TIPU MĀTORO

Wallaby-free Aotearoa

Aotearoa New Zealand Wallaby Strategy

Achieving a wallaby-free Aotearoa

This strategy is about realising the opportunity for the Tipu Mātoro National Wallaby Eradication Programme to protect New Zealand's natural and production environments, by removing wallabies.

The strategy is founded upon collaboration – working across central and regional government agencies, upholding the principles of the Treaty of Waitangi/Te Tiriti o Waitangi[1] by working with Māori, working with land managers, and bringing along the wider community.

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Disclaimer

While every effort has been made to ensure the information in this publication is accurate, the Ministry for Primary Industries does not accept any responsibility or liability for any error of fact, omission, interpretation, or opinion that may be present, nor for the consequences of any decisions based on this information or any reliance placed on the information.

1 For simplicity, the terms 'Treaty of Waitangi' and 'Te Tiriti o Waitangi' are used interchangeably throughout the remainder of this document and should not be interpreted as referring to the different translations of the text.

Contents

Vision

A wallaby-free Aotearoa New Zealand.

Our vision is to remove all wallabies[2], from Aotearoa New Zealand.

Aim

By 2025 wallabies are contained within designated containment areas (see figures 1 and 2). This involves:

- eliminating outlier populations,
- reducing wallaby numbers within buffer areas inside containment, and
- developing innovation in wallaby detection and control methods.

Once containment is achieved, the aim is to continue to reduce wallaby numbers inside containment areas and shrink the size of the containment areas over time.

The aim sets out containment as the shorter-term goal of the strategy and is the first step towards the vision of eradication. By 2025, most of the wallabies outside containment (measured absence of breeding populations) will have been identified and eliminated, though it is expected that surveillance and control of the last few individuals will continue beyond 2025. The aim also recognises that innovation is crucial to achieving the goals of this strategy.

After 2025, most control work will occur inside the containment area with a focus on reducing population numbers. More specific targets for reducing the size of the containment areas are to be developed and will consider things such as habitat preferences and the ability to defend areas e.g. rivers, mountains, and fences.

Benefits

Wallaby control results in benefits in the areas where wallaby numbers are reduced, and perhaps more importantly, in areas where wallabies are prevented from spreading to in the first place. These benefits include:

- Increased survival and enduring regeneration of native vegetation and associated biodiversity benefits.
- The hauora of mana whenua and local communities is enhanced through mauri regeneration of the ngāhere and wider taiao.
- Increased uptake of atmospheric carbon from regenerating vegetation reduces climate change.
- Improved pasture, crops, and plantation forests.

In addition to the benefits of removing wallabies, implementing the strategy provides:

- Job creation.
- Upholding the mana of Te Tiriti o Waitangi by creating opportunities for deeper engagement and collaboration between the Treaty Partners.
- Increased capacity and capability of people doing pest management.
- Increased collaboration and community engagement with pest management and biodiversity protection.

2 The vision is that all wallabies will be removed from Aotearoa New Zealand with the exception of those contained within a secure zoo facility.

Figure 1:

North Island Containment Area (within the red line).
Source: Land Information New Zealand.

Figure 2:

South Island Containment Area (within the red line).
Source: Land Information New Zealand.

The problem with wallabies

Wallabies are a serious pest in Aotearoa New Zealand causing damage in a number of settings.

They have a significant impact on indigenous forest through browsing on undergrowth and regenerating plants, leading to biodiversity loss, and impacting tangata whenua values. Browsing damage reduces the forests' ability to take up carbon dioxide, contributing to climate change. Wallabies compete with stock for pasture, reducing stocking rates, (three Bennett's wallabies are equivalent to one stock unit in terms of grazing pressure), damage fences, contribute to erosion, and browse plantation forestry seedlings.

The two populations of wallabies on mainland New Zealand are in South Canterbury (Bennett's wallaby) and the Rotorua lakes area (dama wallaby). They have been spreading outside of the designated containment areas (see maps below) and if this continues, they could impact up to a third of Aotearoa within 50 years. There is also a population of wallabies (multiple species) on Kawau Island in the Auckland Region.

In 2015 the total gross economic impact of wallabies was estimated to be $28 million per annum, and if allowed to spread at their current rate this could grow to nearly $84 million per annum by 2025.

Objectives

The objectives of this strategy are centred around working towards our common goal of eradication of wallabies by getting the system right, empowering action and protecting and restoring the land.

Upholding the principles of the Treaty of Waitangi is a key part of how the Tipu Mātoro National Wallaby Eradication Programme will seek to achieve each of the below objectives[3].

Tūāpapa	Objective	How we will do this
Getting the system right	Wallaby management is effective, cost efficient and co-ordinated.	• Governance Group to oversee the programme, supported by specialist advisory groups. • Develop a wallaby information and mapping system to measure operational effectiveness and show progress over time. • Regional Coordination Groups will provide a forum for localised planning, integration at place and information sharing.
	The ecology and impact of wallabies are understood, and effective surveillance, control and decision support tools are developed, accessible and used.	• Develop a research plan and implementation roadmap, integrating Mātauranga Māori and social research to deliver innovative solutions. • Develop best practice guidance and decision support tools for wallaby control.
	The rangatiratanga of whānau, hapū and iwi is actively enabled and supported, such that they exercise kaitiakitanga of the taiao in their takiwā, including their taonga, and natural and cultural resources that may be affected by wallabies.	• Give effect to Te Tiriti o Waitangi through recognition and active promotion of the rangatiratanga of mana whenua at all levels of the programme. • Work directly with iwi to design and resource wallaby eradication and/or innovative pilot projects.

This pou is inspired by poutama pattern traditionally found on tukutuku panels. The poutama represents the pursuit of knowledge and levels of advancement.

3 The objective have been alinged with the three pou from Te Mana o te Taiao: New Zealand Biodiversity Strategy.

Whakahau

Empowering action

Objective	How we will do this
New Zealanders are aware of the impacts of wallabies, support the management of wallabies, report sightings accurately and do not transport and release wallabies.	• Develop a communications and engagement plan. • Carry out social research on wallaby management and investigate existing research on other mammals to inform comms and engagement work. • Work with partner organisations to implement the communications and engagement plan using existing relationships and a range of channels.
Jobs are created and capability of people to undertake pest control activities is increased.	• Funding agreements enable people to carry out wallaby operations. • Enable and support the activity of iwi kaimahi, contractors, or entities to undertake wallaby control work.

