relationships with communities, as these relationships are being held by contractors. • Concern around the reliability of contractor capacity - there is a significant risk that if a contractor exits the market, WRC would be unable to complete its work. • Delivery is relatively more expensive than other approaches used by other councils.
Horizons Regional Council Mixed contractor/ council staff delivery approach	• Ensures that RTCIs are guaranteed to be met, and work is done to a high level. • The Contractor / In-house approach allows HRC to strategically control specific management areas in-house to save costs. • Creates clear visibility of HRC doing work in the community. • Allows for strong relationships with landowners.	• Delivery is relatively more expensive than landowner/occupier approaches. • In-house delivery is rising at a faster rate relative to contractor delivery, which may, in the future, result in in-house delivery becoming unaffordable.
Taranaki Regional Council Landowner/ occupier approach	• Creates clear visibility of TRC doing work in the community. • The delivery approach is relatively cost effective to deliver. • Allows for strong relationships with the community.	• RTCIs are not guaranteed to be met, and often are not met. • Landowners are often uninterested in carrying out control to a high level once they understand the level of work required; engagement from landowners in delivering possum control decreases over time • Intensive monitoring of regulatory compliance is required to ensure work is delivered. This is a high cost to council. • Coordination of properties is limited, and work is completed ad hoc.

Regional Council	Advantages of delivery approach	Disadvantages of delivery approach
Environment Southland Contractor/ council staff/ Landowner	• The delivery approach is relatively cheaper than other approaches used by other councils. • Allows for strong relationships with the community • Creates clear visibility of ES doing work in the community.	• RTCIs are not guaranteed to be met, and often are not met. • Landowners are often uninterested in carrying out control to a high level. • Level of work noted to reduce over time, as landowners become less engaged. • Instances of contractors not wanting to work with landowners, due to historic difficulties with some landowners being difficult. • Coordination of properties is limited, and work is completed ad hoc.
Hawkes Bay Regional Council Landowner/ occupier approach	• Farmers were the initial driver of this approach, so community buy-in is high. • The approach is relatively cheaper than other approaches used by other councils, and as of present, working effectively. • Allows for strong relationships with the community. • Creates clear visibility of HBRC doing work in the community.	• While RTCI targets are largely being met, there is a worry that, over time, landowners are becoming more complacent, and the quality of work will decrease. • Increased monitoring is required to compensate for landowners losing interest. • Coordination of properties is limited, and work is completed ad hoc.
Community-led approach	• Ensures that RTCIs will likely be met, and work is done to a high quality standard. • Creates clear visibility of possum control work in the community • Allows for strong relationships with landowners. • Can be used to avoid significant VTA usage is likely more supported by the community and has a strong level of future proofing.	• Delivery is costly and labour intensive over large areas • Requires significant upfront investment for the bait stations to achieve initial knockdowns. • The trap network delivery approach is reliant on maintaining possum populations at low levels and this can be overwhelmed if possum levels get too high.

4.3. Key Lessons Learned and Delivery Challenges

As part of the review, participating councils and organisations were also asked to identify the key challenges they had experienced while delivering possum control programmes. While some challenges were specific to particular delivery approaches, several common themes emerged across all programmes. The key challenges identified for each delivery approach are summarised in Table 8.

The following overall observations can be drawn from these findings:

- Contractor availability is emerging as a significant constraint nationally and may become increasingly important if regional councils seek to expand possum control programmes following OSPRI's withdrawal.
- Councils operating landowner-led approaches consistently reported challenges in maintaining long-term participation and ensuring possum control standards are achieved over time.
- Many of the challenges identified are not solely related to the delivery approach itself, but rather to broader factors such as funding constraints, reinvasion from unmanaged areas, and the availability of effective control tools.

These findings reinforce the importance of determining a delivery approach that not only aligns with ORC's objectives, but is also capable of being sustained over the long term.

