

Taranaki Regional Council Biosecurity Strategy

2018 – 2038

Taranaki Regional Council

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At a glance

Our vision

Taranaki has a high performing, integrated system for managing the risks and impacts of pests and other harmful organisms to the economy, environment and human health.

Agencies, community groups and individuals work cooperatively, taking an integrated, efficient and cost effective approach that is based on sound science and a social mandate to undertake that work.

Together we are making a significant contribution to protecting our region, people, economy and natural resources by preventing the introduction or establishment of new pests and by reducing the damage caused by pests and other harmful organisms introduced in the past.

(refer section 3)

Five priorities

We will achieve the vision by implementing the following strategic priorities for action:

Pathways and exclusion

Eradication

Sustained control

Working with others

Regional leadership

Description

Undertake risk assessments, surveillance and exclusion programmes to prevent the establishment of new invasive (and harmful) species to Taranaki or the exacerbation of existing problems

For invasive species not yet established in the region, increase the focus on reducing the infestation level of invasive species to zero levels in Taranaki in the short to medium term to prevent their establishment

Implement regulatory response, including application of good neighbour rules, that provide for the ongoing control of 'pests' under the RPMP to reduce their impacts and spread to other properties

Facilitate and support the efforts of others in the community contributing to pest outcomes through community and site led programmes that exclude, eradicate, contain, reduce or control invasive species to protect a site's values

On the region's behalf, coordinate and lead regional responses through biosecurity planning, biological control, research, advocacy and liaison, and other assistance

(refer section 4)

Key actions (over life of the Strategy)

- Prepare risk assessments and plans for harmful organisms that are likely to have significant impacts and are not yet present in the region
- Monitor high risk pathways to ensure the early detection of harmful organisms that are likely to have significant impacts on the region
- Support national pathway initiatives to reduce the potential spread of harmful organisms and their impacts

- Identify any new infestations of 'Eradication Programme' pests
- Undertake direct control of known infestations of 'Eradication Programme' pests

- Monitor and enforce compliance with RPMP rules for 'Sustained Control Programme' pests
- As part of the Self-help Possum Control Programme, maintain possum populations at very low levels
- Expand Old Man's Beard Programme, to support land occupiers undertaking control adjacent to the Kaupokonui and Waingongoro rivers

- Expand Self-help Possum Control Programme to support community driven initiatives, including landscape predator control
- As part of an urban pest project, expand support for district councils and urban land occupiers to control predators
- Work with and support land occupiers and community groups undertaking pest control to protect regionally- significant biodiversity values

- Undertake biosecurity planning, including development and review of regional pest management plans
- Contribute to and facilitate biological control and research for harmful organisms established and widespread in the Taranaki region
- Provide advice and information to avoid, remedy or mitigate the spread of harmful organisms and their impacts
- Undertake advocacy and liaison to support government or industry-led pest initiatives

(refer sections 4 to 8)

Outcomes

Key outcomes delivered by the Strategy by 2038 that contribute to the vision are:

- To aim to have no new harmful organisms established in the region (noting that achieving this outcome is largely dependent upon the actions of others)
- Climbing spindleberry, Giant reed, Madeira vine and Senegal tea eradicated from the region
- Wide spread pests and weeds having regionally significant impacts are being managed to an appropriate level that, at the very least, reduces adverse impacts on neighbours
- Across the ring plain (over 32% of the region), possums and predators are being maintained at very low levels to protect remnant indigenous ecosystems and wildlife
- Biosecurity policy in the region is informed by strong science and robust information.

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1. Introduction

1.1 Title

This document is entitled the *Taranaki Regional Council Biosecurity Strategy 2018-2038* (the Strategy). It has been prepared by the Taranaki Regional Council (the Council).

The Strategy is a **non-statutory** document that complements and supports the *Regional Pest Management Plan for Taranaki* (the RPMP).

1.2 Purpose

The purpose of this Strategy is to set out the Council's strategic direction and framework relating to its biosecurity responsibilities for the next 20 years. In particular, the Strategy:

- sets out the Council's leadership responsibilities, vision and priorities for biosecurity in the Taranaki region, and
- outlines and integrates, across all things biosecurity, the non-regulatory and regulatory programmes and activities that the Council will either lead or participate in.

1.3 Scope and application

Biosecurity is defined as "...the exclusion, eradication or effective management of risks posed by pests and diseases to the economy, environment and human health"¹

Biosecurity encompasses a broad suite of activities – from pre-border to pest management – with many national and local agencies having very separate roles and responsibilities (refer Figure 1). It is also addressed under a plethora of legislation – most noticeably the Biosecurity Act 1993 (BSA). However, as noted in sections 2.2 and 2.3, other legislation applies and other agencies also have a role.

The Strategy addresses the Council's biosecurity roles and responsibilities (and not those of other agencies).

Unless the context relates otherwise, for the purposes of this Strategy 'biosecurity' refers to the management of all harmful organisms and not just those legally defined as 'pests' in a RPMP. The BSA definition of a pest only relates to "...an organism specified as a pest in a pest management plan".

The Strategy sets out the Council's strategic directions and priorities for pest management over the next 20 years, including mandatory and discretionary programmes and activities. On occasion the Council will be the lead agency; on other occasions, the Council may have a supporting role where it is contributing to the programmes and activities of other agencies.

The Strategy does not contain rules. Rules relating to pest management are set out in the RPMP.

For further information on the pest review please refer to <https://www.trc.govt.nz/assets/Documents/Plans-policies/PestPlanReview/PMfactsheet1.pdf> and <https://www.trc.govt.nz/assets/Documents/Plans-policies/PestPlanReview/PMfactsheet2.pdf>.

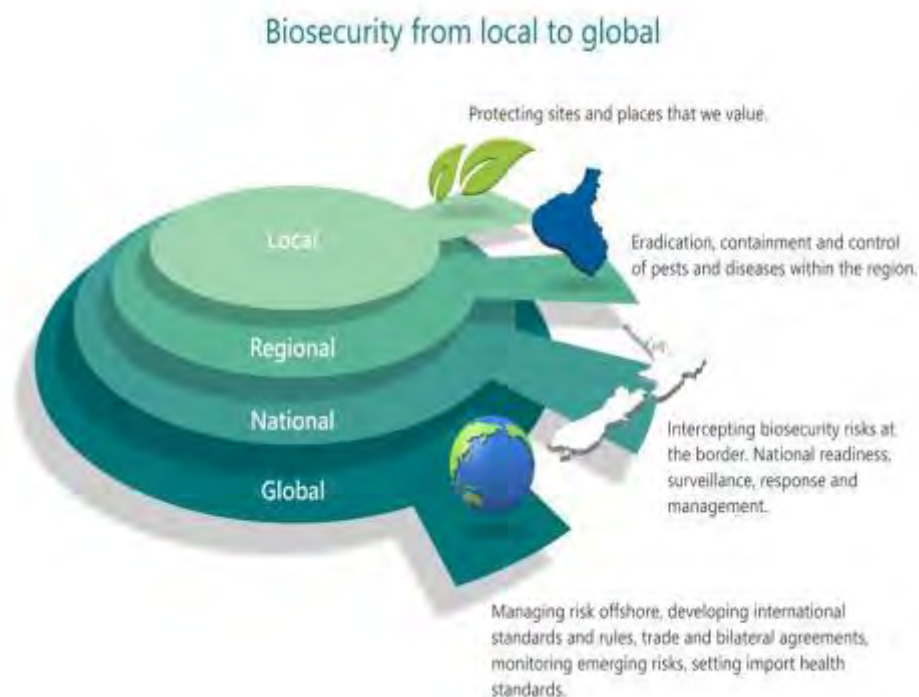


Figure 1: The biosecurity continuum

¹ Biosecurity Strategy for New Zealand, 2003.

The Strategy applies to the Taranaki region as shown on SO Plan 13043 deposited with the Chief Surveyor of the Taranaki Land District (refer Figure 2) The region covers 723,610 hectares on the North Island's west coast. The boundaries of the region conform to those of water catchments and extend from the Mohakatino catchment in the north to the Waitotara catchment in the south and inland to, but not including the Whanganui catchment.



Figure 2: The Taranaki region

1.4 Structure

The Strategy has nine sections.

Section 1 introduces the Strategy, including its purpose, scope, and structure.

Section 2 sets the scene in relation to pest management in Taranaki, including the risks from pests and other harmful organisms, the Council's legislative mandate to act, plus the legislative roles and responsibilities of other key players in the region.

Section 3 sets out a vision, principles and priorities for managing biosecurity risks in Taranaki. Five priority areas are identified to give effect to that vision and principles, these are: pathways; eradication; sustained control; working with others; and leadership.

Section 4 sets out the suite of pathway and exclusion programmes, actions and targets to managing the risk of invasive species being introduced to and spreading across the region.

Section 5 sets out the suite of programmes, actions and targets for eradication programmes to prevent invasive species already present in the region from becoming established.

Section 6 sets out the suite of regulatory programmes, actions and targets relating to managing the externality impacts of established 'pests' to be managed via Sustained Control Programmes.

Section 7 sets out the suite of regulatory and non-regulatory community and site-led programmes, actions and targets where the Council is largely working with others to achieve common pest management outcomes.

Section 8 sets out other programmes, actions and targets (not already addressed) relating to the Council's other 'leadership' responsibilities for biosecurity.

Section 9 outlines the monitoring and review provisions of the Strategy.

A definition of terms and acronyms used in the Strategy are presented at the back of the Strategy.

2. Background

2.1 Biosecurity – a layered defence

Taranaki is but a small part of New Zealand’s wider biosecurity system. It involves many players, each with their own roles and responsibilities.

New Zealand’s biosecurity system is widely acknowledged as being one of the world’s best. It is made up of three broad areas of activity: pre-border, at the border, and post-border. This Council’s roles and responsibilities are confined to the latter area –the post-border. For an overview of New Zealand’s biosecurity system please refer to <https://www.trc.govt.nz/assets/Documents/Plans-policies/PestPlanReview/PMfactsheet5.pdf>.

Pre-border

Pre-border activities result in the vast majority of biosecurity risks being managed offshore as exporting countries take action to ensure their export products meet our biosecurity import requirements. The Ministry for Primary Industries is charged with managing risks offshore, developing international standards and rules, trade and bilateral agreements, monitoring emerging risks, and setting import health standards.

At the border

The Ministry for Primary Industries is also charged with intercepting biosecurity risks at the border. Activities include inspections at airports, seaports, mail centres and along the coastline for ensuring compliance with rules and for overseeing national readiness, surveillance, responses and management of biosecurity risks at the border.

Post-border

There are two aims here: to reduce the likelihood of harmful pests or diseases from establishing in New Zealand, and to reduce or contain the harm caused by those that have.

Activities include monitoring and surveillance activities, and controlling weeds and animal pests. Many participants are involved in this part of the system. They include not just the Council but also central government, industry, iwi, community groups, district councils, and the public.

2.2 Pest management in Taranaki

Over the last 180 years, the introduction of economically important plants and animals has helped to shape Taranaki’s landscape, people and economy. Sixty percent of the region is now covered by exotic grasses with introduced cattle, sheep and other animals underpinning the local economy. However, over that time, Taranaki’s farmed and natural landscapes have also been under constant pressure from a wide range of largely exotic plants and animals that because of their biological characteristics or impacts are generally recognised to be ‘pests’.

‘Legacy’ pests refer to harmful organisms that are widespread and historically have been a problem for many years, particularly in relation to impacts on agricultural production. In Taranaki, legacy pests include harmful organisms such as Ragwort, Old man’s beard, possums, goats and wasps. However, there are many more harmful species, not yet in the regions that also have the potential to arrive and exacerbate existing pest problems, e.g. Velvetleaf, Didymo.

‘Pest’ impacts and the significance of those impacts will vary according to the species. However, typically their impacts can be grouped around the following themes:

- **Economic:** Productivity in our land-based industries is compromised by a wide range of harmful organisms. These harmful organisms cost the country billions of dollars in lost revenue and control costs. For example, pastoral weeds are conservatively estimated to cost the New Zealand economy \$1.2 billion per annum in lost animal production and control costs. The total direct economic cost of vertebrate pests to the primary sector is estimated at about \$1 billion per year, but with multipliers included could be as high as \$3.3 billion (1.96% of GDP).² Examples of harmful organisms already present in Taranaki having significant economic impacts would include Ragwort, thistles, rabbits and possums.
- **Biodiversity:** Weeds pose a threat to one-third of all New Zealand nationally threatened plant species. There are more than 300 weeds of conservation concern in New Zealand. Possums, stoats, rats and cats are among some of the threats facing Taranaki’s native plants, birds,

² Royal Society of New Zealand, 2014.

reptiles and bats. The long term costs of loss of native biodiversity from invasive vertebrate, invertebrate, freshwater, marine and micro-organism species are difficult to monetarised but are significant nonetheless.

- **Natural resource (soil and water):** Aquatic weeds and pest fish in Taranaki rivers and lakes can destabilise aquatic habitats, and modify water flow with negative consequences for drainage, irrigation, power generation, and recreational activities. In the marine environment, invasive species such as *Undaria* and *Grateloupia* displace native species and modify coastal habitats. Invasive marine species also pose threats to aquaculture, commercial fishing and other maritime industries, including recreational pastimes.
- **Amenity (recreation and lifestyle):** Invasive ants such as Argentine ants or fire ants can have a very significant impact on lifestyle. Wasps and aquatic weeds such as *Egeria*, *Lagarosiphon* and Hornwort are examples of locally established pests already reducing recreational experiences in the region.

- **Human health:** Some pests can directly impact on human health, e.g. poisonous weeds such as Hemlock, attacks by wasps or magpies causing injury, or bites from exotic spiders and ants. Other pests may have indirect impacts on human health by being a vector for diseases.
- **Animal health and welfare:** Some animal pests may be a vector for diseases that impact on animal health and well-being, e.g. Bovine tuberculosis, while some weeds may be poisonous to livestock. Foot-and-Mouth Disease is one of the biggest biosecurity threats facing New Zealand. ³
- **Social and cultural wellbeing:** Includes impacts on wahi tapu sites but also includes potential impacts on biodiversity (e.g. mahinga kai species), natural resources, amenity and human health values etc.

Controlling invasive species is an important part of protecting the region's natural environment and productive capacity of land. It is not something that agencies such as the Council can or should be tackling on their own. It is something all of us must take responsibility for.



Pest management in Taranaki – a responsibility that we all share. Council officers talking to local farmers about possum control.

³ The Ministry of Primary Industries is the lead Government agency for border control and preventing the introduction of diseases such as Foot and Mouth Disease to New Zealand.

Biosecurity and pest management are crucial to New Zealand's environmental and economic wellbeing



2.2.1 Biosecurity issues of significance

For the purposes of this Strategy, biosecurity issues of regional significance to Taranaki are:

- *Managing existing threats:* Invasive and harmful organisms threaten our economy and environment, despite investing heavily in biosecurity and pest management systems.
- *Looking to the future:* More emphasis needs to be given to surveillance and monitoring to increase the chances of successful eradication of new incursions when a species' distribution is still limited; and to prevent the recovery of existing pests after control has been applied.
- *Building partnerships and knowledge:* More emphasis needs to be given to aligning and supporting the management efforts across the biosecurity system. This recognises that harmful organisms are managed across New Zealand and the region by many organisations and responsibilities.

- *Addressing priorities:* Pest management systems need to be dynamic, responsive and adaptable. Resources for managing harmful organisms are finite, requiring a 'future focus' in pest management that prioritises prevention, early intervention, and pathway management over ongoing management of established, widespread invasive species.

2.2.2 Pest infestation curve model

The pest infestation curve model (Figure 3) demonstrates basic pest population dynamics and is widely used by agencies to help determine the most appropriate approach to managing invasive species. Generally, the lower a harmful organism is situated on the curve, the more cost effective it will be to control, and eradication may be feasible. The higher a harmful organism is on the curve, the more difficult and costly it will be to control, although there may be benefit in controlling the species in specific areas or sites where it is not yet established, or to protect particular values.

As a species moves through the continuum, the management approach should respond accordingly, from concerted initial efforts to prevent its establishment or spread, to strategically focused efforts on a site-led basis to protect particular values or sites.

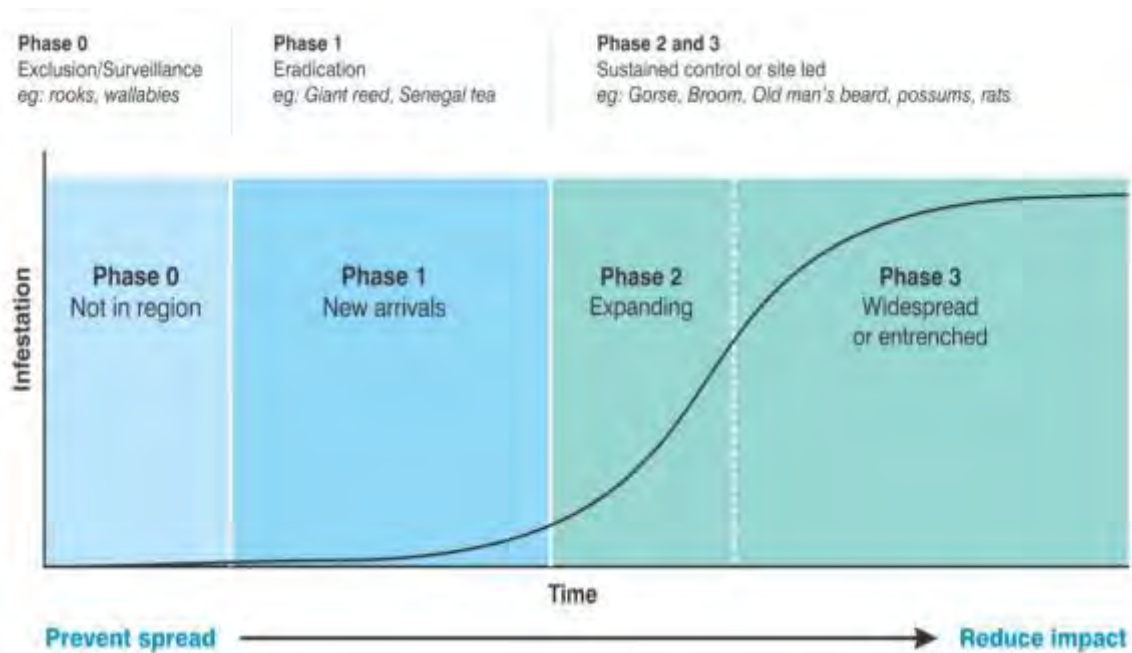


Figure 3: Pest infestation curve

2.3 Council's biosecurity framework

Regional pest management in the Taranaki region sits within the wider biosecurity framework. The Council works closely with the community and other key agencies (refer section 2.4 below) to manage biosecurity threats.

Set out below are the legislation and policy instruments that underpin or authorise the Council's biosecurity related programmes and activities.

2.3.1 Biosecurity Act 1993

The Biosecurity Act 1993 (BSA) provides a mandate and a set of powers and tools for pest control that aims to protect a broad suite of values including agricultural and environmental.

Under section 12B of the BSA regional councils provide "...leadership in activities that prevent, reduce, or eliminate adverse effects from harmful organisms that are present in New Zealand (pest management) in their region".

The ways in which a regional council provides leadership include—

- (a) promoting the alignment of pest management in the region
- (b) facilitating the development and alignment of regional pest management plans and regional pathway management plans in the region
- (c) promoting public support for pest management, and
- (d) facilitating communication and co-operation among those involved in pest management to enhance effectiveness, efficiency, and equity of programmes (section 12B(2) of the BSA).

Regional councils are not necessarily required under the BSA to carry out pest management for their region. Any involvement is at their discretion. However, the imposition of any rules or access to the regulatory powers [Part 6] of the Act is undertaken subject to the preparation of a regional pest management plan (refer section 2.3.3 below), regional pathway management plan (refer section 2.3.4 below) or small scale management programme (refer section 2.3.5 below).

The tools and powers available to regional councils under the BSA are also available to government agencies/Ministers, i.e. national pest and pathway management plans.

2.3.2 National Policy Direction for Pest Management

The *National Policy Direction for Pest Management* (NPD) was promulgated on 17 August 2015 and has the effect of regulation.

The stated purpose of the NPD is to ensure that activities under Part 5 of the BSA [Pest Management] provide the best use of available resources for New Zealand's best interests, and align with each other to help achieve the purpose of Part 5.

The NPD provides direction to regional councils on the setting of good neighbour rules in regional pest management plans (refer section 2.2.3 below) plus directions on the setting of objectives, programme descriptions, the analysis of benefits and costs, funding allocations, and timing of inconsistency determinations.

Pursuant to sections 71(a)(i) and 91(a)(i) of the BSA any proposed regional pest or pathway management plan must not be inconsistent with the NPD.

2.3.3 Regional pest management plan

Under the BSA, the imposition of any rules for pest management must be subject to the preparation of a national or regional pest management plan. Consequently the Council has prepared a regional pest management plan (RPMP) entitled *Pest Management Plan for Taranaki 2018*.

The purpose of the RPMP is to provide the regulatory framework for efficient and effective management or eradication of 17 animal and plant pest species in the Taranaki region so as to:

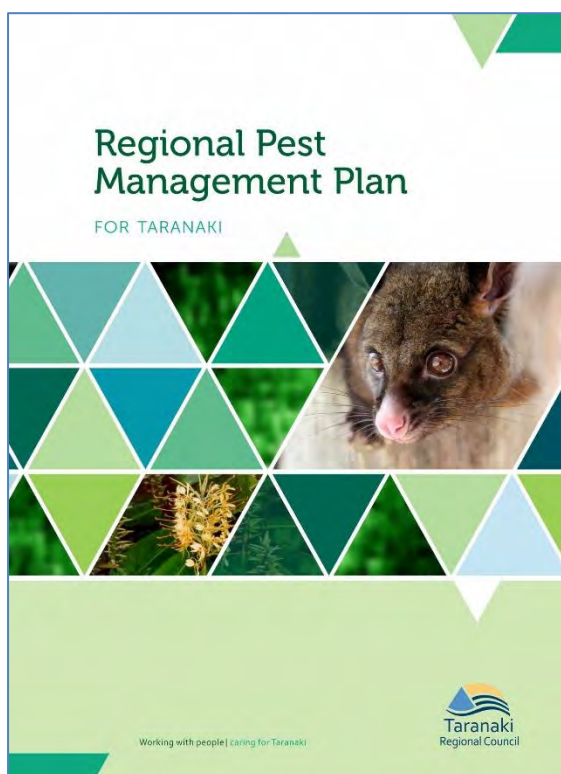
- minimise the actual or potential adverse or unintended effects associated with those organisms, and
- maximise the effectiveness of individual pest management action by way of a regionally coordinated approach.

The RPMP identifies which organisms are classified as pests and will be managed on a regional basis. There are many organisms in the Taranaki region considered undesirable or a nuisance. However, the BSA definition of a pest only relates to "...an organism specified as a pest in a pest management plan".

Only in a pest management plan is it possible to include a rule for pest management. The RPMP, when operative, will empower the Council to exercise the relevant service delivery, advisory, enforcement and funding provisions available under the BSA. The RPMP also identifies the costs and funding sources for administering and implementing the Plan.

The RPMP review process involves the preparation of a plan, which provides an opportunity for the regional community and other affected parties to have input into determining appropriate pest management programmes and funding levels for the next ten years.

For further information on the RPMP please refer to <https://www.trc.govt.nz/assets/Documents/Plans-policies/PestPlanReview/PMfactsheet3.pdf>



The Plan is the Council's 'rulebook' for pest management in the region. Under the BSA, rules have the effect of regulation. Both this Strategy and the Plan should be read together.

2.3.4 Regional pathway management plan

In 2012 an Amendment to the BSA introduced national and regional pathway management plans. These plans provide a statutory mechanism for developing rules to prevent harmful organisms from being transported into new or different areas. Regional pathway management plans may apply to a region or number of regions.

Pathway management plans are a new and untried initiative and statutory mechanism, e.g. at the time of adopting this Strategy the *Fiordland Pathway Management Plan* had just being developed - the first of its kind in the country.

In the future the use of BSA powers to manage pest pathways instead of individual organisms may become more prevalent. In the meantime, through this Strategy Council, will adopt a number of regulatory and non-regulatory methods that manage pathways.

