horizons
regional council

PROPOSED

Horizons Regional Council Combined Regional Pest Management Plan and Strategy 2015-2035

AUTHORS

Section 1
James Lambie, Science Coordinator

Acknowledgements
The author gratefully acknowledges the contributions of Craig Mitchell, Bill Martyn, Craig Davey, Eric Dodd and Barry Gilliland

Section 2
Peter Russell
Better Biosecurity Solutions Ltd

Acknowledgements
The author gratefully acknowledges the contributions of Bill Martyn, Craig Davey, James Lambie, Eric Dodd, Maria Burgess, Neil Gallagher and Aaron Madden

Front Cover Photo
Stormy Point Lookout
(Craig Mitchell - Horizons Regional Council)

August 2015
ISBN: 978-1-927259-35-1
Report No: 2015/EXT/1456

CONTACT	24 hr Freephone 0508 800 800	help@horizons.govt.nz	www.horizons.govt.nz

SERVICE CENTRES	**Kairanga** Cnr Rongotea and Kairanga-Bunnythorpe Roads Palmerston North **Marton** Hammond Street **Taumarunui** 34 Maata Street	**REGIONAL HOUSES**	**Palmerston** North 11-15 Victoria Avenue **Wanganui** 181 Guyton Street	**DEPOTS**	**Levin** 11 Bruce Road **Taihape** Torere Road Ohotu **Woodville** 116 Vogel Street

POSTAL ADDRESS	Horizons Regional Council, Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442	F 06 9522 929

Foreword

Horizons Regional Council remains committed to the efficient and effective management of the threats imposed by pest plants and animals on the Region's economy and environment. These commitments are embedded in two combined documents – the *Proposed Regional Pest Management Plan* (2015 to 2035), which uses the provisions of the Biosecurity Act 1993 to support the implementation of strategic pest management, and the *Regional Biosecurity Strategy and Programmes*, which describes the broader aims and aspirations of Horizons' pest management programmes.

The 2012 amendments to the Biosecurity Act include the introduction of the National Policy Direction (NPD). Embedded in the purpose of the NPD is greater consistency between regional council pest management plans and the introduction of the principle of "Crown as a good neighbour". The *Proposed Regional Pest Management Plan* captures the essence of these directives by proposing a Plan that is consistent with the proposed NPD and identifying the use of a "good neighbour rule" where it is appropriate to use rules for the management of pests across boundaries.

Pest management is a joint effort between the regional councils, their communities and a host of other agencies that have a role in managing the effects of pests on economic and environmental values. The *Regional Biosecurity Strategy and Programmes* identifies a raft of non-regulatory methods Horizons can employ to give readers of the *Proposed Regional Pest Management Plan* a full understanding of the Council's biosecurity functions.

Michael McCartney
CHIEF EXECUTIVE

Table of Contents

Table of Figures, Tables and Maps

Section One: Regional Pest Management Plan

Part One: Plan Establishment

1. Introduction

1.1. Proposer

In recognition of its regional leadership role under the Biosecurity Act 1993, Horizons intends to establish a Regional Pest Management Plan. The first formal step is the notification of the proposed Regional Pest Management Plan (RPMP) for the Manawatu-Wanganui Region 2015-2035. This document, titled *Proposed Regional Pest Management Plan*, builds on and replaces the previous regulatory (Biosecurity Act) components of the Regional Pest Animal Management Strategy (2009) and the Regional Pest Plant Management Strategy (2007) in accordance with recent amendments to the Biosecurity Act. Throughout the document, this proposed Regional Pest Management Plan is referred to as the RPMP or the Plan and is intentionally written as if it were the final (operative) Plan.

1.2. Non-regulatory Regional Biosecurity Strategy

The RPMP supports the regulatory (Biosecurity Act) framework for implementing Horizons' new *Regional Biosecurity Strategy and Programmes* (Regional BSP), which details the pest management ambitions for the Manawatu-Wanganui Region for the next 20 years. The Regional BSP includes non-regulatory and aspirational aspects to pest management that cannot otherwise be incorporated into a RPMP.

1.3. Purpose

The purpose of the RPMP is to outline the regulatory framework for efficient and effective management or eradication of specified animal and plant organisms in the Manawatu-Wanganui Region so as to:

- Minimise the actual or potential adverse or unintended effects associated with those organisms; and
- Maximise the effectiveness of individual pest management action by way of a regionally coordinated approach.

There are many organisms in the Manawatu-Wanganui Region that are considered undesirable or a nuisance. However, it is only where an individual's pest management actions or non-action impose undue effects upon others that regional management is warranted. The Biosecurity Act 1993 (the Act) contains prerequisite criteria that must be met to justify such intervention. This Proposal signals which organisms should be classified as pests and managed on a regional basis.

Once made operative, the Regional Pest Management Plan will empower Horizons to exercise the relevant advisory, service delivery, regulatory and funding provisions available under the Act in delivering the specific objectives identified in Part Two of this Plan.

1.4. Coverage

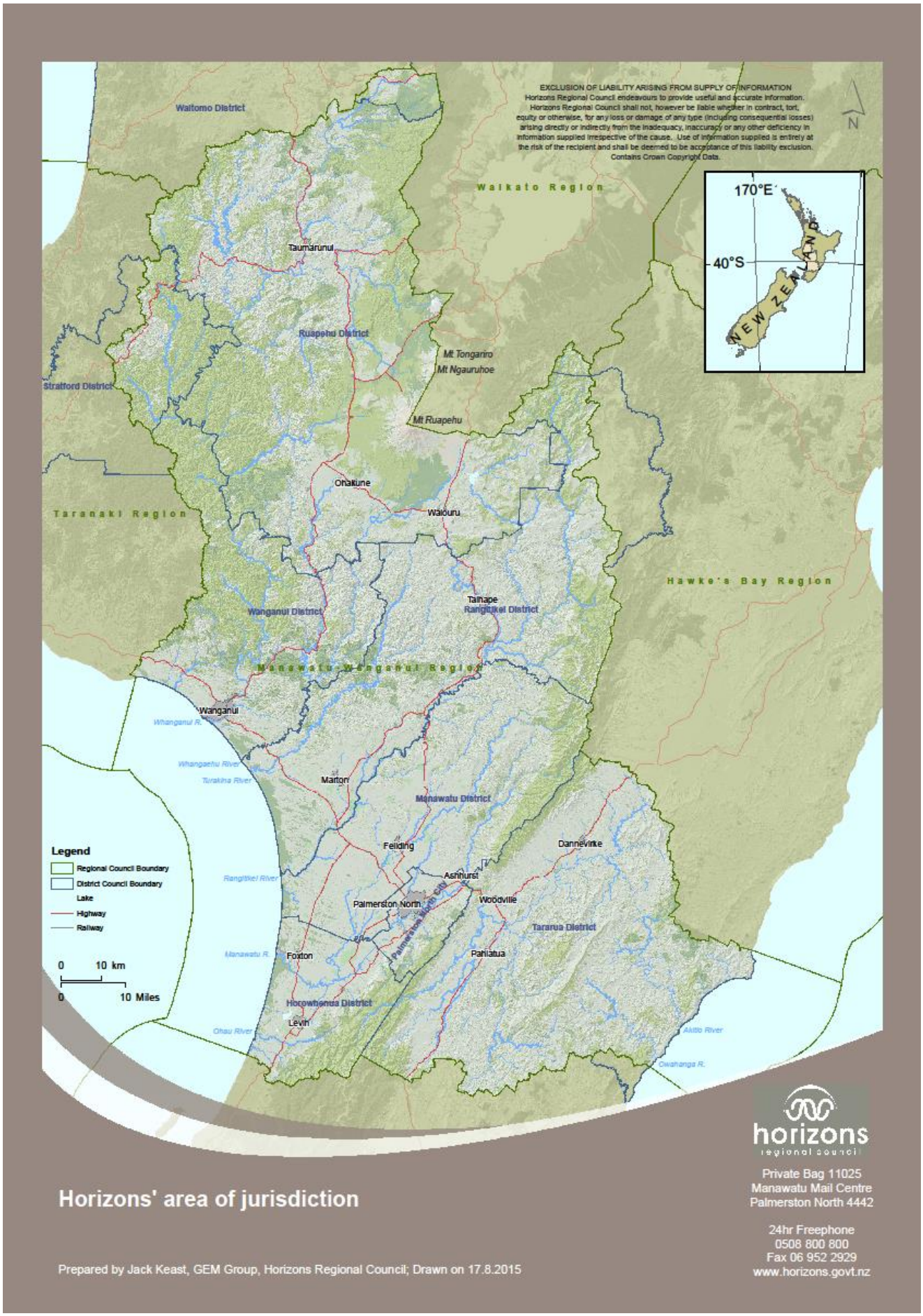
The Plan takes effect within the administrative boundaries of the Region (Map 1-1) as defined by the Local Government (Manawatu-Wanganui Region) Reorganisation Order 1989, *Gazette* p2351. The Manawatu-Wanganui Region covers a land area of approximately 22,215 square kilometres in the lower Central North Island, and extends 12 miles (19.3 km) out to sea.

1.5. Duration

The proposed RPMP has a duration period of 20 years and takes effect on the date that it is made operative in accordance with Section 77 of the Act.

1.6. Terms and definitions

A description of terms used in the proposed RPMP can be found in the Glossary at the end of this document.



Map 1-1: Regional Administrative Boundaries and Horizons' area of jurisdiction.

2. Organism Status

Section 2 identifies which organisms are classified as pests under the RPMP and which are assigned as 'any other organism to be controlled'. It also indicates the programme or programmes that will be utilised to meet the desired pest management objectives as described throughout Section 5.4 of this plan.

2.1. Organisms classified as pests

The animals and plants listed in Table 2-1 and Table 2-2 are classified as pests under this Plan, and assigned to a New Zealand-wide control designation embraced by regional councils. Section 5.1 of this Plan sets out the detail of each of the programmes, but in summary they are:

1. Exclusion programme (preventing establishment);
2. Eradication programme;
3. Progressive containment programme (rolling back); and
4. Sustained control programme.

These pests are banned from sale and distribution

In accordance with Section 52 of the Act, the pests listed in Table 2-1 and Table 2-2 should not be knowingly released or spread unless in accordance with this Plan or as otherwise permitted under Section 52 of the Act. Under Section 53 of the Act, any person in charge of these organisms should not offer for sale, or propagate, breed, or multiply the organisms unless permitted by a chief technical officer.

In addition to the pests listed in Table 2-1 and Table 2-2 there are a number of unwanted organisms that are not present in the Region, or in New Zealand, for which a central government agency (Department of Conservation, Ministry for Primary Industry, or Ministry of Fisheries) is the lead agency for regulating the distribution, eradication or exclusion of the pest. While not requiring direct involvement from Horizons, any discovery of these pests by Horizons' staff will be reported to the lead agency.

2.1.1. General rules for all pests

Rule 2.1.1. No person shall knowingly spread, cause to be spread, release, or cause to be released any pest to be managed in this Plan except:

(a) In the course of and in accordance with the Plan; or
(b) As provided in an emergency regulation made under Section 150 of the Act; or
(c) For a scientific purpose carried out with the authority of the Minister; or
(d) As permitted either generally or specifically by a chief technical officer.

Rule 2.1.2. The owner or person in charge of an organism which that person knows or suspects constitutes a pest to be managed in this Plan must not:

(a) Cause or permit that organism to be in a place where organisms are offered for sale or are exhibited; or
(b) Sell or offer that organism for sale; or
(c) Propagate, breed, or multiply the pest or unwanted organism or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding, or multiplication of the pest or unwanted organism.

A Chief Technical Officer may permit an owner or person in charge of an organism to carry out an act otherwise prohibited by rule 2.1.2 so long as permission is given either by notice in the *New Zealand Gazette* or in writing to the owner or person in charge of an organism.

Rules 2.1.1 and 2.1.2 do not prohibit the legal ownership or trade of domestic or farmed animals, as long as they are kept in accordance with legislation pertinent to their management and *Gazette* notices. Where the intent of those directives is not being followed by the owner or person in charge, those animals may be considered feral and may be controlled as pests under this Plan.

Rule 2.1.2 does not prohibit the sale and display of these organisms if they are dead (e.g. herbarium plant specimens or animals taxidermy). However, viable seed must not be offered for sale. Other legislation may prohibit the sale of the meat of animal organisms for consumption.

Breach of these rules is an offence under Section 154(N) of the Biosecurity Act, upon which Horizons will instigate the compliance and enforcement process as outlined in Section 8 of this Plan. The reason for banning the sale and distribution of pests under this Plan is to prevent their further spread through negligent liberations or ignorance.

Other organisms banned from propagation and release to the wild

The liberation of introduced animals (including mammals, birds, lizards, and invertebrates) to the wild is generally regulated by other legislation. Specifically, the liberation of pigs, goats, red deer, fallow deer, sika deer, sambar deer and possums to the wild is prohibited under the Wild Animal Control Act 1977. The Department of Conservation (DOC) has the statutory authority to act on illegal liberations of animals not otherwise covered in this Plan. Horizons will work with DOC to collectively address the issue of illegal liberations.

The liberation of any introduced fish species to water bodies, where the species is otherwise absent, is prohibited by the Conservation Act 1987. The Department of Conservation and the Fish and Game Council (in relation to sports fish) have the statutory authority to act on illegal liberations of fish not otherwise covered in this Plan. Horizons will work with these agencies to collectively address the issue of illegal liberations of fish. The liberation of birds is also regulated by these two agencies.

The liberation of any Unwanted Organism is banned under the Biosecurity Act 1993 and this includes a long list of plants and animals including insects and other invertebrates. Newly imported organisms are regulated under the Hazardous Substances and New Organisms Act 1996.

Check with Horizons, the Department of Conservation, the Fish and Game Council, the Ministry for Primary Industries, Ministry of Fisheries and the Environmental Protection Authority before releasing exotic plants and animals to the wild.

2.1.2. Pest animals

Table 2-1**:** Animal organisms classified as pests, their control programmes under this RPMP and the agency responsible for management.

The animals are listed alphabetically by common name. The page numbers quoted refer to the page on which the description of the species can be found.

Species	Exclusion	Eradication	Progressive Containment	Sustained Control
Wallaby species (pg. 32) *Macropus species*	✓ Horizons/MPI			
Possum (pg. 59) *Trichosurus vulpecula*				✓ Horizons
Rabbit (feral) (pg. 59) *Oryctolagus cuniculus*				✓ Occupier
Rook (pg. 34) *Corvus frugilegus*		✓ Horizons		

Note: All of the site-led pest animal species listed in the previous Pest Animal Strategy have been removed and will appear in the new Regional BSP. The reason for this is that rules banning those pests from sale and distribution does not contribute to their effective management under site-led programmes. The pests include feral mustelids, feral cats and koi carp. If the community desires that those pests be kept in the Plan, then those pests belong in this section.

2.1.3. Pest plants

Table 2-2**:** Plant organisms classified as pests, their control programmes under this RPMP, and the agency responsible for management.

The plants are listed alphabetically by common name. The page numbers quoted refer to the page on which the description of the species can be found.

Species	Exclusion	Eradication	Progressive Containment	Sustained Control
African feather grass (pg. 34) *Cenchrus macrourus*		✓ Horizons		
Alligator weed (pg. 34) *Alternanthera philoxeroides*		✓ Horizons		
Arrowhead (pg. 34) *Sagittaria montevidensis*		✓ Horizons		
Australian sedge (pg. 39) *Carex longebrachiata*			✓ Occupier	
Banana passionfruit (pg. 39) *Passiflora species*			✓ Horizons	
Blackberry (pg. 39) *Rubus fructicosus agg.*			✓ Occupier	
Blue passion flower (pg. 34) *Passiflora caerulea*		✓ Horizons		
Bladderwort (pg.32) *Utricularia gibba*	✓ Horizons			
Boneseed (pg. 40) *Chrysanthemoides monilifera*			✓ Horizons	
Broom species (exotic) (pg. 40) *Cytisus scoparius, Calicotome spinosa Genista monspessulana, Spartium junceum*			✓ Occupier	
Californian bullrush (pg. 32) *Shoenoplectus californicus*	✓ Horizons			
Cathedral bells (pg. 34) *Cobaea scandens*		✓ Horizons		
Chilean needle grass (pg. 32) *Nassella neesiana*	✓ Horizons			
Chilean rhubarb (pg. 34) *Gunnera tinctoria, G. manicata and all varieties and hybrids of these species*		✓ Horizons		
Chinese pennisetum (pg. 34) *Cenchrus purpurascens*		✓ Occupier / Horizons		
Climbing alstromeria (pg. 34) *Bomarea caldasii*		✓ Horizons		
Climbing spindleberry (pg. 34)		✓		

Species	Exclusion	Eradication	Progressive Containment	Sustained Control
Celastrus orbiculatus		Horizons		
Contorta pine (pg. 40) *Pinus contorta*			✓ Horizons	
Darwin's barberry (pg. 40) *Berberis darwinii*			✓ Horizons	
Eelgrass (pg. 40) *Vallisneria species*			✓ Horizons	
Egeria (pg. 40) *Egeria densa*			✓ Horizons	
Evergreen buckthorn (pg. 41) *Rhamnus alaternus*			✓ Horizons	
Field horsetail (pg. 41) *Equisetum arvense*			✓ Occupier	
Gorse (pg. 41) *Ulex europaeus*			✓ Occupier	
Grey willow (pg. 41) *Salix cinerea*			✓ Horizons	
Heath rush (pg. 32) *Juncus squarrosus*	✓ Horizons			
Himalayan balsam (pg. 35) *Impatiens glandulifera*		✓ Horizons		
Hornwort (pg. 41) *Ceratophyllum demersum*			✓ Horizons	
Knotweed (Asiatic and giant) (pg. 35) *Reynoutria japonica and R. sachalinensis*		✓ Horizons		
Lagarosiphon (pg. 41) *Lagarosiphon major*			✓ Horizons	
Manchurian wild rice (pg. 32) *Zizania latifolia*	✓ Horizons			
Moth plant (pg. 42) *Araujia sericifera*			✓ Horizons	
Nodding thistle (pg. 42) *Carduus nutans*			✓ Occupier	
Nassella tussock and Mexican feather grass (pg. 35) *Nassella trichotoma and N. tenuissima*		✓ Horizons		
Noogoora bur (pg. 32) *Xanthium strumarium*	✓ Horizons			
Old man's beard (pg. 42) *Clematis vitalba*			✓ Horizons	
Phragmites (pg. 32) *Phragmites australis*	✓ Horizons			
Purple loosestrife (pg. 35) *Lythrum salicaria*		✓ Horizons		
Queensland poplar (pg. 35) *Homalanthus populifolius*		✓ Horizons		
Reed sweetgrass (pg. 42) *Glyceria maxima*			✓ Horizons	
Rum cherry (pg. 35) *Prunus serotina*		✓ Horizons		
Saffron thistle (pg. 32) *Carthamus lanatus*	✓ Horizons			
Sagittaria (pg. 32) *Sagittaria platyphylla*	✓ Horizons			
Senegal tea (pg. 35) *Gymnocoronis spilanthoides*		✓ Horizons		
Spartina (pg. 35) *Spartina species*		✓ Horizons		
Sweet pittosporum (pg. 32) *Pittosporum undulatum*	✓ Horizons			
Tussock hawkweed (pg. 32)	✓ Horizons			

Species	Exclusion	Eradication	Progressive Containment	Sustained Control
Hieracium lepidulum				
Tutsan (pg. 42) *Hypericum androsaemum*			✓ Occupier	
Variegated thistle (pg. 42) *Silybum marianum*			✓ Occupier	
Wilding conifers (pg. 59) *(various species)*				✓ Occupier / Horizons
Woolly nightshade (pg. 36) *Solanum mauritianum*		✓ Occupier / Horizons		
Yellow bristle grass (pg. 42) *Setaria pumila*			✓ Occupier	
Yellow ragwort (pg. 43) *Jacobaea vulgaris*			✓ Occupier	

3. Planning and Statutory Background

3.1. Strategic background

Pest management influences, or is influenced by, the way land and water is used and managed, and Horizons has several planning or operational activity mandates that have regional pest management capacities. Land occupiers and the wider community, either as beneficiaries or exacerbators or both, are a fundamental part of the framework. The inherent nature of regional pest management planning processes under the Act provides the most efficient mechanism to reduce or prevent pest impacts on a region's economic, environmental, social and cultural values. The RPMP and the Regional BSP are therefore central to the implementation of all pest management activity. All regional authorities have regional pest management plans. Figure 3-1 depicts the key strategic relationships that influence or are influenced by Horizons' RPMP and Regional BSP.

This comprehensive linkage is reflected in the Council's biosecurity mission to "safeguard Horizons' regional economy and environment from the damage caused by harmful organisms".

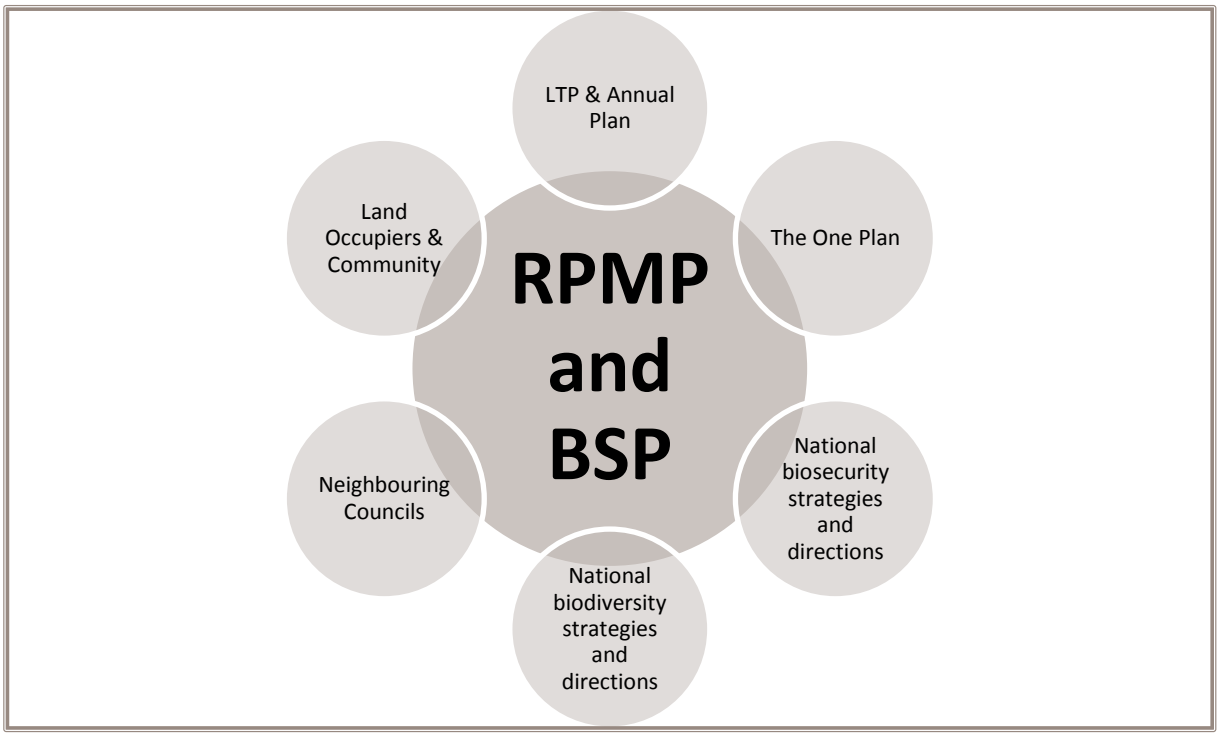


Figure 3-1: Strategic relationships of regional pest management

Long-term Plan (LTP) and Annual Plan: The LTP and annual planning processes define the resources that Horizons anticipates will be needed to accomplish the objectives set out in the RPMP. These processes provide Horizons' community with the ability to regulate the speed and cost of implementing the RPMP. These processes also identify the rate of implementation of other activities that have aspects of pest management within them, such as the Sustainable Land Use Initiative (SLUI), the Whanganui Catchment Strategy (WCS) and works under Horizons' flood control and drainage schemes.

The One Plan: The One Plan is Horizons' principal document dealing with matters for which Horizons is responsible under the Resource Management Act (RMA) 1991. In keeping with the RMA's general principles, the One Plan's policies, methods and regulations seek to protect the Region's economy, natural heritage and landscape. The RPMP provides a crucial tool in achieving the goals outlined in the One Plan by providing the regulatory framework for integrating the control of pests that affect the success of One Plan objectives for soil conservation, biodiversity and flood protection.

National Biosecurity Strategy: The New Zealand Biosecurity Strategy came into effect in 2003 and sets the scene for the expectations for nationally integrated pest management under the much anticipated National Policy Direction (NPD) (discussed in Section 3.4). The general expectations are:

- That there is clear and effective national leadership and coordination of pest management activities within central government, local government and the private sector;
- That there are transparent and effective performance measures to monitor and forecast the establishment of pest impacts and pathways;
- That the Crown meets its obligation as a landowner; and
- That there is a routine programme of national and regional communication and coordination, including ongoing assessment and review.

The Ministry for Primary Industry is the leading agency in biosecurity at the national level.

National Biodiversity Strategy: The New Zealand Biodiversity Strategy was launched in 2000 and is coordinated by the Department of Conservation. This strategy outlines the actions undertaken to implement New Zealand's requirements under the Convention on Biological Diversity, which was ratified by the New Zealand Government in 1993. The term 'biodiversity' relates to the variety of biological life and the natural patterns it forms, and includes genetic diversity, the diversity of species and habitat diversity. The New Zealand Biodiversity Strategy identifies that the maintenance of biodiversity in New Zealand is under great threat from invasive species. Effective biosecurity is a key need for the protection of biodiversity.

Neighbouring Councils: Horizons shares boundaries with Greater Wellington, Taranaki, Waikato and Hawke's Bay regional councils. It is in the interests of efficient and effective pest management to ensure that the pest management objectives between neighbouring councils are not inconsistent with each other. In developing this Plan, Horizons has remained cognisant of, and has given regard to the aims and objectives of existing pest management plans or strategies of neighbouring councils.

Land occupiers and the wider community: The task of strategic pest management is much greater than can be dealt with by Horizons alone. The RPMP is very much about Horizons' ability and capacity to manage the effects of pests on the Region's economy and environment, using regulation as guided by national legislation and policy direction. In the wider context of strategic pest management, successful pest control relies on land occupiers and the community to work jointly with Horizons to achieve the aims and aspirations outlined in the Regional BSP.

3.2. Legislative background

Regional councils undertake local government activities and actions under several legislative mandates. While embracing pest management is not solely dependent on a particular statute, its effectiveness is correlated to the purpose of the particular statute. All regional councils in New Zealand have favoured the Biosecurity Act 1993 for preparing and operating regional pest management plans. The successful implementation of the rules specified in this RPMP is wholly dependent on Horizons' powers under the Biosecurity Act. Figure 3-2 depicts the main legislative instruments Horizons must account for when implementing the Plan.

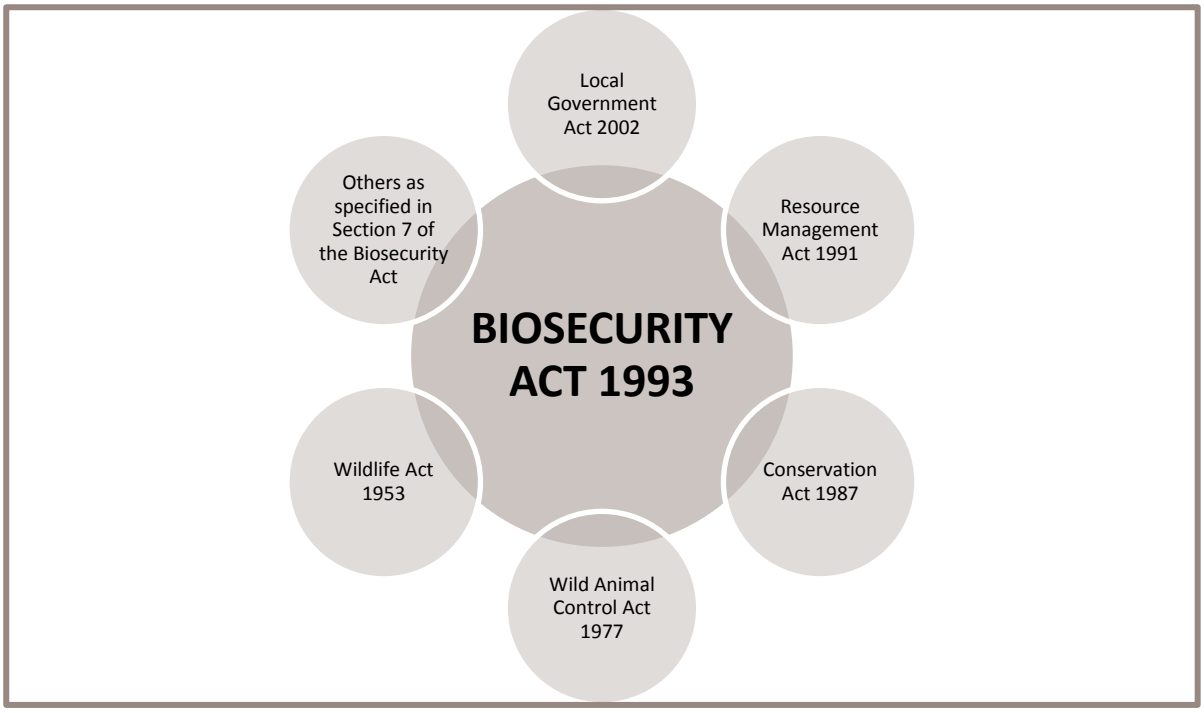


Figure 3-2: Biosecurity-relevant legislation

In preparing this Plan, Horizons has taken into account the Act and subsequent legislative amendments to it. This Plan has been considered, planned and funded pursuant to Part 5 of the Act. While the Act is the cornerstone of the Plan, nothing in the Plan is to affect or derogate from other legislation relating to pest management. This Plan is consistent with the Section 7 requirement of the Act to ensure the proposed management activities are in accordance with relevant New Zealand legislation.

3.3. Relationship with other Pest Management Plans

A regional pest management plan must not be inconsistent with:

(a) Any national or regional pest management plan (whether relating to the same region or any other region or regions) concerning the same organism; or
(b) Any regulation.

In developing this Plan, Horizons has remained cognisant of, and has given regard to the aims and objectives of existing pest management plans and strategies of neighbouring regional councils. As part of the Plan review process, Horizons will work with neighbouring regions to further identify approaches to managing pests common to all RPMPs, to ensure Horizons' RPMP is not inconsistent with neighbouring councils' RPMPs.

Horizons is also cognisant of, and has given regard to the control of unwanted organisms that are under the auspices of central government agencies. Horizons will work with the Department of Conservation, the Ministry for Primary Industries and the Ministry of Fisheries to ensure Horizons' RPMP is not inconsistent with their objectives for unwanted organisms.

3.4. Relationship with the National Policy Direction

The National Policy Direction (NPD), which is being prepared by the Minister for Primary Industries in accordance with Section 56 of the Act, has yet to come into effect although a draft of the NPD is available. The purpose of the NPD is to ensure that activities under Part 5 of the Act (Pest Management) provide the best use of available resources for New Zealand's best interests and align with one another, when necessary, to contribute to the achievement of the purpose of Part 5.

The following steps in Table 3-1 have been undertaken to comply with the draft NPD, with the aim of developing a Plan that will not be inconsistent with the final NPD.

Table 3-1: Steps to ensure compliance with draft National Policy Direction.

NPD requirements	Steps taken to comply
Programme descriptions	The types of programmes as described in Part 5 of the Plan are in accordance with clause 5 of the NPD.
Setting objectives	The contents of Section 5.2 of the Plan are described in accordance with clause 6 of the NPD.
Analysing benefits and costs	Analyses of costs and benefits (ABC) in accordance with clause 7 of the NPD. An explanation of Horizons' evaluation of its ABC process can be found in Section 9 of this Plan.
Funding rationale	The funding rationale described in Section 9 of the Plan has been developed in accordance with clause 8 of the NPD.
Good neighbour rules	The good neighbour rules focus on the added costs imposed on an occupier who controls the pest by a neighbour who does not control the pest to the same extent.

4. Responsibilities and obligations

4.1. The management agency

Horizons is the management agency responsible for implementing this RPMP. Horizons, in determining that it shall be the management agency, is satisfied that it meets the requirements of Section 100 of the Act in that it:

(a) Is accountable to the RPMP funders, including Crown agencies, through the requirements of the Local Government Act 2002;
(b) Is acceptable to the funders and those person(s) subject to management provisions of the RPMP through the implementation of the previous Regional Pest Management Strategies; and
(c) Has the capacity, competency and expertise to carry out the implementation of the RPMP.

Horizons will:

- Within 3 months of the Plan becoming operative, prepare an Operational Plan for its implementation;
- Review the Operational Plan annually, and, if it thinks fit, amend it;
- Prepare a report on the Operational Plan and its implementation not later than five months after the end of each financial year; and
- Make copies of the Operational Plan and reports on its implementation available to the public.

The principal measures by which Horizons will implement this Plan are identified in relation to individual animal and plant pests described throughout Section 5.4 of this Plan. The detailed manner in which Horizons will undertake its management responsibilities is set out in Part 3 (Procedures) of this Plan.

4.2. Compensation and disposal of receipts

The Plan does not provide for compensation to be paid to any persons as a result of any obligations under the Plan or its implementation. Should there be any net proceeds arising in the course of implementing the Plan, distribution shall be in accordance with Section 100I of the Act.

4.3. Affected parties

4.3.1. Private land occupiers/land owners

Under Part Two of the Plan, private land occupiers/landowners are generally responsible for managing pest populations on their land at or below levels specified in the rules. Failure to meet rule requirements can lead to regulatory action being taken against a land occupier/owner. However, in specific situations, Horizons will carry out or facilitate pest control where it is:

- In the interests of the wider community to do so;
- More cost effective for Horizons to do so;
- On a user pays basis or in an agreed rating district; or
- Part of regulatory default action.

Occupiers have a duty to report the presence of pests to Horizons and to refrain from the sale, propagation, distribution or harbouring of pests.

A land occupier cannot prevent the entry of a duly authorised person onto private land, at any reasonable time, for the purpose of establishing the presence or absence of pests, for managing pests or compliance with biosecurity law. While the methods of control are the prerogative of the land occupier, compliance with the requirements under other legislation (for example, the Resource Management Act or the Hazardous Substances and New Organisms Act) must also occur.

This Plan treats all private land equitably and emphasises the responsibilities and obligations of all land occupiers, including Maori. Council acknowledges the complex and variable relationships of Maori land ownership and occupation; comprising multiple ownership, including lessees, or a range of corporate management systems under the Companies Act or Te Ture Whenua Act. Where owners or occupiers are not identifiable, recourse may be made to the Maori Land Court or the Registrar of Companies to assist effective communication.

4.3.2. Crown agencies

Five central government agencies occupying the Crown estate have been identified as being significant beneficiaries or exacerbators of pest management in the Manawatu-Wanganui Region. Pursuant to Section 5 and Section 69 (5) of the Act, the Act binds the Crown to the extent that a good neighbour rule, or action under a plan to enforce a good neighbour rule in the Plan, are the only ways in which a plan may cause the Crown to become liable to meet obligations or costs. Horizons will also continue to pursue and maintain formal and informal relationships with Crown agencies to achieve the objectives of this Plan.

4.3.2.1. Department of Conservation

The Department of Conservation (DOC) administers 423,777 ha (approximately 19% of the total land area) in the Manawatu-Wanganui Region. It is an occupier for public conservation land under the Reserves Act 1977, National Parks Act 1980 and the Conservation Act 1987. There are two DOC Conservation Partnerships Regions (Lower North Island and Central North Island) with part of their areas within the Horizons boundaries). DOC has particular interest and expertise in the area of pest threats to indigenous biodiversity values.

4.3.2.2. Land Information New Zealand

Land Information New Zealand (LINZ) administers approximately 1,280 ha of vacant and non-rateable land. LINZ also has responsibility for unalienated Crown land in the Region and surplus railway land.

4.3.2.3. New Zealand Railways Corporation (KiwiRail)

KiwiRail is the Crown's agent responsible for managing approximately 522 km of land and rail infrastructure, on behalf of the Crown, in the Manawatu-Wanganui Region. This accounts for approximately 1,600 ha of non-surplus railway land.

4.3.2.4. New Zealand Defence Force

The New Zealand Defence Force (NZDF) has three large installations within the Region. They are Ohakea Air Force Base, Linton Army Camp and Waiouru Army Camp and its surrounding training area. The total area occupied is approximately 62,000 ha.

4.3.2.5. New Zealand Transport Agency

The New Zealand Transport Agency (NZTA) is the roading authority for State Highways. NZTA manages approximately 1,216 km of road and roadside verges and as such is subject to the conditions relating to the management of pests on road verges identified in Section 4.3.3 of this Plan.

Memoranda of Understanding for roles and responsibilities for pest management between Horizons and NZTA will be established. Such agreements will:

- Identify an annual operation plan to which NZTA agrees to be bound;
- State which species are to be controlled, and where, and best practice control methods suggested;
- State expected timeframes for completion of work;
- Incorporate existing agreements between roading authorities and their clients (ratepayers), e.g. non-toxin agreements; and
- Encourage machine hygiene and the prevention of pest spread.

4.3.3. Territorial Local Authorities

There are 10 Territorial Local Authorities (TLAs) wholly or partly contained within the Manawatu-Wanganui Region (see Map 1-1: Regional Administrative Boundaries and Horizons' area of jurisdiction.). They are: Horowhenua District, Palmerston North City, Tararua District, Manawatu District, Rangitikei District, Wanganui District, Ruapehu District, Stratford District, Taupo District and Waitomo District.

Each territorial authority will be bound by the rules in this Plan, with the exception of situations where adjoining land occupiers of road reserves are deemed responsible in accordance with Section 4.3.4. Each territorial authority will be responsible for meeting its costs of complying with this Plan. The only TLA not affected is Taupo District, which does not administer land or roads in the Manawatu-Wanganui Region.

Memoranda of Understanding for roles and responsibilities for pest management between Horizons and the TLAs will be established or renewed. Such agreements will:

- Identify an annual operation plan to which the TLA agrees to be bound;
- State which species are to be controlled, and where, and best practice control methods suggested;
- State expected timeframes for completion of work;
- Incorporate existing agreements such as non-toxin agreements between TLAs and their clients (ratepayers); and
- Encourage machine hygiene and the prevention of pest spread.

4.3.4. Occupiers of road reserves

Section 6(1) of the Act states that:

Where a pest management plan or a pathway management plan applies to land adjoining a road, the plan may state that the land includes, for the purposes of the plan, all or any of the portions of road bounded by —

(a) The boundary of that land abutting that road; and
(b) Lines extended from the end of that portion of boundary to the middle line of the road; and
(c) The middle line of the road connecting those extended lines.

Except where a rule prevents occupier control, roading authorities are responsible for controlling pests (as described in Part Two of this RPMP) on road reserves that they occupy in the following situations:

- Rest areas;
- Weigh pits and stockpile areas;
- Road reserves where road works have contributed to the establishment of named pests;
- Other isolated areas of road reserves mainly for safety reasons;
- Road reserves adjacent to land where the landowner is undertaking programmed pest management; and
- Any other area where it is unreasonable to expect adjoining landowners to control pests (e.g. steep topography).

Where the road reserve boundary is unknown it shall be taken as 10 m from the road centre line.

Except where a rule prevents occupier control, adjacent landowners are responsible for controlling pests (as described in Part Two of this RPMP) on road reserves in the following situations:

- Unformed (paper) roads that they occupy, or are contiguous to the land they occupy;
- On land beyond 10 m of the road centre line where the road reserve boundary is unknown;
- Where fences encroach into a surveyed road reserve, the occupier adjoining the road reserve shall be responsible for pests within that fenced area;
- Where adjacent occupiers do not support the use of toxins to control pests (e.g. organic farming practices), the occupier adjoining the road reserve shall be responsible for pest control in the road reserve as well.

4.4. Good neighbour rule process

Certain pests in this Plan have a good neighbour rule. A good neighbour rule focuses on managing the costs incurred by one neighbour due to the spread of pests from the property of the other neighbour, by focusing on managing externality effects. Horizons considers such rules to be useful to ensure that a person who is going to the trouble of managing certain pests on his or her land is not incurring unreasonable ongoing costs resulting from a neighbour not doing the same.

The good neighbour complaint procedure is:

4.4.1. Complaint received

Complaint given to Council staff regarding pest invasion involving the migration of pest/s from land owned by a neighbour or near neighbour.

4.4.2. Staff investigation / Pest creating unreasonable cost

- Council staff will document the complaint and arrange inspection in a timely manner. On investigation the Council Officer will check that the pest in question is listed in this Plan.
- The pest must be present at such density that significant cost is being imposed on a neighbour or near neighbour.
- The Officer needs to ascertain that any unreasonable cost imposed on a neighbour or near neighbour can be attributed to pests established on a property crossing an ownership boundary and infesting otherwise clear land.
- If the Council Officer determines this has occurred further action will be taken, initiated by an assessment using the Decision Support Tool (DST).

4.4.3. Decision Support Tool (DST)

When an initial inspection has taken place and further action has been decided on, the Officer will be guided by the DST. Figure 4-2 depicts the DST process.