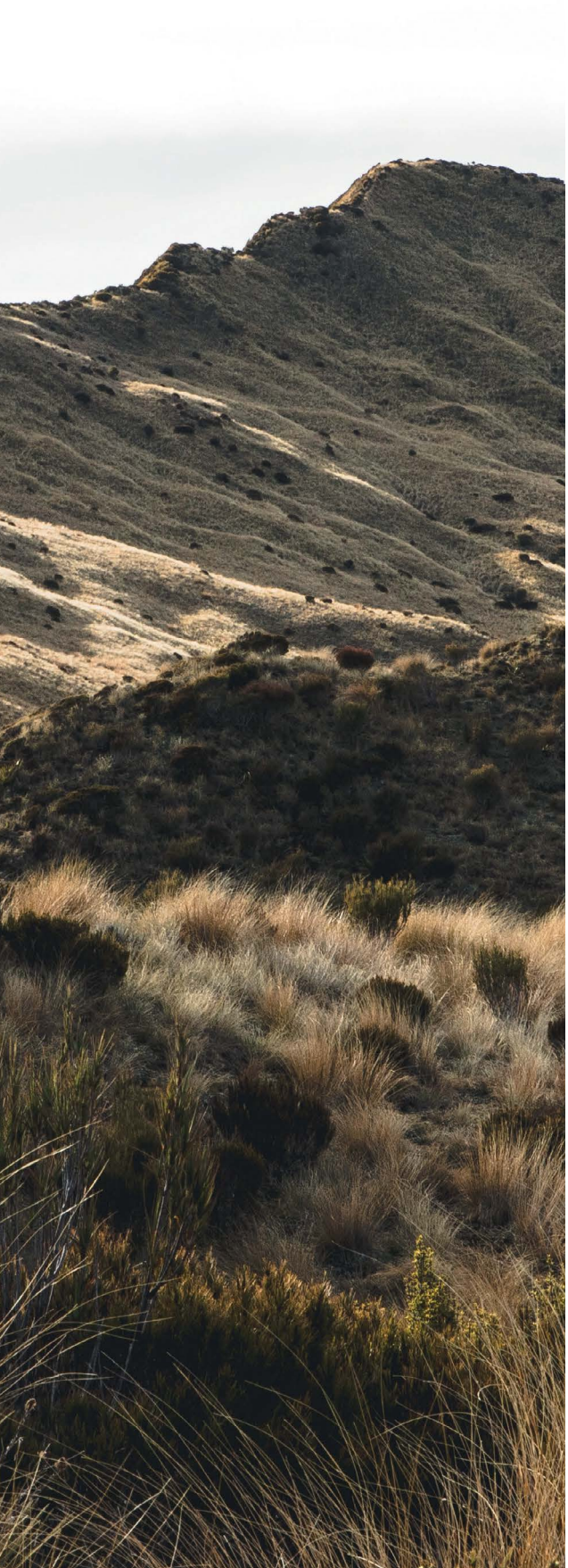
This pou is inspired by the traditional pātikitiki pattern. The significance is being able to always provide, and empowerment as a catalyst for change.

Tiaki me te whakahaumanu

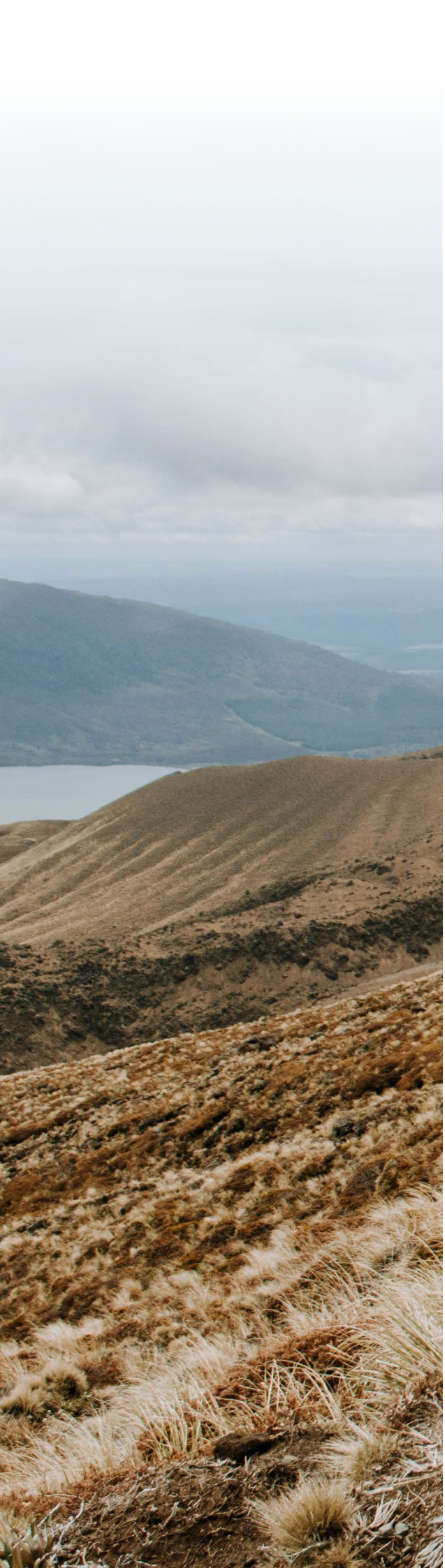
Protecting and restoring

Objective	How we will do this
Wallaby populations outside the containment areas are identified and eliminated.	• Prioritise surveillance, control and monitoring operations that will best achieve the objectives. • Undertake surveillance, control, and monitoring operations. • Apply adaptive management to operations and continue to look for innovative solutions. • Managing health and safety risks is a fundamental part of all wallaby operations.
The density and distribution of wallabies within the containment areas are reduced (eventually to zero), working from buffer areas on the edge of containment areas first.	

This pou is inspired by Kaokao patterns traditionally found on tukutuku panels. This Kaokao means to be gathered or collected together and when used in a woven tukutuku represents the idea of strength and protection in numbers.



Appendices



Appendix One

About the Aotearoa New Zealand Wallaby Strategy

The Aotearoa New Zealand Wallaby Strategy sets out the direction and objectives of the Tipu Mātoro National Wallaby Eradication Programme. It is an agreement that provides a shared vision and agreed responsibilities and actions to improve wallaby management across Aotearoa.

The development of the strategy was a collaborative effort of the wallaby programme partners with input from stakeholders, this was facilitated by Biosecurity New Zealand (BNZ), a business unit within the Ministry for Primary industries (MPI). Approval of the strategy sits with the wallaby programme Governance Group.

The Governance Group is made of up representatives from central government agencies, regional councils, iwi, Federated Farmers and Forest & Bird. This group, supported by various advisory groups, makes the key decisions, and addresses the critical issues facing wallaby management. The Governance Group oversees allocation of the new wallaby management funding announced as part of budget 2020, which enabled establishment of the Tipu Mātoro National Wallaby Eradication Programme.