2.3.5 Small-scale management programme

Subject to an organism being an 'unwanted organism' and the Council preparing a public notice, the Council can immediately access the Part 6 powers of the BSA and undertake direct control of an organism without needing to prepare or review a pest or pathway management plan.

A small scale management response is subject to the pre-requisites of section 100v of the BSA, which requires the Council to be satisfied that:

- (a) a declared 'unwanted organism'⁴ is present and, without action, could cause serious impacts
- (b) the organism can be eradicated or effectively controlled within 3 years
- (c) the programme is not inconsistent with the NPD
- (d) any process requirements in the NPD for declaring the programme were complied with
- (e) the taking of the measures, including any compensation, costs less than an amount prescribed by Order in Council,⁵ and
- (f) the taking of the measures is unlikely to result in significant monetary loss to any person (other than a person who failed to comply with biosecurity law and contributed to the presence or spread of the organism).

2.3.6 Local Government Act 2002

The Local Government Act 2002 (LGA) sets out the statutory purpose of local government and the role of local authorities. It also provides, in the form of Long Term Plans (LTPs), the framework for the direction and priorities of each local authority.

Through LTPs councils secure funding for non-regulatory (operational) activities (with specific measures subject to the work programming / budgeting and community consultation process).

⁴ Refer to MPI's register of unwanted organisms on the website <https://www.mpi.govt.nz/protection-and-response/finding-and-reporting-pests-and-diseases/registers-and-lists/>.

⁵ Pursuant to the Biosecurity (Small Scale Organism Management) Order 1993, the maximum amount for the purposes of section 100v(2)(e) of the BSA is \$500,000.

As noted earlier, community decisions on its priorities and resourcing for biosecurity works and the nature and extent of such measures remains, of necessity, a matter for regional council/community to determine under the LGA processes. While the RPMP sets out the regulatory framework for pest management, a large number of non-regulatory programmes and activities are actually authorised under the LTP.

2.3.7 Other Council strategies and plans

Regional councils also have responsibilities under the Resource Management Act 1991 (RMA) to sustainably manage the natural and physical resources of the region, including the Coastal Marine Area.

The focus of the RMA is on managing adverse effects on the environment through regional policy statements, regional and district plans, and resource consents. The RMA, along with regional policies and

plans, can be used to manage activities so that they do not create or exacerbate biosecurity risk, e.g. coastal discharges and disposition activities spreading marine pests.

The BSA cannot over-ride any controls imposed under the RMA, for example, bypassing resource consent requirements. RMA strategies and plans such as the *Regional Policy Statement for Taranaki*, *Regional Coastal Plan for Taranaki*, and the *Regional Fresh Water Plan for Taranaki* may include provisions that impact on and/or regulate pest management activities, e.g. discharges of pesticides, insecticides, herbicides, and piscicides.

Finally, the Council has prepared the *Biodiversity Strategy for Taranaki*. This non-statutory strategy outlines, amongst other things, non-regulatory and regulatory pest management actions and programmes that the Council will either lead or participate in to achieve its biodiversity outcomes.

Figure 4 below shows the principal statutes, strategies and plans underpinning the Council's biosecurity roles and responsibilities, including this Strategy.

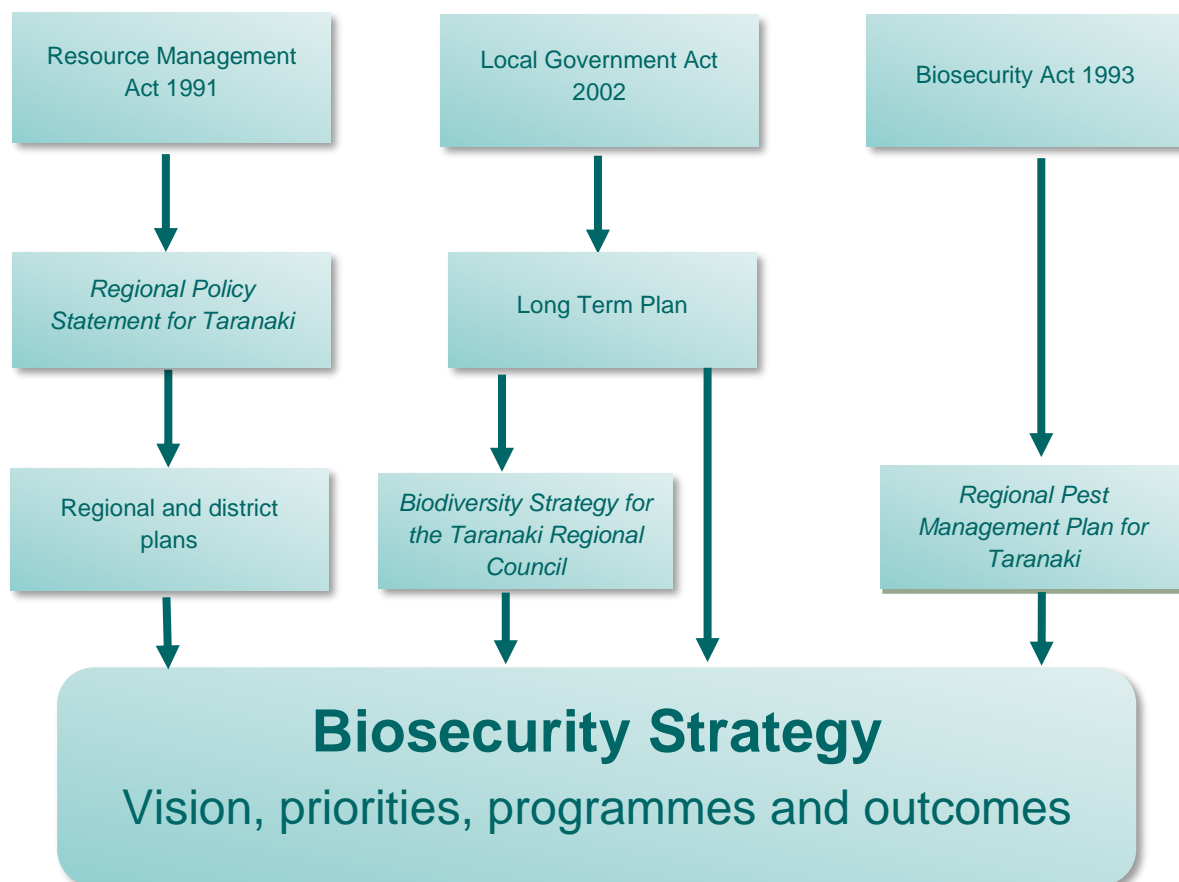


Figure 4: Legislative and planning framework contributing to the Biosecurity Strategy

2.4 Wider biosecurity framework outside Council

Other agencies and groups (in addition to regional councils) also have statutory roles and obligations in relation to biosecurity. As part of this Strategy, the Council is seeking not to duplicate the work of other agencies, but rather identify activities and programmes to work cooperatively, provide support and add value where appropriate.

The key agencies/groups and their roles are outlined briefly below. These roles are identifiable from the functions listed in legislation or from the programmes that agencies implement.

2.4.1 Ministry for Primary Industries

The Ministry for Primary Industries (MPI) is the Government department charged with leadership of New Zealand's biosecurity system.

MPI's responsibilities include certain pre and post border roles that are important to prevent the introduction of new species to New Zealand. MPI also has a lead role administering the BSA and undertaking pest and disease surveillance.

National policy instruments and policies prepared and/or administered by MPI include:

- *National Policy Direction for Pest Management 2015*: New policy instrument under the BSA to ensure that activities under Part 5 of the BSA (including RPMPs) are aligned and making the best use of available resources. Directions address common terminology, setting of good neighbour rules, setting of objectives, and the development of cost benefit analysis and determining funding allocations.
- *Biosecurity 2025 Direction Statement*: Non statutory strategy setting out high level actions for promoting biosecurity outcomes across New Zealand
- *Pest Management National Plan of Action 2010*: Non statutory strategy setting out high level recommendations to improve pest management in New Zealand.

MPI-led programmes identified and of relevance to this Strategy include the National Biosecurity Capacity Network, the Marine High-Risk Site Surveillance Programme, the Invasive Ants Surveillance Programme, the National Pest Plant Accord, the National Pest Pet Accord, National Interest Pest Response, and

Freshwater Pests Partnership Programme (refer sections 4 to 8 below).

2.4.2 Department of Conservation

The Department of Conservation (DOC) is funded and empowered, in its own right, to manage pests and other harmful organisms on the public conservation estate.

DOC is the principal central government agency involved in the conservation of biodiversity. Its role is broad and multifaceted operating under a number of different statutes, including the Conservation Act 1987, the National Parks Act 1980, the Wildlife Act 1953 and the Reserves Act 1977.

DOC's statutory responsibilities can be grouped as follows:

- management of the public conservation estate. In Taranaki, DOC is responsible for 146,973 hectares of Crown land (or 21% of the region), including Egmont National Park.
- freshwater fisheries, including management of pest freshwater fish under the Freshwater Fisheries Regulations 1983
- promotion of conservation off the public conservation estate through funding and advocacy.

DOC is required to control pests on land that they occupy or administer in accordance with any good neighbour rules set out in the RPMP.

Particular pest fish are classified as "unwanted organisms" under the BSA or "noxious fish" under the Freshwater Fisheries Regulations 1983. For more information refer Appendix 2.

2.4.3 Territorial local authorities

There are three territorial local authorities (district councils) in Taranaki - New Plymouth District Council, Stratford District Council (excluding parts of the district that lie in the Whanganui catchment), and South Taranaki District Council.

Each territorial authority manages a number of council-owned reserves and undertakes direct management of harmful organisms impacting on the values within parks, reserves and other council administered lands.

Territorial authorities are also road controlling authorities in their district. With respect to roads, territorial authorities are jointly responsible for 3,504 kilometres of local roads⁶ in the Taranaki region and

⁶ Taranaki Regional Council, 2015(c).

are required to control pests on land that they occupy or administer in accordance with any RPMP rules.

2.4.4 New Zealand Transport Authority

The New Zealand Transport Authority (NZTA) is the Government agency responsible for managing 391 kilometres of state highways⁷ in the Taranaki region. The land on which state highways lie, including those parts of road, roadway or road margin extending to adjacent property boundaries, accounts for approximately 1,278 hectares in the Taranaki region.

NZTA is required to control pests on land that they occupy or administer in accordance with any RPMP rules.

2.4.5 KiwiRail

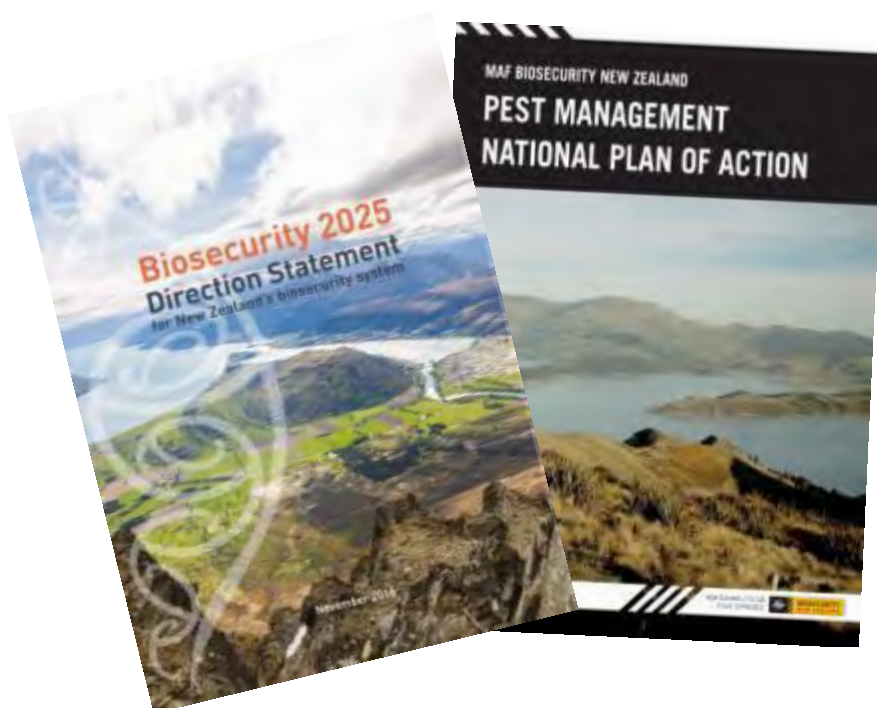
KiwiRail is the Crown agent responsible for managing New Zealand's railway infrastructure. There is approximately 215 kilometres of railway line in the Taranaki region accounting for 763 hectares of railway land.⁸

KiwiRail is required to control pests on land that they occupy or administer in accordance with any RPMP rules.

2.4.6 Others

Everyone has responsibilities for pest management. At the individual level, many people manage their land to keep it free of weeds and pests, particularly where they are the direct beneficiary of that work. Private land occupiers are required to control pests on land that they occupy or administer in accordance with any RPMP rules.

At the industry level, others involved in the wider biosecurity system include industries such as OSPRI and Kiwifruit Vine Health, which have prepared and are implementing national pest management plans under the BSA. Other examples include the Plant Nurseries Association involvement in the National Pest Plant Accord, Port Taranaki's involvement in marine pest surveillance and management programmes, and the many non-governmental organisations or community groups undertaking pest management for environmental protection.



National biosecurity strategy and plan.

⁷ Taranaki Regional Council, 2015(c).

⁸ Taranaki Regional Council, 2015(c).

2.5 Overview of statutory roles and responsibilities for biosecurity management in Taranaki

Table 1 below provides a summary of respective roles and responsibilities for biosecurity – across the system and across environment types. Lead statutory responsibilities in Table 1 are highlighted in bold.

Table 1: Taranaki Regional Council's place in biosecurity management

Pre-border	At the border	Post border (pest management)	
MPI [Biosecurity – import standards]	MPI [Biosecurity – surveillance & incursion response]	MPI [Fisheries management] DOC [Marine reserves] Port Taranaki/shipping & fishing industries <i>Regional councils</i> [BSA plans & RMA coastal plans]	Marine
		DOC – [Freshwater fish and whitebait management] MPI [Fisheries management] River/lake bed owner <i>Regional councils</i> [BSA plans]	Freshwater
		DOC [Wildlife protection, species recovery, mainland islands, pest control]	Crown land
		<i>Regional councils</i> MPI Occupiers Territorial authorities - parks and reserves Road controlling authorities (NZTA and TLAs) DOC [Wild animal control] KiwiRail Industry and other sector groups, e.g. quarries & plant nurseries etc	Private land

3. Taranaki vision and priorities for biosecurity

Having regard to Taranaki's biosecurity issues of significance, this section sets out the vision, principles and priorities underpinning the Council's biosecurity programmes and activities.

3.1 A vision for biosecurity in Taranaki

The Council's vision for biosecurity in the Taranaki region involves three inter-related outcomes:

Building pest resilience for Taranaki⁹

Taranaki has a high performing, integrated system for managing the risks and impacts of pests and other harmful organisms to the economy, environment, cultural and human health.

Agencies, tangata whenua, community groups and individuals work cooperatively, taking an integrated, efficient and cost effective approach that is based on sound science and a social mandate to undertake that work.

Together we are making a significant contribution to protecting our region, people, economy and natural resources by preventing the introduction or establishment of new pests and by reducing the damage caused by pests and other harmful organisms introduced in the past.



A vision for biosecurity – protecting our region, our people, our economy and our unique natural resources.

⁹ Vision to be confirmed following targeted and public consultation on this Strategy and the 'Proposed Pest Management Plan for Taranaki'.

3.2 Biosecurity principles

Set out below are key principles critical to the success of any Council biosecurity activity, regardless of scope and scale:¹⁰

1 **Aligned to outcomes and social mandate**

Biosecurity/pest management is the means to achieve or contribute to a range of social, economic and environmental outcomes – it is not an end in itself. Biosecurity activities are prioritised based upon who has a social mandate through legislation and policy instruments to undertake that work, and to a level that is commensurate with that mandate.

2 **Adaptive**

Biosecurity systems identify and respond to emerging changes in risk or management opportunities at all levels and in a timely way. New Zealand (and Taranaki) faces an increasing total pest management burden with growing complexity and uncertainty. Adaptation and continuous assessment and improvement are necessary at all levels to deal with new and emerging pest issues and minimise both control costs and impacts¹¹ by:

- preventing the spread of harmful organisms, especially by human activity
- early detection and intervention to control harmful organisms.

3 **Effective and efficient**

Biosecurity/pest management demands are greater than can be addressed by available capacity and resources. Those involved in pest management therefore need to use the most cost-effective pest management approaches; identify priorities; avoid inappropriate trade-offs and perverse outcomes; and use robust decision-making processes to ensure the best use of available resources.

4 **Strong relationships**

Pest management is everyone's business and cannot succeed without a broad base of public support and participation. Co-operation is critical to success and depends on trust and a sense that relationships are valued and responsibilities are shared equitably. As far as possible, decisions and planning must be consistent at local, regional and national levels to ensure resources target

priorities for biosecurity/pest management identified at each level. Where the activities contribute to common goals, alignment can help all parties better achieve their respective goals, including iwi who are partners with the Crown through Te Tiriti o Waitangi and kaitiaki (guardians) of Taranaki's taonga.

3.3 Biosecurity priorities

For the purposes of this Strategy, the Council has arranged its biosecurity programmes and activities into five priority areas, namely:

- 1 Pathways and exclusion – risk assessments, surveillance and exclusion programmes to prevent the establishment of new invasive (and harmful) species to Taranaki or the exacerbation of existing problems
- 2 Eradication – responses to reduce the infestation level of invasive species to zero levels in Taranaki in the short to medium term to prevent their establishment. Studies¹² show that late control for newly naturalised plants is on average 40 times more expensive than earlier control
- 3 Sustained control – regulatory response, including application of good neighbour rules, that provide for the ongoing control of 'pests' under the RPMP to reduce their impacts and spread to other properties
- 4 Working with others – community and site led programmes to exclude, eradicate, contain, reduce or control invasive species to protect a site's values¹³
- 5 Other leadership responses including biosecurity planning, biological control, research, advocacy and liaison, and other assistance.

Sections 4 – 8 of the Strategy identify the suite of programmes, activities and targets for these priority areas. The proposed programmes and activities add value and/or contribute to the Council's vision for biosecurity in the region.

¹⁰ As adapted from the 'Pest Management National Plan of Action'.

¹¹ For example a Department of Conservation study suggests that 'late site-led weed control costs alone may be 40 times more costly than early control.'

¹² Harris, S and Timmins, S.M, 2009.

¹³ Site-led work, for the purposes of this Strategy, involves weed and animal pest control work to protect regionally significant biodiversity values.

4. Pathways and exclusion

The concept underpinning the pathway approach in pest management is to prevent harmful organisms from reaching a destination in the first place rather than responding after the species has arrived, then, becomes established, and becomes a problem. However, even with 'established' problems in the region there is still an opportunity to modify behaviours and practices to avoid exacerbating problems in other parts of the region.

MPI is responsible for avoiding the introduction or establishment of organisms not yet present in New Zealand and to manage risks inter-regionally where national values are at risk. However, for species already present in New Zealand, responsibility for pathway management is generally dependant on the regions or the affected industry assuming responsibility. Therefore the Council's focus will be on managing pathways for harmful organisms present in New Zealand but not yet established in Taranaki and, as appropriate, support measures to reduce the spread of other harmful organisms already in the region.

In Taranaki, 'high risk' pathways for the accidental or deliberate spread of harmful organisms include:

- visitors to the region accidentally introducing fragments of aquatic weeds via 'dirty' equipment and gear
- people deliberately releasing aquatic weeds when cleaning their aquariums and fish ponds
- invasive weeds and seeds transported via machinery, livestock and fodder or in contaminated stock feed, crop and pasture seeds (e.g. Velvetleaf), and other material (e.g. garden waste)
- agricultural and other cartage contractors of machinery, stock, and equipment, who travel between the central North Island regions
- nursery, landscaping and gardening industries and the accidental introduction and spread of invasive ants, reptiles and weeds
- intentional release of wild animals (such as wallabies, deer and pigs) and pest fish for hunting and fishing purposes
- intentional release/escape of pets into the wild, e.g. lorikeets, red-eared slider turtle; and
- accidental import of harmful organisms in and around Port Taranaki through ballast water discharges, biofouling of boat hulls, or as 'stowaways' where they secrete themselves in vessels and goods, e.g. Undaria.



Rook control at Eltham. Council responds to any sightings and takes control action to prevent their establishment in the region.

4.1 What we want to achieve

Avoid the introduction or establishment of harmful organisms present in New Zealand but not yet present in Taranaki, and reduce the spread of other harmful organisms already in the region over the duration of this Strategy.

4.2 What we will do

To achieve the pathway and exclusion objective, the Council will:

1. Undertake risk assessments and contingency planning for harmful organisms not yet present in the region
2. Undertake surveillance of high risk pathways to ensure the early detection of harmful organisms in the region
3. In the event surveillance identifies the presence of new harmful organisms to the region, consider the appropriate incursion response
4. Support national pathway initiatives to change people's behaviours and reduce the potential spread of harmful organisms and their impacts.

4.2.1 Risk assessments and contingency planning

Action 1: Undertake risk assessments and contingency planning for harmful organisms not yet present in the region			
Risk assessment and contingency planning activities		Status	Lead responsibility
1.	Prepare <i>Risk Assessment Inventory</i> of potential invasive plants and animals present in New Zealand but not yet present or established in Taranaki and which are likely to have regionally significant adverse and unintended impacts	Proposed	Policy / Environment Services
2.	Maintain a process for adding to or deleting from the list of potential invasive plants and animals present in New Zealand but not yet present or established in Taranaki according to the following criteria: <ul style="list-style-type: none"> species established in adjacent or nearby regions or on known pathways significance and severity of likely impacts should the species become established in the region likely public benefits exceed private (individual) benefits of control Council is best placed to manage the pest. 	Proposed	Environment Services
3.	Annually review and update Risk Assessment Inventory	Proposed	Environment Services
4.	Maintain <i>Fresh water biosecurity partnership programme for Taranaki</i>	Active	Environment Services

Explanation

The most effective form of pest management is to avoid a problem becoming a problem in the first place. The first step in this process is to undertake forward planning to clearly identify potential and likely threats so as to ensure systems and processes are in place to promote early detection and action. The Council will therefore undertake risk assessments and prepare a *Risk Assessment Inventory* of potential invasive plants and animals present in New Zealand but not yet present or established in Taranaki, for which there is a high risk they may spread to this region, and which would have regionally significant adverse and unintended impacts.¹⁴

The purpose of risk assessments are to inform and support the Council's regional surveillance, incursion response and social marketing activities by:

- increasing public awareness of the risks posed by the introduction of new weeds and pest animals to Taranaki
- promoting social responsibility to avoid practices or actions that may contribute to the spread of these species
- providing an objective, evidence-based foundation for policy development and determining the best allocation of resources to particular species or locations, including the targeting of key pathways and developing a contingency response such as the *Regional Didymo Action Plan for Taranaki*.

Pest risk assessments are a desktop exercise synthesising information from a range of existing sources on a candidate species, including:

- description, taxonomy and general biology
- history of introduction and spread in New Zealand
- current and potential distribution
- current and potential pathways
- current and potential costs and benefits
- management options, including current control practices, feasibility of eradication, and legislative management responses.

Examples of harmful organisms not yet present in Taranaki and capable of causing serious adverse and unintended impacts on people, the environment and the economy include alligator weed, didymo, Chilean needle grass, and wallabies.

¹⁴ Noting that MPI are responsible for border security and managing risks posed by organisms not yet present in New Zealand.