Table 8: Key challenges by delivery approach

Delivery approach	Key challenges
Contractor Delivery approach	• Limited contractor pools result in increased prices and a notable risk of failing to meet work if a contractor exits the market. As this issue was highlighted by OSPRI, which primarily uses two contractors in the Otago region, ORC can expect to face this issue if a contractor approach is chosen.
Internal Delivery approach	• High upfront infrastructure costs and council staff overheads can result in very high establishment costs. • Requires council to hold all costs for training and development. • Requires council to operate/build and maintain infrastructure for operations.
Landowner/Occupier Delivery approach	• Landowner/Occupiers that undertake work themselves are often reliant on the use of brodifacoum, which is currently under review by the Ministry for Primary Industries (MPI). This creates considerable risk of losing the primary tool in their toolbox. • The use of bait stations in the Landowner/Occupier approach has been considered largely unsuccessful due to the upfront cost associated with purchasing traps, and their lack of effectiveness in stations/high country. • The bait station method can be overwhelmed if RTCI gets over a certain threshold, which would result in initial control being required again. • Some landowners are stopping possum control and prioritising alternative income streams, such as the feral deer industry. • TRC, HBRC, and ES all noted that without their current budget constraints, they would look to transition to a contractor approach due to the inefficiencies and relative ineffectiveness of their current approach.
Community-led Delivery approach	• Similar to the landowner/occupier challenges, the PFD Kilmog/Karitāne approach raises challenges regarding the bait station's ability to be used in large scale, and the level of effectiveness in remote stations/high country. • There is some uncertainty regarding the lifespan of AT220 traps, while expected to last over 5 years, replacement will be required eventually.
All	• ES and HBRC noted that by the time OSPRI inform of any transition out, typically, that area had been monitored to assess the level of TB infestation, the last year of control was typically many years beforehand, and so the gains made by OSPRI had already been lost before they had a chance to start control. • Use of Double Tap bait has been noted by multiple councils to be effective in targeting rats; however, lacking effectiveness in targeting possums. Many councils that have used Double Tap bait in the past have since discontinued its usage. • DOC is not undertaking control over all PCL. Where landowners adjacent to PCL are undertaking possum control, but the PCL itself is not being controlled by DOC, this may create tension. Because PCL often contains optimum possum habitat, when control is not routinely undertaken, these areas can act as possum reservoirs contributing to rapid reinvasion of neighbouring properties.

4.4. Regulatory compliance and enforcement

Table 9 provides a summary of the regional pest management plan framework used by each region to support the delivery of the possum programmes, along with a summary of the associated implementation difficulties and lessons learned. Further content on the regulatory arrangements for each region is provided in Appendix A.

Table 9: Regional approach to regulatory compliance and RPMP rules, difficulties of the current approach, and lessons learned.

Approach	**Regulatory approach taken**	**RPMP Rules** (See Appendix A for specific rules)	**Difficulties of approach**	**Key Lessons learned**
Contractor / In-house	• General rules ensure that council / contractors have the ability to access private land to carry out possum control operations.	• HRC - Good Neighbour Rule which requires occupiers to manage possums where neighbours are undertaking control. • WRC - General rule banning possession of possums, and allowing possum control and monitoring to be carried out in the region.	• Landowners are generally supportive of the work being undertaken. However, difficulties may arise if they block contractors/council from entering the land to carry out pest control.	• Regulatory enforcement is expensive and time-consuming. • Regardless of approach, clear rules allowing regulatory enforcement are beneficial, but should only be used as a last resort. Possum control is most effective with the support of the community, and this is harder when undertaking regulatory enforcement. • In a landowner/contractor-led approach, there are other means to avoid the use of regulatory enforcement. HRC works by increasing bait station frequencies in proximity to any area not under active control. • General region-wide rules are hard to manage/monitor and often ignored, rendering them effectively useless. • Rules can be used to drive conversations with DOC and OSPRI. • In the Landowner/Occupier approach, HBRC enforces the lowest RTCI (4%), with the greatest success. If councils carry out the initial control, and landowners are engaged, setting a lower RTCI may actually be easier for
Landowner / Occupier	• General rules that apply within the selected area, ensuring that Landowners / Occupiers must carry out possum control below a select RTCI.	• TRC - General Rule for the Self-Help Possum Control Programme and Good Neighbour Rule, ensuring regulatory enforcement is possible. • HBRC and ES - General rules for the Self-Help	• Most landowners/occupiers are generally supportive of the work being done, but often fall behind on completing the work. Strong relationships are required, with significant monitoring and a strong reliance on the ability to threaten regulatory	

		Possum Control Programme ensuring regulatory enforcement is possible.	enforcement if needed.	Landowners, because it maintains possum populations lower down the invasion curve, resulting in lower rates of re-invasion.

4.5. Comparative costs of delivery approaches

Each regional council participating in this review has provided indicative information regarding the costs associated with delivery of their possum control programme on a per hectare basis as set out in Table 10. This information was requested to provide an understanding of the relative cost differences between delivery approaches to provide an insight into potential future investment for ORC.

It is important to note that each programme reviewed operates under different environmental, operational, and organisational conditions, including variations in terrain, habitat type, possum density, accessibility, monitoring requirements, programme scale, delivery methods, and target RTCI levels. As a result, differences in cost alone should not be used as a proxy to evaluate efficiency or effectiveness.

