

**Te Mahere Marohi ā-Rohe
Whakahaere Kaupapa Koiora
Orotā mō Tāmaki Makaurau**

**Proposed Regional Pest
Management Plan**

November 2017



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He Mihi

Tuia ki te rangi

Tuia ki te whenua

Tuia ki te moana

Tuia te here tangata

Ka rongo te pō ka rongo te ao.

Bind the domain of the upper realm

Bind the domain of the land,

Bind the domain of the ocean

Bind the tapestry of life which affirms our connection to the natural world and to one another.

1 Kupu Whakataki / Introduction

1.1 Kaihora me ōna tikanga / Proposer and purpose

The Auckland Council has a regional leadership role under the Biosecurity Act 1993 (the Biosecurity Act), and intends to establish a regional pest management plan (RPMP). The purpose of the proposed RPMP is to outline the framework to efficiently and effectively manage or eradicate specified organisms in the Tāmaki Makaurau / Auckland region.

Doing so will:

- minimise the actual or potential adverse or unintended effects associated with those organisms; and
- maximise the effectiveness of individual actions in managing pests through a regionally coordinated approach.

Many organisms in the Tāmaki Makaurau / Auckland region are considered undesirable or a nuisance, but not all can be effectively managed, mainly due to resource constraints and limitations with pest control methods. The Biosecurity Act has prerequisite criteria that must be met to justify intervention using the regulatory powers of the Act. This Proposal identifies those organisms classified as pests to be managed through the RPMP.

Once operative, the RPMP will empower the Auckland Council to exercise the relevant strategic, advisory, service delivery, regulatory and funding provisions available under the Biosecurity Act to deliver the specific objectives identified in Part Two: Pest Management.

Section two of this document sets out the broader context of managing pests in Tāmaki Makaurau / Auckland, including an overview of the regulatory and non-regulatory actions of the Auckland Council which support the provisions of the RPMP.

1.2 UHINGA / Coverage

The proposed RPMP will operate within the administrative boundaries of the Tāmaki Makaurau / Auckland region and covers a total area (land and sea) of 1,615,972 ha (see Figure 1).

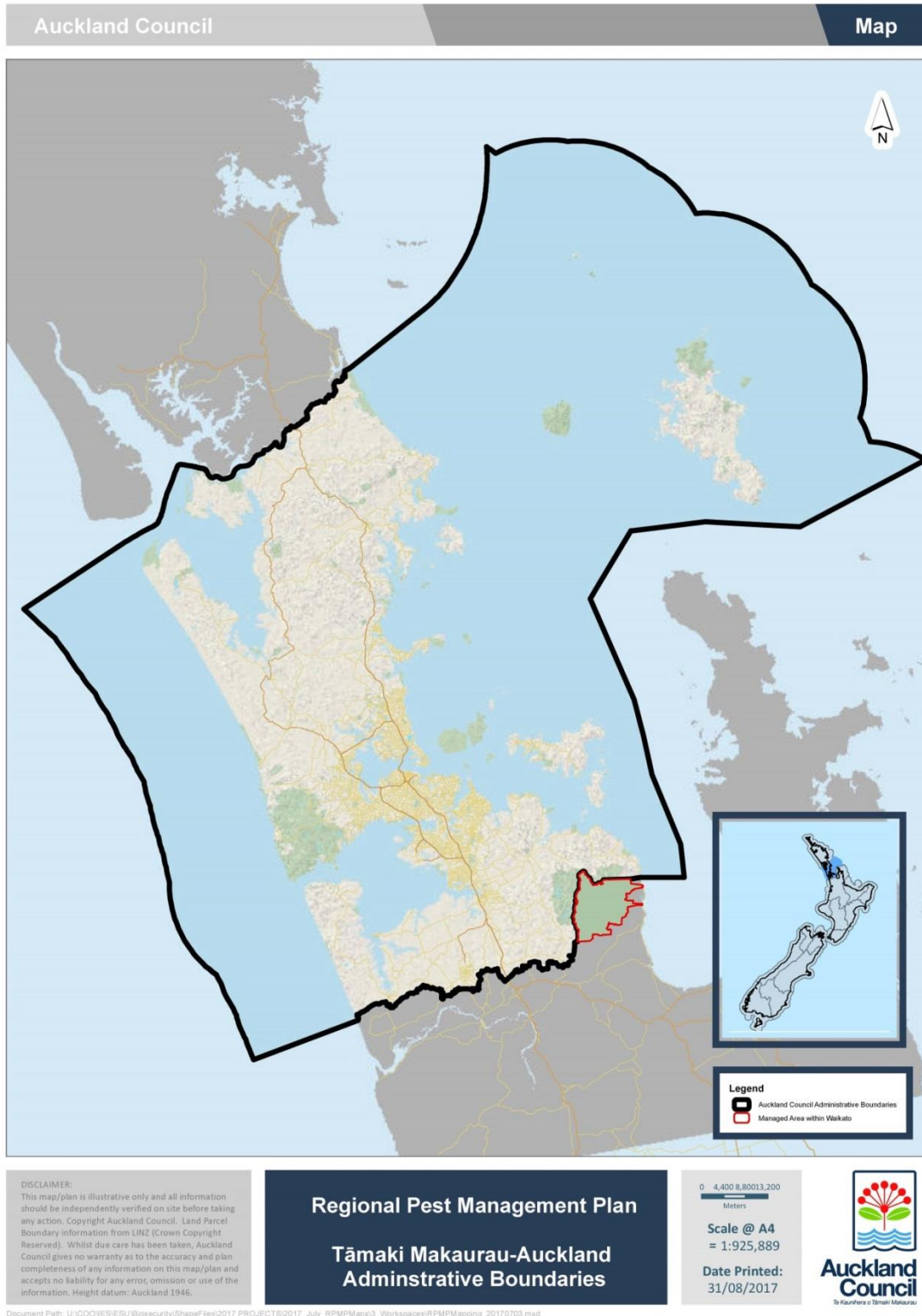


Figure 1 Administrative boundaries of Tāmaki Makaurau –Auckland. At time of writing, Auckland Council is also the management agency for that portion of the Hunua ranges falling in the Waikato region (outlined in red in Figure 1), in order to provide for consistent integrated management across this ecologically important area. However, the rules of the Waikato Regional Pest Management plan apply in this area.

1.3 Wā kawenga / Duration

The proposed RPMP will commence on the date on which the Council fixes the Council's seal and it becomes operative as a Regional Pest Management Plan under s77 of the Biosecurity Act. It is proposed to remain in force for a period of 10 years following commencement. The RPMP may cease at an earlier date if the Auckland Council declares, by public notice, that the RPMP has achieved its objectives. It may also cease at an earlier date if, following a review, it is revoked.

1.4 Arotakenga i te mahere / Plan review

Auckland Council may review the RPMP or any part of it if they have reason to believe that the RPMP, or part of the RPMP, is failing to achieve its objective or that relevant circumstances have changed since the RPMP commenced. This will enable the council to quickly respond, as required, to any new issues that may emerge over the life of this plan, such as new regional incursions, including where central government responses have not been undertaken, or have been discontinued.

The Council must review the RPMP if it has not been reviewed for ten years, or if it is due to terminate in less than 12 months and it is proposed to extend the RPMP's duration. A review must also be initiated if the RPMP is inconsistent with a National Policy Direction (NPD), and any changes to resolve any inconsistency have a significant effect on a person's rights and obligations.

A council can make minor amendments to the RPMP without needing a review. Any minor amendment:

- must not significantly affect any person's rights and obligations
- must not be inconsistent with the NPD.

A review may result in no change to the RPMP, or may extend its duration.

2 He rauhanganga kōrero ā-mahere, ā-ture, ā-rautaki / Planning, statutory and strategic background

2.1 Rauhanganga ā-ture / Legislative background

Auckland Council is a unitary authority, with the powers, duties and responsibilities of both a territorial authority and a regional council. Regional councils and unitary authorities undertake local government activities and actions under several legislative mandates. All regional councils and unitary authorities in Aotearoa / New Zealand have favoured the Biosecurity Act 1993 for pest management by preparing and operating their RPMPs. Most councils, including Auckland Council, also undertake a range of non-regulatory pest management responses additional to those specifically provided by the Biosecurity Act.

2.1.1 Ture Ārai Koiora 1993 / Biosecurity Act 1993

Auckland Council, as a unitary authority can use its regulatory powers under the Biosecurity Act to eradicate or effectively manage pests in its region, including unwanted organisms. A regional council is not legally obliged to manage a pest, or other organism to be controlled, unless it chooses to do so. As such, the Biosecurity Act's approach is enabling rather than prescriptive. It provides a framework to gather intervention methods into a coherent system of efficient and effective actions. Indeed, as noted in section 1.1 above, the Biosecurity Act has prerequisite criteria that must be met to justify such intervention.

Part 5: Managing pests and harmful organisms

Part 5 of the Biosecurity Act sets out the statutory scheme for pest management. The primary purpose for pest management is to provide for harmful organisms that are present in New Zealand to be managed effectively or eradicated. A harmful organism is assigned pest status if included in a pest management plan (also see the prerequisites in ss69–78 of the Biosecurity Act). Part 5 includes the need for ongoing monitoring to determine whether pests and unwanted organisms are present, and keeping them under surveillance. Part of this process is to develop effective and efficient measures (such as policies and plans) that prevent, reduce, or eliminate the adverse effects of pests and unwanted organisms on land and people (including Māori, their kaitiakitanga and taonga). Part 5 also addresses the issue of who should pay for the cost of pest management. (See section 10 for cost allocation information).

Part 9: Miscellaneous provisions

Part 9 of the Biosecurity Act allows for the registration of unwanted organisms, being those capable or potentially capable of causing harm to any natural and physical resources or human health. Identification of a species as an unwanted organism means regulatory programmes can be developed to address that organism, without it needing to be included in a pest management plan. For example, prior to inclusion in this RPMP the regulatory

response under the Biosecurity Act in Tāmaki Makaurau / Auckland to kauri dieback pathogen (*Phytophthora agathidicida*) was mandated only by its status as a registered unwanted organism. Unwanted organisms can also be included in Pest Management Plans if that will enable more effective and transparent management responses, as is the case for kauri dieback pathogen.

Myrtle rust (*Austropuccinia psidii*) is an identified unwanted organism with the potential to be a serious disease for members of the Myrtle (Myrtaceae) family of plants. Its presence on the mainland of Aotearoa / New Zealand was confirmed in April 2017, on pōhutukawa seedlings in a nursery in Kerikeri. There are 27 native species and several highly valued exotic species that are members of the Myrtle family, including pōhutukawa, rātā, mānuka, kānuka, maire and Eucalyptus. To date¹, it has been detected on the native pōhutukawa and rātā species, mānuka and ramarama, one Eucalyptus species, bottle brush and monkey apple. At this early stage of incursion, consideration of myrtle rust as an unwanted organism allows for an appropriate first response (coordinated by the Ministry for Primary Industries (MPI)).

Part 2: Functions, powers and duties in a leadership role

Part 2 of the Biosecurity Act sets out the functions, powers and duties of central and local government.

Central Government

The Minister of Primary Industries is responsible for the administration and coordinated implementation of the Biosecurity Act, and for recording and coordinating reports of suspected new organisms and managing appropriate responses to such reports.

Central government performs a national biosecurity leadership role and is responsible for responding to and managing biosecurity issues at the border – i.e. managing processes for preventing the incursion of problematic organisms, and responding to these when they are detected in Aotearoa / New Zealand for the first time. Auckland Council may assist MPI in such responses, as a member of the National Biosecurity Capability Network.

Once a species has become established in Aotearoa / New Zealand, beyond the stage where it can be eradicated, the Biosecurity Act mandates a range of responses, including the establishment of National and Regional Pest Management Plans.

The Minister is also required to provide leadership through the NPD, which provides mandatory directions on the development and content of pest management plans (s56 of the Biosecurity Act).

Local Authorities

Regional councils are required to provide regional leadership for biosecurity activities to prevent, reduce, or eliminate adverse effects from harmful organisms within their region.

¹ 3 August, 2017.

Some of the ways regional councils can provide leadership include helping to develop and align RPMPs and regional pathway management plans in the region, promoting public support for managing pests, and helping those involved in managing pests to enhance effectiveness, efficiency and equity of programmes.

Section 13(1) of the Biosecurity Act sets out the powers that support regional councils in this leadership role. These are:

- powers to establish (e.g. appoint a management agency for a plan; implement a small-scale management programme)
- powers to research and prepare (e.g. gather information; keep records; prepare a proposal to make and implement an RPMP)
- powers to enable (e.g. giving councils the power to cause monitoring to determine whether pests are present and surveillance of pests is to be carried out);
- powers to review (e.g. disallow an operational plan; review, amend, revoke or replace a plan).

Section 2.3.1 of part 2 of this document sets out in more detail how Auckland Council exercises regional leadership in relation to pest management in Tāmaki Makaurau / Auckland.

Part 6: Administering an RPMP

Once operative, an RPMP is supported by elements of Part 6 (as nominated in the plan) that focus on the voluntary and mandatory actions of a regional council. For example, a regional council must assess any other proposal for an RPMP, must prepare an operational plan for any RPMP (if the management agency for it), and must prepare an annual report on the operational plan.

Changes to the Act since 1993

The Biosecurity Act has been amended since 1993, including most relevantly through the Biosecurity Law Reform Act 2012. Important changes include:

- legislative (e.g. being able to bind the Crown to stated good neighbour rules (GNR) within a pest management plan, or to rules within a pathway management plan)
- structural (e.g. giving regional councils a clear regional leadership role in managing pests; adding pathway management to the suite of pest management programmes; linking programmes with stated intermediate outcomes and programme objectives; using consistent terms in pest management programmes)
- compliance related (e.g. setting out the extra requirements under the NPD that must be complied with; introducing greater transparency of risk assessment in the analysis of benefits and costs)
- procedural (e.g. allowing funding, roles, and responsibilities related to small-scale management programmes to be delegated; allow a partial review (including adding a pest or pathway management plan) to be done at any time)
- consultative (e.g. increasing the flexibility in public consultation).