Central government funding for the wallaby programme is $27 million. This is spread over the first four years, with ongoing funding of $7 million per year after this. While most of the funding is for wallaby control operations, there is also money for research, particularly for developing and improving wallaby surveillance and control tools. Remaining funding is for programme management including developing the wallaby information system (Wall-IS) and programme communications. Regional councils have also increased their funding contributions for wallaby control to $1.5 million per year (a significant increase from $300,000 in 2015).

The 2020 central government funding for wallabies was part of the broader Job for Nature programme COVID-19 economic recovery package. Alongside creating jobs, a key value for the wallaby programme is sustainability and a focus on capability building within the people we are providing employment for. These benefits both local communities and the wider environmental sector.

The strategy aims to adhere to the principles of partnership, protection and participation which underpin the relationship between government and Māori under the Treaty of Waitangi. It is recognised that iwi and hapū need to be involved at all levels of the programme from governance through to research and operational work on the ground. Māori participation in wallaby management is one way of carrying out the role of kaitiaki. Iwi are also significant land managers, particularly in the wallaby impacted areas of Te Ika a Māui (North Island).

Achieving the vision of a wallaby-free Aotearoa New Zealand requires the collaborative action of many parties, the support of local communities, and effective use of the new wallaby management funding. There is now a real opportunity to engage with communities at place and to co-design innovative solutions for wallaby management, and ensure the programme has the social licence to operate as well as the public support which is crucial to sustaining ongoing funding.

The objectives in the wallaby strategy are grouped into three pou which align with those articulated in Te Mana o te Taiao: Aotearoa New Zealand Biodiversity Strategy 2020 and to Te Mana o te Taiao's objectives for managing the impacts of introduced browsers. The wallaby programme also has synergies with the Predator Free 2050 movement, particularly in terms of new tools and research.

Progress on implementing the strategy will be monitored by the Governance Group using the evaluation framework (Appendix Six). The strategy is expected to be reviewed in 2025.

Appendix Two

Background to Wallabies – History and Impacts

Wallabies in Aotearoa New Zealand

Five species of wallaby have been present in New Zealand for over 140 years, with populations centred in South Canterbury, Rotorua, and Kawau Island. Wallabies were also established on Rangitoto and Motutapu Islands but were successfully eradicated during the 1990s.

Five wallaby species were introduced to Kawau Island in the Hauraki Gulf in the 1870s by Sir George Grey, then Governor of New Zealand and owner of the island. At least three of the five wallaby species remain (it is thought that the last brush-tailed rock wallabies were removed in 2006, but this is unconfirmed).

The Bennett's wallaby was introduced to the Waimate Hills area of South Canterbury from Australia in the 1870s, to provide animals for recreational hunting. In 1912, the dama wallaby was also introduced from Kawau Island to Rotorua near Lake Ōkāreka in the Bay of Plenty region for hunting purposes. Wallaby numbers slowly began to rise and expand their range so that by the 1950s they were declared noxious pests. During the years it was active from 1972 to 1992, the South Canterbury Wallaby Board employed a dedicated team to keep wallaby numbers low using poison and shooting. After the board was dissolved wallaby numbers and their range in South Canterbury began to increase once again.

Since the early 1990s, responsibility for managing both dama and Bennett's wallabies has mainly been held by regional councils, who have managed them through Regional Pest Management Plans (RPMPs). Containment areas have been identified in the North and South Islands for the dama and Bennett's wallaby respectively. They centre on where the main populations have existed since introduction and use natural barriers such as large rivers and

mountain ranges as their borders. Whilst rivers and mountains may slow down the rate of spread, wallabies have been observed fording large and rapidly flowing rivers, as well as crossing bridges and other infrastructure.

Prior to 2012, wallabies were managed under the Wild Animal Control Act 1977, as well as being included in some Regional Pest Management Plans. In 2012, wallaby management was transferred to the Biosecurity Act 1993 under which they are deemed an unwanted organism. This means they cannot be transported, bred, exhibited, sold, or released unless a permit is obtained.

Wallabies are mobile and have been found well outside the containment areas and even outside the affected regions. Regional councils are aware of several deliberate releases of wallaby outside their core range and of many examples of hunters collecting well-grown joeys for pets. There is also still a small trade in wallabies for pet food, human food, commercial guided hunting, export, and petting zoos.

Wallabies are largely nocturnal animals, often hiding under scrub during the day and venturing out to pasture to feed at night. Therefore, one of the most significant barriers to containment is detecting and controlling wallabies at the low densities found in newly invaded areas.

Manaaki Whenua Landcare Research evaluated the current and future distribution and impacts of wallabies on mainland New Zealand in 2015. This work concluded that Bennett's and dama wallabies and were expanding their distribution (by up to 800 metres and 2 kilometres respectively) and could impact up to one third of both the North and South Islands within 50 years if the 2015 status quo was maintained[4], as shown in Figure 3.

This research suggests that wallabies can establish in most parts of New Zealand, but some areas are more suitable than others[5]. Figure 4 shows the predicted relative suitability of habitats and shows that high to moderate densities of wallabies are likely to occur throughout the New Zealand mainland, with the exception of alpine, urban areas, and intensively farmed areas.

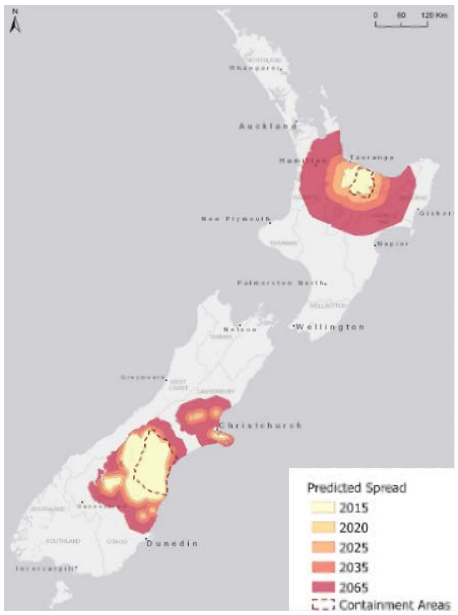


Figure 3:

Conservative predicted spread of wallabies in the North and South Islands from containment areas if managed under status quo *(Latham et al. 2016).*

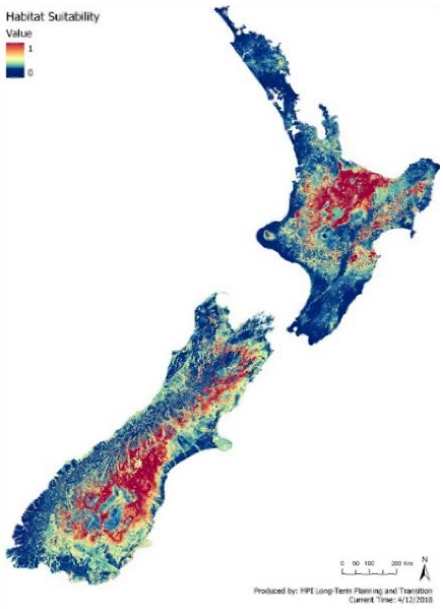


Figure 4:

Predictions of habitat suitability. Bright red and yellow colours indicate areas predicted to be excellent to good wallaby habitat (1); pale blue indicateds moderately suitable habitat; and dark blue represents poor habitat (0).