The first action will be to ensure all parties have an understanding of the Act and RPMP. This is to confirm that the parties know what their rights and responsibilities are.

Two key good neighbour principles the parties need to know are:

1. No-one is required to bear the unreasonable cost of managing pests named in the RPMP that come from land owned by a neighbour or near neighbour; and
2. Conversely, a landowner with infestations of a pest is only obliged to manage it so it does not cause neighbours or near neighbours to bear unreasonable pest management costs.

Guidelines for this are set out in the National Policy Direction regarding the 2012 Biosecurity Act amendments.

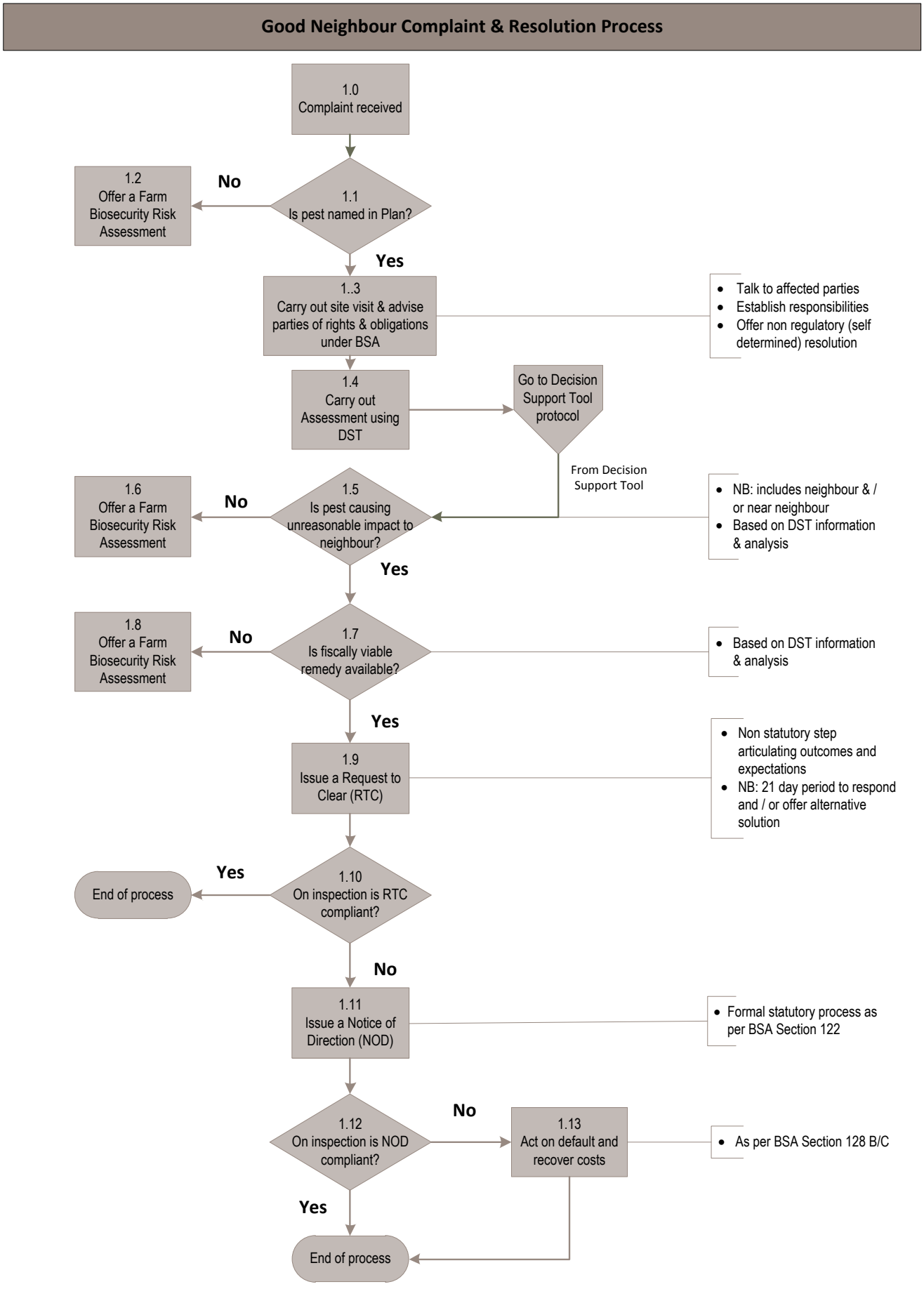


Figure 4-1: Good Neighbour Rule – Complaint processes and protocol for resolution

Decision Support Tool (DST) – Process for determining a fiscally viable remedy to pest complaint

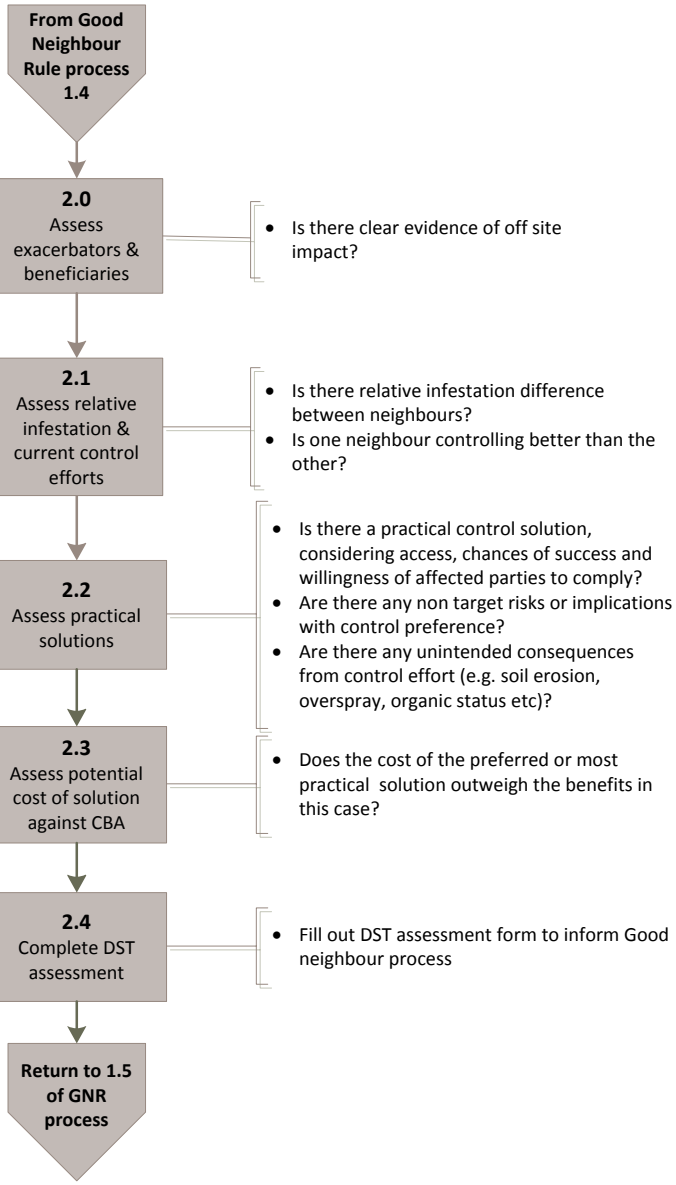


Figure 4-2: Decision Support Tool (DST) – Process for determined fiscally viable remedy

4.4.4. Evaluation and assessment of benefits and cost (ABC)

An assessment of the pest impacts will be carried out.

During any assessment the Officer will;

1. Determine that the pest in question is listed in the RPMP.

2. Determine that, in the absence of the Good Neighbour Rule, the pest would spread to land that is adjacent or nearby within the life of the Plan and would cause unreasonable costs to an occupier of that land.
3. Consider the proximity and characteristics of the adjacent or nearby land and the biological characteristics and behaviour of the particular pest.
4. Identify whether the occupier of the land that is adjacent or nearby is taking reasonable measures to manage the pest or its impacts.
5. Ensure that the solution does not set a requirement on an (exacerbating) occupier that is greater than that required to manage the spread of the pest to adjacent or nearby land.
6. Determien whether the costs (on the exacerbating occupier) of compliance with the rule are reasonable, relative to the costs that the neighbour would incur from the pest spreading, in the absence of a rule.

4.4.5. Fiscally viable remedy

When a remedy is considered both reasonable and compliant with ABC criteria, a Request to Clear (RTC) process is commenced. Should the RTC action fail, a Notice of Direction (NOD) can be taken to enforce action. Failure to comply with NOD could result in the Council acting on default under the Act. Council can undertake the work requested in the NOD and recover cost from the exacerbating landowner.

Part Two: Pest Management

5. Programmes and Attributes

In preparing management objectives and identifying the principle measures for implementing pest management programmes, Horizons undertakes an analysis to determine the most sensible, equitable, practical and affordable management solution for each pest or class of pest under an appropriate designation.

5.1. Pest management programmes

The pests, and any other organisms to be controlled, will be managed under one or more pest management programmes. These nationally defined programmes reflect outcomes in keeping with invasion extent and the ability to achieve desired control levels for the particular pests. The programmes are described as follows:

5.1.1. Preventing establishment: Exclusion programme

The intermediate outcome is to search for and control new incursions of the pest which is present in New Zealand but not yet established the Region, and which has the potential to become a serious pest in the future. Section 100V of the Act may be used to instigate emergency control of new incursions of pests that are not otherwise listed in this Plan.

5.1.2. Eradicating: Eradication programme

The intermediate outcome is to eradicate the pest in an area. In the short to medium term, eradication involves reducing infestation levels where it becomes difficult to detect if the pest still exists. This category includes potentially invasive pests where their rate of increase or geographic extent is not well known, but is assumed to be at low densities or low geographic spread.

5.1.3. Rolling back: Progressive containment programme

The intermediate outcome is to contain and reduce the geographic distribution of the pest to an area over time. Containment usually arises in situations where a pest is at high densities in part of the Region, but of low extent or limited range. Eradication is not feasible, but it is feasible to prevent the pest from spreading to other parts of the Region or to eradicate the pest from other parts of the Region.

5.1.4. Managing Externalities: Sustained Control programme

The intermediate outcome is to provide for the sustained control of the pest to a level where externality impacts are manageable. The focus is on the densities of a subject and ensuring they do not reach a level where they are causing significant externality impacts. Sustained control is a strategy for pests of low to moderate densities but of such wide geographical spread that they cannot be easily eradicated.

5.1.5. Protecting value in places: site-led pest programme

The intermediate outcome is to exclude, eradicate, contain, reduce or control the pests that are capable of causing damage to a place (site) and its values.

5.2. Objective framework

The NPD prescribes the following matters to be encompassed within an Objective for each organism or classes of organisms (s70(2)(b) of the Act):

- The particular adverse effect/s (s54(a) of the Biosecurity Act) to be addressed;
- Pest management immediate outcome/s to be achieved;
- The area to which it applies;
- The level of outcome, if applicable;
- The period for achieving the outcome; and
- If the period for achieving the outcome is greater than 10 years, what intermediate outcome is anticipated in the first 10 years of the RPMP.

To this end, the Objectives for each pest specifies the duration and outcomes for each pest (See Pest Management Attributes – Section 5.4).

5.3. Principal measures

The Act requires a proposed Regional Pest Management Plan to indicate the principal measures (actions) that will be used in the Plan to achieve the objectives (s70(2)(c)(iv)). The following principal measures are grouped under four main categories. The activities that may occur within each category are provided as a suite of possibilities that may be applied as appropriate.

5.3.1. Requirement to act

Land occupiers or other persons may be required to act where Plan rules dictate:

(a) Pests are to be controlled;
(b) Management plans are to be prepared and submitted;
(c) The presence of pests is to be reported;
(d) Any actions that are to be reported (type, quantity, frequency, location, programme completion);
(e) Pests are not to be spread (propagation, sale, distribution), pathways are to be managed (machinery, gravel, animals).

5.3.2. Council inspection

This measure may include staff undertaking:

(a) Property visits or surveys to determine the presence or absence of pests, compliance with rules and management programmes, or to identify areas for which control programmes will apply (places of value, exclusion zones, movement control areas);
(b) Regulatory management (rule enforcement, action on default, prosecution, exemptions);
(c) Limited control action where it is effective and cost efficient to do so;
(d) Effectiveness monitoring where it is more effective and cost efficient than to do so independently.

5.3.3. Service delivery

Horizons may undertake service delivery as follows:

(a) Where it is funded to do so within a rating district;
(b) On a user-pays basis;
(c) Providing control tools, including sourcing and distributing biological agents or provisions.

5.3.4. Advocacy and education

Horizons may undertake:

(a) The provision of any of a broad suite of general purpose education, advice, awareness and publicity activities concerning pests, pathways and their control to both land occupiers and the general public;
(b) Encouragement of land occupiers to carry out pest control;
(c) Facilitating or funding community and land occupier self-help groups and committees;
(d) Assisting other agencies with control, advocacy and the sharing or sourcing of funding;
(e) The promotion of industry requirements and best practice to contractors and land occupiers;
(f) Encouragement of land occupiers and other persons to report the presence of pests or to control them;
(g) Facilitating or commissioning research.

5.3.5. Memoranda of Understanding (MOU)

Horizons may develop MOUs with agencies to achieve the following:

(a) Establish agreed levels of services from those agencies to act to control pests on their land;
(b) Defer enforcement actions, such as good neighbour rules in this Plan, in preference for pragmatic levels of service that achieve the objectives of the RPMP and the aspirations of the Regional BSP.

5.4. Pest management attributes

The following section describes the pest management attributes for each pest or group of pests to be managed under this Plan. This section also describes any rules that will be used to achieve the objectives of the Plan.

For each pest or group of pests listed the Act requires a proposed Regional Pest Management Plan to describe the reasons for inclusion (and why it is more appropriate than relying on voluntary action), the objective of pest management (see Section 5.2 above) and the principal measures used to achieve the objectives (see Section 5.3 above).

The Act also requires that Horizons be satisfied that the pests are capable of causing at some time an adverse effect on at least one of a number of values. To inform the evaluation of the funding of the RPMP (Section 9), Horizons has grouped the values into three broad categories:

- Production pests – those that affect the value of economic wellbeing, or affect animal welfare;
- Environmental pests – those that affect the viability of threatened species, indigenous plants or animals, or affect the sustainability of natural ecosystems, ecological processes and biodiversity, or affect soil resources and water quality; and
- Social / amenity pests – those pests that affect human health, social and cultural wellbeing, or affect the enjoyment and the recreational value of the natural environment, or affect the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu and taonga.

These effects are reported for each pest or group of pests under Status in Table 5-1, Table 5-3, Table 5-8 and Table 5-17 respectively.

5.4.1. Exclusion Programme

Horizons' Exclusion Programme covers species for which Horizons has opted to be the lead agency or partner for managing new incursions into the Region. These pests are present outside Horizons' Region and have the potential to expand their range into the Manawatu-Wanganui Region and become a problem. At the time of writing this RPMP, these pests have not yet established viable or persistent populations in the Region, or they have recently been eradicated. If these organisms do appear in the Region, Horizons can opt to undertake small-scale eradication programmes of these species under Section 100V of the Act, without the need to review the RPMP.

Table 5-1: Organisms on Horizons' Exclusion Programme.

The page numbers quoted refer to the page on which the management regime for each species can be found.

Species	Description	Status
Bladderwort (pg. 33)	A sprawling submerged aquatic plant with finely divided thread-like leaves, with tiny round bladders (often black) which trap small aquatic invertebrates. Small yellow flowers (from summer to autumn). Forms dense mats and is capable of invading wetlands and ponds, potentially displacing native *Utricularia* species.	Environmental Pest, absent from Region
California bulrush (pg. 33)	A tall dense clump-forming rush found on coastal river banks and estuaries. A small site of this environmental weed (near Taumarunui) has been eradicated.	Production Pest, extirpated
Chilean needle grass (pg.33)	An erect, tussocky perennial grass. Primarily a production pest plant affecting pastoral farming, but capable of invading indigenous ecosystems also.	Production Pest, absent from Region
Heath rush (pg. 33)	A leafy rush, this environmental pest plant is capable of invading indigenous ecosystems.	Environmental Pest, absent from Region
Manchurian wild rice (pg. 33)	A large-growing grass that grows on the margins of wetlands and waterways. This environmental pest plant is classified nationally as unwanted organism. Regulated also by the Ministry for Primary Industries.	Environmental Pest, absent from Region
Noogoora bur (pg. 33)	A herbaceous weed with 'bur' fruits. This production pest plant affects economic well being (mainly the value of wool).	Production pest, absent from Region
Phragmites (pg. 33)	A large reed forming dense beds on the edges of water. This is an environmental pest plant and is classified nationally as an unwanted organism. Regulated also by the Department of Conservation.	Environmental Pest, absent from Region
Saffron thistle (pg. 33)	A herbaceous weed, this production pest plant affects pastoral productivity.	Production Pest, absent from Region
Sagittaria platyphylla (pg. 33)	An invasive aquatic herb, this environmental pest plant is capable of invading indigenous aquatic ecosystems.	Environmental Pest, absent from Region
Sweet *pittosporum* (pg. 33)	A shrubby tree, this environmental pest plant is capable of invading indigenous scrub ecosystems.	Environmental Pest, absent from Region
Tussock hawkweed (pg. 33)	A herbaceous weed found in grassland, roadsides, and river beds. This environmental pest plant is capable of invading indigenous ecosystems.	Environmental Pest, absent from Region
Wallaby species (pg. 33)	These mammals are production pest animals that mainly affect pastoral and horticultural values. Classified nationally as an unwanted organism. Regulated also by Ministry for Primary Industries.	Production pest, absent from Region

REASON FOR INCLUSION

The pests on the Exclusion Programme, classed as production or environmental pests, are capable of causing adverse effects to the productive capacity of the Region, or to the Region's environmental values, as indicated by the Description and Status of each of the pests in Table 5-1 above.

Table 5-2: Management regime for Exclusion Programme pests

Management regime for Exclusion Programme pests	
OBJECTIVE Over the duration of the Plan, exclude the pests listed in Table 5-1 from the Region to prevent adverse effects on economic well-being and the environment.	**PRINCIPAL MEASURES** Service delivery Horizons will undertake control of these pests should they arrive in the Region. Council inspection Horizons will conduct searches in areas that are vulnerable to invasion by the subject species. Advocacy and education Horizons will carry out programmes to increase public awareness of the exclusion programme and the threat posed by these pests. These pests will be incorporated into generic biosecurity advocacy programmes, including information on limiting their dispersal. Requirement to act Occupiers have a duty to inform Horizons of the presence of these pests on their land. Horizons will enforce the general rules for all pests as detailed in Section 2.1 of this Plan.
AIMS • Detect these pests before they become widely established in the Region. • Facilitate a quick response through appropriate funding that will enable the control or management of these species.	
MONITORING The organisms listed in Table 5-1 will be monitored in accordance with Section 7.1 of this Plan.	**OUTCOMES** Economic losses to the primary production sector by these pests are avoided. Native ecosystems are protected from the adverse effects of these pests.

5.4.2. Eradication Programme

Horizons' eradication programme covers species for which Horizons has opted to be the lead agency or partner for eradicating the organisms from the Region. These pests are present in Horizons' Region but are limited in their size or extent of infestation, or their eradication is feasible and a cost-effective solution to protecting production or environmental values into the future. Many of these organisms are environmental or production pest plants. The rook (listed first) is the only pest animal included.

Table 5-3: Organisms on Horizons' Eradication Programme

The page numbers quoted refer to the page on which the management regime for each species can be found.

Species	Description	Status
Rook (pg. 37)	A social bird from the crow family. Adult is glossy black, approximately 50 cm in length and weighs 350-500 gm. Through effective past control rooks are largely restricted to the Tararua District, although there remain small rookeries in the Manawatu and Taihape areas. There is a large area of suitable habitat (farmland with cropping) west of the main ranges that could support many more birds. Current evidence suggests that they will increase in numbers to economically damaging levels if uncontrolled.	Production Pest
African feather grass (pg. 38)	A robust rhizomatous perennial grass that forms dense tussock up to 2m tall. A distinctive yellow/purple flower (from November to April) on a narrow cylindrical stem up to 300 m long. Known sites in Wanganui, Horowhenua and along the Manawatu River in the Tararua District. Unpalatable to stock and can outcompete pasture. Possibly some environmental effects as it prefers damp situations in swampy areas and along borders of streams, though will grow in a range of soil types including sand.	Production Pest
Alligator weed (pg. 38)	An aquatic perennial herb with floating stems that form dense floating mats. Waxy oval / egg shaped leaves in opposite pairs. Flowers (from December to February) are white in small papery florets in clover-like heads up to 13 mm in diameter. Known only at one site near Taumarunui. Grows quickly and can infest swamps, ponds, lagoons, stream banks, dune hollows and drains. Has also the potential to cause economic losses to lowland pasture and cropping land.	Environmental Pest
Arrowhead (pg. 38)	A robust, stem-less, rhizomatous aquatic plant. Young plants have ribbon-like leaves and grow submerged. Older plants emerge above the water with glabrous leaves that are shaped like an arrowhead up to 28 cm long and 23 cm wide. Currently known at 2 sites in the Region. An invasive weed with the potential to block waterways and invade wetlands.	Environmental Pest
Blue passion flower (pg. 38)	A hairless vine with angular shoots with five-lobed leaves. Purple-white flowers (from December to April). Low infestations in the Region, and only known from Wanganui City, Dannevirke and the vicinity of Levin. The number of residential gardens in which blue passion flower is being cultivated is currently unknown. Capable of causing damage to native bush areas by smothering shrubs and canopy trees. It can grow in coastal shrublands, lowland forests, forest margins and wasteland areas.	Environmental Pest
Cathedral bells (pg. 38)	A fast-growing perennial climber with leaflets in three pairs. Leaves dark green above, whitish underside, with a brown stalk ending in a twining tendril. Flowers (summer to autumn) are bell-shaped, green initially and colouring to purple after pollen production. Large winged seed. Currently known from 25 sites with less than 10 hectares affected in total. The growth habit is to carpet the understory of forests and smother canopy trees. This climber has the potential to become a major environmental pest problem in native forests, scrub and recreation areas.	Environmental Pest
Chilean rhubarb (pg. 38)	A giant clump-forming summer-green herb growing up to 2 m tall. Rhubarb-like leaves approximately 80 cm by 100 cm, with soft prickles on main veins. Small greenish flowers (from October to November) on tall (1 m long) panicle rising from the base of the leaf stalks. Small (1.5 mm to 2 mm long) fruits are highly visible. Present in parks, botanic gardens and large private gardens, and in the wild along streams and drains. Current estimated area is 400 hectares. Has the potential to invade any steep wet cliff areas at the expense of indigenous habitat, and ability to invade pastoral drains. Considered a serious pest in Taranaki.	Environmental Pest
Chinese *pennisetum* (pg. 38)	A tufted perennial grass that forms large tussocks around 1m high. Leaves are long and wiry. Flowers are purplish, bristly, cylindrical spikes. Now extends to around 1000ha. Generally unpalatable to stock. Does not compete successfully with dense pasture, but has the capability of affecting hill country pastures. Difficult to control once established. Small plants are difficult to distinguish from other grasses and rushes.	Production Pest
Climbing *alstromeria* (pg. 38)	A rhizomatous perennial vine with multiple twining stems. Pale green leaves are thin, elongated and pointed at the tips. Flowers are trumpet-shaped in dense drooping clusters. Flowers (mainly in spring or summer) are orange-red on the outside and yellow with red spots on the inside. Fruit is a capsule that splits to reveal bright orange/red fleshy seeds. Known from 8 sites in the Region. This shade tolerant vine has the capability of invading and smothering native forest and shrublands, particularly on margins such as tracks and fence lines.	Environmental Pest
Climbing spindleberry (pg. 38)	A deciduous hairless climber that can grow at least 12 m tall. Leaves are arranged alternately on the stem and are round to elliptical in shape. Flowers (from October to December) are green and inconspicuous. Fruit are showy and yellow, opening to expose a scarlet centre. Currently infesting approximately 110 ha. Aggressively invasive and shade tolerant, this weed is capable of invading and smothering native forest canopies and preventing forest regeneration by forming dense mats on the forest floor.	Environmental Pest

Species	Description	Status
Himalayan balsam (pg. 38)	A herbaceous summer annual that can grow up to 3 m tall. Succulent reddish-green stem which is hollow and can range from 5 mm to 50 mm in diameter. Flowers are white to dark pink and resemble a British policeman's helmet. Balsam is frost-sensitive and dies back in winter. Found naturalised at 5 sites within the Region. Has the capability to compete with native plants for light, space, nutrient, and pollinators (bees) and can rapidly spread along gullies, riparian and forest margins, and into wetlands. On river banks, it can form dense monoculture stands that die back in winter, leaving bank prone to erosion.	Environmental Pest
Knotweed (pg. 38)	Upright perennial herb that can grow up to 3 m tall. Leaves are variable, oblong to spade-shaped and 50-140 mm long by 30-130 mm wide. Flowers are very small, white-greenish in colour and produced on long spikes in summer. Winged fruits. Presently known to be in isolated low-density populations. Tolerates a range of conditions including shade, high temperature, high salinity, drought and floods. Can form dense thickets and once established, populations can be extremely persistent. Has the potential to be a severe problem in riparian margins and low-lying areas and is known to be a serious pest in Australia, US and UK.	Environmental Pest
Nassella tussock and Mexican feather grass (pg. 38)	Vigorous perennial grasses with numerous drooping fine and wiry leaves. The two species are similar to each other. Plants grow up to 1 m tall and have a dense fibrous root system. Flowers (from October to December) are open-branched panicles, purple in colour. Seeds are wind dispersed and can travel up to 16 km from the parent plant. Known from 1 site, near Kakariki, that covers approximately 2 ha. Has the capability to invade and replace desirable pasture species, reducing stock carrying capacity by up to 10%.	Production Pest
Purple loosestrife (pg. 38)	A slow growing, hairy, perennial herb that grows up to 2 m tall. Dense purple flowered spikes at the top of each branch that produce thousands of long-lived seeds. Dies back to root crowns over winter. Currently present in low numbers across the Region, with a total area of infestation of about 100 ha. Highly invasive of wetland areas, stream and lake margins, and drains. Has the potential to displace all other wetland plants in lowland wetlands, drastically altering native ecosystems. One of the worst wetland plants in the US.	Environmental Pest
Queensland poplar (pg. 38)	An evergreen shrub with grey bark. Smooth, hairless leaves are green on the upper side and silver to blue-green underneath. Distinctly heart-shaped leaf turns deep-red in autumn. Flowers (from September to November) are small and inconspicuous. Smooth, round, drooping fruit look like small green buttons. Known in Wanganui at 3 sites. Can seed prolifically and is shade tolerant. Capable of forming a sub-canopy under native forests, effectively displacing native vegetation through competition for light, water, nutrients and space.	Environmental Pest
Rum cherry (pg. 38)	A large deciduous tree growing up to 18 m tall with a canopy 8 m wide and a trunk diameter of 70 cm to 120 cm. Leaves are 60 mm to 140 mm long. Small flowers (10 mm-15 mm in diameter) have 5 white petals and are fragrant. Leaves turn bronze in autumn and flowers appear in profusion before new leaves emerge in spring. The fruit ripens to dark red / black. Known from 2 sites in the Region. Little is known of the ecological impact of this species in New Zealand, but it is known to be highly invasive in Europe and dense stands of seedlings have been reported as being present in open forest sites in New Zealand. Suspected to be capable of invading native forest margins. While mainly considered an environmental pest, leaves have been reported to have caused livestock poisoning.	Environmental Pest
Senegal tea (pg. 38)	A perennial aquatic herb that grows to more than 1 m tall. It has hollow stems (1 m to 1.5 m long and 5 mm to10 mm in diameter at first, increasing to 20 mm with age) which become prostrate and take root at nodes. It also has dark-green, slightly waxy, lance-shaped leaves (50 mm to 200 mm long by 25 mm to 50 mm wide) with serrated edges. Flowers (from November to April) are highly scented and clover-like. Known from 15 sites in the Region, located in Wanganui, Palmerston North and near Levin. Grows very quickly and is known to rapidly cover water bodies with a floating mat, excluding other plants and the animals that rely on those habitats. The effects of flooding are made much worse because infestations block drainage channels. Recreational activities, irrigation and navigation may also be affected.	Environmental Pest
Spartina (pg. 38)	A herbaceous perennial plant growing 0.4 m to 1.3 m tall, yellowish green in spring and summer, and turning light brown in autumn and winter. The leaves are 200 mm to 600 mm long and 150 mm broad at the base, tapering to a point. It produces flowers and seeds on only one side of the stalk. The flowers are a yellowish-green, turning brown by the winter. Currently known to occur on public land at 3 river mouth sites. Spartina is managed by DOC but has the potential to invade wetlands outside of public estate if not managed. New colonies may take some time to become established, but once they do, vegetative spread by rhizomes is rapid, smothering natural ecosystems and preventing birds like waders from feeding.	Environmental Pest

Species	Description	Status
Woolly nightshade (pg. 38)	A shrub or small tree capable of growing as tall as 5 m. Leaves are large (100 mm to 25 mm long by 35 mm to 100 mm wide), and are light to dark green on the upper surface, white to yellowish green on the lower surface. Flowers occur in dense clusters (from January to December), usually mauve to purple in colour, or white. Occasionally produces a spherical berry (c. 10 mm in diameter), dull yellow in colour. Primarily bird-dispersed. Present in dense populations around Wanganui but currently sparse elsewhere in the Region. An estimated 100 ha of production land is infested with woolly nightshade with a further 630 ha of commercial forestry, marginal land and urban areas with scattered infestations. An aggressive and rapidly growing plant that can establish quickly in poorly managed land, hill country and forest margins. The species is very competitive and readily invades over the top of gorse.	Production Pest

REASON FOR INCLUSION

The pests on the Eradication Programme, classed as production or environmental pests, are capable of causing adverse effects to the productive capacity of the Region, or to the Region's environmental values, as indicated in the Description and by the Status of each of the pests in Table 5-3. For these species, it is appropriate that Horizons be involved in managing these pests rather than relying on voluntary action, because the successful eradication of these species requires coordination of action at regional scale, and the benefits of the control of many of these pests accrue to a wider community than those directly affected by the presence of the pests on their property. Occupiers are duty bound to inform Horizons of the presence of these pests and to allow Horizons to undertake management, otherwise the eradication objective for these pests is compromised.

Table 5-4: Management regime for rooks

Management regime for rooks	
OBJECTIVE Over the duration of the Plan, eradicate rooks from the Region to eliminate adverse effects on economic well-being. **AIMS** • All ground-based poisoning operations result in a 95% kill rate or higher. • Progressive reduction of active nests within the Region to fewer than 70 active nests by 2020. • Eradicate rooks from the Region by 2030.	**PRINCIPAL MEASURES** Service delivery Horizons will coordinate and conduct control operations on all rookeries, and on rook flocks where conditions are suitable. Council inspection Horizons will undertake investigations to determine the location of all rookeries in the Region. Horizons may also undertake site specific investigations to determine damage. Advocacy and education Horizons will carry out programmes to increase public awareness and promote community participation in the surveillance for rooks and rookery locations. Requirement to act Occupiers have a duty to inform Horizons of the presence of rookeries. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan, and with the specific rules for rooks as detailed in Table 5-5.
MONITORING Horizons will monitor the success of rook control using standard industry protocol and best practice guidelines (NPCA 2006a), which include operational success monitoring (percent kill estimates) and population census (number of active rookeries and active nests). Rooks will also be monitored in accordance with Section 7.1 of this Plan.	**OUTCOMES** Major damage to crop and pasture production by rooks is avoided. No measurable effect attributed to rooks in areas being controlled for pests under site-led biodiversity programmes.

Table 5-5: Specific rules for rooks

Specific rules for rooks	
Rule	Explanation
Rule 5.5.1	No person shall attempt to control rooks or rookeries without prior permission from an Authorised Person[1].
Good Neighbour Rule 5.5.2	All occupiers who are aware of rookeries on the land which they occupy have a duty to inform Horizons of the presence of those rookeries. **A breach of these rules will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.**

[1]For the purpose of this Plan, control means shooting or any other disturbance of rooks or rookeries that cause rooks to become wary of control or cause rookeries to fragment and disperse. Control does not include the use of deterrents such as scarecrows and crucified rooks, which are "best practice" options for protection of arable land.

Table 5-6: Management regime for Eradication Programme pest plants

Management regime for Eradication Programme pest plants	
OBJECTIVE Over the duration of the Plan, eradicate the pest plants identified in Table 5-3 from the Region to eliminate their adverse effects on economic well-being and/or their effects on the environment. **AIMS** • With the exception of Chinese *pennisetum*, all known populations occurring on private land of the pest plants listed in Table 5-3, will be controlled to zero-density by 2020. • Reduce the population of Chinese *pennisetum* to zero-density by 2027. • Prevent spread of the pest plants listed in Table 5-3 into neighbouring properties. • Facilitate a quick response through appropriate funding that will enable the management of newly identified sites of the pest plants listed in Table 5-3 as they become known.	**PRINCIPAL MEASURES** Service delivery With the exception of woolly nightshade and Chinese *pennisetum*, Horizons will undertake the control of these plants on all known sites on private land. Where fiscal or other external restraints to achieving success prevent this, Horizons will work on the highest prioritised sites first. In the instance of woolly nightshade and Chinese *pennisetum*, Horizons will assist occupiers with the control of these plants. Council inspection Horizons will conduct searches in areas that are vulnerable to invasion by the subject species. Advocacy and education Horizons will carry out programmes to increase public awareness of the Eradication Programme and the threat posed by these pests. These pests will be incorporated into generic biosecurity advocacy programmes, including information on limiting dispersal of these pests. Horizons will engage with centralgovernment agencies for the effective eradication of these organisms from public estate. Requirement to act Occupiers have a duty to inform Horizons of the presence of these pests on their land. Occupiers will generally be responsible for the control of woolly nightshade and Chinese *pennisteum*. Occupiers have a duty to inform Horizons of the presence of all of the eradication species. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan, and with the specific rules for Eradication Programme pest plants as detailed in Table 5-7.
MONITORING Horizons will monitor the success of the previous pest control event by recording the extent and/or density of the subject pest in known areas where the pest is being controlled. Sites will be checked annually for a further five years after zero-density has been achieved. Biennial site visits will occur thereafter. The organisms listed in Table 5-3 will also be monitored in accordance with Section 7.1 of this Plan.	**OUTCOMES** Major loss of pastoral productivity by production pests on the Eradication Programme is avoided. No measurable effect to the success of Horizons' biodiversity programmes is attributable to environmental pests on the Eradication Programme. The subject pests will be excluded from the Region.

Table 5-7: Specific rules for Eradication Programme pest plants

Specific rules for Eradication Programme pest plants	
Rule	Explanation
Rule 5.7.1	Every roading authority shall not less than once every calendar year identify the presence of the pest plants identified in Table 5-3 where they occur within the road reserve as defined in Section 4.3.4 within the Region. Upon discovery, the pests shall be destroyed.
Rule 5.7.2	Where the occupier of a place is opposed to control being undertaken by authorised Horizons staff, the occupier shall, within 21 calendar days of being notified of the presence of the pest, destroy the pest located in the place they occupy.
Rule 5.7.3	Where an occupier of a place fails to comply with Rule 5.7.2, authorised Horizons staff may destroy all identified pests species located in that place.
Good Neighbour Rule 5.7.4	All occupiers who are aware of these pests on the land which they occupy have a duty to inform Horizons of the presence of these pests. **A breach of these rules will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.**

5.4.3. Progressive Containment Programme

Horizons' Progressive Containment Programme covers species for which Horizons has opted to be the lead agency or partner to progressively control the organisms so that their Region-wide effects on economic, environmental or social/amenity values do not worsen. Progressive Containment involves proactively controlling pests to zero-density in parts of the Region where this is possible, and actively containing them so that they do not spread further. These pests are present in Horizons' Region but are limited in their regional range. Total eradication is not a cost-effective solution to protecting production or environmental values into the future, but preventing the spread limits the effects these pests have on these values. All of these organisms are environmental or production pest plants.

Table 5-8**:** Organisms on Horizons' Progressive Containment Programme

The page numbers quoted refer to the page on which the management regime for each species can be found.