2.1.2 Ture Tiaki Rawa Taiao 1991 / Resource Management Act 1991

Regional councils also have responsibilities under the Resource Management Act 1991 (RMA) to achieve integrated management of the natural and physical resources of the region, including the Coastal Marine Area (CMA). These responsibilities also include Part 2 matters under the RMA such as sustaining the potential of natural and physical resources, safeguarding life-supporting capacity and protecting environmentally significant areas and habitats (ss5(2), 6(c) and 7(d) of the RMA).

The RMA sets out the functions of Regional councils in relation to the control of the use of land for the purpose of maintenance and enhancement of ecosystems, water bodies and coastal water (s30(1)(c)(iia)), the control of actual or potential effects of use, development or protection of land in any CMA in the region (s30(1)(d)(v)) and the establishment, implementation and review of objectives, policies and methods for maintaining indigenous biological diversity (s30(1)(ga)).

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 a biosecurity risk or those risks are minimised. While the Biosecurity Act is the main regulatory tool for managing pests, there are complementary powers within the RMA that can be used to ensure the problem is not exacerbated by activities regulated under the RMA, and which promote positive biosecurity actions.

The Biosecurity Act cannot over-ride any controls imposed under the RMA, for example, bypassing resource consent requirements, unless the Minister has made a temporary exemption (up to 20 working days) from the provisions of Part 3 of the RMA in an attempt to eradicate an organism and other conditions are met (s7A).

Neither does the Biosecurity Act restrict the range of pests that can be managed using RMA tools. While all regulatory responses must be fair, reasonable and justified, the RMA and Biosecurity Act have different mandates. The RPMP specifies pests and programmes which have been justified through a Cost-Benefit Analysis process, and which frequently require proactive pest control by landowners and others. Pest control conditions attached to a consent required under the RMA have the purpose of remedying, mitigating or offsetting adverse effects arising from that consent and use of land, or because a district or regional plan anticipates a certain level of environmental quality and management post-development, where consent was necessary.

The council's primary resource management tool is the Auckland Unitary Plan (currently Operative in Part (AUP) which includes the Regional Policy Statement and district and regional plans except the district plan for the Tīkapa Moana o Hauraki / Hauraki Gulf Islands (HGI Section) and the regional coastal plan provisions. The Auckland Council District Plan (HGI Section) still applies until the AUP is amended to include this area, and the regional coastal plan provisions are not operative until formally approved by the Minister of Conservation.

Provisions in the AUP promote effective biosecurity management through:

- identification of the threat of pests to the maintenance of indigenous biodiversity
- requirements for pest control as a condition of resource consents affecting natural resources, including requirements to address existing pests at a site, or through the use of measures to reduce the likelihood of pests establishing (e.g. requiring certain procedures are followed in revegetation programmes to address Myrtle rust)
- provisions which facilitate and promote the removal of pests
- land disturbance and vegetation removal rules relating to the movement of soil and kauri material to reduce the risk of spreading kauri dieback pathogen (*Phytophthora agathidicida*)
- requirements relating to the level and cleaning of hull fouling on boats
- linking of biosecurity considerations to the provision and management of aquaculture, marinas and other activities.

The Auckland Council District Plan (HGI Section) has provisions which address biosecurity issues, principally through the inclusion of an appendix of identified plant and animal pests, the control of which is generally identified as a permitted activity (i.e. not subject to the same level of regulatory control as actions relating to other species). Some, but not all of these species are addressed in this RPMP (see section 7.1 for the programmes in the RPMP as they apply to the Hauraki Gulf Controlled Area).

2.1.3 Ture Kāwanatanga ā-Rohe 2002 / Local Government Act 2002

The purpose of the Local Government Act 2002 (LGA) is to provide “a framework and powers for local authorities to decide which activities they undertake and the manner in which they will undertake them”. The LGA currently underpins biosecurity activities through the collection of both general and targeted rates to deliver on requirements under the Biosecurity Act.

The council undertakes a range of non-regulatory and land management biosecurity activities which are provided by the LGA, including on its own land and in order to support community initiatives.

2.1.4 Ture Tiaki Kararehe Mohoao 1977 (Ture Whakatika i te Ture Tiaki Mohoao 1997) me te Ture Kararehe Puihi 1953 / Wild Animal Control Act 1977 (Wild Animal Control Amendment Act 1997) and the Wildlife Act 1953

Activities in implementing this Plan must comply with (and not derogate from) other legislation (s7 of the Biosecurity Act). Two such Acts are the Wild Animal Control Act 1977 and the Wildlife Act 1953. Particular relevant requirements are noted below.

- The Wild Animal Control Act 1977 declares deer, chamois or tahr, and wild pig and goats to be wild animals. This Act controls the hunting and release of wild animals and regulates deer farming and the operation of safari parks. It also gives local authorities the power to destroy wild animals under operational plans that have the Minister of Conservation’s consent.

- The Wildlife Act 1953 controls and protects wildlife not subject to the Wild Animal Control Act 1977. It defines wildlife which are not protected (e.g. feral cattle, feral cats, feral dogs), wildlife which are to be game (e.g. mallard duck, black swan), partially protected or are injurious. It authorises that certain unprotected wildlife may be kept and bred in captivity even if they are declared pests under a pest management plan.

2.1.5 Ture ā-Motu mō te Tohi me te Kimi Haere 2012 / National Animal Identification and Tracing Act 2012

The National Animal Identification and Tracing Act 2012 (NAITA) establishes an animal identification and tracing system that provides for the rapid and accurate tracing of deer (and cattle) for the purpose, among other things, of improving biosecurity management. To meet NAIT requirements, all persons in charge of deer must ensure all deer are tagged with approved ear tags, registered, and records kept of the animals' movements. The NAIT requirements are used as a component of defining 'feral' (as opposed to 'owned') deer for the purposes of this RPMP.

2.1.6 Ture ā-Rohe Tuku Iho mō te Ika Whenua o Waitākere 2008 / Waitākere Ranges Heritage Area Act 2008

The Waitākere Ranges Heritage Area Act 2008 (WRHAA) relates to the parkland and adjacent private land in the Te Wao Nui a Tiriwa / Waitākere Ranges. The purpose of the Act is to “recognise the national, regional, and local significance of the Te Wao Nui a Tiriwa / Waitākere Ranges heritage area”; and “to promote the protection and enhancement of its heritage features for present and future generations.”

The WRHAA identifies 14 heritage features, and healthy, functioning ecosystems are integral to most of these. The WRHAA requires that particular regard be given to the purpose and objectives of the Act when acting under Part 5 of the Biosecurity Act 1993 (including the preparation of RPMPs).

The Waitākere Ranges Local Board takes an active role in the implementation of the WRHAA, including through the provisions of financial and logistical support to the community to undertake biosecurity actions, and the oversight of the development and response to monitoring in the Te Wao Nui a Tiriwa Waitākere Ranges.

2.1.7 Ture Papa Rēhia Moana mō Tikapa Moana 2000 / Hauraki Gulf Marine Park Act 2000

The Hauraki Gulf Marine Park Act (HGMPA) relates to the entire Tikapa Moana o Hauraki / Hauraki Gulf, its islands and its catchments. The HGMPA recognises the national significance of the Gulf and establishes the Hauraki Gulf Marine Park. The purpose of the HGMPA includes to “integrate the management of the natural, historic, and physical resources of the Tikapa Moana o Hauraki / Hauraki Gulf, its islands, and catchments”, “recognis[ing] the historic, traditional, cultural, and spiritual relationship of the tangata whenua with the Tikapa Moana o Hauraki / Hauraki Gulf and its islands” and to “establish

objectives for the management of the Tīkapa Moana o Hauraki / Hauraki Gulf, its islands, and catchments”.

The HGMPA’s purpose and its management objectives are broad, and collectively promote the interrelationship between the Hauraki Gulf and its islands, and the ability of that interrelationship to sustain the Hauraki Gulf environment’s life supporting capacity, as a matter of national significance.

All persons exercising power or carrying out functions for the Hauraki Gulf under any Act specified in Schedule 1 of the HGMPA (which includes the Biosecurity Act) must have particular regard to the national significance of the Hauraki Gulf and its management objectives (s13 of the HGMPA).

See section 7.1 for programmes in this plan applying to the Tīkapa Moana o Hauraki / Hauraki Gulf and its islands.

2.1.8 Ture Whenua Rāhui 1977 / Reserves Act 1977

Under the Reserves Act, the Minister of Conservation may approve the introduction of biological control organisms into reserves vested in the Crown, or in any other reserve if requested by the administering body of that reserve, in order to control wild animals or pest animals or plants. This requirement is subject to the provisions of any other Act applicable to the import, genetic modification, or use of organism(s) concerned, the general policy for the implementation of the Reserves Act, strategy or plan, or other plan approved for the reserve (s51A of the Reserves Act).

2.2 Te tarāwaho ārai koiora i waho o te kaunihera / Biosecurity framework outside the council

An effective biosecurity framework works both within a region and at a national level. Neighbouring regional pest plans and pathway management plans and national legislation, policy and initiatives influence this RPMP. As a result, an RPMP is an integral cog in a secure biosecurity framework to protect Aotearoa / New Zealand’s environmental, economic, social and cultural values from pest threats.

As outlined in section 2.1.1 above and detailed below at section 2.2.1, central government is required to produce National Policy Direction to direct the development of pest management plans.

A number of other national instruments and measures have been developed to improve the effectiveness and efficiency of the biosecurity framework in Aotearoa / New Zealand including:

2.2.1 He Pūrongo Taki Ahunga Ārai Koiora 2025 / Biosecurity 2025 Direction Statement

In November 2016 the government outlined its vision for biosecurity management in Aotearoa / New Zealand through the release of the Biosecurity 2025 Direction Statement. This outlines five strategic directions necessary to strengthen the parts of the national biosecurity system that are working well, to drive change where it is needed, and harness opportunities to work more effectively:

1. “A biosecurity team of 4.7 million.” A collective effort across the country: every New Zealander becomes a biosecurity risk manager and every business manages their own biosecurity risk.
2. “A toolbox for tomorrow.” Harnessing science and technology to transform the way we do biosecurity.
3. “Smart, free-flowing information.” Tapping into the wealth of data available, building intelligence and using powerful data analysis to underpin risk management.
4. “Effective leadership and governance.” System-wide leadership and inclusive governance arrangements support all system participants in their roles.
5. “Tomorrow’s skills and assets.” A capable and sustainable workforce and world-class infrastructure provide the foundation for an effective system.”

The programmes in this RPMP align well with these strategic directions, emphasising the shared responsibilities of pest management and the evidence basis for their inclusion. Preparation and implementation of an RPMP is core to taking regional leadership, combined with the broader operational and other programmes undertaken by the council.

2.2.2 Te Marohi Taiao ā-Motu Aronga Whānui o te Mahi Ahumoana / Proposed National Environmental Standard for Marine Aquaculture

The Ministry for Primary Industries (MPI) in partnership with the Ministry for the Environment (MFE) has proposed a National Environmental Standard for Marine Aquaculture (NES). NES' are regulations recommended by the Minister for the Environment under the RMA. The proposed NES has the objective of developing a more consistent and efficient regional planning framework for the management of existing marine aquaculture activities and on farm biosecurity management, while supporting sustainable aquaculture within environmental limits.

All marine farms would be required to prepare, implement and regularly update Biosecurity Management Plans by January 2025. The criteria for these plans would be specified in a separate document developed by MPI in close consultation with biosecurity experts and is likely to be based on MPI's Aquaculture Biosecurity Handbook.

The proposed NES was released for public consultation between June and August 2017, public consultation closed on the 8 August 2017.

2.2.3 Konihi Kore 2050 / Predator Free 2050

This is an ambitious programme to rid Aotearoa / New Zealand of possums, rats and stoats by 2050. Its aim is to connect and amplify successful efforts already underway

across communities, iwi, private businesses, philanthropists, scientists and government. The intention is also to focus on developing breakthrough predator control tools and techniques (as it is recognised that currently the technology to achieve this ambition is not available).

Four interim goals for 2025 have been set for the project:

- An additional one million hectares of land where pests have been suppressed or removed through Predator Free New Zealand partnerships.
- Development of a scientific breakthrough capable of removing at least one small mammalian predator from Aotearoa / New Zealand entirely.
- Demonstrate areas of more than 20,000 hectares can be predator free without the use of fences.
- Complete removal of all introduced predators from offshore island nature reserves.

Auckland Council recognises and supports the opportunity for a step-change in pest management in Aotearoa / New Zealand, and has developed a complementary programme focusing on pests in Tāmaki Makaurau / Auckland (see “Pest Free Auckland” discussion below).

2.2.4 Te Whakaaetanga Tipu Orotā ā-Motu / National Plant Pest Accord

The National Plant Pest Accord (NPPA) is a cooperative agreement between central government (MPI and the Department of Conservation (DOC)), unitary and regional councils, and New Zealand Plant Producers Incorporated (an industry body of plant growers and their industry partners) to manage risks associated with the sale, distribution and propagation of specific, harmful pest plants. Although the NPPA itself is non-statutory, the approximately 207 plant species (some listings include sub-species) identified by the NPPA have been declared unwanted organisms under Part 9 of the Biosecurity Act, and thus banned from propagation, sale or other distribution. Several plants on the NPPA list are also addressed by management programmes in this RPMP, additional to the restrictions on their spread derived from their status as unwanted organisms.

2.2.5 Whakaaetanga Ārai Mōkai Orotā ā-Motu / National Pest Pet Biosecurity Accord

The National Pest Pet Biosecurity Accord (NPPBA) is an initiative similar to the NPPA, and is a partnership between MPI, DOC, unitary and regional councils, the Pet Industry Associations and the New Zealand Companion Animal Council. Its purpose is to regulate the domestic trade of high-risk pets (excluding cats and dogs) and to encourage responsible pet ownership. The intention is to identify a list of species to be declared as unwanted organisms, although to date no species have been regulated under the NPPBA. As with pest plants on the NPPBA, inclusion of high-risk pets on the NPPBA list does not preclude their inclusion in RPMP programmes.

2.3 Te tarāwaho ārai koiora a te kaunihera / The council's biosecurity framework

The Regional Pest Management Plan sits within a biosecurity framework for the Tāmaki Makaurau / Auckland region and is supported by a number of complementary policies, plans and programmes.