The following key assumptions and limitations apply when interpreting the cost information:

- Costs provided by participating councils are based on information provided through engagement and have not been subjected to a full cost analysis. The costs therefore may not include all programme overheads, monitoring costs, compliance activities, or internal management costs.
- Control methods vary significantly between regions and include aerial control, ground-based toxin application, trapping networks, bait station networks, and mixed delivery approaches.
- Terrain and accessibility have a significant influence on cost. Operations undertaken in remote, steep, or heavily forested environments are generally more expensive than those undertaken on accessible farmland, as a result of this, some regions have provided a cost range, other than an average, as reflected in the table below.
- Target RTCI levels differ between programmes. Generally, lower RTCI targets require greater investment and more frequent control operations.
- Some programmes involve initial knockdown control followed by lower-cost maintenance control, while others undertake ongoing intensive management.
- Cost information provided by councils reflects current programme delivery costs for 2025/26.

Table 10: Comparative costs associated with each organisation's method of delivery.

Organisation	Control methods	Frequency of control	Aerial control (cost per ha)	Ground control - initial knockdown (average cost per ha per year)	Ground control - ongoing control (annual control costs per ha)
Waikato Regional Council	Contractors carrying out ● Trapping network ● Bait station networks ● Ground VTA - Feratox	Ground control completed every 3 years Aerial control completed on 5-6 year rotation	$50-$70	$35 - $60	$7 - $11.7 (averaged over 3 year cycle)
Horizons Regional Council	Contractors / In-house mix ● Bait station networks ● Ground VTA - Feratox	Every 2 years	N/A	$42	$10 - $15 (averaged over 2 year cycle)
Environment Southland	Contractors conduct initial control before landowners take over. ● Bait station networks using Cyanide	One off	N/A	$13	N/A
OSPRI	Contractors carrying out ● Trapping network ● Ground VTA - Feratox ● Dogs and guns	Every year for ground control Aerial control completed on 4 year rotation	$35 - $40	N/A	$14 - $20
PFD - Kilmog/Karitāne Predator Control	Intensive AT220 trapping network ● 1 trap per 25 hectares (8 hectares of habitat)	Every year	N/A	$38.5	$14.5

The following findings can be observed from the cost information provided:

- Contractor-led programmes consistently represent the highest direct operational cost when compared with landowner-led approaches. However, they also provide the greatest certainty of achieving target RTCI levels and generally require less expenditure on compliance and enforcement activities.

- Landowner-led approaches appear less expensive from a direct programme delivery perspective. However, these savings are partially offset by the need for monitoring, relationship management, education, and regulatory enforcement. As a result, the difference between contractor-based and landowner-led approaches is often smaller than initial programme budgets suggest.

- Horizons Regional Council experience demonstrates that internal delivery can be cost-competitive where capability, infrastructure, and operational systems have been developed over a long period. However, the upfront investment required to establish an equivalent capability would likely create a significant barrier to entry for councils without an existing operational programme.

- The PFD Kilmog/Karitāne programme demonstrates that intensive trapping-based approaches can be effective at maintaining low possum densities at a local scale. However, the costs associated with this approach indicate that it is unlikely to be economically viable as the primary mechanism for delivering possum control across the full extent of historical OSPRI management areas.

These findings suggest that while cost will be an important consideration for ORC, delivery approaches should also be assessed alongside their ability to achieve biodiversity outcomes, maintain low RTCI levels, and operate effectively at a regional scale.

5. Options for the Otago region

5.1. Applying Lessons to the Otago Context

The review of possum control programmes across New Zealand highlights that there is no single delivery approach that is universally superior. Rather, each approach reflects the objectives, funding constraints, operational capacity, and historical context of the region in which it operates. The findings from the review provide a basis for assessing potential approaches that are likely to be most suitable for the Otago context.

The contractor-based delivery approach was consistently identified as the most effective option for achieving and maintaining target RTCI levels. Councils using contractor-based delivery reported high confidence that control targets would be met, due largely to the performance-based nature of contracts and the specialist expertise of contractors. This approach also has relatively small set up cost, enables strategic prioritisation of resources across large areas and provides the greatest certainty of maintaining biodiversity outcomes. However, it also requires significant long term investment and can create a reliance on a relatively small pool of specialist contractors over time.

The landowner/occupier approach is the most affordable approach from a council funding perspective. By placing responsibility for ongoing control on landowners/occupiers, councils are able to extend control across large areas with comparatively lower direct expenditure. However, there are consistent challenges in maintaining long-term engagement, ensuring compliance with RTCI targets, and coordinating control activities across multiple properties. As a result, biodiversity outcomes are less certain and significant monitoring and compliance effort is often required to determine outcomes.