Species	Description	Status
Australian sedge (pg. 57)	A perennial tussock-forming sedge. The leaves are Y-shaped in cross-section. Flowering stems are triangular in cross-section and sharply angled; flowers are grouped in catkin-like spikes that hang at the end of long, thin nodding stalks. The seed is a small, smooth triangular nut. A prolific seeder, with most seeds falling close to the parent plant. Distinguishable from other species of carex in New Zealand by the way it shoots from the bottom of the original stalk and its distinctive flower/seed head. The plant normally flowers and seeds from October to February. It is generally not palatable to stock. It can form dense stands that exclude pasture species and will spread from infested land onto clear land. It does not compete successfully with well managed pastures. It is a difficult plant to control once established.	Production Pest
Banana passionfruit (pg. 44)	A large, vigorous, scrambling, evergreen vine with clinging tendrils. The leaves are toothed and three-lobed; the flowers are large, pink and tubular. Banana passionfruit flowers in winter-spring. The fruit are yellow when ripe, up to 12 cm long, cylindrical with a sweet-flavoured orange pulp surrounding seeds. Can smother forest canopies (up to 10 m high), topple shallow rooted trees and suppress indigenous regeneration. It can invade forest, margins, secondary forest as well as windbreaks, plantations, roadsides and wasteland.	Environmental Pest
Blackberry (pg. 57)	A prickly, scrambling perennial shrub growing to taller than 2 m. The leaves are compound in three to five oval toothed leaflets that are arranged in a five-fingered formation; the flowers are large and white or pink. It produces black edible berries and is spread via bird dispersal of seed and by cane extension. It forms impenetrable thickets if unchecked, although it does not compete successfully with well-managed pastures and the new canes are palatable to sheep. It will spread between properties from infested land onto clear land. It affects plantation forest establishment and suppresses other indigenous plants in scrub and forest margins. It can displace plant communities and restrict habitats of native organisms, and can reduce recreational and amenity values.	Production Pest

Species	Description	Status
Boneseed (pg. 44)	A perennial shrub growing to 3 m with woody stems and many branches. The leaves are bright to dark green, alternate, toothed and practically hairless; the flowers are bright yellow, daisy-like, with 8-12 petals clustered at the ends of the branches. Flowers in September-February. Unlike most members of the daisy family, boneseed produces black coloured berries that are spread by birds. Boneseed is an aggressive coloniser that competes with indigenous species, especially in coastal areas, and is very tolerant of drought.	Environmental Pest
Broom species (exotic) (pg. 57)	Erect much-branched, almost leafless, deciduous woody shrubs 1.5-3 m tall. The leaves, when present, consist of three leaflets. The species of concern are the exotic Scotch broom (*Cytisus scoparious*), montpellier broom (*Genista monspessulana*), Spanish broom (*Spartium junceum*) and spiny broom (*Calicotome spinosa*). All species have golden-yellow flowers. These species flower in spring followed by the formation of explosive seed pods. The majority of seed dispersal occurs within 20 m of the parent plant and seed can remain viable in the soil for many years. Seedlings are palatable and unable to compete with productive pasture but once established in dense stands, it can shade out most species. It is spread between properties from infested land onto clear land, is widespread in river gravel and is a major contaminant in roading metal. It has the potential to spread rapidly and out-compete indigenous plant species of low-stature habitats.	Production Pest
Contorta pine (pg. 54)	A two-needled conifer capable of growing to 25 m, but also commonly stunted in growth with twisted branches. The species produces small green cones with a rough exterior after about four or five years. The cones remain closed for long periods of time before bursting open to release the fertile seeds. Seed dispersal is mainly by wind, with seed travelling up to 30 km from the parent plant, although most seed falls within 100 m of the parent plant. Contorta pine can grow in a wide range of habitats. Contorta pine poses a substantial threat across the Volcanic Plateau, especially in Tongariro National Park where it has been controlled for over 40 years. Contorta pine is a transformer weed in low-stature habitat such as tussock and alpine. It can also invade ungrazed land and can compete vigorously with commercial species within plantation forests. The subject species include *Pinus contorta* subsp. *contorta*, and *Pinus contorta* subsp. *murrayana*.	Environmental Pest
Darwin's barberry (pg. 44)	A spiny, thick stemmed woody evergreen shrub up to 4 m tall. The flowers are attractive, deep orange in colour, growing in simple drooping flower clusters up to 7 cm long; the dark purple berries have a bluish-white bloom. The small, shiny dark green holly-like leaves are alternate in clusters of three to five, together with five pronged, needle-sharp spines. Darwin's barberry flowers in July-September although flowers can still be present in January. Capable of invading forest margins and into light open forest (such as beech forest) where it can form impenetrable stands and prevent native regeneration. Can also grow on generally steeper pasture where stock grazing is not so intensive. It can block access to infrastructure and can restrict access to recreational areas. Poses a considerable threat to the open, cold beech forest of the Volcanic Plateau as well as the Ruahine and Tararua Ranges.	Environmental Pest
Eelgrass (pg. 53)	A perennial freshwater aquatic plant which grows in lakes and flowing water and can grow to a height of 5.5 m. It is bottom rooting with stout rhizomes and long ribbon-like light green leaves growing from nodes at regular intervals along the rhizomes. There is no evidence of viable seed production in New Zealand, although mixed populations of this dioecious species do occur. Impacts on water bodies and the indigenous biodiversity supported by these systems. They can obstruct water bodies, grow rapidly and are capable of forming dense masses which out-compete indigenous aquatic species. The plants can also impede drainage, block water intakes, cause flooding and affect water quality. Requires deliberate planting to become established in a water body.	Environmental Pest
Egeria (pg. 53)	Egeria is a submerged perennial freshwater aquatic herb that grows in still and flowing waters. The plant is bottom rooted and produces long, slender and much branched leafy stems that grow to 4 or 5 m tall. It is larger and denser than Lagarosiphon, having 3-8 leaf whorls. Where the plant grows near the surface, it produces many white male flowers protruding just above the water surface in summer. The stems are brittle and fragment and root easily. Impacts on water bodies and the indigenous biodiversity supported by these systems. They can obstruct water bodies, grow rapidly and are capable of forming dense masses which out-compete indigenous aquatic species. The plants can also impede drainage, block water intakes, cause flooding and affect water quality. Dispersal is through the vectoring of vegetative fragments. Common vectors of dispersal include boats, trailers, water-skis, fishing equipment, eel nets, boots, dogs, kayaks, canoes, jet skis and coarse fish.	Environmental Pest

Species	Description	Status
Evergreen buckthorn (pg. 44)	An evergreen shrub that grows to 20 m with leathery leaves that are glossy on the top surface, entire or with teeth that can be blunt or sharp. It is dioecious, with the female and male plants being very distinct from each other. The flowers are green, small, fragrant, 3-4 mm in diameter, with no petals, forming a loose branching cluster. Fruit are small, dark red berries ripening to black and produced only on female plants. Has the ability to form dense colonies, smothering indigenous plants and preventing establishment of indigenous plants. It can alter the structure of other indigenous forest ecosystems in a very short period of time. Poses a serious threat to coastal vegetation, competing strongly with indigenous coastal species, and can also restrict access to recreational areas. It also has the ability to colonise the margins of streams, forest margins and disturbed forests.	Environmental Pest
Field horsetail (pg. 57)	A perennial fern ally which is poisonous to livestock. It grows up to 80 cm tall, but dies back in winter. It prefers damp, open ground, particularly along stream and riverbanks. It is of limited distribution in New Zealand but is well established in Wanganui and Rangitikei. While it spreads by rhizomes and small tubers, its control is extremely difficult. Effective management may be through the control of dispersal pathways. Has the capability to seriously affect pastoral productivity.	Production Pest
Gorse (pg. 57)	An evergreen 2–3 m tall shrub. The young stems are green, with the shoots and leaves modified into 1-3 cm green spines. Young seedlings produce normal leaves for the first few months; these are trifoliate, resembling a small clover leaf. The flowers are yellow, 1–2 cm and are produced throughout the year, but mainly in early spring. The fruit is a dark purplish-brown pod 2 cm long, partly enclosed by the pale brown remnants of the flower; the pod contains 2-3 small blackish, shiny, hard seeds, which are ejected when the pod splits open. Seeds remain viable for 30 years. It forms dense spiny thickets that prevent stock from grazing and reduces pasture production. It can spread between properties from infested to clean land and is a major production pest plant. It is widespread and present in high density throughout the country. The extent of dispersal via the seed bank, seed rain, through machinery and stock is considerable. It provides some benefits as a nursery plant for indigenous species, as a nitrogen fixer and a provider of pollen and nectar for bees. It can also stabilise steep slopes, which helps minimise the effects of erosion.	Production Pest
Grey willow (pg. 44)	A small deciduous tree growing to 7 m but often only 1-2 m. The leaves are shiny above and covered with soft grey hairs beneath. Catkins appear on the stems in spring before the leaves develop. Favours swampy areas and riverbanks, although will grow in a wide range of habitats up to 1,400 m asl. Dioecious, with male and female trees distinct from each other and it hybridises easily. An aggressive invader in wetlands, spreading rapidly to become the dominant vegetation, changing the composition of wetland habitat and interrupting ecological processes. Can impede water flow and increase the negative effects of flooding and is a particular threat to the Volcanic Plateau wetlands.	Environmental Pest
Hornwort (pg. 53)	A submerged freshwater perennial plant found in still or flowing water; often found in fertile, nutrient-rich waters but also grows in deep, clear lake waters to depths of 14 m. Hornwort does not have roots, instead having modified base leaves that anchor the plant into muddy substrates. Hornwort is often free floating with branched and brittle stems up to 7 m long. The leaves are forked with toothed edges and arranged in whorls of 7-12; the flowers are minute and no seed is set in New Zealand. Asexual propagation is via fragmentation of plant stems. Impacts water bodies and the indigenous biodiversity supported by these systems. They can obstruct water bodies, grow rapidly and are capable of forming dense masses which out-compete indigenous aquatic species. The plants can also impede drainage, block water intakes, cause flooding and affect water quality. Dispersal is through the vectoring of vegetative fragments. Common vectors of dispersal include boats, trailers, water-skis, fishing equipment, eel nets, boots, dogs, kayaks, canoes, jet skis and coarse fish. Rotting hornwort pollutes the water, killing any fauna present. Amenity and recreational values are impacted on as boating, fishing and swimming become difficult and unpleasant.	Environmental Pest
Lagarosiphon (pg. 53)	A vigorous perennial freshwater herb that grows submerged in lakes, ponds, rivers and streams. The leaves are arranged spirally around the stem, rather than whorled as is the case with other oxygen weeds, and are recurved backwards or downwards. The flowers are tiny, solitary, pink and female that do not produce seed in New Zealand. Oxygen weed is brittle, and fragments and roots easily. Impacts on water bodies and the indigenous biodiversity supported by these systems. They can obstruct water bodies, grow rapidly and are capable of forming dense masses which out-compete indigenous aquatic species. The plants can also impede drainage, block water intakes, cause flooding and affect water quality. Dispersal is through the vectoring of vegetative fragments. Common vectors of dispersal include boats, trailers, water-skis, fishing equipment, eel nets, boots, dogs, kayaks, canoes, jet skis and coarse fish.	Environmental Pest

Species	Description	Status
Moth plant (pg. 44)	A perennial climber that is capable of growing up to 5 m or more. Leaves are opposite, dark green above, pale beneath. The flowers are white, fragrant, and bell-shaped, followed by large, pear-shaped pods containing kapok-like material surrounding the black seeds. Seed dispersal is by wind (in autumn and winter), with each pod containing many seeds. Any broken part of this plant weeps a milky white sap. Has the ability to compete with and displace indigenous species. In gardens, the fast growing and competitive nature of the plant can be a problem. The plant is poisonous and the sap has an irritant effect on contact. Moth plant can invade forest margins, disturbed habitat, riparian margins, banks and cliff faces, unmanaged areas and waste places.	Environmental Pest
Nodding thistle (pg. 57)	A spiny-leafed (usually) biennial plant. The leaves are narrow and oblong, up to 18 cm long by 10 cm wide, with whitish margins at the bases of marginal spines. Flower stalks can be greater than 75 cm tall, with red-purple or (very rarely) white composite flowers. Flowers are followed by seed heads containing many seeds with thistledown. A highly aggressive agricultural pest affecting pasture production that is particularly invasive on light, sandy and volcanic soils. It can form dense stands of up to 150,000 plants/ha. Dense infestations obstruct livestock movement and prevent access to pasture. Nodding thistle produces 10,000 seeds per plant with 60-80% viability. Seed may be dormant in the soil for up to 20 years. A widespread plant and dispersal via the seed-bank, seed-rain, through machinery and stock is considerable.	Production Pest
Old man's beard (pg. 44)	A fast-growing, deciduous, perennial vine that on maturing becomes woody and brown or grey in colour. Young vines are ribbed and often purple. The leaf is composed of five leaflets; the flowers are creamy-white and loosely bunched (2-3 cm across). Old man's beard flowers in December-May, followed by very conspicuous fluffy greyish white seed heads in autumn through to early spring. A highly competitive vine that establishes rapidly in forest habitats, smothering canopy trees and forming dense carpets in the understorey, replacing indigenous species and suppressing regeneration. Old man's beard causes the collapse of forest fragments and is considered one of the country's worst weeds. The remaining forest habitat in the lowland and hill country of the Region is under extreme threat from Old man's beard.	Environmental Pest
Reed sweetgrass (pg. 53)	Reed sweetgrass is a large, aggressive aquatic perennial grass with long, upright, shiny, hairless, green leaves < 1 cm-7 cm wide that can grow to between 30 cm and 60 cm above water. Flowers appear in spikelets on stout, erect stems and are pale green in colour with purple spots. Reed sweetgrass has an extensive root system producing a sprawling mat of rhizomes. It is found in wet areas and can also grow in stable flowing rivers. Impacts on water bodies and the indigenous biodiversity supported by these systems. They can obstruct water bodies, grow rapidly and are capable of forming dense masses which out-compete indigenous aquatic species. The plants can also impede drainage, block water intakes, cause flooding and affect water quality.	Environmental Pest
Tutsan (pg. 57)	An evergreen or semi-evergreen shrub up to 1.5 m tall. The flowers are pale yellow, appearing in clusters of 2-8 flowers. Fruits are red, becoming black when ripe. Tutsan leaves are pale green, often bluish-green below, egg-shaped and attached to stems at the broad end of the leaf. Tutsan flowers from November to February followed by fruit set. Seeds are dispersed primarily by birds. Tutsan is a highly invasive plant, especially of marginal production land, but can establish in riparian margins, forest margins and roadsides. Tutsan has also been recorded growing in shade under forest canopy. Tutsan escaped from cultivation in 1870 and is now found throughout New Zealand, favouring marginal land and higher rainfall areas. Tutsan is non-toxic but is unpalatable to stock.	Production Pest
Variegated thistle (pg. 57)	A robust erect annual. The glossy rosette leaves have white veins and blotches giving it a variegated look. The large purple flower is surrounded by many sharp spines. They are short lived, flowering and seeding in the summer following germination. Up to 6,000 seeds per plant can be produced and remain viable for more than 9 years. Plants are found in overgrazed pasture, wasteland, along roadsides and in drought prone areas. It also grows well on high fertility soils. Can form dense infestations, supressing pasture species. Can be injurious and toxic to stock.	Production Pest
Yellow bristlegrass (pg. 57)	A summer growing annual grass, with a seed head that consists of a large (up to 10 mm wide) golden to brown bristle. Flat leaf stem. Yellow bristle grass is an aggressive annual-seeding plant which spreads rapidly through pasture, reducing pasture quality. Cows don't willingly eat it, leading to low pasture utilisation. Grazing avoidance leads to rapid re-infestation and an opening for other weeds. Seeds pass through the rumen and are spread around the farm in dung. Seeds are also spread by water, soil movement, animals, and as contaminants of hay and maize. The barbed seeds stick to and are often carried in fur, feathers, or clothing.	Production Pest

Species	Description	Status
Yellow ragwort (pg. 57)	A robust, branched, biennial or perennial plant up to 1.5 m tall. The plant emits an unpleasant smell when crushed. It produces a basal rosette of pinnately lobed leaves and numerous bright yellow flowers in flat-topped clusters in its second year. It flowers between November and April. It is competitive with pasture species and subsequently production is reduced when infestations occur. The plant contains alkaloids that are toxic to stock. The plant is able to produce 50,000-150,000 seeds/plant, of which 70% may be viable. Sheep are effective in controlling small plants; however it is unpalatable to cattle, deer or horses. It is widespread in New Zealand. The extent of dispersal via the seed-bank, seed rain, through machinery and stock is considerable.	Production Pest

REASON FOR INCLUSION

Classed as production or environmental pests, these pests on the Progressive Containment Programme are capable of causing adverse effects to the productive capacity of the Region, or to the Region's environmental values, as indicated in the Description and by the Status of each of the pests in Table 5-8. For these species, it is appropriate that Horizons regulate for their management rather than rely on voluntary action, because the successful containment of these species requires coordination of action at regional scale. The benefits of progressive containment accrue to a wider community than those directly affected by the presence of the pests on their property.

In some situations it is not possible to define a zone of containment on a map. This may be because the absolute distribution of the pest is not known, or that the distribution of the pest is generally considered region-wide but is known to be locally patchy. It is appropriate to apply the on-farm biosecurity risk assessment tool and good neighbour rules as a means of ensuring that land that is presently clear of the pest remains clear of the pest.

Table 5-9: Management regime for mapped Progressive Containment pest plants

Management regime for mapped Progressive Containment plants: banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard

OBJECTIVE

Over the duration of the Plan, progressively contain banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant, and old man's beard to the Good Neighbour Process Zone identified for these plants to reduce adverse effects on the environment.

AIMS

- To control to zero-density banana passionfruit in the banana passionfruit Active Management Zone (Map 5-1) by 2020.
- To control to zero-density boneseed in the boneseed Active Management (Map 5-2) by 2020.
- To control to zero-density Darwin's barberry in the Darwin's barberry Active Management Zone (Map 5-3) by 2020.
- To control to zero-density evergreen buckthorn in the evergreen buckthorn Active Management Zone (Map 5-4) by 2020.
- To control to zero-density willow with wetland habitat or where it threatens wetland habitat in the grey willow Active Management Zone (Map 5-5) by 2020.
- To control to zero-density moth plant in the moth plant Active Management Zone (Map 5-6) by 2020.
- To control to zero-density old man's beard in the old man's beard Active Management Zone (Map 5-7) by 2020.

PRINCIPAL MEASURES

Service delivery

Horizons will undertake direct control of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow (where it is in or near a wetland habitat), moth plant, and old man's beard **on private land** within their respective Active Management Zones.

Horizons may conduct control of these species outside their respective Active Management Zones and/or on public land under non-regulatory site-led management programmes or community initiatives, at Horizons' discretion.

Horizons will not undertake pest control work on Crown lands. However, Horizons will work with Crown agencies on the effective management of these species on or near public or Crown estate.

PRINCIPAL MEASURES (Continued)

Council inspection

Horizons will conduct searches in areas that are vulnerable to invasion by the subject species.

Advocacy and education

Horizons will carry out programmes to increase public awareness of the Progressive Containment Programme and the threats posed by these pests.

These pests will be incorporated into generic biosecurity advocacy programmes, including information on limiting dispersal of these pests.

Requirement to act

Occupiers have a duty to inform Horizons of the presence of these pests on their land. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan.

In situations where private occupiers inside the respective Active Management Zones oppose the control methods used by Horizons, those occupiers will become responsible for the control of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard on the land they occupy in accordance with the good neighbour rule process outlined in Section 4.4 of this Plan and the good neighbour rule detailed in Table 5-10.

Outside their respectives Active Management Zones, private occupiers and TLAs are responsible for the control of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard in accordance with the good neighbour rule process outlined in Section 4.4 of this Plan, and the good neighbour and the eradication rules detailed in Table 5-10.

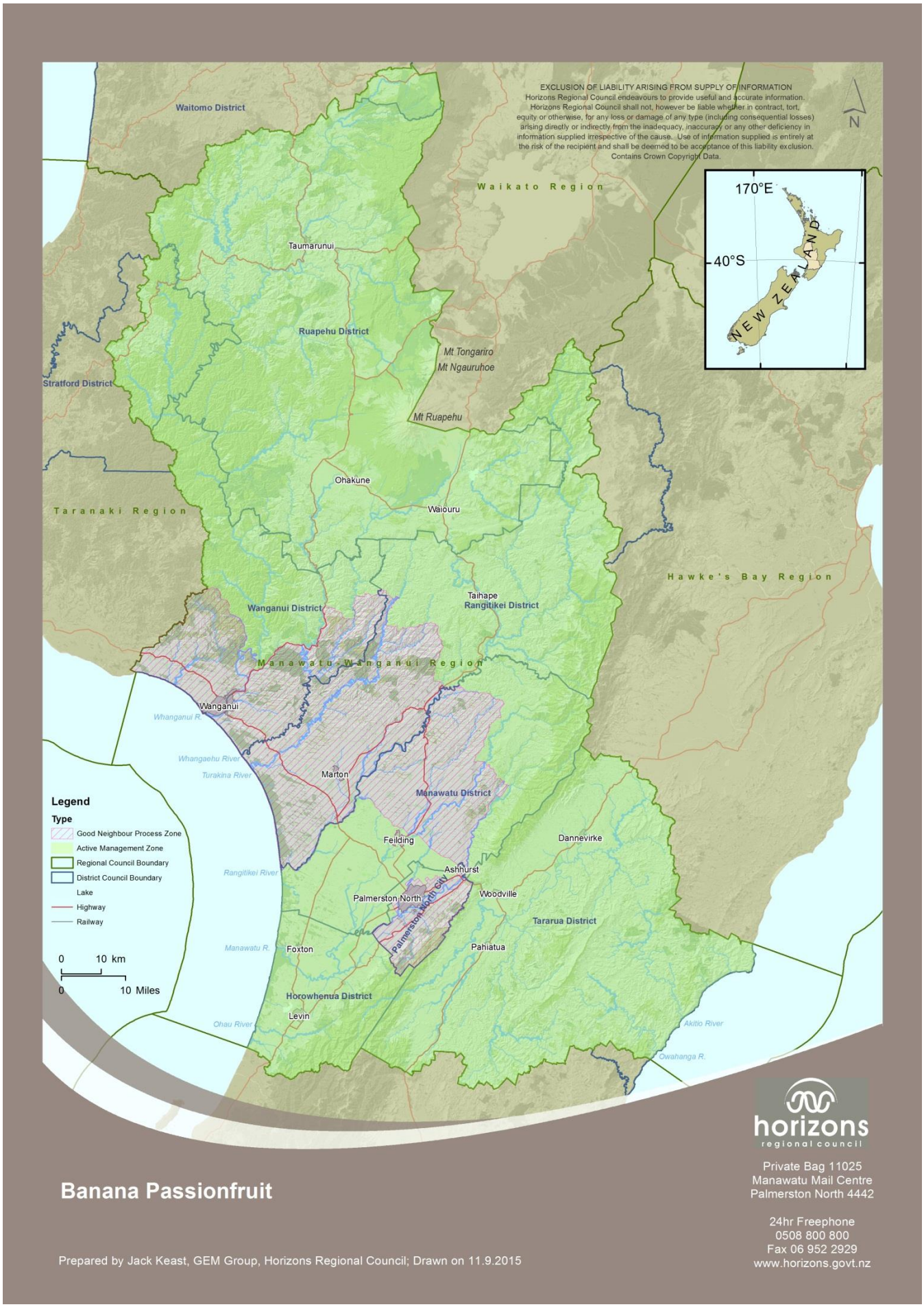
Crown agencies will be bound as a neighbour for the control of these pests where they occur on public or Crown lands in accordance with the good neighbour rule process outlined in Section 4.4 of this Plan and the good neighbour rule detailed in Table 5-10.

Roading authorities will be responsible for the control of infestations of these pests within the respective Active Management Zones of these pests where they occur within the road corridor in accordance with rule 5.10.3.

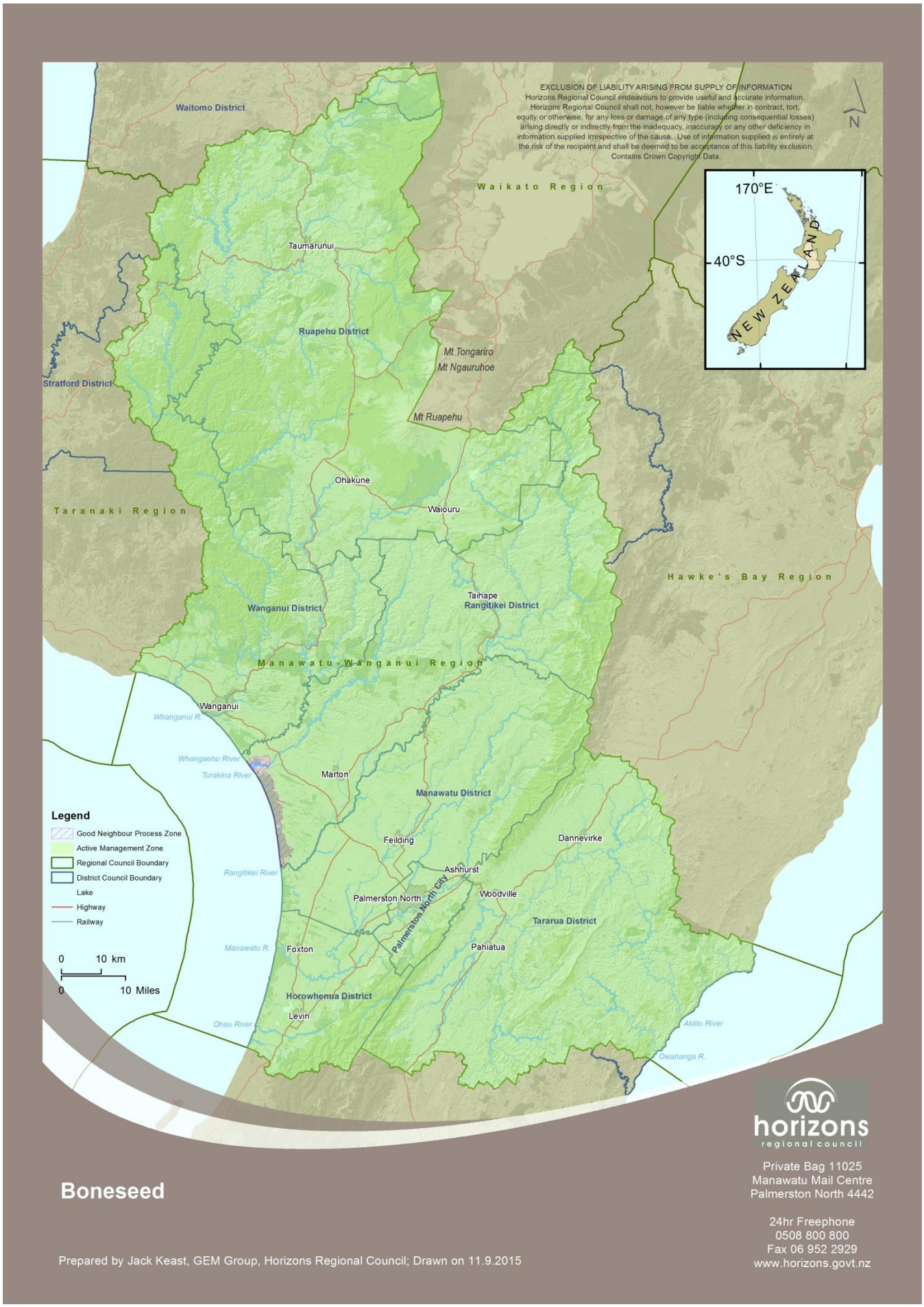
Management regime for mapped progressive containment plants: banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard	
MONITORING	**OUTCOMES**
Horizons will monitor the success of the previous pest control event by recording the extent and/or density of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard in areas where the pest is being controlled by Horizons. Sites will be checked annually for a further five years after zero-density has been achieved. Biennial site visits will occur thereafter. Banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard will also be monitored in accordance with Section 7.1 of this Plan.	Native ecosystems, riparian habitats, and soil conservation retirement blocks are protected from the adverse effects of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard. Areas that are clear of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant and old man's beard, remain clear of these species.

Table 5-10: Specific rules for mapped progressive containment plants

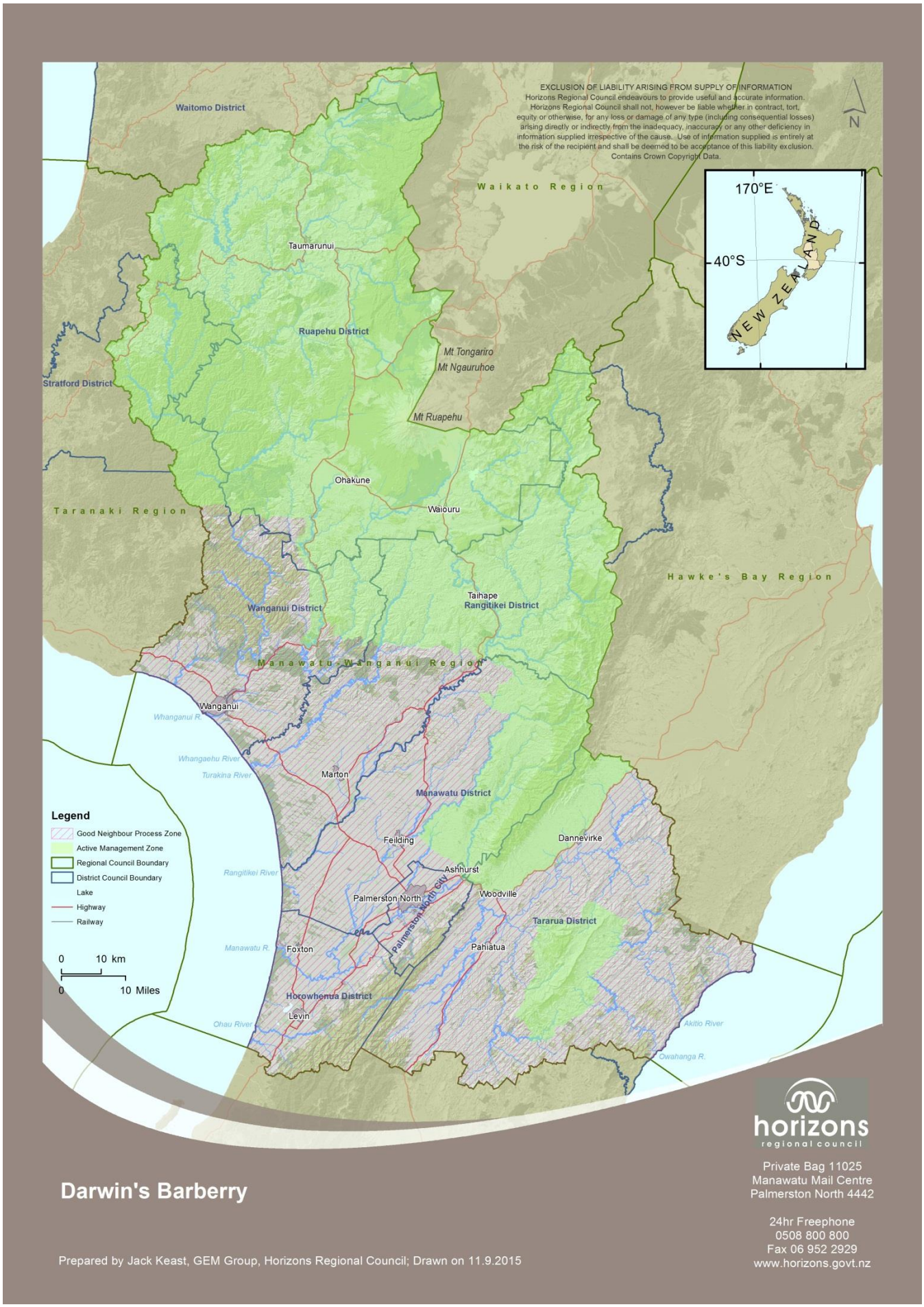
Specific rules for mapped progressive containment environmental plants	
Rule	Explanation
Good Neighbour Rule 5.10.1	When required to act, the occupier shall within 21 calendar days of being notified of the presence of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant or old man's beard, control or destroy that species located in the place they occupy, as identified by an authorised Horizons staff member.
Rule 5.10.2	Where the private occupier of a place inside the respective Active Management Zones fails to comply with rule 5.10.1., an authorised Horizons staff member may destroy the subject species located in that place.
Rule 5.10.3	Every roading authority shall, not less than once every calendar year, identify the presence of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant or old man's beard where they occur within the road reserve as defined in Section 4.3.4 within the respective Active Management Zones for these pests. Upon discovery, the pests shall be destroyed.
Good Neighbour Rule 5.10.4	All occupiers who are aware of these pests on the land which they occupy within the Active Management Zone have a duty to inform Horizons of the presence of those pests.
Eradication Rule 5.10.5	In places within the Good Neighbour Process Zone, where Horizons' On-farm Biosecurirty Risk Assessment Tool identifies that eradication is feasible, occupiers will actively engage in the eradication of banana passionfruit, boneseed, Darwin's barberry, evergreen buckthorn, grey willow, moth plant, or old man's beard from their property.
	A breach of these rules will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.



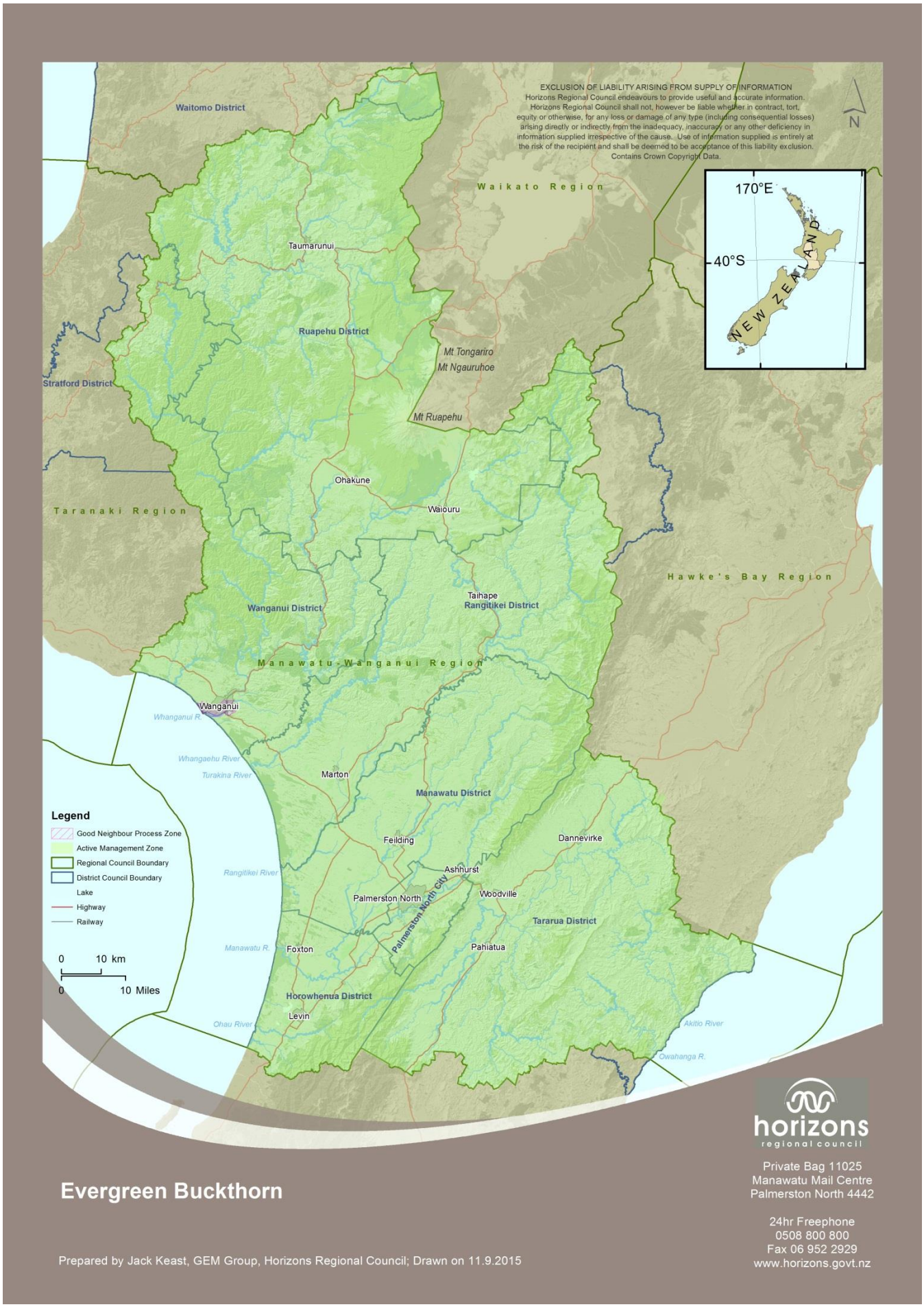
Map 5-1: Banana passionfruit Active Management and Good Neighbour Process Zones



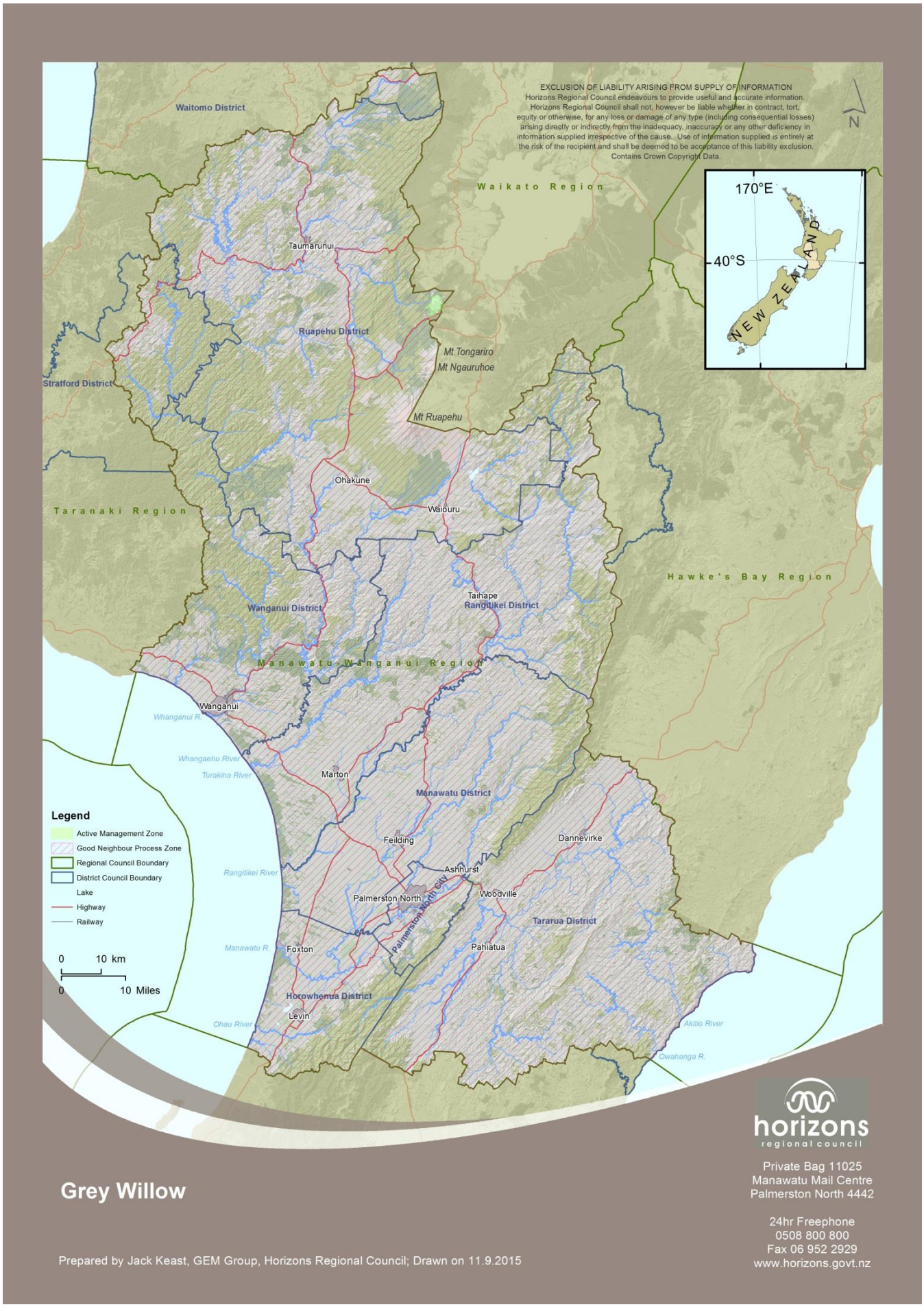
Map 5-2: Boneseed Active Management and Good Neighbour Process Zones



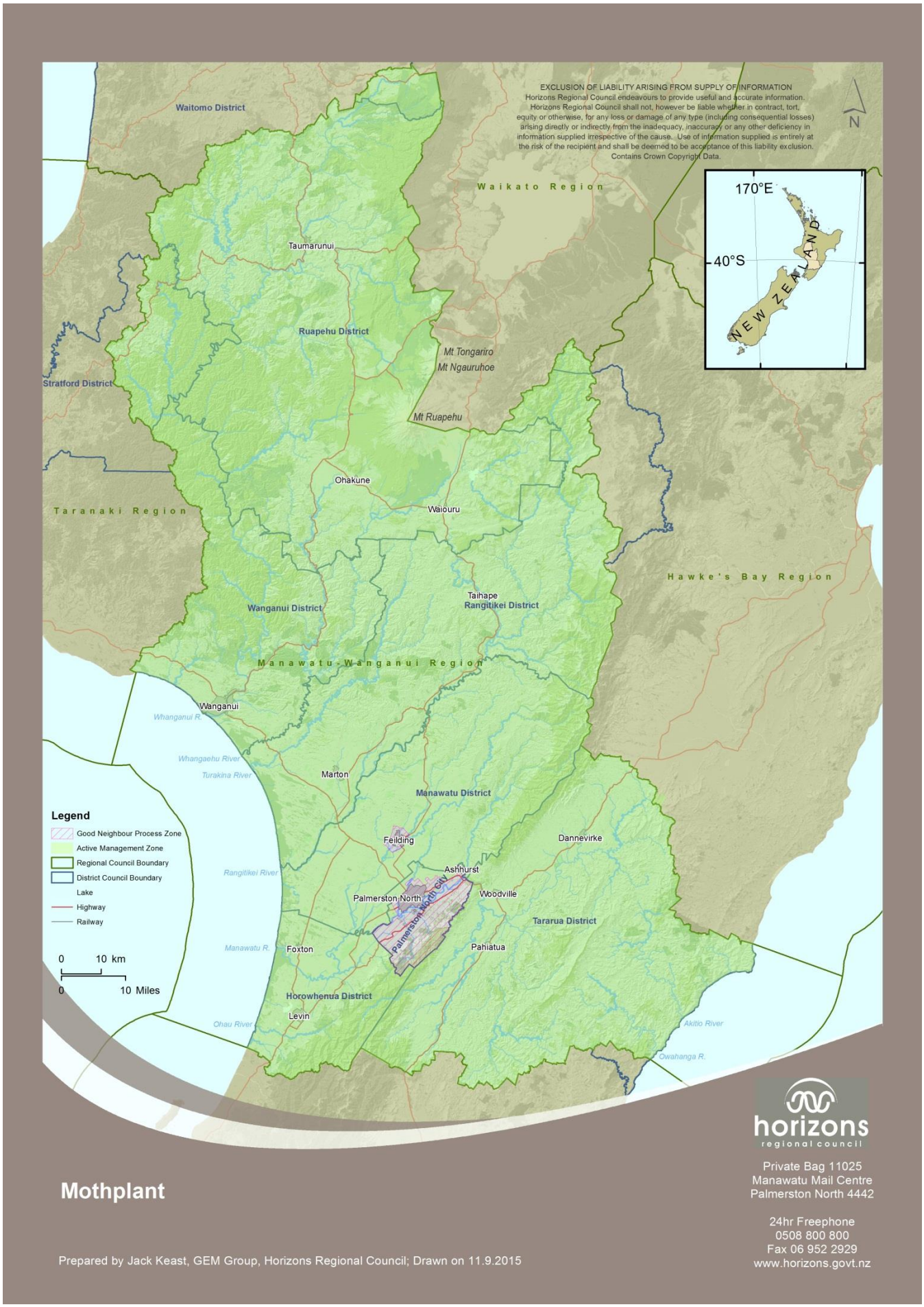
Map 5-3: Darwin's barberry Active Management and Good Neighbour Process Zones



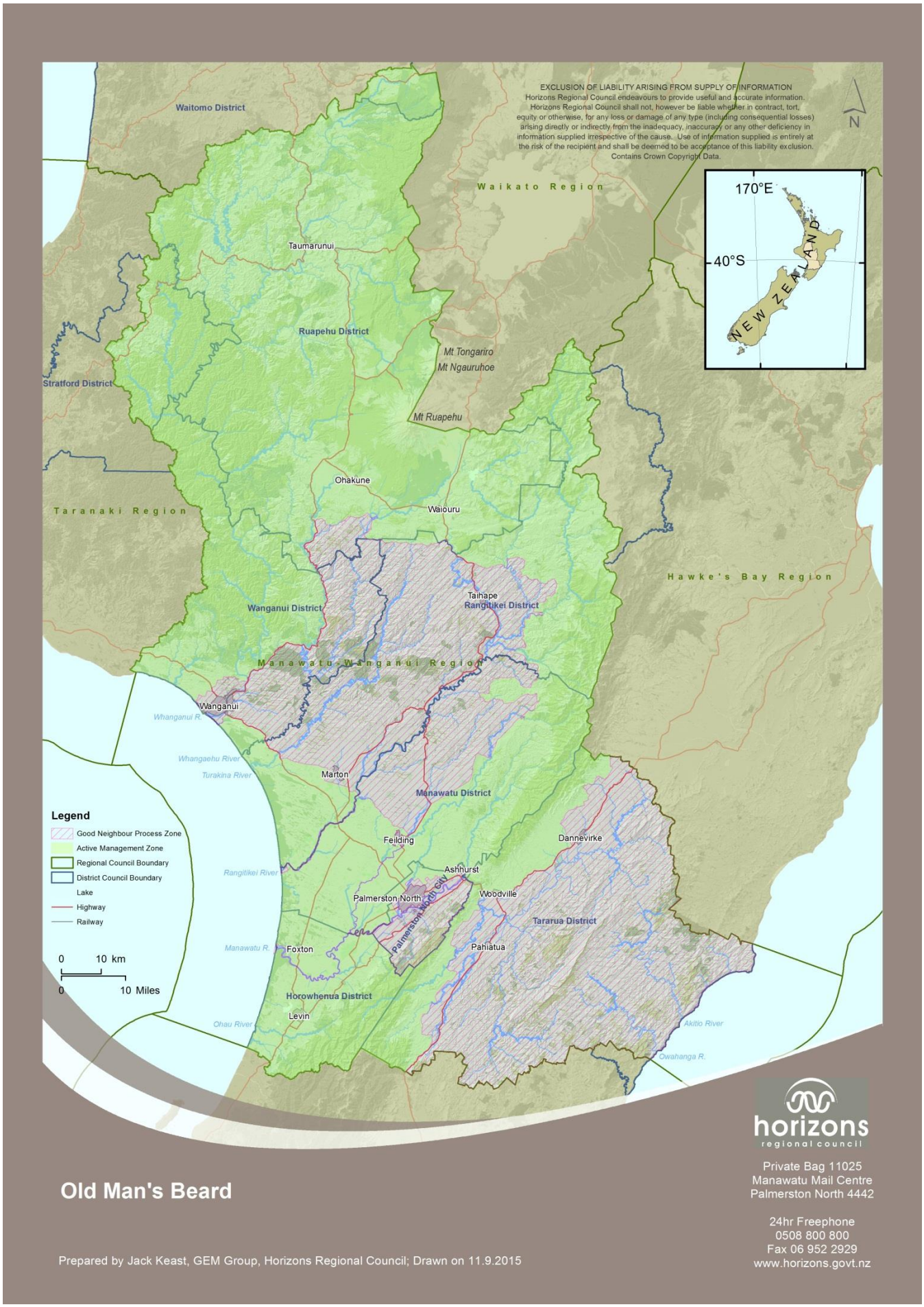
Map 5-4: Evergreen buckthorn Active Management and Good Neighbour Process Zones



Map 5-5: Grey Willow Active Management and Good Neighbour Process Zones



Map 5-6: Moth plant Active Management and Good Neighbour Process Zones



Map 5-7: Old man's beard Active Management and Good Neighbour Process Zones

Table 5-11: Management regime for Progressive Containment aquatic plants

Management regime for Progressive Containment aquatic plants

OBJECTIVE

Over the duration of the Plan, contain eelgrass, egeria, hornwort, lagarosiphon and reed sweetgrass to the areas that Horizons assesses these pests were restricted to in 2008 to reduce further adverse effects on the environment.