2.3.1 Kaiarataki ā-Rohe / Regional leadership

In addition to the regulatory powers and responsibilities under the legislation described in section 2.1 of this report, the Auckland Council exercises its regional leadership role through its role as the largest landowner in Tāmaki Makaurau / Auckland, provisions in the Unitary Plan, and support to the community to undertake effective pest control on public and private land.

Auckland Council has a unique governance structure in Aotearoa / New Zealand, with a Mayor with specific executive powers, a Governing Body comprised of the Mayor and 20 ward Councillors and 21 Local Boards. The Governing Body together with the Local Boards collectively comprise Auckland Council.

The Governing Body's role includes the development of regional strategies and plans (including the RPMP), although it consults with the Local Boards and others in this role.

Outside of the RPMP, the council has an extensive programme of non-regulatory initiatives to promote improved biosecurity outcomes and both the governing body and local boards have a significant role in the delivery of non-regulatory biosecurity initiatives. These include actions on regional parks (delivered and supported by the governing body) and local parks (delivered and supported by local boards). Both the governing body and the local boards support actions on private land through grants, in-kind resources and advice and support in the development of management responses.

The broader community also undertakes a significant level of pest management in Tāmaki Makaurau / Auckland independent of the council.

As part of its regional leadership role, the council supports national efforts to manage or exclude unwanted organisms in our region in partnership with MPI, on a cost recovery basis.

2.3.2 Tāmaki Makaurau Koiora Orotā Kore / Pest Free Auckland

The Pest Free Auckland programme is a non-regulatory initiative to connect and amplify action by communities and landowners to protect and restore Tāmaki Makaurau / Auckland's wildlife and natural environment. This will be achieved by concurrently eradicating ecosystem-transforming pests and restoring and establishing habitat.

The initiative is linked with Predator Free New Zealand but will aim higher and target a broader suite of pest plants, animals and pathogens. A programme that is focused on just a subset of predators (i.e. rats, possums and mustelids) would not realise the benefits from also controlling herbivores (grazers and browsers), weeds and pathogens. A broader

programme will also align with other central government conservation priorities, such as controlling weeds and kiwi recovery, and thus provide strategic alignment for community groups to access funding support.

The Pest Free Auckland programme will be established as a growing initiative, so that new projects can be added over time.

The programme will comprise three key concurrent components:

1. **Eradicating pests and restoring ecosystems** by focusing on islands, peninsulas, open sanctuaries and corridors. This will include introduction of threatened species at suitable sites and adopting new pest control technologies (e.g. self-setting traps and remote-sensing monitoring).
2. **Education and community empowerment** to encourage community, landowner and householder action and behaviour change to control pests (e.g. promoting responsible pet ownership and appropriate disposal of garden waste), create natural habitats and prevent environmental degradation.
3. **Monitoring and communication applications** to capture current activities and facilitate and motivate new activities. Mobile and social media applications will be used to capture, monitor, communicate and report the pest control activities to show success and population trends, based on key metrics e.g. bellbirds in backyards.

Pest Free Auckland will be facilitated by Auckland Council but delivered through partnerships with community groups, landowners and householders, mana whenua, schools, DOC and the private and philanthropic sectors.

2.3.3 Te Mahere a Tāmaki Makaurau / Auckland Plan

The RPMP will contribute to the achievement of the “protect and enhance” theme of the Auckland Plan by helping ensure effective pest management.

2.3.4 Te Mahere Pae-tawhiti / Long Term Plan

The budget for implementing the plan will be confirmed through the Long-term Plan 2018-2028 process. Consultation on the Regional Pest Management Plan will be aligned with consultation on the Long-term Plan in early 2018.

2.3.5 Rautaki Kanorau-koiora / Biodiversity Strategy

The Auckland Council has an indigenous biodiversity strategy which has as its vision:

“He taonga, ka whaihua ngā rerenga ke o te Ao Turoa i Tāmaki Makaurau

Auckland’s indigenous biodiversity is flourishing and treasured”

As is the case everywhere in Aotearoa / New Zealand, protection and enhancement of indigenous biodiversity in large part requires effective pest control. Many of the regulatory programmes in this RPMP are biodiversity focussed, reflecting this pressing need.

Objectives in the Biodiversity Strategy emphasise the need to prioritise biodiversity actions so as to ensure resources are expended in the most effective way, to maximise

biodiversity outcomes for ecosystems and species. This underpins the council's approach to the implementation of biodiversity programmes, by focusing actions undertaken and/or supported by the council towards priority ecosystems and catchments. Over the last few years, the council has undertaken a systematic prioritisation process for all terrestrial ecosystem types within the region. This in turn is reflected in the programmes in the RPMP through the identification of strategic priority areas for comprehensive and integrated pest management responses in areas of high biodiversity value. (See Section 3 regarding strategic priority areas).

2.3.6 Kaupapa Here Ngaki Tarutaru / Weed Management Policy

Auckland Council's Weed Management Policy was adopted in 2013 and aims to guide weed management and vegetation control on land owned or administered by the council and its council controlled organisations (CCOs) (including the road corridor and waterways). Both Auckland Council and its CCOs are required to implement it.

This policy has eight non-hierarchical objectives which guide weed management activities:

4. Take an integrated approach to weed management and vegetation control.
5. Ensure best practice in weed management and vegetation control.
6. Minimise agrichemical use.
7. Minimise non-target effects of agrichemical use.
8. Ensure public health and safety.
9. Protect and enhance the environment.
10. Empower the community to manage weeds under the policy.
11. Deliver weed management and vegetation control which is value for money.

To be considered a weed a plant needs to be growing in the wrong place and having an adverse effect on people, Maori cultural values, infrastructure, other built assets or the natural environment.

The Weed Management Policy's focus is largely on the method of delivery of weed control, including the control of vegetation that may not be a particular biosecurity threat (for example, species which may impact on infrastructure) but is considered a plant growing in the wrong place.

The RPMP, in contrast, is focused on the outcomes to be achieved through pest management programmes, in line with the purpose of RPMPs as outlined in Part 5 of the Biosecurity Act. It does not specify the methodology that is to be used to implement the pest management programmes outlined in the RPMP.

The Weed Management Policy is relevant to (and a directive of) the Auckland Council delivery of weed control programmes both under and outside of the RPMP.

2.3.7 Rerekētanga o te āhuarangi / Climate Change

Climate change is expected to exacerbate invasive species problems in a number of ways. Warmer temperatures will make Tāmaki Makaurau / Auckland suitable for sub-tropical species that currently find our region too cold to establish invasive populations. Increased disturbance from severe weather events may spread invasive species into and around the region, and damage intact native ecosystems making them easier to invade. Native species may also be less well matched to the changing conditions, and therefore find it harder to compete successfully with invasive species. Climate change will be an increasingly important factor in Tāmaki Makaurau / Auckland's biosecurity. In recognition of this, this RPMP takes a precautionary approach to species which are likely to be advantaged in the region as a result of climate change.

2.4 Ārai Koiora ā-Moana / Marine Biosecurity

The Tāmaki Makaurau / Auckland region has over 3000km of coastline, including three major harbours. Tāmaki Makaurau / Auckland is a high risk site for marine pest invasion due to the scale and complexity of recreational and commercial local, domestic and international vessel movements. Introduced marine species spread to and within marine environments by way of fouling on hulls and other equipment and in ballast water. Tāmaki Makaurau / Auckland is a source of invasion to other regions from vessel movements departing Tāmaki Makaurau / Auckland, especially via the Ports of Auckland.

The introduction of more non-native marine species to the region in the future is likely to be inevitable. Introduced marine species have the potential to cause significant ecological and economic impacts on our marine environment by: competing with native species for food, space and other resources, consuming native and aquaculture species, fouling natural and artificial surfaces, spreading disease, and releasing toxic compounds. About 260 non-indigenous marine species have been identified in Aotearoa / New Zealand, of which, 141 species are known to occur in the Tīkapa Moana o Hauraki / Hauraki Gulf alone (State of our Gulf 2014).

There are issues around the technical feasibility of controlling marine invasive species once an incursion has occurred. For effective management, a thorough understanding of the pest's biology and its ability to adapt and reproduce in the regions' environment is critical. Many marine invasive species produce thousands of offspring which can rapidly disperse across large areas via water currents. Application of toxins is also problematic in the marine environment, both due to pollution concerns and because it may be rapidly diluted and dispersed. The marine environment poses access difficulties in comparison to land-based invasive species management.

The council's involvement in marine biosecurity work is a relatively recent development, partially driven by the increased clarity on the respective roles in central and local government (as articulated in the Pest Management Plan of Action 2011 and adopted by Cabinet and Regional Council Chief Executives as a matter of policy).

Broadly speaking, as with other aspects of pest management under the Biosecurity Act, central government is responsible for preventing the establishment of pests new to Aotearoa / New Zealand, including through developing eradication programmes if these pests are detected, and will be the lead agency in implementing these programmes. Additionally, if a pest is already in Aotearoa / New Zealand, but a national objective has been set to eradicate or contain that pest, this will also be the subject of a central government led response. Central government will also be the lead agency in relation to programmes relating to government owned or administered areas (such as marine reserves).

Central government is also responsible for the production of craft risk management standards (CRMS) which specify requirements for the management of risks associated with vessels entering Aotearoa / New Zealand territory. A CRMS addressing biofouling on the hulls of vessels arriving in Aotearoa / New Zealand will come into force in May 2018.

The government has also released a proposed NES for Marine Aquaculture, which includes requirements for marine biosecurity plans on aquaculture farms (see section 2.2.2).

2.4.1 Whakahaere ara whāinga / Pathway management

Given the limitations on effective control of marine pests, and their shared vectors of spread, the most effective and efficient way to address these pests is to prevent their establishment, and spread to new areas, by managing the ‘pathways’ which facilitate this establishment and spread.

Because of this, Auckland Council has not included marine species in this plan, but rather will focus on the management of the pathways, both within Tāmaki Makaurau / Auckland, and between Tāmaki Makaurau / Auckland and other regions.

This plan does include pest management provisions which address the movement of non-marine invasive species to and between the high value islands of Tīkapa Moana o Hauraki / the Hauraki Gulf.

As outlined in section 2.1.2, the council has included provisions in its unitary plan relating to the level and cleaning of hull fouling on boats and linking of biosecurity considerations to the provision and management of aquaculture, marinas and other activities.

2.4.2 Tūhononga Ārai Koiora ā-Moana ki te Raki / Top of the North Marine Biosecurity Partnership

The Top of the North Marine Biosecurity Partnership (“Top of the North” or “TON”) was established to increase collaboration and consistency between partners that have a statutory responsibility for preventing, reducing or eliminating adverse effects of marine pests that are present within the top of the North Island region.

The TON partnership currently consists of representatives from Northland Regional Council, Auckland Council, Waikato Regional Council, Bay of Plenty Regional Council, Gisborne District Council, DOC and MPI.

TON partners are in discussions around the development of an inter-regional pathway management plan for the TON area. Its main focus would likely be on minimising the spread of organisms by domestic vessels.

2.5 Te hono ki ētahi atu Mahere Whakahaere Kaupapa Koiora Orotā / Relationship with other Pest Management plans

An RPMP must not be inconsistent with:

- the NPD;
- any other pest management plan on the same organism;
- any pathway management plan;
- any regional policy statement or regional plan prepared under the RMA; or
- any regulations.

Auckland Council shares boundaries with the Northland and Waikato regions, and in the preparation of this plan staff have worked with both these regional councils on common issues on these shared boundaries. In particular, priority has been given to species such as rhamnus which has a relatively low incidence in both neighbouring regions, despite being much more prevalent in Tāmaki Makaurau / Auckland.

The landscape-scale possum programme in this RPMP presents an exciting opportunity to work towards possum eradication across the Northland peninsular, as the urbanised Tāmaki Makaurau / Auckland isthmus represents a geographical barrier to reinvasion of possums from south of the isthmus. This would be a significant step towards achieving Predator Free New Zealand. Auckland Council will work with Northland Regional Council, the DOC, mana whenua, community groups and other stakeholders to progress this aspirational goal.

Auckland Council is the management agency for the entirety of the Hunua ranges, including that portion which falls within Waikato regional boundaries. The Council administers this portion of the Hunua ranges using rules of the Waikato RPMP 2014-2024, which are consistent with this RPMP and those of the now succeeded Auckland RPMS 2007-2012.

2.6 He Hononga ki te Ahunga o te Kaupapa Here ā-Motu / Relationship with the National Policy Direction

The National Policy Direction (NPD) came into force on 24 September 2015. The stated purpose of the NPD is to ensure that activities under Part 5 of the Biosecurity Act provide the best use of available resources for Aotearoa / New Zealand's best interests, and align with each other (when necessary), to contribute to the achievement of Part 5.

The table below sets out the NPD requirements and the steps taken to comply with them.

Table 1 National Policy Direction requirements and the steps taken to comply with them.

NPD requirements	Steps taken to comply
Programme is described	Checked that the types of programmes (described in section [6.1] of the Proposal) comply with clause 5 of the NPD.
Objectives are set	Checked that the contents of section 1 of the Proposal comply with clause 6 of the NPD.
Benefits and costs are analysed	Analysed the costs and benefits (see clause 6 of the NPD). That analysis is in [the publication or section describing it]. [Note any consultation done or other relevant action that contributed to the analysis].
Funding rationale is noted	Checked the funding rationale described in section 10 of the Proposal has been developed in line with clause 7 of the NPD.
Good neighbour rules (GNRs) are described	GNRs have been developed in line with clause 8 of the NPD. [Noted any consultation done or other relevant action that contributed to their development].