4 Latham, Latham, & Warburton, 2016, Review of current and future predicted distributions and impacts of Bennett's and dama wallabies in mainland New Zealand. MPI Technical Paper No: 2016/15

5 Latham et al., 2016.

This research raises the alarm about the potential for further wallaby spread, but also highlights the opportunity that currently exists to tackle the issue. Acting to contain wallabies now, means protecting surrounding areas from future wallaby impacts. If wallabies were left to spread, the following are likely:

- Impacts will be felt over a much wider area and may start to undermine other key initiatives such as the One Billion Trees Programme and large projects to eliminate mammalian pests across landscapes e.g., Te Manahuna Aoraki, which will in turn increase the pressure from stakeholders to deal with the issue.
- The cost of management increases and will become less effective for that spend because it will be spread more thinly.
- Future management options could be lost, meaning that spread can get to a point where containing wallabies within an area is not feasible, socially acceptable or is extremely cost prohibitive.

Environmental impacts

Dama and Bennett's wallaby can have a significant impact on the regeneration of native vegetation, especially when combined with the browsing impacts of other animal pests. When abundant, wallabies can prevent the regeneration of most palatable native plant species, which modifies forest diversity and can lead to a significant decline in forest health and integrity over time. These impacts can, in turn, reduce the ecosystem services derived from these forests.

A survey in the Ōkataina Scenic Reserve showed that dama wallabies were likely to be responsible for inhibiting the regeneration of palatable species such as hangehange, fuchsia, raurēkau, karamū, patē and fivefinger[7]. Bennett's are also thought to inhibit regeneration of palatable species in forest margins and remnants. The key issue, then, is that only a handful of native species will survive wallaby browsing in the long term, with significant consequences on ecosystem structure and function. The iconic landscapes of Te Urewera and Northern/Central Otago are two areas at immediate risk from wallaby invasion and associated impacts.

A further impact of browsing damage on native vegetation is that it prevents the forest from taking up atmospheric carbon as the vegetation grows. In combination with other introduced browsers this significantly reduces the amount of carbon taken up by our forests. Instead of being locked away in a healthy forest ecosystem, the carbon will remain in the atmosphere as carbon dioxide and contribute to the ongoing global climate change[8]. The pressure browsing pests place on vegetation is likely to exacerbate climate stresses, for example much of the South Island range of wallabies is expected to become drier as a result of climate change, which will add a further stress to browsed vegetation.

Lake Ōkataina Scenic Reserve Exclosure Plot. Wallaby damage on the left. Wallabies excluded on the right. Photo credit: Biosecurity New Zealand.

Economic impacts

Damage to agriculture is primarily caused by wallabies competing for pasture and fodder species as they have high dietary overlap with stock, consequently reducing stocking rates (three Bennett's wallabies are equivalent to one stock unit in terms of grazing pressure)[9].

6, 7 Latham et al., 2016;
8 Hackwell & Robinson, 2021, Protecting Our Natural Ecosystems' Carbon Sinks, Forest & Bird
9 Latham et al., 2016;
10 G Corbett, P Whaley, G Sullivan, S MacLean, 2017, personal communication, November 30
11 Latham et al., 2016.

The Bennett's wallaby, which is prevalent in the South Island, has been recognised as an agricultural pest in South Canterbury since the 1940s owing to competition with domestic livestock, fouling pasture and damaging crops[10]. Whilst dama wallaby are well suited to living in the forest interior, they also travel through forests to feed on pasture. Because of their size, wallabies have also been known to damage fences and contribute to erosion and subsequent nutrient loading of waterways[11].

Bennett's and dama wallaby also have the potential to cause damage to some plantation forestry species through browsing young seedlings. Wallabies are known as a serious pest during the establishment phase of plantation forests including forests planted for carbon capture under the Emissions Trading Scheme.

In 2015 the total gross economic impact of wallabies was estimated to be $28 million per annum, and if allowed to spread that this could grow to nearly $84 million per annum by 2025[12]. There could be further economic costs of wallaby browsing damage to vegetation in terms of the loss of carbon storage or ability to uptake carbon as New Zealand's Emissions Reduction Plan comes into force.

Social and cultural impacts

Wallabies have social impacts through the damage that they do to indigenous forest and agricultural values.

For tangata whenua, cultural health, wellbeing, and identity are strongly linked to the physical environment and any impacts are considered holistically together with the impacts on forest health and taonga species. Many native plant species have traditional and contemporary uses as materials for structures and art, as indicators of seasonal change and/or harvest times, and as rongoā (medicinal use of plants).

Wallabies can significantly impact the mauri of a forest as their selective browsing alters the plants that make it up. The mauri of forests and shrub-lands is linked to the health of the plants and animals found there. It reflects the resilience of the relationship between people and nature, which can result in changes to practices and associated knowledge systems, language, cultural iconography and overall human mental, spiritual and physical health.

Wallabies feeding on pasture reduces livestock carrying capacity increasing pressure on farming systems and incomes. Downstream effects of reduced farming income and employment on rural communities have far-reaching impacts on rural populations, their social and community infrastructure such as schools, and on farmer resilience to the impacts of other pest incursions or events.

12 Latham et al., 2016.

Appendix Three

Who is Involved in Wallaby Management

Eradication of Aotearoa wallaby populations is a combined effort. To achieve this a co-ordinated, system-wide approach is required, with each party involved undertaking distinct and complementary roles, supported where appropriate by relevant legislation/regulation. Figure 5 shows the structure of the Tipu Mātoro National Wallaby Eradication Programme.