AIM

- To prevent the dispersal of aquatic pest plant species from known locations.

PRINCIPAL MEASURES

Service delivery

Horizons may undertake direct control of localised areas of infestation, or of newly discovered small infestations as and when required.

Horizons will oversee dispersal pathway management. Dispersal risk areas will be identified and targeted for management. The importance of interagency collaborations is recognised and such arrangements will be incorporated wherever possible into Horizons initiatives.

Such initiatives can include, but are not restricted to:

- erecting signage at both infested and non-infested sites advising of the risk of dispersal via boats, boat trailers, fishing gear, dogs, jet skis etc;
- erecting signage that advises of ways to implement good hygiene practices;
- producing (waterproof) flyers and/or pamphlets advising of ways to implement good hygiene practices;
- localised weed control at public boat access and swimming areas to minimise the risk of transfer.

Collaboration between Horizons and other agencies will be pursued.

PRINCIPAL MEASURES (Continued)

Council inspection

Horizons' staff will conduct searches in areas vulnerable to invasion by these aquatic pest plant species. In the occurrence of a newly discovered infestation, an assessment of the feasibility of control will be made. Where justified and practicable, new incursions will be controlled.
Where new incursions are discovered attempts will be made to trace and confirm vectors. Where feasible, management of these vectors will be implemented.

Advocacy and education

Advocacy will be a fundamental component of this programme and is closely intertwined with the implementation of dispersal pathway management. All awareness campaigns will be consistent with the National Aquatic Pest Awareness Campaign - Stop The Spread. Advocacy initiatives can include, but are not restricted to:

- working with contractors to promote an ethic of responsible work practices and advocating for machine hygiene;
- continuing to work internally (e.g. with Operations Group) to ensure continuation of sustainable drain management practices and other such initiatives;
- targeting fishing groups (e.g. coarse fishers, eel fishers etc.) and increasing the awareness of the need for fishing gear hygiene;
- liaising with managers and owners of properties with infestations to facilitate coordinated management of dispersal avenues;
- broader awareness programmes targeted at other lake user groups (i.e. the wider public);
- providing advice and information on these species to occupiers and other interested parties.

Requirement to act

Occupiers have a duty to inform Horizons of the presence of these pests in their lakes and streams. Occupiers and the general public will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan, and with the specific rules for containment aquatic plants detailed in Table 5-12.

MONITORING

Horizons will monitor success by periodically recording the presence or absence of these weeds from the Regions' west coast lakes.

Eelgrass, egeria, hornwort, lagarosiphon, and reed sweetgrass will also be monitored in accordance with Section 7.1 of this Plan.

OUTCOMES

The distribution of eelgrass, egeria, hornwort, lagarosiphon and reed sweetgrass is restricted to current infestations and the spread of other aquatic pest plant species throughout the Region is slowed.

Native ecosystems are protected from the adverse effects of aquatic pest plants.

Table 5-12: Specific rules for Progressive Containment aquatic plants

Specific rules for Progressive Containment aquatic plants	
Rule	Explanation
Rule 5.12.1	No person shall intentionally distribute, propagate or dispose of any or all of eelgrass, hornwort, egeria, lagarosiphon or reed sweetgrass, except at legal landfills or authorised green waste dump sites, or as authorised by a resource consent pursuant to the RMA (1991).
Statutory Obligation (Sections 52 and 53 of the Act)	No person shall knowingly sell, offer to sell, display in a place where plants are offered for sale or exhibition, distribute or propagate eelgrass, hornwort, egeria, lagarosiphon or reed sweetgrass. **A breach of these rules will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.**

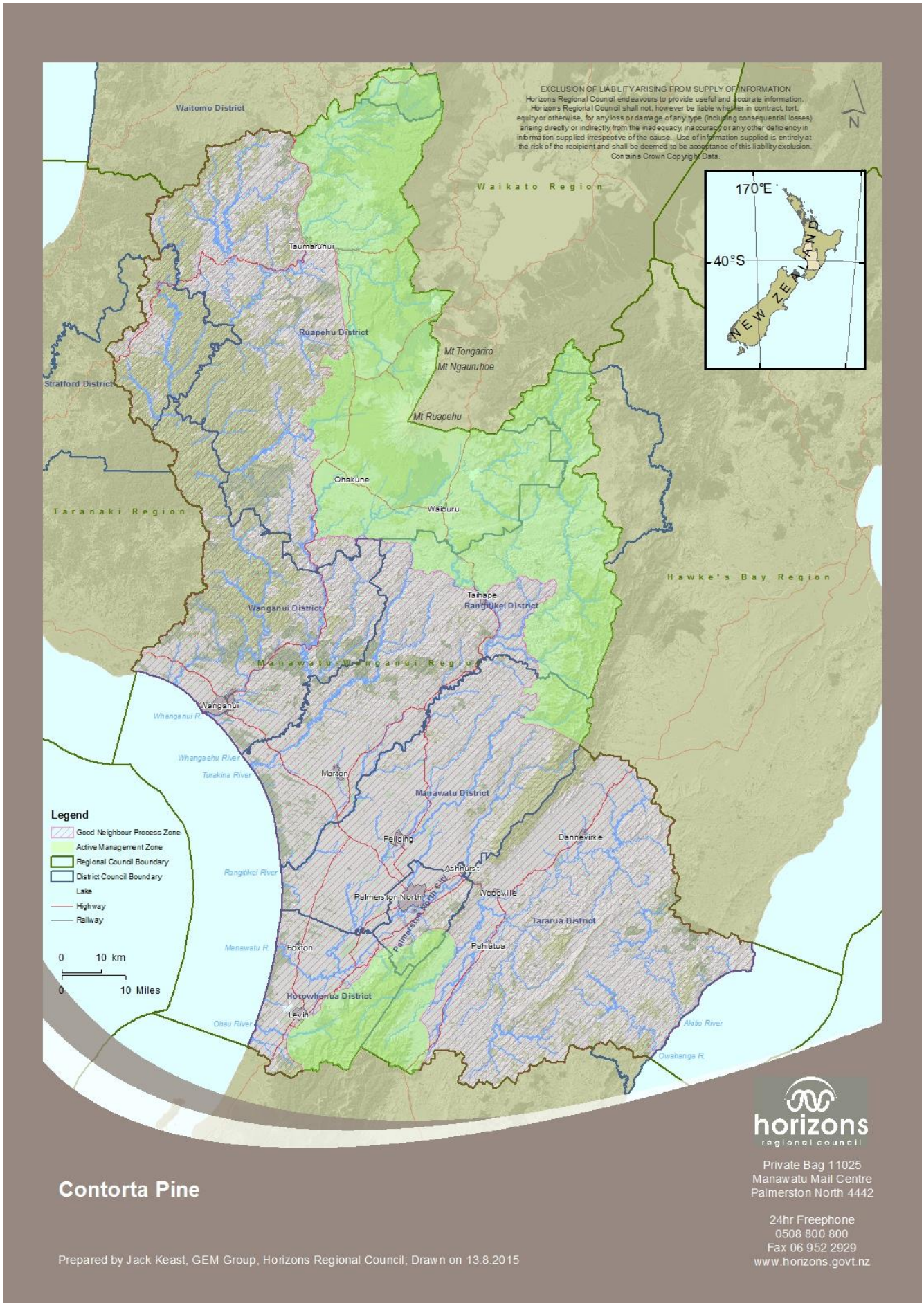
Table 5-13: Management regime for contorta pine

Management regime for contorta pine	
OBJECTIVE Over the duration of the Plan progressively reduce the incidence of *Pinus contorta* to reduce adverse effects on the environment. **AIMS** • To control to zero-density contorta pine within the Active Management Zone (Map 5-8) by 2020. • To work according to the aims and actions of the Nature Central Wilding Conifer Implementation Plan. • To establish rules and/or approaches consistent with the New Zealand Wilding Conifer Management Strategy to address the impact of contorta pine in the Region. **PRINCIPAL MEASURES** Service delivery Horizons will undertake direct control of contorta pine on private rateable land within the Active Management Zone (Map 5-8), with a focus on preventing further spread. Horizons will not be responsible for site clean-up, landscaping or replacement of trees. Horizons will not conduct control of contorta pine outside of the Active Management Zone with the exception of prioritised sites of high natural value. The New Zealand Defence Force (NZDF) has chosen to control contorta pine, and is therefore responsible for maintaining sustained control (three-year rotation) of contorta pine wherever it occurs on land occupied by the NZDF or NZDF land leased to another occupier. The Department of Conservation (DOC) has chosen to control contorta pine on the Volcanic Plateau, and is therefore responsible for maintaining sustained control (three-year rotation) of contorta pine wherever it occurs on DOC land.	**PRINCIPAL MEASURES (Continued)** Council inspection Horizons will conduct searches in areas that are vulnerable to invasion and will enforce control of contorta pine where it occurs in all road reserves within the Active Management Zone. Memoranda of Understanding (MOU) Horizons will maintain and enhance relationships with the key land management agencies on the Volcanic Plateau. MOUs can incorporate other species and allow for creative sharing of resources where responsibilities and outcomes are agreed on. MOUs will stipulate the requirement for control of contorta pine to be under sustained management (three-year rotations). Advocacy and education Horizons will incorporate contorta pine into advocacy programmes focused on the threats to and protection of the Volcanic Plateau. Horizons will undertake collaborations with other agencies. Horizons may implement a targeted awareness campaign that focuses on contorta pine. Horizons will provide advice and information on contorta pine to occupiers and other interested parties. Requirement to act Occupiers have a duty to inform Horizons of the presence of contorta pine. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan, and the eradication rule in Table 5-14. The occupier of Karioi Forest is responsible for maintaining sustained control of contorta pine as described in Table 5-14. Roading authorities will be responsible for the control of contorta pine infestations within the Active Management Zone where they occur within the road corridors, in accordance with rule 5.14.5.

MONITORING	OUTCOMES
Horizons will monitor the success of the previous pest control event by recording the extent and/or density of contorta pine in known areas where contorta pine is being controlled by Horizons. Sites will be checked annually for a further five years. Biennial site visits will occur thereafter. Contorta pine will also be monitored in accordance with Section 7.1 of this Plan.	Contorta pine is controlled to zero-density within the Active Management Zone, and is controlled in conjunction with the other key agencies involved in land management on the Volcanic Plateau to protect the natural values of the Volcanic Plateau. A coherent strategic approach for management of contorta pine results in protection of the natural values of indigenous habitats. High-value natural areas prioritised for protection under the Regional Biodiversity Programme are maintained free of contorta pine.

Table 5-14: Specific rules for contorta pine

Specific rules for contorta pine	
Rule	Explanation
	At the time of writing this Plan, the New Zealand Wilding Conifer Management Strategy (NZWCMS) has just been released. The NZWCMS encourages consistency between regional pest management plans for all regional councils with regard to the effective management of wilding conifers. Until a nationally consistent approach has been prepared, Horizons has no specific rules for wilding conifers. Until that time, the following rules for contorta pine remain in force.
Rule 5.14.1	The occupier of the Karioi Forest must: (i) destroy all contorta pine (green and yellow) in the Karioi Forest Mixed Species Plantation Area at the time of harvest. As this will occur over the next 10 or more years, management must adopt clear areas as per rule 5.14.2 in compartments adjacent to the recently felled compartments and now exposed wetlands or stream margins. (ii) following compliance with rule 5.14.1 (i) inspect cleared compartment areas as per the Karioi Forest Balance Area and include into the maintenance programme.
Rule 5.14.2	The occupier of the Karioi Forest must: (i) maintain zero-density of all contorta pine (green and yellow) within 30 metres of the ever changing boundary of the Karioi Forest Mixed Species Plantation Area. (ii) the Karioi Forest Mixed Species Plantation Area will be inspected every three calendar years and all contorta pine (green and yellow) present within this area destroyed.
Rule 5.14.3	The occupier of the Karioi Forest must inspect the area of the Karioi Forest Balance Area subject to contorta pine (green or yellow) control every three calendar years for contorta pine (green and yellow). All contorta pine (green and yellow) found shall be destroyed.
Rule 5.14.4	The occupier of the Karioi Forest shall provide Horizons with annual reports detailing how rules 5.14.1 to 5.143. are being complied with. The annual report shall: (i) detail the physical area where destruction has been carried out. (ii) detail the total area (in hectares) subject to ongoing management of contorta pine.
Rule 5.14.5	Every roading authority shall not less than once every calendar year identify the presence of contorta pine where it occurs within the road reserve as defined in Section 4.3.4 within the contorta pine Active Management Zone. All contorta pine identified shall be destroyed. Every roading authority shall destroy any contorta pine within the contorta pine Active Management Zone as identified by an authorised person.
Eradication Rule 5.14.6	In places within the Good Neighbour Process Zone, where Horizons' On-farm Biosecurirty Risk Assessment Tool identifies that eradication is feasible, or on places within the Active Management Zone where occupiers do not wish Horizons to undertake the management of contorta pine, occupiers will actively engage in the eradication of contorta pine from their property.
	A breach of these rules will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.



Map 5-8: Contorta pine Active Management and Good Neighbour Process Zones

Table 5-15: Management regime for the 'on-farm biosecurity risk assessment' suite of Progressive Containment plants

Management regime for the 'on-farm biosecurity risk assessment' suite of Progressive Containment plants: Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort

OBJECTIVE

Over the duration of the Plan contain the spread of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort to reduce adverse effects on economic wellbeing and the environment.

AIMS

- To reduce the occurrence and spread of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass, and yellow ragwort from infested land to clean land.
- Where identified as a priority, to manage these species in high-value natural areas in conjunction with other pest management.
- To investigate and support biocontrol options for these species.
- To promote on-farm biosecurity risk assessments and encourage best management practice for risk pathways.
- To reduce excessive nitrate losses from expansive areas of gorse and broom in One Plan Target Catchments.

PRINCIPAL MEASURES

Service delivery

Horizons will encourage and assist land occupiers to undertake a risk assessment to ascertain whether their land is at risk from the spread of these species and whether the presence of the species requires intervention.

Horizons will support the establishment of biocontrol programmes, including sourcing funding, initiating research or coordinating community groups. Where biocontrol agents are already available, Horizons will support initiatives to maintain self-sustaining populations of biocontrol agents throughout the Region.

PRINCIPAL MEASURES (Continued)

Pathway management plans

Horizons will investigate the feasibility of managing the spread of these species using pathway management plans.

Council inspection

Horizons will conduct searches in areas that are vulnerable to invasion by the subject species.

Advocacy and education

Horizons will carry out programmes to increase public awareness of the on-farm biosecurity risk assessment programme and the threats posed by these pests.
These pests will be incorporated into generic biosecurity advocacy programmes, including information on limiting dispersal of these pests.

Requirement to act

The responsibility for the control of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort lies with the land occupier.

Occupiers have a duty to inform Horizons of the presence of these pests on their land. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan and the good neighbour rule detailed in Table 5-16.

TLAs and Crown agencies will be bound as a neighbour for the control of these pests where they occur on public or Crown lands, in accordance with the good neighbour rule process outlined in Section 4.4 of this Plan and the good neighbour rule detailed in Table 5-16.

Management regime for the 'on-farm biosecurity risk assessment' suite of Progressive Containment plants: Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort	
MONITORING Horizons will monitor the success of the previous pest control event by recording the extent and/or density of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort in areas where the pest is being controlled by Horizons. Sites will be checked annually for a further five years after zero-density has been achieved. Biennial site visits will occur thereafter. Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort will also be monitored in accordance with Section 7.1 of this Plan.	**OUTCOMES** Native ecosystems, riparian habitats and soil conservation retirement blocks are protected from the adverse effects of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort. Water quality is protected from excessive nitrate loadings that may be attributed to gorse and broom. Areas that are clear of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort remain clear of these species. The spread of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort between properties will be reduced. The spread of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort throughout the Region will be stopped.

Table 5-16: Specific rules for 'on-farm biosecurity risk assessment' Progressive Containment plants

Specific rules for the 'on-farm biosecurity risk assessment' suite of Progressive Containment plants	
Rule	Explanation
Good Neighbour Rule 5.16.1	When required to act, the occupier shall within 21 calendar days of being notified of the presence of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort, control or destroy that species located in the place they occupy, as identified by an authorised Horizons staff member.
Eradication Rule 5.16.2	In places where Horizons' On-farm Biosecurirty Risk Assessment Tool identifies that eradication is feasible, occupiers will actively engage in the eradication of Australian sedge, blackberry, broom species (exotic), field horsetail, gorse, nodding thistle, tutsan, variegated thistle, yellow bristlegrass and yellow ragwort. **A breach of these rules will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.**

5.4.4. Sustained Control Programme

Horizons' Sustained Control Programme covers species for which Horizons has opted to be the lead agency or partner for ensuring these organisms remain controlled to levels where their impacts on economic values or environmental values are cost-effectively reduced (i.e. that the cost of control is less than the opportunity costs that arise if these pests go unmanaged). These pests are widespread and throughout Horizons' Region.

Table 5-17**:** Organisms on Horizons' Sustained Control Programme

The page numbers quoted refer to the page on which the management regime for each species can be found.

Species	Description	Status
Possum (pg. 60)	An Australian marsupial originally introduced to create a fur trade. Ranging in size from 2-5 kg, possums have a rounded build, grey to black or orange-black fur, and a prehensile tail. They eat a large range of plants including trees, crops, gardens and pasture. They are also known to eat native insects and prey on native birds and their eggs. They are considered the number one animal pest in the Region because of their adaptability to different environments, and the extent and severity of damage they cause to both production and environmental values. Concerted effort by a number of agencies, including Horizons, has driven populations to very low levels though the population will rapidly re-expand if left un-managed. Populations are very destructive to indigenous ecosystems – from localised extinctions of possum-preferred species, to canopy dieback and ecosystem change. Vectors for a number of pathogens – the best known being bovine tuberculosis (Tb).	Production Pest and Social/Amenity Pest
Rabbit (feral) (pg. 62)	A herbivorous mammal of 1-2 kg with a rounded body, long ears and a small tail. The fur colour is mainly buff, sprinkled with black, a reddish neck and white belly, or black. Breeding occurs throughout the year, with adult females capable of producing 45 to 50 young per year. Habitation is of forest margins, shrub lands and tall pasture habitats on most soil types, but they prefer short pasture on light, free-draining soils. Historically, feral rabbits have been a significant problem for farming in parts of the Region. At high infestation levels they can significantly: damage new plantings of trees and crops; reduce the amount of palatable pasture; increase the amount of bare ground susceptible to erosion and pest plant invasion; initiate erosion processes by burrowing; damage horticultural crops and damage residential gardens; and reduce vegetation species diversity – replacing vegetation dominated by perennial species with vegetation dominated by annuals, and replacing grasslands and shrub land with low, herbaceous and mat-forming vegetation. Even small populations can be a nuisance to bush remnant restoration programmes where they affect the re-establishment of the forest understorey and damage soil conservation, forestry and other new tree plantings. They can also be a local nuisance in urban and peri-urban areas, where small populations do a lot of damage to vegetable gardens, trees and nurseries.	Production, Environmental and Social/Amenity Pest
Wilding conifers (pg. 63)	This category includes wilding (not purposefully cultivated) conifer seedlings and trees, including *Pinus radiata* and douglas fir, intended to be managed according to the NZ Wilding Conifer Management Strategy. These species have wind blown seeds that persist in the environment for a long time. Wilding conifers are wide and varied. Douglas fir is capable of invading nativ bush and generally wilding conifers modify landscapes, leading to the loss of montane tussock , shrub and herbfield habitats to trees.	Environmental Pest

REASON FOR INCLUSION

The pests on the Sustained Control Programme, classed as production or environmental pests, are capable of causing adverse effects on the productive capacity of the Region, or to the Region's environmental values, as indicated in the Description and by the Status of each of the pests in Table 5-17. For rabbits, it is appropriate that Horizons be involved in regulating these pests if voluntary action does not effectively manage the unreasonable cost of externality (boundary) effects arising from neighbours who are not controlling these organisms. For possums, the continued suppression of the regional population requires coordination of action at regional scale, and the benefits of the control accrue to a wider community than those directly affected by the presence of the possums on their property. For wilding conifers, it is appropriate that Horizons be involved to provide a regionally coherent approach for the management of wilding conifers which will result in the protection of indigenous habitats from the effects of wilding conifers. The benefits of coordinated management for native habitat protection accrue to a wider community than those directly affected by the presence of wilding conifers on their property.

Table 5-18: Management regime for the possum

Management regime for the possum	
OBJECTIVE Over the duration of the Plan sustainably control possums to low densities to reduce adverse effects on economic wellbeing and the environment. **AIMS** • One hundred percent of the Region's eligible[2] rateable land to be managed under a Possum Control Operation (PCO) by 2018. • PCOs on land not previously under the auspices of TBfree vector control to have possum populations maintained below a density of 10% Residual Trap Catch Index (RTCI) or 40% Wax Tag 7-night Bite Mark Index (BMI). • PCOs on rateable land previously under the auspices of TBfree vector control to have possum populations maintained below a density of 5% RTCI or 15% BMI. **PRINCIPAL MEASURES** Service delivery Horizons will provide ongoing service delivery possum control in all established Possum Control Operations to ensure that operational targets are achieved. Horizons will continue to work closely with TBfree NZ to ensure that, as TBfree NZ ceases possum control in specific areas, Horizons is in a position to assume responsibly for future control work	**PRINCIPAL MEASURES (Continued)** Council inspection Horizons will conduct searches in areas that are vulnerable to invasion by the subject species. Advocacy and education Horizons will carry out programmes to increase public awareness of the roles and responsibilities of occupiers and the threats posed by possums. Horizons will seek to integrate possum control work with Crown Agencies where their land is contained inside, or adjacent to, a possum control operation. The possum will be incorporated into generic biosecurity advocacy programmes, including information on limiting dispersal of these pests. Requirement to act Occupiers have a duty to inform Horizons of the presence of possums. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan and the good neighbour rule detailed in Table 5-19. TLAs and Crown agencies will be bound as a neighbour for the control of possums where they occur on public or Crown lands in accordance with the good neighbour rule process outlined in Section 4.4 of this Plan and the good neighbour rule detailed in Table 5-19.
MONITORING Horizons will monitor possum density trends in at least 15% of PCOs by 30 June every year, using standard industry protocols and best practice guidelines. Monitoring will also be in accordance with Section 7.1 of this Plan. Horizons will audit the quality of possum control inputs for alignment with industry and Horizons' best practice for all PCOs on an annual basis, by 30 June. Horizons will monitor environmental outcomes as prescribed in management plans for high-value natural areas prioritised for protection under the Regional Biodiversity Programme.	**OUTCOMES** Damage to amenities, forestry, soil conservation plantings, crops, horticulture, and pasture production is suppressed to today's level or lower. The risk of disease transmission from possums to livestock, pets, and humans is reduced. The diversity of the Region's indigenous flora and fauna is protected from loss attributed to possums. The effectiveness of any soil conservation planting is not reduced as a consequence of possum browse.

[2] Note: Land under the auspices of a current TBfree NZ vector control programme is not eligible for Horizons' PCO programme.

Table 5-19: Specific rules for the possum

Specific rules for the possum	
Rule	Explanation
Good Neighbour Rule 5.19.1	When required to act, the occupier shall within 21 calendar days of being notified of possums control or destroy that species located in the place they occupy, as identified by an authorised Horizons' staff member. **A breach of this rule will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.**

Table 5-20: Management regime for sustained control of feral rabbits

Management regime for feral rabbits	
OBJECTIVE Over the duration of the Plan sustainably control feral rabbits to reduce adverse effects on economic wellbeing and the environment. **AIMS** • Feral rabbit populations in rural areas to be kept below a level acceptable for reducing externality effects on neighbours and for reducing environmental damage. • 95% of all queries regarding rabbit damage on pasture, horticulture, crops and amenities, including nuisance rabbits, to be addressed within two working days. **PRINCIPAL MEASURES** Service delivery Horizons will use biocontrol agents in accordance with industry-agreed best practice guidelines. Horizons may provide service delivery in selected sites valued for biological diversity or soil conservation where it is deemed rabbits are a threat to environmental values. Horizons may conduct control operations on small populations of rabbits, or provide tools for rabbit control, in urban or peri-urban situations where control by occupiers would otherwise be difficult. Horizons will assist landowners and self-help groups to develop coordinated pest control programmes in areas where a pest problem is identified and coordinated control would be the most efficient means of addressing the problem.	**PRINCIPAL MEASURES (Continued)** Horizons may provide user-pays pest control services to individual landowners and self-help groups upon request or by negotiation. Costs will be calculated and recovered on a case by case basis. Council inspection Horizons will conduct searches in areas that are vulnerable to invasion by rabbits. Advocacy and education Horizons will carry out programmes to increase public awareness of the roles and responsibilities of occupiers programme and the threats posed by rabbits. The feral rabbit will be incorporated into generic biosecurity advocacy programmes, including information on limiting dispersal of these pests. Requirement to act Occupiers have a duty to inform Horizons of the presence of feral rabbits. Occupiers will act in accordance with the general rules for all pests as detailed in Section 2.1 of this Plan and the good neighbour rule detailed in Table 5-20. TLAs and Crown agencies will be bound as a neighbour for the control of rabbits where they occur on public or Crown lands in accordance with the good neighbour rule process outlined in Section 4.4 of this Plan and the good neighbour rule detailed in Table 5-20.

MONITORING	OUTCOMES
Horizons will undertake periodic monitoring to establish regional trends in the feral rabbit population, and will report results in the annual monitoring report by November of the year the data are collected. Horizons will assay populations every third year for regional trends in rabbit hemorrhagic disease (RHD) virus imunity, in accordance with industry protocols, and will report results in the annual report by November of the year the data are collected. Monitoring and reporting will also be in accordance with Section 7.1 of this Plan.	Severe pastoral losses and soil damage caused by rabbit population explosions are avoided. Any unreasonable costs imposed by a neighbour who is not controlling feral rabbits are avoided.

Table 5-21: Specific rules for feral rabbits

Specific rule for feral rabbits	
Rule	Explanation
Good neighbour rule 5.20.1	When required to act, the occupier shall within 21 calendar days of being notified of the presence of feral rabbits, control or destroy that species located in the place they occupy, as identified by an authorised Horizons' staff member. **A breach of this rule will create an offence under Section 154 N(19) of the Act. Any person or corporation who fails to comply with this rule is liable to penalties as prescribed under Section 157(5) of the Act.**

Table 5-22: Management regime for wilding conifers

Management regime for wilding conifers	
OBJECTIVE Over the life of the Plan progressively reduce the incidence of wilding conifers to reduce adverse effects on the environment.	**PRINCIPAL MEASURES (Continued)** Advocacy and education Horizons will incorporate wilding conifers into advocacy programmes focused on the threats to and protection of natural values. Horizons will undertake collaborations with other agencies to establish a nationally consistent approach to wilding conifer management. Horizons may implement a targeted awareness campaign that focuses on wilding conifers. Horizons will provide advice and information on wilding conifers to occupiers and other interested parties.
AIMS • To work according to the aims and actions of the Nature Central Wilding Conifer Implementation Plan. • To establish rules and/or approaches consistent with the New Zealand Wilding Conifer Management Strategy to address the impact of contorta pine in the Region.	
PRINCIPAL MEASURES Service delivery Horizons may undertake direct control of wilding conifers in areas prioritised for protection under the Regional Biodiversity Programme, as part of a non-regulatory management approach. Horizons will not be responsible for site clean-up, landscaping or replacement of trees.	Requirement to act At the time of writing this Plan, the New Zealand Wilding Conifer Management Strategy (NZWCMS) has just been released. The NZWCMS encourages consistency between regional pest management plans for all regional councils with regard to the effective management of wilding conifers. Until a nationally consistent approach has been prepared, Horizons has no specific rules for wilding conifers.
MONITORING Horizons will monitor the success of each previous pest control event by recording the extent and/or density of the wilding conifers in known areas where the wilding conifers are being controlled by Horizons. Sites will be checked annually for a further five years. Biennial site visits will occur thereafter.	**OUTCOMES** A coherent strategic approach for management of wilding conifers which will result in protection of the natural values of indigenous habitats. High-value natural areas prioritised for protection under the Regional Biodiversity Programme are maintained free of wilding conifers.

6. Actual or Potential Effects of Implementation

Given its experiences under the current pest management strategies, Horizons is satisfied that the overall effects of the RPMP will be beneficial to the Regional community. While Horizons is confident that a RPMPS is the most effective way of managing pests, there are some aspects of the implementation of the RPMP that may have real or perceived adverse effects.

6.1. Effects on Māori

It is assumed that pest animal management under the RPMP will have a positive effect on the relationship of Māori, their culture and their traditions, their ancestral lands, waters, sites, wāhi tapu (sacred places), and taonga (treasures) by contributing to the protection of taonga and mauri (life-force) associated with indigenous biodiversity, landscapes and waterways. Positive results stemming from the RPMP can include improved quality of traditional food gathering sites (e.g. wetlands and estuaries), and improved quality of native plant resources for food, fibre and rongoa (medicinal) uses.

It is acknowledged that the kiore is considered taonga by some iwi and that feral animals such as deer, pigs and goats are prized as replacements for traditional hunting resources. The degree of control of these species (if any) is negotiated with the owner, so there is room to accommodate the aspirations of the owners and occupiers of tribal lands. Also, a great deal of the feral range of these species is not a priority for pest control under the RPMP. It is therefore perceived that the Regional effect of the RPMP on the availability of these hunting resources will be minimal.

6.2. Effects on the environment

This RPMP will enhance and protect the ecological environment, including natural ecosystems and processes, soil health and water quality by removing, reducing or managing the pest species that threaten them. The use of control tools such as toxins and traps can negatively affect indigenous wildlife. Horizons actively participates in current research and training that aims to minimise the non-target effects of pest control, and readily adopts best practice methods for poisoning and trapping operations.

Enjoyment of the cultural environment will also be enhanced where pest management overlaps with amenity and recreational values. The economic environment will experience some benefit as a result of suppressing or eradicating pests that impact on primary productivity. In addition, the tourism industry (domestic and international) is expected to gain from this RPMP through enhancement of the natural areas utilised by visitors.

6.3. Effects on marketing overseas of New Zealand products

The control of pests in areas of high natural value should increase the recreational and aesthetic values associated with these areas, which may have a positive impact on international tourism. Further, New Zealand's clean, green image may benefit from pest management in natural areas.

The broad-scale use of toxins could be considered in conflict with the clean, green image. The use of best practice methods when applying toxins and employment of mixed method control should mitigate this threat. The volume of exports may be improved through increased productivity by managing pests that affect agriculture, horticulture and forestry.

7. Monitoring

7.1. Measuring the extent to which the objectives are being achieved

Monitoring provides a measure of how effective work conducted under this Plan has been. It highlights areas of success and areas where improvements are required. Robust spreadsheets and databases will be utilised to capture and store data collected during the monitoring of this Plan. Data collected in the field will be entered regularly so that the Plan can be reported on in an accurate way at any time.

There are three areas of monitoring required in order to report on the success of the pest management programmes. They are:

1. Establish whether, and to what degree, occupiers, plant nurseries, plant and pet retail outlets, stakeholders and members of the public are complying with the Plan, i.e. compliance monitoring.
    - Horizons will periodically inspect plant nurseries, pet shops and retail outlets (including aquatic pet shops) in the Region to ensure no pest plants or pest animals are being propagated, sold or offered for sale. Inspections will search for pests banned from sale, distribution and propagation under this Plan and the National Pest Plant Accord list. Availability of pests for purchase will be noted. Site visits are to be recorded and comments made on outcomes and actions taken where required.
    - After Horizons receives a complaint regarding a pest, properties will be inspected for pest infestations. All complaints will be logged in a complaints register and inspections recorded. The process, outcome and Horizons' response will also be recorded.
    - All roadside and rail verges will be inspected for pest plant infestations at least once a year. Inspections and results will be recorded. Contact with appropriate roading authorities will be logged. Subsequent exchanges between Horizons and roading authorities will also be logged, with dates of control and other details recorded.
2. Establish the mortality rate and effectiveness of control techniques. Determine to what degree the objectives are being met, i.e. success monitoring.
    - All direct control work conducted by Horizons will be logged, citing control techniques employed. Follow-up visits and any further control work will also be logged.
    - Success rates will be recorded and entered into Horizons' database.
    - Biological control agents will be periodically surveyed, and levels and distribution of biocontrol agents will be recorded and/or mapped.
    - Where Memoranda of Understanding exist between Horizons and other agencies, the parties will meet periodically to discuss the work programme. Work conducted by Horizons under such arrangements will be monitored in the same manner as other work conducted by Horizons under this Plan. Other parties will be requested to provide monitoring of any control work they may have conducted independent of Horizons' control work.
    - Prior to and following control, infestation size and, where appropriate, density or an index of density will be recorded. This data will be entered into Horizons' database and comparisons drawn between pre- and post-control.
    - Maps will be produced annually for each species, indicating areas of work and known infestation levels.
    - Control work events and result data will be checked against the timeframes associated with each objective.
    - The monitoring methodology will be reviewed as required to ensure that information on infestation size, density and location is logically and consistently collected across the Region in a manner which is as comprehensive as required while remaining simple to apply.

3. Establish the extent to which the objectives are being achieved, i.e. outcome monitoring.

   - For exclusion and eradication pest programmes, the outcome measure is the continued absence of the pest from the Region as it may be assumed that the result is protection of production and environmental values. This may be achieved by under taking either:
     - Active monitoring, i.e. undertaking statistically representative searches of areas vulnerable to invasion; or
     - Passive monitoring, i.e. investigating reports from occupiers or the public on the presence of the pests.
   - For the Progressive Containment Pest Programme, the outcome measure is the degree of reduction of the area of these pests inside the active management zones and/or the continued zero-density status of the pest inside the active management zones, as it may be assumed that the result is protection of production and environmental values.
   - For sustained control pests, the outcome measure is the speed at which boundary complaints are responded to and resolved, and the success of the uptake and implementation of on-farm biosecurity risk assessments.

7.2. Monitoring management agency performance

Horizons will report annually, by November, on work conducted over the previous financial year to achieve the objectives of the RPMP. Reporting will include (but is not restricted to) the following performance measures:

- The results of inputs, outputs and outcomes monitoring as detailed in Section 7.1 above. Reasons for changes in pest population or infestation number, size or density (positive or negative) will be explained;
- The results of outcomes and outputs monitoring as detailed in any programmes to identify and control new incursions;
- The change (positive or negative) in the extent of biocontrol agents and suggested reasons for the change.
- The results of trials;
- An evaluation of work programmes, including review of the operational plan and, if necessary amendment;
- Reporting on education campaigns with a statement on the perceived success of these, and guidance on the direction of future campaigns; and
- Details of community initiatives including extent of work, methods and results.

7.3. Review of the Plan

Monitoring the effects of the Plan will ensure that it is continuing to achieve its purpose and that relevant circumstances have not changed to such a significant extent that a review of the Plan is required. A review of the Plan may be needed if:

(a) There are changes to the Act and a review is needed to ensure that the Plan is not inconsistent with it;
(b) Other harmful organisms create problems, or have the potential to create problems, that can be resolved through integrating them into the Plan;
(c) Monitoring shows a significant change in the problems posed by pests or other organisms to be controlled covered by the Plan; or
(d) Circumstances change to such a significant extent that Horizons assesses that a review would be appropriate.

Failing the need to review the Plan under any of the above circumstances, the Plan will be reviewed in accordance with Section 100D of the Act. Such a review may extend, amend, revoke or leave the Plan unchanged.

The procedures to be used to review the Plan will include:

(a) An assessment of the efficiency and effectiveness of the measures of achievement (specified for each individual pest and other organisms to be controlled or group of pests or other organisms to be controlled) for achieving the objectives of the Plan;
(b) An assessment of the impact of the organism covered by the Plan on the Region and any other harmful organisms that should be considered for inclusion in the Plan; and
(c) Liaison with key stakeholders and interest groups on the effectiveness of the Plan.

Part Three: Procedures

8. Powers conferred

The Principal Officer (Chief Executive) of Manawatu-Wanganui Regional Council may appoint authorised persons for the purpose of exercising functions, powers and duties under the Act in relation to a regional pest management plan.

Manawatu-Wanganui Regional Council will use the statutory powers of Part 6 of the Act as shown in Table 8-1 together with any other powers and regulations from the Act, for the purpose of implementation.

Table 8-1: Powers from Part 6 to be used

Administrative provisions	Biosecurity Act Reference
The appointment of authorised and accredited persons	Section 103(3) & (7)
Delegation to authorised persons	Section 105
Power to require assistance	Section 106
Power of inspections and duties	Section 109, 110 & 112
Power to record information	Section 113
General powers	Section 114 & 114A
Use of dogs and devices	Section 115
Power to intercept risk goods	Section 120
Power to examine organisms	Section 121
Power to give directions	Section 122
Power to act on default	Section 128
Liens	Section 129
Declaration of restricted areas	Section 130
Declaration of controlled areas	Section 131
Options for cost recovery	Section 135
Failure to pay	Section 136

Note: The procedures that are followed in the event of land occupiers or other persons not complying with the rules or other general duties are set out in Section 8.1 below.

In addition, the Manawatu-Wanganui Regional Council has the power to prosecute under the Section 154N (19) of the Act for a breach of a plan rule where the rule provides for this.

Appointment of authorised persons by a Chief Technical Officer (a person employed under the State Sector Act 1988) may also be sought where implementation of other biosecurity law is considered necessary.

8.1. Regulatory management

Failure to comply with a rule

In the event that an occupier fails to comply with any requirement in any rule included in Part Two of the Plan, an authorised person of Horizons will:

(a) advise the occupier of their non-compliance and direct them to take remedial actions; and
(b) follow up the initial inspection to confirm what remedial action has been taken and/or identify outstanding requirements.

In circumstances of continued non-compliance, the authorised person will report to the chief executive or their delegated subordinate, who in turn may:

(c) utilise the administrative and enforcement provisions of the Act.

Failure to Comply with a Notice of Direction

Where a Notice of Direction has been given to an occupier under Section 122 of the Act, and the occupier has not complied with the requirements of the direction within the time specified, then under Section 128 of the Act, Horizons may enter onto the land specified in the Notice of Direction and carry out, or cause to be carried out, such works or measures as are reasonably necessary to meet the requirements of the Notice of Direction.

Offences

Horizons will, in appropriate cases, prosecute persons who do not act on directions or requirements issued by authorised persons to give effect to this Plan.