2.7 Hononga ki te Ao Māori / Relationship with Māori

Ko te whai wāhi o te Māori ki te ārai koiōra he wāhanga nui tonu o te kawae i te mana kaitiakitanga. He wāhi hiranga tonu e kawea ana e te Māori e pā ana ki te whakahaere kaupapa koiōra orotā mā roto mai i ōna pānga mahi ōhanga matua e hāngai ana ki tōna whai pānga whenua/kainoho whenua rānei. Ko tētahi o ngā tikanga o te Mahere Marohi ā-Rohe Whakahaere Kaupapa Koiōra Orotā (RPMP) i raro i te Ture Ārai Koiōra he tiaki i te herenga i waenga i te Māori me ōna whenua tuku iho, wai, wāhi noa, wāhi tapu me ana taonga, te tiaki hoki i aua āhuatanga i ngā kaikino a te mate orotā. Ko tā te whakahaere kaupapa koiōra orotā, he tiaki wāhi tapu me ngā taonga, whakaora ake i te mauri o te whenua, me te wai māori, e piki ai te oranga o aua hāpori ake. Ko te whaihua o ngā whakahaere kaupapa koiōra orotā, he horanga whānui te āhua me tōna whakatairanga i te hononga i waenga i te iwi me te taiao. E hua ai ēnei painga ki te rohe, me mahi tahi rawa te katoa. Ahakoa he rahi ngā iwi me ngā rōpū e mahi tahi ana mai i roto me waho i te rohe o Tāmaki Makaurau, he aro kore te orotā ki te rohenga whenua. E aronui ana te Kaunihera o Tāmaki Makaurau ki te mahi tahi me ngā mana whenua, te Tari o te Papa Atawhai me

ētahi atu rōpū ki te whakarahi ake i ngā mahi whakahaere kaupapa koiora orotā māwhiti noa i ngā rohenga paewhenua.

Ahakoā kāhore te RPMP i te āta tohu tikanga hei whakahaere kaupapa, ka mahi tahi te kaunihera me ngā mana whenua ki te kimi wāhi e taea ai te whakapiki i te āheitia me te whakarite i te mahere. I ētahi wāhi ka taea e ngā mana whenua me te kaunihera te mahi tahi ki te whakahaere kaupapa koiora orotā i raro i te mana ā-hoa tūturu, noho kaiwhakahaere takirua rānei. He taurira o tēnei, ko te Mana Tūpuna Maunga o Tāmaki Mākaurau i whakatūria hei tiaki i ngā rārangi maunga o te rohe i muri i te whakataunga o ngā nawe o te Tiriti o Waitangi.

I raro i te LGA kua herea te kaunihera ki te whakarite, whakaute hoki i ngā kawenga a te Karauna i raro i te Tiriti o Waitangi. Ka meinga hoki ngā kaunihera ki te tiaki me te whakapiki ake kia whai wāhi te Māori ki ngā tukanga whakatau kaupapa. I tūtakina ēnei kawenga me aua whakahau i te wā e whakaritea ana tēnei mahere, ka mau tonu hoki inā ka oti i a ia te whakamana.

Māori involvement in biosecurity is an important part of exercising kaitiakitanga. Māori also carry out significant pest management through their primary sector economic interests and as land owners and/or occupiers. One specific purpose of an RPMP under the Biosecurity Act is to provide for the protection of the relationship between Māori and their ancestral lands, waters, sites, wāhi tapu, and taonga, and to protect those aspects from the adverse effects of pests. Pest management protects wāhi tapu and taonga, restores the mauri of whenua and wai māori, and enhances the well-being of local communities. Successful pest management is holistic in nature and recognises the interconnectedness of people and the environment. To achieve these outcomes for the rohe, all must work together. While there are many iwi and other organisations that contribute to pest management within and outside of Tāmaki Makaurau / Auckland, pests do not have boundaries. Auckland Council wants to work alongside mana whenua as well as the Department of Conservation (DOC) and other organisations to enhance pest management across organisational boundaries.

While the RPMP does not specify operational delivery methods, the council will work with mana whenua to explore opportunities for capacity building while implementing the plan. In some situations mana whenua and the council undertake pest management together as part of formal partnership and co-management agreements. An example of this is the Tūpuna Maunga o Tāmaki Makaurau Authority, which is set up to manage the region's maunga (volcanic cones) following Te Tiriti o Waitangi / the Treaty of Waitangi settlements.

The LGA requires the council to recognise and respect the Crown's responsibilities under the Tiriti o Waitangi / Treaty of Waitangi. It also requires councils to maintain and improve opportunities for Māori to contribute to decision-making processes. These responsibilities and requirements were met while preparing this plan and will continue after it takes effect.

2.8 Whakawhitiwhiti Kōrero / Consultation

Extensive consultation has been underway on the review of the RPMP since 2014. A detailed summary of consultation undertaken, responses received, the council's response and rationale is included in the accompanying consultation summary report.

3 He whakarāpopototanga o ngā hōtaka kei tēnei mahere ā-rohe whakahaere kaupapa koiora orotā / Summary of programmes in this RPMP

3.1 Pikinga muinga koiora urutā / Pest infestation curve

Auckland Council uses the pest infestation curve to assist decision-making on pest management in both regulatory and non-regulatory contexts (see Figure 2). New or emergent pests with low numbers and limited distribution are at the beginning of the curve. Pest control at this stage often involves relatively low costs and high long-term benefits. For these pests, progressive containment or even eradication may be feasible, preventing or delaying them becoming the widespread problem pest plants of the future. For widespread pests at the established stage of the curve, the costs of control can be high, and eradication is unlikely to be feasible for many species. The most notable exception to this is small mammals, for which control technologies are sufficiently advanced to enable eradication or suppression to very low levels over increasingly large areas. For most other widespread pests, control will be most effective if delivered as a site-led approach, in which the full suite of invasive species are managed at a given site, sufficient to protect the values of the site. This avoids one widespread pest simply being replaced by another, yielding no net reduction in impacts, and also avoids situations where pests are controlled at a rate that fails to keep pace with their rate of reproduction. Site-led approaches aligned to the region's areas of highest biodiversity value and defensible geography are a key feature of this RPMP.

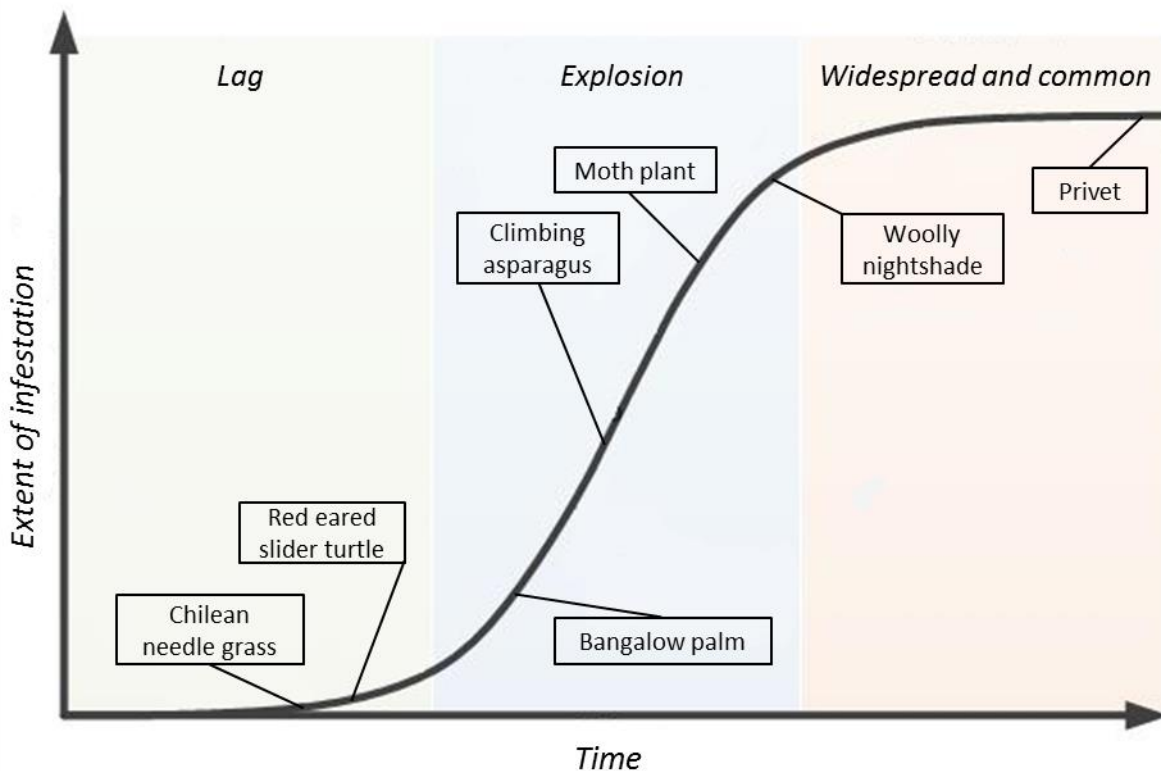


Figure 2 Pest infestation curve model for the Tāmaki Makaurau / Auckland region 2017.

3.2 Ngā Hōtaka / Programmes

3.2.1 Te Rohe Āta Whakahaere o Tikapa Moana / Hauraki Gulf Controlled Area

Te Tikapa Moana o Hauraki / the Hauraki Gulf contains a diverse array of ecosystems spread across 30 major island groups and over 400 discrete 'islands', including rock stacks, reefs and sand bars. These islands are home to one of the highest diversities of seabirds in the world. The tiny Ruapuke / Maria Island (1 ha) in the Noises group in the Te Tikapa Moana o Hauraki / Hauraki Gulf was the site of Aotearoa / New Zealand's first island rodent eradication, with success confirmed in 1964. Since then, eradication technology has grown rapidly, so that now over half of the islands in the gulf are free of mammalian pests. These eradications have enabled the reintroduction of numerous threatened species to Te Tikapa Moana o Hauraki / Hauraki Gulf islands. In addition to providing valuable contributions to national threatened species management, pest free islands in the gulf have become a major tourist attraction, with Rangitoto and Tiritiri Matangi receiving over 100,000 and 30,000 visitors per year respectively. With human visitors comes the risk of pests hitchhiking along for the ride.

Auckland Council runs the Treasure Islands awareness and behaviour change programme in the Te Tikapa Moana o Hauraki / Hauraki Gulf in partnership with the DOC, designed to reduce the risk of those pests hitchhiking ashore. As part of Treasure Islands, commercial

transport operators can voluntarily apply for and attain a “Pest-free Warrant” which certifies that steps have been taken by that operator to reduce the risk of accidentally transporting pests to islands. Over 40 operators have a Pest-free Warrant and, combined with extensive networks of on-islands traps and other biosecurity devices, this programme has been remarkably successful at protecting the islands of the gulf. However, on-going invasions are still a problem, especially for very small and easy to overlook species such as Argentine ants and plague skinks. To address these on-going invasions, this RPMP has extended the Pest-free Warrant to a regulatory approach, complemented by species-specific rules in some cases. Furthermore, the Pest-free Warrant will also be extended, on a voluntary basis, to other high risk businesses such as nurseries, building supply stores and quarries, to reduce the risk of their products accidentally containing stowaway pests when being moved to offshore islands.

In addition to heightening our efforts to keep pests off islands, this RPMP also prioritises control for a number of species on Te Tikapa Moana o Hauraki / Hauraki Gulf islands in recognition both of the high biodiversity values on many of these islands, as well as their relative isolation and defend-ability which makes it possible to successfully control species which might be too widespread on the mainland to effectively control.

3.2.2 Aotea / Great Barrier

Aotea / Great Barrier has retained some of the region’s highest biodiversity values, including being home to threatened species such as the tāiko / black petrel and pāteke / brown teal. Because of the island’s relative isolation, some destructive and invasive pests such as mustelids and possums never made it to Aotea / Great Barrier. It is a key regional priority to keep it this way. Unfortunately though, with human movement to the island comes the risk of stowaway pests; both Argentine ants and plague skinks have found their way to Aotea / Great Barrier in recent years. Goods, such as pot plants and landscape supplies, are particularly high risk.

Aotea / Great Barrier’s distance from the mainland has also slowed the arrival of pest plants such as moth plant and woolly nightshade and many other garden escapees that are increasingly common on the mainland. In many cases it is possible to remove populations of pest plants on the island before they get a serious foothold. Therefore, in recognition of Aotea / Great Barrier’s outstanding natural heritage and defendable geography, this RPMP gives special recognition to Aotea / Great Barrier and the surrounding smaller islands in this group, through a range of programmes targeting low incidence pest plants for control, as well as managing pathways to prevent new incursions.

While possums and mustelids are absent from Aotea / Great Barrier, rabbits, rats and cats pose a serious threat to native fauna and island infrastructure. This RPMP proposed to manage these mammalian pests at high biodiversity value sites in the interim while the council (including the Great Barrier Local Board) works with mana whenua, DOC and the local community to progress conversations around ways to achieve a mammalian pest-

free Aotea / Great Barrier in the future, taking into account diverse community perspectives and concerns.

3.2.3 Moutere o Kawau / Kawau Island

Kawau Island holds the only population of wallabies in the Tāmaki Makaurau / Auckland region. This poses a very real risk to the mainland, with wallabies having severe impacts on native forest as well as pastoral farming. Expanding populations of wallabies in regions south of Tāmaki Makaurau / Auckland also pose a risk to our region. This RPMP aims to eradicate wallabies from Kawau and maintain the wallaby-free status of the remainder of the region. However, eradication of wallabies, alone, from Kawau has the potential to have perverse outcomes, such as creating an advantage for competing pests such as rats and possums or pest plants. In recognition of this, this RPMP combines the wallaby eradication programme with Kawau eradication programmes for possums, rats and stoats. Again, the Pest Free Warrant programme will be critical in preventing reinvasion following eradication.

3.2.4 Moutere o Waiheke / Waiheke Island

Waiheke is home to many native shorebirds, wetlands with threatened kōkopu, and other high biodiversity values that are threatened by pests. Waiheke has the potential to be home to new threatened species introductions, such as kiwi, if pests are removed. In addition, Waiheke is within swimming distance of other pest-free islands, and while pests such as rats and stoats remain on Waiheke this poses a source of on-going reinvasion of surrounding islands. This RPMP therefore contains programmes for eradication of mammals such as stoats.

3.2.5 Whenua Papa Rēhia me ōna Rohe Hauropi Hiranga / Parkland with Significant Ecological Areas

Tāmaki Makaurau / Auckland is the weediest city in the country. Given the long list of existing and emerging pest plant species in the region, controlling a whole suite of pest plants at sites of high biodiversity value can be a more effective approach than targeting a smaller list of species for region-wide enforcement. Auckland Council is also committed to “walking the talk”, role-modelling best-practice pest management on council lands. This RPMP will coordinate the efforts of the council, transport corridor operators (such as NZTA and Auckland Transport) and private land owners to ensure maximum biodiversity benefits are achieved through collective action to protect parkland containing Significant Ecological Areas (SEAs)².