Community and volunteer-led approaches, for example, the PFD Kilmog/Karitāne approach, can provide strong opportunities for local engagement and generate significant social and environmental benefits at a local scale. These approaches are particularly effective where communities are highly motivated to protect specific biodiversity values. However, experience from PFD and other community initiatives suggests that volunteer-led approaches are difficult to scale across large geographic areas and are dependent on sustained community interest and leadership. For the Kilmog/Karitāne approach the community has not provided any in-kind assistance and/or support for any transition to community-led control. Therefore, long-term funding for PFD would be required to continue to maintain this project. Consequently, this approach is unlikely to provide a solution for maintaining possum control across the areas currently influenced by OSPRI's programme.

This review also considered the viability of establishing and maintaining an internally delivered possum control programme. While Horizons Regional Council has demonstrated that a mixed in-house and contractor approach can be effective, its success is underpinned by nearly two decades of investment in staff capability, operational systems, equipment, and institutional knowledge. ORC does not currently possess this capability or infrastructure, and establishing an in-house delivery function would require substantial upfront investment. For this reason, a predominantly internal delivery approach is not considered a realistic option for Otago in the short to medium term.

The above findings suggest that the strongest options for ORC are those that retain central coordination and strategic oversight while drawing on the strengths of contractors, communities, and landowners where appropriate. The following sections assess three potential delivery options that have been developed specifically for the Otago context and evaluate their ability to achieve ORC's investment objectives.

5.2. Delivery options

The following options have been developed for further assessment within the Otago context.

Option A: Landowner/Occupier based possum control (Regulatory)

- This option is based on ORC changing the Otago RPMP to make landowners responsible for controlling OSPRI areas and selected high-biodiversity areas.
- Landowners would have the option to undertake the work themselves, or employ a contractor, to address their obligations under the RPMP.
- ORC would monitor landowners to ensure compliance and take regulatory action if RTCI targets are not being met.
- ORC supports community involvement in pest control, at a small scale.

Option B: Contractor based possum control (Regulatory)

- This option places the responsibility for possum control on the council.
- Council predominantly utilises contractors to undertake delivery.
- Areas for control would be defined and enabled for control through RPMP rules.
- Management of the programme would be coordinated centrally via ORC, focusing resources on the highest priority areas.
- This option includes consideration of externally managing the programme through utilising OSPRI as a potential vehicle.
- The regulatory framework would be used to facilitate property access, and would likely include good neighbour rules.
- ORC supports community involvement in pest control, at a small scale.

Option C: Community / Volunteer based possum control (Non-regulatory)

- This option does not include any rules in the RPMP, and instead relies on a pool of contestable funding to incentivise the community to undertake work within local areas of interest.
- This option assumes a mix of community led initiatives that could either be centrally co-ordinated e.g. the predator free model, or decentralised involving multiple communities/individuals. These groups may choose to use contractors to undertake work.

5.3. Qualitative Assessment of Options

The options have been subjected to a qualitative assessment as set out in Table 11. Each option has been assessed against the identified investment objectives and critical success factors. A weighted score has been attributed to each option. All of the options have been assessed against the status quo as described in Section 2 of this report. Section 5.4 provides further analysis on the relevant

advantages and disadvantages of each option based on the findings from the review of other regional council approaches.

Table 11: Qualitative assessment of options

Investment Objectives	Status quo	Option A: Landowner/Occupier based possum control	Option B: Contractor based possum control	Option C: Community / Volunteer based possum control
Is efficient and effective in supporting communities and landowners to achieve agreed biodiversity outcomes at identified high-value areas. (50% weighting)	1.00	1.50	2.00	1.75
Has the potential to maintain the gains that OSPRI have made within TB Management Areas (TMAs) within the Otago region once they are transitioned out of the OSPRI programme. (30% weighting)	0.00	0.75	1.50	0.75
Generates maximum return on investment from operational expenditure. (20% weighting)	0.20	0.60	0.80	0.30
IO sub total	**1.20/5**	**2.85/5**	**4.30/5**	**2.80/5**
Critical Success Factors				
Strategic fit and business needs	0.2	0.7	0.70	0.60
Potential value for money	0.2	0.6	0.90	0.40
Supplier capacity and capability	1	0.7	0.80	0.60
Potential affordability	1	0.7	0.50	0.30
Potential achievability	1	0.8	0.80	0.60
CSF subtotal	**3.40/5**	**3.50/5**	**3.70/5**	**2.50/5**
TOTAL	**4.60/10**	**6.35/10**	**8.00/10**	**5.30/10**

5.4. Advantages and Disadvantages by Option

Table 12: Advantages and disadvantages of the three proposed approaches.