Recovery of Costs Incurred

Under Section 128 of the Act, Horizons may recover the costs and expenses reasonably incurred by it in carrying out the works and measures as a debt due from the occupier to whom the Notice of Direction was given.

Provision for Exemption

Horizons may, upon the written request of an occupier, exempt any person from any requirement in any rule included in Part Two of this Plan. Before granting an exemption under Section 78 of the Act the chief executive shall be satisfied that:

(a) The requirements have been substantially complied with and that further compliance is unnecessary; or
(b) The action taken or provision made in respect of the matter to which the requirement relates is as effective as or more effective than actual compliance with the requirement; or
(c) The prescribed requirements are clearly unreasonable or inappropriate in the particular case; or
(d) Events have occurred that make the prescribed requirements unreasonable or inappropriate in the particular case; and
(e) That the granting of exemption will not significantly prejudice the attainment of the objectives of this Plan.

Process: On receipt of any request, Horizons will advise that person within ten (10) working days of its decision whether or not to exempt that person from any requirements of any plan rule included in Part Two of this Plan. The chief executive will delegate the power to approve exemptions. Regard will be given to:

(a) Positive soil conservation effects of pest plants in erosion prone sites;
(b) Regeneration of indigenous habitat;
(c) Prevention or mitigation of flood damage;
(d) Effective suppression of the pest through alternative management methods;
(e) The pest being used for valid scientific research;
(f) The pest being used for approved herbal, medicinal, or commercial extractive or consumptive use; or
(g) Where two occupiers with a common boundary agree that control of the pest using good neighbour rules is not necessary or is better managed through non-regulatory means.

A register of exemptions will be maintained for public inspection.

9. Funding

Section 70 of the Act requires funding of the RPMP to be addressed in the proposal. For the purpose of identifying the most appropriate funding regime, the matters to be addressed as set out in the Act include:

- An analysis of the benefits and costs of the Plan and the cost of any reasonable alternative measures;
- The extent to which any person or persons of any class, kind or description are likely to benefit from the Plan (beneficiaries);
- The extent (if any) to which any persons or persons of any class, kind or description by their activities or inaction contribute to the creation, continuance or exacerbation of the problems proposed to be resolved by the Plan (exacerbators);
- The rationale for the allocation of costs; and
- Whether any unusual administrative problems or costs are expected in recovering the costs allocated to any of the persons who are required to pay.

9.1. Analysis of benefits and costs

With a few exceptions, little has changed between the objectives of this Plan and the previous Regional Pest Plant Management Strategy and the Regional Pest Animal Management Strategy.

The new or changed obligations imposed by the Plan are:

- The addition of yellow bristlegrass and field horsetail as Progressive Containment species;
- Shifting Austrailian sedge, blackberry, broom species (exotic), gorse, nodding and variegated thistle, tutsan, and yellow ragwort from (what was effectively) Sustained Control to Progressive Containment;
- The introduction of the Good Neighbour rule concept; and
- The introduction of the on-farm biosecurity risk assessment.

For all of these new obligations, the Decision Support Tool that guides the pest control response encompasses an on-site analysis of the costs and benefits of pest control actions on the occupier and on the Region as a whole. If the analysis of costs and benefits do not stack up, no new obligation is imposed. Horizons belives a regional scale monetary costs and benefits analysis of these proposalsis not necessary and therefore it has not been performed. All of the other pests and programmes under consideration had cost benefit analyses performed when the existing RPAMS and RPPMS were formed. There are no new obligations imposed on any occupier that are not already implicit in the Biosecurity Act. Horizons is satisfied that the previous assumptions used to identify the benefits and the costs under previous strategies remain valid, and therefore those costs and benefits analyses are used to inform this Plan.

9.2. Beneficiaries and exacerbators

Beneficiaries are people, institutions or activities that, under the RPMP, will experience lower costs, higher production or the benefits of a healthier natural environment. Beneficiaries include the “Regional Community” who benefit from non-financial gains from pest control such as protection of biodiversity, soil, recreational, and water quality values.

Exacerbators are people, institutions or activities that, through their actions (or non-actions), contribute to the creation, continuance or worsening of a pest problem. Exacerbators may include public entities such as Crown agencies, Horizons, TLAs or private individuals or companies.

The underlying rationale for identifying beneficiaries and exacerbators is that they are expected to share the cost of implementing the Plan. By identifying the beneficiaries and exacerbators, an equitable funding policy can be formed for each pest.

Table 9-1 below is an assessment of the groups of people who are contributing to the pest problem (exacerbators), and those who benefit from the control of pests (beneficiaries).

Table 9-1**:** Pest Beneficiaries and Exacerbators for each pest or class of pests identified in this RPMP

Pest(s)	Beneficiaries	Exacerbators
Production Pest animals excluding rooks and possums	The associated annual monitoring and reporting of pest animals under this RPMP is of regional benefit. The value of rabbit enforcement and avoidance of plagues benefits farmers and the Regional economy. By keeping unwanted organisms out of the Region, the exclusion programmes for pest animals benefits the Regional economy. The regional community also benefits from ancillary protection from the environmental effects of these pests.	Landowners and occupiers (including Crown agencies) who are not controlling these pests are the main exacerbators. Persons who knowingly liberate these pests are also exacerbators.
Possums	The nation and the Region benefit from the sustained control of possums. The reduction of possum numbers benefits the Regional economy and contributes toward the protection of environmental values. Famers and larger properties benefit as a result of protecting the productive capacity and other features of their property.	Landowners, occupiers (including Crown agencies) and persons who harbour and knowingly liberate possums are the main exacerbators.
Rooks	The nation and the Region benefit from the eradication of rooks by protecting economic futures. Although rooks current only affect the northern and eastern parts of the Region, properties within the entire Region are protected by their containment and eventual eradication.	Landowners, occupiers (including Crown agencies) and persons who harbour rooks are the main exacerbators.
Production Pest plants	Farmers are the main beneficiaries of the management of Production Pest plants. The progressive containment and sustained control of various pest plants benefits the Regional economy.	Landowners and occupiers (including Crown agencies) who do not control pest plants in accordance with this RPMP are the main exacerbators. Persons who knowingly propagate and sell these pests are also exacerbators.
Environmental Pests	The regional and national community benefits through the protection of regional environmental values.	Landowners and occupiers (including Crown agencies) who do not undertake management of these pests are the main exacerbators. Persons who knowingly propagate and sell these pests are also exacerbators.

9.3. Funding sources and rationale

In giving effect to funding, both the Biosecurity Act 1993 and the Local Government (Rating) Act 2002 require that funding should be sought from:

- Those people who have an interest in the Plan;
- Those who benefit from the Plan;
- Those who contribute to the pest problem; and
- In a way which reflects economic efficiency, equity and the ability to target those funding the Plan and the costs of collecting the funding.

These factors were considered when Horizons developed and adopted the funding policies for the Biosecurity Activity under the 2015-2025 (current) Long-term Plan (LTP). The policies, including the analysis of the distribution of benefits, are described in full in the LTP (LTP pp. 296 – 300). Table 9-2 summarises the types of rates against each activity.

Table 9-2: Horizons LTP revenue and funding policy for RPMP activities

Activity	Type of rate[3]			
	EQCV	General UAC	Per ha >4 ha	Targeted UAC
Production Pest animals excluding rooks	60%		40%	
Rooks	10%		90%	
Production Pest plants	30%		60%	10%
Environmental and Amenity Pests	50%	50%		

9.4. Anticipated implementation costs

The LTP details the prospective funding impact for the Biosecurity Activity projected over the 10-year life of the LTP (LPT pg. 228). The 2015-2016 costs are represented in Table 9-3 and exclude GST.

Table 9-3**:** 2015-2016 funding impact statement per Horizons 2015-2025 Long-term Plan (LTP pg. 228)

Activity (by rating type)	Income ($000s)
Biosecurity general including Environmental and Amenity pests (all EQCVs and general UACs)	2,807
Production pest animals excluding rooks (targeted per ha)	1,309
Rooks (targeted per ha)	142
Production pest plants (targeted per ha)	115
Production pest plants (targeted UAC)	19

9.5. Funding limitations

There are no unusual administrative problems or administrative costs expected in recovering the funding from those required to pay. All of the revenues are identified as targeted rates. Targetted rating imposes the limitation that the funds can only be used for the pest control activities that the rates are attributed to.

[3] EQCV = Equalised Capital Value: Capital value of the property taking into account different valuation dates around the Region.
UAC = Uniform Annual Charge: Same amount per property.
Per ha = Per Hectare rate: Same amount per hectare, differentiated between properties less than and greater than 4 hectares.

Section Two: Regional Biosecurity Strategy

1. Introduction

1.1. Overview

Pest plants and animals seriously threaten New Zealand's natural environment and agricultural industry. Controlling these pests is an important part of protecting the country's natural environment and productive capacity of land.

This document, titled *Regional Biosecurity Strategy and Programmes 2015-2035* (aka 'Regional BSP' or 'the Strategy'), details the non-regulatory pest management ambitions and aspirations for the Manawatu-Wanganui Region for the next 20 years. It focuses on Horizons Regional Council (Horizons) providing regional leadership and direction around all matters concerning biosecurity, including collaboration with other agencies that are involved in biosecurity, inspiring and supporting communities to help solve local pest issues, engaging with landowners and rural communities over their rights and responsibilities, and integrating biosecurity services with a raft of other council plans and initiatives, such as the Sustainable Land Use Initiative and the Regional Biodiversity Protection Programme.

The purpose of the Regional Biosecurity Strategy and Programmes document is to:

- Detail the non-regulatory pest management work that Horizons is either leading or participating in; and
- Complement the regulatory focused Regional Pest Management Plan (RPMP) and provide a complete package of activities and initiatives that Horizons undertakes.

While the RPMP is Council's 'bedrock, regulatory' document, it deals strictly with obligations under the Biosecurity Act 1993 (the Act) and the pest management rules that Horizons will enforce across the Region. A significant amendment to the Act in 2012 saw the legislation around pest management made more specific in its direction, including the creation of a National Policy Direction (NPD) which is presently in draft form. There is also a national desire to see more consistency between regions, which creates a prescriptive process.

The Regional BSP, by containing all the non-regulatory biosecurity work of Horizons, is a larger, more universal document that can have flexibility incorporated around funding and priority actions, as it is linked to long-term plan and annual plan processes. The Strategy includes activities that are not relevant to the NPD and Council can chose the extent to which it wishes to be involved in the actions and measures that are outlined. Some of the content of this Strategy may in time find itself included in the RPMP, such as the pest pathway components, which are in their development stages at present.

The Strategy is more than a policy framework. It contains a number of aspirational objectives, combined with implementation measures and on-the-ground programmes which Horizons will carry out, either solely or in collaboration with others. The Regional BSP is written for organisations and ratepayers in the Region who have an interest in biosecurity.

1.2. More than just a rulebook – document structure

The Regional BSP covers a number of existing collaborative and community orientated programmes that Horizons is involved with (e.g. Weedbusters, biocontrol of weeds and advisory services). However, it also introduces a number of new initiatives, such as an on-farm biosecurity assessment concept and novel new ways to manage difficult roadside pest plants like yellow bristle grass. This is in response to growing public sentiment for Horizons to be more proactive and innovative over pest issues.

The Regional BSP incorporates some concepts and ideas from the Biosecurity Generic Guidelines Group – a group made up of regional council and Crown agencies representatives. It also draws on some components of the previous Regional Pest Plant Management Strategy and the Regional Pest Animal Management Strategy. Many of the programmes and initiatives developed under these strategies are still valid.

While the structure and content of the Regional BSP is not guided by the requirements of the Biosecurity Act, many of the terms used are found in the Biosecurity Act. The Regional BSP complements the Regional Pest Management Plan and the two documents should be read together.

Section 1 contains the **introduction** to the Regional BSP. It outlines the purpose and why Horizons is involved in a mix of pest strategy and programme responses.

Section 2 provides an overview of the **Regional Pest Management Plan**, recent changes to the Biosecurity Act, new pest categories created and the relevance and links with this Strategy.

Section 3 outlines some new concepts and programmes on **regional pathway plans and approaches**. It focuses on freshwater pests, pathways of weed spread along roadsides and a new pest pet accord. The is based on the successful National Pest Plant Accord, but is developed for managing biosecurity risks as a result of animals being bought and sold in the pet trade.

Section 4 highlights four **high profile species-specific programmes** for possum, yellow bristle grass, tutsan and field horsetail. Possum control under the Possum Control Operation is Horizons' biggest single species expenditure in biosecurity and will reach a significant milestone in terms of regional coverage by June 2016. With regard to the three pest plants covered, the intention is to highlight that while they are well established in the Region and unlikely to be eradicated, there are still opportunities to restrict their spread and to keep large areas of the Region that are currently clear of these pests to date, clear.

Section 5 covers the framework and process of an **investigation programme for potential pests** in the Region. This applies where a number of plants and animals are known to be present, and may have the potential to become economically and ecologically damaging, but not enough information is known about their distribution or effects. Pests will be nominated by the public and different organisations through submissions and direct contact over the next 20 years. Having a 'holding pen' of candidate organisms allows Council to assess their effects following a robust process.

Section 6 introduces a new **on-farm biosecurity risk assessment** concept and tool that is designed to be used by farmers and land managers to determine the status of production weeds on their property, which will in turn help prioritise where control effort should be directed.

Section 7 outlines how **advocacy and community awareness programmes** are managed across the Region. This includes the provision of advice and information, and how communities can tap into regional funding for small-scale projects. These programmes have close connections with social marketing initiatives (Section 3.2), designed to change permanently people's habits and behaviours around pest management, e.g. not dumping garden waste in nearby gullies.

Section 8 covers **biological control** programmes. The current effort is focused solely on pest plants and there are good prospects for the control of intractable pests such as tutsan, field horsetail and old man's beard, although there are no guarantees of success.

Section 9 covers **biological assessment and monitoring**, which is an important component of all biological control projects. It involves assessing the impact that control agents have on their target weeds.

Section 10 provides an overview of the **site-led programme initiatives for biodiversity outcomes**, focusing specifically on the role that pest plants and pest animals play in managing biodiversity threats to the "Top 100" wetlands and "Top 200" forest remnants in the Region. Essentially, any organism impacting on a site can be controlled by the Council, with the permission of landowners, and control is not restricted to named pests in the RPMP. This section provides examples of the types of widespread pests that would likely be controlled for biodiversity outcomes, e.g. stoats and rats that predate on nesting birds and ground cover weeds, such as tradescantia, that smother native seedlings.

The final part, Section 11, looks at the many different national bodies and groups that Horizons staff are part of, including **inter-regional and national programme alignments and initiatives**. It notes how cross-boundary pest issues are managed with regional neighbours and the interacting roles of the Department of Conservation (DOC) and Ministry for Primary Industries (MPI) which also have biosecurity responsibilities. The Regional BSP concludes with an overview of two collaborative environmental projects that Horizons is strongly involved with – controlling invasive legumes to protect and enhance the iconic Desert Road vista and tussock landscapes, and the management of wilding conifers, through Nature Central, which is a consortium of regional environmental agencies in the lower North Island.

1.3. Terms and definitions

A description of terms used in the Regional BSP can be found in the Glossary at the end of this document.

2. The Regional Pest Management Plan – 2015-2035

2.1. Overview

The purpose of the Regional Pest Management Plan (RPMP) is to provide the regulatory framework for efficient and effective management or eradication of specified animal and plant organisms in the Manawatu-Wanganui Region, so as to:

- Minimise the actual or potential adverse or unintended effects associated with those organisms; and
- Maximise the effectiveness of individual pest management action by way of a regionally coordinated approach.

There are many organisms in the Manawatu-Wanganui Region considered undesirable or a nuisance. However, it is only where an individual's pest management actions or non-action impose undue effects upon others that regional management is warranted. The Biosecurity Act 1993 (the Act) contains prerequisite criteria that must be met to justify such intervention. The RPMP signals which organisms are classified as pests and managed on a regional basis.

The pest animals and pest plants listed in the RPMP are assigned to a New Zealand-wide control designation embraced by regional councils. The organisms classed as pests can be found in Section 2 of the RPMP and their control programmes in Section 5 of the RPMP.

The RPMP builds on and replaces the previous regulatory (Biosecurity Act) components of the Regional Pest Animal Management Strategy (2009) and the Regional Pest Plant Management Strategy (2007), in accordance with recent amendments to the Biosecurity Act. The non-regulatory components of the above two strategies are now incorporated into the Regional BSP.

2.2. Changes to the Biosecurity Act

The Biosecurity Law Reform Act was introduced to Parliament in 2010 to update the Biosecurity Act 1993 and allow the biosecurity system to respond to an increasingly challenging environment. The bill was passed into law in September 2012. The amended Act remains the primary piece of legislation for pest management in New Zealand. References in the RPMP and this Strategy to the Biosecurity Act refer to the current, amended version.

The Biosecurity Law Reform Act made a wide range of amendments to the Act, along with related amendments to four other Acts. As a result, pest management strategies must now be called pest management plans and there are new requirements for the development and review of these plans. Other changes include:

- The development of new policy instruments, such as the national policy direction (NPD) and pest pathway management plans; and
- A requirement for the Crown to comply with good neighbour rules.

Horizons has introduced these changes into the RPMP. With a few exceptions, little has changed between the objectives of the RPMP and the Regional BSP, and the previous Regional Pest Plant Management Strategy and the Regional Pest Animal Management Strategy that they replace.

Horizons is satisfied that the assumptions used to identify the benefits and the costs under previous strategies remain valid and that any new obligations on occupiers are reasonable.

3. Regional Pathway Plans and Approaches

3.1. Introduction

The concept underpinning the pathway approach in pest management is to prevent pests from reaching a destination in the first place rather than responding after a pest has arrived, become established and become a problem. At present there is no law to prevent the movement within New Zealand of plant material, or of goods potentially contaminated by animal pests, weeds or weed seeds.

Introduced plants that have become weeds are sometimes distributed for use or commercial purposes before their potential economic and environmental impacts as weeds are fully understood. Another significant cause of weed spread is inappropriate use and disposal of green waste including garden waste and inadequately composted mulches. The nursery, landscaping and gardening industries are important pathways for the introduction and spread of weeds. Similarly, the pet trade industry could also provide future pathways for the transfer of undesirable animal species.

In 2012, an Amendment to the Biosecurity Act introduced the possibility of National and Regional Pathway Management Plans being developed. These plans are based on the pathway concept above and provide government recognition of the need for a statutory mechanism to prevent pests from being transported into new or different areas. Regional Pathway Management Plans may apply to areas other than entire regions, including inter-regionally.

Pathway Management Plans are a new and untried initiative and statutory mechanism (e.g. at the time of writing this Strategy in June 2015, a Draft Fiordland Pathway Management Plan was being developed – the first of its kind in the country). Accordingly, there are no precedents to guide the development of Pathway Management Plans. In the future the use of Biosecurity Act powers to manage pest pathways, instead of individual organisms, may become more prevalent. In the meantime, Horizons will continue a number of regulatory and non-regulatory methods that manage pathways.

This section includes various national/regional pathway-related pest management initiatives that Horizons is involved in, including the role of social marketing aimed at behaviour change and building on the success of the *Check Clean Dry* messaging for managing freshwater pests that was developed from the didymo campaign to prevent its spread to the North Island.

3.2. Changing people's behaviours – the role of social marketing

The purpose of social marketing programmes is to change behaviours by increasing awareness of the risks invasive organisms pose to certain values and encoby uraging people to take specific actions to avoid introducing risk organisms. Social marketing to promote voluntary behaviour change is desirable because it is cheaper and is preferable to enforcement and can be targeted, e.g. pitched at levels that people can identify with and easily understand. Using social marketing to change behaviour is incremental and cannot be expected to immediately change the behaviour of users.

Horizons has been involved in social marketing at a number of different levels and is supportive of ways to increase people's buy-in to addressing biosecurity issues. Social marketing in its most obvious form is usually reflected through awareness campaigns and related initiatives. The projects in this section illustrate some high profile examples where social marketing techniques have been employed at national and regional levels.

Any biosecurity related social marketing programme would need to identify key messages, target audiences and potential delivery mechanisms, with objectives to increase:

- Awareness of general biosecurity issues and the risks introduced organisms pose to a place or area;
- The positive use of human behaviours which can be harnessed to prevent introductions;
- Awareness of the specific measures being undertaken to prevent the introduction and spread of invasive species; and

- Awareness of how to identify unwanted organisms and how to report detections.

Target audiences

Depending on the project a social marketing programme would target as many people as possible, including: iwi/runanga, volunteers, adjoining landowners to a site, visitors, travellers and tourist groups, environmental groups and local schools and tertiary institutions.

Delivery mechanisms

Social marketing messages can be disseminated in many ways, including developing codes of practice and through traditional media. Codes of practice are a non-regulatory tool for encouraging desired behaviours. In remote locations, where compliance with regulatory measures is difficult to enforce, it is critical to work with users to identify practical and reasonable measures to reduce biosecurity risks. Other media that could be used include brochures and posters, articles in stakeholder publications, local community newspapers/radio, signage, websites and direct mail-outs.

Section 7 has more details of Horizons' approach to awareness campaigns at the local/community level.

3.3. Managing freshwater pest pathways – 'Check, Clean, Dry'

Overview

Freshwater environments are heavily used by human-based activities which provide many pathway opportunities for pest spread. Activities/threats include:

- Commercial fishing (e.g. eel harvesting with nets and moving nets contaminated with weed fragments to different water ways;
- Freshwater aquaculture (e.g. diseases spread between wild and farmed salmon);
- Waterway management (e.g. gravel extraction using contaminated machinery);
- Hydro-electric power generation/irrigation (e.g. aquatic pests spread via artificial water courses and transfer of terrestrial weed seeds and fragments directly onto land);
- Companion (pet) animals (e.g. fish/turtles released when they become too big or unwanted); and
- Sporting and recreational activities (e.g. fishing activities give rise to a range of risk pathways). As with commercial fishing, pests can be inadvertently moved via boats, fishing equipment, nets and by trailers and vehicles.

As a result of these many potential 'pest risk' activities, freshwater environments are well suited to pathway management, as most freshwater organisms are unable to cross catchment boundaries by natural means.

A number of agencies have jurisdiction in the freshwater environment. The statutory responsibilities and regulatory tools can suffer from being limited and somewhat disjointed. For instance, DOC, Land Information New Zealand (LINZ), landowners, iwi and regional councils may all share an interest in any given water body. As a consequence, pathway management may of necessity rely on active partnership arrangements.

The Freshwater Pests Partnership Programme (FPPP) is an MPI-led partnership approach to managing pests found in freshwater environments. It was first instigated as a management response in 2005-06 when the national didymo response transitioned to a long-term management programme. Initiatives within the programme have also shifted from a focus on didymo-specific activities to include other freshwater pest plants, such as egeria, hornwort, hydrilla and lagarosiphon. The success of the didymo programme has been utilised to

expand awareness of other freshwater pests and to move towards a pathway approach to the management of freshwater pests.

The focus of management is on freshwater users taking personal responsibility for reducing the risk of spread, collecting information on the impacts and identifying tools to support management decisions and responses. This focus was determined by the practicalities of managing a freshwater incursion of an organism that is not always visible to freshwater users and the general lack of information on impacts and response options.

The freshwater pests under this programme are generally deemed 'ineradicable', hence the focus on collaborative and long-term management solutions between various parties. However, the emphasis is very much on preventing the spread to areas free of the particular pest. The immediate focus of the FPPP is still very much on keeping the North Island didymo-free.

Impacts of didymo

Didymo was first detected in Southland in 2004 and has now spread throughout most of the South Island, although some waterways are still free of didymo. The North Island is still free of known didymo. A recent economic impact assessment by NZ Institute of Economic Research in 2011 for didymo and other freshwater pests found that didymo is estimated to have caused $128 million in negative impacts between 2006 and 2011, and for every year that it is not present in the North Island there is a saving of between $20-30 million.

Slowing the spread of didymo and other freshwater pests throughout the country is achieved through the Check, Clean, Dry (CCD) social marketing programme (refer to the previous section in this Strategy). Social marketing / behaviour change was agreed as the best approach because:

- Eradication of didymo was not likely;
- Cleaning methods for river equipment had been developed;
- Greater likelihood of community buy-in through an inclusive rather than regulatory approach;
- Ability for partner organisations to act as channels to communicate the message/desired behaviour; and
- Behaviour change allows for reducing the spread of other freshwater pests.

Regional overview

The Horizons Region contains a range of freshwater pests, all with potential to spread more widely within the Region or into neighbouring regions. These include fish such as perch, gambusia, goldfish and isolated populations of koi carp, catfish and tench. Invasive freshwater plants include hornwort, lagarosiphon, egeria, Canadian pondweed, eelgrass and others.

While the threat of didymo is the greatest concern 'Check, Clean, Dry' behaviour will also help prevent the spread of all invasive species. The Horizons Region covers a large area and contains a diverse range of waterways, including coastal dune lakes, large lowland rivers and pristine mountain streams. The Region contains several waterways of high significance, including the Manganui o te Ao River, a nationally important trout fishery and stronghold for the endangered blue duck/whio. The Region also encompasses the western diversion of the Tongariro Power Scheme. Not only are the waterways that make up this scheme high-value waterways in their own right, but they empty into the Taupo and Waikato catchments and any freshwater pests they receive could reach these catchments.

Rivers such as the Rangitikei are of high recreational value and attract high numbers of tourists and travellers. A number of rivers, including the Whanganui, hold very high cultural importance for local iwi. The Region's most highly valued rivers and streams are also the most likely to provide a favourable habitat for didymo.

Objectives

The FPPP is supported by a partnership between MPI, Department of Conservation, Fish and Game New Zealand, regional councils (including Horizons), affected industry and specific Maori entities. The objectives are to:

- Slow the spread of didymo and other freshwater pests throughout New Zealand;
- Protect valued sites and 'at risk' species;
- Mitigate impacts of didymo on affected sectors; and
- Maintain the North Island free of didymo for as long as possible.

Implementation measures

Aligning initiatives with national and generic freshwater programmes, where appropriate, will ensure the programmes' continued relevance by establishing the systems and behaviours necessary to safeguard Horizon's freshwater systems from both current and future freshwater pests.

The Freshwater Pests Partnership Programme is overseen by a Steering Group of representatives from the different regions (including representing Horizons interests) and different stakeholder organisations to provide cross-sector governance and coordination. The Steering Group works alongside the wider partner organisations to ensure the outcomes and objectives for the programme are achieved.

One of the most important tasks of the Steering Group, which is of relevance to Horizons, is the advocacy work carried out at the Picton ferry terminal. Because didymo is established in the South Island, but not yet found in the North Island, raising awareness about the southern controlled area and providing information about didymo and other freshwater pests among travellers as they leave the South Island is critical to the success of any North Island freshwater pest programmes, Horizons especially.

Horizons strongly supports the FPPP and is involved in the following regional partnership activities:


Summer student hired to spread the word

- *Participate in the Check, Clean, Dry communications programme* – provide information to support the Freshwater Pest Long Term Management Steering Group and play a lead part in regional activities;
- *Prepare and maintain regional response preparedness plans* – in the advent didymo is discovered in the Region's waterways, it is imperative for Horizons to be prepared and be able to act early to limit adverse effects (e.g. through a similar process to managing a civil defence emergency response);
- *Run regional summer advocacy programmes, supported by MPI* – e.g. maintaining signs and installing new ones at appropriate places, and undertaking community outreach through events, school visits and liaison with local businesses such as sports stores and clubs. MPI supplies each region with annual funding to hire advocates to spread the CCD message at waterways and events; and
- *Conduct didymo surveillance and monitoring in high risk waterways* – carried out as part of Horizons' regional river and waterway water quality and sampling programme.

3.4. Pathway management of pest plants

A significant proportion of pest plant dispersal is related to human activity pathways such as use of transport corridors and agricultural practices. In agriculture, the pathways for spread include:

- Transported livestock and fodder;
- Contaminated crop and pasture seeds;
- Deliberate introductions of new species; and
- Contaminated machinery such as harvesters and diggers.

There are a number of ways in which Horizons will use the pathways prevention concept to stop or slow down pest plant dispersal.

3.5. Pest dispersal through contaminated machinery and equipment

The role of machinery, vehicles and equipment including railway wagons, tractors, diggers and cars contaminated with plants and animals (fragments or whole organisms) in spreading and infesting previously clear areas is well recognised, but often not managed in practice. This dispersal is caused through human movement of risk goods and can be intentional or unintentional, although the latter is more likely.

Horizons will undertake education and public awareness projects to increase awareness of the public, land occupiers and agricultural and commercial contractors of the risks associated with movement of equipment such as harvesters, freshwater fishing nets and boat trailers, and risk goods such as seed, grass, crop, timber and topsoil, through the Region.

Horizons was party to the development of an all-in-one best practice guideline and logbook for operators of machinery in rural environments. The booklet provides guidance on where, when and how to clean machines, as well as other good practice tips for preventing the spread of pests and weeds. There is also a 36-page logbook section for recording machinery clean-downs.

This project will be undertaken in accordance with the social marketing initiatives discussed in Section 3.2 above. Regulation is seen as a less cost-effective and desirable option than personal responsibility, but may be used if there is clear disregard shown by offenders. Horizons has the ability to use administrative powers (section 122 of the Act) to direct any person in charge of a risk good to treat any good, destroy any pest and take steps to prevent the spread of any pest. A 'restricted place' can also be declared under section 130 of the Act.

3.5.1. Pest dispersal through contaminated stock feed, crop and pasture seeds

There is increasing demand for stock feed imports to the Region from within New Zealand and from international sources. This increases the risk of incursions of new weeds onto properties. Horizons will be promoting that farmers in particular should be aware that there are a number of serious weeds, either not known in the Region or present at very low levels, that are a threat to their business if allowed to establish. Whether the stock feed's purpose is to increase stock production or to supplement feed shortages caused by climatic factors, purchasers must know the weed status of materials and goods entering their property (see also Section 6 on proposed new on-farm biosecurity measures).

Landowners and sellers of potential risk goods, such as stock feed, seed and crops, should follow strategies that minimise the risk of weed contamination. When buying animal/stock feed:

- Ask the seller to guarantee that feed, such as hay and silage, is weed free;
- Inspect the crop before it is harvested; and
- Ask about any past weed problems.

If feed comes from overseas:

- Only buy from reputable dealers and ask for a guarantee that it is weed free;
- Inspect feed on arrival;
- Keep records of where the product came from and where it is fed out; and
- If in doubt, restrict feed-out areas to simplify the weed control that an incursion would require and contact appropriate Horizons staff for further advice.

3.5.2. Pest dispersal through contaminated green waste

A key pathway of pest spread is the inappropriate disposal (dumping) of green waste from domestic gardens. Pest plants from domestic gardens can spread in a variety of ways, from seed carried by birds or wind, to fragments of stem or roots forming new plants.

Inappropriate disposal of garden waste is illegal and regulated by local councils. Horizons does not permit the inappropriate disposal of pest plants and weeds. For declared pest plants, there is a statutory obligation contained in the RPMP that states: *"No person shall knowingly communicate, release, sell, offer to sell, display in a place where plants are offered for sale or exhibition, propagate or breed pest plants."*

Regulation is seen as a less cost-effective option than personal responsibility and running awareness campaigns but may be used if there is clear disregard shown for pest dispersal through these means.

3.5.3. Pest dispersal through the nursery, landscaping and gardening industries

Horizons Biosecurity staff will regularly inspect plant nurseries and retail outlets to ensure no pest plants are being propagated, sold or offered for sale. Horizons does not permit the sale of declared pest plants listed in the RPMP. For these plants, the same statutory obligation outlined in the above section also applies. Horizons has good overall relations with this sector and is party to a country-wide pest plant management agreement, called the National Pest Plant Accord, developed before the pest pathway concept was widely introduced. The Accord is a very good example of a pest pathway management approach.

National Pest Plant Accord

The National Pest Plant Accord (NPPA) is a cooperative agreement between the Nursery and Garden Industry Association, regional councils and government departments with biosecurity responsibilities. The Ministry for Primary Industries (MPI) is responsible for coordinating, developing and managing the Accord.

The NPPA is a list of approximately 150 plants that have been declared unwanted organisms and which regional councils have agreed to monitor to prevent their sale, propagation or distribution. This work is undertaken to prevent breaches of section 52 and 53 of the Biosecurity Act 1993. Some species included in the Horizons RPMP are also listed on the Accord. The full list of species on the NPPA is available on MPI's website (www.mpi.govt.nz).

The NPPA is intended to carry the same effect as a Memorandum of Understanding and is not a binding contract. However, Horizons is committed to its roles and obligations under the Accord. These include:

- Undertaking a routine surveillance programme and actively enforcing restrictions against the sale, distribution or propagation of species on the NPPA;
- The provision of sufficient authorised persons to carry out the surveillance, inspection and enforcement programmes;
- The provision of advice and information regarding the NPPA to members of the public and commercial interests; and

- Contribution to the development or identification and information packages in support of the Accord.

Horizons also has a role in reporting on activities under the Accord, participation in a technical working group and consideration of recommendations of the technical working group. The NPPA demonstrates the value of a partnership approach to achieve high levels of voluntary compliance among retailers, and improved awareness of potential weed problems among consumers.

3.5.4. Pest dispersal through transport corridors – proposed new road reserve management initiatives

Introduction

Weed species spread along dispersal corridors, including roads, rail, navigable rivers and stream and river banks. The dispersal mechanisms are assisted by the geographic continuity of these routes. Mechanisms of dispersal include seeds and insects being transported:

- On vehicles of all types;
- By roadside mowing and vegetation trimming;
- By wind, including via wind gusts generated by passing road and rail traffic;
- By water flow;
- By birds; and
- In the case of aquatic weeds, pest fish eggs and micro-organisms.

Dispersal corridors provide entry routes into the Region from areas such as Waikato, Taranaki and Hawkes Bay, where the incidence of some pest species is higher than in Horizons Region. They also provide a means of dispersal all around the Region once unwanted species have invaded the Region. Weed 'hot spots' can develop at convergences of these various corridors, calling for extra vigilance at such places.

In many parts of Horizons Region, pest plants have established on road and rail verges. The spreading of metal obtained from a number of different sources (which have sometimes been weed contaminated) along transport corridors is one example of how this has happened in the past. Topsoil re-spread as part of road reinstatement work has also been a significant potential source of weed spread to previously uninfested areas. This action has in some cases resulted in road verge areas becoming infested with weeds, which in turn creates adverse effects upon adjoining occupiers. The reverse situation can occur if land occupiers fail to control weeds on land adjacent to the road.

Roadside reserves

The RPMP spells out the pest plant management obligations of roading authorities and adjoining land occupiers with regard to their use or ownership of State Highway and local road reserves. However, while the RPMP prescribes rules as to who is responsible, and in what situations, it does not state how control work should be carried out. Recent collaborative work between Horizons and Waikato regions, AgResearch, roading contractors, NZTA and interested districts suggest that traditional road verge maintenance practices of mowing vegetation and spraying around marker pegs and water tables are probably linked to the unintentional spread of some pest plants, particularly grasses.

Lighter grass seeds can readily attach to mowing machinery, especially if vegetation is wet, thus allowing greater adhesion. In this way, mowing represents a classic pathway opportunity for pest spread along corridors, for many kilometres in places. Regular spraying of vegetation around marker pegs will invariably kill off many vegetation species over time. However, the first species to colonise bare ground are typically

aggressive weeds, such as yellow bristle grass (YBG)[4] The photo (above left) shows dense YBG in the strip between marker peg and road.

This plant is now widespread along many of the Region's roadside verges and many people are concerned at its rate of spread. YBG is known to survive excretion following grazing by cows. It has been suggested that overflowing, or illegal discharging of, stock truck effluent tanks into road verges may also play a role in spreading YBG in the Horizons Region.

Total control of YBG on road reserves is impractical but there are management tools that can minimise its impacts, particularly spreading from roadside verges into neighbouring pasture land. The highest priority management action is keeping areas that are currently free of YBG, free into the future.

In considering responses it is acknowledged that there are practical challenges to pest plant management on road reserves Key issues are traffic safety issues, topography of the areas, access and differing widths of verge areas.

Objective

Horizons aims to work collaboratively with those parties which have an interest in reducing the impacts of pests spread through roading and transport corridor activities and to identify practical and achievable solutions.

Implementation measures

Possible mitigation measures challenge traditional corridor maintenance methods employed by road controlling authorities to date. A number of new initiatives are being considered in the development of a set of best practice guidelines for farmers, roading authorities and roading contractors alike. During the implementation period of the RPMP, Horizons will assist in the development of these guidelines. Examples of roadside vegetation management issues to consider for yellow bristle grass (YBG), for example, include:

- Determining if cleaning of mowing equipment is practicable between leaving an infested area and before arriving at a new, uninfested area;
- Working with maize contractors, in particular, to reduce spread during maize harvest;
- Changing mowing frequency (e.g. before end of December and not again until March/April), to remove seed heads at critical times of the year and to create overall a thicker, more dense sward of vegetation/grass where seeds will struggle to germinate and establish;
- Reducing reliance on spraying roading marker pegs, guard rails and other structures in order to avoid bare ground situations, including if necessary late summer/autumn spraying rather than winter spraying;
- Selecting non-invasive hardy, low-growing broadleaf plants that can be hydro-seeded onto bare areas and add value to ecosystems (e.g. fescue/clover mixes);
- Mowing a thin strip (bare minimum) of the road reserve, for safety/visibility reasons only, in order to create a vegetation barrier (e.g. hedging foliage) or buffer zone (e.g. 2 m to 6 m wide of taller vegetation) between the mown strip and neighbouring paddock to reduce the chances of seed dispersal and germination;
- Identifying areas where 'do nothing' (no mowing or spraying) may be a viable option; and
- Restricting of grazing on 'the long acre' (December to May) and taking hay from road verge areas, thereby reducing the opportunity for spread.

The above measures require further investigation and wide ranging dialogue between all the possible affected parties. A Regional Pathway Management Plan is potentially the best place for the management of roadside pests such as YBG.

Horizons supports and welcomes the debate and will maintain a leadership and supporting role on new pathway management proposals. Best practice guidelines will eventually be incorporated into future contracts, where

[4] See section 4.3 for more information on YBG issues. YBG is spread by mowers, machinery and stock. YBG seed will fall and can blow a short distance through the fence. Stock grazing roadsides will move YBG seed around via dung.

appropriate, and Memoranda of Understanding with roading authorities as they are developed and become operationalised.

3.6. Pathway management of pest animals

The management of pathways of pest animal spread through human induced action is different and arguably more complex than for pest plants. Pathways include:

- The intentional release of wild animals such as deer and pigs for hunting purposes;
- The transmission of bovine TB through uncontrolled or illegal movement of cattle/deer;
- Biofouling of boat hulls and through marine farming activities where structures/craft may potentially carry marine pest organisms;
- Recreational boating and fishing, where stowaway fish/amphibians could secrete themselves in boat trailers, or rodents being accidentally transported to pest-free offshore island; and
- Accidental or deliberate release of pets such as fish, reptiles and amphibians, or newly imported animals (often as they 'out-grow' their owners) that may become pest issues in the future.

The keeping of companion animals is common and the range of species kept continues to become more diverse over time. Pets may be abandoned into the wild, usually because they are no longer wanted, or less frequently species are released to establish wild populations. In other instances, pets simply escape, with many classes of pets such as birds, reptiles, amphibians and insects less inclined to come back to their owners than traditional mammalian pets. Pets can be transferred between owners via private sales, gifts and swaps, and the retail pet trade.

Aquaria species, such as fish and turtles in particular, are commonly kept as pets. However, these animals often become unwanted for various reasons. If they can't be given away or sold, they are often released into a natural waterway, along with any aquatic vegetation or disease organisms in the aquaria. The pet trade supplies species to the market and this is largely unregulated for species present in New Zealand.

The pet trade is viewed as a high risk pathway for potential animal pests. This issue is being addressed. Horizons is involved in the national development of a new agreement with the pet trade industry and others, based on the successful NPPA initiative that has been operative since 2001.

3.6.1. National Pest Pet Biosecurity Accord (NPPBA)

Overview

The National Pest Pet Biosecurity Accord (NPPBA) is a cooperative agreement between the Pet Industry Association of New Zealand, the New Zealand Companion Animal Council and those regional councils and government departments with biosecurity responsibilities that have ratified the Accord. As with the National Pest Plant Accord (NPPA), the Ministry for Primary Industries (MPI) is also responsible for coordinating, developing and managing this Accord.

The NPPA provides a mechanism for regulating the breeding, distribution and sale of pest pet species listed in the Accord that are already present in New Zealand and deemed to present an unacceptable biosecurity risk to the environment, economy, human health or social/cultural values. It also provides a mechanism for promoting good biosecurity risk reduction practices by the public.

The Accord covers the following activities: pest pet risk assessment; regulation; surveillance; enforcement; and engagement and communication. The Accord does not cover the following groups: animals native to New Zealand; cats and dogs; domestic livestock (e.g. sheep, cattle, goats, deer, horses); the majority of zoo animals; introduced animals managed under the Wild Animal Control Act 1977 (e.g. possums, deer); and aquatic plants (covered by the National Plant Pest Accord). Nor does the Accord cover the following activities aimed at managing the biosecurity risks of pets in New Zealand (e.g. surveillance for pet species in the wild; management responses (e.g. eradication, progressive containment) to pest pet species found in the wild; or consideration of pet species to be included in regional pest management plans.