4.2.2 Pathway surveillance

Action 2: Undertake surveillance of high risk pathways to ensure the early detection of harmful organism in the region			
Pathway surveillance activities		Status	Lead responsibility
5.	Annual monitoring of lakes with high recreational use, in the summer period, to detect presence of any new aquatic weed species	Active	Science Services
6.	Annual monitoring of rivers with high recreational use, in the summer period, to detect presence of didymo	Active	Science Services
7.	Liaise and support, as appropriate, MPI ¹ surveillance pathway programmes, including: <ul style="list-style-type: none"> • <i>Marine High – Risk Site Surveillance Programme</i> at Port Taranaki to detect high risk invasive marine species • Liaise with and support MPI's <i>Invasive Ants Surveillance Programme</i> at Port Taranaki 	Active	MPI / Science Services
8.	Cooperate with other biosecurity management agencies such as DOC on matters of surveillance and exclusion of harmful organisms not present or established in the region, including Brown bull-headed catfish	Active	Environment Services, DOC
9.	Annual monitoring of commercial outlets (nurseries and pet shops) to support implementation of the <i>National Pest Plant Accord</i> and <i>National Pest Pet Biosecurity Accord</i>	Active	Environment Services
10.	Provide public hotline and respond to any public reporting of potential pests, including provision of a weed identification service	Active	Environment Services

Explanation

The Council already undertakes a lot of monitoring and surveillance. However, its systems are geared towards species already widespread and well known. At the time of writing, Council surveillance for new or uncommon species was heavily dependent upon passive surveillance, which largely relies on members of the public alerting the Council. This reduces the chances of early detection and response.

Through this Strategy, the Council is seeking to better coordinate and be more proactive in relation to surveillance of potential pathways for new pests into the region. In particular, the Council will focus its efforts on the most likely entry points for new problems recognising that the introduction of invasive species can be accidental or deliberate. This includes Port Taranaki, which is a major pathway for potential pests into the region with ships and goods coming from overseas or from other parts of New Zealand.

Key pathways targeted for surveillance are:

- **Lakes:** Council will annually monitor lakes with high recreational use – Lake Rotorangi, Lake Rotomanu, Lake Ratapiko, Lake Opunake and Lake Rotokare –to detect presence of any new aquatic weed species.
- **Rivers:** Council will annually monitor high recreational use rivers – Waiwhakaiho, Manganui, Patea, Waingongoro, Hangatahua (Stony) and Kaipokonui rivers and Kapuni and Mangaoraka streams – to detect presence of didymo.
- **Port:** Council will support and assist MPI's Marine High-Risk Site Surveillance Programme and Invasive Ants Surveillance Programme.¹⁵
- **Commercial outlets:** Council is a signatory to the *National Pest Plant Accord* and *National Pest Pet Biosecurity Accord* and, in accordance with the accords, will inspect all plant nurseries and pest stores annually (refer section 4.2.4 for further information).

Passive or general surveillance, which relies on public reportings or enquiries of unusual or unknown organisms, will remain the cornerstone of biosecurity within Taranaki. The Council provides a free public hotline for such reportings and will respond to any public reporting of potential pests either by liaising with MPI, investigating itself, or through the provision of a weed identification service. The Council may also identify and respond to reports of unusual or unknown organisms identified through its other programmes responsibilities (e.g. in association with farm visits, freshwater and coastal monitoring programmes).

¹⁵ MPI's marine programme is undertaken annually at 11 major ports and marinas around the country, including Port Taranaki. The surveillance is designed to detect the presence of exotic and potentially invasive marine species not yet present in New Zealand. On average, a new marine species arrives in New Zealand every year and any one of these could become a pest. Refer <https://www.mpi.govt.nz/protection-and-response/finding-and-reporting-pests-and-diseases/surveillance-programmes/>.

4.2.3 Incursion response

Action 3: In the event surveillance identifies the presence of new harmful organisms to the region, consider the appropriate incursion response			
Incursion response activities		Status	Lead responsibility
11.	Undertake a feasibility study and make a determination on Council undertaking an incursion response	Active	Policy Environment Services
12.	Where appropriate: <ul style="list-style-type: none"> undertaking section 100v small scale management action, or with the permission of the land occupier, undertake direct control of harmful organism 	Active	Environment Services
13.	If appropriate, consider the preparation of a Pathway Plan for Taranaki to impose pathway rules relating to the spread of new pests or invasive species	Active	Policy
14.	Review the <i>Pest Management Plan of Taranaki</i> to include new species and/or rules relating to the control of species now present in Taranaki.	Active	Policy
15.	Liaise and, as appropriate, support MPI-led eradication responses including the <i>National Interest Pest Response</i> and the <i>National Biosecurity Capability Network</i>	Active	Environment Services

Explanation

On the detection of a new harmful organism in Taranaki (including but not confined to those species identified in the *Risk Assessment Inventory* of potential invasive plants and animals), the Council will undertake a feasibility study as part of its consideration and determination on the appropriate management response. The management responses available to Council range from 'Do nothing' (e.g. it is technically infeasible to meet a control objective such as eradication, other agencies have the mandate and/or are better placed to lead the management response, or the costs would outweigh the benefits) to undertaking an incursion response.

In the event that an incursion response is considered appropriate, the immediate courses of action available to the Council are:

- section 100v small-scale management responses – subject to an organism being an unwanted organism and the Council preparing a public notice, the Council can immediately access the Part 6 powers of the BSA and undertake direct control of an organism (without needing to prepare or review a pest/pathway plan)
- undertake immediate control of the organism where Council has the permission of the land occupier. In such circumstances it would not be necessary to access the Part VI powers of the BSA, however, preparation of a pest or pathway management plan may still be necessary if the incursion response is significant and/or long term.

In addition to the above, but subject to a much longer timeframe, the Council could seek to access Part 6 powers under the BSA by:

- undertaking and preparing pathway plans, which provide a statutory mechanism for developing rules to prevent harmful organisms from being transported into new or different areas, and/or
- amending the RPMP to identify new species for which an eradication (or sustained control) objective is appropriate for Taranaki. Refer to Section 8.2.1 for further information on biosecurity planning.

The MPI-led *National Interest Pest Responses* aim to eradicate 11 selected established pests from New Zealand. These pests were selected for national response because of their potential to have a significant impact on our economic, environmental, social and cultural values and include: Salvinia; Water hyacinth; Johnson grass; Cape Tulip; Pyp grass; Phragmites; Hydrilla; White bryony; and Manchurian wild rice.¹⁶ None of these species are currently present in Taranaki but, in the event that infestations were identified, Council would liaise directly with MPI to ensure the infestations are eradicated from the region.

In addition to the above the Council is part of the *National Biosecurity Capability Network* that would provide field support to MPI and AsureQuality in the event of a biosecurity outbreak such as Foot and Mouth Disease.¹⁷

¹⁶ Refer <http://www.biosecurity.govt.nz/pests/surv-mgmt/mgmt/prog/nipr> for further information.

¹⁷ Refer <https://www.asurequality.com/our-services/pest-and-disease-management-solutions/national-biosecurity-capability-network-nbcn/> for further information.

4.2.4 Support national pathway initiatives

Action 4: Support national pathway initiatives to change people's behaviours and reduce the potential spread of harmful organisms and their impacts

Other pathway activities		Status	Lead responsibility
16.	Provide advisory, inspectorial and compliance services to enforce sections 52 and 53 relating to prohibitions on the sale, distribution, release and propagation of 'unwanted organisms' and 'pests'	Active	Environment Services
17.	Undertake and provide advisory, educational and monitoring services to support MPI's National Pest Plant Accord	Active	Environment Services
18.	Undertake and provide advisory, educational and monitoring services to support MPI's National Pest Pet Biosecurity Accord	Proposed	Environment Services
19.	Undertake and provide advisory and educational services to support MPI's Freshwater Pests Partnership Programme	Active	MPI, DOC, Environment Services
20.	Consider supporting any other national initiatives that contribute to pathway objectives set out in this section of the Strategy.	Active	Environment Services

Explanation

MPI is the lead agency for a number of national pathway initiatives. DOC is the lead agency for pest fish. As appropriate, the Council will provide advisory, inspectorial and compliance services within the region to support national pathway initiatives, including:

- National Pest Plant Accord:** This Accord is a MPI-led agreement between the Nursery and Garden Industry Association, regional councils, and other government departments with biosecurity responsibilities to regulate the propagation, distribution and sale of 150 high-risk plant species listed in the Accord that have been declared 'unwanted organisms'.¹⁸ In accordance with its commitments under the Accord, the Council:

 - undertakes routine *surveillance and inspections* of plant nurseries and retail outlets
 - provides *advice and information* on the species listed in the Accord list
 - undertakes *compliance* activities to enforce sections 52 and 53 of the BSA – prohibiting the sale, release or propagation of plant species contained on the Accord list
 - participates in the development of identification and information packages in support of the Accord and consider recommendations on particular species to be included in the Accord list.
- National Pest Pet Biosecurity Accord:** This Accord is a new MPI-led agreement between the Pet Industry Association of New Zealand, the New Zealand Companion Animal Council, regional councils, and other government departments with biosecurity responsibilities to regulate the breeding, distribution and sale of pet species listed in the Accord that are already present in New



Council officer inspecting a nursery to ensure harmful plants are not being spread via the garden retail trade.

¹⁸ The full list of species on the National Pest Plant Accord is available on MPI's website (<http://www.biosecurity.govt.nz/pests/surveillance/mgmt/mgmt/prog/nppa/list>).

Zealand and present an unacceptable biosecurity risk.¹⁹ In accordance with its commitments under the Accord, the Council:

- undertakes routine *surveillance and inspections* of pet shops and other outlets
 - provides *advice and information* to members of the public and commercial interests in relation to the species listed in the Accord list to reduce the frequency of risky public behaviour such as pet releases into the wild, and to promote the responsible management of risk species by the pet industry
 - undertakes *compliance* activities to enforce sections 52 and 53 of the BSA – prohibiting the sale, release or breeding of pest pet species contained on the Accord list
 - actively participates in the development of identification and information packages in support of the Accord and consider recommendations on particular species to be included in the Accord list.
- *Freshwater Pests Partnership Programme*: This MPI-led Programme, which is a partnership between MPI, DOC, Fish and Game New Zealand, regional councils, affected industry, and specific Maori entities, aims to slow the spread of freshwater pests throughout New Zealand and, in particular, maintain the North Island free of didymo for as long as possible. Council's responsibilities under the Programme include:
 - participate in MPI's *Check, Clean, Dry communications programme*²⁰ – maintain signs and install new ones at appropriate places, undertake community outreach (at events, school visits, liaison with local businesses (such as sports stores) and clubs. MPI supplies each region with annual funding to hire advocates to spread the 'Check, Clean, Dry' message at waterways and events
 - prepare and maintain *regional response preparedness plans* – in the event didymo is discovered in the Region's waterways, it is imperative for Council 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)
 - undertake didymo surveillance and monitoring in high risk waterways – carried out as part of the Council's regional river and water way water quality and sampling programme (refer section 4.2.2 above).

Refer to sections 8.2.3 and 8.2.4 for further information on awareness campaigns at the local/community level and advocacy and liaison activities.



An example of a young colony of didymo. To date no didymo has been found in the region.

¹⁹ Accidental or deliberate release of pets (often as they 'out-grow' their owners) such as fish, reptiles and amphibians, or newly imported animals that may become pest issues in the future. Refer to MPI's website <http://www.mpi.govt.nz/protection-and-response/finding-and-reporting-pests-and-diseases/keeping-watch/stopping-pets-becoming-pests/> for further information.

²⁰ Refer to MPI's website (<http://www.mpi.govt.nz/funding-and-programmes/other-programmes/campaigns/check-clean-dry/>) for further information.

4.3 Pathway and exclusion targets (key performance indicators)

Targets	Measures
No new harmful organism species established in the region ²¹	Number of incursion and other management responses
All public reports of suspected new harmful organisms are responded to within 5 days	Number of public enquiries (and other measures of increased public awareness)
	Number of identified actions being implemented (where applicable)

²¹ Note, the introduction or establishment of new harmful organisms to Taranaki - from overseas or other parts of New Zealand- is largely outside the control of the Council. Achieving the target is largely dependent upon the actions of others including MPI and the actions of industries and individuals outside the region. Accordingly this target is aspirational. As far as is practicable, the Council will monitor the effectiveness of its pathway and exclusion programmes by monitoring the number of detections and incursions by new harmful organisms in the region.



Port Taranaki surveillance programmes check to ensure there are no new potentially invasive species coming from overseas or from other parts of the country via shipping or risk goods. On average, a new marine species arrives in New Zealand every year and any one of these could become a pest.

5. Eradication

The concept underpinning regional eradication programmes is to prevent invasive species, not yet established in Taranaki, from becoming established and imposing significant impacts on the region. The intention is to remove all individuals of these pests from the region, and eliminate the possibility of any further reproduction or propagation within the region.

Eradication is only possible if the infestation is found when the populations are very small and their distribution is limited, and where control is technically feasible.

Statutory instruments available to the Council for achieving eradication objective are pest management plans and small scale management programmes. In relation to the RPMP, five species have been identified as 'pests' for which the Council will undertake eradication programmes. They are:

- Climbing spindleberry
- Giant Reed
- Madeira (Mignonette) vine
- Moth plant
- Senegal tea.

In accordance with the RPMP, and in recognition of the wider public benefits (rather than individual benefits) of eradicating these species, the Council assumes responsibility for the control of these species rather than relying on the land occupier. Through their inclusion as a 'pest' in the RPMP, Council can access Part 6 regulatory powers under the BSA, including entry onto land to undertake works.

5.1 What we want to achieve

Reduce known infestation levels of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea to zero levels in the Taranaki region, by 2038, and avoid regionally significant impacts on the environment, economy and people.

5.2 What we will do

To achieve the eradication objective, the Council will:

1. Undertake surveillance and monitoring to identify infestations of 'Eradication Programme' pests and ensure the effectiveness of eradication measures
2. Undertake direct control of known infestations of 'Eradication Programme' pests.

For a fuller description of the pests and the eradication programmes, please refer to the RPMP.



Climbing spindleberry



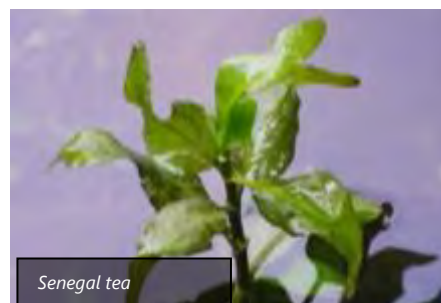
Giant reed



Madeira vine



Moth plant



Senegal tea

Five plant species – Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea – to be eradicated in Taranaki by 2038.

5.2.1 Surveillance and monitoring of Eradication Programme pests

Action 1: Undertake surveillance and monitoring to identify infestations of 'Eradication Programme' pests and ensure the effectiveness of eradication measures		
Surveillance and monitoring activities	Status	Lead responsibility
21. Prepare and maintain eradication plans for all sites with known infestations of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea	Active	Environment Services
22. Monitor the location and extent of known infestations of Eradication Programme pests	Active	Environment Services
23. Re-inspect the effectiveness of direct control activities for Eradication Programme pests	Active	Environment Services
24. Respond to any reportings of previously unknown or new infestations of Eradication Programme pests	Active	Environment Services
25. Annual monitoring of commercial plant nurseries and retail outlets to ban the propagation, sale and distribution of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea	Active	Environment Services
26. Provide public hotline and respond to any public reporting of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea infestations	Active	Environment Services

Explanation

The successful eradication of pests that are present in very low numbers within the Taranaki region relies on effective surveillance and monitoring. Over time the Council has been gathering information on the location of species that have been identified in the RPMP as 'Eradication Programme' pests – these being Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea. The Council maintains a database identifying known infestations. However, inevitably, more infestations are likely to be identified over time because the infestations are new or not previously known about.

Key surveillance and monitoring activities for Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea are:

- *Eradication plans:* Council will prepare and maintain site-specific plans setting out the programme to destroy known infestations of Eradication Programme pests, including location, methods, timing, resources and control techniques
- *Property inspections:* annually inspect and monitor properties with known infestations of Eradication Programme pests to establish the extent of any infestations and to identify any remedial action that needs to be undertaken
- *Commercial outlets:* annually inspect all plant nurseries and retail outlets to prohibit the propagation, sale and distribution of Eradication Programme pests
- *Education:* promote public reportings by undertaking a public awareness campaign and providing information to individuals or the community to assist them to identify Eradication Programme pests and encourage public reportings of any infestations to the Council.

Through this Strategy, passive or general surveillance will continue to have an important role. However, the Council will seek to be more proactive in relation to surveillance by annually promoting public awareness and encourage the reporting of any suspected infestations. Council respond to any public reporting of previously unknown or new infestations of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea, responding to all public complaints on the plant within five days of receipt

5.2.2 Direct control of Eradication Programme pests

Action 2: Undertake direct control of known infestations of Eradication Programme pests		
Direct control (eradication) activities	Status	Lead responsibility
27. As soon as practicable, undertake initial direct control of known infestations of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea	Active	Environment Services
28. Annually monitor known sites and undertake further direct control for any re- infestations	Active	Environment Services
29. Where appropriate, undertake direct control of other harmful organism not yet established or widespread in the region	Active	Environment Services

Explanation

In accordance with the RPMP, responsibility for the control of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea lies with the Council (rather than the land occupiers). This is based upon eradication being considered a technically feasible objective for Taranaki and in recognition that this Council is best placed to undertake that control given the wider public good of achieving that objective.

Eradication generally requires repeat treatments to successfully address subsequent re-infestations. To achieve the objective for eradication programmes, the Council will prepare eradication plans for known infestation sites AND:

- undertake direct control to eradicate known (as at 1 July 2017), and any new infestations of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea that are discovered over the duration of the Strategy
- annually inspect sites with known infestations and re-treat any re- infestations of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea.

In addition to the above, Council will consider undertaking the direct control of other harmful organism not yet established or widespread in the region. They include any of the incursion responses identified in section 4.2.3 above for 'new' species but, subject to suitable partnership arrangements may also include localised eradication operations with affected land occupiers for any new weed incursion such as Boneseed, with DOC for pest fish such as gambusia, and Port Taranaki and DOC for marine pests such as *Undaria* and *Grateloupia*. The objective of such operations is to prevent the spread of small localised infestations to other areas where they would then have much larger adverse effects.

For further information on Eradication Programme pests please refer to the relevant sections of the RPMP.



In the past, Council has worked with the Port Taranaki and DOC to remove Undaria from the Port. Undaria is spread by fragments on infested boats and mooring.

5.3 Eradication targets (key performance indicators)

Targets	Measures
<p>Direct control of 100% of known infestation sites (as at 1 July 2017) of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea</p> <p>All public reports in relation to the suspected presence of Climbing spindleberry, Giant reed, Madeira vine, Moth plant and Senegal tea are responded to within 5 days</p>	<p>Number of known sites controlled</p> <p>Proportion of known sites controlled</p> <p>Proportion of sites requiring re-treatment</p> <p>Number of direct control measures</p> <p>Number of new infestations identified and being actively managed</p> <p>Number of public enquiries (and other measures of increased public awareness)</p> <p>Number of identified actions being implemented (where applicable)</p>

6. Sustained control

The concept underpinning regional sustained control programmes is that, for harmful organisms already established and having significant impacts across the region, regulatory intervention in the form of rules is necessary to support and coordinate the individual actions of land occupiers to protect agricultural production and/or environmental values.

Sustained control programmes involve the Council providing a suite of inspectorial, compliance monitoring and enforcement activities for 'legacy' pests identified in the RPMP and for which land occupiers are required to undertake control. In relation to the RPMP, 12 species (refer Table 2) are declared to be 'pests' in the Taranaki region for which rules are set out in the RPMP. Their inclusion as a 'pest' in the RPMP, allows Council to set rules and access the Part 6 powers of the BSA to enforce those rules.

The RPMP contains two types of rules:

- Good neighbour rules (GNR):** these apply to all land occupiers - both Crown and private. Section 2 of the BSA defines good neighbour rule as "... a rule to which the following apply:
 - it applies to an occupier of land and to a pest or pest agent that is present on the land; and
 - it seeks to manage the spread of a pest that would cause costs to occupiers of adjacent land; and
 - it is identified in a regional pest management plan as a good neighbour rule; and
 - it complies with the directions in the national policy direction relating to the setting of good neighbour rules."

For further information on good neighbour rules please refer to <https://www.trc.govt.nz/assets/Documents/Plans-policies/PestPlanReview/PMfactsheet4.pdf>.
- General rules:** these apply to private land occupiers only (excludes the Crown)²² and apply to pest species for which the community has determined that additional control requirements are appropriate to maximise the effectiveness of individual pest actions across the region.

Table 2: RPMP rules for Sustained Control Programme pests in Taranaki

Pest species	Good neighbour rule	General rule
Brushtail Possums	GNR	General
Giant buttercup	GNR	-
Giant gunnera	GNR	General
Gorse	GNR	-
Nodding, Plumeless & Variegated thistles	GNR	-
Old man's beard	GNR	General
Wild broom	GNR	-
Wild ginger (Yellow and Kahili)	GNR	General
Yellow ragwort	GNR	General

6.1 What we want to achieve

Manage Sustained Control Programme pests in Taranaki to a level that minimises their adverse externality impacts on neighbouring production and or environmental values over the duration of the Strategy.

6.2 What we want to do

To achieve the Sustained Control objective the Council will:

- Undertake compliance monitoring and inspections to ascertain compliance with RPMP rules to control 'Sustained Control Programme' pests
- Enforce compliance with RPMP rules for 'Sustained Control Programme' pests.

For a fuller description of the pests and the sustained control programmes, please refer to the RPMP.

²² Under section 69(5) of the BSA, the Crown (e.g. DOC) is only liable to meet costs and obligations relating to good neighbour rules.

6.2.1 Compliance monitoring and inspections

Action 1: Undertake compliance monitoring and inspections to ascertain compliance with RPMP rules to control 'Sustained Control Programme' pests			
Compliance monitoring and inspection activities		Status	Lead responsibility
30.	Undertake inspections of properties in the Self-help Possum Control Programme to ensure possum numbers are being maintained below 10% residual trap catch (RTC)	Active	Environment Services
31.	At least two times a year inspect Category C properties to ensure land occupiers are complying with general and or good neighbour rules relating to pest plants.	Active	Environment Services
32.	Annually inspect roadside margins, quarries and other gravel producers to ensure land occupiers are complying with RPMP rules relating to pest plants	Active	Environment Services
33.	Annually inspect plant nurseries and retail outlets to ensure no pest plants are being propagated, sold or offered for sale.	Active	Environment Services
34.	Respond to any public complaint relating to Sustained Control pests following the identification of a problem either by the public or by an Authorised Person of the Council	Active	Environment Services
35.	Maintain record of the number of public complaints pertaining to individual pest species, instances of non-compliance with the RPMP rules, and the Council's response	Active	Environment Services

Explanation

The responsibility for control of 12 Sustained Control pests lies with the land occupier who must meet the requirements set out in the rules of the RPMP. These rules may apply to part of the property (e.g. boundary situations) or the whole property, or part of the region (e.g. rural areas) or the whole region.

The Council's compliance monitoring and inspection activities include:

- *Self-help Possum Control Programme:* Council will annually inspect properties in the Programme to ensure possum numbers are being maintained below 10% residual trap catch (RTC). This will involve randomly selecting and representatively monitoring possum prone habitat across the more than 4,000 properties in the Programme (in 2015/2016, this involved almost 1,500 trap catch, wax tag and chew-bite inspections)
- *Category C properties:* this refers to an inspection category assigned to properties identified through recent inspections as having failed to comply with RPMP rules for pest plants and for which regular effective control is required. Council will inspect Category C properties at least twice a year to ensure pest plants are being effectively managed (as at 30 June 2016, there were 186 Category C properties)
- *Roadside verges and rail corridors:* this involves visual drive-by inspections to ensure compliance with RPMP rules for pest plants. All state highways and rural roads are inspected and advice provided to the administrative agency (the New Zealand Transport Agency and the district councils respectively) directing them to undertake any necessary pest plant control work
- *Plant nurseries, retail outlets quarries and other gravel producers:* Council will annually inspect all plant nurseries, plant retail outlets, quarries and gravel producers. As part of this programme, Council will also be seeking to work with affected industries to develop biosecurity hygiene and monitoring programmes to assist them with meeting their BSA and RPMP requirements
- *Response to public complaints:* The Council will respond to any public complaint relating to Sustained Control pests following the identification of a problem either by the public or by an Authorised Person of the Council as they go out and about in the region. All complaints received will be responded to within five days and, where appropriate, advice given or enforcement action taken.