3.2.6 Te Wao Nui a Tiriwa me Kohukohunui / The Waitākere and Hunua Ranges

The Waitākere and Hunua ranges are particularly high value parkland, representing the two largest tracts of forest ecosystems on the region’s mainland. These areas are covered by the above SEA parkland programme, but are also singled out for additional protection

² SEAs are areas of significant indigenous vegetation and significant habitats of indigenous fauna, which must be protected as a matter of national importance in line with Section 6(c) of the RMA.

for some species. For instance, feral deer are currently not established in either Waitākere or Kohukohunui / Hunua; maintaining the deer-free status of these two areas is the top priority of the regional deer programme.

3.2.7 Urutā patu kauri / Kauri dieback

As an incurably fatal disease of kauri trees, kauri dieback disease poses a very real threat to the continued existence of kauri forests in the region. Human movement of soil is the key risk pathway for the spread of kauri dieback. As kauri dieback is not currently known from Kohukohunui / Hunua or Te Tikapa Moana o Hauraki / Hauraki Gulf islands (with the exception of Aotea / Great Barrier), this RPMP prioritises the protection of these disease-free areas with the implementation of exclusion zones and increased hygiene measures. This will be supported by a Sustained Control programme seeking to minimise spread around the remainder of the region. These provisions are complemented by those in the Unitary Plan, as set out in section 2.1.2.

3.2.8 Te ārai koiora wai māori / Freshwater biosecurity

A range of freshwater pest plants and animals are already present in wai māori / freshwater ecosystems across the mainland of the region. However, freshwater ecosystems on Aotea / Great Barrier are free of all the main freshwater pests, and have retained extremely high biodiversity values. This RPMP therefore prioritises protection of Aotea / Great Barrier through the use of exclusion programmes for a range of freshwater pest plants and animals.

On the mainland, although most waterbodies have some pest species present, there is evidence that impacts are synergist – increasing with increasing number of freshwater pest present, culminating in water quality ‘tipping’ to algal dominated systems at highly invaded sites. Therefore there is still benefit in preventing further spread of freshwater pests on the mainland. Because humans are the main cause of freshwater pests spreading to new waterbodies, the RPMP addresses freshwater pest spread through an education and awareness pathway management approach, modelled on the successful Treasure Islands approach and borrowing from successful freshwater biosecurity programmes elsewhere in the country.

In addition, this RPMP recognises that some mainland sites retain high freshwater biodiversity values, but that these ecosystems are at imminent risk of collapse due to pests and other pressures. Therefore this RPMP implements a site-led approach to manage a suite of pest plants and animals at two top priority lakes, Tomarata and Rototoa, in conjunction with the local communities, mana whenua and NIWA.

3.2.9 Paihamu / Possums

Possums have devastating impacts on native biodiversity, as well as posing substantial risks to primary productivity through transmission of bovine tuberculosis and eating pasture and horticultural crops. By controlling possums over large landscape-scale areas, it is possible to substantially reduce costs, both through economies of scale / purchasing

power as well as by reducing reinvasion from surrounding uncontrolled areas. Landscape-scale possum control elsewhere in the country has seen kōmako / bellbird returning to farming landscapes. This RPMP implements possum control across the entirety of rural mainland Tāmaki Makaurau / Auckland.

3.2.10 Rohe katoa / Whole region

While many of the programmes in this RPMP are targeted to defensible geography and sites of highest biodiversity, some programmes are applied across all, or almost all, of the region. Key themes within these region-wide programmes are:

- Exclusion, eradication or progressive containment of 32 low incidence pests of potentially high impact on primary production or native ecosystems to prevent these species becoming serious pests in the future.
- Sustained control programmes aimed at reducing spread and impact of primary production pests (e.g. Bathurst bur, rabbits).
- Sustained control programmes to prevent the sale and distribution of pests. These programmes address the further spread of pest plants and animals through regulation of nursery and pet trade, and education and advice to encourage responsible pet ownership and gardening practices. These programmes also provide education, advice, and support to community groups involved in pest management activities, particularly prioritised for those active around biodiversity focus areas or areas of defensible geography such as islands and peninsulas.

3.3 Rangahau / Research

Part of Auckland Council's regional leadership function includes the identification and facilitation of key research and development needed to support successful pest management in our region. The issues set out below highlight areas currently identified as high priority for further research, including because current methodologies do not pass the rigorous cost-benefit analysis required before species and programmes can be included in a RPMP.

This list is not exhaustive and Auckland Council may undertake or commission research on any other biosecurity issues throughout the life of the Plan as issues and opportunities arise.

Auckland Council supports a partnership approach in the delivery of this research (e.g. with Ministry of Business Innovation and Employment, Universities, Crown Research Institutes, industry bodies, mana whenua, 'citizen science' groups) interested in addressing the following issues.

Māori have a distinct knowledge base, mātauranga Māori (the body of knowledge originating from Māori ancestors, including Māori world views and perspective) and tikanga whakahaere (management approaches). Mātauranga Māori me o rātou tikanga are recognised as important sources of knowledge which inform mana whenua biosecurity priorities and contribute to the management of pests within the region. Auckland Council supports partnerships with Māori to ensure that mātauranga Māori is included within

biosecurity research initiatives, and will work with mana whenua and other Māori led initiatives (e.g. Te Tira Whakamātaki, Maori Biosecurity Network) to improve underpinning biosecurity knowledge and pest management in the region.

Research to deliver tools and deployment strategies needed to eliminate small mammal pests across natural and production system in the region will be supported through collaborative biosecurity science initiatives such as New Zealand's Biological Heritage Science Challenge. The ability to cost-effectively keep rats, stoats and possums at zero density will be transformational for conservation of the region's biodiversity. The ultimate outcome is to enable scaling-up of current efforts to landscape-scale pest freedom. This project will accelerate the provision of improved tools, methodologies and strategies for mammal pest control in general and specifically enable community pest control initiatives including Pest Free Auckland to be successful. They will be socially acceptable, cost-effective and targeted next-generation technologies that have been proven at pilot scale to effectively eliminate small mammal pests. A step change in research innovation will be achieved by identifying and making the advances necessary to achieve our desired outcomes from within the fields of 'lures/repellents', 'surveillance/detection/monitoring', 'improved toxins and devices' and 'landscape-scale strategy'.

While the impacts of mammalian pests in Aotearoa / New Zealand are well understood, and exciting advances are being made in controlling small mammals, many other types of pests are much less well understood both in terms of their impacts and also methods for control.

Lack of effective control tools severely hampers effective management of some of these species.

Auckland Council has identified the following areas as research priorities:

- Trait-based research for pest plants: because of the numerous exotic plant species present in the region, it will never be achievable to undertake species-specific research on every single species in order to inform risk assessments. In the development of this RPMP, the council has identified several plant traits or impact types that are of concern, and for which additional research may assist in informing risk assessments of new species based on life-form or other traits. Pest plant research themes of particular interest to the council include:
 - Potential risk of genetic impacts from exotic species with closely related native species in genera within which hybridisation has been recorded overseas, including, but not limited to: maiden hair fern (*Adiantum raddianum*), great bind weed (*Calystegia sylvatica*), orache (*Atriplex prostrata*), *Persicaria* spp., Cretan brake (*Pteris cretica*), Tahitian pōhutukawa (*Metrosideros collina*).
 - Climate resilience, including species that may be advantaged by warming climates, such as black eyed Susan (*Thunbergia alata*), camphor laurel (*Cinnamomum camphora*) and wild tamarind (*Leucaena leucocephala*), as well as species that form seedling banks which may facilitate disturbance-mediated invasion of native ecosystems, such as sycamore (*Acer pseudoplatanus*) and box elder (*Acer negundo*).

- Succulents and other life-forms that may pose risks to coastal ecosystems or other disturbance-prone native ecosystems in a Tāmaki Makaurau / Auckland context, for instance yucca (*Yucca gloriosa*), gazania (*Gazania rigens* and *G. linearis*), trailing African daisy (*Osteospermum fruticosum*).
- Freshwater invasive species, both plant and animal: freshwater invasive species in natural ecosystems often have complex food-web relationships and far-reaching impacts that are relatively poorly understood. Limited control tools are available for many of these species, and management interventions can have unexpected perverse outcomes due to the complex inter-relationships between species. Development of new management tools and refining understanding of impacts are both priorities to enable improved management of freshwater invasive species.
- Marine invasive species: as with freshwater invasions, impacts and control tools for marine invasive species are relatively poorly understood and developed when compared with terrestrial pests. Development of new management tools and refining understanding of impacts are both priorities to enable improved management of marine invasive species.
- Exotic birds and reptiles: management of exotic birds and reptiles is often constrained by a lack of management tools. Development of improved management tools is a priority to enable improved management of exotic bird and reptile invasions. Further research is also required to improve understanding of exotic bird and reptile impacts in natural ecosystems.
- Terrestrial invertebrates: due to their small, cryptic nature and high reproductive potential, it can be difficult to effectively manage invertebrate pests at a regional scale once they are too widely established for eradication to be feasible. Improved management tools are required to support industry groups to manage invertebrate pests such as guava moth. Research is also required to improve understanding of impacts of exotic invertebrates, such as the hadda beetle, giant willow aphid and dung beetles, on native species and natural ecosystems, and to develop tools for managing invertebrate pests to protect biodiversity.
- Pathogens: diseases such as kauri dieback disease and myrtle rust are an emerging issue in biosecurity due to their cryptic nature and ease of human-mediated transport. Successful management of pathogen pests requires research into surveillance, detection, spread prevention and management tools, as well as improved understanding of impacts in natural ecosystems.
- Future threats: in order to make appropriately prioritised management decisions, research is required to understand the potential risks associated with species that may not yet be established as pests in the Tāmaki Makaurau / Auckland region. This includes horizon scanning for emerging threats, incursion readiness planning for high risk species not yet present in the country, and facilitating development of tools and technologies to improve management outcomes.
- Social science is also increasingly recognised as having a crucial role to play in enabling pest management to achieve desired outcomes. It is critical that management agencies have a 'social licence to operate' from their communities – i.e. community support for priorities and tools – and also have a good understanding of the drivers and barriers to changing behaviour, as well as effective interventions, across all ethnic and social groups in society.

4 Kawenga me ngā herenga / Responsibilities and obligations

4.1 Te tari whakahaere / The management agency

Auckland Council is the management agency responsible for implementing the proposed RPMP. Auckland Council is satisfied that it meets the requirements of s100 of the Biosecurity Act in that it:

- is accountable to those providing the funds to implement the RPMP, including Crown agencies, through the requirements of the LGA 2002;
- is acceptable to those providing the funds to implement the RPMP subject to the RPMP's management provision; and
- has the capacity, competency and expertise to manage the proposed RPMP.

How the council will undertake its management responsibilities is set out in Part Three (Procedures) of the proposed RPMP and in the council's operational plans, including the Weed Management Policy.

4.2 Whakaeatanga me te āta panga rīhiti / Compensation and disposal of receipts

The proposed RPMP does not provide for compensation to be paid to any persons meeting their obligations under its implementation. However, should the disposal of a pest or associated organism provide any net proceeds, a person will be paid disbursement in the manner noted under s100I of the Biosecurity Act.

4.3 Te hunga whai pānga / Affected parties

A number of agencies and individuals have roles and responsibilities for pest management. These are generally set out in the Biosecurity Act. In addition to the council, the parties listed below also play a part in the management of pests in Auckland. Their roles are briefly explained below:

- the public
- individuals (including landowners, occupiers and those who occupy the Coastal Marine Area)
- the Crown
- roading authorities
- rail corridor occupiers
- the nursery industry and the pet industry
- commercial transport operators in the Te Tikapa Moana o Hauraki / Hauraki Gulf.

4.3.1 Te iwi tūmatanui / The public

The general public has an interest in reducing the impacts of pests on Auckland's social, economic, environmental and cultural well-being. Public awareness, behaviour,

participation and support are fundamental to effective pest management. Ultimately, central and local government are accountable to communities.

4.3.2 la tangata (hunga whai whenua/ kainoho rānei) / Individuals (landowners/occupiers)

Pest management is an individual's responsibility in the first instance because generally occupiers contribute to the pest problem and in turn benefit from the control of pests. The term occupier has a wide definition under the Biosecurity Act and includes:

- the person who physically occupies the place
- the owner of the place
- any agent, employee, or other person acting or apparently acting in the general management or control of the place.

Under the Biosecurity Act, place includes: any building, conveyance, craft, land or structure and the bed and waters of the sea and any canal, lake, pond, river or stream.

Owners and/or occupiers must manage pest populations at or below levels specified in the rules. If they fail to meet the rules' requirements, they may face legal action. In some instances, owners and/or occupiers must report pests to the council. They must never sell, propagate, distribute or keep pests.

An owner and/or occupier cannot stop an authorised person from entering a place, at any reasonable time, to:

- find out whether pests are on the property
- manage pests
- ensure the owner and/or occupier is complying with biosecurity law.

While the owner and/or occupier may choose the methods they will use to control any pests, they must also comply with the requirements under other legislation (e.g. RMA and/or the Hazardous Substances and New Organisms Act 1996).

This proposed RPMP treats all private land equitably and emphasises the responsibilities and obligations of all land owners and/or occupiers, including Māori. The council acknowledges the complex and variable relationships of Māori land ownership and occupation. This includes multiple owners (including lessees) or a range of corporate management systems under the Companies Act 1993 or Te Ture Māori Whenua Act 1993. Where owners and/or occupiers are unknown, the Maori Land Court; or the Registrar of Companies may help to identify and communicate with them.

4.3.3 Tari kāwanatanga / Crown agencies

The Crown has an interest in protecting the national interest and ensuring the pest management system is equitable, efficient and achieves the best overall outcomes for New Zealand and under the Treaty of Waitangi and international treaties. The Crown is also a landowner and protects the public's interest in the land of the Crown, including land managed by the DOC and LINZ.

4.3.4 Whenua rāhui ā-rori / Road reserves

Road reserves include the land on which the formed road lies and the verge area that extends to adjacent property boundaries. The Biosecurity Act allows the option of making either roading authorities (NZ Transport Agency and district/city councils) or adjoining land occupiers responsible for pest management in road reserves (see s6(1) of the Biosecurity Act). This RPMP makes roading authorities responsible for pest management in road reserves.