The Accord has been developed in partnership with all parties having joint benefits. The Pet Industry Association of New Zealand (PIA) is the collective voice for New Zealand's pet retailing and wholesaling industries. Although not all pet traders in the industry are part of the PIA, it does represent a large proportion of the industry. The New Zealand Companion Animal Council (NZCAC) is a forum that facilitates the achievement of a harmonious relationship between companion animals, people and the environment.

The initial list of species to be included in the Accord will be developed following an agreed process. All species that have been assessed as high risk in the National Pest Pet Biosecurity Project will automatically be put forward for consideration, as will known pest pet species that are currently unwanted organisms. A Technical Advisory Group (TAG) will complete a risk assessment for each proposed species, based on specified technical evaluation criteria, and will recommend whether or not the species should be included in the Accord list. The species must be declared an 'unwanted organism' under the Act to be included on the Accord list.

Objectives

The purpose of the Accord is to:

- Contribute to the prevention of the establishment of wild populations of pet species;
- Reduce the frequency of risky public behaviour, such as pet releases into the wild; and
- Promote the responsible management of risk species by the pet industry.

Implementation measures

Horizons strongly supports the intent of this agreement and will be a signatory to it. As far as possible, Horizons' roles will be aligned with current surveillance/inspection work under the National Pest Plant Accord. With support from MPI, Horizons may carry out compliance activities in the Region to prevent the sale and distribution of pest pet species contained in the Accord list. Particular activities Horizons staff will undertake include:

- *Routine surveillance and inspections of pet shops and other outlets* – where listed pest pet species may be found. The inspection regime will be at the discretion of Horizons;
- *Providing advice and information to members of the public and commercial interests* – in relation to the species listed in the Accord list and associated surveillance and inspection activities;
- *Undertaking compliance activities to achieve the purpose of the Accord* – including actively enforcing sections 52 and 53 of the Act in relation to the species contained in the Accord list;
- *Providing sufficient Authorised Persons to carry out the surveillance and inspection programme* – Horizons will submit recommendations for the appointment of Authorised Persons, for the purposes of the Accord, to MPI;
- *Keeping accurate records of inspections in the National Pest Pet Biosecurity Accord Inspection Database* – so the effectiveness of the Accord can be measured; and
- *Appointing regional council representatives to the National Pest Pet Biosecurity Accord steering group* – and actively participate in the development of identification and information packages in support of the Accord and consider the TAG's recommendations on particular species to be included in the Accord list.

4. High Profile Species Specific Programmes

4.1. Introduction

The RPMP takes a regulatory approach to managing pest plants and animals in the Region. This section of the Regional BSP focuses specifically on four prominent pests: possums, yellow bristle grass, tutsan and field horsetail. It complements the RPMP regulatory regimes for these pests.

They have been included in this section due to the hig -profile they have within Horizons, either because effective control:

- Is expansive across the Region, sometimes controversial and is a 'big-ticket' item for annual funding (e.g. possums); or
- Is difficult to carry out with the current tools and approaches (e.g. yellow bristle grass); or
- Is hampered by difficulties in identifying or controlling at optimal times of the year (e.g. tutsan); or
- Will rely on so far unexplored management of dispersal pathways (e.g. field horsetail).

These four species in particular require holistic management, using both regulatory and non-regulatory approaches, to provide the best outcomes. The various management components of these species are outlined or detailed in in various parts of this Strategy and in the RPMP. However, pulling all the management threads together for these topical and regionally important species creates a cohesive picture which makes the full programme of Horizons' interventions easier to assess.

Possums

A major focus of this section is the policy and implementation measures for the Possum Control Operation (PCO) Programme. No other pest in the Region is more widespread or significant in terms of impact and uniqueness in the many ways which it adversely affects the regional community. Possums are included in the RPMP as a regulatory pest animal due to the possible use of Good Neighbour rules to control possums on Crown and rateable land (refer to Section 4.4 of the RPMP). Essentially, possum control is a key service delivery (non-regulatory) function of council, hence it is covered in detail in this Strategy.

Possums are listed as a Sustained Control pest in the RPMP. The aim of pest management with regard to this category is on providing for continued control in prescribed areas and ensuring they do not reach a level where they can cause externality impacts. Possum control is carried out as a direct control service of Council, based on the 'public good' nature of the benefits of the work to the Region. The continued suppression of the regional populations require coordination of action at a regional scale. The benefits of control accrue to a wider community than those directly affected by the presence of possums on their property.

Yellow bristle grass, tutsan and field horsetail

The three pest plants, yellow bristle grass, tutsan and field horsetail, are listed as Progressive Containment pests in the RPMP. The aim of their management regime is to 'roll-back' infestations and keep clear areas clear. The intermediate outcome is to contain and reduce the geographic distribution of the pests to specific areas over time. Containment arises where the pests are at high densities in parts of the Region but of low extent or limited range. Eradication is not feasible, but it is feasible to prevent the pests from spreading to other parts of the Region or to eradicate the pests from parts of the Region.

Ultimately, land occupiers are responsible for control of these pest plants on land they occupy, however Horizons has identified the need to be the lead agency to provide for the progressive containment of the organisms so that their Region-wide effects on economic, environmental and social/amenity values do not worsen. See also section 6 for a new on-farm approach to managing pests in this category.

4.2. Possum Control Operation (PCO)

Overview

Possums *(Trichosurus vulpecula)* are considered the number one animal pest in the Horizons Region because of their adaptability to many different environments and the extent and severity of damage they cause to both production and biodiversity values.

Possums impact significantly on the integrity of indigenous ecosystems, from localised extinctions of possum-preferred species to canopy dieback and ecosystem change. In the Ruahine Ranges in the mid 1990s, for example, possums were found to be primarily responsible for the collapse of 75 per cent of the indigenous rata/kamahi forest. They have caused local extinction of native mistletoe species and tree fuchsia from some native forest remnants. Possums also prey on native bird species, through predation of both eggs and chicks.

Impacts on productive capacity can be moderate in areas under no possum control. High populations consume economically significant amounts of pasture. The Horizons cost-benefit analysis for possums notes that one possum per hectare reduces the carrying capacity of land by just over 7% of a stock unit and goes on to note that inaction by Horizons to control possums would result in the loss of 63,000 stock units (assuming all 1.3 million hectares of pastoral land in the Region would be affected).

Possums are also vectors for a number of pathogens, the best known being bovine tuberculosis (TB). Individual possums are able to do considerable damage through attacks on gardens, trees and nurseries and through their habit of nesting in buildings. Possums occur throughout the Region in varying densities, ranging from high populations in areas of ideal habitat that are not under any formal control, to very low densities due to the collective and sustained control for many years by Horizons (on public rateable land), TBfree NZ for bovine TB control purposes (across any land tenure) and DOC (on public conservation land).

4.2.1. Brief history of the Possum Control Operation

Over the last 20-25 years there has been a huge input into managing possums in the Region, firstly for TB reasons by the then Animal Health Board (now TBfree NZ), then for wider environmental purposes by Horizons. There have also been self-help programmes, then Possum Control Areas (groups set up by landowners with some council assistance), through to the Council-led and funded PCO. The 10-year PCO programme commenced in 2006-07 with an ambitious plan to have half the Regions' rateable land managed under a PCO by 2012 and the balance of the Region by 2017 (excluding active bovine TB areas).

Future possum control in 2006 was targeted to build on the legacy of previous possum control, especially where over time the areas under TB control were expected to reduce and the 'retired areas' introduced would be into the regional programme. Capitalising on the low cost of control that maintenance work offered (from 'inheriting' very low possum numbers) was an obvious benefit for Horizons' involvement, compared with ceasing work altogether and starting some years later at a much higher initial control cost. This 'maintaining the gains' philosophy was central to the PCO Implementation Plan, along with directly approaching new communities that had not been part of any formal possum control previously, to join the programme. The PCO has grown incrementally each year since 2006, the aim being to add on average 116,000 hectares to the programme annually.

4.2.2. Current PCO situation

The Possum Control Operation is the only one of its kind in New Zealand and is the single largest biosecurity programme carried out by Horizons, both in terms of area covered and cost. Horizons spends approximately $3.2 million per annum on implementing the PCO, which covers all initial and maintenance operations scheduled for that year. By the end of the 2015-16 financial year, Horizons estimates it will have 1.19 million hectares under PCO management.

The goal is to have all of the rateable land in the Region, estimated to be approximately 1.3 million hectares, based on current knowledge in 2015, under programmed control by 2018. This figure may vary as areas are anticipated in the short term to roll off the TBfree NZ programme, but only when the diseases levels and risks

are judged to be low enough to warrant cessation of that part of the TB programme. Horizons' policy from 2006 continues, in that former bovine TB management areas will be assimilated, when appropriate, into the PCO. Once all of the eligible rateable land has been completed, the council has committed to a further 10 years of ongoing maintenance control, through to 2026-27.

The map following shows the geographic extent of the PCO. As at mid-2015 there were 100 separate possum control operational areas. By the end of 2015-16, there will be an estimated 115 areas and by 2018 up to 126 areas will be included. Over time, these areas will be continually reassessed and merged or changed depending on many factors, e.g. funding, TB status, Crown involvement and local boundary variations.

Objectives

Horizons will, over the RPMP term, sustainably control possums to low densities in order to reduce adverse effects on the economy and the environment. The RPMP contains three aims:

- One hundred per cent of the Region's eligible rateable land to be managed under a Possum Control Operation (PCO) by 2018. (TBfree NZ will continue to manage possum control over areas of land in Ruapehu, Wanganui and Rangitikei districts in the foreseeable future, under their current National Bovine TB Pest Management Strategy);
- Possum Control Operations (PCOs) on land not previously under the auspices of TBfree NZ vector control to have possum populations maintained below a density of 10 per cent Residual Trap Catch Index (RTCI) or 40 per cent Wax Tag 7-night Bite Mark Index (BMI); and
- PCOs on rateable land previously under the auspices of Animal Health Board vector control to have possum populations maintained below a density of 5 per cent RTCI or 15 per cent BMI.

Outcomes sought include:

- Damage to amenities, forestry, soil conservation plantings, crops, horticulture and pasture production is suppressed to today's level or lower;
- The risk of disease transmission from possums to livestock, pets and humans is reduced;
- The diversity of the Region's indigenous flora and fauna is protected from loss attributed to possums; and
- The effectiveness of any soil conservation planting is not reduced as a consequence of possum browse.

Implementation measures

Horizons will:

- *Provide ongoing service delivery possum control* in all established Possum Control Operations to ensure that operational targets are achieved and will progressively expand PCOs into areas that have previously not received possum control;
- *Continue to work closely with TBfree NZ* to ensure that as TBfree NZ ceases possum control in specific areas, Horizons is in a position to assume responsibility for future control work;
- *Continue to cooperate with Crown agencies* where their land is contained inside, or adjacent, to a possum control area;
- *Monitor possum density trends* in at least 15 per cent of PCOs by 30 June every year. Monitoring will use standard industry protocols and best practice guidelines;
- *Audit the quality of possum control inputs* for alignment with industry and Horizons' best practice for all PCOs on an annual basis, by 30 June every year;
- *Monitor environmental outcomes* as prescribed in management plans for high-value natural areas prioritised for protection under the Regional Biodiversity Programme. As part of the RPMP, results of outcome monitoring in any given year will be summarised in the annual report for that year;
- *Provide ongoing advice* to occupiers on appropriate control measures and management programmes;
- *Carry out community education programmes* to increase public awareness of the services provided by Horizons and the rules in the RPMP; and
- *Support research initiatives* (directly or in-kind contributions) to assist with the refinement of current methods and practices, including the development of new technologies and new methods (e.g. baits and bait application rates) and to better monitor biodiversity outcomes in PCOs (linked to the Regional Biodiversity Programme).

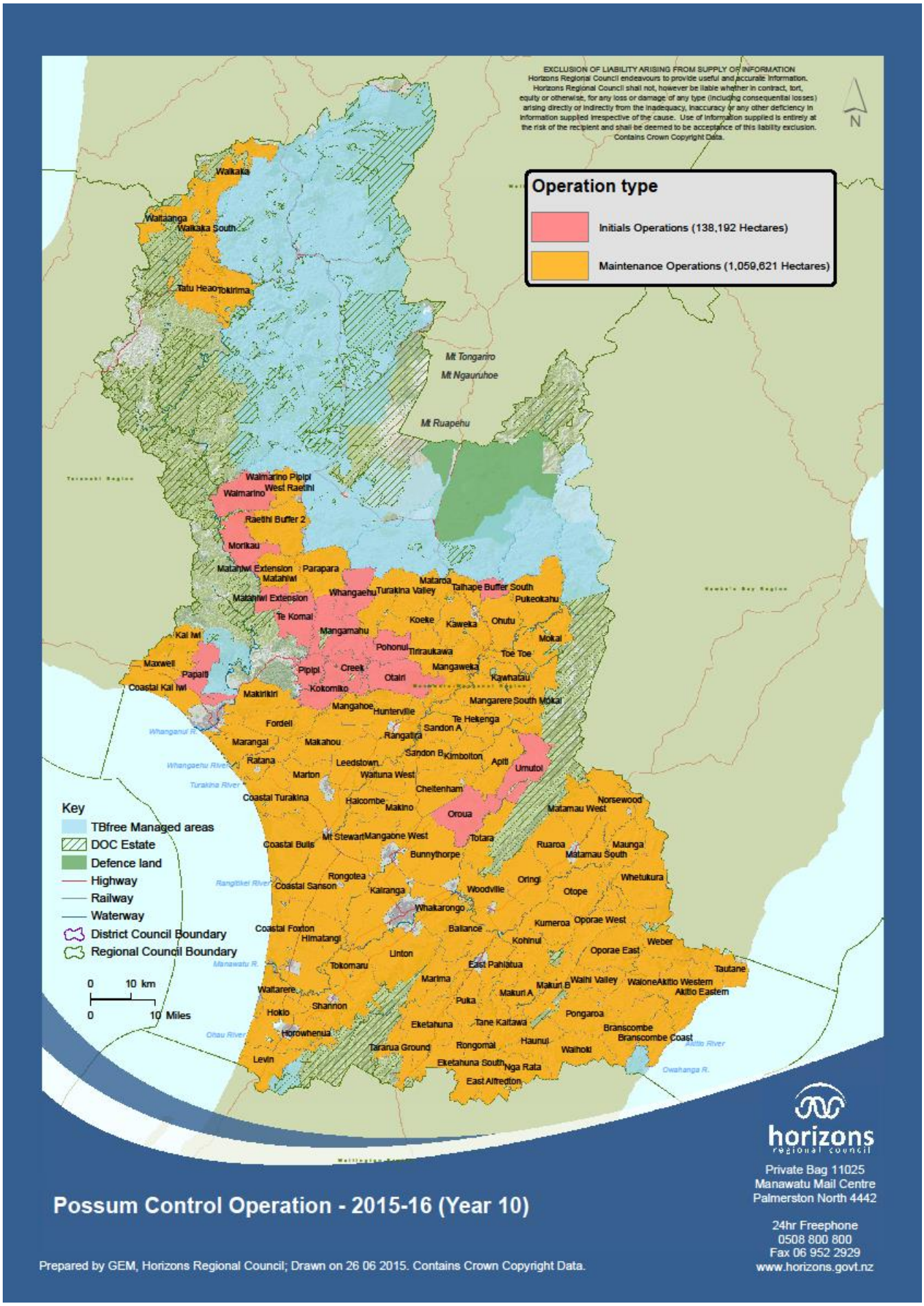


Figure 1: Extent of the PCO by 2015/16

4.3. Yellow bristle grass *(Setaria pumila)*

Overview

Yellow bristle grass (YBG) is a summer growing annual grass. It is a serious weed that reduces dairy farm profitability and could potentially infest productive land throughout New Zealand. Its aggressive nature means that it can spread rapidly through pasture, where cows do not willingly eat it. Grazing avoidance aids re-infestation and also provides an opening for other weeds. Reduced pasture quality alone is estimated to cost $343 per hectare and grazing avoidance when the plant is flowering could cost more.

YBG has a seed head that consists of a large (10 mm wide) golden to brown coloured bristle. It germinates in late spring and summer, when soil temperature is above 12°C but optimally above 20°C and where there is no or little covering vegetation. Germination requires adequate soil moisture. This requirement is usually met with rainfall, after which a flush of seedlings appears when the temperature is right.

It is often the first weed to invade bare ground and is particularly prevalent along roadsides, especially around marker posts and along and under guard rails, where extensive roadside spraying has been carried out.

The overall RPMP objective is to contain the spread of YBG, to reduce adverse effects, with specific aims of:

- Reducing the occurrence of yellow bristle grass spreading from infested land to clean land;
- Where necessary, managing yellow bristle grass populations in high priority areas (in conjunction with other pest management); and
- Investigating biocontrol options for yellow bristle grass.

4.3.1. Rules

Overview

The responsibility for control of yellow bristle grass lies with the land occupier. Horizons welcomes the opportunity to work with land occupiers on identification and developing practical control measures. Each occupier will be encouraged to undertake an on-farm biosecurity risk assessment (refer to section 6) to ascertain whether their farming operation is at risk from YBG and whether its presence or potential presence will require intervention. Roading authorities are responsible for control of YBG where it occurs on land they occupy.

Horizons may instigate control operations where infestations are detected in their infancy and control is achievable. Horizons will work with agencies involved in the potential spread of these species to identify the best interventions to prevent the establishment of new infestations. Entrenched and unsprayable infestations will be managed using biological control (if or when it becomes an effective control tool) and it is possible that some of the methods being investigated for control on roadsides could also be used in other situations.

Progressive containment pest rules for yellow bristle grass are:

- *Good neighbour rule 5.16.1* – When required to act, the occupier shall within 21 calendar days of being notified of the presence of yellow bristle grass, control or destroy that species located in the place they occupy, as identified by an authorised Horizons staff member.

4.3.2. Biocontrol

Landcare Research is about to embark on a joint Sustainable Farming Fund project with AgResearch to explore biocontrol scenarios for YBG. Prospects for control will be clearer by July 2016.

4.3.3. Roadside weed management

Total control of yellow bristle grass on road reserves is impractical, but there are management tools that could minimise the impacts of YBG, particularly reducing spreading from roadside verges into neighbouring pasture land (see also Section 3.4.5 of this Strategy). Horizons aims to work collaboratively with parties that have an interest in reducing the impacts of YBG spread through roading corridors and to identify practical solutions. Examples of roadside management options include:

- Determining if cleaning of mowing equipment after mowing is practicable;
- Change mowing frequency to remove seed heads at critical times;
- Less reliance on spraying roading marker pegs, guard rails and other structures;
- Use of low growing broadleaves that can be seeded widely to avoid bare ground;
- Mowing only a thin strip of grass to create a vegetation barrier between the mown strip and neighbouring paddock;
- Identifying areas where 'do nothing' may be viable (e.g. letting vegetation grow thick and high); and
- Restrict grazing of, and making hay off, road verges.

Other management measures include providing advice and information, monitoring and consideration of managing the spread of YBG using pathway management plans.

4.4. Field horsetail *(Equisetum* species*)*

Overview

Field horsetail (FHT) is a perennial fern ally that grows preferentially on damp open ground. It has a thick underground root system and asparagus-like fertile stems with whorls of needle-like leaves. The extensive underground rhizomes will penetrate to great depths around rivers and lake margins. Dense colonies establish on riverbanks, obliterating other vegetation. It is of limited distribution in New Zealand but is well established in Wanganui and Rangitikei.

The overall RPMP objective is the same as for yellow bristle grass, which is to contain the spread of field horsetail and over time to reduce its adverse effects.

4.4.1. Rules

Overview

The responsibility for control of field horsetail lies with the land occupier. As for all production pests, each occupier will be encouraged to undertake an on-farm biosecurity risk assessment (refer to Section 6) to ascertain whether their farming operation is at risk from FHT and whether its presence or potential presence will require intervention. Roading authorities are responsible for control of FHT where it occurs on land they occupy.

Horizons may instigate control operations where infestations are detected in their infancy and control is achievable. Horizons will work with agencies involved in the potential spread of field horsetail to identify the best interventions to prevent the establishment of new infestations. Entrenched and unsprayable infestations will be managed using biological control, if and when it becomes an effective control tool.

Progressive Containment Pest rules for field horsetail are:

- *Good neighbour rule 5.16.1* – When required to act, the occupier shall within 21 calendar days of being notified of the presence of field horsetail, control or destroy that species located in the place they occupy, as identified by an authorised Horizons staff member.

4.4.2. Biocontrol

Biocontrol offers good prospects for control of FHT (refer also to Section 8.2.2). Horizons, in conjunction with NZ Landcare Trust and local landowners have formed the Rangitikei Horsetail Group to manage a project to import insects to be released against field horsetail. Four insects held in containment at Landcare Research, Lincoln are being tested. They are a flea beetle, a weevil and two sawfly species. All appear highly host-specific. An application to release all four is likely later in 2015.

4.4.3. Roadside weed management

Field horsetail spreads through extensive underground rhizomes and does not set seed (the spores are largely inconsequential). Therefore, the roadside reserve management approaches being considered for YBG will not in the main apply for field horsetail.

The two best approaches might well be to 'do nothing' and let vegetation grow thick and high to prevent FHT establishing. During roading maintenance work where infestations are present it would be desirable to restrict roadside grading and any other activity that may move roading material around, especially related to drainage works.

Other management measures include: providing advice and information, monitoring and consideration of managing the spread of FHT using pathway management plans.

4.5. Tutsan (Hypericum androsaemum)

Overview

Tutsan is a small perennial, semi-evergreen shrub which grows to 1.5m high. Leaves are oval, up to 100mm long, without a stalk and usually opposite. Tutsan has pale yellow terminal flower bunches which appear from November to February. Round fruit are up to 10 mm and are initially coloured red then become black. It is common on roadsides, banks and disturbed areas. Tutsan escaped from cultivation in 1870 and is now found throughout New Zealand though it favours marginal land and higher rainfall areas.

The overall RPMP objective for tutsan is the same as for yellow bristle grass and field horsetail, which is to contain the spread of tutsan and overtime reduce the adverse effects.

4.5.1. Rules

Overview

The responsibility for control of tutsan ultimately lies with land occupiers. Horizons' preference is to work with landowners to identify control options and strategies to manage tutsan in the different parts of the Region that are affected.

Each occupier will be encouraged to undertake an on-farm biosecurity risk assessment (refer to Section 6) to ascertain whether their farming operation is at risk from tutsan and whether its presence or potential presence will require intervention. Roading authorities are responsible for control of tutsan where it occurs on land they occupy.

Horizons may instigate control operations where tutsan infestations are detected in their infancy and control is achievable. Control zones may in time be created in the Region, to clearly define those areas free of tutsan, where the greatest efforts will be made to maintain that status.

Horizons will work with agencies involved in the potential spread of tutsan to identify the best interventions to prevent the establishment of new infestations. Entrenched and unsprayable infestations will be managed using biological control when it becomes available.

Progressive containment pest rules for tutsan are:

- *Good neighbour rule 5.16.1* - When required to act, the occupier shall within 21 calendar days of being notified of the presence of tutsan, control or destroy that species located in the place they occupy, as identified by an authorised Horizons' staff member.

4.5.2. Biocontrol

There are good prospects for the biocontrol of tutsan. The Tutsan Action Group, a group of affected farmers in Taumarunui, plus Horizons, DOC and Landcare Research have carried out extensive research. Two insects are being assessed at the time of writing this Strategy. They have been tested and found to be suitably host specific only to tutsan. The insects are a foliage and fruit feeding moth and a foliage-feeding beetle. An application for wide-scale release will be made for at least one insect and a rust in 2016.

4.5.3. Roadside weed management

Total control of tutsan on road reserves will be difficult to achieve; however, many of the same management tools being considered for YBG could also minimise the impacts of tutsan, particularly the spread from roadside verges into neighbouring pasture land (see also Section 3.4.5 of this Strategy). Horizons aims to work collaboratively with parties that have an interest in reducing the impacts of tutsan spread along road corridors and to identify practical solutions. Examples of roadside management options include:

- Determining if cleaning of mowing equipment after mowing is practicable;
- Change mowing frequency to remove seed heads at critical times;
- Mowing only a thin strip of grass to create a vegetation barrier between the mown strip and neighbouring paddock; and
- Identifying areas where 'do nothing' may be viable (e.g. letting vegetation grow thick and high).

Other management measures include providing advice and information, monitoring and consideration of managing the spread of YBG using pathway management plans.

5. Investigation Programme for Potential Pests

5.1. Introduction

Overview

A number of plants and animals present in the Region may have the potential to become economically and ecologically damaging. During the development and subsequent implementation of the RPMP and this Strategy, a number of 'nuisance or fringe pests'[5] will likely be identified or nominated by ratepayers, and others, to be declared 'named pests' in the RPMP. There will be an expectation that some management intervention will be instigated.

Due to the vast number of potential candidates, particularly weedy plants, it is inevitable that Horizons will lack the full level of knowledge pertaining to many of these species, including their abundance, distribution and threat within the Region, to be able to determine their status and to set control mechanisms or targets.

The purpose of this section is to outline the steps that Horizons will need to consider in order to make a decision on each organism placed in this 'holding pen' category. The species mentioned in Sections 5.3 and 5.4 are not declared 'pests' under the Biosecurity Act, and are only banned from sale, propagation or distribution (outside of this Strategy) if they are nationally listed as an Unwanted Organism, on the National Pest Plant Accord list or until such time as they are moved into a proactive pest management programme under the RPMP.

Investigatory process

A decision-making process to determine which management objective the organism might be placed in will be undertaken by Horizons, following a similar procedure as that for determining 'exclusion pests' in the RPMP. Species nominated will collectively be placed into a monitoring programme. This is a temporary measure to enable the collection of information. These species will be monitored to assess factors including distribution, abundance and estimated rate of spread. Control trials may also be undertaken to provide more detailed management related information.

Time limits will be assigned for this information to be gathered, after which the costs and feasibility of control will be determined. Potential pest plants will have a monitoring objective established as a temporary status before being moved into one of the RPMP management objectives (e.g. Eradication, Progressive Containment or Sustained Control) or dropped from the Plan or Strategy and any further consideration.

During the life of the RPMP and this Strategy, Horizons may feel it necessary to add species to the list of species under the monitoring programme. All cases will be considered carefully, weighing up budget constraints with potential risk. Priorities and timeframes for all species will be adjusted accordingly.

5.2. Management approach

Objective

Horizons will develop and follow a robust decision-making process to determine the status of all organisms nominated for inclusion in the Regional Pest Management Plan.

[5] This term has no formal status under any legislation and refers loosely to organisms that have been raised through submissions or public fora, for example, by people who have observed or recorded informally that these organisms appear to be displaying pest or weedy tendencies.

Implementation measures

Tasks to be completed under this objective (for each species) include:

- The electronic recording and digital mapping of all known infestations or populations;
- Research into the biology of the plant or animal, including through research providers (e.g. identification, historic records of distribution);
- Compilation of research into the ecological or economic threat exhibited by the species elsewhere in New Zealand or overseas;
- Identification of habitats and areas that would potentially be at risk of invasion or would be detrimentally impacted on;
- Compilation of information on control techniques used elsewhere and their effectiveness or otherwise;
- Utilising interagency relationships in order to share distributional data and biological information;
- Conducting targeted awareness campaigns that solicit information from the public regarding distribution of species; and
- Conducting control trials to determine the most efficient, cost- effective control method.

5.3. Potential pest plant species

Table 1: Potential pest plants to be investigated further to determine their status (Note: this list was current as of July 2015; contact Horizons for an up-to-date list of organisms in this category).

Plant	Description
Pink ragwort *(Senecio glastifolius)*	An erect perennial herb invasive in coastal areas, cliff faces, scrublands and river margins, and capable of displacing indigenous species in these places.

5.4. Potential pest animal species

Table 2: Potential pest animals to be investigated further to determine their status (Note: this list was current as of July 2015; contact Horizons for an up-to-date list of organisms in this category).

Animal	Description
Canada goose *(Branta canadensis maxima)*	The Canada goose, which is native to arctic and temperate areas of North America, was introduced to New Zealand in the early 1900s. It has a black head and neck and a face with distinctive white patches sometimes referred to as 'chin straps'. In June 2011 the Canada goose was moved from schedule 1 of the Wildlife Act 1953 to schedule 5. The change meant this species is no longer recognised as a game bird and that Fish and Game councils no longer have any legal responsibility for its management. Landowners may now control Canada geese by any humane means. The Canada goose is not recognised by Horizons as a named pest. Its impact on farm production is largely unquantified, but it is known that five Canada geese may consume the same amount of grass as one sheep and that they further exacerbate production impacts by fouling paddocks. It is likely that large aggregations of the birds do sometimes cause negative effects. Anecdotal evidence from some landowners affected by these birds supports this statement. In the water, Canada geese feed from bottom sediments and also directly on aquatic plants. However, it is defecation from large numbers of these geese that may become a threat to aquatic values. That is because when Canada geese concentrate at specific sites their droppings introduce bacteria and nutrients into the waterways. The species appears to be widely distributed in the Region at varying densities.
Black backed gulls *(Larus dominicanus)*	Black-backed gulls are known to impact on farming operations neighbouring areas such as landfills, where they gather to feed and scavenge. This species has no protection under the Wildlife Act. Landowners can humanely control them on their property. Council is open to working with affected landowners to identify low-key suitable responses, including exploring options with local hunting clubs. The site-led programme (see Section 10) is exclusively for biodiversity related pests, so the anecdotal impacts on production values are not appropriate for this species. After further investigation, Council may wish to consider a site-led category for organisms that impact on production values.
Sambar deer *(Cervus unicolor)*	Sambar deer are not widespread but cause significant damage to forestry plantations within their feral range. Like other deer, they can also impact on the success of soil conservation and river engineering plantings, and indigenous vegetation communities. Sambar deer are a popular sport and trophy hunting resource. See also Section 10.4 regarding controlling sambar deer in high priority areas. All deer species are managed by DOC under the Wild Animal Control Act (1977) and any decision about their status and control is ultimately a matter for DOC. Horizons/DOC may also wish to consult with the Game Animal Council around possible management plans in the future.

6. On-farm Biosecurity Risk Assessment Proposal

6.1. Background

Relatively recent pest plants to the Region, such as tutsan, yellow bristle grass and field horsetail, have the potential to become Region-wide problems and their impacts on pastoral farming are increasing as their spread accelerates. However, they have not yet reached their 'full potential' and plant densities differ across the Region. There is still a chance to keep 'clear areas clear' and roll back infestations to defendable boundaries in order to avoid species like tutsan becoming 'the new gorse' and impacting further on regional farming profitability. Delivering this message to the Horizons farming community is one of the keys to motivate farmers to be part of the solution.

Longstanding production pests (e.g. gorse, broom ragwort and nodding thistle) are well established, wide-spread throughout the Region and have well documented economic impacts on farm profitability. There is little chance to contain these intractable plants at regional scale, let alone consider eradication. Spraying will very likely continue as the main control tool for many years to come. Biocontrol may eventually slow down or limit some infestations, but over many decades, or it may not achieve anything tangible and could fail to meet expectations.

The previous designation of 'boundary control' for some of these Progressive Containment plants in the RPMP did not provide for addressing spread outside of individual properties. Given the ability of pests such as tutsan and yellow bristle grass to disperse much further, it seems inappropriate to have 'boundary control' rules. There is strong public sentiment for Horizons to do more, be proactive and try other approaches. Horizons agrees and has developed a new concept (through this Strategy), to help re-brand production weed control by focusing on better management of some of the widespread, problematic plants that unfortunately will never be eradicated.

The proposal outlined in this section is a new decision support tool to help guide farmers and rural land managers to achieve best practice biosecurity risk assessments. It is primarily concerned with rural land occupiers thinking more about biosecurity on their farm and starting to treat their farm as a country with a nine-wire post and batten border! Collective action with engaged communities to solve local issues is one of the key objectives that Horizons is attempting to achieve in developing this proposal.

6.2. Concept overview

The biosecurity risk assessment tool is a one-page form which, when filled out for a pest species, will provide a property-based score to give certainty on any required intervention against the species. It has been developed primarily for production pest plants in the progressive containment and sustained control categories of the RPMP.

The purpose of the risk assessment tool is to:

- Provide farm owners with information to prioritise activities needed (e.g. cleaning up small infestations of pests before they spread through a farm or to neighbouring land); and
- Provide a means for Horizons to have better engagement with landowners who have major problems currently or are likely to in the immediate future.

Essentially, the biosecurity risk assessment process helps farmers and land managers to understand if their weeds are becoming someone else's problem or if someone else's weeds are becoming their problem. Horizons' role is to develop/refine the toolkit approach, promote the concept, meet and engage with landowners to discuss their own situations and issues (discussing their rights and responsibilities) and help farmers prioritise actions.

The tool should be viewed as a motivator for land occupiers to address their pest issues in a more targeted and engaged way, while also integrating a wide range of factors to consider when making decisions on what to tackle first. A key driver is that a landowner can be exempted from controlling pests as per the RPMP rules if they have a pest plant control plan that is based on the risk assessment tool.

This approach indicates a new intent by Horizons to innovate and move away from a previously blunt 'regulatory only' approach to achieve pest management outcomes for ubiquitous weed problems.

6.3. Aims

The following broad aims are anticipated, depending on the various situations presented:

- Protecting clear land and keep it clear (exclusion);
- Eradicating infestations where achievable (direct control);
- Long-term management of entrenched infestations (containment), including biological intervention;
- Site led control within high value sites; and
- Developing a Pathway Plan to eliminate controllable spread from infestations.

The above approach complements the four new RPMP designations:

- Exclusion – surveillance programmes to detect and then control if found (driven mainly by education);
- Eradication – 'take it on where you can beat it';
- Progressive Containment – push the infestation back to a defendable position; and
- Sustained control – using biological agents and other tools as opposed to relatively ineffective boundary control rules.

6.4. How it works – the mechanics

The following example illustrates how the risk assessment tool would be applied, using tutsan as the species focus. It includes a range of situations, from including widespread, hill country tutsan; hill country with very little tutsan; heavily infested roadsides; and lifestyle blocks free of tutsan. Some principles and assumptions about tutsan need to be considered first. They include:

- Tutsan is a major weed of farmland and bush and river margins;
- Tutsan exists in places where control is virtually impossible due to cost and collateral damage;
- Tutsan will always be here;
- Tutsan spread is human assisted in roadsides, via mowing;
- Tutsan spread also occurs with wind and water and possibly birds;
- Tutsan can be managed in pasture with high stocking rates, fertiliser/lime and chemical control;
- Preventing tutsan establishing is the best form of management;
- Infestations will create other infestations within a moderate distance from the parent;
- Biocontrol is an unknown quantity but holds some promise;
- The Ruapehu District has abundant tutsan but most of the district is free, even some farms adjacent to heavy infestations;
- Tutsan is across the Region and programmes against it are occurring already; and
- Action to control tutsan is well justified given its impacts on land value and farm sales.

In the form that follows, five different property situations have been selected to provide a range of scenarios regarding tutsan infestations, in order to test the assessment tool. Each property's tutsan designation is determined by undertaking a risk assessment to give an intervention score. In reality, this will be done by either the landowner or by Horizons in consultation with the landowner. It can be carried out over time, moving out from known infestations.

This process will help educate land occupiers and put tutsan 'front and centre' of farm management decision-making. In this example, the tool highlights tutsan requiring control: on farm, within the road corridor, on neighbouring land or district-wide infestations that may spread along roads, via machinery or stock.

It is anticipated that for most land managers the score will determine that they would achieve progressive containment by using 'Exclusion' as the means of achievement. In other words their land is clear of tutsan and it needs to be maintained that way. Those landowners on the fringes of thicker infestations may score 'Eradication' as the means of achievement, as it makes economic sense given the limited infestation size and density/age/land class.

Those adjacent to infestations of magnitude, or with significant populations within their property. may have their farm/land managed across a variety of designations to limit the impact and recognise that reinvasion will be an ongoing issue. Containment is the realistic option, whereas eradication is not. This is the most difficult scenario, as long-term management is not desirable but a reality, especially in the absence of a known biocontrol solution to limit the impacts. Other infestations such as on DOC-managed land, river edges and bush blocks would be managed primarily by the "Good Neighbour Rule" process outlined in the Plan although this is infestation and pathway dependent.

As part of the implementation of this proposed initiative, Horizons would:

- Utilise pest pathway management approaches to restrict spread by containment within current entrenched infestations;
- Champion biocontrol and monitor release sites, assess for success and purchase and facilitate wide-scale spread of biological agents;
- Map and record the distribution, range and densities of pests;
- Encourage liaison between TLAs and government;
- Offer management advice and integrate the approach into SLUI[6], WRET[7] and Biodiversity programmes;
- Assist with the biosecurity risk assessment analysis required of each farm; and
- Develop an integrated *On-farm Biosecurity* information pack – the complete package. The key messages and actions that will be promoted are shown in a one page example below.

[6] Sustainable Land Use Initiative
[7] Whanganui River Enhancement Trust

6.5. On-farm biosecurity risk assessment example for tutsan

Criteria	Score	Hill country farm, large infestation	Hill country farm, minor infestation	Lifestyle block owner	Landowner with clean farm but infested roadsides	Highly infested road reserve
1. Is the weed on the property?						
• Y	1	1	1	0	0	1
• N	0					
2. What is the likelihood of reinfestation?						
• A lot close by	5	5	5	3	5	5
• Some nearby	3					
• Not much around	1					
3. What is the infestation size?						
• Small <100 m2	1	5	1	0	0	5
• Medium 100-5000 m2	3					
• Large 5000 m2	5					
4. Control options required across the whole farm						
• Helicopter	5	5				
• Tractor (boom, gun and hose)	3	3				3
• Knapsack control (spot treatment)	1	1	1	1		1
Control sub total	9	9	1	1	0	4
Intervention score		20	8	4	5	15
Rule - Eradication is an achieveable aim	<10		8	4	5	
Rule - GNR	>10	20				15

6.6. Analysis

For the lightly infested hill country property, lifestyle block and 'clean' farmer, eradication from their properties will be the most sensible option while infestations are manageable. The biggest job ahead will be for the 'clean' farmer and the agencies involved to work together to keep the property clean.

The heavily infested farm and roadside analysis shows intractable infestations where a range of management interventions will need to be implemented to contain it.

6.7. Components of on-farm biosecurity

Pathways for pests to your place – Biosecurity on the farm

Key messages

- **Controlling widespread weed infestations is costly. Stopping new weeds taking hold is the best economic strategy.**
- **Farming practices can spread weeds. Stock feed originating from overseas or even from outside the Horizons Region increases biosecurity risks. It might bring in seeds from plants previously not known in the Region.**
- **Fifty-seven plants are proposed to be legally classified as 'pests' under the RPMP. Twenty-two of these pests have production related effects. There are also a number of other plants with 'weedy' characteristics that could adversely affect the Region's economy.**
- **Action to prevent establishment – be aware and initiate action.**

1. Being weed aware. Treat your boundary like a border

- Contact Horizons for a list of significant pest plants in your area – order factsheets or download them from the Horizons website.
- Tell your staff about weeds and pest plants in your area.
- Movement of livestock, people and vehicles spreads weeds. Seeds are on boots or animal hooves.
- Consider the risks if you allow people onto your farm to fish for eels, as they may inadvertently bring pest plants such as alligator weed or hornwort with them (on nets).
- Check your roadside boundaries regularly as they are a common source of new weeds, often spread by roadside mowers. Consider the outside weed burden if you graze roadsides or harvest roadside vegetation.
- Establish weed barriers (e.g. hedges/unmown grasses) along road frontages to reduce roadside weed invasion and avoid spraying along fence lines, leaving bare ground encourages weed establishment and invasion.

2. Integrated approach to prevent weed invasions on farms

- Use the biosecurity risk assessment tool to assess the status of weeds on your farm
- Engage with Horizons staff, neighbours and others to seek help and advice on priority actions

3. Buying weed free stock feed, soil, metal and sand

- Ask the seller to guarantee feed (such as hay and silage) is weed free and if you can inspect any material on arrival or the crop before it is harvested.
- If feed comes from overseas, only buy from reputable dealers and ask for a guarantee that it is weed free.
- Keep records of where product came from and where it was used on the farm.

4. Doing regular inspections – protect your farm and waterways

- Regularly inspect your property for new or unusual plants – particularly storage/feed-out areas.
- Check areas of highest risk, such as entrances, vehicle races, boundaries and feed or soil/

7. Advocacy and Community Awareness Programmes

This section covers wide-ranging and specific biosecurity advocacy, information and awareness education services which are supported or implemented by Horizons. By association, many of the initiatives are closely linked and are generic to pest management in general. However, community initiative programmes for pest plants and pest animals are separated out because some of the implementation measures can differ.

This section also complements, and expands on, the outline of the principal measures to achieve the RPMP, as discussed in Section 5.3.4 of the RPMP, around the provision of advocacy and education. It also has close links with the new proposal outlined in Section 6, the biosecurity risk assessment tool that has been primarily developed for production pest plants.