Ragwort was once a much larger problem in the region and on many dairy farms. Through the inspection and compliance regime most 'problems' are now of a localised nature.

The Council records and takes action in response to any public complaint received in relation to pests and other harmful organisms. Responding to public complaints is an integral part of the Council's inspectorial and enforcement activities.

6.2.2 Enforcement action

Action 2: Enforce compliance with RPMP rules to control 'Sustained Control Programme' pests		
Enforcement activities	Status	Lead responsibility
36. As appropriate, issue Notices of Direction to identify remedial action that must be undertaken by the occupier to ensure compliance with any RPMP rule	Active	Environment Services
37. As appropriate, undertake default action under section 128 of the BSA to manage or destroy 'Sustained Control Programme' pests to the required level	Active	Environment Services
38. As appropriate, prosecute the occupier to enforce compliance with RPMP rules	Active	Environment Services
39. Consider, on a case-by-case basis, granting and recording exemptions to compliance with any RPMP rule in accordance with section 78 of the BSA	Active	Environment Services
40. Maintain record of the exemptions to rules, including relevant conditions	Active	Environment Services

Explanation

To ensure adverse externality impacts for the 12 Sustained Control programme pests on neighbours are being properly managed, the Council will undertake the appropriate enforcement response for non-compliance with RPMP rules.

Instances of non-compliance are initially identified through inspections and compliance monitoring (refer section 6.2.1). At that time a Notice of Direction will be served under section 122 of the BSA identifying remedial action that must be undertaken by the occupier. In instances of continued non-compliance, the Council will consider further enforcement action. Depending upon the individual circumstances of the case, the Council may undertake one or both enforcement options:

- undertake default action under section 128 of the BSA. Default action involves the Council undertaking the works or measures specified in a Notice of Direction and recovering the costs and expenses of that work from the occupier to whom the Notice was given, or
- prosecute the occupier under section 154N of the BSA.

Under section 78 of the BSA, the Council may, upon the written request of an occupier, exempt any person from any requirement in any RPMP rule. Before granting an exemption, the Council will be satisfied that that the granting of the exemption will not significantly prejudice the attainment of the objectives of the RPMP AND that:

- the requirements have been substantially complied with and that further compliance is unnecessary,
- the action taken or provision made in respect of the matter to which the requirement relates is as effective or more effective than actual compliance with the requirement,
- the prescribed requirements are clearly unreasonable or inappropriate in the particular case, or
- events have occurred that make the prescribed requirements unreasonable or inappropriate in the particular case.

On receipt of any request, the Council will advise that person within 10 working days of its decision whether to exempt him or her from any requirement in any RPMP rule. Any exemption may be subject to conditions ensuring that:

- measures are taken to minimise any adverse and unintended effects of the pest plant; or
- any beneficial effects associated with the pest are safeguarded or enhanced.



Council staff annually inspect road and railway corridors when they are out and about in the region..

6.3 Sustained Control targets (key performance indicators)

Targets	Measures
Reduce the densities of Sustained Control Programme pests where they are having impacts on adjacent agricultural production and or environmental values	Number of Category C properties and inspections Number of plant nurseries and retail outlets inspected
All public reports in relation to infestations of Sustained Control Programme pests are responded to within 5 days	Number of other property inspections Number of public complaints/enquiries Number of enforcement actions Number of exemptions



7. Working with others (community and site led initiatives)

Not all biosecurity responses require a species-led approach. The impacts of most harmful organisms differ from property to property, from place to place, and from land use to land use, according to the significance of their impacts on the values associated with any particular site or place (e.g. production weeds such as gorse are not a significant biodiversity problem). In most cases, given finite resources and differing priorities, a site-led approach is the most appropriate course of action, i.e. the harmful organism does not have to be managed everywhere but only in those places or sites where it is capable of having a particularly significant adverse effect on certain values associated with a site or place.

The concept underpinning site-led responses is that for certain sites and places, Council support is appropriate to protect values of regional significance and because there is a public benefit. In such cases, the Council will work with others to protect those values by providing a suite of advisory, extension, direct control, and other assistance to work with and support others to deliver biosecurity outcomes.

Council support may vary significantly in scale. The Self-help Possum Control Programme is landscape in scale, specific to possums, and involves rules (refer section 6.2 above). The Council is also investigating expanding upon this Programme to address not only possums but other predators. However, most other site led/community initiatives are smaller in scale and rely on voluntary actions of people to take pest management action on a plethora of 'legacy' pests such as possums, goats, mustelids, and Woolly nightshade to achieve biodiversity and/or public amenity outcomes.



Possums are one of New Zealand's worst pests due to the extent and severity of damage they cause to both production and biodiversity values and as a vector for Tb.

7.1 What we want to achieve

Working with and supporting others to contain, reduce or control harmful organisms within an area or site to an extent that protects the regionally and locally important values of the area or site over the duration of the Strategy.

7.2 What we will do

To achieve the 'working with others' objective, the Council will:

1. Support rural land occupiers as part of the Taranaki Self-help Possum Control Programme to maintain possum populations within acceptable limits (10% RTC) on land already included in the Programme
2. Investigate and trial expanding the Self-help Possum Control Programme to target other pests
3. Support district councils and urban land occupiers to control possums and other pest predators (rats, feral cats, mustelids) as part of an urban halo project, including the New Plymouth Urban Pest Control Programme
4. Undertake initial control of Old man's beard along the Waingongoro and Patea rivers and support rural land occupiers to undertake the on-going control of the plant
5. Support Taranaki Mounga Project and other parties to control any harmful organism capable of causing:
 - damage to a site or place with regional or locally significant biodiversity values
 - significant impacts on public amenity values (particularly threats to children's health and safety).

7.2.1 Self-help Possum Control Programme

Action 1: Support rural land occupiers as part of the Self-help Possum Control Programme to maintain possum populations within acceptable limits (10% RTC) on land already included in the Programme.

Self-help Possum Control Programme activities		Status	Lead responsibility
41.	Undertake initial control of possums on rateable land included in the Self-help Possum Control Programme and reduce possum populations to at least a 5% RTC	Active	Environment Services
42.	Provide ongoing advisory and extension support to private land occupiers to ensure possums are maintained below a 10% RTC	Active	Environment Services
43.	Undertake monitoring of possum density levels and trends in at least 15% of properties in the Self-help Possum Control Programme by 30 June every year to ensure compliance with RPMP rules and the effectiveness of the programme	Active	Environment Services
44.	Enforce, if appropriate, RPMP rules in instances of non-compliance	Active	Environment Services
45.	Continue to cooperate with Crown agencies where their land is contained inside or adjacent to areas in the Self-help Possum Control Programme	Active	Environment Services

Explanation

The Taranaki Self-help Possum Control Programme is the single largest biosecurity programme carried out by the Council, both in terms of area covered and cost. The Council spends approximately \$1.4 million per annum on implementing the Programme, which covers all initial and maintenance operations scheduled for that year. As at 30 June 2016, the Programme covers over 4,000 properties covering 240,200 hectares – 32% of the region.

Through the Self-help Possum Control Programme most rateable rural land on the ring plain and coastal terraces in the region is under programmed possum control. Once initial control on the eligible rateable land has been completed by the Council, rules apply requiring the land occupier to maintain possum numbers below 10% RTC.

The sustained suppression of possum populations requires coordination at a regional scale. The benefits of that control accrue to a wider community than just the affected land occupiers hence the partnership approach.

Implementation of the Self-help Possum Control Programme involves three parts:

- *Land occupier engagement:* Given the application of RPMP rules after initial control, new areas are included in the Programme only following Council consultation with affected land occupiers that confirms at least 75% of private land occupiers, covering at least 75% of the land area targeted, support being included in the Programme.
- *Initial possum control:* This involves the Council undertaking the initial control of possums on properties to be included in the Programme and reducing possum population levels in that area to a very low level of at least a 5% RTC.²³
- *Possum control maintenance:* Following the Council undertaking initial possum control, the land occupier is responsible for



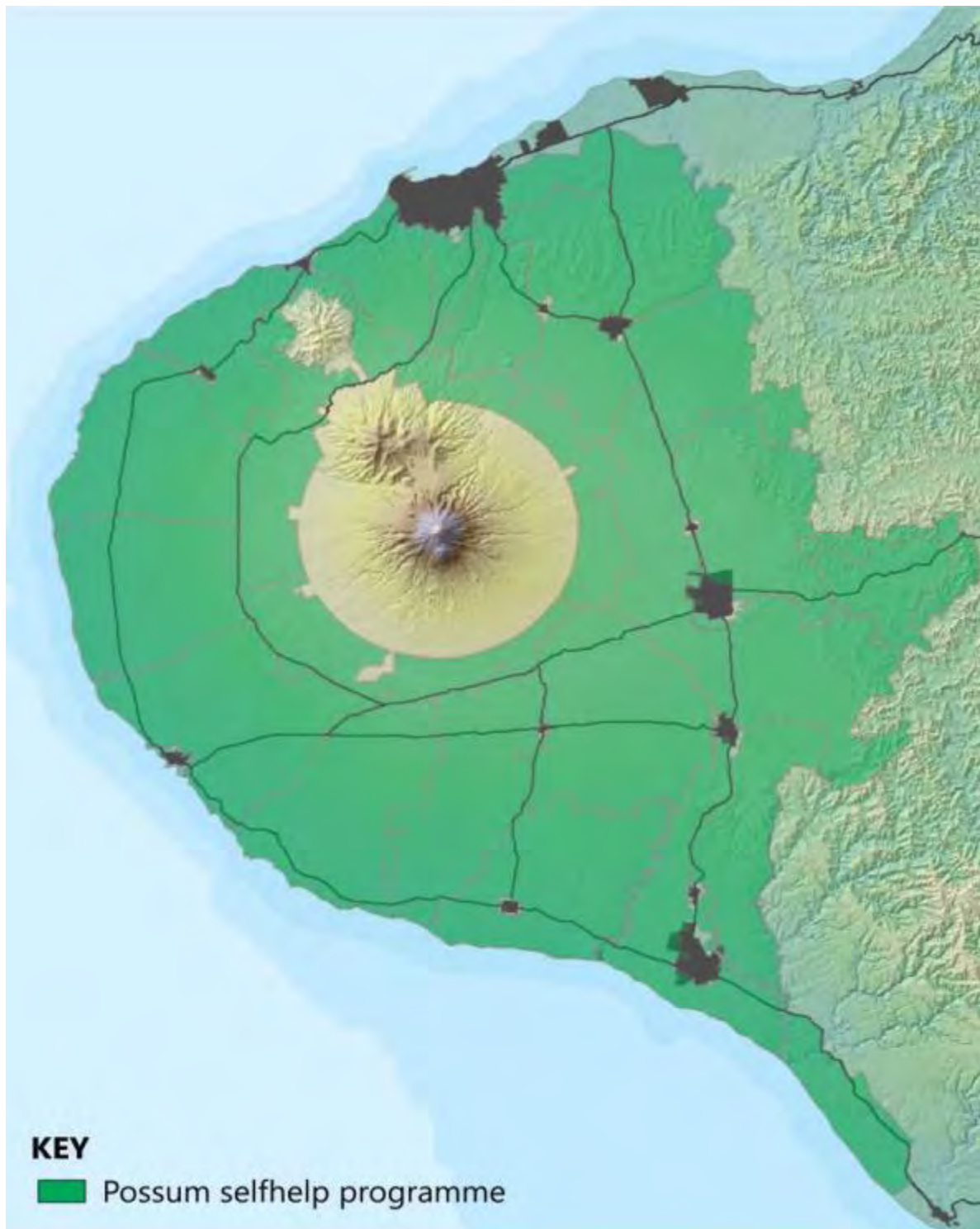
Regular property-specific advice and assistance is provided to all occupiers in the Self-help Possum Control Programme.

²³ Over time the Self-help Possum Control Programme has been incrementally increased to cover rural areas of the ring plain and much of the coastal terraces (refer map overleaf). It has also been recently extended into urban areas in collaboration with New Plymouth District Council. The Council will continue to support the Programme and look at ways to expand it further in collaboration with projects such as Predator Free 2050 Limited and Taranaki Mouna Project Limited, among others.

controlling possums below a 10% RTC in accordance with RPMP rules (refer section 6.2.2 above).

The Council will support land occupiers' possum control maintenance through an advisory, inspectorial and enforcement service and the provision of possum control products, materials and equipment at cost. As appropriate, the Council may in limited circumstances undertake further possum control where the sustainability or effectiveness of the Programme is threatened or where an added level of possum control is needed to protect Key Native Ecosystems (refer sections 7.2.4 and 7.2.5 of this Strategy).

The map below shows the geographic extent of the Self-help Possum Control programme.



By June 2016, the Self-help Possum Control Programme covered approximately 32% of the region.

7.2.2 Landscape predator control on the ring plain

Action 2: Investigate and trial expanding the Self-help Possum Control Programme to target other pests			
	Landscape predator control activities	Status	Lead responsibility
46.	Investigate public and private interest in landscape predator control to reduce possum, rat, mustelid and feral cat populations on the ring plain	Proposed	Environment Services
47.	Subject to public and private support, develop with other potential partners a landscape predator control programme based upon the Self-help Possum Control Programme	Proposed	Environment Services
48.	If appropriate, consider the inclusion of predator control rules as part of a review of the RPMP	Proposed	Policy

Explanation

In 2016, the Government has recently announced *Predator Free New Zealand 2050*, which aims to rid New Zealand of possums, rats and stoats by 2050. Through the programme the Government is seeking to support²⁴ large-scale collaborative predator control projects.

Through the Self-help Possum Control Programme most rateable rural land on the ring plain and coastal terraces in the region is under programmed possum control. Through this Strategy, it is proposed that Council investigate Government and local interest/support in expanding that programme across rural and urban areas to control other predators such as rats, and mustelids, and feral cats. The predator control would seek to support and complement other significant biodiversity initiatives such as the Taranaki Mouna project and the urban pest control currently being undertaken in the New Plymouth urban area (refer section 7.2.3 below). In so doing native flora and fauna species would have a much greater level of protection – from the mountain to the sea – covering almost 275,000 hectares on the Taranaki Ring Plain and Mount Taranaki.

Any proposal would seek to incrementally establish landscape predator control across properties already doing possum control.²⁵ It would build on the Self-help Possum Control Programme and involve the following component parts:

- *Land occupier engagement:* Given the proposed application of RPMP rules after initial control, new areas are included in the Programme only following Council consultation with affected land occupiers that confirms at least 75% of private land occupiers, covering at least 75% of the land area targeted, support being included in the Programme.
- *Initial predator control:* This involves the Council undertaking the initial control of possums, rats, mustelids and feral cats on rural and urban properties to be included in the Programme and reducing predator population levels in that area to very low levels.
- *Predator control maintenance:* Following the Council undertaking initial predator control, the land occupier would be responsible for controlling possums, rats, feral cats and mustelids in accordance with RPMP rules (note the imposition of any new rules is subject to a review or variation to the RPMP in accordance with the BSA).

The Council will support land occupiers' predator control maintenance through an advisory, inspectorial and enforcement service and the provision of control products, materials and equipment at cost. As appropriate, the Council may in limited circumstances undertake further predator control where the sustainability or effectiveness of the Programme is threatened or where an added level of possum control is needed to protect Key Native Ecosystems (refer sections 7.2.4 and 7.2.5 of this Strategy).

²⁴ Funding will be allocated to initiatives on the basis of attracting \$2 from other sources (including the private sector, philanthropists and local government) for every \$1 of Crown funding

²⁵ This would involve including 10,000 – 20,000 hectares into the Programme with the aim of it eventually covering the area currently covered by the Self-help Possum Control Programme. This would ensure the programme is affordable by spreading resourcing requirements over a longer period of time.

7.2.3 Urban projects

Action 3: Support the district councils and urban land occupiers to control possums and other predators as part of an urban halo project, including the New Plymouth Urban Possum Control Programme

Urban halo activities		Status	Lead responsibility
49.	In conjunction with the New Plymouth District Council, establish a network to undertake integrated possum and other predator control across parks, reserves, walkways and adjacent participating properties in the New Plymouth urban area	Active	Environment Services
50.	Undertake initial possum control on participating private properties in the New Plymouth Urban Possum Control Programme	Active	Environment Services
51.	Provide ongoing advisory and extension support to the district council and participating private land occupiers to ensure possums are maintained at low levels	Active	Environment Services
52.	Undertake monitoring to determine the outcomes of possum control on indicator (bird) species levels and trends within the Urban Programme	Active	Environment Services
53.	Consider request from district councils to establish and support new halo projects in other urban areas	Proposed	Environment Services

Explanation

Urban projects refer to pest control carried out along city parks, reserves, walkways and adjacent properties to protect and enhance biodiversity values in the city. They are an opportunity to improve biodiversity within the urban landscape.

At the time of writing this Strategy, the Council has applied the concept only to the New Plymouth urban area, however, the concept has wider application. The New Plymouth Urban Possum Control Programme was set up in 2015 and involves this Council, New Plymouth District Council and willing land occupiers establishing an integrated pest control network along city parks, reserves, walkways and adjacent properties to deliver sustained possum and other predator control across much of the city. District councils, as managers of parks and reserves, undertake significant possum and pest control work. Through urban projects there is an opportunity to broaden the area under sustained control by including nearby and adjacent private land to broaden and maximise the biodiversity outcomes possible in an urban setting.

The Programme involves:

- Targeted assistance to establish integrated possum and other predator control in parks, reserves, walkways and participating adjacent properties within the urban areas bordering the Waiwhakaiho River and the Te Henui and Huatoki streams
- Land occupier participation is voluntary. Under the programme, the Council commissioned contractors to work with residents to choose a safe and efficient control method for their property. There are signs in key places to advise the public of the programme, control methods and any precautions they need to take.
- The Council met all of the costs of the initial possum control on private properties and now supports residents in the programme to maintain possum and other predator control.
- Subsequent monitoring has revealed a significant reduction in possum numbers (e.g. the possum 'bite rate' on a line of wax tags in the Waiwhakaiho catchment reduced from 7.5% to 2.1% after urban control took place.)

The New Plymouth Urban Possum Control Programme contributes to a vision where, from the mountain to the sea, there is effective and sustained possum control that is contributing to biodiversity outcomes. It complements the work being done further up in the catchment by farmers in the Self-help Possum Control Programme, and by DOC inside the Egmont National Park.

As previously noted the concept has wider application and the Council will consider developing similar type programmes in other urban areas upon expression of interest from the relevant district council. The extent and form of any Council assistance will be determined on a case-by-case basis taking into account the outcomes sought, the resources required, the fair and equitable allocation of costs, degree of public support, and the anticipated regional benefits.

7.2.4 Old Man’s Beard Programme –Waingongoro

Action 4: **Undertake initial control of Old man’s beard** along the Waingongoro River and support rural land occupiers to undertake the on-going control of the plant

Waingongoro Old Man’s Beard Programme activities		Status	Lead responsibility
54.	Undertake initial control of Old Man’s Beard on rateable land adjacent to the Waingongoro River	Active	Environment Services
55.	Provide ongoing advisory and extension support to private land occupiers to ensure they are complying with RPMP rules relating to the control of Old Man’s Beard	Active	Environment Services
56.	Undertake compliance monitoring and, where necessary, enforce, RPMP rules in instances of non-compliance	Active	Environment Services
57.	Consider, at the next review of the RPMP, applying the ‘Self-help’ concept to the Patea River (currently excluded from the RPMP rules for Old Man’s Beard) .	Proposed	Policy

Explanation

In previous pest management strategies, rules applied requiring the control of Old man’s beard in all areas except for within 50 metres of three of the region’s rivers; the Kaupokonui, the Patea and the Waingongoro. In these catchments the plant was considered too widespread in these areas for landowners to effectively control. However, in recent times the Council has implemented, and completed, initial control in the Kaupokonui Stream catchment. Land occupiers are now responsible for ongoing control in this area.

The Waingongoro Old Man’s Beard Programme seeks to emulate the success of the Council’s Self-help Possum Control Programme and the programme in the Kaupokonui River, by incrementally undertaking an intensive initial control operation along the Waingongoro River and thereafter supporting land occupiers in the ongoing control of the plant.

The programme represents a significant step in reducing infestations of Old man’s beard in the region and involves the following component parts:

- *Aerial surveillance and field monitoring* to identify infestations of Old man’s beard along the Waingongoro River
- *Land occupier support:* Given the application of RPMP rules, all affected landowners were approached, given information on the programme and invited to sign up to an agreement. The affected landowners included the South Taranaki District Council which has some riparian reserves through Kaponga. Ninety percent of affected landowners signed up to the programme
- *Initial weed control:* This involved the Council funding the direct control of Old man’s beard (to achieve a 95% reduction).
- *Ongoing maintenance:* Following the Council undertaking initial weed control, the land occupier is responsible for controlling Old man’s beard in accordance with RPMP rules (refer section 6.2.2).

The Council will support land occupiers’ weed control maintenance through an advisory, inspection and enforcement service and the provision of control products, materials and equipment at cost. As appropriate, the Council may in limited circumstances undertake retreatment where the sustainability or effectiveness of the Programme is threatened or where an added level of weed control is needed to protect Key Native Ecosystems (refer sections 7.2.5 and 7.2.6 of this Strategy).

Old Man’s Beard is currently identified as a Sustained Control Programme pest in the Proposed RPMP. The Proposed RPMP now includes rules that require the control of Old man’s beard across Taranaki (including the Waingongoro River) with the exception of the mid to lower reaches of the Patea River. Over the life of this Strategy, and in association with reviews of the RPMP, the Council may consider extending the ‘Self-help’ concept to target the Patea River.

7.2.5 Community and site-led biodiversity programmes

Action 5(a): Support other parties, including land occupiers, community groups, QEII, district councils, and Department of Conservation, to control any harmful organism that is capable of causing damage to a site or place with regional or locally significant biodiversity values

Biodiversity Programme activities		Status	Lead responsibility
58.	Consider on a case-by-case basis supporting or undertaking appropriate control of harmful plants and or animals having impacts on the regionally significant values associated with privately-owned Key Native Ecosystems	Active	Environment Services
59.	Consider on a case-by-case basis supporting community groups to undertaking appropriate control of harmful plants and or animals having impacts on the regionally significant values associated with privately-owned Key Native Ecosystems	Active	Environment Services
60.	Provide ongoing advisory and extension support to private land occupiers to ensure possums are maintained appropriate levels	Active	Environment Services
61.	Consider on a case-by-case basis supporting DOC to undertake appropriate control of harmful plants and or animals where there will be mutually significant benefits to co-ordinating our respective programmes, including possum control in and around the Egmont National Park	Active	Environment Services

Explanation

The Council has prepared the *Taranaki Regional Council Biodiversity Strategy*. As part of that mandate, the Council assesses and identifies sites that contain biodiversity values of regional significance (Key Native Ecosystems) and applies a targeted non regulatory approach to prioritise the protection of these sites. Through that approach, biodiversity plans are prepared and all harmful plants and animals, irrespective of their 'pest' status, are controlled to a level that protects the biodiversity values of the KNE.

There are thousands of invasive plant and animal species already widespread in the region that is capable of having significant adverse effects. The cost of managing these species everywhere, irrespective of the values being affected, or the severity of those effects, would be disproportionate to the benefits. Through a site-led approach the Council is seeking to focus its efforts and resources to where it can make the greatest 'public good' gains. In particular, the Council is seeking to focus on supporting the work being undertaken by individuals and community groups to protect indigenous biodiversity values that are particularly threatened or rare in the region, and/or to groups that have already made significant conservation gains, to safeguard those gains.