Delivery approach	Advantages	Disadvantages
Landowner/Occupier based possum control	• Relatively low direct cost to Council. • Maintains direct relationships between Council and landowners/occupiers. • Provides visible community engagement and shared responsibility for pest management outcomes. • Can encourage local ownership of biodiversity outcomes and long-term stewardship.	• Control activities may be undertaken inconsistently and in an uncoordinated manner across the landscape. • Greater risk of RTCI targets not being achieved, reducing confidence in biodiversity outcomes. • Reliance on voluntary action can result in uneven levels of participation and investment between properties. • Possum control competes with other land management priorities and may not always be undertaken at the optimal time or intensity. • Limited ability to achieve economies of scale or integrate control activities across multiple programmes and land tenures. • Significant monitoring, compliance, and enforcement effort is required to maintain programme performance. • Regulatory requirements may create tension with some landowners and affect long-term programme support.
Contractor based possum control	• Provides the highest level of confidence that agreed RTCI targets will be achieved and maintained. • Contractors possess specialist expertise, operational capability, and experience delivering large-scale possum control programmes. • Existing contractor knowledge of local landscapes, operational requirements, and stakeholder relationships supports efficient programme delivery. • Provides flexibility to adjust programme scope and investment levels over time. • Enables coordinated, landscape-scale delivery focused on priority biodiversity outcomes.	• Typically the highest-cost delivery approach. • Ongoing funding requirements may create affordability challenges when balanced against other Council priorities. • Reliance on a limited contractor market creates risks associated with cost escalation, reduced competition, and contractor availability. • Council may have fewer direct relationships with landowners, iwi, and community stakeholders where engagement is primarily undertaken through contractors.
Community based possum	• Provides a highly visible mechanism for supporting	• Programme outcomes are highly dependent on sustained

control	community participation in biodiversity management. ● Can generate strong local ownership and advocacy for biodiversity outcomes. ● Leverages volunteer effort and local knowledge.	community interest, capacity, and leadership. ● Greater risk of RTCI targets not being consistently achieved across the landscape. ● Control activities are often focused on local areas of interest and may not align with regional biodiversity priorities. ● Delivery can be fragmented and difficult to coordinate at a regional scale. ● While valuable for local outcomes, community-led approaches are generally less efficient and more costly per hectare when applied to large-scale possum management programmes.

5.5. Cost analysis of options

Table 13 presents an indicative cost for three potential possum control delivery options in Otago over a six year cycle. The purpose of this analysis is to provide a general indication of the likely scale of costs associated with each delivery option. It is intended to support comparison between options and to inform discussion around the relative affordability, delivery requirements, and potential resourcing implications of each approach. Actual costs will depend on the specific locations selected for control, land tenure, terrain, access constraints, landowner participation, contractor availability, and the final programme design adopted by ORC.

The approach has been developed using cost information provided by regional councils, OSPRI and PFD. Councils have provided a range for lower-cost and higher-cost operating environments. Higher-cost areas generally include land with difficult access, complex terrain, fragmented ownership, bush or high-country environments, organic properties, or areas where vertebrate toxic agents are unlikely to be acceptable. Lower-cost areas generally reflect more accessible land, simpler tenure arrangements, and environments where standard ground-based control can be delivered more efficiently.

For the purposes of the analysis, a 1,000,000 hectare programme area has been used as a proxy for a potential Otago regional programme area. The costs are over a six year period (two three-year control cycles). Under the landowner/occupier-led and contractor based possum control options, the annual programme area it is assumed that approximately one third of the total programme area will be controlled each year over a 3 year cycle. For the community/volunteer-led option, cost estimates have been applied across the full programme area for each year. The community/volunteer-led option is based on PFD costs on their Kilmog/Karitāne project.

The following additional assumptions have been used to develop the costing model:

- Management overheads have been based on current regional council benchmarks.
- Costs represent operational delivery only.
- Costs have been calculated using the assumption that initial knockdown control is required.
- A 3%/per annum allowance for inflation has been factored into the cost.
- No allowance for future contractor scarcity.
- No allowance for major aerial operations.
- For Landowner/Occupier based possum control, any additional cost burden on landowners has not been included.
- For Community / Volunteer based possum control, the feasibility of managing the area of land specified in the model is unlikely, however it has been included for comparison purposes.
- For Community / Volunteer based possum control, costs have been based on the PFD Kilmog/Karitāne programme, and may vary depending on terrain, and volunteer involvement.

The cost assessment undertaken confirms that the lowest-cost option is not necessarily the most effective option when considered alongside programme performance and biodiversity outcomes. The landowner/occupier approach has the lowest direct Council costs, but it also carries the greatest risk that possum populations will not be maintained at target levels. Conversely, the contractor-based

approach requires a higher ongoing investment but provides greater certainty that biodiversity outcomes will be achieved and maintained.