7.1. Awareness campaigns and initiatives

Overview

One of the most effective outcomes of the implementation of the RPMP and the Regional BSP will be successful behaviour change brought about by targeted intervention methods, i.e. campaigns and initiatives. Alerting the Region's communities to the issues, threats and solutions could result in more effective pest management, particularly in prevention and containment measures such as stopping the spread of aquatic pest plants and the establishment of 'new to the Region' pest plants, the majority of which will probably originate from gardens and pest animals.

The role of social marketing in raising biosecurity awareness, including links to the freshwater pest awareness programmes with which Horizons will be involved, is outlined under the Pathways section of the Strategy and the two sections are closely linked.

Objectives

Horizons will undertake awareness campaigns and other initiatives targeted towards particular communities or user groups, and to address specific issues. They will be additional to the provision of more general advice and information, which is outlined in detail in the next section.

Implementation measures

The communities and user groups that should be incorporated into awareness campaigns include, but are not restricted to:

- Nurseries, garden centres and plant and pet retailers (and their customers);
- Water user groups (fishing, boating, etc.);
- Gardening groups, hunting clubs and societies;
- Lifestyle block owners, coastal communities and holiday home owners;
- Occupants of new housing developments and absentee landlords;
- Territorial local authorities (parks, reserves and amenity plantings);
- Historic homestead owners/occupiers (many contain legacy pest plants);
- Quarry operations and transportation companies; and
- Tangata whenua groups (marae and hapu level).

Issues that should be addressed by targeted awareness campaigns include:

- Informing the public on the RPMP and the community's roles and responsibilities;
- Prevention of new incursions/surveillance measures;
- Encouraging responsible choices in acquiring pet species and gardening practices;
- Containment of aquatic pest plants;
- The spread of species from urban gardens into natural areas; and
- The risks associated with illegal dumping of garden waste and unwanted pets.

Several existing mechanisms exist to encourage and support behaviour change. Horizons will continue to enhance these opportunities where appropriate. Details of individual awareness campaigns will be outlined in the yearly operation plans that stem from the RPMP and/or this Strategy. They may include:

- *Liaising and combining resources with other resource management agencies* that also have an interest in community awareness around pest control (e.g. DOC, Forest and Bird, Fish and Game, tangata whenua and the community groups themselves, as a vehicle for advocacy initiatives). Horizons continues to be an active member of Weedbusters and is involved in, and contributes to, national initiatives such as publications (e.g. *Plant Me Instead* booklet), national awareness campaigns (e.g. *Protect your water*) and risk management;
- *Publication or purchase of publications* (brochures, pamphlets, booklets, books) that provide information pertaining to the awareness campaign in question in a simple and factual manner. Publications are shared between, sold to, or purchased from, other agencies and regional councils. Collaborative productions are encouraged. New methods, designs and materials are investigated to keep advocacy publications innovative, eye-catching and current;
- *Printed and electronic media*. Awareness campaigns are supported in the media through information, timely and accurate advertisements, articles, photos and airplay. Horizons' Communications team plays an integral part in this process;
- *Holding interactive stalls/shows at agricultural field days. Horizons attends field days (and their equivalent) throughout the Region. Stalls could be in conjunction with other agencies or councils; and*
- *Assistance to make good gardening choices – including advice about pest plant/garden disposal and assistance with choosing appropriate species, e.g. Horizons purchases and distributes Plant Me Instead booklets free of charge.*

7.2. Provision of advice and information

Overview

Awareness and understanding of threats and implications of pest plants and animals is imperative for the wider success of their management. The provision of technical advice and information allows occupiers to make informed decisions and can lead to more self-responsibility for pest management.

Objective

Horizons will, in relation to each pest plant and animal, provide technical advice and information to land occupiers and the wider community for the purposes of:

- Promoting greater public awareness of the potential or actual adverse effects associated with pest plants and animals;
- Promoting greater public awareness of an individual's responsibilities under the RPMP and the initiatives and community programmes that support wider pest management objectives;
- Promoting effective pest plant and animal control or the adoption of management techniques that will avoid, minimise or remedy the adverse impacts associated with pest plants and animals; and
- Promoting consideration of animal welfare impacts and use of the most humane control tools that will still achieve cost effective and desired outcomes.

Implementation measures

Horizons will:

- Respond to public requests (via Frontline, a Council enquiry database) for information or enquiries in relation to the identification of pests, their impacts and appropriate control options;
- Disseminate advice to land occupiers when undertaking property inspections and other pest management activities, with a focus on rural and lifestyle communities;
- Prepare and distribute pamphlets and other educational material, including web-based access, in relation to pest management;
- Organise timely and relevant media and publicity programmes, as appropriate, to highlight particular pest management issues, including new threats or report on success stories;

- Provide technical advice, best practice control methods and information on safe disposal methods. The provision of advice is not restricted to species within the RPMP but extends to species recognised as having a detrimental impact on production, human health or environmental values;
- Provide a free plant identification service;
- Promote greater awareness of responsible gardening practices, including species selection and avoidance of garden waste dumping;
- Establish and maintain ongoing working relationships with the wider horticultural industry (e.g. plant retailers, landscape companies and district councils) to discourage propagation, sale and use of undesirable plants;
- Provide practical, technical information on pest plant identification and control (including biocontrol) and disposal methods at garden centres, trade and supply centres, and other places frequented by the communities most affected by pest plants. Such displays will be maintained, regularly updated and, where possible, interactive;
- Organise and attend, as appropriate, field days, meetings, garden/home/lifestyle shows, farm discussion groups or any other organised event that pertains to agriculture, horticulture or land use, and the differing biosecurity threats;
- Undertake, on request, talks and presentations to interested community groups (e.g. botanical societies, horticultural groups and gardening clubs, fishing clubs, water-user groups, hunting groups/clubs, tangata whenua representatives);
- Undertake in-house training sessions to familiarise staff in all areas of Horizons' operations with pest identification, mechanisms of spread and methods of control, and the latest research projects and technologies available; and
- Undertake continual development of Horizons' public website to include information relating to pest identification, biology, methods of control, including disposal and information on acquiring, establishing and dispersing biocontrol agents.

7.3. Amenity pest service

Overview

Amenity pests are those that impact on people's lifestyles or wellbeing. The occupier may be unable to control, dispatch or otherwise control the pest and is harmed or affected by its presence in some way. The 'amenity approach' is initiated through Horizons' Frontline enquiry system, where any pest or weed enquiry is logged and sent to a Biosecurity officer responsible for the location where the enquiry originated. Horizons staff are required to contact the person within 48 hours to engage with them over a response and then have one week to carry out any agreed action.

To avoid over-subscription of the amenity pest service the following criteria will be used to determine if Horizons should control the pest:

- The occupier is elderly or infirm or otherwise does not have the physical capacity to implement control;
- In the case of animal pests, the beneficiary is in a residential area and this limits the tools available to them to control the pest;
- There is no commercial provider of the service to control the animal pest in question; and
- Horizons is not limited by other Acts, laws, bylaws or policies to deliver a pest control service in the situation.

As an alternative to Horizons controlling the pest, staff will provide advice on ways to control the pest that are within the means of the occupier, e.g. lend traps or other equipment, or may provide bait.

Objective

To reduce the harm caused by amenity pests in domestic situations to people who otherwise cannot instigate their own control work.

Implementation measures

Horizons may provide service delivery in amenity pest situations, on a case by case basis, where the situation meets the appropriate criteria above. Such service includes the following elements:

- Customer enquiries responded to in a timely manner;
- In the case of the loan of cage traps, users are advised of their animal welfare obligations and advised to avoid trapping on weekends or at other times when Horizons staff may not be available to dispose of the animal, if required;
- In the case of the supply of bait, users are advised of any laws or bylaws restricting the use of toxins and advised on how to avoid non-target deaths; and
- The number of customer inquiries resulting in Horizons intervention, split between advice or control service, is reported monthly.

7.4. Community initiative programmes for pest plants

Overview

The task of pest plant management is much greater than can be dealt with by one agency alone. Local communities often have the knowledge, community 'ownership' and enthusiasm required for successful pest management and habitat restoration initiatives. Community groups are also well placed to have an effective advocacy role.

Community care groups may involve a collection of individuals, an organisation or a family, or an individual occupier, and be focused on the care of a single site (e.g. a wetland, forest fragment) or a coordinated approach for a single species (e.g. old man's beard across a number of areas). Often other resource management/land management agencies, such Landcare Research or DOC, are also involved.

Objective

Horizons will harness the will and wider support of the many different communities in the Region, in addition to working alongside other resource management agencies, to protect sites or manage particular pest species.

Implementation measures

Horizons will, at its discretion, assist and encourage community initiatives through a range of mechanisms. Preference will be given to groups and individuals that can demonstrate how their project aligns with Horizons One Plan methods for protection of the Region's natural resources.

The level of involvement from Horizons will be project-dependent and could include:

- Preparation of site, or species, management plans;
- Assistance with funding applications, leveraging funding or consideration of provision of 'seeding' funds;
- Assistance with, or provision of, project management expertise;
- Provision of written resources that provide direction and training on issues such as pest management methods, site manipulation and habitat restoration;
- Provision of materials such as herbicide, fencing materials, native plants;
- Developing codes of practice for specific communities and specific issues, for example:
    - groups of occupiers of properties adjacent to rivers, to attempt to manage the establishment and dispersal of pest plants along river corridors;
    - new subdivisions in close proximity to natural areas, specifying desired gardening practices; and
    - organic farmers, to ensure effective pest plant management is achieved in the absence of herbicide use.

Horizons work' will be measured, monitored and reported on as a component of the larger monitoring strategy for the Region and against individual site management plans.

7.4.1. Weedbusters regional programme

Overview

Weedbusters is a nation-wide weeds awareness and education programme that aims to protect New Zealand's environment from the increasing weed problem. Weedy plants are one of the greatest threats to New Zealand's parks, reserves, coasts, bush remnants, wetlands and alpine areas. Many of these weeds originated as ornamental plants that have 'jumped the fence' from gardens and gone wild. People play a large part in spreading environmental weeds, often without knowing it, and Weedbusters aims to educate people and raise awareness to turn this problem around.

The vision for Weedbusters is that **New Zealanders are aware of and take action to reduce the impact of weeds on the environment, economy and human health. The goals are to:**

- Ensure that the New Zealand population is aware of the threat of weeds;
- Increase the number of people participating in managing the weed problem;
- Help all agencies involved in weeds work to share resources and provide clear and consistent messages; and
- Secure ongoing funding for the Weedbusters programme.

Throughout New Zealand, communities, private individuals, local government, central government and research organisations are actively involved in Weedbusters work. This includes direct control of weeds, as well as education about invasive weeds and pest plants. The Weedbusters programme celebrates the efforts of these individuals, communities and organisations, and aims to spread the message that each person has responsibility for stopping the spread of weeds.

Objective

Horizons strongly supports and participates in the national Weedbusters programme. It will:

- Promote weed awareness and education through the national, interagency Weedbusters programme, including distribution of information resources and use of a Woody Weed mascot suit to engage with children;
- Work with other agencies involved in Weedbusters, such as the Department of Conservation (DOC) and other regional and district councils, to promote Weedbusters;
- Encourage membership of Weedbusters and participation in Weedbuster events and regional promotional activities including Central District field-days, Arbor Day celebrations and Wanganui race day every November;
- Support Weedbuster groups by providing advice and information, and where appropriate small-scale initiative funding of up to $2000 annually, to registered Weedbuster groups in the Region on a first in first served basis; and
- Coordinate the biennial Weedbuster Awards, where groups and individuals are nominated and their efforts are celebrated with an award ceremony.

Weedbusters in the Horizons Region

Distribution of weedbuster groups in the Horizons Region is wide-ranging, from Tararua to Wanganui, through to northern Rangitikei. These groups are made up of volunteers who give their time to weed control for the betterment of their local environment. Sites include bush reserves such as Te One Bush and Gordon Park or a stretch of road, such as Dannevirke's highway entrance. In all cases, these groups see Weedbusters as

supporting their weeding efforts and raising the profile of their activities. Horizons works closely with these groups, with assistance ranging from providing simple advice and monitoring their efforts, to providing resources such as tools, equipment, signage, and access, to small-scale control funds.

As at July 2015 there were 10 current registered Weedbuster groups in the Horizons Region:

- Adopt-a-highway (Dannevirke);
- Castlecliff Coast Care (Wanganui);
- Desert Road Invasive Legume Control Group;
- Friends of Gordon Park Scenic Reserve (Wanganui);
- Kimbolton School (Kimbolton, Manawatu);
- Lake Westmere Care (Wanganui);
- Natural Heritage Mangaweka;
- Pahiatua School;
- Team Te One (Mangaweka/Taihape Area); and
- Wanganui Urban Weeders.

7.4.2. Other environmental group initiatives

Horizons also coordinates and supports other pest plant project initiatives. These projects are concerned with protection of community valued landscapes and are generally larger in scale than traditional Weedbuster groups, which focus more on localised sites. For example, Horizons runs the following two programmes:

- *Wanganui Urban Weed Programme* – implemented in 2011 with the focus on woolly nightshade but now also including wild ginger control. Wanganui was well suited for a city-wide awareness campaign, including the development of self-responsibility and behaviour change among residents. Council provides support, incentives and promotions for these land occupiers to control pests. For a relatively small cost, Horizons continues to gain positive exposure in Wanganui and engages directly with the community in an awareness campaign designed to capture the attention of the locals;
- *Palmerston North Weedbusters* – Horizons has run a successful urban weed programme in Palmerston North, in conjunction with Palmerston North City Council, since 2006. Weeds including old man's beard, banana passionfruit, gunnera and wild ginger are on the wanted list. The key focus of the campaign is responding to every siting. Staff then visit the site, the weeds are removed and an information pack is left to assist the landowner to manage weeds in the future;

Horizons supports two other groups:

- *Rangitikei Environment Group (REG)* – REG carries out pest plant control (in particular targeting old man's beard) and biodiversity restoration works within the Rangitikei district. The working group's focus is to re-establish, enhance and sustain the native flora and fauna of the Rangitikei district that is being degraded and destroyed by introduced exotic plant and animal pests. This group complements the overall pest plant approach coordinated by Horizons and there are synergies with the Possum Control Operation Programme. Horizons rates the local community to help fund their work and staff have an advisory/monitoring/audit role; and
- *Desert Road Invasive Legume Control Group* – is a partnership agreement between eight organisations involved in managing the Desert Road (State Highway 1) corridor and adjacent land. The goal is to integrate eradication and control efforts of gorse, broom and lupin, in order to protect the iconic Desert Road vista and unique surrounding volcanic landscape. For more details on this initiative refer to Section 10.4, under inter-regional and cross-boundary initiatives.

7.5. Community initiative programmes for pest animals

Overview

Community care groups and self-help initiatives may involve a community, an organisation, a family or a highly motivated individual occupier seeking advice or assistance from Horizons. Local people who have the passion and enthusiasm required for successful pest management are encouraged by Horizons, especially if the aspirations of the group or individual match Horizons' objectives.

The focus may be on the care of a single site, such as a wetland or forest fragment, where the control of a range of animals is required to preserve the values at the site.

The focus could also be on the coordinated control of a single species that affects regional values but in a localised area. Examples include the control of peacocks to protect agricultural values or the control of goats that are affecting soil conservation values. Preference will be given to self-help groups that have aspirations in line with One Plan methods for land management. In areas where there is strong support for Horizons-led control of the pest (service delivery), preference will be given to individuals and groups that have a high willingness to pay.

Objective

Horizons will actively support and encourage community participation in addressing pest animal problems where there is a will and passion demonstrated for successful pest management. This approach will maintain consistency with other areas of Council activities where the establishment of care groups is encouraged.

Implementation measures

Horizons will, at its discretion, assist and encourage community care groups and self-help initiatives through a range of mechanisms. Preference will be given to groups and individuals that can demonstrate how their project aligns with the Horizons One Plan methods for protection of the Region's natural resources. The level of involvement from Horizons will be project-dependent and may include:

- Preparation of site (or species) management plans (e.g. for soil conservations pests such as possums, goats and rabbits);
- Assistance with funding applications or provision of 'seeding' funds;
- Assistance with or provision of project implementation expertise (e.g. contacting other landowners in the project area or organising and coordinating control events);
- Provision of written resources that provide direction and training on pest management, site manipulation and habitat restoration;
- Provision of materials, such as traps, bait stations and bait (e.g. in association with site-led biodiversity projects for control of possums, mustelids, feral cats, rats and deer);
- Developing Codes of Practice for specific communities and specific issues (e.g. for groups of occupiers of properties adjacent to rivers or bush corridors to attempt to manage pest animals along corridors, or for new subdivisions in close proximity to natural areas specifying cat-free areas and for organic farmers to ensure effective pest animal management is achieved in the absence of toxin use);
- Arranging collaborations with other groups or organisations (e.g. self-help groups, hunter groups, pest management contractors, DOC, Fish and Game, and TLAs); and
- User-pays delivery of a service, when (for example) specialised techniques or controlled substances have to be used and the efficiency of Horizons undertaking coordinated control is cheaper than the cost to individuals to do the control work (e.g. species-led local agricultural pest problems such as rabbits, eastern rosella, peafowl, Canada geese, pigs, goats, deer and black backed seagulls around landfills where they impact on farming practices).

There is no fixed list of pests covered under this initiative. The onus is on each specific group to demonstrate that the group is highly motivated and the organisms are doing significant damage. The cost of Horizons' involvement should not detract from achieving the other objectives in this Strategy or the principal measures outlined in the RPMP.

Due to other legislative provisions, Horizons may be unable to provide for community expectations for the management of protected species or game birds such as mallard ducks or paradise ducks, or sports fish such as perch. For pest fish species, DOC or the Fish and Game Council should be contacted in the first instance, before seeking the help of Horizons.

Horizons' input under this programme will be accounted for as a component of the annual report for this Strategy.

8. Biological Control

8.1. Introduction

Invasive pests pose a serious and increasing threat to all New Zealand ecosystems. Biological control (biocontrol) is an important tool for managing serious, widespread and intractable weeds, some of which have already been successfully controlled in New Zealand.

Biocontrol uses one living organism, usually insects or fungi, to control another. The natural enemies of weeds are studied carefully and tested to ensure they will not damage desirable plants or cause unexpected problems if introduced to New Zealand. Biocontrol offers a cost-effective, environmentally friendly and sometimes permanent solution to weed control. Carefully selected biocontrol agents target only the undesirable weed species in question. They don't harm desirable plants, and don't pollute the environment. Once established, they travel wherever the weed spreads and can return again and again to kill off new weed growth—all without human involvement.

The Environmental Protection Agency (EPA) only allows the introduction of biocontrol agents if stringent criteria are met in relation to risks and benefits. The safety record of biocontrol of weeds in New Zealand is excellent. Once new biocontrol agents have been approved for release, mass rearing programmes are carried out so they can be released as widely and as quickly as possible.

Horizons is a strong supporter of biocontrol programmes to control pests, where it is feasible, cost effective and acceptable. Because of the costs involved, public organisations such as DOC, Horizons and most regional councils, working through the National Biocontrol Collective, currently fund the development and release of weed biocontrol agents through collaboration with science providers. Once numbers build up to harvestable levels at release sites, relevant biocontrol agents can then be made available free of charge.

8.2. Pest plant biocontrol programmes

Overview

Biocontrol agents do not eliminate weeds, because they can never find or kill every plant. Rather, a successful biocontrol attack is likely to result in smaller, weaker plants that are less likely to spread and can be more easily outcompeted by other plants. Infestations may be reduced to a level that is acceptable or eliminated effectively and economically by other means. If biocontrol is successful and the weed becomes increasingly rare, then its associated biocontrol agents will also reduce.

Biocontrol is rarely a quick fix because it takes many years, or even decades, for suitable agents to be found, tested, approved, reared, released and established; further time is then needed for agents to spread, become common and be able to achieve damaging levels. The impact of biocontrol agents is likely to vary throughout New Zealand and from year to year, **and** usually several biocontrol agents are required to have a significant impact on a weed. Biocontrol has the greatest impact when used in conjunction with good land management practices.

Implementation measures

Horizons is committed to using biological control for pests where practical and will continue to release, propagate and redistribute appropriate biological agents for the control of widespread pest plants including gorse, broom, ragwort, heather, thistles (Californian and nodding), old man's beard and blackberry. In addition:

- Horizons may give financial or logistical assistance to research into additional biological control agents for the above or any other pest plant species, as identified through the national collective group;
- Should a suitable new biological agent be developed during the term of the Strategy, Horizons may undertake to release, propagate and redistribute those agents;
- Horizons will continue to encourage collaboration between agencies on biocontrol needs and research directions, via a national strategy approach;

- Horizons will provide training for staff around biocontrol concepts, agents and their identification, distribution and population monitoring; and
- Horizons will extend training pertaining to biocontrol to the regional community as required, and provide readily available information on how to attain, release and maintain a population of biocontrol agents.

Horizons is investing in three champion biocontrol programmes during the first years of the RPMP – for tutsan, field horsetail and old man's beard. Horizons is also the New Zealand lead for the biological assessment and reporting of project outcomes for these three programmes (see Section 9 below for more detail). These three pests are deemed progressive containment pests in the RPMP. One of the key aims is to investigate and support biocontrol options for these species.

8.2.1. Tutsan

Tutsan is a highly invasive plant, especially of marginal production land, but can establish in riparian margins, forest margins and roadsides. While tutsan is nontoxic, it is unpalatable to stock. Tutsan has also been recorded growing in shade under forest canopy

Biocontrol potential

Good prospects for biocontrol. The Tutsan Action Group, a group centred on affected farmers in Taumarunui, plus Horizons, DOC and Landcare Research, obtained research funding. Two insects that were in containment in 2015 have been tested and found to be suitably host specific. They are a foliage- and fruit-feeding moth and a foliage-feeding beetle. An Environmental Protection Agency (EPA) application will be made for at least one insect and a rust in 2016. Overseas research bodies are undertaking work in Europe looking for pathogen agents such as strains of a rust that could attack North Island tutsan populations, which seem to be currently resistant in New Zealand.

8.2.2. Field horsetail

Field horsetail prefers damp, open ground, particularly along stream and riverbanks. It is poisonous to livestock and is extremely difficult to manage and control.

Biocontrol potential

Biocontrol offers good prospects for control of this pest. Horizons, in conjunction with NZ Landcare Trust and local landowners (see photo following of a field day held with landowners) have formed the Rangitikei Horsetail Group to manage a Sustainable Farming Fund project to import insects and/or diseases from the northern hemisphere to New Zealand to be released against field horsetail. Landcare Research is the science advisor.

The outcomes sought are that in the long term this project will provide a cost-effective and safe control method for a plant pest which is currently 'out of control'. At the completion of the project, staff will have a better understanding of the distribution and costs of field horsetail in New Zealand. Horizons will have documented natural enemies utilising field horsetail in New Zealand and will have used this information to select the most promising potential biocontrol agents.

Four insects in containment at Lincoln are being tested. They are a flea beetle, a weevil and two sawfly species. All appear highly host-specific. An EPA application to release all four is likely later in 2015.

Horizons is confident that it will be possible to secure funds to continue the

project and allow all potential agents to be released and established in the future.

However, the plan is to release just the weevil initially and see if the others are needed. The weevil appears to be extremely promising and may be able to control field horsetail alone.

Impact assessment, using a variety of methods to measure changes in field horsetail populations, will be undertaken once monitoring shows that agents are established. It is likely to take up to five years for agent populations to build to the level where impact assessment is appropriate. In the longer term, Horizons expects to be able to demonstrate that the spread of field horsetail and severity of infestations have been reduced, allowing land to be returned to productive use.

8.2.3. Old man's beard

Old man's beard is a fast-growing, deciduous, perennial vine that on maturing becomes woody and brown or grey in colour. A highly competitive vine that establishes rapidly in forest habitats, smothering canopy trees and forming dense carpets in the understorey, replacing indigenous species and suppressing regeneration. Old man's beard causes the collapse of forest fragments and is considered one of the country's worst weeds. The remaining forest habitat in the lowland and hill country of the Region is under extreme threat from old man's beard.

Biocontrol potential

Prospects for biocontrol for old man's beard are less certain. A leaf miner is established and is common and widespread but limited in its impact by parasitism. A fungus previously released is thought to have died out and a sawfly is not known to have established. The National Biocontrol Collective is supporting work during 2015 to test a leaf-curling mite. This new agent could be released in 2016. Field trials are also being carried out for a bark beetle, although it is likely to be a few years yet before they are successfully completed.

9. Biological assessment and monitoring

Overview

An important component of all biological control projects is assessing the impact that control agents have on their target weeds. Proof of impact is needed to back up anecdotal evidence, or hearsay, that agents are doing a good job, and provide justification for continued investment in biological control. Identifying where agents are doing an inadequate job is equally important so that additional agents can be sought to strengthen the attack or alternative control methods developed.

While being able to demonstrate changes in weed populations is useful, being able to demonstrate how an ecosystem changes as a weed declines is the ultimate goal. However, ecosystem studies are challenging and require more resources than population studies and are the exception rather than the rule. Some key considerations involved in undertaking assessment and monitoring work include:

- Only once agents are easy to find is it appropriate to instigate a monitoring programme and, depending on the species in question, measure the abundance of the agent or the amount of damage it is causing;
- The need for replication by collecting data from many sites and over many years, and randomisation to avoid bias, requires adequate resourcing with time and funding, including experienced operators. Sites also need to be secure enough that assessment can be carried out for as long as needed;
- Determining which, of a range of assessment techniques available, is the best and most cost effective, depending on the questions posed. Photos are quick, easy to take and cheap, and have always been a good way of visually demonstrating changes in weed populations in association with harder data. Digital software analysis is used that identifies differences between photos, such as a change in gorse cover over time; and
- Some pest plant species do not lend themselves to photography. These include some pasture weeds that are too variable from year to year because of the effects of land management, and many vines when they are growing up too high or on something indistinguishable. For these species, there are alternatives such as traditional plots, transects and quadrats, where the presence or absence of control agents is measured over time.

If an agent has clearly failed to establish then no assessment can be undertaken. Some agents establish but remain rare and hard to find; all that can be done is to keep a watching brief, for possibly as long as 10 years, to see if they become more common. If an agent continues to fail to live up to expectations then researchers may need to undertake studies to find out why.

Horizons is committed to undertaking assessment and monitoring of biocontrol agents, both as the national lead for tutsan, field horsetail and old man's beard as well as being involved in monitoring and supplying data for several other national monitoring programmes, including banana passionfruit, broom, Darwin's barberry, tradescantia and Japanese honeysuckle.

Horizons has developed a biocontrol assessment/monitoring response plan. Upon release of new agents, staff will establish and report on criteria including assessment condition scores, photo points and other relevant measurable, depending on the target species and expected agent damage.

Staff involved in this programme will be diligent and trained in checking sites, knowledgeable about what they are looking for and will be undertaking work at the right times of the year. Horizons is aware that biocontrol outcomes, like other weed management programmes, need to be measureable, add value to the Region's overall biosecurity function and that analysis/reporting needs to be presented in easy to understand and meaningful ways.

9.1. National strategy for biocontrol of pest plants

Biocontrol has made significant advances in New Zealand in the last 5-10 years, with many new agents approved, successfully released and now doing the job intended. A significant amount of biocontrol expertise and capability has also been built up, including collaboration with many overseas research organisations. However, the players in the field to date have both limited funding and scope.

There has been national discussion about the need to further optimise investment in biocontrol if greater benefits are to be realised. The development of a national strategy was considered a logical step in setting a strategic direction for the future. At the time of writing, a national strategy concept was under development with the following objectives and outcomes considered:

- A more formalised governance structure will provide greater accountability within the system;
- Greater collaboration needs to be fostered, improving the efficient and effective delivery of the programme – the Ministries (MPI, MFE and MBIE) noted that increased collaboration between Crown Research Institutes (CRIs) and tertiary research organisations would also increase and widen expertise and knowledge in the overall area;
- More end users of the programme will have access to a wider pool of capacity and capability, with delivery provided by those most suited – potential end users were identified, other than regional authorities, with opportunities to better align control objectives and priorities between the different parties. For example, forestry companies have interests in controlling pampas and power companies are interested in biocontrol for aquatic weed control;
- Wider engagement with more end users will create leverage for further funding for research and delivery – investment in biocontrol needs to be increased to address ongoing economic and environmental impacts of pest plants; and
- A national strategy will establish a clear framework to share information on the benefits of biocontrol with a wider range of end users; there is no clear pathway for end users currently and the potential benefits of biocontrol require greater marketing, including detailed cost benefit analyses.

9.2. Pest animal biocontrol prospects

Biological control agents for animal pests can come in a range of options that include predators, parasites or diseases that directly kill the pest or reduce their ability to breed. The effectiveness of biological control for pest animals has historically been fraught with unanticipated negative effects and lack of success, such as with mustelid control of rabbits. However, advances in biocontrol agent testing has minimised non-target effects and increased confidence in the use of biocontrol agents such as Rabbit Haemorrhagic Disease (RHD) to control rabbits.

Biocontrol could be especially useful for widespread species such as wasps, where other means of suppressing their populations over a wide area are costly or ineffective. Due to the ecology of most biocontrol agents and their hosts, the biocontrol only reduces infestations and does not eradicate the pest. The ideal ecological result is an equilibrium between the populations of the pest and the biocontrol agent where the pest density is maintained to acceptable low levels. This will substantially reduce the adverse effects of the pest. There may still be an ongoing cost of maintaining control in the form of monitoring, but the cost of control is much less than using other control methods for the same result.

The only animal presently under any part of a Horizons biocontrol programme is the rabbit, where occasional monitoring of RHD immunity levels is carried out as an indication of the presence and effectiveness of the disease. When last monitored in 2012, immunity levels were as high as 30 per cent and will vary accordingly. However, the RHD disease still cycles through rabbit populations when conditions are right.

Horizons remains committed to exploring opportunities for appropriate biocontrol agents and will participate, as appropriate, in the national search for new and improved biocontrol agents.

10. Site-led Programme Initiatives for Biodiversity Outcomes

10.1. Introduction

Horizons has obligations under the Resource Management Act to provide for the protection of indigenous biodiversity in the Region. This is implemented through regulatory and non-regulatory approaches prescribed in the One Plan[8].

The non-regulatory approach includes the methods by which Horizons assists landowners in the voluntary protection of indigenous biodiversity, such as enhancement works, fencing and pest control. Pests impacting on key biodiversity ecosystems are usually among the highest threats to maintaining the integrity of these sites.

This section focuses only on the pest management related elements of the regional Biodiversity Protection Programme (BPP). Biodiversity operational work is a separate council activity and is reported on separately, although the close links between biodiversity and biosecurity responses are acknowledged.

The BPP includes management of a large number of pest plants and pest animals that threaten biodiversity values. Many of these pests are widespread within the Region and have been established for a considerable time. Due to limited resources, the most rational approach is to focus control of these pests only in sites of greatest ecological value, where the whole site is under active management for a range of outcomes. This approach requires acceptance that many situations and many areas will not be targeted for pest control programmes.

[8] Chapter 6: Indigenous Biological Diversity, Landscape and Historic Heritage – Policy 6-5.

Another reason for limiting control to site-based circumstances is that some species, such as deer, are valued as resources while others, such as cats, are valued as pet species. Strategies for control at some sites may also include species that are largely benign or even desirable in other habitats and landscapes of the Region. However, within high priority sites these species would be considered undesirable.

Horizons is not able to fund site-led programmes that do everything, everywhere; therefore, the scale of pest control that can be undertaken across the range of sites cannot be consistent.

10.2. Defining key sites and scale

As a consequence of historical events, contemporary pressures and surrounding land use, much of the Region's remaining lowland indigenous vegetation is threatened habitat. Active management of representative areas of these habitats is pivotal to retaining the Region's indigenous biological diversity. In response, Horizons is implementing an ambitious biodiversity enhancement programme which aims to bring the "Top 100" wetlands and the "Top 200" bush remnants under active council management.

The high priority wetlands and bush remnants are identified using prioritisation systems that Horizons has developed internally, informed by guidance from national and regional information including national spatial databases and predictive models, and through in-field data collection. The projects around regional indigenous biodiversity have been ongoing and regularly reported on to Council.

10.3. Management approach

Objective

Horizons supports the implementation of pest control at the high priority wetlands and bush remnants throughout the Region and may control pest plant or animal species in order to assist with the protection, restoration and enhancement of site values, as implemented via Horizons Biodiversity Protection Programme.

Implementation measures

Horizons may provide direct control via service delivery in pre-selected sites where it is deemed that pests are a threat to the ecological integrity of the sites and other values within them. The extent, frequency and nature of control, including any need for integration with control of other plant or animal species, and outcome monitoring, will be determined and reviewed on a case by case basis by Horizons through the Biodiversity Protection Programme.

Specific management measures that Horizons will implement include:

- *Partnerships* – as with all direct control operations, every effort will be made to work in partnership with landowners and develop collaborative solutions to issues. In addition, control under this section may be planned and carried out in association with the Crown (DOC), tangata whenua, Fish and Game Council, hunting clubs or associations and such persons or organisations as appropriate for the site;
- *Species control is not limited* - the need to control pest plants and animals at high priority wetlands and bush remnants is not restricted to those species named as Biosecurity Act pests in the RPMP, but may encompass any exotic organism that threatens site values – see sections 9.4 and 9.5 relating to the range of organisms that Horizons would most likely control, in consultation with landowners;
- *Appropriate management at sites* – protecting biodiversity values at a specific site first requires that the values are identified and then that an appropriate management is decided – that is, how to manage the threats. These considerations may also apply to pest plants, where removal of one undesirable species, such as willow, may result in invasion by other pests; this requires that a multi-species approach to site management shall be considered;

- *Integrated management* – The need for integrated vertebrate pest control i.e. multiple species pest management at high priority sites comes from:
  - The dynamic nature of interactions among multiple animal pests;
  - Their different impacts on different site values at different population densities;
  - Their different rates of recovery following control; and
  - The need to optimise control solutions.

  NB: Minimum desirable animal densities may depend on the exact nature of site values to be protected. For example, a reduction in possum or stoat numbers can result in increased rat numbers. A reduction in rat or mice numbers can result in increased predation by stoats on indigenous birds. A number of animals, including mice, rats, feral pigs and deer, may influence forest regeneration and over time this may affect forest succession.
- *Research to aid in protection of sites* – Horizons recognises that current knowledge of interactions among pests is incomplete. A greater ecosystem-level understanding of the consequences of pest control is needed to maximise the benefits gained from targeting critical pests while also minimising possible adverse consequences that result from non-target species responses to changes in abundance of targeted species. Consequently, Horizons will encourage research initiatives to:
  - determine the most cost-effective control methods of multiple pests, taking account of species-specific rates of increase and interactions among species; and
  - determine the key factors to enable landscape-scale integrated pest management programmes to be carried out. These could include alignment of the site-led pest control work with the outcomes of the PCO Programme.
- *Monitoring* – performance measures and methods are outlined in individual site-specific work plans. The site-led biosecurity aspects of the problem will be successful when the high priority areas are being managed in an integrated manner in line with, One Plan and RPMP requirements and through the annual Biodiversity Programme operational plan.

10.4. Pest animals included in the biodiversity programme

Table 3 describes the pest animals that may be managed under the site-led Biodiversity Protection Programme. Some of the animals are noted here but are managed under other legislation (e.g. Wild Animals Control Act 1977 – goats, deer) and/or primarily managed by other organisations (e.g. DOC – pest fish).

Table 3: Pest animals that may be managed under the site-led biodiversity programme

Animal	Description
Feral stoat *(Mustela erminea)*	A long (up to 30 cm), very slender (80-100 g) mammal with a light brown coat and off-white belly. Common throughout the Region.
Feral ferret and hybrids *(Mustela putorius)*	A long (up to 40 cm), slender (1-2 kg) mammal. Colouration ranges from white to brown to black, with bandit-like markings on the face. Larger than stoat and weasel and has a more bushy tail. Common throughout the Region, though generally avoiding dense forest.
Feral weasel *(Mustela nivalis vulgaris)*	A long (up to 20 cm), very slender mammal (30-55 g), with a light brown coat, white belly and black tipped tail. Differs from a stoat in being generally smaller and having a longer tail relative to body. Throughout the Region but not common.
Koi/European carp (*Cyprinus carpio)*	A fish with a pair of barbels at corners of mouth, large scales and a large prominent dorsal fin. Usually coloured orange, but sometimes white, black, gold or a combination of these colours. Often exceed 5 kg and occasionally 10 kg. Known from at least 12 sites in the Region.
Gambusia *(Gambusia affinis)*	A thick bodied fish with a small mouth, large round dorsal fin and olive green silvery colour. Maximum length is usually 6 cm. Females are larger than males. Known from at least six sites in the Region.
Brown bull-headed catfish *(Ameiurus nebulosus)*	A fish with eight long whisker-like barbels around the mouth. The skin is slimy to touch and colour is dark brown to green on the back with a pale underside. Grows to 50 cm and 3 kg in weight. Suspected at six sites in the Region.
Rudd *(Scardinius erythropthalmus)*	Stout-bodied fish of the carp family. They have yellow-orange eyes, deep red fins, and a sharp-edged belly. Grows to 35-40 cm and weighs 1-2 kg. Known from at least five sites in the Region.
Goat *(Capra hircus)*	An herbivorous mammal of 25-55 kg. Goats have a hairy coat ranging in colour from white, light and tan brown and black, or any combination, and short tail. Goats will eat nearly any kind of vegetation within their reach. In heavily infested areas, they do significant damage to the forest understorey, accelerate soil erosion and change forest structure and species composition. Goats are a feral food resource for hunters and feral goats may be mustered and legally treated as domestic animals when managed in accordance with the Wild Animal Control Act 1977.
Red deer *(Cervus elaphus)*	An herbivorous mammal, red deer can be distinguished from other deer by their reddish-brown hairy coat. On average red deer stand at 1.2 m tall at the shoulder. In dense populations red deer damage forest understoreys, opening them up to soil erosion and changing understorey species composition and forest structure. Red deer are a significant feral food resource for hunters and a popular sport and trophy hunting resource.
Sika deer *(Cervus nippon)*	Sika have a white spotted chestnut brown coat with cream belly in summer. In winter the coat is a uniform dull grey. They have a white/cream rump patch which they flash when alarmed. On average sika stand 0.9 m tall at the shoulder. Like red deer, sika can change forest understorey structure and composition through browsing. Their populations have yet to reach a point where they are considered a threat to soil conservation in indigenous forests, but they may impact on the success of soil conservation plantings. Sika are also a feral food resource for hunters and popular sport and trophy hunting resource.

Animal	Description
Sambar deer *(Cervus unicolor)*	Sambar stand slightly shorter than red deer on average but are more heavily built and have a darker coat with shorter hair. The antler beam is thicker and tines are more toward the top of the antler. Sambar are not widespread but cause significant damage to forestry plantations within their feral range. Like other deer, they can also impact on the success of soil conservation and river engineering plantings, and indigenous vegetation communities. Sambar are a minor feral food resource for hunters but are a popular sport and trophy hunting resource.
Fallow deer *(Dama dama)*	Similar in colouration and stature to sika, the main point of difference is that the spots are usually more prominent and the antler in older males is palmate. Like sika, fallow populations have yet to reach a point where they are considered a threat to soil conservation in indigenous forests, but they may impact on the success of soil conservation plantings. Fallow are also a feral food resource for hunters and popular sport and trophy hunting resource.
Feral pig *(Sus scrofa)*	The feral pig is the same species as the domestic pig, though is often leaner and more hairy. Pigs are omnivorous with a taste for invertebrates, small vertebrates, eggs, vegetation, roots, fruit and fungi, and root through the soil for buried food items. Through their foraging habits, pigs change the ecosystem dynamics of the forest floor. Feral pigs are a significant feral food resource for hunters and a sport and trophy hunting resource.
Feral cat *(Felis catus)*	A predatory mammal typically ranging in weight from 2-5 kg. Cats will take small mammal pests like rats and mice, but also native birds, lizards and insects. Cats are throughout the Region and are a popular pet.

10.5. Pest plants included in the biodiversity programme

Table 4 (below) gives an indication of the categories or types of pest plants that are likely to be managed under Horizons' site-led Biodiversity Protection Programme and is illustrated with some well-known and widespread weedy plants. As noted above there is no set pest list and any undesirable species encountered that is impacting on high priority wetlands and bush remnants will be targeted. Control work will be in keeping with individual site management plans and implemented through open communication and engagement with landowners.

Resources will not be diverted to controlling 'site-led' species in an ad hoc manner in other parts of the Region. A number of the species controlled under this programme may also be banned from sale, propagation and distribution under the National Pest Plant Accord.