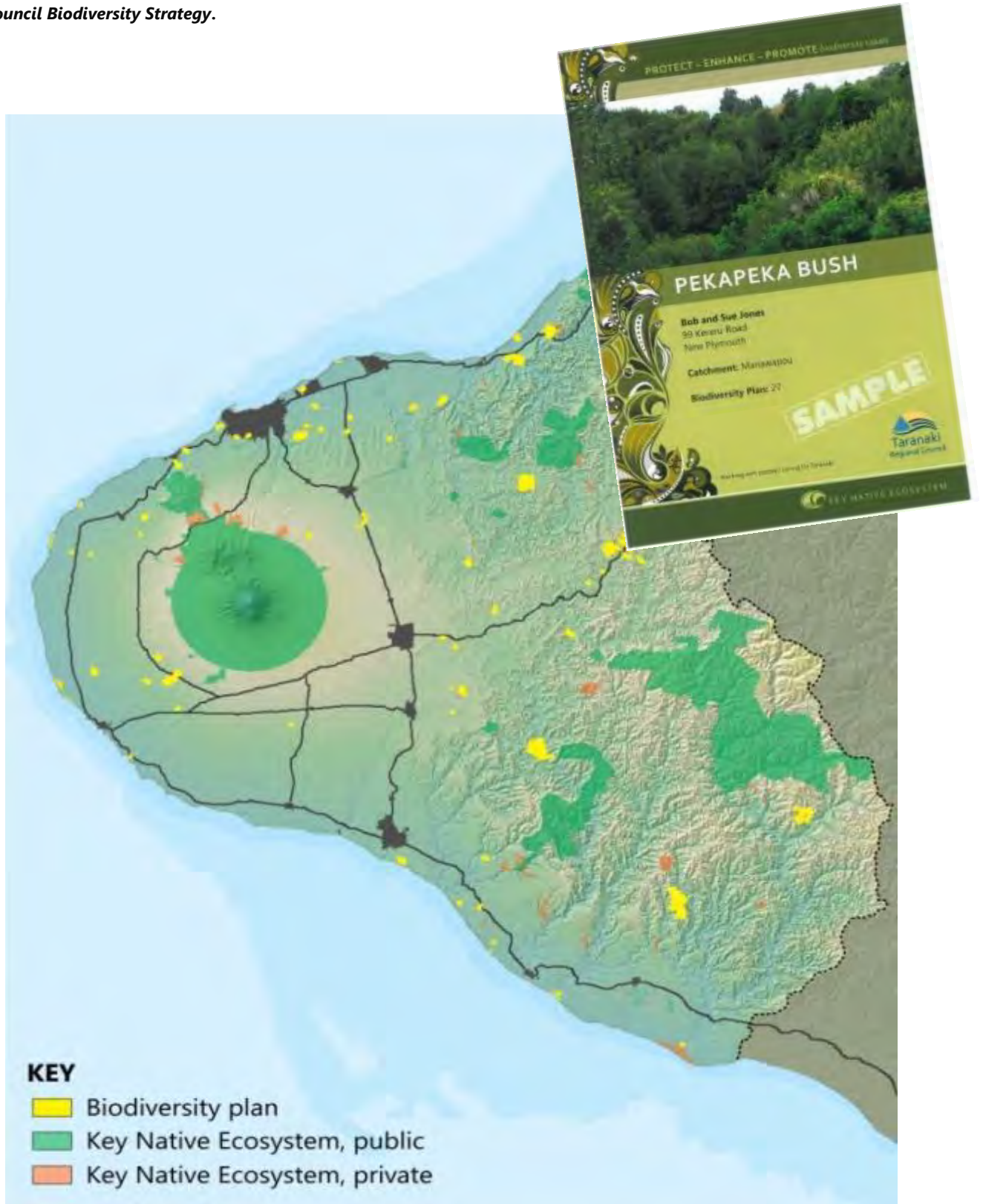
Specific management measures that Council will implement include:

- **Key Native Ecosystems programme:** This programme involves Council working with individuals and community groups to protect designated terrestrial sites and places that are regionally significant for their biodiversity values. Council support may be in the form of site-specific pest management advice and information, the provision of pesticides and equipment, or undertaking the direct control itself.
- **Self-help Possum Control Programme:** This Programme involves coordinated sustained possum control that contributes to protecting privately-owned remnant forests and wetlands over most of the ring plain and coastal terraces. Refer section 7.2.1 for further information.
- **Integrated pest management:** The Department of Conservation is separately empowered and resourced to manage the public conservation estate. However, on occasion there will be significant benefits in undertaking and co-ordinating our respective programmes, e.g. possum and other predator control in and around the Egmont National Park.



Waikirikiri Lagoon restoration project. Council works with a wide variety of partners to protect values associated with Key Native Ecosystems such as Waikirikiri Lagoon.

For a fuller description of the Council's biodiversity programmes and activities refer to the *Taranaki Regional Council Biodiversity Strategy*.



As at 30 June 2016, there are 218 Key Native Ecosystems of which 172 sites are privately owned. At the time of writing this Strategy 101 sites have biodiversity plans (in yellow) and are being actively managed by land occupiers with Council support to address any pest and weed threats.

7.2.6 Taranaki Mounga Project

Action 5(b): Supporting biodiversity outcomes from the Taranaki Mounga Project			
Biodiversity Programme activities		Status	Lead responsibility
62.	Subject to public and private support, develop with other potential partners a landscape predator control programme based upon the Self-help Possum Control Programme to align with and support biodiversity outcomes from Taranaki Mounga Project	Proposed	Environment Services
63.	Promote control of possums, rats, mustelids, feral cats and, in particular, wild goats on private land adjacent to the Egmont National Park	Proposed	Environment Services
64.	Provide technical advice, best practice control methods and information on safe disposal methods of pests and other harmful organisms on the Council's website and through the preparation and distribution of pamphlets and other educational material	Proposed	Environment Services
65.	Subject to an agreed management plan, coordinate with and support DOC/Taranaki Mounga Project by undertaking possum control on private land adjacent to the Egmont National Park	Active	Environment Services
66.	Undertake or support direct control of harmful organisms, including weeds, possums, rats, mustelids, feral cats and wild goats on Key Native Ecosystems with land management plans, on private land adjacent to the Egmont National Park	Proposed	Environment Services
67.	TRC will convene Taranaki Mounga Project Limited, territorial authorities, and relevant government agencies to jointly investigate: (a) If regulatory mechanism(s) are required to address the risk of goats immigrating into Egmont National Park; and (b) In the event regulatory mechanism(s) are required, determine what mechanism(s) are most appropriate to address this risk within the timeframes required and by no later than 2020.	Proposed	Environment Services

Explanation

Taranaki Mounga is an ambitious conservation project to secure the mountain, ranges and islands of Taranaki from pests, restore and revitalise wildlife, and transform the ecological resilience of the area. It is a collaborative partnership between DOC, Iwi of Taranaki, NEXT Foundation and founding sponsors Shell New Zealand, TSB Community Trust, Jasmine Social Investments and LandCare Research.

The project extends from the Ngā Motu / Sugar Loaf islands offshore from New Plymouth to the peaks of Kaitake, Pouakai and Mt Taranaki itself, and over the 34,000 hectares of Egmont National Park. Taranaki Mounga is aiming to work with groups including the Council, farmers and environmental groups like Wild for Taranaki to create an area or 'halo' around the mountain to protect the perimeter of the Park against reinvasion from harmful species such as possums, predators and goats.

Subject to suitable funding arrangements, the Council will support Taranaki Mounga by:

- *Self-help Possum Control Programme:* Continuing its Programme of coordinated sustained possum control that contributes to protecting privately-owned remnant forests and wetlands adjacent to Egmont National Park. Refer section 7.2.1 for further information.
- *Landscape predator control:* Investigating the extension of the Self-help Possum Control Programme to include predator control of rats, stoats and feral cats to enhance biodiversity values across the ring plain including increase protection for whio, kiwi and other species on the Mounga
- *Taranaki Mounga Project:* Assisting with education and extension programmes relating to wild goats on private land adjacent to the Mounga
- *Key Native Ecosystems adjacent to the Mounga.* This involves Council working with individuals and community groups to protect designated terrestrial sites and places that are regionally significant for their biodiversity values. Council support may be in the form of site-specific pest management advice and information, the provision of pesticides and equipment, or undertaking the direct control itself.

7.2.7 Other support and assistance services

Action 5(c): Support other parties to control any harmful organism that is capable of causing significant impacts on public amenity values (particularly threats to children's health and safety)

Amenity Programme activities		Status	Lead responsibility
68.	As time and resources permit, undertake direct control of wasps and magpies where they pose a particular threat to children's health and safety	Active	Environment Services
69.	Assistance with funding applications, or provision of 'seeding' funds	Active	Environment Services
70.	Assistance with or provision of project implementation expertise	Active	Environment Services
71.	Provision of written resources that provide direction and training on pest management, site manipulation and habitat restoration	Active	Environment Services
72.	Preparation of site (or species) management plans (e.g. for soil conservation pests such as goats and rabbits)	Active	Environment Services
73.	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)	Active	Environment Services
74.	Promote the removal of environmental pest plants through a 'swap a plant' scheme in conjunction with public awareness campaigns	Proposed	Environment Services

Explanation

On a case-by-case basis, and as time and resources permit, Council will provide other support and assistance to land occupiers, schools, community groups, and district councils to facilitate the control of harmful organisms causing significant impacts on public amenity values, including:

- provision of material or undertaking direct control for harmful organisms that pose a threat to children's health and safety, e.g. wasps and magpies
- preparation of site (or species) management plans to manage pest threats to riparian and soil conservation values, e.g. possums, goats and hares
- assistance to community groups with funding applications to control harmful organisms
- assistance with or provision of project implementation expertise (e.g. contacting other landowners in the project area, or organising and coordination of 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 wild deer)
- 'swap a plant' scheme in conjunction with a public awareness campaign to promote the removal and destruction of environmental pests (e.g. Giant gunnera, Old man's beard and Wild ginger) by the Council 'swapping' an environmentally acceptable alternative species for the pest.



Officers demonstrating pest control techniques at a public

The level of Council involvement will be project dependent. In its considerations as to what action (and level of support) is necessary, appropriate, and cost effective, the Council will have regard to the following matters:

- an occupier has endeavoured to achieve effective pest control but has failed despite his or her best efforts
- control undertaken by the Council will be as effective or more effective than the control undertaken by the occupier, or
- an occupier is neither the beneficiary of the control nor an exacerbator of the problem.

7.3 Community and site-led targets (key performance indicators)

Targets	Measures
Less than 10% RTC across rural area covered by the Self-help Possum Control Programme Increase in the number of sites and land area where sustained pest and weed control is being undertaken	Area of ring plain or coastal terraces maintained under the Self-help Possum Control Programme at levels <10% RTC The number of properties and areal extent undertaking sustained pest and weed control to protect biodiversity values





Council environment officer setting up leg-hold trap.

8. Other leadership responses

Section Eight sets out other activities undertaken by the Council to give effect to its leadership responsibilities under section 12B of the BSA. The ways in which the Council provides leadership in the region include:

- (a) promoting the alignment of pest management in the region
- (b) facilitating the development and alignment of regional pest management plans and pathway management plans in the region
- (c) promoting public support for pest management
- (d) facilitating communication and co-operation among those involved in pest management to enhance effectiveness, efficiency, and equity of programmes (section 12B(2) of the BSA).

The suite of leadership activities undertaken pursuant to sections 12B and 13 of the BSA, not already covered by sections 4 to 7 of this Strategy, include:

1. biosecurity planning – development and or consideration of strategies and plans addressing pests and pathways
2. biological control – biological control research and action to reduce the infestation levels of legacy pests in Taranaki in the long term
3. advice and information – non regulatory response to promote and empower others to undertake effective control of ‘pests’ to reduce their impacts and spread to other properties
4. advocacy and liaison – support programmes and activities of others to promote more effective pest management.

8.1 What we want to achieve

Provide leadership on biosecurity matters for Taranaki, where there is a public good to the region, and where such activities prevent, reduce or eliminate adverse effects from harmful organisms that are present in New Zealand.

8.2 What we will do

To achieve the leadership objective the Council will:

1. Undertake biosecurity planning, including facilitating the development and alignment of regional pest management plans and regional pathway plans
2. Contribute to and facilitate biological control and research for harmful organisms established and widespread in the Taranaki region to reduce or mitigate their impact
3. Provide advice and information, to avoid, remedy or mitigate the spread of harmful organisms, their impacts, and to reduce the infestation levels of legacy pests in Taranaki in the long term
4. Undertake advocacy and liaison to support government or industry-led initiatives to change peoples’ behaviours and:
 - reduce the potential spread of pests and diseases not yet present or established in the region
 - avoid or mitigate adverse effects on third parties caused by the dispersal of pests already present or established in the region.

8.2.1 Biosecurity planning

Action 1: Undertake biosecurity planning, including facilitating the development and alignment of regional pest management plans and regional pathway plans		
Biosecurity planning activities	Status	Lead responsibility
75. Prepare pest management plan that delivers efficient and effective management of the Council's pest management functions	Active	Policy
76. Prepare operational plan and update relevant standard operating procedures.	Active	Policy
77. Undertake ten-yearly review of <i>Pest Management Plan for Taranaki</i> in 2027	Active	Policy
78. Undertake five-yearly interim review of pest management plan	Active	Policy
79. Consider preparing and making other pest management plans, strategies, pathway management plans, including those prepared by other parties.	Active	Policy
80. Consider section 100v and other responses	Active	Policy / Environment Services
81. Through advocacy and liaison provide policy input into legislation, strategies and other plans that are relevant to biosecurity in the Taranaki region	Active	Policy

Explanation

Biosecurity planning is the preparation, adoption and maintenance comprehensive and publicly considered policies, plans and strategies that will deliver to the Taranaki community, efficient and effective management of the Council's biosecurity functions under sections 12B and 13 of the BSA.

Under section 12B of the BSA, Council is responsible for facilitating the development and alignment of regional pest management plans and regional pathway management plans in the region.

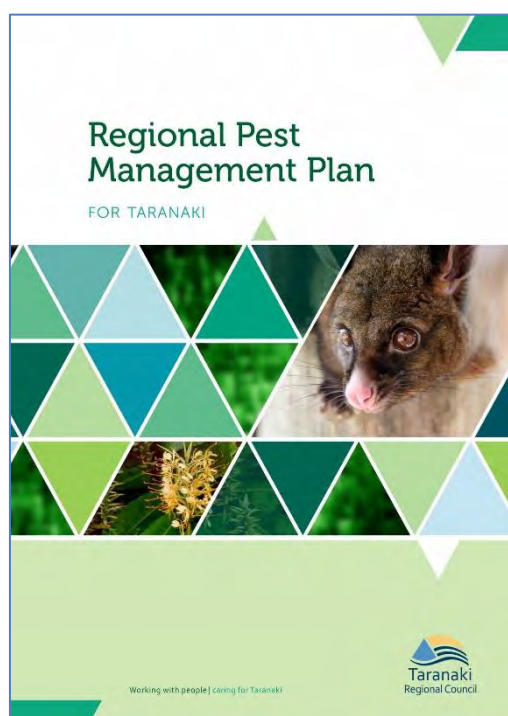
Regional councils are not necessarily required under the BSA to prepare a pest management plan but, on behalf of its local community, the Council has determined to prepare a Proposed RPMP. The RPMP provides the regulatory framework for efficient and effective management or eradication of specified animal and plant organisms in the Taranaki region. The RPMP identifies which organisms are classified as 'pests' and will be managed on a regional basis. Only in a pest management plan is it possible to have a rule under the BSA for pest management.

The RPMP, when operative, will empower the Council to exercise the relevant service delivery, advisory, enforcement and funding provisions available under the BSA. After five years an interim review is required with a full review to be carried out after 10 years (i.e. 2027).

The effectiveness of the Council's biosecurity strategies and plans will be reviewed every five and ten years.

In accordance with section 13 of the BSA, the Council will also consider RPMP proposals prepared by other parties for the Taranaki region.

Council will also consider other policy responses that support our biosecurity vision and priorities, including preparation and input into other policy instruments such as national legislation, national and regional pest/pathway management plans, and small-scale management responses.



The Plan is the Council's 'rulebook' for pest management in the region. Both this Strategy and the Plan should be read together.

8.2.2 Biological control and research

Action 2: Undertake biological control and research, where appropriate, for harmful organisms established and widespread in the Taranaki region to reduce or mitigate their impacts

Biological control and research activities		Status	Lead responsibility
82.	Release, propagate and re-distribute appropriate biological control agents, managing release sites, collecting data and training field staff.	Active	Environment Services
83.	Regularly monitor the effectiveness of released biological control agents. Where biological control agents have successfully been propagated and have become established, consideration will be given to their further distribution	Active	Environment Services
84.	Provide financial and logistical support in relation to research for additional biological control agents as identified by the regional collective	Active	Environment Services

Explanation

Biological control agents include predators, parasites, or diseases that directly kill the organism or reduce their health and ability to propagate or breed.

The effectiveness of biological control has historically been fraught with unanticipated negative effects and lack of success (e.g. mustelid control of rabbits). However, biocontrol has made significant advances in New Zealand in the last 10-20 years, with many new agents approved, successfully released and now doing the job intended. In particular, advances in biocontrol agent testing has minimised non-target effects and increased confidence in the use of biocontrol (e.g. use of Rabbit Haemorrhagic Disease (RHD) to control rabbits).

Biocontrol is especially useful for widespread species where other means of suppressing their populations over a wide area are costly or ineffective (e.g. wasp control). Due to the ecology of most biocontrol agents and their hosts, the biocontrol only reduces infestations (i.e. it will not eradicate the pest).

The ideal ecological result is to create 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. Currently, the Council undertakes biological control programmes for the following weeds:

Target species	Biological control agents
Blackberry	Blackberry rust
Californian thistles	Green thistle beetles
Giant buttercup	Buttercup fungus
Gorse	Seed weevil, soft shoot and hard shoot moths, spider mite, thrips- European and Portuguese, pod moths
Mist flower	Mist flower fungus
Nodding thistle	Crown weevil, gall fly and receptacle weevil
Old man's beard	Leaf fungus, leaf miner, sawfly Pink Ragwort
Ragwort	Cinnabar moth, ragwort flea beetle
Scotch thistle	Gall fly
<i>Tradescantia</i>	Stem, leaf and tip beetles
Woolly nightshade	Lace bugs
Wild broom	Gall mite, psyllids, seed beetles

The Council remains committed to exploring opportunities for appropriate biocontrol agents, and will participate, as appropriate, in the national search for new and improved biocontrol agents. This may include financial and logistical support in relation to research for additional biological control agents. Should other suitable biological control agents

be developed during the duration of the Strategy, the Council may undertake to release, propagate and re-distribute those agents.

In addition to biological control, the Council may consider supporting research initiatives (directly or in-kind contributions) to assist with the refinement of current pest control methods and practices, (e.g. baits and bait application rates).



Council officer inspecting the effectiveness of Buddleia leaf weevil biological control release site at Lake Mangamahoe.

8.2.3 Provision of advice and education

Action 3: Provide advice and information, to reduce the infestation levels of legacy pests in Taranaki in the long term			
Advice and education activities		Status	Lead responsibility
85.	Respond to public requests for information or enquiries in relation to the identification of harmful organisms, their impacts, and appropriate control options	Active	Environment Services
86.	In conjunction with property visits, provide property specific advice on the control of pests and other harmful organisms, including specific measures to prevent the introduction and spread of invasive species when undertaking property inspections and other pest management activities	Active	Environment Services
87.	Promote awareness of how to identify unwanted organisms and how to report detections	Active	Environment Services
88.	Provide technical advice, best practice control methods and information on safe disposal methods of pests on the Council's website and through the preparation and distribution of pamphlets and other educational material. 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	Active	Environment Services
89.	Undertake, on request, talks and presentations to interested community groups to increase awareness and capacity on effective pest control techniques and methodologies, including weed hygiene (e.g. botanical societies, horticultural groups and gardening clubs, fishing clubs, water-user groups, hunting groups/clubs, tangata whenua representatives)	Active	Environment Services
90.	Annually undertake a public awareness campaign in the media to assist the community to identify Eradication Programme pests and encourage public reportings of any infestations to the Council	Active	Environment Services
91.	As appropriate, organise timely and relevant media and publicity programmes to highlight other pest management issues, including new threats or report on success stories	Active	Environment Services
92.	Annually participate in MPI's <i>Check, Clean, Dry communications programme</i>	Active	Environment Services
93.	Provide public hotline and respond to any public reporting of potential pests, including provision of a weed identification service	Active	Environment Services

Explanation

The purpose of advisory, education and social marketing activities is to promote general awareness and understanding of the issues and the risks that introduced organisms pose to a place or area and to encourage people to change behaviours or take specific actions to avoid, mitigate or remedy pest management impacts.

The provision of technical advice and information allows occupiers to make informed decisions and can lead to more self-responsibility for pest management.



Public requests may relate to the identification of plants, information on their control or assistance in calibrating spray equipment and such like

8.2.4 Advocacy and liaison

Action 4: Undertake advocacy and liaison to minimise the effects of cross boundary issues and promote complementary, efficient and effective pest management in Taranaki.			
Advocacy and liaison activities		Status	Lead responsibility
94.	Have regard to relevant strategies and plans and promote alignment where appropriate in policy development and the implementation of Council biosecurity programmes and activities	Active	Policy / Environment Services
95.	Liaise with MPI: <ul style="list-style-type: none"> on national biosecurity matters marine surveillance and incursion responses 	Active	Policy / Environment Services
96.	Liaise with adjacent regional councils and DOC	Active	Policy / Environment Services
97.	Prepare submissions and undertake other advocacy on pest management and cross boundary issues of interest to this region	Active	Policy

Explanation

The aim of advocacy and liaison is to promote the purpose of this Strategy by minimising the effects of cross-boundary issues and promoting complementary, efficient and effective pest management.

Harmful organisms (and their impacts) are not constrained by administrative and catchment boundaries. The actions elsewhere in the country or by other parties, including neighbouring regions, Government agencies, including MPI and DOC, and sector groups, may directly or indirectly impact on effective pest management in this region. The Council 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.

The Council will undertake the following advocacy and liaison activities:

- pursuant to section 71(a) of the BSA, have regard 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 MPI over pest management issues best dealt with or co-ordinated at the national level. In particular, the Council will participate in the National Pest Plant Accord and the National Pest Pet Accord, which involves regional councils collectively enforcing a national ban on the sale, propagation and distribution of a list of recognised harmful plants and pets, which have been declared 'unwanted organisms' (refer section 4.2.4 above)
- in conjunction with other regional councils, work with MPI (as the lead agency) in relation to potential marine biosecurity issues which may affect the Taranaki region (refer section 4.2.4 above)
- liaise, as appropriate, with Horizons and Waikato regional councils and DOC on cross-boundary issues pertaining to pest and pathway management
- liaise, as appropriate, with other regional councils on matters of pest management which are relevant to more than one region, including representation on Bio-Managers, New Zealand Biosecurity Institute, BioNet plus appropriate communication and consultation and consideration of potential inter-regional pathway plans and any existing and new Memoranda of Understanding between this Council and neighbouring councils
- liaise and work with rail and road controlling authorities to address pest dispersal through transport corridors. 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
- make submissions with regard to documents prepared by other authorities in relation to pest management, including to Government in support of any initiatives to provide councils with additional powers to manage feral cats and to support the development of national cat management legislation.

Coordination with other pest management plans will be achieved through consultation and communication between the Council and other persons or organisations proposing and implementing plans.

8.2.5 Yellow Bristle Grass Action Group

Action 4: Undertake and contribute to advocacy, liaison and research to minimise the spread of Yellow Bristle grass (YBG) in Taranaki.			
Advocacy, liaison, and research activities		Status	Lead responsibility
98.	Subject to stakeholder interest, establish bi-annual meetings of Taranaki Yellow Bristle Grass Action Group to coordinate, undertake public awareness, and review actions against Yellow bristle grass with a particular focus on YBG distribution in the eastern hill country	Proposed	Environment Services
99.	Work closely with NZTA, district councils and Federated Farmers to develop and implement a set of best practice guidelines for farmers, roading authorities and roading contractors	Proposed	Environment Services
100.	Through the Regional Transport Committee liaise with road controlling authorities in Taranaki (TLAs and NZTA) for the development and implementation of road construction and maintenance contracts that promote weed hygiene practices for Yellow bristle grass and other harmful plants along state highways and local roads	Proposed	Environment Services
101.	Assist with the development, review and dissemination of national guidelines for managing Yellow bristle grass	Active	Environment Services
102.	Provide on-going technical advice, best practice control methods and information for managing Yellow bristle grass on the Council's website, in social media and through the preparation and distribution of pamphlets and other educational material	Active	Environment Services
103.	In conjunction with Council property visits, promote farmer awareness and provide property specific advice on the control of Yellow bristle grass	Proposed	Environment Services
104.	Undertake monitoring of Yellow bristle grass infestations to assess baseline information and dispersal trends, particularly into the eastern hill country	Proposed	Environment Services
105.	Contribute funding to national or sector research on options and methods for managing spread of Yellow bristle grass	Active	Environment Services

Explanation

The control of Yellow bristle grass to prevent its further spread in Taranaki is of particular concern to the farming community. Its spread is particularly noticeable on road reserves where it poses a threat to adjacent agricultural production value, particularly dairying. There is a risk of Infestations spreading to Taranaki's eastern hill country, where it would be much harder to manage. Control of the plant is difficult (due to the limited effectiveness of herbicides) and can exacerbate the problem (e.g. by resulting in bare land that is then re-infested).