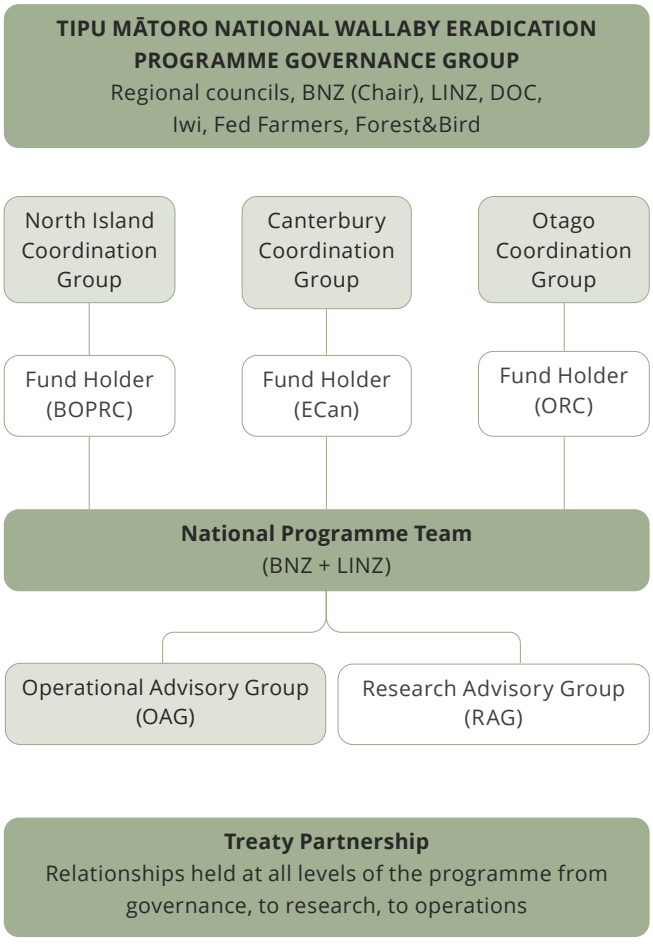


Figure 5:

Diagram showing the structure of the National Wallaby Eradication Programme.

Functions of each group

- The Governance Group provides strategic oversight of the programme. They are responsible for setting the direction of work to be completed.
- The National Programme Team are responsible for leading development of the programme and they report on all related activities to the Wallaby Governance Group.
- The Operational Advisory Group provides advice on the how and where operational activities are best delivered to achieve the outcomes of the strategy.
- The Research Advisory Group provides expert advice on research needs, research procurement, quality assurance and make recommendations on areas of research investment.
- The Fund Holders deliver wallaby surveillance and control operations.
- The Regional Coordination Groups are organised by the Fund Holders to ensure that operational planning is coordinated at a local level and that landowners and communities are connected to the programme.
- The partners to the Te Tiriti o Waitangi engage which each other at all levels of the programme. In addition to having iwi and hapū representatives on the various advisory groups and the Regional Coordination Groups, the National Programme Team engages with iwi and hapū to co-design solutions.

Further detail on the main parties involved in wallaby management and the functions of each are set out below.

Central government (BNZ, DOC, LINZ)

- Ensure that the principles of the Treaty of Waitangi are given effect to within all of the programme's activities – work in partnership with Māori: co-design at all levels: governance, planning, and operations
- provide national leadership, including oversight of strategy implementation;
- contribute to the control costs of wallaby populations on the basis of the wider public good benefit, and as a land manager for Crown-administered land;
- oversee operational control on Crown-administered land;
- promote consistency and alignment of legislation;
- co-ordinate and fund research to improve management tools and best practice;
- support increased capacity and capability within the biosecurity system, including working closely with contractors and training providers;
- promote awareness and support community initiatives; and
- facilitate communication and co-operation among those involved in pest management to enhance effectiveness, efficiency, and equity of programmes.

Regional councils

- Ensure that the principles of the Treaty of Waitangi are given effect to within all of the programme's activities– work in partnership with Māori: co-design at all levels: governance, planning, and operations
- provide leadership at the regional/local level;
- co-ordinate operational planning between parties in the region;
- contribute to the control costs of wallaby populations on the basis of the public good benefit to regional/local communities;
- carry out (or contract) surveillance, control, and monitoring of wallaby populations;
- support increased capacity and capability within the biosecurity system, including working closely with contractors and training providers
- ensure strong working relationships with land managers and leverage local control efforts;
- enable wallaby control in regional plans;
- establish appropriate rules in Regional Pest Management Plans (RPMP) to ensure those responsible for managing land are undertaking their roles;
- seek alignment of RPMP rules with other regions;
- carry out compliance and enforcement activities within their regions as required; and
- deliver communications to communities at a local level.

Tāngata whenua

- Ensure that the principles of the Treaty of Waitangi are given effect to within all of the programme's activities – work in partnership with the Crown: co-design at all levels: governance, planning, and operations
- inform management and research through Mātauranga Māori;
- pest control internships - working with existing contractors and Ministry of Social Development;
- carry out surveillance, control, and monitoring of wallaby populations, particularly on iwi owned land;
- provide advocacy and education on wallaby impacts and control; and
- assist in maintaining social licence for wallaby control.

Land managers

- report sighting/signs of wallabies on their own and neighbouring properties;
- control wallabies on their land and where they may impact neighbouring land (noting that land managers have a responsibility to keep wallabies below a certain density within the containment area in Canterbury);
- draw on best management practices in controlling wallabies;
- work collaboratively with local government, central government, and neighbours to manage wallaby populations;
- support the management of activities for neighbouring wallaby infestation and/or sightings by allowing access for control operations; and
- comply with any relevant legislation including RPMP provisions under the Biosecurity Act, or any land-use rules under the Resource Management Act 1991 (RMA).

Non-Government Organisations and industry groups

- communicate and engage with the general public to report any sightings and not move any wallabies;
- advocate for wallaby control;
- sponsor research projects through:
  - Sustainable Food & Fibre Futures (previously the Sustainable Farming Fund); and
  - DOC Community Fund;
- carry out wallaby control through programmes that create alliances between communities, regulators, and funding partners;
- provide advocacy and education on wallaby impacts and control;
- assist in maintaining social licence for wallaby control; and
- report detections and sightings of wallabies by their members.

Contractors

- deliver surveillance, control, and monitoring of wallaby populations on behalf of management agencies;
- report detections and sightings;
- grow capability and capacity within the contractor market; and
- implement best practice as developed.