Table 4: Indicative categories of exotic plants that may be managed under the site-led biodiversity programme (Note: it is not possible to list all the possible plants that could be covered in this programme)

Plant category and plant name	Description
Ground cover	
Wandering Jew *(Tradescantia fluminensis)*	A creeping ground cover that forms dense carpets and suppresses indigenous regeneration. Highly aggressive in forests, disturbed forests, shrublands, wetlands and roadsides. Found throughout the Region.
Vines	
Japanese honeysuckle *(Lonicera japonica)*	Vigorous climber that smothers canopy trees and small trees and shrubs, and suppresses indigenous regeneration. Invades disturbed forests, shrublands, fernland, wetlands and forest margins.
Jasmine *(Jasminum polyanthum)*	A vigorous evergreen climber that smothers mid-canopy and canopy trees and shrubs, and can form impenetrable ground cover. Invades disturbed forests, forest margins and shrublands.
Trees	
Crack willow *(Salix fragilis)*	A tree growing to 25 m tall. Can block waterways and grows easily from fragments. Establishes quickly in waterways, ponds, lakesides and wet habitats.
Tree privet (shining privet) *(Ligustrum lucidum)*	A tree growing to 20 m plus. Invades disturbed forest, shrublands and tussocklands. Capable of replacing canopy trees and displacing indigenous species. Also reputed to cause allergies but there are few clinical trials. Inclusion in site-led category is for ecological purposes.
Shrubs	
Buddleia *(Buddleja davidii)*	A deciduous shrub which grows to 4 m. Forms dense colonies in disturbed forest, shrublands, tussockland and riparian margins. Also production forest, roadsides, quarries and amenity areas.
Ferns	
African clubmoss *(Selaginella kraussiana)*	A fern that forms mats on the forest floor of disturbed forest and shrubland, suppressing native regeneration. African clubmoss is widely distributed throughout the Region.
Grasses	
Pampas *(Cortaderia species)*	A giant perennial clump-forming grass. Highly invasive in wetlands, disturbed forests, shrubland, tussockland, herbfields and coastal cliffs. Pampas can also colonise bare ground and increases fire risk.
Aquatics	
Parrots feather *(Myriophyllum aquaticum)*	An herbaceous perennial aquatic plant that has both submerged and emergent leaves. Easily spread as broken stems re-sprout. Changes characteristics of the streams and lakes it infests and can clog drains and irrigation systems.
Herbs	
German ivy *(Senecio mikanioide)*	Scrambling, soft perennial herb that can smother low-growing plants and suppress indigenous regeneration. Invades disturbed forests, shrublands, forest margins, scrublands and especially coastal areas.

Japanese honeysuckle

Wandering Jew

Pampas

11. Inter-Regional and National Programme Alignments and Initiatives

This section discusses a number of national and inter-regional programmes and initiatives with which Horizons is involved, in either leadership or member roles. It covers how cross-boundary issues between other regions and other biosecurity agencies will be managed, and the biosecurity bodies, groups and organisations that collectively drive biosecurity in New Zealand. It also outlines two collaborative project examples – wilding conifer management (nationally and regionally) and an interagency legume control project on the Desert Road. Links to Biosecurity research and training are also covered.

11.1. Inter-regional and interagency cross boundary issues

Introduction

Pests and their impacts are not constrained by administrative and catchment boundaries; therefore cross-boundary issues with neighbouring regional councils and the Department of Conservation (DOC), in particular, will be inevitable.

Horizons' pest management work is carried out on private rateable land, whereas DOC undertakes pest management on Crown-owned public conservation land. Horizons shares boundaries with the following regional councils: Greater Wellington, Taranaki, Waikato and Hawke's Bay.

Inter-regional pest issues will arise through natural spread of pests (e.g. the Waikato region is cognisant of the need to keep dama wallaby from spreading south, potentially through the Central North Island). Similarly, Horizons' rook control programme, while focused in southern districts, has ensured for some years that rooks do not spread north into the Waikato region from the Ruapehu district. Managing pathways of pest spread between regions is a key new initiative under a 2012 amendment to the Biosecurity Act. It is likely that during the implementation of the new iterations of RPMPs that increased emphasis will be placed on managing specific pest pathways, such as movement of stock feed containing known pest plants into a neighbouring region where the pest plant is not recorded.

It is in the interests of efficient and effective pest management to ensure that the pest management objectives between neighbouring councils and DOC are not inconsistent with each other.

Objective

Horizons aims to minimise adverse cross-boundary pest management issues by promoting complementary and efficient and effective pest management, and working collaboratively with neighbouring regions and other agencies with pest management responsibilities.

Implementation measures

To minimise the effects of cross-boundary issues, Horizons will:

- Have regard, pursuant to section 71(a) of the Act, to any national or regional pest management plan concerning the same organism, any regulation, or any regional policy statement, or regional plan prepared under the Resource Management Act and not be inconsistent with them or their intent;
- Liaise, as appropriate, with the Ministry for Primary Industries (MPI) over pest management issues which are best dealt with or coordinated at the national level (e.g. Horizons will participate in the National Pest Plant Accord and National Pest Pet Trade Accord as they affect the Manawatu-Wanganui region);
- In conjunction with other regional councils, be cognisant of any potential marine biosecurity issues which may affect the Horizons region. However, Horizons has assessed that MPI should be the lead agency for marine biosecurity management in New Zealand;
- Liaise, as appropriate, with Bay of Plenty, Taranaki, Auckland, Waikato and Hawkes Bay regional councils and DOC offices on cross-boundary issues pertaining to pest management;

- Liaise, as appropriate, with other regional councils on matters of pest management which are relevant to more than one region, including appropriate communication and consultation and consideration of potential inter-regional pathway plans, and any existing and new Memoranda of Understanding between Horizons and neighbouring councils;
- Advocate and encourage other authorities involved with pest management issues to adopt policies, practices or measures which will avoid, mitigate or remedy adverse effects associated with pests; and
- Make submissions with regard to documents prepared by other authorities in relation to pest management. Coordination with other pest management plans will be achieved through a process based on consultation and communication between Horizons and other persons or organisations proposing and implementing plans.

11.2. National Biosecurity bodies and organisations

11.2.1. Bio-Managers, biosecurity, and biodiversity working groups

Overview of the two groups

The Bio-Managers Group (BG) was formed in March 2012 to focus on key strategic issues related to national, collaborative and long-term approaches to improving biosecurity and biodiversity management in New Zealand. The outcome sought is to provide for integrated solutions to 'bio issues' that enable collective action by regional councils, for example, whether or not to develop a national biocontrol strategy for pest plants, by bringing together all the strands of science and identifying potential end user partners.

The BG arose out of the need to split out strategic issues from operational and technical matters, hence the concurrent creation of the Biosecurity Working Group (BWG) and the Biodiversity Working Group (BDWG). BWG and BDWG focus on improving the overall operational effectiveness, developing new tools and working on new processes and guidelines that feed up through to BG for approval where required. The BWG and BDWG have agreed priority list of tasks to address each year, which are then reported to BG.

The origins of the groups go back to the early 1990s through a series of predecessor management groups (known variously as the BWOG, BTAG, BMG and BGGGS, where the 'B' stands consistently for Biosecurity). Over the last 20 years, these groups have played a significant role in the development of pest management and biodiversity policy and operational delivery. The first major initiative was to produce guidelines for the preparation of the first round of Regional Pest Management Strategies under the Biosecurity Act 1993.

This led to involvement in a wide range of activities aimed at improving pest and biodiversity management on a national basis. The groups played major roles in the national Biosecurity Strategy (2003) and later with the Future of Pest Management (2008) which included significant amendments to the Biosecurity Act in 2012. The work of the groups continues, with input into the development of the National Policy Direction (NPD), considering the role of regional councils in biodiversity, reviewing the wilding conifers national strategy and recently, marine biosecurity and seeking EPA approval for using herbicides for aquatic weeds.

Membership of the Bio-Managers Group comprises tier 2 and 3 level representatives from regional councils and unitary authorities and it reports to the Regional Chief Executives Group. BWG and BDWG are presented by council tier 3 and 4 operational managers, although there is some overlap in representation for smaller councils. The groups bring together a wide range of players from within regional government and from central government agencies, particularly MAF/MPI, DOC and LINZ.

Horizons staff have been represented on these groups, and representing the interests of the Horizons Region, for more than 20 years and strongly support the collaborative opportunities that these groups present.

Objectives

Horizons will have input into the following objectives, through representation on the BWG and BDWG groups, to:

- Achieve greater integration between biodiversity and pest management functions;
- Provide advice and recommendations to chief executives to enable collective decision-making on key strategic issues, allowing for resources to be used efficiently and effectively;
- Provide a forum for information sharing, networking, debate and discussion, thus allowing improved understanding of issues, and the identification of strategic directions and promotion of consistency or equivalence of best practices within councils;
- Work with the Regional Chief Executive Officers' Group in a two-way process whereby key strategic issues, options and solutions are identified and passed between the two groups, to progress as appropriate;
- Promote strategic alignment and integration of biodiversity and biosecurity functions with Resource Management functions through the Resource Managers Group; and
- Prioritise operational and technical actions that need to be carried out each year and ensure that these tasks are carried out in a timely manner and reported accordingly.

11.2.2. New Zealand Biosecurity Institute (NZBI)

The New Zealand Biosecurity Institute (NZBI) is an incorporated society that exists to advance the cause of Biosecurity in New Zealand. Its mission is 'Working together to protect New Zealand from the adverse impacts of invasive species'. With a 400-plus membership, spanning the length and breadth of New Zealand, the institute is open to anyone interested in biosecurity. Collectively, NZBI members are the engine driving New Zealand's world-class biosecurity system.

The NZBI's aims are to:

- Raise awareness of the institute and biosecurity issues;
- Encourage the development and application of best practice in biosecurity;
- Connect people and organisations to share knowledge; and
- Create opportunities for professional development of members.

NZBI branches throughout the country hold local events during the year and meet annually during New Zealand Biosecurity Month to hold the National Education and Training Seminar (NETS). NETS is attended by people from all facets of biosecurity and features workshops and presentations on many different aspects of invasive species management. It gives members the opportunity to share experiences and successes as well as lessons learnt. The seminar invites top national and international speakers from across the spectrum of biosecurity.

Horizons values continued membership of the NZBI and attendance at regional NZBI branch meetings. It is part of the Lower North Island branch. NETS is the principal national conference for all people working in pest management, including DOC, MPI, research providers, local government and landcare groups. Attendance at these seminars, including maintenance of networks and individual upskilling, has many direct benefits for Horizons.

11.2.3. National Pest Control Agencies (NPCA)

NPCA was established in the early 1990s to help coordinate possum control in New Zealand. In 2011, the name was changed to reflect the wider need to control *all* vertebrate pest populations in New Zealand – hence 'possum' became 'pest', and NPCA became an incorporated society.

NPCA provides a coordinating forum for those involved in vertebrate pest management in New Zealand. Its strategic aims are focused on raising standards in vertebrate pest control and it also promotes public awareness of the pressing and ongoing need for vertebrate pest control in New Zealand. These aims support the conservation, biodiversity and farming objectives of the Department of Conservation, Tbfree New Zealand (formerly the Animal Health Board), regional authorities and pest control industry stakeholders.

The NPCA work occurs at a national level, including:

- *Promoting quality assurance* – to set minimum work quality standards and codes of practice for pest control (through best practice guidelines (http://www.npca.org.nz/index.php/publications/a-best-practice/157-a-series) and by administering a pest population monitoring accreditation (http://www.npca.org.nz/index.php/accreditation)scheme);
- *Promoting a positive public perception of vertebrate pest control* work – and facilitate effective communication between those in the industry;
- *Providing research and technology transfer opportunities* – identify and prioritise research needs in vertebrate pest control and ensure that the results of research are communicated and implemented within the industry;
- *Consulting about policy, regulatory and operational issues* – within the vertebrate pest control industry; and
- *Ensuring NPCA's role and functions adapt* – to meet the changing needs and structures of the vertebrate pest control industry. Recently, NPCA has branched into projects other than vertebrate pests, such as developing a machinery hygiene guidelines booklet – (see pathways section of this Strategy).

Horizons strongly supports the aims of NPCA and encourages refinements and improvements to pest control methods and use of new and relevant technologies. Horizons has been well represented on the NPCA executive committee and staff continue to be well involved. Since 2012, the NPCA has aligned its technology transfer conference with the NZBI NETS conference to make both organisations run more efficiently.

11.3. Wilding conifer management

11.3.1. New Zealand Wilding Conifer Management Strategy

Introduction

Wilding conifers are a serious and well established pest in New Zealand. They reduce the productivity of primary industries and damage the environmental, social, cultural and landscape values for which New Zealand is renowned. Large areas of the country have already been affected by these unwanted trees and if decisive action is not taken, the opportunity to prevent them spreading further will soon be beyond grasp.

The New Zealand Wildling Conifer Management Strategy (2015 to 2030) supports collaborative action between land occupiers, researchers, regulators and communities to address the critical issues facing wilding conifer management. In 2011, a 'current state' report identified that failure to respond to the spread of wilding conifers will invariably lead to a worsening of the problem with escalating and exponential control costs. The report recommended the development of a national strategy, improved leadership and coordination and prioritisation to effectively address the risks of wilding conifer spread.

The management of wilding conifers can be complex and often involves a wide range of parties with different drivers or objectives. Control operations can be large and long-term, requiring significant investment across multiple parties and land tenures.

The Ministry for Primary Industries (MPI) led the development of the strategy in collaboration with a multi-stakeholder working group, including representation from the Central North Island (Horizons, Waikato and Hawkes Bay) regions. The strategy identifies actions for key parties involved in wilding conifer management under four principles: individual and collective responsibility, cost-effective and timely action, prioritisation and coordination.

The New Zealand Wilding Conifer Management Strategy is an agreement that provides a shared vision of 'the right tree in the right place' and agreed actions to support effective wilding conifer management across the country.

While wilding conifers are pests, planted conifers are valuable resources. Radiata pine and Douglas fir, two of the spread-prone conifer species in New Zealand, are important commercial species that contribute significantly to forestry exports. Effective management of wilding conifers supports New Zealand's brand of responsible natural wood products, protects productive farming and forestry land, protects conservation values including native ecosystems and plant species, and protects iconic landscapes for local communities and tourists. However, New Zealand is at a crossroads in the management of wilding conifers. New control methods provide an opportunity to turn the tide of wilding conifer invasion across iconic landscapes and protect the value of our production and conservation lands.

Wilding conifers are present in Horizons Region and are typically associated with protecting the Central North Island part of the Region. The RPMP notes *Pinus contorta* as a Progressive Containment pest and identifies a control area in the northern and eastern parts of the Region, with a goal to prevent invasion into the Ruahine and Tararua ranges. DOC and the NZ Defence Force also carry out control work. The RPMP notes other wilding conifers as sustained control species.

<u>Objective/outcomes</u>
The objective of the national strategy is to prevent the spread of wilding conifers and contain or eradicate established areas of wilding conifers by 2030. The strategy documents the essential features of the system to support wilding conifer management and provides a focus for where improvements need to be made. The strategy itself is a non-statutory document; however, its objective will be achieved using a broad range of tools and approaches.

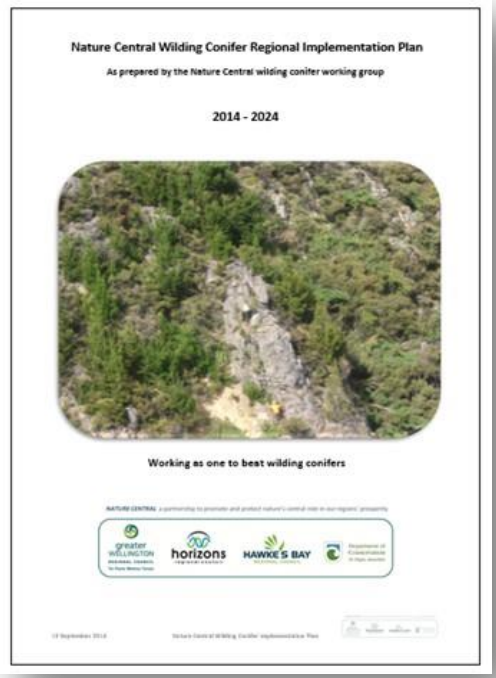
Anticipated outcomes, and Horizons views, include:

- *Key parties collaborate to minimise the negative economic, environmental and landscape impacts of wilding conifers* – Horizons is well placed to provide leadership at regional and local level, promote consistency in policy across organisations, enable wilding conifer control in regional plans, facilitate the development of control plans, coordinate control operations where multiple parties are involved and contribute to the management of legacy infestations on the basis of the public good benefit to regional and local communities;
- *Communities are aware and taking actions for the prevention and effective management of wilding conifers* – Horizons supports prioritising wilding conifer management, by considering: distribution, extent and impacts at each site, spread risk, the goals and management approach for control at each site, level of support, costs involved and the probability of success. Horizons is well placed to coordinate regional and local operations in its Region, across organisations. Furthermore, Horizons aims to support ongoing research into control efficacy and to increase understanding of wilding conifer impacts and inspire public action through education and supporting community initiatives;
- *Beneficial conifer plantings continue* – Horizons acknowledges the important economic role to the Region that planted production forestry provides;
- *Land occupiers do not establish high spread risk conifer plantings, and prevent or reduce spread from new and existing wilding conifer populations* – Horizons is well placed to establish appropriate rules in regional pest management plans to ensure that land occupiers are carrying out their control obligations; and
- *Wilding conifer management and control is timely and cost-effective* – Horizons supports the fair allocation of costs associated with wilding conifer control, including adequate funding of early intervention for both Crown and private land occupiers and the development of a cost share model for collective action.

11.3.2. Nature Central Wilding Conifer Regional Implementation Plan

Overview

Nature Central is a programme that promotes a shared commitment to greater collaboration and more efficient and effective management of resources in the lower North Island. The Nature Central Partners are Horizons, Hawke's Bay and WellingtonrRegional councils and DOC. Chief executives of these agencies have approved the Nature Central work plan and part of this agreement is a strong commitment to collaborating on wilding conifer control and management.



Other Nature Central region stakeholders in wilding conifer control include the forestry industry, MaoritTrust bodies, Nga Whenua Rahui, QEII, district councils, LINZ, NZDF, KiwiRail and private landowners.

This regional approach supports the New Zealand Wilding Conifer Management Strategy by creating a framework for the above parties to work together in a more coordinated way to improve the efficiency and effectiveness of wilding conifer control operations across the Lower North Island. The RPMP, although primarily concerned with regulatory approaches, also notes the establishment of an interagency strategy for the management of wilding conifers within the Region.

Objective/goals

Horizons, with other stakeholders, commits to working smarter and more strategically in order to manage the spread of wilding conifers more quickly, and to be more effective and efficient in reducing the risk wilding conifers present to the natural assets.

The goals of the Plan are to:

1. Assess the current state through surveillance, assessment and mapping;
2. Reduce wilding conifers to zero density in defined high-value and priority areas through coordinated control operations;
3. Increase areas clear of wilding conifers and contain low-risk stands to prevent the risk of spread across the Plan operational area;
4. Prioritise control areas as follows:
    - control outlier sites first
    - high-risk dispersal areas within infestation areas
    - buffer zones around core infestations
    - constriction of the core areas.
5. Increase the number of parties using the Plan, focusing on all land managers in the Lower and Central North Island that manage wilding conifers, and other stakeholders implicated in or affected by their spread;
6. Allow organisations to share resources, reduce duplication of effort and maximise economies of scale in purchase decisions for goods and services; and
7. Communicate the successes and outcomes through monitoring, sharing 'good news' stories and celebrating successes.

At an operational level, a working group comprised of the partners and stakeholders will meet annually in mid-October to: assess previous years activities in relation to planned effort, decide priority work areas for coming years and plan them, be informed about any best practice methodologies that could be adopted, discuss and recommend actions to improve efficiency, and identify research and resource needs. The group members will collaborate with landowners and land managers within their areas of influence regarding the presence of wilding conifers in operational areas.

Implementation measures

Horizons, through its participation in this group, will be involved in the following activities:

- *Collecting data, reporting and sharing information* – a key aspect of the collaborative approach to tackling wilding conifers is to understand and be aware of other stakeholders' interests and plans in this area. To this end an information sharing protocol will be established to which all parties agree;
- *Use mapping as a communications tool* – to achieve this, the parties will align operational data to allow consistent reporting and monitoring to take place. Operational areas from all parties will be consistently represented. Maps of operational areas will be shared with other stakeholders and the public, and used to communicate the work of the group. NB: The map at Figure 2 indicates the priority areas for the Plan;
- *Adopt best practice* – the parties to the Plan will seek to implement the current best practice approaches to all areas of wilding conifer management. The parties will adopt nationally consistent practices to enable effective communication and reporting between stakeholders.

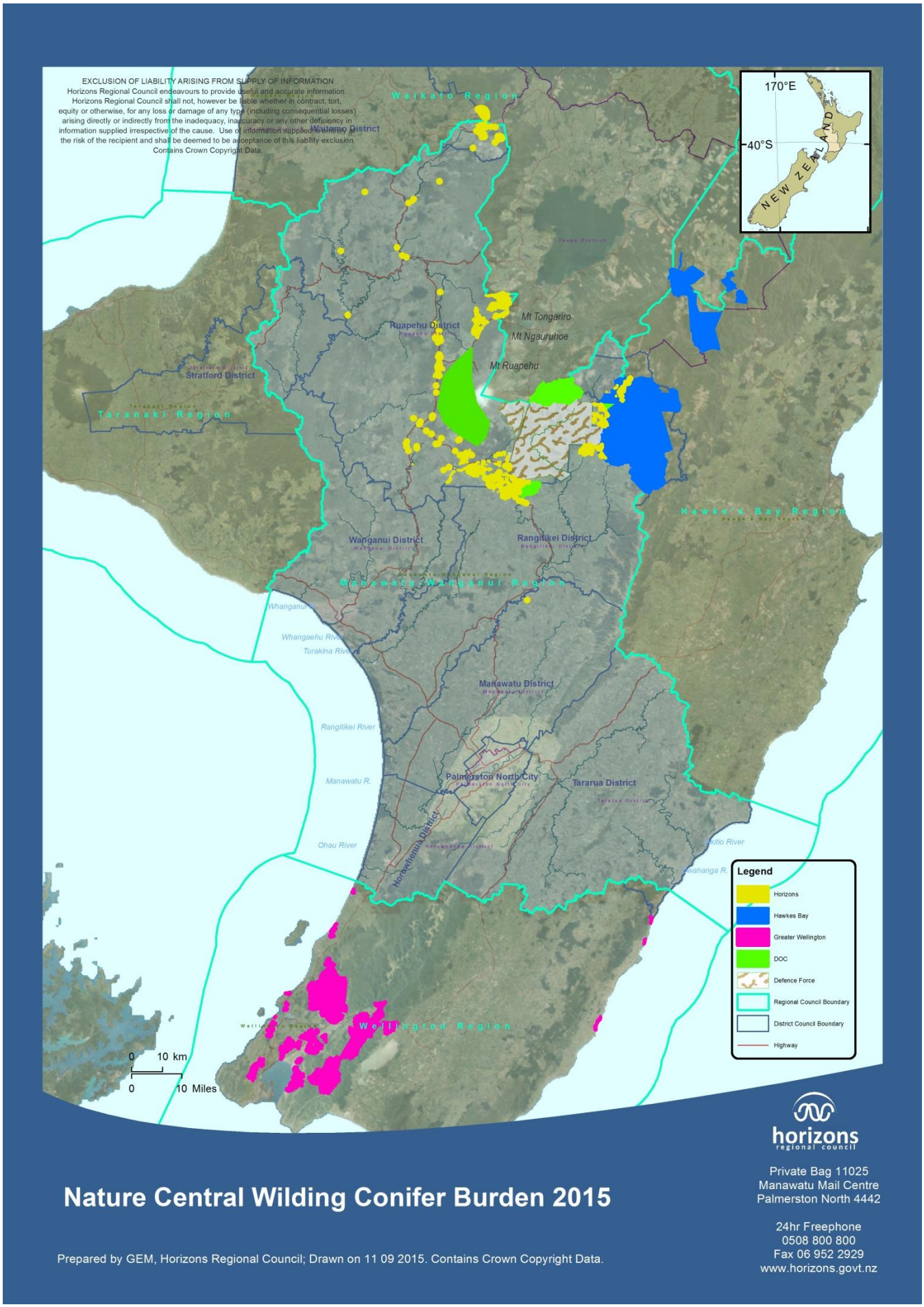


Figure 2: Nature Central wilding conifer control operational areas

The group will also adopt practices endorsed and created by the New Zealand Wilding Conifer Management Group (NZWCMG) and through the New Zealand Wilding Conifer Management Strategy, such as.

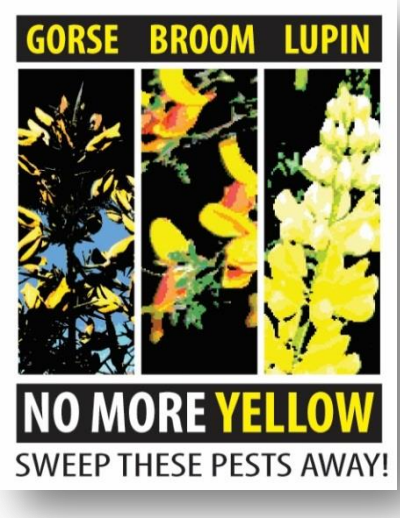
- *Assess cost sharing options for multi-agency prioritised infestations* – when any control programmes are set, cost allocations will be shared using the MPI cost sharing model as a guide, as outlined in the New Zealand Wilding Conifer Management Strategy;
- *Coordinate effort* – the parties will adopt the roles and responsibilities as set out in the New Zealand Wilding Conifer Management Strategy;
- *Promote consistency of policy* – to achieve greatest impact in addressing the spread of wilding conifers it will be necessary to consider the policy settings of all the partners, particularly regional councils and local government, to ensure consistency. The two main policy mechanisms that are available are via the Resource Management Act (1991) and the Biosecurity Act (1993);
- *Synchronised and joint operations* – the parties will identify operational activities that, if synchronised with adjoining land managers, may achieve better results and more efficient outcomes for both parties. Activities that will benefit from synchronisation include survey, control, monitoring, contract tendering and resource consent application;
- *Monitoring and reporting* – the working group will annually provide results monitoring of all control operations in the Nature Central region to allow success to be measured, enable accountability and to highlight areas of concern. Reporting will focus on the change in sites' status and the number of coning trees controlled in a site or operational area. The annual results can be aggregated to show hectares under wilding conifer burden, and hectares being controlled; and
- *Communications* – the group will raise the profile of the wilding conifer issue to the public and stakeholders through producing a joint wilding conifer communications plan and provide information resources outlining the threats posed by wildings and the importance of a coordinated approach.

11.4. Desert Road Invasive Legume Control Group

Introduction

The Central North Island Desert Road tussock-lands, between Rangipo in the north and Waiouru in the south, contain unique landscapes and ecosystems that are highly valued. State Highway 1, which runs through the area, is bordered to the west by Tongariro National Park. Land to the east is mostly managed by the NZ Army. Crown agencies, iwi, landowners and Waikato and Horizons regional councils have diverse interests in the threatened ecosystems and surrounding land, as do electricity and roading infrastructure providers.

Horizons was instrumental in developing a Memorandum of Understanding (MOU) to formalise an agreement between eight organisations[9] to work collaboratively to protect the Desert Road landscape from the adverse effects of three legume pest plants: broom, gorse and tree/yellow lupin. Previously, several organisations carried out broom, gorse and lupin control in parts of the area, independently, for their own purposes. Until the advent of this project there was no overall coordination of effort to understand and manage the legume weed invasion.



The density and distribution of the legumes varies across the landscape. Much of the landscape is legume-free but there are some large infestations along road verges and in more remote areas out of sight of State Highway 1. Roads, roading activities and vehicle movements exacerbate the constant risk of weeds moving

[9] The eight organisations involved are: Department Of Conservation, New Zealand Defence Force, Lake Rotoaira Forest Trust, Genesis Energy, Waikato Regional Council, New Zealand Transport Agency, Transpower and Horizons Regional Council.

across the landscape and are the most important pest pathway to manage.

The Desert Road Invasive Legume Control Project (DRILCP) was established in 2013 to oversee the project. The project is branded as 'No More Yellow – Sweep These Pests Away'.

Objective

The overall objective is to protect the unique natural values and vistas of the Desert Road environments from invasive legumes. The project principles are based on: collaboration and sharing of data, coordinated and prioritised control of invasive legumes (including pathway management), monitoring and reporting of progress, advocacy on the benefits of control and the risks of doing nothing, and establishing best practice control guidelines through implementing the project.

Implementation measures

The eight organisations acknowledge that there are a number of overlapping goals related to preserving the Desert Road landscape and ecosystems. These goals can be achieved by focusing on five key objectives and methods:

- *Wide-ranging and genuine cooperation between the parties to achieve sound landscape and pest management outcomes over the life time of the project* – Horizons will provide support for the Desert Road Invasive Legume Control Project through regular attendance at group meetings, sharing data, planning for Desert Road pest plant control and at least an annual review;
- *Introduced legumes in the project area are measurably reduced in density by 2025.* Interim targets include: (a) near zero density in 100% of the known sparse/low density areas; (b) a measured reduction in moderate density areas; and (c) containment of high density areas, and eliminate risk of spread from these sources. Horizons will help ensure that control is carried out efficiently and effectively by the parties through two approaches:
    - *Roll-back control* – halt the spread and reduce densities to 'sparse' (less than one plant per 10 hectares). Also, containment of core infestations to prevent spread; and
    - *Hotspot control* – 'vista management' (e.g. target areas immediately visible from SH 1) and protection of land not currently invaded, through pathway management interventions.
- *Trend monitoring carried out to assist with annual reporting on progress against the control objectives* – Horizons will contribute to three yearly aerial photo mapping, comparing progress with a 2012-13 baseline for broom and 'as required' mapping for gorse and lupin following baseline surveys;
- *Advocacy to stakeholders, other interested parties and the public that is timely, clear and appropriate* – Horizons will assist in developing a community-based approach to focus on the environmental and tourism benefits of the project, and the risks of not carrying through with the project (including: signage, website development, Turangi/Waiouru awareness media campaigns, social media and building on the range of successes similar to those achieved with the didymo awareness programme); and
- *Better overall control is achieved through adaptive management techniques and the recognition of 'best practice' evolution* – Horizons will support different control methods (e.g. biocontrol, manual control techniques or different herbicides and application means and rates) to advance 'science learnings' and ensure efficiencies are made for all parties. Biosecurity research and training.


Scenes like this should be a thing of the past.

The research and technology supporting pest management is dynamic and continuously advancing. Horizons is committed to incorporating such advances into annual operational plans. Research information is obtained and shared by Horizons in a number of ways:

- Funding research. Actively pursuing and potentially driving research. Could include funding of graduate students, collaborative investment between several agencies (e.g. biocontrol research) and professional contracts to provide research to better inform management decisions;
- Maintaining contacts with research institutes (e.g. Landcare Research, Massey University, AgResearch). Active relationship building, two-way relationship – receiving research results but also requesting and/or guiding direction of future research;
- Utilising the Internet and subscribing to list-servers (national and international forums on pest ecology). Individual actions, passive, continual upskilling;
- Continued membership of national institutes;
- Maintaining contacts with other pest managers throughout the country; and
- Establishing contacts in Australian research institutes and resource management agencies. Institutional or individual contacts. Awareness of potential future pest species.

New information needs to be disseminated among staff and should be incorporated into training sessions where appropriate. Staff training and upskilling will be an ongoing process and will be delivered via a mix of active/formal opportunities including conferences, workshops and field days; and passive/informal mechanisms including being incorporated into team meetings, delivered via email and self-learning. Areas identified for staff training include:

- Regular workshops in pest identification. This will be particularly necessary for surveillance plants and new incursions. Maintain contacts with botanical and zoological skills in Region, including (herbaria, academic institutes, DOC staff and professional individuals;
- Field days demonstrating new control methods. Links to research institutes, herbicide and pesticide manufacturers, other pest managers and experiences overseas;
- Ecological theory, pest ecology, population dynamic theories and how they apply to pest management. Upskilling to keep in line with change in strategy direction and to incorporate integrated habitat management approach; and
- Upskilling, revision of monitoring methods, good data collection and storage practices, use of databases, spreadsheets and new computer programmes and technology.

Glossary

Terms marked with an asterisk (*) are defined in the Biosecurity Act 1993.

Term	Description
Active Management Zone	The defined area within the Region where a particular pest is to be eradicated or controlled to zero-density. Active Management Zones apply to species managed under a Progressive Containment objective.
Animal	Means any mammal, insect, bird or fish, including invertebrates, and any living organism except a plant or human.
Appropriate	Means determined to be appropriate by the Council or its officers to be proper and suitable after the consideration of relevant factors.
Authorised person*	A person appointed an authorised person under Section 103 of the Act.
Biological Control (Biocontrol)	The use of organisms that attack pests without harming other species.
Biological Diversity (Biodiversity)	The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.
Binomial name	The two-part scientific name given to an animal (i.e. *Genus species*).
Chief Technical Officer*	A person appointed a chief technical officer under Section 101 of the Act.
Costs and Benefits*	Costs and benefits of any kind whether monetary or non-monetary.
Crown land	Land vested in the Crown and administered by a Minister; includes all land forming part of any national park, any reserve within the meaning of the Reserves Act 1977, and all unoccupied lands of the Crown.
Direct control	Means pest control undertaken by or funded by Horizons Regional Council – see also service delivery.
Distinctiveness	Refers to unusual or uncommon features, species or populations in a given location.
District Council	A district council constituted under Part 1A of the Local Government Act 2002.
Ecological context	The connectivity of a given site with the surrounding landscape and ecological processes.
Ecosystem	A defined community of all plants, animals and micro-organisms, the physical and climatic environment and the interactions and processes between them.
Effect*	Includes any positive or adverse effect, temporary or permanent effect, past, present or future effect, cumulative effect which arises over time or in combination with other effects – regardless of the scale, intensity, duration or frequency of the effect, potential effect of high probability, potential effect of low probability which has a high potential impact.
Endemic	A species that is indigenous only to New Zealand.
Enforce	To compel observance of the law.
Environment*	Includes: ecosystems and their constituent parts, including people and their communities, all natural and physical resources, amenity values, the aesthetic, cultural, economic and social conditions that affect or are affected by any of the above.
Eradication pest programme	Means those pests that are to be managed under an eradication programme. Eradication pest plants are of limited distribution or density in the region or part of the region, for which the eventual goal is eradication at known sites in the region.
Exacerbator	A person who, by their actions or inaction, contributes to the creation, continuance, or exacerbation of a particular pest management problem.
Exclusion pest programme	Where the outcome for the programme is to prevent the establishment of the subject that is present but not yet established in New Zealand or the region.
Exotic	A species, subspecies or lower taxon occurring outside its natural range (past or present) and dispersal potential.
Extirpate	To remove or eliminate completely.
Fecundity	In relation to an individual, its productivity or fertility as measured by the number of offspring produced annually or during its lifetime.
Functional Intactness	The extent to which natural processes and systems within an ecosystem remain intact.
Habitat	The place or type of place where an organism or population normally lives. A description for areas that are similar to each other but different from others.
Good Neighbour Process Zone	For Progressive Containment programmes, is the zone of containment where the on-farm biosecurity risk assessment will be used to identify the scale of occupier responsibility.
Hapū	A social, political unit comprised of whanau (extended families) each recognising descent from a common ancestor.
Indigenous	A species, subspecies or lower taxon, occurring within its natural range (past or present) and dispersal potential.
Introduced	A species brought from its natural range to New Zealand by a human agency.
Iwi	A political grouping comprised of several hapū, each recognising descent from a common ancestor(s). The hapū not only recognise genealogical ties but geographical, political and social ties. Today iwi are represented by many organisations, including trust boards, runanga, iwi authorities etc., but only in specific areas where the mandate to do so has been given by the constituent hapū.
Kaitiaki	Spiritual or physical guardian, protector.
Kaitiakitanga	The exercise of guardianship by the tangata whenua of an area in accordance with tikanga Maori in relation to natural and physical resources; and includes the ethic of stewardship.
Karioi Forest	Means the area known as Karioi Forest and included under the following Certificates of Title WN1300/4, WN1300/16 and WN133/17.
Karioi Forest Balance Area	Means the Karioi Forest excluding those areas that fall within the definition of the Karioi Forest Seed Source Area or Karioi Forest Mixed Species Plantation Area.
Karioi Forest Mixed Species Plantation Area	Means the areas within Karioi Forest as identified on Map 5-8, comprising green contorta (*Pinus contorta* var. *contorta*) in association with *Pinus radiata* or *Pinus nigra* var. *laricio.*

Term	Description
Karioi Forest Seed Source Area	Means the areas within Karioi Forest comprising, mature stands of green contorta *(Pinus contorta* var. *contorta).*
Mauri	Principle of life, life force.
Mustelid	Any member of the genus *Mustela* – specifically stoats, ferrets/polecats, and weasels.
Natural Area	An area of particular indigenous habitat type that naturally occurs at the given site.
Occupier*	a) in relation to any place physically occupied by any person, means that person; and b) in relation to any other place, means the owner of the place; and c) in relation to any place, includes any agent, employee, or other person, acting or apparently acting in the general management or control of the place.
Organism*	Does not include a human being or a genetic structure derived from a human being, includes a micro-organism, includes a genetic structure that is capable of replicating itself (whether that structure comprises all or only part of an entity, and whether it comprises all or only part of the total genetic structure of an entity). Includes an entity (other than a human being) declared by the Governor General by Order in Council to be an organism for the purposes of the Act. Includes a reproductive cell or developmental stage of an organism. Includes any particle that is a prion.
Palmate	In relation to the antlers of deer – having part of the antler spreading out from a central point like fingers from a hand.
Peri-urban	Properties on the urban fringe, such as life-style blocks, that are managed as rural properties but are constrained by urban rules or norms with regard to shooting, poisoning or trapping animals.
Person*	Includes the Crown, a corporation sole, and a body of persons (whether corporate or unincorporated).
Pest*	An organism specified as a pest in a pest management plan.
Pest Management Plan*	A plan, made under Part V of the Act, for the management of a particular pest or pests.
Plant	Any plant, tree, shrub, herb, flower, nursery stock, culture, vegetable, or other vegetation; and also includes any fruit, seed, spore and portion or product of any plant; and also includes all aquatic plants.
Prehensile	In relation to possums, the ability to grasp things by wrapping the tail around them.
Principal Officer*	a) in relation to a regional council, its chief executive; and b) in relation to a region, the chief executive of the region's regional council and includes an acting chief executive.
Progressive containment programme	Where the outcome for the programme is to contain and reduce the geographic distribution of the subject to an area over time.
Property Boundary	Legal boundary that divides one property from another (usually associated with different owners).
Risk Goods*	Means any organism, organic material, or other thing, or substance, that (by reason of its nature, origin, or other relevant factors) it is reasonable to suspect constitutes, harbours, or contains an organism that may – a) cause unwanted harm to natural and physical resources or human health in New Zealand; or b) interfere with the diagnosis, management, or treatment, in New Zealand, of pests or unwanted organisms.
Region	The term Region (with a capital 'R') refers to the Manawatu-Wanganui Region over which Horizons has jurisdiction as determined in accordance with the Local Government Act 1974.
Regional Council	A regional council constituted under Part 1A of the Local Government Act 2002.
Road	Means all formed roads (including road verges) from the centre of the road to an abutting property boundary and includes all bridges, culverts and fords forming part of any road, but does not include unformed (paper) roads.
RPAMS	Horizons' Regional Pest Animal Management Strategy 2009.
RPPMS	Horizons' Regional Pest Plant Management Strategy 2007.
Rule	Means a rule included in a pest management plan in accordance with section 73(5) of the Act.
Service Delivery	Works conducted by Horizons with no direct cost to the property owner. See also direct control.
Stakeholders	The beneficiaries and exacerbators identified in this Plan as bound by and contributing to the Plan.
Significant	In relation to indigenous biological diversity means areas of significant indigenous vegetation and significant habitats of indigenous fauna.
Site-led	A programme that focuses on protecting certain values at certain sites.
Species-led	A proactive programme, concentrating on a specific species throughout the Region.
Sustained control programme	Where the outcome for the programme is to provide for the sustained control of the subject in an area to a level where externality impacts are manageable
Surveillance	The active searching for new incursions of invasive pests.
Territorial Local Authority	A District or City Council.
Taonga	Treasures, entities (living and inanimate) with great value.
Transport corridor	Means local roads, state highways and railway lines as owned or occupied by district/city councils, NZ Transport Agency and KiwiRail.
Unwanted Organism* (Unwanted Organism Register)	Organisms that have been determined unwanted by Chief Technical Officers of government departments with biosecurity interests. The Register also contains organisms declined importation by the Environmental Protection Authority (EPA) and organisms listed in the second schedule of the Hazardous Substances and New Organisms Act 1996.
Viability	Of sites – measure of ability to retain site values over time, either in terms of retaining soil (soil conservation) or maintaining genetic, species, or ecosystem diversity (biodiversity) or in terms of retaining natural processes, cycles or systems within an ecosystem.
Wilding	In relation to conifers, means any tree established by natural means, or any tree that has not been purposefully planted.
Working Day*	Means any day except – a) a Saturday, a Sunday, Good Friday, Easter Monday, Anzac Day, Labour Day, the Sovereign's birthday, and Waitangi Day; and Wellington Anniversary Day; and

Term	Description
	b) a day in the period commencing on the 20th day of December in any year and ending with the 15th day of January in the following year.
Zero-Density	In relation to the staged eradication of pests, a medium-term target to maintain an area free from the adverse effects of the pests. The pests may still arise in the region, but they are managed such that they cease to be a threat to economic, environmental or social/amenity values.

horizons
regional council

11-15 Victoria Avenue
Private Bag 11 025
Manawatu Mail Centre
Palmerston North 4442

T 0508 800 800
F 06 952 2929
help@horizons.govt.nz
www.horizons.govt.nz