The application of rules on land occupiers to destroy the Yellow bristle grass, given the current limited effectiveness of herbicides, is not considered appropriate. Accordingly Council will be seeking to work with interested parties to initiate actions to limit the pathway spread of the weed, and promote practices and behaviours to better control the plant. This will involve a suite of advocacy, liaison, and research activities.

In working with others the Council will investigate stakeholder interest in participating on a Taranaki Yellow Bristle Grass Action Group, which will coordinate regional responses to:

- Coordination and review of actions against Yellow bristle grass (with a particular focus on YBG distribution in the eastern hill country) including:
 - Cleaning of mowing equipment;
 - Changing mowing frequency;
 - Reducing spread during harvest;
 - Roadside spraying and mowing protocols;
 - Replacement species for vegetation of bare land;
 - Identifying 'no go' control areas; restrictions on grazing; and
 - Taking hay from long acre and road verge areas;
- Education and public awareness programmes to identify the problem and provide information to assist the farming community to promote practices that reduce the spread of YBG; and
- Ongoing research into pest characteristics, effective pest control techniques, and methodologies

8.3 Leadership targets (key performance indicators)

Targets	Measures
Regional pest management plan is in place in accordance with statutory requirements	Operative pest management plan is in place Active participation in national or regional groups Number of biosecurity related submissions prepared

Council officer working with Tiaki Te Mauri O Parininihi Trust in the Parininihi/Whitecliffs area.



9. Strategy monitoring and review

This Strategy is a non-statutory document (i.e. not a formal statutory plan or policy under the BSA) to guide Council's biosecurity programmes and actions.

The Biosecurity Strategy can be implemented using existing resources (staff time and operational budgets). The Strategy builds on many existing programmes and activities. However, some new focus and activities are proposed – largely in association with pathway and eradication programmes – which will require additional resourcing. This will largely be achieved by shifting resources within existing programmes (for example the Council's initial control operations in the Self-help Possum Control Programme are now large completed and the programme is now in a maintenance phase). Future decisions on the overall level of resourcing will be made by the Council during the preparation of its annual plan and Long Term Plan.

The Council will monitor the implementation and effectiveness of the Strategy by:

- (a) for exclusion and eradication programmes, surveying and mapping the presence and distribution of known infestations
- (b) for sustained control programmes, recording the number of public complaints pertaining to individual pests and instances of non-compliance with RPMP rules
- (c) for community and site-led programmes, recording the direct control and other forms of assistance to support the efforts of others to control unwanted organisms
- (d) for other 'leadership' responses, maintaining a record of liaison and advocacy undertaken plus other response activities, including the release and distribution of biological control agents.

Progress on implementing targets in the Strategy will be annually monitored and reported on through the annual planning process under the Local Government Act (Figure 5). A more comprehensive review will also be undertaken after ten years, and in conjunction with the review of the RPMP to ensure the Strategy continues to be relevant, effective and efficient.

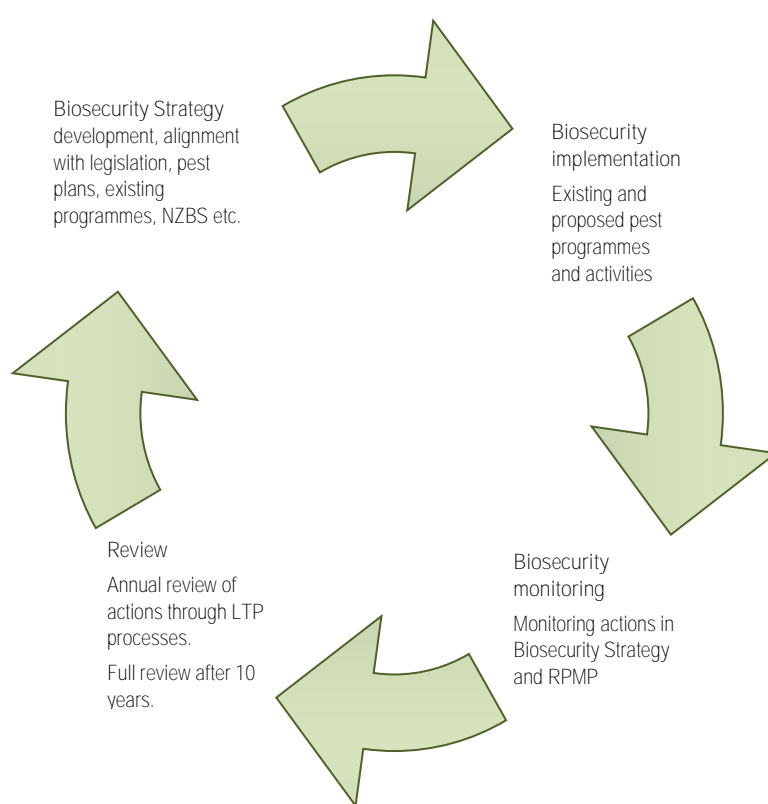


Figure 5: Planning, implementation, monitoring and review of the Biosecurity Strategy

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Definitions and acronyms

This section provides the meaning of words used in this Strategy. When a word is followed by an asterisk (*), the meaning which follows is the meaning provided in section 4 [interpretation section] of the Biosecurity Act 1993 or *National Policy Direction for Pest Management 2015*.

Authorised person* A person appointed an authorised person under Section 103 of the Act.

Animal means any mammal, insect, bird or fish, including invertebrates, and any living organism except a plant or human.

Appropriate means as determined to be appropriate by the Taranaki Regional Council or its officers acting under delegated authority.

Biological control means the introduction and establishment of living organisms, which will prey on, or adversely affect a pest.

Biological diversity (or biodiversity) means the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems.

BSA means the Biosecurity Act 1993.

Chief Technical Officer* means a person appointed a chief technical officer under Section 101 of the Act.

Crown²⁶

- (a) means her Majesty the Queen in right of New Zealand; and
- (b) includes all Ministers of the Crown and all departments; but
- (c) does not include:
 - (i) an Office of Parliament;
 - (ii) a Crown entity; or
 - (iii) a state enterprise named in the First Schedule to the State-Owned Enterprises Act 1986.

Crown land refers to land vested in the Crown and administered by a Minister, and 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 the Taranaki Regional Council.

District council means a district council constituted under Part 1A of the Local Government Act 2002.

DOC refers to the Department of Conservation.

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.

Enforce means to compel observance with 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.

Eradicate, in relation to an organism, means to totally clear the organism from New Zealand, or a region or part of a region.

Eradication means to reduce the infestation level of the subject that is present in New Zealand to zero levels in an area in the short to medium term.

Exacerbator means a person, who by his or her activities or inaction, contributes to the creation, continuance, or exacerbation of a pest management problem.

Exclusion means to prevent the establishment of the subject that is present in New Zealand but not yet established in an area.

Externality impacts, in relation to pest management, are adverse and unintended effects imposed on others.

Exotic means a species, subspecies or lower taxon occurring outside its natural range (past or present) and dispersal potential.

Feral cat means cats which are unowned, unsocialised, and have no relationship with or dependence on humans.

²⁶ *Public Finance Act 1989*.

Good neighbour rule* refers to a rule to which the following apply:

- (a) it applies to an occupier of land and to a pest or pest agent that is present on the land; and
- (b) it seeks to manage the spread of a pest that would cause costs to occupiers of adjacent land; and
- (c) it is identified in a regional pest management plan as a good neighbour rule; and
- (d) it complies with the directions in the national policy direction relating to the setting of good neighbour rules.

Harmful organisms refer to the full range of organisms capable of having adverse and unintended impacts on marine, freshwater or terrestrial environments and includes:

- (a) pest animals or plants identified in a national or regional pest management plan or national or regional pathway plan made under Part 5 of the Biosecurity Act 1993; or
- (b) any other new or established and exotic animal or plant that could pose a threat to values of interest, and
- (c) their related vectors/ pest agents, and particles such as prions, (including organisms that have been purposefully established but later prove to be a threat to the values).

Indigenous means native to New Zealand.

Introduced means a species brought from its natural range to New Zealand by a human agency.

Iwi refers to 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.

Key Native Ecosystems refers to terrestrial sites (sites on land) identified by the Taranaki Regional Council to have regionally significant indigenous biodiversity values.

LGA refers to the Local Government Act 2002.

LTP refers to long term plans prepared under the Local Government Act 2002.

Management agency* means a management agency responsible for implementing a regional pest management plan.

National Policy direction* or **NPD** means the direction approved under section 57 [of the Biosecurity Act 1993].

New Zealand Transport Authority or **NZTA** is the Government agency responsible for managing state highways.

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.

Person* Includes the Crown, a corporation sole, and a body of persons (whether corporate or unincorporated).

Pest* means an organism specified as a pest in a pest management plan.

Pesticide means a substance for destroying harmful pests.

Pathway* means movement that:

- (a) is of goods or craft out of, into, or through:
 - (i) a particular place in New Zealand; or
 - (ii) a particular kind of place in New Zealand; and
- (b) has the potential to spread harmful organisms.

Pathway management plan * means a Plan to which the following applies:

- (a) it is for the prevention or management of the spread of a harmful organism
- (b) it is made under Part V of the Act
- (c) it is a national pathway management plan or a regional pathway management plan..

Pest management plan and RPMP* means a Plan to which the following applies:

- it is for the eradication or effective management of a particular pest or pests
- it is made under Part 5 of the Act
- it is a national pest management plan or a regional pest management plan.

Plant refers to 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.

Port includes an airport, anchorage, harbour and wharf.

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.

Private land means any land which is for the time being held in fee simple by any person other than Her Majesty; and includes any Maori land.

Region²⁷, in relation to a regional council, means the region of the regional council as determined in accordance with the Local Government Act 2002.

Regional council means a regional council within the meaning 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.

Rule means a rule included in a pest management plan in accordance with section 73(5) of the Act.

RMA refers to the Resource Management Act 1991.

Road includes all bridges, culverts, and fords forming part of any road.

RTC refers to residual trap catch.

Sale includes bartering, offering for sale, exposing, or attempting to sell, or having in possession for sale, or sending or delivering for sale, causing or allowing to be sold, offered or displayed for sale, and includes any disposal whether for valuable consideration or not and 'Sell' has a corresponding meaning.

Site-led pest programme means a management programme for which the intermediate outcome for the programme is that the subject, or an organism being spread by the subject that is capable of causing damage to a place, is excluded or eradicated from that place; or is contained, reduced, or controlled within the place to an extent that protects the values of that place.

Small-scale management programme means a small-scale management programme to which section 100V [of the Biosecurity Act 1993] applies.

Subject means:

- (a) in relation to a proposal for a pest management plan, means the organism or organisms proposed to be specified as a pest or pests under the plan; and
- (b) in relation to a pest management plan, means the pest to which the plan applies; and
- (c) in relation to a proposal for a pathway management plan, or to a pathway management plan, means the pathway or pathways to which the proposal for a plan, or to which the plan, applies; and
- (d) in relation to a small-scale management programme, means the unwanted organism specified in the programme.

Sustained control pest programme means a management programme for which the intermediate outcome for the programme is to provide for the sustained control of the subject, or an organism being spread by the subject, in an area to a level where the costs imposed on persons are manageable.

Surveillance refers to the active searching for new incursions of invasive pests and other harmful organism.

Tangata whenua²⁸, in relation to a particular area, means the Iwi or hapu that holds mana whenua over that area.

Transport corridor means local roads, state highways and railway lines as owned or occupied by district/city councils,

Vector means a carrier of disease.

²⁷Resource Management Act 1991

²⁸ Resource Management Act 1991

Unwanted organism* means any organism that a chief technical officer believes is capable or potentially capable of causing unwanted harm to any natural and physical resources or human health, and

- (a) includes—
 - (i) Any new organism, if the Authority [Environmental Risk Management Authority] has declined approval to import that organism; and
 - (ii) Any organism specified in the Second Schedule of the Hazardous Substances and New Organisms Act 1996; but
- (b) does not include any organism approved for importation under the Hazardous Substances and New Organisms Act 1996, unless—
 - (i) the organism is an organism that has escaped from a containment facility; or
 - (ii) a chief technical officer, after consulting the Authority [Environmental Risk Management Authority] and taking into account any comments made by the Authority concerning the organism, believes that the organism is capable or potentially capable of causing unwanted harm to any natural and physical resources or human health.

Wāhi tapu means places or things which are sacred or spiritually endowed. These are defined locally by tangata whenua of the Taranaki region.

Wild goat means a goat not in a farmed situation.

Working Day* means any day except –

- (d) a Saturday, a Sunday, Good Friday, Easter Monday, Anzac Day, Labour Day, the Sovereign's birthday, and Waitangi Day; and Wellington Anniversary Day;
- (e) The day observed in the region of a regional council as the anniversary date of the province of which the region forms a part; and
- (f) 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.

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Appendix 1: Summary of the means for achieving individual pest management objectives

A summary of management responses in relation to particular harmful species is outlined below. The management response may include a suite of regulatory and/or non-regulatory actions identified in sections 4 to 8 of this Strategy. A list and description of harmful species **not** identified as 'pests' in the *Regional Pest Management Plan for Taranaki* (for which regulatory responses apply) is provided in Appendix 2 below.

Table 3: Summary of regulatory and non-regulatory management responses for harmful organisms in Taranaki

Harmful organisms	Advise & educate	Monitor & surveillance	Enforce rules			Direct control		Biological control
			Sale & distribution controls	Good neighbour rules	Other property rules	To protect site values (KNEs)	To eradicate from region	
Management response 1: Pathway and exclusion programmes (Strategy only – refer section 4 above)								
Invasive ants, rusa deer, pest fish, rooks, didymo ...								
Management response 2: Eradication programmes (RPMP – refer section 5 above)								
Climbing Spindleberry								
Giant Reed								
Madeira Vine								
Moth plant								
Senegal Tea								

Harmful organisms	Advise & educate	Monitor & surveillance	Enforce rules			Direct control		Biological control
			Sale & distribution controls	Good neighbour rules	Other property rules	To protect site values (KNEs)	To eradicate from region	
Management response 3: Sustained control programmes (RPMP – refer section 6 above)								
Brush-tail possums								
Common and Purple pampas								
Giant Gunnera								
Giant Buttercup								
Gorse								
Nodding & Plumeless Thistle								
Old Man's Beard								
Ragwort								
Variegated Thistle								
Wild Broom								
Wild Ginger [Kahili and Yellow]								
Management response 4: Community and site-led programmes (Strategy only – refer section 7 above)								
Possums, feral cats, fallow deer, wild goats and pigs, rats, hare, mustelids, Climbing asparagus, Spanish health, Wandering willy, Woolly nightshade ...								
Management response 5: Other programmes (Strategy only – refer section 8 above)								
Undaria, Egeria, Argentine ants, magpies, wasps, Egeria, Lagarosiphon, Yellow bristle grass, tutsan,								

Appendix 2: Description of other harmful organisms for which Council and other biosecurity management programmes and legislative powers apply

In addition to the harmful species identified as 'pests' in the *Regional Pest Management Plan for Taranaki* (for which regulatory responses apply) the following species have also been identified as having actual or potential adverse and unintended impacts of regional significance, for which programmes and activities set out in this Strategy may apply. These programmes and activities include pathway management, advice and education, liaison and advocacy, biological control and/or site-led management. Some harmful organisms are also covered by other legislative authorities and powers relating to the propagation or spread of "unwanted organisms" and "noxious" or pest fish.

A description of potential harmful organisms in Taranaki, including their adverse effects is outlined in Table 4 below. Management options and responses are also identified in the Table and are summarised as follows.

TARANAKI REGIONAL COUNCIL MANAGEMENT:

- 1 = Pathway and exclusion programmes
- 2 = Eradication programmes
- 3 = Sustained control programmes
- 4 = Community or site-led programmes
- 5 = Other council programmes.

OTHER LEGISLATIVE POWERS:

- 6 = Freshwater Fisheries Regulations 1983 (make it an offence to obtain or keep in captivity any mosquito fish (*Gambusi affinis*) or to control or spread certain pest fish as specified in Schedule 3 of the Regulations including Walking catfish, Live European Carp, live Japanese koi, Pike, three Piranha species; Rudd; and Tilapia)
- 7 = Plants declared to be "unwanted organisms" under the BSA and on the National Pest Plant Accord (NPPA) (these plants cannot be distributed, sold or propagated in New Zealand)
- 8 = Other organisms declared to be "unwanted organisms" under the BSA (it is an offence to sell, distribute, or release these organisms).

Table 4: Other harmful organisms in Taranaki (not listed in the RPMP) for which Council and other biosecurity programmes and actions apply

Harmful species	Description	Council Management and other legislative powers (refer to key above)
Argentine Ant <i>(Linepithema humile)</i>	The Argentine ant is light to dark honey-brown and 2-3 mm long. Because they are so small, the best way to tell Argentine ants from other ants is by their colour and their trails. Argentine ants breed prolifically and do not fly off to establish new nests like other ants. Their trails are often five or more ants wide and, unlike other species, may travel up trees or buildings. Argentine ants pose a particularly serious threat to people's amenity and lifestyle values and they have a painful bite. They are highly active in their food searches and large colonies will utilise just about any food source they can find—even when it is in microwaves, refrigerators, and screw-top jars. Argentine ants pose a significant threat to horticulture production as they feed directly on fruit crops. They are also a serious pest of viticulture, avocado and tomato crops. Argentine ants are very aggressive and kill or drive away other insects. They can prey on Monarch butterflies and young birds and compete strongly with native invertebrate and other insect species thereby reducing biodiversity (both indigenous and valued exotic) values in their area.	1, 4, 5
Darwin's Ant <i>(Doleromyrma darwiniana)</i>	Darwin's ants are similar in appearance and behaviour to Argentine ants but can be distinguished by their pungent smell when squashed. Darwin's ants infest homes, shops and other buildings, and may pose a threat to native ecosystems. Darwin's ant has the potential to be a major pest in New Zealand. The first population recorded in Auckland in 1959 was eradicated, but large colonies are now well established in Christchurch. Smaller populations can be found in the northern and eastern North Island, particularly at Mount Maunganui, and the northern South Island.	1, 4, 5
Eastern rosella <i>(Platycercus eximius)</i>	Eastern rosella are native to Australia. They are medium sized parrots with brightly coloured plumage (bright red head, white cheek patches, yellow belly, yellow-green upper back mottled with black, bright green rump, dark blue upper wings with bright blue shoulders, and dark green and light blue tail feathers). Males are generally brighter than females and juveniles are duller than adults with greener plumage. Eastern rosellas could potentially have detrimental effects for native parrots through spreading parrot-specific disease organisms not otherwise present. North Island rosella populations have been found to carry Beak and Feather Disease Virus (BFDV), a parrot specific virus which could be harmful to native parrots. Additionally, they may compete with native species for food and/or tree cavities, which they nest in. Rosellas cause localised damage to grain and fruit crops in New Zealand, including stripping flowers from some fruit trees.	1, 4, 5
Feral cat <i>(Felis catus)</i>	Feral cats are solitary and predominantly nocturnal animals. Feral cats are the same size and have the same range of colour as domestic cats. Although population densities are small, feral cats have an enormous home range of approximately 150 to 200 hectares. From the age of about one year, feral cats can breed in any season. They have up to two litters of about four kittens each year. They are carnivores and opportunistic feeders and feed on a wide variety of wildlife including indigenous birds—such as young kiwi, reptiles and invertebrates. Both domestic and feral cats can have an extraordinary impact on indigenous biodiversity values, especially in and around natural areas such as forests, shrubland, wetlands and dunelands. In such areas, even a small number of feral cats can have a disproportionate large impact on rare and endangered species, affecting the diversity, vigour and even survival of some species. Feral cats have been found with toxoplasmosis, which is a health risk to humans, and Bovine tuberculosis, which continues to be New Zealand's principal animal health problem. They may also be a vector for a number of animal diseases that impact upon agricultural production values. They are the primary host for <i>Sarcocystis spp</i> , which can be spread to sheep, causing abortions and the possible rejection of meat for export.	4, 5
Hare <i>(Lepus europaeus occidentalis)</i>	Brown hares are very similar to their close relative, the rabbit. However, it is distinguishable from the rabbit by its larger size and its larger muscular hind quarters. The hare is mostly brown in colour and its front legs are about half the size of its hind legs. The hare's impacts in relation to agricultural production values are generally localised , however, because of their often quite destructive habits, those impacts can be significant – particularly with respect to silviculture, horticulture, cropping and amenity values. Hares damage new tree plantings, and horticultural, crop, riparian and amenity plantings, by nipping out the tops of seedlings even though they do not actually eat them. A single hare amongst such plantings can do considerable damage. Selective browsing by hares may threaten rare and endangered indigenous plant species. Its preference for young tender growth such as regenerating plants can also affect the diversity and vigour of native vegetation in other areas. For example, the damage caused by hares to riparian planting can be considerable, resulting in added costs to the farmers through the need to replace plantings.	4, 5, 8