The analysis also confirms that community-led approaches are best viewed as complementary to a regional possum management programme rather than as a primary delivery mechanism. While they can provide valuable local outcomes and community engagement benefits, the costs associated with scaling this model across the former OSPRI footprint are likely to be prohibitive.

Table 13: Indicative six-year cost model for the potential possum control delivery options in Otago.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Landowner/Occupier based possum control						
Total programme area (ha)	1.00M	1.00M	1.00M	1.00M	1.00M	1.00M
Annual programme area (ha)	333K	333K	333K	333K	333K	333K
Control phase	Initial	Initial	Initial	Monitoring/ Compliance	Monitoring/ Compliance	Monitoring/ Compliance
High estimate costs (ha)	$60.00	$61.80	$63.65	$20.58	$21.20	$21.83
Low estimate costs (ha)	$35.00	$36.05	$37.13	$17.58	$18.11	$18.65
Total (high estimate)	$20.0M	$20.6M	$21.2M	$6.9M	$7.0M	$7.2M
Total (low estimate)	$11.6M	$12.0M	$12.4M	$5.9M	$6.0M	$6.2M
Contractor based possum control						
Total programme area (ha)	1.00M	1.00M	1.00M	1.00M	1.00M	1.00M
Annual programme area (ha)	333K	333K	333K	333K	333K	333K
Control phase	Initial	Initial	Initial	Maintenance	Maintenance	Maintenance
High estimate costs (ha)	$60.00	$61.80	$63.65	$36.42	$37.51	$38.64
Low estimate costs (ha)	$35.00	$36.05	$37.13	$21.42	$22.06	$22.72
Total (high estimate)	$20.0M	$20.6M	$21.2M	$12.1M	$12.5M	$12.8M
Total (low estimate)	$11.6M	$12.0M	$12.4M	$7.1M	$7.3M	$7.5M

Community / Volunteer based possum control						
Total programme area (ha)	1.00M	1.00M	1.00M	1.00M	1.00M	1.00M
Annual programme area (ha)	1.00M	1.00M	1.00M	1.00M	1.00M	1.00M
Control phase	Initial	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance
High estimate costs (ha)	$44.28	$17.41	$17.93	$18.47	$19.03	$19.60
Low estimate costs (ha)	$38.50	$15.14	$15.60	$16.06	$16.54	$17.04
Total (high estimate)	$44.2M	$17.4M	$18.0M	$18.5M	$19.0M	$19.5M
Total (low estimate)	$38.5M	$15.1M	$15.6M	$16.0M	$16.5M	$17.0M

6. Recommended Approach

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.

While each of the delivery approaches assessed offers distinct advantages, the contractor delivery approach performed most strongly when evaluated against ORC's investment objectives, critical success factors, and the practical realities of delivering possum control at a regional scale. The approach provides the greatest certainty of maintaining low possum densities, enables strategic prioritisation of investment, and offers the strongest opportunity to protect and build upon the gains made through OSPRI's TB control programme.

6.1. Delivering Biodiversity Outcomes

The primary objective identified through the workshop process was to ensure that any future 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.

In contrast, both landowner-based and community-based approaches rely heavily on voluntary participation, sustained engagement, and involve varying levels of technical capability. While these approaches can achieve positive outcomes in some circumstances, the review identified repeated examples of declining participation over time, inconsistent control effort, and RTCI targets not being maintained. As biodiversity outcomes are directly linked to maintaining possum populations below identified thresholds, the contractor delivery approach provides the greatest certainty that biodiversity objectives will be achieved.

6.2. Maintaining the Gains Made by OSPRI

A driver for this review is the planned withdrawal of OSPRI from possum control operations within the Otago region. Significant public investment has been made over several decades to reduce possum populations and achieve TB eradication objectives. These efforts have also generated biodiversity benefits over time.

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.

The contractor delivery approach provides the strongest opportunity to proactively manage the transition from OSPRI's currently managed areas in a timely way. Through central coordination, ORC would be able to prioritise areas where gains remain intact, schedule follow-up control before significant reinvasion occurs, and ensure that resources are directed to the areas where they can achieve the greatest benefit.

6.3. Prioritising High-Value Biodiversity Areas

Otago contains a diverse range of landscapes, habitats, and land ownership patterns. Given the scale of the region and the likely funding constraints associated with any future programme, it is unlikely that ORC will be able to undertake intensive possum control across all former OSPRI management areas.

A key advantage of the contractor delivery approach is the ability for ORC to strategically prioritise investment. Rather than relying on landowner interest or community capacity to determine where control occurs, ORC can direct resources toward areas that provide the greatest biodiversity return on investment. This includes areas with significant indigenous biodiversity values, sites where OSPRI gains remain recoverable, and locations where coordinated landscape-scale control can be achieved.