Hunters

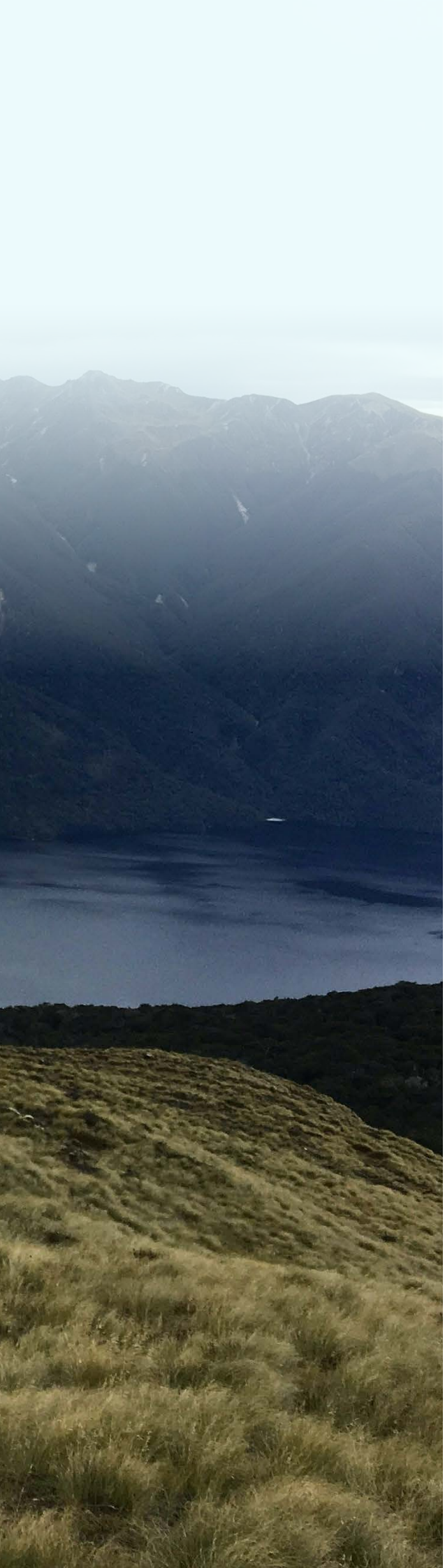
- report sightings;
- provide advocacy and education on wallaby impacts and control; and
- assist in reducing wallaby populations in containment areas (where population density is high).

Researchers

- develop new tools and provide extension to end users;
- develop tools to measure programme success including system to determine proof of freedom for areas;
- review operations and audit; and
- contribute to the technical advisory group.

Communities

- support and understand that wallabies are an introduced pest causing harm to our environment;
- support efforts to report and notify authorities of sightings of wallabies; and
- agree to not move or illegally release wallabies and understanding the consequences of doing so.



Appendix Four

Achieving the Objectives

Tūāpapa | Getting the system right

Objective 1

Wallaby management is effective, cost efficient and co-ordinated.

The wallaby programme Governance Group consists of representatives of partner organisations, the role of this group is to:

- Agree a programme strategy and establish the desired outcomes required from the partnership as delivered through the programme plan;
- Ensure the programme upholds the principles of the Te Tiriti o Waitangi;
- Be champions and advocates for the programme;
- Set the context for all people working on the programme;
- Ensure effective communication between and within the organisations involved in the programme;
- Objectively evaluate, review, and monitor the effectiveness of the programme plan and determine the likelihood of success of options;
- Oversee and have ultimate responsibility for implementation of the strategy;
- Provide or source resources to enable delivery of agreed activities;
- Set terms of reference and membership for the Advisory Groups and determine priorities;
- Report back to the partner organisation/group they represent;
- Identify and act on opportunities for learning to maintain an environment of continuous improvement; and
- Identify and manage strategic issues and risks and remove barriers for the programme team.

Coordination and support for the Governance Group is provided by Biosecurity New Zealand, who also provides support for wallaby advisory groups which advise Governance on operational, research and technical matters. Best practice guidance is developed to ensure that control operations are as effective as possible and that the legislative requirements for health and safety, toxin use, and animal welfare are met.

Land Information New Zealand (LINZ) will develop a wallaby information and mapping system called Wall-IS. This system is the central collection point for all wallaby operational data including data on methods, location, costs, health and safety reporting and employment. Wall-IS is the tool for measuring effectiveness of operations and planning future operations. There is potential to build the functionality to link in data from community and land manager led control operations. Wall-IS also holds data on the public reports of wallaby sightings.

Regional councils provide support for regional coordination groups which bring together partner organisations, local iwi, and stakeholders with an interest in wallaby management. These groups will help to ensure:

- Control operations are planned in a cohesive and coordinated way;
- Control operations achieve the objectives of this strategy;
- Alignment between wallaby management work funded from different sources;
- Effective communication between organisations responsible for wallaby management in the region;
- Progress on the control operations is communicated with local communities and land managers;
- Issues and risks are identified and dealt with or escalated to Biosecurity New Zealand.

Objective 2

The ecology and impact of wallabies are understood, and effective surveillance, control and decision support tools are developed, accessible and used.

Significant improvements in surveillance, monitoring, and control tools greatly improve the ability to find and control risk populations. The Research Advisory Group develops a prioritised research plan and provides recommendations to Governance on which projects provide the most benefit. The research plan incorporates Mātauranga Māori and social science research.

The ability to find wallabies at very low densities is crucial to achieving the aim of containment and ultimately eradication. The current suite of detection tools is limited and needs to be expanded, research will investigate the potential of drones and helicopters using thermal imaging cameras and night vision capability. A method for determining proof of freedom for areas where wallabies have been eliminated will be developed.

Research will also be conducted on improving existing control tools and finding new control methods that can be applied to wallabies. Standardised operating procedures and monitoring of outcomes will provide a measure of operational effectiveness which will feed into decision support tools for future operations.

Links are also made to relevant vertebrate pest control and social license research carried out by other DOC programmes and Predator Free 2050. The wallaby programme has a watching brief on the research into developing alternatives to the toxin 1080.

Outputs of research will be incorporated into best practice guidance and disseminated to ensure that the new tools and techniques will be put into practice.

It is recognised that advances in technology and tools are going to be required in order to meet the vision of eradication.

Objective 3

The rangatiratanga of whānau, hapū and iwi is actively enabled and supported, such that they exercise kaitiakitanga of the taiao in their takiwā, including their taonga, and natural and cultural resources that may be affected by wallabies.

The wallaby programme will give effect to the principles of the Treaty of Waitangi of partnership, protection, and participation, with tangata whenua represented at all levels of decision-making. The programme will engage with iwi and hapū at place to design solutions to the wallaby problem. This includes engaging with mana whenua at the earliest stages of operational planning.

Iwi aspirations for providing job opportunities for mana whenua will be supported. This may be through placing people into jobs with existing council contractors, iwi setting up companies that could join council procurement panels or direct funding to iwi groups to carry out control.

The programme will look to pilot direct funding to an iwi group. This will be a multi-year funding commitment and will take a holistic approach of blending operational pest control, with research into new methods and techniques, as well capability development. The results of this pilot will inform the approach to future opportunities of direct funding to other iwi groups.

Whakahau | Empowering action

Objective 4

New Zealanders are aware of the impacts of wallabies, support the management of wallabies, report sightings accurately and do not transport and release wallabies.

To be successful we need people to be aware of and to understand the wallaby problem, its extent, and impacts, as well as the rationale and benefits of eradication. We need them to engage and to think differently about wallabies, and to contribute to protecting our country's natural and production environments.

Increased public understanding through education and support for community initiatives and groups will help inspire action. It is also crucial to developing a sustainable programme in terms of securing on-going social licence and funding for wallaby control.