The plan includes portions of road adjoining land the plan covers, as authorised by section 6, and for the purposes of the plan includes all or any of the portions of road bounded by:

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

Auckland Transport is the roading authority for local roads, and the New Zealand Transport Agency is the roading authority for State Highways.

4.3.5 Te umanga tāpapa tupu me te umanga mōkaikai / The nursery industry and pet industry

The nursery and pet industries are subject to national approaches to minimise pest spread associated with their activities, being the National Pest Plant Accord (NPPA) and the National Pest Pet Biosecurity Accord (NPPBA). These industries must never sell, propagate, or distribute species that are declared pests either as Unwanted Organisms in relation to the NPPA, NPPBA or as a pest in this RPMP.

4.3.6 Umanga kaikawekawe i te whanga o Tīkapa Moana / Commercial transport operators in the Tīkapa Moana o Hauraki / Hauraki Gulf

Commercial transport operators have a role in reducing the risk of pest spread to Tīkapa Moana o Hauraki / Hauraki Gulf islands. This role, previously recognised through a voluntary Pest Free Warrant system, is now proposed to be introduced into the RPMP.

5 Rārangi orotā / Organisms declared as pests

The organisms listed in Table 2-Table 4 are classified as pests. The tables also indicate what management programme or programmes will apply to the pest and if a good neighbour rule (GNR) applies.

Attention is also drawn to the **statutory obligations** of any person under s52 and s53 of the Biosecurity Act. Those sections ban anyone from selling, propagating or distributing any pest, or part of a pest, covered by the RPMP. Not complying with s52 and s53 is an offence under the Biosecurity Act, and may result in the penalties noted in s157(1).

Table 2 Animal organisms classified as pests. GNR = Good neighbour rule

Animal		Programme																Page(s)	
Common name	Scientific name	Hauraki Gulf Controlled Area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site led	Exclusion	Eradication	Progressive containment	Sustained control		GNR
Argentine ant	<i>Linepithima humile</i>				✓												✓		73, 284
bearded dragon	<i>Amphibolurus barbatus</i> syn. <i>Pogona barbata</i>					✓											✓		107, 214
blue-tongued skink	<i>Tiliqua scincoides</i> and <i>T. nigrolutea</i>					✓											✓		109, 215
brown bullhead catfish	<i>Ameiurus nebulosus</i> syn. <i>Ictalurus nebulosus</i>					✓						✓					✓		111, 193, 216
Canadian geese	<i>Branta canadensis</i>					✓											✓		112, 218
cat (pest)	<i>Felis catus</i>				✓												✓		75, 219
Darwin's ant	<i>Doleromyrma darwiniana</i>				✓												✓		78, 222
eastern rosella	<i>Platycercus eximius</i>					✓											✓		113, 223
eastern water	<i>Physignathus lesueurii</i>					✓											✓		114,

Animal		Programme															Page(s)		
Common name	Scientific name	Hauraki Gulf Controlled Area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site led	Exclusion	Eradication	Progressive containment		Sustained control	GNR
dragon	<i>Iesueurii</i>																		224
feral deer	<i>Cervus, Axis, Dama, Odocoileus, Elaphurus</i> spp. including any hybrid	✓														✓			71, 201
feral goat	<i>Capra hircus</i>															✓			203
feral pig	<i>Sus scrofa</i>				✓					✓	✓						✓		80, 150, 156, 225
galah	<i>Cacatua roseicapilla</i>					✓											✓		116, 227
gambusia	<i>Gambusia affinis</i>					✓											✓		117, 228
goldfish	<i>Carassius auratus</i>					✓											³ ✓		118, 230
hedgehog	<i>Erinaceus europaeus</i>				✓												✓		82, 231
Indian ring-	<i>Psittacula krameri</i>					✓											✓		119,

³ When outside of containment

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Animal		Programme															Page(s)		
Common name	Scientific name	Hauraki Gulf Controlled Area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site led	Exclusion	Eradication	Progressive containment		Sustained control	GNR
necked parakeet																			232
koi carp	<i>Cyprinus carpio</i>					✓							✓					✓	120, 234
magpie	<i>Gymnorhina sp.</i>																	✓	236
monk parrot	<i>Myiopsitta monachus</i>					✓												✓	121, 237
mouse	<i>Mus musculus</i>				✓													✓	84, 238
mustelids (ferret, stoat, weasel)	<i>Mustela furo, M. erminea and M.nivalis</i>				✓				✓		✓	✓						✓	86, 145, 150, 158, 239
myna	<i>Acridotheres tristis</i>																	✓	241
perch	<i>Perca fluviatilis</i>					✓							✓					✓	122, 193, 242
plague skink (syn. rainbow skink)	<i>Lampropholis delicata</i>				✓													✓	88, 244

Animal		Programme															Page(s)			
Common name	Scientific name	Hauraki Gulf Controlled Area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region						
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site led	Exclusion	Eradication	Progressive containment		Sustained control	GNR	
possum	<i>Trichosurus vulpecula</i>				✓				✓								✓ ⁴	✓ ⁵		90, 145, 207, 245
rabbit and hare	<i>Oryctolagus cuniculus, Lepus europaeus</i>				✓													✓	✓	92, 247
rainbow lorikeet	<i>Trichoglossus haemotodus</i> and all hybrids					✓												✓		123, 250
rat	<i>Rattus rattus, Rattus norvegicus, Rattus exulans</i>				✓				✓	✓	✓							✓		94, 145, 150, 159, 251
red-eared slider	<i>Trachemys scripta elegans, T. scripta scripta, T. scripta troostii</i>					✓												✓		124, 253
rook	<i>Corvus frugilegus</i>												✓							198
rudd	<i>Scardinius erythrophthalmus</i>					✓							✓					✓		126, 193,

⁴ Rural only⁵ Remainder of region

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Animal		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf Controlled Area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
																			255
shingleback lizard	<i>Tiliqua rugosa</i>																	✓ ⁶	257
snake-neck turtle	<i>Chelodina longicollis</i>					✓												✓	127, 258
sulphur-crested cockatoo	<i>Cacatua galerita</i>					✓												✓	129, 210
tench	<i>Tinca tinca</i>					✓							✓					✓	130, 193, 259
wallaby	<i>Macropus, Petrogale</i> and <i>Wallabia</i> spp.								✓								✓ ⁷		145, 200
wasp: <i>Vespula</i> and paper	<i>Vespula germanica</i> , <i>V. vulgaris</i> , <i>Polistes chinensis</i> and <i>P. humilis</i>																	✓	261

⁶ When outside of containment

⁷ Remainder of region

Table 3 Pathogen organisms declared as pests. GNR = Good neighbour rule

Pathogen		Programme															Page(s)		
Common name	Scientific name	Hauraki Gulf Controlled Area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Hunua Ranges	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Exclusion	Exclusion	Eradication	Progressive containment		Sustained control	GNR
Dutch elm disease	<i>Ophiostoma novo-ulmi</i>															✓		263	
kauri dieback pathogens	<i>Phytophthora agathidici</i> and <i>P. multivora</i>	✓											✓			✓		96, 187, 265	

Table 4 Plant organisms classified as pests. GNR = Good neighbour rule.

* = species listed on the 2012 National Pest Plant Accord (NPPA) species.

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
African club moss	<i>Selaginella kraussiana</i> *																✓		284
African feather grass	<i>Cenchrus macrourus</i> syn. <i>Pennisetum macrourum</i> *														✓				268
African pig's ear*	<i>Cotyledon orbiculata</i> *																	✓	284
Agapanthus ⁸	<i>Agapanthus praecox</i> subsp. <i>orientalis</i> (syn. <i>A. orientalis</i>)										✓	✓						✓	160 , 284
<i>Akebia trifoliata</i>	<i>Akebia trifoliata</i>																✓		269
alder	<i>Alnus glutinosa</i>																	✓	284
alligator weed	<i>Alternanthera philoxeroides</i> *					✓						✓						✓	131 , 180

⁸ *Agapanthus* for the purpose of this RPMP means all *agapanthus* cultivars, except for:

- Agapanthus* 'Agapetite'; A. 'Finn'; A. 'Gold Drops'; A. 'Golden Drop'; A. 'Goldstrike'; A. 'Pavlova'; A. 'Sarah'; A. 'Thunderstorm'; and
- any other low fertility cultivar which is determined by Auckland Council to produce less than 2% viable seeds compared to fertile cultivars that were evaluated under the same conditions and location.

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
																			284
aristea	<i>Aristea ecklonii</i> *																	✓	180 284
artillery plant	<i>Lamium galeobdolon</i> syn. <i>Galeobdolon luteum</i> syn. <i>Lamiastrum galeobdolon</i> *																	✓	284
arum lily	<i>Zantedeschia aethiopica</i> * ⁹																	✓	284
Asiatic knotweed	<i>Reynoutria japonica</i> syn. <i>Fallopia japonica</i> , <i>R. sachalinensis</i> syn. <i>F. sachalinensis</i> * and hybrids																	✓	278
asparagus species	<i>Asparagus drepanophyllus</i> and <i>A. umbellatus</i>																	✓	268
Australian sedge	<i>Carex longebrachiata</i>																	✓	284
baccharis	<i>Baccharis halimifolia</i>																	✓	284
balloon vine and small balloon vine	<i>Cardiospermum grandiflorum</i> * and <i>C. halicacabum</i> *																	✓	268

⁹ Green goddess variety listed in the NPPA only

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Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
bamboo species	<i>Phyllostachys aurea</i> , <i>Phyllostachys nigra</i> , <i>Pleioblastus auricomus</i> , <i>Pleioblastus hindsii</i> , <i>Pseudosasa japonica</i> , <i>Chimonobambusa quadrangularis</i>																✓		284
banana passionfruit	<i>Passiflora tripartita</i> var. <i>mollissima</i> , <i>P. mixta</i> and <i>P. tarminiana</i> *																✓		284
bangalow palm	<i>Archontophoenix cunninghamii</i>										✓						✓		180 284
barberry	<i>Berberis glaucocarpa</i>																✓		284
bartlettina	<i>Bartlettina sordida</i>																✓		284
Bathurst bur	<i>Xanthium spinosum</i>																✓		284
berry heath	<i>Erica baccans</i>																✓		284
black wattle	<i>Acacia mearnsii</i>																✓		284
blackberry (wild aggregates)	<i>Rubus fruticosus</i> agg.																✓		284

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
bladderwort species	<i>Utricularia arenaria*</i> , <i>U. gibba*</i> , <i>U. livida</i> and <i>U. sandersonii</i>																✓		284
blue morning glory	<i>Ipomoea indica*</i>										✓						✓		180 284
blue passion flower	<i>Passiflora caerulea*</i>																✓		284
blue spur flower	<i>Plectranthus ecklonii</i> and <i>P. grandis</i>																✓		284
Bolivian fuchsia	<i>Fuchsia boliviana*</i>																✓		284
bomarea	<i>Bomarea caldasii</i> and <i>B. multiflora*</i>																✓		284
boneseed	<i>Chrysanthemoides monilifera*</i>						✓				✓						✓		136 , 180 , 284
box thorn	<i>Lycium ferocissimum</i>				✓		✓				✓						✓		102 , 136 , 180 ,

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Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
																			284
Brazilian pepper tree	<i>Schinus terebinthifolius*</i>																✓		284
Brazilian rattlebox	<i>Sesbania punicea</i>					✓											✓		131 284
broomsedge	<i>Andropogon virginicus</i>													✓					268
brush wattle	<i>Paraserianthes lophantha</i>																✓		284
buddleia	<i>Buddleja davidii</i>																✓		284
bur daisy	<i>Calotis lappulacea</i>																✓		284
burdock	<i>Arctium minus</i>																✓		284
bushy asparagus	<i>A. aethiopicus*</i> syn. <i>Asparagus densiflorus</i>						✓				✓	✓					✓		136 162 284
buttercup bush	<i>Senna septemtrionalis</i>																✓		284
Californian bulrush	<i>Schoenoplectus californicus*</i>																✓		284

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
Californian thistle	<i>Cirsium arvense</i>																✓		284
Canary Island ivy	<i>Hedera helix</i> subsp. <i>canariensis</i>																✓		284
Cape honey flower	<i>Melianthus major</i>																✓		284
Cape ivy	<i>Senecio angulatus</i>																✓		284
Cape pond weed	<i>Aponogeton distachyos</i>							✓											136
Cape sundew	<i>Drosera capensis</i>																✓		284
carex	<i>Carex divulsa</i>																✓		284
<i>Carex scoparia</i>	<i>Carex scoparia</i>							✓									✓		136 284
castor oil plant	<i>Ricinus communis</i>																✓		284
cat's claw creeper	<i>Macfadyena unguiscati</i> *																✓		284
cathedral bells	<i>Cobaea scandens</i> *															✓			278
<i>Cenchrus</i> spp. (except kikuyu grass and pearl)	<i>Cenchrus</i> spp.* syn. <i>Pennisetum</i> spp. (excl. <i>C. clandestinus</i> and <i>C.</i>																✓		284

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		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
barley)	<i>americanus)</i>																		
century plant	<i>Agave americana</i>																	✓	284
Chilean flame creeper	<i>Tropaeolum speciosum*</i>																	✓	284
Chilean glory creeper	<i>Eccremocarpus scaber*</i>																	✓	284
Chilean needle grass	<i>Nassella neesiana*</i>													✓					268
Chilean rhubarb	<i>Gunnera tinctoria*</i>																	✓	284
Chinese fan palm	<i>Trachycarpus fortunei</i>																	✓	180 284
Chinese holly grape	<i>Mahonia lomariifolia</i>																	✓	284
chocolate vine	<i>Akebia quinata*</i>																	✓	284
<i>Clematis flammula</i>	<i>Clematis flammula*</i>					✓												✓	131 284
climbing asparagus	<i>Asparagus scandens*</i>						✓							✓	✓			✓	136