Harmful animals	Hedgehog (<i>Erinaceus europaeus</i>)	Hedgehogs are small, spiny, nocturnal mammals introduced from the UK. They are abundant on temperate lowland and farmland areas where frosts are few and food is plentiful. Lowland stream and riversides are also favoured habitats. Dense populations of hedgehogs are common in cities and urban areas because invertebrate prey and dry sites for hibernating are available, as well as extra food purposely provided by householders. Hedgehogs commonly eat earthworms in pasture but also feed on mice, lizards, frogs, eggs and chicks of ground-nesting birds, and scavenge carrion. The impact of hedgehogs on indigenous fauna in New Zealand have not been quantified although they clearly have the potential to contribute significantly to the decline of numerous taxa, including threatened ground-nesting birds.	4, 5
	Magpie (<i>Gymnorhina tibicen</i>)	Adult magpies are about 41 centimetres in length and weigh between 280 to 340 grams. The birds are black and white in colour with a range of patterns. Magpies are gregarious and found in family groups of two to 24 birds. Their nests are usually high in exotic trees but occasionally in native trees and sometimes on man-made structures such as power pylons. The breeding season is generally between August and November and breeding magpies, on average, rear one chick. Extremely territorial, magpies have the reputation for being the most aggressive birds in New Zealand and nesting Magpies will attack humans, sometimes causing serious physical injuries. Magpies exhibit the same aggressive behaviour against other birds and consequently are a perceived threat to indigenous biodiversity values. They also prey on indigenous invertebrates such as skinks and geckos and indigenous bird chicks and eggs to feed their own young. This in turn may affect the abundance of indigenous fauna species in some areas.	4, 5
	Mustelids (1) Ferret (<i>Mustela furo</i>); Stoat (<i>Mustela erminea</i>); Weasel (<i>Mustela nivalis vulgaris</i>)	The ferret, stoat, and weasel belong to a group of small to medium sized carnivores known as mustelids. They are considered together as their effects on the environment are largely the same. Mustelids share the characteristic long body, short legs and smooth pointed face but they vary in size. The adult male ferret, the largest of the three species is, on average, about 41 centimetres long, the stoat 29 centimetres, and the weasel 22 centimetres. Mustelids search for prey through all possible cover, down every accessible hole and up every likely tree in the course of each hunting excursion. Killing behaviour is independent of hunger and mustelids will, if the opportunity arises, kill any suitable prey and cache the surplus for future use. Mustelids are serious predators of indigenous bird life. Stoats in particular are considered to be the primary factor contributing to the decline of mainland kiwis and have been linked to the disappearance of a number of other threatened indigenous bird species such as the kokako. Along with cats, mustelids predate on young kiwi, and both destroy 95% of juvenile kiwi within the first six to nine months of leaving the nest. Mustelids have an unknown but suspected participation in the Bovine tuberculosis cycle, and they carry parasites and toxoplasmosis, which causes abortions in sheep and illness in humans.	4, 5
	Plague skink (<i>Lampropholis delicata</i>)	The plague or rainbow skink is a small greyish brown Australian lizard that has recently been recorded in Taranaki. After their accidental introduction to Auckland in the 1960s plague skinks have spread to the Waikato, Bay of Plenty (excluding Rotorua), Palmerston North and Whanganui. Their current distribution in Taranaki is as yet unknown. At only around 3-5cm from the nose to hind legs (snout to vent length or SVL), or about 8-10cm including their long thin tail, they are smaller than any of our native skink species. The most distinguishing characteristic is one large diamond shaped scale on the top of the head. Native species have two smaller scales. The Ministry for Primary Industries, MPI (previously MAF) has classified the plague skink as an unwanted organism under the BSA.	1, 4, 5, 8
	Rabbit (<i>Oryctolagus cuniculus</i>)	The European rabbit is a small to medium sized herbivore, usually grey-brown in colour. Rabbits breed throughout the year and produce several litters comprising of three to seven young. On average, adult female rabbits produce 45 to 50 young a year, although survival rates are low. Where conditions are favourable, the rabbit's mortality rate is lowered, and the population has the ability to increase rapidly. Under favourable conditions rabbits can become enormously abundant and very destructive to pastoral farmland over large parts of Taranaki – particularly sheep and beef properties. By competing directly with stock for grazing, rabbits reduce the carrying capacity of agricultural land. Rabbits may also have localised impacts on silviculture and horticulture values by eating new tree and crop plantings. Where present in large numbers, the overgrazing and burrowing of pasture by rabbits may result in soil erosion and the loss of valuable topsoil and the sedimentation of waterways, and creates favourable conditions for less desirable plant species.	4, 5
	Rainbow lorikeet (<i>Trichoglossus haematodus</i>)	Rainbow lorikeets are small (25-30cm long), slim, brightly coloured (emerald green, orange, midnight blue, dull blue, ruby red, lemon yellow, purple, and violet greenish grey plumage) and noisy parrots. They are native to north-eastern Australia. Wild populations resulting from deliberate releases established in Auckland and Rotorua in the late 1990s but were successfully eradicated in the early 2000s. No viable wild populations are currently known in New Zealand although the species is still able to be kept in captivity. Rainbow lorikeets are unwanted organisms under the Biosecurity Act 1993 and are managed under the National Interest Pest Responses (NIPR) initiative. They are regarded as a pest because they compete with native birds for food, particularly with honey eaters such as tui and bellbird. They also compete for nest sites with native cavity nesters such as kaka and kakariki, and may carry avian diseases.	1, 4, 5, 8

Harmful animals	Ship rat (<i>Rattus rattus</i>) and Norway rat (<i>Rattus norvegicus</i>)	There are two introduced European rat species in New Zealand – the ship rat and Norway rat. Ship rats are smaller than Norway rats, weighing 130-170g. The Norway rat is the largest rat in New Zealand. They often weigh between 150-300g, but can grow to more than 500g. Norway rats are competent swimmers and this ability enables them to colonise offshore islands. Rats have been responsible for the extinction of a number of native species and continue to have a major impact on New Zealand's flora and fauna. They are also implicated in the spread of human diseases. Both species eat seeds and foliage, birds, eggs, invertebrates, snails and lizards. This means their impact on native species is two-fold – they prey on them and compete with them for food. However, it is the nocturnal ship rat – an excellent climber – that is probably the most widespread mammalian predator in non-beech forests on the New Zealand mainland. In mixed podocarp-hardwood forest a common sign of ship rats is the cached and gnawed remnants of miro or hinau seeds. Although they destroy many seeds, ship rats may also help to disperse some seeds, as shown in captive feeding trials. Norway rats tend to occupy coastal margins, but are also found in forests.	4, 5
	Rook (<i>Corvus frugilegus</i>)	Rooks are large, totally black birds with a violet-blue glossy sheen. The birds stand about 45 centimetres high. A distinguishing feature of the social system of rooks is the conspicuous breeding colonies or rookeries that the birds form. Rookeries are generally built in pine and eucalyptus trees but oak, poplar and walnut trees may also be used. Where established, rookeries may approach several hundred birds. Initially introduced in the Hawkes Bay to control grass grub, rook numbers, in many parts of New Zealand, now pose a particularly serious threat to cropping and horticulture production. Most of the year the birds will feed in small groups and do not represent a problem. However, during the summer, when the soil becomes hard and difficult to work, rooks aggregate into larger groups targeting easier food supplies. On such occasions, the rooks show a strong preference for foraging on fields of cereal at all stages of the crop. Rooks can also tear up large areas of pasture in their search for grass grub and other invertebrates.	1, 4, 5, 8
	Wallaby (<i>Macropus eugenii</i>)	The dama wallaby is a small grey brown coloured wallaby with reddish shoulders, long pointed ears and a long, grey tapering tail. They stand around 55cm tall and weigh between 4-7kg. Dama wallabies browse on native and exotic vegetation and when present in high densities can reduce species diversity and alter patterns of forest succession. They are classified as an unwanted organism under the Biosecurity Act and may be hunted. Wallabies were first liberated in the Rotorua area the early 1900s and were considered well established by the 1930s. Over the last 100years their range has steadily extended, mainly north and east, by an average rate of about 19km ² per year by both natural and human assisted movement. They are present in low numbers in the Waikato but are not yet established in Taranaki. Dama wallabies prefer the margins of forest and scrub habitats where they can shelter during the day and feed on grasses and pasture species at night. They inhabit predominantly podocarp/tawa/mixed hardwood forest with adjoining areas of manuka scrub, bracken and pasture. Other wallaby species are also present in the South Island and on some Hauraki Gulf islands. They will only become present in Taranaki if intentionally moved by people.	1, 4, 5, 8 (BSA "unwanted" status will expire 20 Sept 2021)
	Wasps Australian paper wasp (<i>Polistes hummulis</i>) Asian paper wasp (<i>Polistes chinensis</i>) Common wasp (<i>Vespula vulgaris</i>) German wasp (<i>Vespula germanica</i>).	As well as inflicting a painful sting, and in some cases allergic reactions, wasps frighten people, threaten bee, forestry and horticulture industries and negatively affect amenity values. The Australian paper wasp has been in New Zealand for more than a century. The Asian paper wasp arrived in New Zealand in the late 1970s and by 1995 was widespread throughout central and upper North Island. Large populations of Asian paper wasps occur in lowland open habitats such as shrublands, swamps and salt marshes. Asian paper wasps can occur at high densities and the full extent of their impact requires further research. Common wasps and German wasps are almost indistinguishable from each other. Both species are social insects that inhabit agricultural areas, natural forests, planted forests, scrub/shrublands and urban areas where they nest underground and in cavities in trees and buildings. The German wasp is a successful invader of disturbed environments and natural ecosystems. It is difficult to control as a new colony can be established from a single inseminated female. The common wasp has been nominated as one of the world's worst invaders. This species impacts on conservation, forestry, beekeeping, horticulture and human activities. In addition to causing painful stings to humans, they compete with birds and other insects for insect prey and sugar sources. They will also eat fruit crops and scavenge around rubbish bins and picnic sites.	4, 5

Harmful animals	Wild deer Red deer: <i>Cervus elaphus</i> Sika deer: <i>Cervus Nippon</i> Sambar deer: <i>Cervus unicolor</i> Rusa deer: <i>Cervus timorensis</i> Fallow deer: <i>Cervus dama</i> <i>Cervus elaphus nelson</i> <i>Odocoileus virginianus boreali</i>)	Wild deer species include red deer, sika deer, sambar deer, rusa deer, fallow deer, wapiti deer and white-tailed deer living in the wild but excluding farmed or escaped farmed deer. Wild deer range in size and colour, depending upon the species, however generally they are various shades of brown. The antlers of deer, worn by males only, are shed each year. Wild deer are opportunist and highly adaptable feeders that can both browse and graze. In forested areas, wild deer will destroy the under-storey of vegetation which, when combined with possum damage to the upper canopy, can result in the severe deterioration of forested areas. Wild deer can also have a significant impact in forestry production areas, particularly during the establishment phase. Even small numbers of wild deer can cause degradation of indigenous flora and fauna affecting the diversity, vigour, and even survival of some rare and endangered species. Wild deer may also have a significant impact on agricultural production values and animal health and along with the possum are major vectors for Bovine tuberculosis. Established wild deer populations can adapt to, and thrive in habitats ranging from steep hill country to coastal flats and scrub margins.	1, 4, 5
	Wild goat (<i>Capra hircus</i>)	Wild goats are goats that are free ranging and not in a farmed situation. Varying in size and colour, both sexes may be white, brown, black, or a combination of these colours and have horns. The adult male, the larger of the two sexes, stands almost 70 centimetres high at the shoulder and weighs between 50 to 70 kilograms. Wild goats have a high productive rate and prosper in a wide range of habitats, particularly in forested areas or areas adjacent to pasture and scrub margins. The impact of wild goats on indigenous vegetation is second only to the possum, as they can destroy the under-storey of vegetation also damaged by possums in the upper canopy, resulting in the severe deterioration of forested areas. Such damage may result in the degradation of indigenous flora and fauna affecting the diversity, vigour and even survival of some rare and endangered species. Wild goats can also impact upon agricultural production values, competing directly with livestock for pasture and potentially reducing the carrying capacity of farmland, and thus reducing productivity. Wild goats can damage newly planted or young trees planted for forestry production and soil conservation purposes. In areas where wild goats are encroaching onto farms, the goats may represent a problem for stock hygiene as goats and sheep can carry and transmit many of the same parasites and diseases. Goats are notoriously difficult to contain by fences and goat escapees from farmland into forested areas represent an on-going problem.	4, 5
	Wild pig (<i>Sus scrofa</i>)	Wild pigs are pigs that are free ranging and not in a farmed situation. They are smaller and more muscular than domestic pigs, with massive forequarters and smaller, shorter hindquarters. They are more hirsute, with longer and coarser hair, longer and larger snouts and tusks, and much narrower backs. Wild pigs are omnivorous and opportunistic feeders. They can cause localised damage to pasture, production forestry (in the early stages of establishment), and cropping. Their more significant impact is on indigenous biodiversity values. Where present in large numbers, wild pigs will eat the tops and dig up the roots of indigenous vegetation, resulting in the decline of some plant species. Wild pigs may also have a significant effect on the diversity, vigour and even survival of rare native fauna. For example they feed on threatened populations of indigenous land snails, eat their eggs, and destroy their litter habitat.	4, 5
Freshwater fauna species	Brown bull-headed catfish (<i>Ameiurus nebulosus</i>)	The Brown bull-headed catfish is a large headed fish with eight long whisker-like barbels around the mouth. They are dark brown to greenish-olive on the back, with a pale underside, and their skin is slimy and eel-like to touch. They grow to at least 500mm in length and 3kg in weight. Catfish are predatory scavengers, eating diverse foods including snails, insects such as caddisfly larvae, crustaceans including koura, plant material, detritus and small fish. They push native fish out by taking over their territory and eating many of the same foods. Catfish are extremely robust and tolerate low oxygen levels, high turbidity, poor water quality and a range of temperatures. It is also thought that catfish can hibernate in bottom mud if necessary. Catfish are able to stay alive for long periods out of water if kept moist, making intentional and accidental transfer very easy.	1, 4, 5
	Gambusia (<i>Gambusia affinis</i>)	Gambusia or, as they are sometimes known 'Mosquitofish', are small fish introduced to New Zealand in the 1930s to control mosquito larvae. However, they proved to be ineffective in the control of mosquitoes and instead became pests. Gambusia have thick bodies, small mouths and large round dorsal fins and are an olive green silvery colour. The female grows to about 60mm in length, with the male reaching about 35mm in length. Gambusia consume a wide range of small aquatic and terrestrial insects and crustaceans. They feed mainly on the surface of the water or only a few inches deep below the surface. They can breed rapidly when conditions are suitable and may attack larger fish by nibbling their fins. Gambusia are found in vegetated ponds and lakes, rivers, creeks, springs and ditches and they reproduce several times throughout the year.	1, 4, 5, 6, 8

Freshwater fauna species	Koi carp (<i>Cyprinus carpio</i>)	Koi carp are an ornamental strain of the common or European carp. Koi carp look very similar to a large gold fish but with a distinctive large head, a pair of barbels at each corner of the mouth, large scales and a large prominent dorsal fin. Like goldfish, Koi carp can be bright orange with dark blotches, or a splotchy olive brown. In New Zealand Koi carp commonly exceed 5kg and occasionally 10kg. Introduced to New Zealand as ornamental fish they now breed in natural waterways and pose a significant threat to the health of New Zealand's freshwater ecosystems. They uproot water plants, lower water quality and eat insects and other young fish. Their feeding disturbs bottom sediments leading to increased turbidity and general muddying of waters, the effect of which is to reduce aquatic plant growth with flow-on impacts on other fish species, invertebrates and wildlife. Koi carp prefer warm enclosed waters or slow flowing rivers and canals and are tolerant of low oxygen levels and high turbidity.	1, 4, 5, 6, 8
	Red-eared slider turtle (<i>Trachemys scripta elegans</i>)	Red-eared slider turtles are small (approx. 28cm shell) freshwater turtles native to southern parts of the United States. They are generally olive and brown in colour with distinctive red stripes on each side of the head. They are readily available through the pet trade in New Zealand and can live up to 50 years in captivity. The Invasive Species Specialist Group has listed the red-eared slider turtle as one of the world's 100 worst invasive species. They are omnivorous, long lived and tolerate a range of environmental conditions. These attributes enable them to survive in a wide range of aquatic habitats, including man-made drains and canals, natural wetlands, rivers, lakes, ponds and brackish estuarine waters. Their potential impact in New Zealand is currently unknown although it is likely they could compete with and prey on native fish and nesting water birds.	1, 4, 5
	Rudd (<i>Scardinius erythrophthalmus</i>)	Rudd are stout-bodied freshwater sport fish of the carp family. They have yellow-orange eyes, bright orange fins, silver in colour and have a sharp-edged belly. Rudd may grow to at least 400mm in length and 2kg in weight. They are mostly carnivorous, feeding on small aquatic crustaceans, snails and insects when small and diversifying to small fish, worms, aquatic detritus, also aquatic plants and terrestrial insects when larger. Rudd are found mostly in still or slow-flowing waters, especially those with prolific weed beds.	1, 4, 5, 6
Harmful plant species	Arum Lily (<i>Zantedeschia aethiopica</i>) Also known as the Green Goddess Cultivar.	The Arum lily is a robust, persistent, evergreen, clump-forming perennial herb <1.5m tall. Large arrow-shaped shiny green leaves and white, erect, funnel-shaped 'flower' (Aug-Jan, occasionally other times of year) of central yellow spike and white outer modified leaf. Habitats include wetlands, riparian zones, and pasture. Dispersal method is via seed mainly spread by birds. Flowing water and animals also play a role in spread of seed. Local spread by rhizomes and dumping of garden cuttings. The Arum lily smothers the ground, preventing regeneration of native flora. All parts of the plant are poisonous to humans, pets and livestock. It is a NPPA plant.	1, 4, 5, 7
	Australian sedge (<i>Carex longebrachiata</i>)	Australian Sedge is a perennial tussock-forming sedge native to Australia. The plant is distinguishable from other New Zealand and native sedges by its harsh cutting leaves, angled flowering stems, and catkin-like flower spikes. Australian Sedge is primarily a problem in dry-stock areas where, once established, it is a difficult plant to control and will occupy large areas to the exclusion of pasture species. The seeds can be spread by animals to other properties. Unpalatable to stock, infestations of Australian Sedge reduce pasture production, and thereby reduce the carrying capacity of agricultural land.	5
	Bamboo (<i>Phyllostachys</i> species)	Bamboo species are tall, erect, evergreen, rhizomatous grasses <10m or more high. The stems are smooth with hollow canes and alternating leaves. Habitats include roadsides, shelterbelts, and settled areas. Bamboo tolerates a wide range of conditions but not shade. Dispersal methods differ: some are clumping varieties, others have vigorous runners. Bamboo is vigorous & persistent and spreads rapidly, forming dense stands excluding all other vegetation.	4, 5
	Banana passionfruit (<i>Passiflora tripartita</i> (all subspecies) and <i>P. tarminiana</i>)	Banana passionfruit is also known as Northern Banana passionfruit (<i>Passiflora Mixta</i> , <i>P. Mollissima</i>). Banana passionfruit is a high-climbing vine with pink tubular flowers year round. It produces thin-skinned oval fruit, which turn yellow or orange-yellow when ripe. Pulp is sweet, edible, and orange in colour. Habitats include shrublands, forest margins, roadsides, wetlands, farm and orchard hedges, and domestic gardens. It prefers light gaps on fertile soil. Dispersal is via seed and stem fragments through pigs, possums, rats and birds. Banana passionfruit is an aggressive vine that invades disturbed areas, smothers trees, and reduces biodiversity. All species are NPPA plants.	1, 4, 5, 7, 8
	Blackberry (Wild Aggregates: <i>Rubus fruticosus</i> agg.)	Erect, scrambling, thorny perennial shrub. Grows in thickets <2m tall formed by arching stems or canes <7m long. Dark green shiny leaves are normally shed in winter. Small white or pink flowers between November – April and berries between January and March. Habitats include open areas, roadsides, stream banks, wetlands, pasture, and plantations. Dispersal occurs vegetatively via suckering stems and daughter plants and seeds are spread by birds & waterways. Blackberry quickly develops into a dense canopy cover and dominates native flora in swamps. It also reduces access to, and use of, pasture and provides shelter for animal pests.	4, 5

Harmful plant species	Blue Morning Glory (<i>Ipomoea indica</i>)	Tall growing, twining creeper with distinctive heart-shaped, 3-lobed leaves and purple tubular flowers all year round. Blue morning glory prefers full sun but will tolerate light shade. Frost-tender. It grows in wet & dry conditions including open areas, forest margins, roadsides, hedges and gardens. Dispersal is most via vegetative spread from stem fragments although some seeding white flowers have been found in Bay of Plenty. Blue morning glory is very fast growing and smothers native vegetation either as groundcover or climber. It is a NPPA plant.	1, 4, 5, 7, 8
	Brush wattle (<i>Paraserianthes lophantha</i>)	Brush Wattle is an evergreen tree, which can grow up to 10 metres tall. It has yellow-green flowers, which appear between May to August, followed by flat brown seed pods. Once established it seeds freely and is very difficult to control. Brush Wattle will inhabit grasslands, scrub-lands, forest and riparian margins, marginal hill country, coastal habitats and waste ground. The impact of Brush Wattle is principally on indigenous biodiversity values. Its free-seeding characteristics mean that it can be spread by flowing water and soil and gravel movement. The plant matures quickly and competes very effectively with other tree seedlings for soil moisture, nutrients, and light. The plant thereby suppresses the regeneration of indigenous flora and may eventually eliminate indigenous seed sources.	4, 5
	Cathedral Bells (<i>Cobaea scandens</i>) Also known as Cup And Saucer Vine	Cathedral bells is a perennial climbing vine, which produces large, bell-shaped, greeny-white to purple flowers between August and May. Light green, oval leaves, smooth-edged, hairless, prominent purplish vein & tendrils. Located in forest margins, roadsides, riverbanks, gardens and open areas. Cathedral bells is susceptible to frost and heavy shade but otherwise grows in a wide range of soils & climates. It is dispersed via winged seeds released from large green oval fruit that explode during summer. Seed is also dispersed over distance by water and soil movement and vegetatively via stem fragments. Cathedral bells is fast growing and smothers native vegetation, will kill larger plants, and suppresses growth of seedlings. It is a NPPA plant.	1, 4, 5, 7, 8
	Chinese Privet (<i>Ligustrum sinense</i>) Also known as Small Leaved Privet	Chinese privet is semi-deciduous in colder areas and only grows to 5m high. White tubular flowers appear between October-March with characteristic purple or mauve anthers. Habitats include hedgerows, roadsides, lowland & coastal forest and plantations. Chinese privet is widespread & common and tolerates a wide range of conditions. Seeds are dispersed by birds. Chinese privet displaces the forest shrub tier & marginal shrubs in alluvial forests. Its leaves & fruit are poisonous, and its perfume contributes to asthma.	4, 5
	Chocolate Vine (<i>Akebia quinata</i> ; also known as: <i>Akebia</i> , <i>Rajania Quinata</i>)	Fast-growing, twining vine or vigorous ground cover, with chocolate-purple coloured flowers. The flowers have an odour that is similar to chocolate or vanilla and appear between August and October. Its habitat is terrestrial, in the open to semi shade along forest edges, riparian zones, road sides, or climbing over structures or trees. Birds can spread the seeds but it is usually spread by human activity. Shade and drought tolerant, it can invade many habitats. Once established, its dense growth prevents seed germination and seedling establishment of native plants. Akebia is a NPPA plant.	1, 4, 5, 7
	Climbing Asparagus (<i>Asparagus scandens</i>)	Climbing asparagus is a scrambling & climbing plant, which can also grow in trees as an epiphyte. Slender, extensively branched stems wrap around small trees & saplings. Fine, fern-like foliage, with small, delicate leaves attached to hook vines. Tiny white flowers appear in September-December and it also produces berries. It has a very shade tolerant habitat and prefers the interiors of undamaged & modified forest, forest edges, and riparian zones. Dispersal is via bird-spread seed and vegetative spread by tubers. Fast growing climbing asparagus is a rapid colonizer, which kills host plants by smothering or ring barking them. It also carpets the forest floor preventing regrowth of native seedlings. Climbing asparagus is a NPPA plant.	1, 4, 5, 7, 8
	Coastal Banksia (<i>Banksia integrifolia</i>) Also known as: Coastal Banksia	Coastal banksia is an erect, fast-growing, evergreen tree < 8m tall. Leaves may be irregularly-toothed when young; upper side of leaves green, undersides silvery & felted. Masses of pale yellow flower spikes are produced between March and August. It prefers habitats which are sunny, poor, dry areas such as dunes, gumland scrub, and shrubland. Coastal banksia spreads locally by seed fall and is a threat to well-drained sites especially sand dunes. It forms dense thickets in open areas. Coastal banksia is under proposal to be added to the NPPA.	1, 4, 5
	Contorta Pine (<i>Pinus contorta</i>) Also known as: Lodgepole Pine	Resinous large evergreen shrub, or small-med tree. Bark is reddish brown, grey on surface, fissured and forming small plates. Branches straight to twisted, usually on trunk almost to ground. Its habitat is disturbed and open forest, shrubland, tussockland, herbfield, fernland, bare land, mineralised places, screes, and volcanic habitats. It is dispersed by wind, occasionally by water. It is also found in planted woodlots, remnant plantations, and hedges. Pinus contorta is a prolific seeder, early maturing, tall, long-lived, and it forms dense stands especially on poor soils. It is tolerant of a range of conditions. For those reasons it becomes permanent canopy spp. Plantations remove ground water in summer, and fail to retain it in winter, causing drought and flooding. Leaf litter inhibits growth of understory spp, affects water quality, and can destroy freshwater habitats. Pinus contorta is a NPPA plant.	1, 4, 5, 7, 8