The public, land occupiers and decision-makers are not always aware of the potential impacts of wallabies. This can exacerbate the risk of human mediated spread of the pest, through movement to new areas (either intentionally to establish a hunting population or thoughtlessly by releasing or losing wallabies taken in as pets).

Wider support from the public and funders for wallaby control will enable more cost-effective early intervention. Those with an interest in wallaby management can advocate for wallaby control to land managers, the public, and agencies, through co-ordinated and consistent key messaging and a range of audience appropriate channels. Messaging will address the reasons why commercialisation and the use of incentives for hunting a pest species does not fit neatly with the goal of eradication.

Social research into audience groups provides insights to inform a more successful behaviour change programme. This means finding how we can best encourage people to report wallaby sightings and stop transporting them. Social research also tells us the level of public support for wallaby control (social licence) and in gaps in people's awareness of the problem.

The task of communicating with specific audiences and the wider public cannot be properly achieved neither by a single organisation nor by a single function in that organisation alone. Communication and engagement activities will be carried out by all partners and will be aligned with plan agreed between partners.

Objective 5

Jobs are created and capability of people to undertake pest control activities is increased.

Wallaby control operations will generate employment in the regions where the operations are carried out, namely Bay of Plenty, Waikato, Canterbury, and Otago. This is a key outcome for the programme as it is part of the wider Jobs for Nature programme.

Multi-year funding agreements with regional councils provide contractors the confidence to hire more staff and invest in training to build up the necessary skills of local people. The wallaby programme's culture of capability building sees innovations in control techniques and health and safety shared between all parties via regular meetings of the Operational Advisory Group.

Connecting rangatahi to their land and ideally through jobs is a key aspiration of our iwi partners supported by the wallaby programme. Job placement with existing council contractors, establishing companies and eligibility for council procurement panels, or direct funding to carry our control operations are some of the options.

Tiaki me te whakahaumanu | Protecting and restoring

Objective 6

Wallaby breeding populations outside the containment areas are identified and eliminated.

Objective 7

The density and distribution of wallabies within the containment areas are reduced (eventually to zero), working from buffer areas on the edge of containment areas first.

Operational delivery of wallaby control continues to be carried out by agencies and land managers who are best placed to do so. This means that farmers, forestry companies and other land managers within containment areas are encouraged to continue wallaby control to keep the population numbers in check. Programme funded control continues to be carried out by contractors engaged by regional councils as well as seeking opportunities to work more closely with iwi groups.

Planning starts at the local level with regional councils engaging local partners and stakeholder through the Regional Coordination Groups. This is where the value of local knowledge of iwi, conservationists, farmers, and others with 'on the ground' experience is realised and fed into the operational plans. These regional plans are taken to the Operational Advisory Group which provides recommendations on operational priorities and the allocation of national funding. Governance allocates funds to operations that best meet these objectives.

Land managers and management agencies manage wallabies to protect a range of different values. These include protecting productive agricultural or forestry land and protecting indigenous vegetation and biodiversity. A co-ordinated approach to prioritisation allows parties to understand how their priorities fit within a local, regional, or national context. This supports strategic and efficient resource allocation, within parties' abilities to reallocate effort. Priorities are reviewed over time as improved monitoring and mapping provides better information, and as new control tools become available. An adaptive management approach is taken with operations, this means that new approaches and methods will be tried, lessons will be learnt, and subsequent operations will be better informed.

After 2025, once containment is achieved, more specific targets for reducing the size of the containment areas will be developed and will consider things like habitat preferences and ability to defend areas e.g., rivers, mountains, and fences.

Integrating wallaby control with other local activity is expected and encouraged e.g. other Jobs for Nature projects, Te Manahuna Aoraki Project and other community projects involving pest management.

Health and safety are paramount with requirements an integral part of all funding agreements, and of regional councils and iwi groups. These set out the minimum requirements for planning, incident reporting, and assurance activities.

Embedding a culture of continuous health and safety improvement across the board among programme partners and contractors is critical and fundamental to the wallaby programme's values.

Appendix Five

Strategy Implementation Plan

Pou 1 | Tūāpapa – Getting the system right

Objective	Actions	Lead/Collaboration	Timeframe 2021	2022	2023	2024	2025
1. Wallaby management is effective, cost efficient and co-ordinated	1.a. Governance Group to oversee the programme, supported by specialist advisory groups.	BNZ	●	●	●	●	●
	b. Develop a wallaby information and mapping system to measure operational effectiveness and show progress over time.	LINZ	●	●			
	c. Regional Coordination Groups will provide a forum for localised planning, integration at place and info sharing.	BNZ	●	●	●	●	●
2. The ecology and impact of wallabies are understood, and effective surveillance, control and decision support tools are developed, accessible and used	2.a. Develop a research plan and implementation roadmap, integrating Mātauranga Māori and social research to deliver innovative solutions.	RAG*	●	●			
	b. Develop best practice guidance and decision support tools for wallaby control.	OAG*, RAG*		●	●		
3. The rangatiratanga of whānau, hapū and iwi is actively enabled and supported, such that they exercise kaitiakitanga of the taiao in their takiwā, including their taonga, and natural and cultural resources that may be affected by wallabies	3.a. Give effect to Te Tiriti o Waitangi through recognition and active promotion of the rangatiratanga of mana whenua at all levels of the programme.	BNZ, Iwi	●	●	●	●	●
	b. Work directly with iwi to design and resource wallaby eradication and/or innovative pilot projects.	BNZ, Iwi		●	●	●	●

This pou is inspired by poutama pattern traditionally found on tukutuku panels. The poutama represents the pursuit of knowledge and levels of advancement.

*RAG: Research Advisory Group, OAG: Operational Advisory Group, TAG: Technical Advisory Group.

Pou 2 | Whakahau – Empowering action

Objective	Actions	Lead/Collaboration	Timeframe 2021	2022	2023	2024	2025
4. New Zealanders are aware of the impacts of wallabies, support the management of wallabies, report sightings accurately and do not transport and release wallabies	4.a. Develop a communications and engagement plan.	BNZ	●				
	b. Carry out social research on wallaby management and investigate existing research on other mammals to inform comms and engagement work.	BNZ, DOC	●		●		●
	c. Work with partner organisations to implement the comms and engagement plan using existing relationships and a range of channels.	BNZ	●	●	●	●	●
5. Jobs are created and capability of people to undertake pest control activities is increased	5.a. Funding agreements to enable people to carry out wallaby operations.	BNZ, Regional Councils	●	●	●	●	●
	b. Enable and support the activity of iwi kaimahi, contractors, or entities to undertake wallaby control work.	BNZ, Iwi		●	●	●	●

This pou is inspired by the traditional pātikitiki pattern. The significance is being able to always provide and empowerment as a catalyst for change.