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		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR	
devil's fig	<i>Solanum torvum</i>														✓					268
devil's tail	<i>Persicaria perfoliata</i> syn. <i>Polygonum perfoliatum</i>																	✓		284
divided sedge	<i>Carex divisa</i>																	✓		284
dragon tree	<i>Dracaena draco</i>																	✓		284
drooping prickly pear	<i>Opuntia monacantha</i> and other spp.																	✓		284
dusky coral pea	<i>Kennedia rubicunda</i> *																	✓		284
eel grass	<i>Vallisneria australis</i> *					✓												✓		131 284
egeria	<i>Egeria densa</i> *					✓							✓					✓		131 191 284
elaeanthus	<i>Elaeagnus x reflexa</i>																	✓		284
elephant's ear	<i>Alocasia macrorrhiza</i> syn. <i>A. brisbanensis</i>																	✓		284

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
elodea	<i>Elodea canadensis</i>					✓											✓ ¹⁰		131 284
English ivy	<i>Hedera helix</i> subsp. <i>helix</i>																✓		284
false tamarisk	<i>Myricaria germanica</i> *																✓		284
fatsia	<i>Fatsia japonica</i>																✓		284
ferny asparagus	<i>Asparagus plumosus</i> *																✓		284
firethorn*	<i>Pyracantha angustifolia</i>																✓		284
Formosa lily	<i>Lilium formosanum</i> *										✓	✓					✓		167 284
Furcraea	<i>Furcraea</i> spp.																✓		284
German ivy	<i>Senecio mikanioides</i> syn. <i>Delairea odorata</i>																✓		284
giant hogweed	<i>Heracleum mantegazzianum</i> *													✓					267
giant reed	<i>Arundo donax</i> *						✓				✓						✓		136 180

¹⁰ Outside of secure containment only

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		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
																			284
giant rhubarb	<i>Gunnera manicata</i>																	✓	284
goat's rue	<i>Galega officinalis</i>																	✓	284
gorse	<i>Ulex spp.</i>																	✓	284
great reedmace	<i>Typha latifolia*</i>														✓				268
green cestrum	<i>Cestrum parqui*</i>														✓				268
grey willow	<i>Salix cinerea*</i>							✓										✓	136 284
guava	<i>Psidium cattleianum</i>																	✓	284
Guinea grass	<i>Megathyrsus maximus</i> syn. <i>Panicum maximum*</i> ¹¹																	✓	284
gypsywort	<i>Lycopus europaeus</i>																	✓	284
Hakea	<i>Hakea spp.</i>																	✓	284
hawkweed	<i>Pilosella spp.</i> syn. <i>Hieracium</i>																	✓	284

¹¹ *pubiglumis* variety listed in the NPPA only

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Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
	<i>spp.*¹²</i>																		
hawthorn	<i>Crataegus monogyna</i>																	✓	284
heather	<i>Calluna vulgaris*</i> (excluding double flowered cultivars)																	✓	284
hemlock	<i>Conium maculatum</i>																	✓	284
Himalayan honeysuckle	<i>Leycesteria formosa</i>																	✓	284
holly-leaved senecio	<i>Senecio glastifolius</i>																	✓	284
hornwort	<i>Ceratophyllum demersum*</i>					✓							✓					✓	131 191 284
horsetail	<i>Equisetum spp.*</i>																	✓	284
houttuynia	<i>Houttuynia cordata*</i>																✓		278
<i>Hydrocotyle umbellata</i>	<i>Hydrocotyle umbellata</i>						✓											✓	136 284

¹² *Pilosella xstoloniflora* group listed in the NPPA only

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		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
iceplant	<i>Carpobrotus edulis</i> and hybrids*																✓		284
Italian arum	<i>Arum italicum</i>																✓		284
Italian jasmine	<i>Jasminum humile</i> *																✓		284
Japanese cherry	<i>Prunus serrulata</i>																✓		284
Japanese honeysuckle	<i>Lonicera japonica</i> *											✓					✓		180 284
Japanese spindle tree	<i>Euonymus japonicus</i> *																✓		284
Japanese walnut	<i>Juglans ailantifolia</i> *																✓		284
jasmine	<i>Jasminum polyanthum</i>											✓					✓		169 284
kangaroo acacia	<i>Acacia paradoxa</i>							✓									✓		143 284
khasia berry	<i>Cotoneaster simonsii</i> *																✓		284
kudzu vine	<i>Pueraria montana</i> syn. <i>P. lobata</i>																✓		284

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
lagarosiphon, oxygen weed	<i>Lagarosiphon major</i> *					✓											✓		131 284
lantana	<i>Lantana camara</i> *																✓		273
lizard's tail	<i>Saururus cernuus</i>																✓		284
lodgepole pine	<i>Pinus contorta</i> *																✓		284
loquat	<i>Eriobotrya japonica</i>																✓		284
Madeira vine	<i>Anredera cordifolia</i> *				✓						✓						✓		103 180 284
male fern	<i>Dryopteris filixmas</i>																✓		284
marram grass	<i>Ammophila arenaria</i>																✓		284
marshwort	<i>Nymphoides geminate</i> *													✓					268
Mexican daisy	<i>Erigeron karvinskianus</i> *																✓		284
Mexican devil	<i>Ageratina adenophora</i>																✓		284
Mexican feather grass	<i>Nassella tenuissima</i> *													✓					268

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Plant		Programme														Page(s)			
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		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
Mexican water lily	<i>Nymphaea Mexicana*</i>																✓		284
Mickey Mouse plant	<i>Ochna serrulata*</i>					✓											✓		131 284
mile-a-minute	<i>Dipogon lignosus*</i>				✓		✓										✓		104 136 284
mist flower	<i>Ageratina riparia</i>																✓		284
monkey apple	<i>Syzygium smithii</i> syn. <i>Acmena smithii*</i>										✓						✓		180 284
montbretia	<i>Crocasmia x crocosmiiflora</i>																✓		284
Montpellier broom	<i>Genista monspessulana</i> syn. <i>Teline monspessulana</i>																✓		284
Morton bay fig	<i>Ficus macrophylla</i>																✓		284
moth plant	<i>Araujia sericifera</i> syn. <i>Araujia hortorum*</i>				✓		✓				✓	✓					✓		105 136 171 284
nardoo	<i>Marsilea mutica</i>																✓		284

Plant		Programme													Page(s)					
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region						
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion		Eradication	Progressive containment	Sustained control	GNR	
nassella tussock	<i>Nassella trichotoma</i> *														✓					268
needle grass	<i>Austrostipa rudis</i>															✓				278
nodding thistle	<i>Carduus nutans</i>																✓			284
Noogoora bur	<i>Xanthium occidentale</i>															✓				275
Norfolk Island hibiscus	<i>Lagunaria patersonii</i>											✓					✓			180 284
nutgrass	<i>Cyperus rotundus</i>																✓			284
old man's beard	<i>Clematis vitalba</i> *															✓				278
oxylobium	<i>Callistachys lanceolata</i>																✓			284
palm grass	<i>Setaria palmifolia</i>																✓			284
pampas grass	<i>Cortaderia jubata</i> * and <i>C. selloana</i> *											✓					✓			180 284
paperbark poplar	<i>Melaleuca quinquenervia</i>																✓			284
parrot's feather	<i>Myriophyllum aquaticum</i> *					✓											✓			131 284

Plant		Programme														Page(s)			
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
queen of the night	<i>Cestrum nocturnum*</i>																✓		284
Queensland poplar	<i>Homalanthus populifolius*</i>						✓										✓		136 284
Queensland umbrella tree	<i>Schefflera actinophylla</i>																✓		284
ragwort	<i>Jacobaea vulgaris</i> (syn. <i>Senecio jacobaea</i>)																✓		284
red dragon	<i>Persicaria microcephala</i>																✓		284
red valerian	<i>Centranthus ruber</i>																✓		284
reed sweet grass	<i>Glyceria maxima</i>						✓										✓		136 284
rhamnus	<i>Rhamnus alaternus*</i>			✓		✓					✓	✓					✓		100 131 174 284
Rhaphiolepis / Sexton's bride	<i>Rhaphiolepis umbellata</i>						✓										✓		136 284
rhus tree	<i>Toxicodendron succedaneum</i> syn. <i>Rhus succedanea</i>																✓		284

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		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion	Eradication		Progressive containment	Sustained control	GNR
rough tree fern	<i>Cyathea cooperii</i> *																✓		284
royal fern	<i>Osmunda regalis</i> *							✓									✓		143 180 284
rum cherry	<i>Prunus serotina</i> *																✓		284
saffron thistle	<i>Carthamus lanatus</i>																✓		284
<i>Sagittaria</i> spp.	<i>Sagittaria</i> ^{*13} spp. (except <i>S. teres</i>)																✓		278
salt water paspalum	<i>Paspalum vaginatum</i>																✓		180 284
scrambling lily	<i>Geitonoplesium cymosum</i>															✓			268
<i>Selaginella</i> spp.	<i>Selaginella martensii</i> , <i>S. moellendorffii</i> , <i>S. uncinata</i>																✓		284
Senegal tea	<i>Gymnocoronis spilanthoides</i> *																✓		278
sharp rush	<i>Juncus acutus</i>							✓									✓		131 180 284

¹³ *Sagittaria montevidensis*, *S. sagittifolia* and *S. platyphylla* listed in the NPPA only

Plant		Programme													Page(s)				
Common name	Scientific name	Hauraki Gulf controlled area				Aotea Great Barrier Island			Kawau Island	Waiheke Island	Priority parks		Priority lakes	Whole region					
		Exclusion	Eradication	Progressive containment	Site-led	Exclusion	Eradication	Progressive containment	Eradication	Eradication	Site-led	GNR	Site-led	Exclusion		Eradication	Progressive containment	Sustained control	GNR
sheep's bur	<i>Acaena agnipila</i>																✓		284
skeleton weed	<i>Chondrilla juncea</i>																✓		284
smilax	<i>Asparagus asparagoides*</i>							✓									✓		143 284
snow poppy	<i>Eomecon chionantha*</i>																✓		284
soap aloe	<i>Aloe maculata</i>																✓		284
Spanish broom	<i>Spartium junceum</i>						✓										✓		136 284
Spanish heath	<i>Erica lusitanica</i>																✓		284
spartina	<i>Spartina alterniflora, S. anglica and S. x townsendii</i>															✓ ¹⁴	✓ ¹⁵		278 284
spiny broom	<i>Calicotome spinosa</i>																✓		284
strangling fig	<i>Ficus microcarpa</i>																✓		284
sweet briar	<i>Rosa rubiginosa</i>																✓		284

¹⁴ Excluding Kairapara Harbour

¹⁵ Kaipara Harbour only

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sweet pea shrub	<i>Polygala myrtifolia</i> (excl. cv. 'Grandiflora')*															✓		284	
sweet pittosporum	<i>Pittosporum undulatum</i> *					✓										✓		131 284	
sydney golden wattle	<i>Acacia longifolia</i>															✓		284	
Taiwan cherry	<i>Prunus campanulata</i>															✓		284	
Tasmanian ngaio	<i>Myoporum insulare</i> and hybrids*										✓					✓		180 284	
tradescantia	<i>Tradescantia fluminensis</i> *															✓		284	
Tree lupin	<i>Lupinus arboreus</i>															✓		284	
tree of heaven	<i>Ailanthus altissima</i> *						✓									✓		136 284	
tuber ladder fern	<i>Nephrolepis cordifolia</i> *															✓		284	
tutsan	<i>Hypericum androsaemum</i> *															✓		284	
variegated thistle	<i>Silybum marianum</i>															✓		284	

Plant		Programme														Page(s)			
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velvet groundsel	<i>Roldana petasitis</i> (syn. <i>Senecio petasitis</i>)																✓		284
water plantain	<i>Alisma plantago-aquatica</i>						✓												136
water poppy	<i>Hydrocleys nymphoides</i> *													✓					268
water primrose	<i>Ludwigia peploides</i> subsp. <i>Montevidensis</i> *																✓		284
white-edged nightshade	<i>Solanum marginatum</i> *													✓					268
wild broom	<i>Cytisus scoparius</i> (excl. cultivated varieties)															✓ ¹⁶	✓	278 284	
wild ginger	<i>Hedychium gardnerianum</i> * and <i>H. flavescens</i> *						✓				✓	✓					✓		136 176 284
wild kiwifruit	<i>Actinidia species</i> (wild varieties only)															✓			276
woolly nightshade	<i>Solanum mauritianum</i> *						✓				✓	✓					✓		136 178 284

¹⁶ Rural areas only

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Yellow bristle grass	<i>Setaria pumila</i>															✓		284	
yellow flag iris	<i>Iris pseudacorus*</i>															✓		284	
yellow guava	<i>Psidium guajava</i>															✓		284	
yellow passionfruit	<i>Passiflora ligularis</i>															✓		284	
yellow water lily	<i>Nuphar lutea*</i>															✓		284	

Table 4: Organisms managed under national-led programmes assisted by Auckland Council.

National Interest Pest Responses	
Common name	Scientific name
Alpine newt	<i>Ichthyosaura alpestris</i>
Cape tulip	<i>Homeria flaccida</i> syn. <i>Moraea flaccida</i>
Hydrilla	<i>Hydrilla verticillata</i>
Johnson grass	<i>Sorghum halepense</i>
Manchurian wild rice	<i>Zizania latifolia</i>
Myrtle rust	<i>Austropuccinia psidii</i> syn. <i>Puccinia psidii</i>
Phragmites	<i>Phragmites australis</i>
Pyp grass	<i>Ehrharta villosa</i>
Salvinia	<i>Salvinia molesta</i>
Sea spurge	<i>Euphorbia paralias</i>
Water hyacinth	<i>Eichhornia crassipes</i>
White bryony	<i>Bryonia cretica</i>
Other Ministry for Primary Industries-led Unwanted Organism eradication programmes	
Bat-wing passion flower	<i>Passiflora apetala</i>
Cabomba	<i>Cabomba caroliniana</i>
Chinese knotweed	<i>Persicaria chinensis</i>
Purple loostrife	<i>Lythrum salicaria</i>
Velvet leaf	<i>Abutilon theophrasti</i>

6 Tarāwaho whakahaere kaupapa koiora orotā / Pest management framework

6.1 Hōtaka whakahaere kaupapa koiora orotā / Pest management programmes

One or more pest management programmes will be used to control pests and any other organisms covered by this RPMP. The types of programme are defined by the NPD and reflect outcomes in keeping with:

- the extent of the invasion
- whether it is possible to achieve the desired control levels for the pests.

The intermediate outcomes for five programmes are described below.