The review found that both landowner-based and community-based approaches tend to result in fragmented and opportunistic control efforts, with work occurring where there is motivation rather than where ecological priorities are greatest. A centrally coordinated programme provides greater flexibility to align operational decisions with regional biodiversity objectives.

6.4. Providing Certainty of RTCI Achievement

The achievement and maintenance of target RTCI levels is fundamental to the success of any possum control programme. Across all regions reviewed, contractor delivered programmes provided the highest level of confidence that RTCI targets would be achieved and maintained.

Landowner delivered programmes frequently require ongoing monitoring, education, and enforcement to maintain compliance. Several councils reported that some landowners only undertake control when prompted by council monitoring or regulatory action. Similarly, community-based programmes are dependent on volunteer capacity and can experience fluctuating levels of participation over time.

Although contractor delivery introduces risks associated with market capacity and increasing costs, these risks are generally more manageable than the uncertainty associated with voluntary participation approaches. Performance-based contracts, defined service levels, and regular monitoring provide ORC with a high degree of confidence that agreed outcomes will be delivered.

6.5. Other findings through engagement

It was agreed by all councils interviewed that to provide the most effective possum control operations, there is a fundamental need for a central coordinator. There can be roles for landowners and community groups as a part of that, but centralised management is essential.

ES, HBRC and TRC all noted that due to the issues identified with their current approaches, they would ideally transition to a centralised contractor-based approach. A key barrier identified to enabling this transition is the additional investment that would be required to disestablish any current arrangements and implement the change.

6.6. Overall Assessment

While the contractor approach is likely to require a greater financial commitment than the alternative options considered, it provides the strongest alignment with ORC's strategic objectives and the highest likelihood of achieving enduring biodiversity outcomes. The approach offers the best opportunity to maintain the gains achieved through OSPRI's investment, ensure target RTCI levels are consistently achieved, and direct resources toward the highest-value biodiversity areas across the region.

For these reasons, the contractor based possum control approach is recommended for further investigation and further Long Term Plan business case development.

7. Implementation Considerations

7.1. Key risks

The transition from OSPRI-led disease management to a contractor based possum control possum control approach introduces several operational and financial risks that must be managed to protect biodiversity outcomes. The risks are articulated in the disadvantages section of the analysis and need to be considered and managed where possible.

7.2. Longer-Term Programme Design Considerations

While the immediate focus should be on determining the preferred delivery approach and managing the transition from OSPRI, several longer-term considerations will need to be addressed to ensure the programme remains effective, affordable, and sustainable over time.

7.2.1. Funding Approach

A long-term funding approach will be required to provide certainty for both programme delivery and stakeholder expectations. Experience from other regions demonstrates that successful possum control programmes are typically funded through a combination of general and targeted rates, reflecting the broad biodiversity, agricultural, and community benefits generated by possum control.

The funding approach adopted by ORC should recognise that biodiversity gains resulting from possum control provide benefits across the region, while also ensuring that investment remains proportionate to the outcomes being sought. Consideration should be given to whether a regional programme is best supported through general rates, targeted rates, or a combination of both. The chosen funding mechanism will need to balance affordability, equity, administrative simplicity, and the long-term financial sustainability of the programme.

Given the scale of the potential programme area and the significant cost differences between delivery approaches, further financial analysis should be undertaken before any long-term funding decisions are made. This analysis should include consideration of phased implementation, prioritisation of high-value biodiversity areas, and opportunities to leverage external funding partnerships where available.

7.2.2. Monitoring and Reporting Framework

A robust monitoring framework will be essential to demonstrate programme effectiveness, guide operational decision-making, and provide accountability for ratepayer investment.

The primary performance measure should remain RTCI, as this is the nationally recognised standard for measuring possum abundance and assessing the effectiveness of control operations. RTCI targets vary across councils, OSPRI and PFD depending on the outcomes sought. Higher targets are generally used where the objective is to support practical, lower-intensity control by landowners or community groups. Lower targets used where the objective is to achieve stronger biodiversity outcomes, maintain TB-free status, or prevent possum populations from rebuilding after intensive control. However, RTCI monitoring should be complemented by additional measures that provide insight into biodiversity outcomes, programme efficiency, and operational performance.

Consideration should be given to developing a monitoring framework that includes:

- RTCI monitoring to assess possum population trends and contractor performance;
- Biodiversity indicators to demonstrate ecological outcomes resulting from possum control;
- Spatial prioritisation tools to identify areas requiring additional intervention;
- Monitoring of reinvasion rates following control operations; and
- Programme reporting that clearly communicates outcomes to elected members, stakeholders, and the wider community.