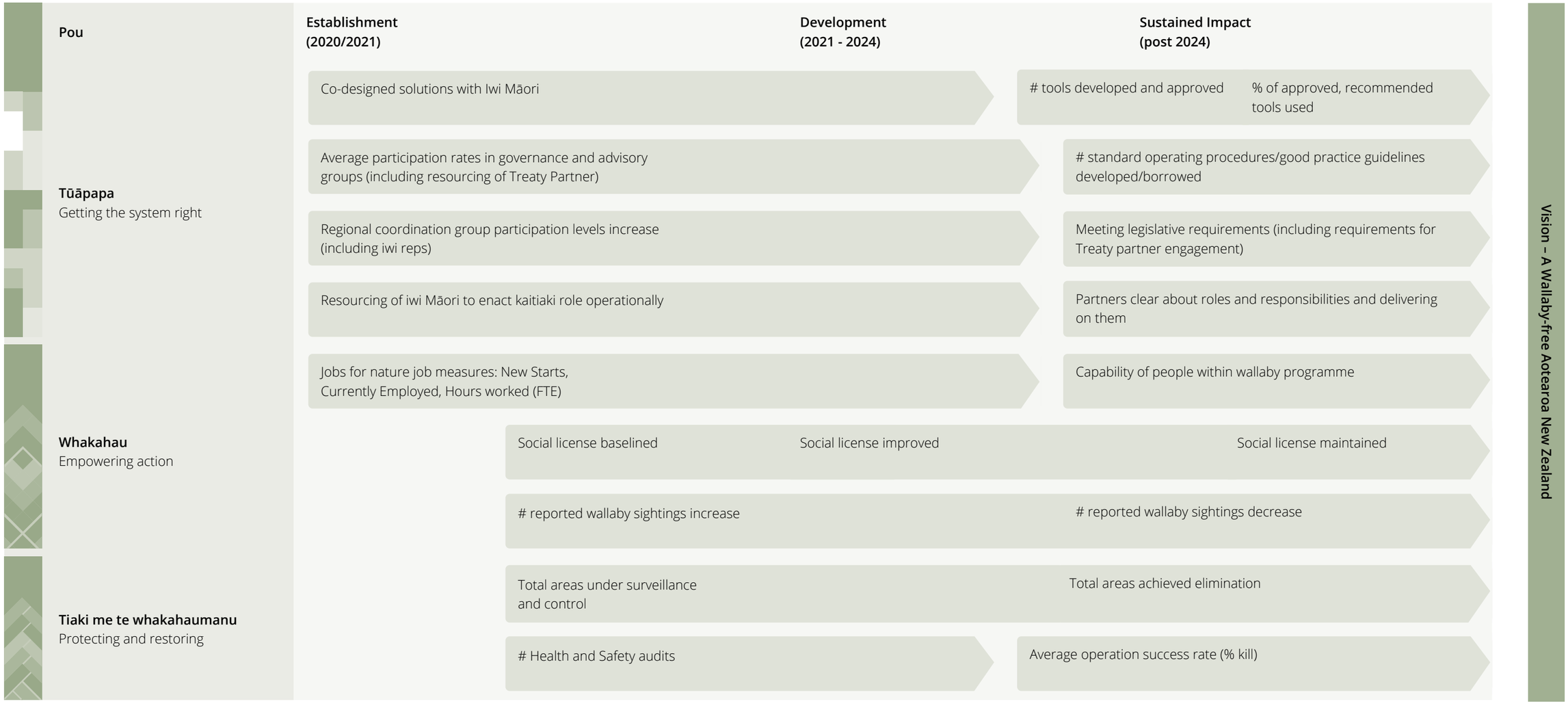
Pou 3 | Tiaki me te whakahaumanu – Protecting and restoring

Objective	Actions	Lead/Collaboration	Timeframe				
			2021	2022	2023	2024	2025
6. Wallaby populations outside the containment areas are identified and eliminated	6-7.a. Prioritise surveillance, control, and monitoring operations that will best achieve the objectives.	OAG		●	●	●	●
7. The density and distribution of wallabies within the containment areas are reduced (eventually to zero), working from buffer areas on the edge of containment areas first	6-7.b. Undertake surveillance, control and monitoring operations.	Regional Councils, Iwi	●	●	●	●	●
	6-7.c. Apply adaptive management to operations and continue to look for innovative solutions.	Regional Councils, Iwi	●	●	●	●	●
	6-7.d. Managing health and safety risks is a fundamental part of all wallaby operations.	BNZ	●	●	●	●	●

This pou is inspired by Kaokao patterns traditionally found on tukutuku panels. Kaokao means to be gathered or collected together and when used in a woven tukutuku represents the idea of strength and protection in numbers.

Appendix Six

Wallaby Programme Evaluation Framework



Kuputaka Glossary

Hapū	section of a large tribe, subtribe
Hauora	health, vigor
Iwi	tribe, group, collective people from a common ancestor
Kaitiaki	Guardian, trustee, minder
Kaitiakitanga	The obligation to nurture and care for the mauri of a taonga: ethic of guardianship, protection
Kaokao	chevron-like pattern used on tukutuku panels representing protection
Mana	authority, influence, status, power. Mana gives the authority to lead, decide, and hold spiritual, cultural and social power
Mana whenua	authority of the land, territorial power. Mana whenua refers to the mana held by the local people specifically with land rights belonging to iwi and hapū
Mātauranga Māori	Māori knowledge, Māori worldview, perspectives and practices originating from Māori ancestors
Mauri	life force
Ngāhere	forest, bush
Pātikitiki	a diamond shaped pattern symbolising providing for family and community, often used on tukutuku panels, lashing together
Pou	post, pole, teacher
Poutama	stepped pattern (commonly found in tukutuku pattern)
Rangatiratanga	chief, chieftanship, leading authority, authority over self
Rangatahi	children, younger generation, youth
Rongoā	remedy, medicine, cure, treatment
Taiao	environment, natural world, nature

Takiwā	area, territory, region
Tangata whenua	people of the land, local people
Taonga	treasure, prized possession, any culturally or socially valuable objects such as jewellery, ideas, resources etc.
Tipu Mātoro	Tipu Mātoro is about the growth, development and wellbeing of our ngāhere and whenua. It is about the positive effects of removing wallabies. "Tipu Mātoro means to grow and develop. The phrase is used in a popular East Coast waiata by Kuini Moehau Reedy for kōhanga reo. In the context of the National Wallaby Eradication Programme, the growth and development relates to Te Taiao, or our environment." – Atawhai Tibble, cultural brand advisor for Tipu Mātoro | Wallaby-free Aotearoa.
Whānau	family, family group, to be born
Whenua	land, country, earth

TIPU MĀTORO

Wallaby-free Aotearoa

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