Harmful plant species	Cotoneaster (<i>Cotoneaster glaucophyllus</i> , <i>C. franchetii</i>)	An arching, spreading, evergreen shrub usually <3m tall (can grow up to 5m). It produces small white - pinkish flowers between October and January in clusters of 1-4 and distinctive bunches of small red berries between February and August. Its habitat is widespread & common in scrub, plantations, forest margins, coastal areas, riverbeds and quarries. It tolerates a wide range of habitats. Dispersal is through seed being dispersed by birds. Cotoneaster competes directly with native shrubs & forms pure stands.	4, 5
	Darwin's barberry (<i>Berberis darwinii</i>)	Darwin's barberry is a small woody evergreen shrub, which may grow up to four to five metres in height. The plant has small shiny dark green leaves, small many-pronged spines, deep orange flowers and small dark berries with a white coating. Darwin's barberry should not be confused with the semi-deciduous Barberry, <i>Berberis glaucocarpa</i>, found commonly throughout Taranaki. Darwin's barberry is very free seeding with the seeds being primarily spread by birds. The plant is capable of inhabiting forest and riparian margins, scrub-land, production forests and regenerating indigenous forests and degraded pasture. Once established the plant is very invasive and can form dense colonies, which exclude and/or compete with other plant species for soil moisture, nutrients, and light. Darwin's barberry represents a particular threat to indigenous biodiversity values. Dense colonies will suppress the regeneration of indigenous flora and may eventually eliminate indigenous seed sources. The plant can also pose a problem on extensively farmed land and in forestry production areas, impacting on the carrying capacity of that land, and imposing additional control costs. It can sometimes obstruct or infest natural and recreational areas on occasion.	4, 5, 7, 8
	Egeria oxygen weed (<i>Egeria densa</i>)	Egeria Oxygen Weed is a perennial aquatic herb, growing wholly submerged in fresh water. Egeria is usually found rooted in bottom mud but can be found as a free-floating mat. The plant has dark green leaves that grow from nodes on brittle branched stems. It may grow up to six metres long and has small white flowers that appear in summer and early autumn. Egeria has an exceptional ability to spread by vegetative fragments. Dispersed by water flow or by people transporting fragments on their boats, trailers and fishing nets, its biological characteristics are such that even a small fragment can become a problem infestation that is very difficult to control once established. Egeria poses an extraordinary threat to Taranaki waterways. The plant is extremely competitive and replaces indigenous aquatic flora species reducing species diversity in affected water bodies. Egeria may also increase sedimentation rates and alter the chemical and physical characteristics of a water body. By modifying habitats and smothering other useful flora species, Egeria affects the amount and type of food available for some fish species and may displace traditional food sources of value to Maori such as watercress. Extremely dense growth of Egeria below the water surface may retard water flow and may interfere with hydroelectric output and urban water supplies. Such growth can result in significant public costs of repairs and also the costs associated with lost production. Surface beds further reduce the aesthetic appeal of waterways and may interfere with recreational activities such as boating, swimming and fishing.	1, 4, 5, 7, 8
	Elaeagnus (<i>Elaeagnus x reflexa</i>)	Dense, spiny, vigorous, scrambling shrub. Previously grown as hedge. Brown, scaly stems with spines. Oval leaves green above & scaly brown on undersides. Hanging clusters of small, white fragrant flowers (Mar-May). Reddish-orange, drupe-like fruit. Habitats include shrublands, forest margins, roadsides, and wetland areas. Dispersal is through vegetative spread, and bird & mammal-spread seed. Elaeagnus forms large dense stands, smothering regenerating forest & is a problem in forest interiors & light gaps. Displaces native species up to mid-canopy level.	4, 5
	Grateloupia (Devil's Tongue) (<i>Grateloupia turuturu</i>)	Grateloupia is native to Japan and Korea. It is a large perennial seaweed, with flat blades that change colour seasonally and are deep red, burgundy, or maroon in colour, and a holdfast for grasping on to firm, typically rough surfaces such as coralline algae (appearance of 'pink paint' on rocks). Blades that are detached from the plant can survive and go on to attach in other locations. Grateloupia reproduces both vegetatively from the edges of its blades, and by spores that settle after being in the plankton and produce small round discs that send up many upright 'shoots', which, in turn, can produce tens of thousands of additional spores. The alga can grow to a remarkably large size for a red seaweed, up to 3 metres in length. Grateloupia is found in the intertidal and upper subtidal in a wide range of habitats. Plants have been observed attached to rocks, pebbles, shells, aquaculture facilities and shellfish. Grateloupia is also tolerant to a range of water temperatures (4°C to 28°C), salinities (15-37) and is found in sheltered and exposed areas as well as in enclosed pools and in running water. In areas that are suitable for Grateloupia colonisation, this species tends to dominate the algal flora. Grateloupia has the potential to negatively impact on environmental marine values via competing with native alga for important resources like space, light, and nutrients, and altering habitats in the low intertidal and upper sub-tidal environments. It is capable of impacting upon environmental, commercial, Maori cultural and spiritual values, human health, and social values. Grateloupia has high impacts on marine values such as species diversity.	1, 4, 5

Harmful plant species	Grey Willow (<i>Salix cinerea</i>) Also known as: Pussy Willow, Shrub Willow, Sallow	Deciduous shrub or small tree <7m tall but usually 2m tall. Bark is rather smooth. Stems grey or greenish-grey & hairy, or reddish to dark purple and are not brittle. Leaves shiny on upper side and covered with fine grey hairs underneath, not bitter. Flowers (Sept-Oct) appear as separate male and female cylindrical catkins (no petals). Fruit may contain many seeds. Habitats include wetlands, riverbanks, wet areas behind coastal dunes and nearby drier places. Dispersal is seed spread via wind. Grey willow blocks waterways & modifies wetlands. Grey willow is a NPPA plant.	1, 4, 5, 7, 8
	Hawthorn (<i>Crataegus monogyna</i>)	Thorny, much-branched, deciduous hedge plant <10m high. Stiff spines on stems. Triangular, hairless leaves have 3-7 deep lobes & are often eaten by pear slugs. Covered in sweetly-scented white or pink flowers (Nov). Shiny, round, crimson berries. Habitats include hedgerows, roadsides, old house sites, and riparian zones. Prefers distinct seasons & cold winters. Dispersal is through seed spread by birds & probably possums. Hawthorn forms thick, impenetrable stands that displace native species. Host for fire blight disease.	4, 5
	Hornwort (<i>Ceratophyllum demersum</i>) Also known as: "Coon's tail"	Hornwort is a submerged freshwater weed found in still and flowing waters of streams, rivers, lakes and ponds. It has been found growing to depths of 16 metres in clear deep lakes. Leaves are finely divided, with minute teeth which make the plant feel rough to the touch. It lacks roots but has modified leaves that anchor the plant in bottom sediments. New plants can form from each piece of the easily broken stems. Hornwort rapidly invades water of varying clarity, temperature, light and nutrient level, and its dense growth habit crowds out native species. It is a major weed in hydroelectric dams, also impeding irrigation, drainage and other water uses. Hornwort is an unwanted organism under the Biosecurity Act 1993, and is banned from sale, propagation, and distribution under the National Plant Pest Accord.	1, 4, 5, 7, 8
	English Ivy (<i>Hedera helix</i> ssp. <i>Helix</i>) Also known as: Common Ivy	Long-lived, woody, climbing, evergreen perennial. Stems <30m long, climb or creep with holdfast roots. Also has non-climbing fertile branches with unlobed leaves arranged spirally around stem. Leaves of non-fertile shoots 5-lobed. Yellowish-green flowers (Mar-May) in rounded, umbrella-shaped clusters. Purplish-black, berry-like fruit. Habitats include riparian zones, cliffs, open forest, plantations, and roadsides. Tolerates wide range of conditions including shade, frost, and damp. Dispersal is through seeds dispersed by birds and vegetative spread from stem fragments and garden refuse. Ivy carpets the forest floor & trees, climbing to top of tallest trees. Specialised rockland & epiphytic plants significantly impacted.	4, 5
	Japanese Honeysuckle (<i>Lonicera japonica</i>)	Evergreen climber, can grow <15m/year. Oval leaves, lighter green underneath; in winter or low light conditions may be toothed or cut. Fragrant, paired, white or yellow tubular flowers (Sept-May). Black berries. Habitats include shrublands, forest margins, roadsides, plantations, coastal areas, wetland margins, and offshore islands. Well adapted to low light conditions. Frost, wind, drought tolerant. More vigorous in deeper valley soils. Dispersal is through seed spread by birds and garden refuse dumpings. Japanese Honeysuckle invades disturbed forests & margins and out-competes other plants by smothering. Japanese honeysuckle is a NPPA plant.	1, 4, 5, 7, 8
	Japanese walnut (<i>Juglans ailantifolia</i>)	Japanese Walnut is a quick growing, hardy, deciduous tree, which may grow up to 15 metres tall. Japanese Walnut has wide spreading branches and the leaves are large, up to 60 centimetres. The young branches and leaf stalks are hairy. The flowers, which appear between October and November, are green or pinkish in long catkins (spikelike group of flowers). These are followed by thick-shelled walnuts when mature. Japanese Walnut trees are often found near rivers and streams (as the nuts float downstream from mature trees and seed on the riverbanks and floodplains). However, the plant is frequently seen in farm and garden situations where the tree has been planted for shade or ornamental purposes. Japanese Walnut represents a potential threat to indigenous biodiversity values, particularly along riparian, wetland and forest margins. The plant matures very quickly and, once established, competes very effectively with other tree seedlings for soil moisture, nutrients and light thereby suppressing the regeneration of indigenous flora and reducing the vigour and density of indigenous flora species in such areas. The obstruction or infestation of drainage channels or natural and recreational areas by Japanese Walnut may also be a problem on occasion.	4, 5, 7, 8
	Jasmine (<i>Jasminum polyanthum</i>)	Evergreen climber up to mid canopy height, twines around host. Opposite, compound leaves, 7 leaflets, small, shiny, dark green when mature; new growth red-tinged. Masses of highly scented, small white tubular flowers in spring; some flowers present all year round. Glossy black fruit with dark red pulp. Habitats include forest margins & gaps, shrubland, and roadsides. Tolerates frost, shade, moisture. Main dispersal method is via garden escapes or dumped garden refuse. Very rapid growth from stem fragments. Seed is also dispersed by birds. Jasmine forms an impenetrable groundcover, smothering all vegetation to mid-canopy level. Alters forest composition, suppresses regeneration.	4, 5

Harmful plant species	Lagarosiphon oxygen weed (<i>Lagarosiphon major</i>)	Lagarosiphon Oxygen Weed is a perennial aquatic plant, which grows wholly submerged in fresh water. The plant has spiralled green leaves on slender brittle stems that may grow up to five metres long. The plant has tiny pink flowers that appear in mid-summer. Lagarosiphon is spread by vegetative fragments. Dispersed by water flow or by people transporting fragments on their boats, trailers and fishing nets, it is very difficult to control once established. Lagarosiphon poses an extraordinary threat to Taranaki waterways. The plant is extremely competitive and shades out indigenous aquatic flora species, thereby reducing species diversity in affected water bodies. Lagarosiphon may also kill fish by depleting oxygen levels in water. The plant also liberates oxygen as it grows, but heavy infestations diminish oxygen available to fish by reducing water circulation and by the rotting of dead plants withdrawing oxygen. By modifying habitats and smothering other useful species, Lagarosiphon may displace traditional food sources of value to Maori such as watercress. Large dense mats of Lagarosiphon may impede water flow and may interfere with water utilisation. The plant has the potential to interfere with hydroelectric power generation output and urban water supplies resulting in significant public costs of repairs and also the costs associated with lost production. Surface beds further reduce the aesthetic appeal of waterways and may interfere with recreational activities such as boating, swimming and fishing.	1, 4, 5, 7, 8
	Pampas (<i>Cortaderia selloana</i> and <i>C. jubata</i>)	Pampas plants can grow up to three metres high and are erect, tall, clump-forming perennial grasses with coarse abrasive leaves. The distinctive flower stems can grow up to five metres high. Other than different colour flowers, the plants share the same features and require the same control measures. Pampas has a fast growth rate and is very hardy, and flowers prolifically. The primary mode of distribution for Pampas seed is by wind and seed can be blown a considerable distance away from the parent plant. It can also be dispersed by gravel, vehicles and livestock. Pampas predominantly impacts on indigenous biodiversity and, to a lesser extent, forestry production values. The biggest threat to indigenous biodiversity values is in coastal areas where Pampas cannot be easily shaded out and/or managed. It is a particular threat on coastal cliffs, islands and sand dune habitats but also can impact on wetlands, and scrub and forest margins. In those areas Pampas can suppress or exclude indigenous flora, and may eventually eliminate indigenous seed sources, thereby altering the existing structure and species composition. The plants can be grazed by stock. Pampas can be readily controlled using herbicides although this form of control is costly and time consuming. Mechanical removal of large mature plants is difficult.	4, 5, 7, 8
	Periwinkle (<i>Vinca major</i>)	Prostrate, scrambling, hairless, evergreen perennial <50cm tall. Forms dense mats of long running stems with roots at nodes. Dark green, glossy, leathery leaves, opposite & oval, pointed tips, hairy midribs & edges. Blue-violet tubular flowers (with paler centres) <5cm in diameter all year round. Habitats include riparian zones, roadsides, banks, lowland & coastal forest, alluvial flats. Tolerates shade and wide range of soil conditions. Dispersed by seed & garden dumping. Moved with soil & on machinery. Similar to tradescantia, periwinkle forms a thick carpet that smothers other plants even in shade conditions. Stops regeneration of native seedlings.	4, 5
	Pink ragwort (<i>Senecio glastifolius</i>)	Pink ragwort shares many of the same biological features of Yellow ragwort and both are biennial herbaceous perennials. Pink ragwort has purplish-pink flowers with a yellow centre and flowers from August to December. It can grow up to 1.5 metres tall. The majority of plants flower in their second season, from December to March, followed by mature seeds a few weeks after the first appearance of flowers. A large plant can produce 150,000 seeds in one season. It commonly grows 45 to 60 centimetres high. Both plants can be a serious pasture weed. However, they can also found in waste places, riparian margins, open forests and swamps. Once established, the plants have the ability to spread rapidly and invade 'clean' pasture areas. They seed freely and are dispersed principally by wind (for Ragwort, which is the more established plant, 99% of seeds fall within 14 metres of the parent plant) and, to a lesser extent, by water and animals, and in hay.	4, 5
	Plectranthus (<i>Plectranthus ciliates</i>)	Trailing, herbaceous groundcover. Stems densely covered in purple hairs. Broad, oval, pungent leaves <12cm long by 7cm wide, green above & glossy purple underneath, with purple veins that are visible on upper surface. White flowers (Dec-Aug) speckled with small purple spots. Small, dark brown nutlets. Habitats include forest edges, roadsides, riparian zones, disturbed or low forest, garden sites. Prefers shady to semi-shady situations, & well-drained soils. Tolerates frost. Seed dispersal minimal, vegetative spread from vigorous sprawling runners. Plectranthus forms thick dense mats smothering native seedlings & suppressing regeneration. Can completely dominate roadsides. It is a NPPA plant.	1, 4, 5, 8
	Potato Vine (<i>Solanum jasminoides</i>) Also known as: Jasmine Nightshade	Woody vine. Arching, twining stems <15m long. Medium to purple green leaves (evergreen in mild locations), single or trifoliate, heart-shaped, prominently veined. Leaves alternate on the stem. Starry white flowers with blue & yellow stamens in loose clusters on end of stems, year round. Blue-black berries. Habitats include shrub, forest margins, and stream sides. Prefers full or part sun. Seeds dispersed by birds, however is a shy seeder. Also dispersed through dumped garden material. Forms dense, very vigorous growth smothering other vegetation.	4, 5

Harmful plant species	<p>Reed Sweet Grass (<i>Glyceria maxima</i>) Also known as: Poa Aquatica</p>	<p>Erect grass forming dense mats in wetlands, water edges. Shiny, bright green leaves soft, <600mm long, each blade ending in an abrupt point. Leaf edges rough to touch. Distinctive brown seed heads (Feb) <1.5m, long-lived seeds. Habitats include any wet ground: wetlands, stream banks, and lake edges. Dispersal is mainly seed spread by wind and water: rhizomes break off and root in damp ground. It is also spread by machinery, fishing gear, and animals. Reed sweet grass rapidly forms dense mat in wet ground, crowding out most native plants.</p>	4, 5
	<p>Smilax (<i>Asparagus asparagoides</i>) Also known as: Bridal Creeper</p>	<p>Climbing perennial creeping herb <3m. Grows from short rhizomes with tuberous roots. Smallish glossy thin green leaves, alternate, broadly ovate, with sharp point. Small greenish-white flowers (Jul-Aug). Small sticky red berries. Habitats include disturbed forest & margins, coastal areas, and roadsides. Prefers fertile, well-drained, lightly-textured soils, tolerates all but wettest soils. Dispersal method is mainly seed dispersed via birds, animals, machinery but can also be dispersed by dumped tubers in garden refuse. Out-competes other vegetation by forming pure colonies. Forms canopy over plants 2-3m high, even in shade. Serious threat to native plant communities. Particular threat to pohutukawa & kowhai. Smilax is a NPPA plant.</p>	1, 4, 5, 7, 8
	<p>Spanish heath (<i>Erica lusitanica</i>)</p>	<p>Spanish Heath is an erect, woody perennial scrub that grows up to two metres tall. It can be identified by its upright woody stems and dense short narrow leaves, and an abundance of white to light pink flowers on the extremities, which make an impressive display through the spring and summer. The plant can grow in dense stands or in isolated patches and has dust-like seeds, which are easily spread by wind. Once established it is difficult to control. The current impacts of Spanish Heath are primarily on lightly grazed agricultural production. The plant adapts well to infertile soils and is capable of totally suppressing pasture or restricting stock grazing in affected areas. The impacts on farm productivity and the cost to land occupiers to control Spanish Heath may be significant – particularly on properties that are only marginally financial sustainable. It grows abundantly on some hillsides although it is largely confined to poor and acidic soils or open disturbed habitats such as steep embankments, roadside margins, and old landslides. Spanish Heath also represents a potential threat to indigenous biodiversity values by altering short, open indigenous scrub and tussock habitats, and displacing indigenous flora species in those areas.</p>	4, 5
	<p>Sycamore (<i>Acer psuedoplanatus</i>) Also known as: Sycamore Maple</p>	<p>Deciduous tree <20m tall. Smooth grey bark becoming rough with age. Dark green palmate leaves, 5 lobed, toothed margins (10-25 cm long), reddish petiole 5-10 cm long, opposite on stem. Leaf undersides pale grey-green, with light brown hairs on the veins. Yellow-green flowers (Spring) on pendulous racemes, 20-50 flowers on each stalk. Clusters of winged seed (2-5cm long). Habitats include partially modified & modified habitats, particularly in colder areas, riparian zones, and forests. Dispersal is via wind and gravity. Sycamore has started to naturalise throughout New Zealand.</p>	4, 5
	<p>Tree Privet (<i>Ligustrum lucidum</i>) Also known as: Hedge Privet, Broad Leaf Privet</p>	<p>Small med, hardy, fast growing, evergreen tree or dense shrub <10m high that can reach 14m in foliage diameter. Dark green, glossy oval leaves, pointed tips, smooth edges. Long panicles of strongly scented white flowers (Nov-Mar). Berry-like bluish or purplish-black drupes. Habitats include hedgerows, roadsides, lowland & coastal forest, wetlands, plantations. Tolerates wide range of conditions. Widespread & common. Tree privet is seed dispersed by birds, over long distances by Kereru. Replaces mid canopy trees (taraire, towai, pohutukawa) & completely dominates areas of forest if unhindered. Chinese privet displaces forest shrub tier & marginal shrubs in alluvial forests. Leaves & fruit poisonous, perfume contributes to asthma. Tree privet is a NPPA plant.</p>	1, 4, 5, 7, 8
	<p>Tutsan (<i>Hypericum androsaemum</i>) Also known as: Sweet Amber</p>	<p>Evergreen or semi-evergreen erect shrub or subshrub <1.5m high. Reddish, ridged stems. Aromatic leaves oval, usually opposite, & greenish often with a red blush. Yellow flowers (Nov-Feb) with numerous stamens clustered on end of branches. Round, green, fruit ripen to red & then black. Habitats include riparian zones, coastal areas, roadsides, banks, disturbed areas, and non-intensively farmed land. Prefers wetter, cooler areas. Tolerates light shade. Dispersal is via birds, wind, soils disturbance & water. Tutsan forms extensive patches. Dense cover of branches & rotting leaves smothers existing low growing plants & seriously inhibits regeneration. Tutsan is a NPPA plant.</p>	1, 4, 5, 7, 8
	<p>Undaria (<i>Undaria pinnatifida</i>)</p>	<p>Undaria is a golden-brown laminarian kelp, which can reach 1-2 metres in length. Mature Undaria is easily distinguished from native kelp by its 'frilly' spore-producing structure (the sporophyll) near the base of the plant, however, the plant's juvenile forms are difficult to distinguish from other native seaweeds. Since its initial discovery in the 1980s Undaria has become established in many ports and extensive parts of the eastern coastline. The plant has a rapid growth rate and tolerates a wide range of wave exposures – from sheltered marinas to the open coast. Although most commonly found at depths of 1-3 metres below the surface, Undaria can be found at up to 18 metres below the surface. It can grow on any hard surface, including artificial substrates such as mooring ropes, pylons, vessel hulls, and floating pontoons. Undaria is a highly invasive species. Once established it has the ability to replace or exclude native seaweed species and associated marine flora. By modifying coastal habitats and smothering other useful species, Undaria may displace paua, mussels and other traditional food sources of value to Māori and other seafood gatherers. Undaria would pose a significant threat to any marine farming proposed for Taranaki waters as it can interfere with marine activities by fouling mussel and salmon farms, and boats. Heavy infestations may also clog marine farming equipment, slow growth of mussels, and restrict water circulation. Heavy fouling of boats seriously decreases their efficiency.</p>	1, 4, 5, 8

Harmful plant species	Wandering Willy (<i>Tradescantia fluminensis</i>) Also known as Wandering Jew	Hairless, succulent creeping plant <50cm tall. Alternate, oval, shining leaves form a sheath around stem. Clusters of white star-shaped flowers (Aug-Nov). Habitats include riparian zones, alluvial flats, lowland forests, coastal areas, damp shrublands, and wetland margins. Prefers cool, moist, shaded conditions. Wandering willy does not set seed in New Zealand. Succulent stems break off & root easily & are dispersed by water, animals, people, & machinery. Spread locally by creeping. Wandering willy is a serious forest floor competitor forming dense mats that smother vegetation & prevent regeneration. Causes dermatitis in dogs & other animals. It is a NPPA plant.	4, 5, 7, 8
	Woolly nightshade (<i>Solanum mauritianum</i>)	Woolly Nightshade is a fast-growing, short-lived shrub or tree, which can grow up to 10 metres tall. Its small purple flowers are produced year-round, and develop into marble sized green/yellow bird-dispersed fruit. The plant tolerates semi-shade and can be invasive in forest margins, disturbed forests, rough pasture, coastal habitats and waste ground. The impact of Woolly Nightshade is principally on indigenous biodiversity values. Woolly Nightshade is very free seeding with the seeds mainly being spread by birds. The plant matures quickly and forms dense, often pure stands that restrict the regeneration rate of native species. Woolly Nightshade is moderately toxic to humans and livestock: the hairs from the leaves can irritate skin, eyes, nose and throat on contact.	4, 5, 7, 8
	Yellow bristle grass (WRC), (FF) (<i>Setaria pumila</i>)	Yellow bristle grass is an upright annual summer-growing plant growing 25–45 cm high, although in open pasture its first leaves are typically parallel to the ground. The leaves are yellow-green to green in colour and usually red or purple at the base. The seed head is distinctive, with cylindrical seed heads with many yellow-tinged bristles. The bristles are initially green, but soon change to a golden-brown colour, which give the grass its name. Yellow bristle grass reproduces by seed, and seeds are dispersed by water, soil movement, animals, machinery, and as contaminants of crop seed and hay. The barbed seed heads are often carried in fur, feathers, or clothing. Seeds are hard-coated and most float on water. Germination typically starts in mid-October and peaks from mid-November to mid-December depending on conditions. Early seed heads can appear as early as late December but mostly in January and February, and the plant is a prolific seeder, with up to 60 seed heads. Yellow bristle grass occurs in areas with adequate summer rainfall, and can tolerate dry conditions once established, but it is frost tender. It grows in areas where the soil has been disturbed, including cultivated areas, old pastures and along footpaths and the side of roads, especially where water collects. While yellow bristle grass is palatable to livestock during the vegetative stage, it has poor nutritive values and stock avoid it after seed heads emerge (mid-January to May). There is also evidence that seed heads can cause lesions and ulcers to the mouths of grazing cattle. Studies have shown that dairy farms infested by the plant can see a 13 per cent drop in dry matter production, with the cost of supplementary feed required to maintain milk production estimated to be \$343 per hectare a year.	1, 4, 5