Monitoring of RTCI targets uses a standard methodology of trapping (using leg-hold traps), which normally takes place over 3 fine nights with each trap line consisting of 10 traps spaced 20 m apart (Glen, 2014). This is generally the method used to monitor contractor performance targets.

Wax tags are becoming more prevalent in monitoring. They are a plastic tag with a flavoured, non-toxic, wax knob attached to it that attracts the possums. Predators are identified through bite marks. Wax tags are a cheaper alternative to leg-hold traps. They are generally considered to be less precise, as there is a chance that they could get multiple bites from the same animals.

Chew cards are another alternative made from a corflute card filled with a non-toxic lure, making them attractive to animals. Similar to wax tags, animals biting or chewing the card leave bite marks that can be analysed to understand the number of animals in the area. Chew cards are often filled

with peanut butter and are very attractive to rats, and also attract a wider range of animals. It was noted by PFD that this can lead to chew cards being an indicator of animals, but not specifically what species are present. In contrast, HBRC noted them as a very useful tool for undertaking cheap monitoring and compliance. They use chew cards for monitoring, and if areas come back above their target percentage, they follow up with the standardised leg-hold trap monitoring. For HBRC, this method worked effectively.

Auto Traps with AI have been highlighted by PF2050 as a useful tool to streamlining monitoring, situationally dependent. In their programmes where targeting 2% or 0% RTCI, they found AT520-AI traps to be useful for monitoring, as they provided a higher level of monitoring than wax tags or chew cards. Yet, it was noted these traps were not feasible for regional landscape scale control.

Given the current lack of information regarding possum populations outside existing site-led programme areas, an early priority should be establishing baseline data to support future prioritisation and investment decisions.

7.2.3. Contractor Procurement and Market Capacity

Should ORC adopt a contractor based possum control approach, contractor procurement will become a critical component of programme success. The review identified that contractor availability is a significant constraint across much of New Zealand, with several councils reporting increasing costs and concerns regarding the limited number of suppliers capable of undertaking large-scale possum control operations.

In Otago, these risks may be amplified due to the relatively small number of contractors currently undertaking possum control work for OSPRI and other organisations. ORC should therefore seek to understand the capacity of the existing market and the potential implications of increased demand for contractor services.

Future procurement approaches should aim to:

- Secure long-term contractor relationships that provide certainty for both ORC and suppliers;
- Encourage competition where possible to reduce cost escalation risks;
- Maintain flexibility to adjust programme scope over time as priorities and budgets change;
- Ensure contracts are performance-based and linked to agreed RTCI outcomes; and
- Explore opportunities for collaboration with organisations such as OSPRI, DOC, and neighbouring councils where procurement efficiencies may exist.

Consideration should also be given to how contractor knowledge, relationships, and local expertise can be retained throughout any transition from OSPRI-led control.

7.2.4. Maintaining Community Involvement

Although a contractor based possum control programme is recommended as the substantive approach, community involvement will remain an important component of successful possum management in the Otago region.

Community groups have played a significant role in predator control and biodiversity restoration throughout Otago and continue to contribute substantial volunteer effort. While volunteer-led delivery is unable to provide a scalable solution for regional possum management, local groups can continue to play an important role in maintaining biodiversity gains, undertaking complementary predator control activities, supporting monitoring programmes, and advocating for biodiversity outcomes within their communities and at selected sites.

ORC should therefore seek to maintain and strengthen relationships with existing community groups rather than replacing community initiatives. This could include continuing contestable funding programmes, providing technical support and training, facilitating access to monitoring information, and integrating community priorities into broader regional planning processes.

A successful long-term programme is likely to be one that combines the certainty and coordination of a centrally managed control programme with the local knowledge, advocacy, and stewardship provided by communities, landowners, mana whenua, and conservation organisations.

7.3. Recommended next steps

The following next steps are recommended to further explore the contractor led option:

- 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.

8. Conclusion

OSPRI's withdrawal from the Otago region creates a significant risk that biodiversity gains will be lost without a successor programme. Without this possum numbers are likely to rebound quickly, impacting biodiversity, reducing the value of previous OSPRI investment and creating future costs for ORC, communities and landowners.

Analysis of delivery approaches across New Zealand indicates that a contractor based possum control programme using centrally coordinated contractors provides the strongest alignment with ORC's objectives for a future programme. While more investment is required than alternative approaches, this option offers the highest certainty of maintaining RTCI targets and protecting biodiversity outcomes across the region. There is significant scope within this option for ORC to refine its

approach through engagement with its regional partners to decide on the level of control delivered by contractors while balancing this with varying levels of community support and funding.

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