1. **Exclusion Programme:** to prevent the establishment of the subject, or an organism being spread by the subject, that is present in Aotearoa / New Zealand but not yet established in an area.
2. **Eradication Programme:** to reduce the infestation level of the subject, or an organism being spread by the subject, to zero levels in an area in the short to medium term.
3. **Progressive Containment Programme:** to contain or reduce the geographic distribution of the subject, or an organism being spread by the subject, to an area over time.
4. **Sustained Control Programme:** to provide for ongoing control of the subject, or an organism being spread by the subject, to reduce its impacts on values and spread to other properties.
5. **Site-led Pest Programme:** 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.

6.2 Ngā Whāinga / Objectives

Objectives have been set for each pest or class of pests. As required by the NPD, the objectives include:

- the particular adverse effect/s to be addressed (s54(a) of the Biosecurity Act)
- the intermediate outcomes of managing the pest
- the geographic area to which the objective applies
- the level of outcome, if applicable
- the period for achieving the outcome
- the intended outcome in the first 10 years of the Plan (if the period is greater than 10 years).

For example:

- Over the duration of the plan Auckland Council will exclude giant hogweed (*Heracleum mantegazzianum*) from establishing in the region to prevent adverse

effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

- Over the duration of the plan Auckland Council will manage climbing asparagus (*Asparagus scandens*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

6.3 Ngā tikanga matua hei whakahaere kaupapa orotā / Principal measures to manage pests

The principal measures used in the RPMP to achieve the objectives are in four main categories. Each category contains a suite of tools to be applied in appropriate circumstances.

1. Requirement to act - land owners and/or occupiers or other persons may be required to act where RPMP rules dictate:
 - pests are to be controlled
 - management plans are to be prepared and submitted
 - the presence of pests is to be reported
 - actions are to be reported (type, quantity, frequency, location, programme completion)
 - pests are not to be spread (propagated, sold, distributed), and pathways are to be managed (e.g. machinery, gravel, animals).
2. Council inspection - inspection by the council may include staff:
 - visiting properties or doing surveys to determine whether pests are present, or rules and management programmes are complied with, or to identify areas that control programmes will apply to (places of value, exclusion zones, movement control areas)
 - managing compliance to regulations (rule enforcement, action on default, prosecution, exemptions)
 - taking limited control actions, where doing so is effective and cost efficient
 - monitoring effectiveness of control.
3. Service delivery – the council may deliver the service:
 - where it is funded to do so within a rating district
 - on a user pays basis
 - by providing control tools, including sourcing and distributing biological agents, or provisions (e.g. traps, chemicals).
4. Advocacy and education – the council may:
 - provide general purpose education, advice, awareness and publicity activities to land owners and/or occupiers and the public about pests and pathways (and control of them)
 - encourage land owners and/or occupiers to control pests
 - facilitate or fund community and land owners and/or occupier self-help groups and committees

- help other agencies with control, advocacy, and the sharing or sourcing of funding
- promote industry requirements and best practice to contractors and land owners and/or occupiers
- encourage land owners and/or occupiers and other persons to report any pests they find or to control them
- facilitate or commission research.

6.4 Ngā Ture / Rules

Rules play an integral role in securing many of the pest management outcomes sought by the proposed RPMP. They create a safety net to protect land occupiers as well as the regional community and its assets (including parkland and other native ecosystems) from the effects of the actions or inactions of others where non-regulatory means are inappropriate or do not succeed. Importantly, amendments to the Biosecurity Act by the Biosecurity Law Reform Act 2012 now bind the Crown by those rules identified as **Good Neighbour Rules** in RPMPs.

The Biosecurity Act prescribes the matters that may be addressed by rules, and the need to:

- specify if the rule is to be designated as a ‘Good Neighbour Rule’ (s73(3)(i));
- explain the purpose of the rule (s73(5));
- specify if breaching the rule is an offence under the Act (s73(6)(d)); and
- specify if an exemption to the rule, or any part of it, is allowable or not (s78).

Exemptions may apply to any or all of the rules contained within this RPMP, on written application to Auckland Council.

Rules can apply generally, or to different classes or descriptions of persons, places, goods, or other things.

Before a rule can be identified as a Good Neighbour Rule in the RPMP, the Council must be satisfied that the requirements of the NPD have been met. Of particular note, the Good Neighbour Rule will:

- identify who the GNR applies to—either all owners and/or occupiers, or a specified class of owner and/or occupier
- identify the pest to be managed
- state that the pest must already be present on the owner’s and/or occupier’s land
- state that the owner and/or occupier of the adjacent or nearby land must, in the view of the management agency, be taking reasonable measures to manage the pest on their land

- (if relevant) state the particular values or uses of the neighbouring land that the pest's spread affects, and that the Good Neighbour Rule is intended to address.

For example, all owners or occupiers of a transport corridor that is located within 500m of the boundary of a Priority Park (as shown in Figure 5) must mow all Formosa lily (*Lilium formosanum*) on that land during flowering, prior to seed set.

7 Hōtaka ā-Orotā / Pest Programmes

7.1 Te Rohe Āta Whakahaere o Tikapa Moana / Hauraki Gulf Controlled Area

Ko Tikapa Moana te kāinga o tētahi o ngā wāhi muia e te hia nei momo manu haumoana o te ao. Ko ōna moutere he wāhi e taea te tū āraitia, e māmā atu te muru rawa i ngā āhua momo koiroa orotā i ērā i te tuawhenua nei. Ko Ruapuke (1 ha) o te kāhui motu Noises te motu tuatahi i Aotearoa kia murua i te kiore, i whakatūturutia tēnei i te tau 1964. Mai i taua wā, i tere piki ake ngā hangarau muru, ināianei neke atu i te haurua o ngā motu kua noho koiroa orotā-kore kē. Nā ēnei murunga i āhei ai te whakahoki ake anō i ētahi o ngā momo i te noho wehi ki Tikapa Moana.

Ko tā ngā hōtaka e whai ake nei he tiaki i ngā tikanga hauropi whakahira me te noho ārai o te matawhenua o ngā moutere o Tikapa Moana, mā roto atu i ngā whakaritenga e āhei ai te aukati i te hora tonu o ngā orotā ki ētahi atu moutere hōu (tae atu ki ngā ture mau Raihana Orotā-Kore o te hunga whai umanga kaikawekawe), āpiti hoki ko te mana o te kaunihera me ngā kaupupuri whenua ki te tiaki i ngā āhua orotā i ētahi wāhi hei ārai, hei whakaheke iho rānei i ngā raru.

The Hauraki Gulf is home to one of the highest diversities of seabirds in the world. Islands have the advantage of being geographically defensible, making it easier than on the mainland to completely remove some pest species. The tiny Ruapuke / Maria Island (1 ha) in the Noises group was the site of Aotearoa / New Zealand's first island rodent eradication, with success confirmed in 1964. Since then, eradication technology has grown rapidly, so that now over half of the islands in the gulf are free of mammalian pests. These eradications have enabled the reintroduction of numerous threatened species to Te Tikapa Moana o Hauraki / Hauraki Gulf islands.

The following programmes protect the high ecological values and strategically defensible geography of Te Tikapa Moana o Hauraki / the Hauraki Gulf islands, through a combination of measures to prevent further spread of pests to new islands (with rules including Pest Free Warrants for commercial transport operators), along with control by council or landowners to manage pests at certain sites to prevent or reduce impacts.



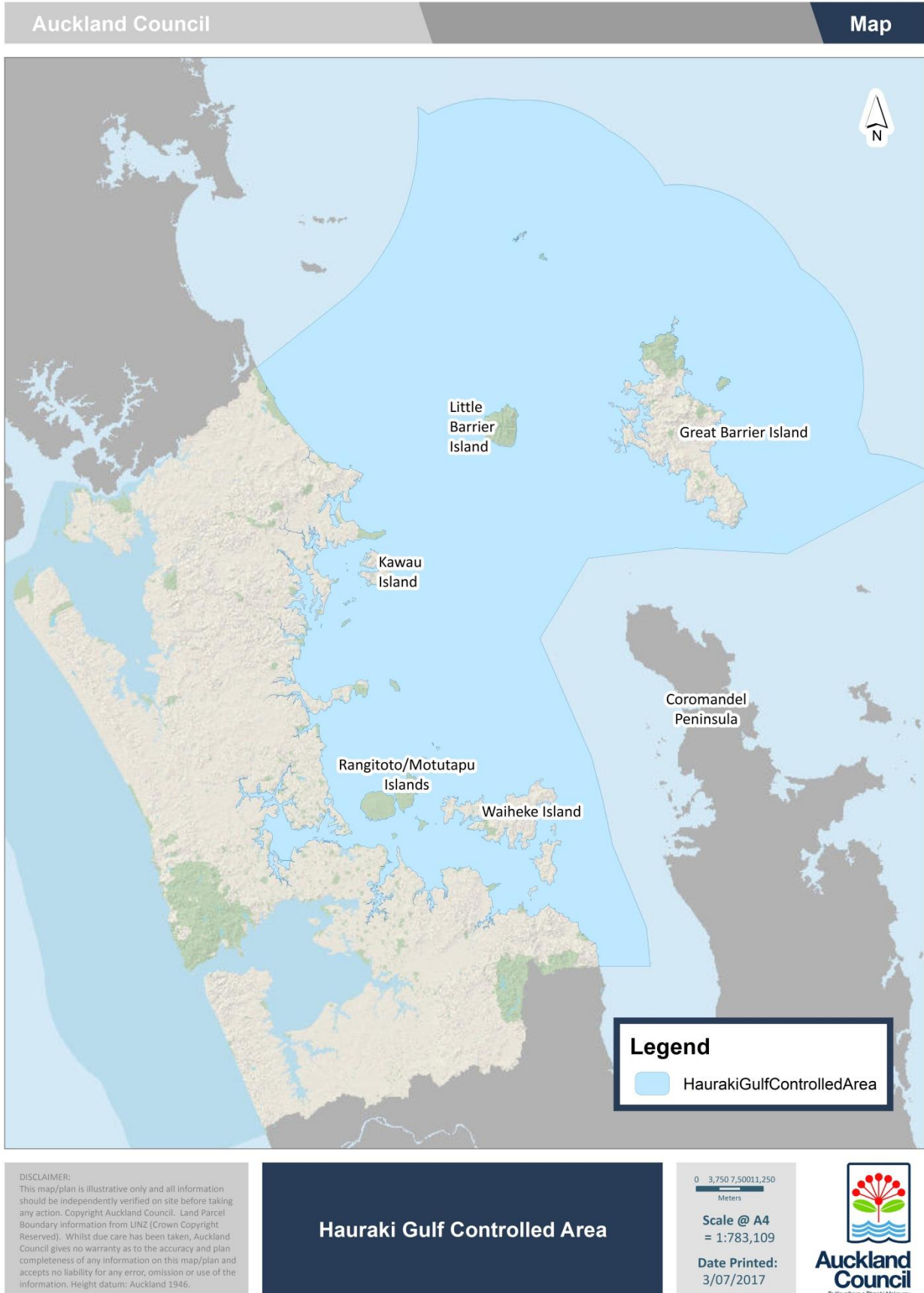


Figure 3 Specified geographic area where Hauraki Gulf Controlled Area pest programmes apply during the lifetime of the plan.

7.1.1 Te noho wātea o te Koiora Orotā / Exclusion pest animals

These exclusion pest animals are potential pest animals which are not known to be established in the Hauraki Gulf Controlled Area. These pest animals all have the potential to establish here and are capable of causing adverse effects to the environmental, economic, human health, social or cultural values of the Hauraki Gulf Controlled Area. It is a key regional priority to ensure these species do not establish on Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands, to protect the values of those islands and past investment in island eradications.

7.1.1.1 Feral deer (*Cervus*, *Axis*, *Dama*, *Odocoileus*, *Elaphurus* spp.)

Feral deer are medium to large-sized ungulates. Red deer have reddish-brown coats and can reach 180kg. Fallow deer are much smaller and have a chestnut coloured coat. Heavy and selective deer browsing on native plants, particularly schefflera/pate, three-finger, lancewood, and hen and chicken fern, can radically change forest structure and impact below-ground processes by altering the nature of litter inputs into the soil. Feral deer are also spill-over hosts and potential reservoirs of bovine TB.



Objective: Over the duration of the plan Auckland Council will exclude feral deer¹⁷ (*Cervus*, *Axis*, *Dama*, *Odocoileus*, *Elaphurus* spp. including any hybrid) from the Hauraki Gulf Controlled Area to prevent adverse effects on the environment.

Intermediate outcome: to prevent the establishment of feral deer (*Cervus*, *Axis*, *Dama*, *Odocoileus*, *Elaphurus* spp. including any hybrid) in the Hauraki Gulf Controlled Area.

Rules:

1. No person shall move or distribute any deer into the Hauraki Gulf Controlled Area (as defined in Figure 3).

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

¹⁷ A feral deer includes any deer that is not:

(a) being kept or farmed in accordance with the Wild Animal Control Act 1977; and
(b) identified in accordance with the National Animal Identification and Tracing Act 2012.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands, in partnership with the Department of Conservation where appropriate.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal.
Enforcement	Enforce conditions of transport within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.

7.1.2 Wāhi whai tipu orotā / Site-led animals

These site-led pest animals are present in the Hauraki Gulf Controlled Area, and have potential to cause serious impacts on the environmental, cultural and economic values of Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands. The following programmes seek to minimise further spread of these pest animals to new islands, and in some cases also manage existing island populations to reduce their impacts on those islands.

7.1.2.1 Argentine ant (*Linepithema humile*)

Argentine ant workers are uniformly light brown insects, wingless and are roughly 2–3mm long. Queens are larger (10-12mm) and dark brown. They have a broad diet and impact on many invertebrate species through predation, competition and interference, and will also prey on hatchlings in nests. They feed extensively on honeydew produced by aphids and scale insects, and therefore protect these insects from predators. This can severely impact on the horticulture industry and will often kill fruit trees due to an increase in scale insects. Production losses in the poultry industry can be caused by Argentine ants killing hatchlings, and to the apiculture industry due to hive robbing. Argentine ants will often bite humans and can become major nuisances in homes and gardens. They can also interfere with pest plant biocontrol.



Richard Toft, Entecol

Objective: over the duration of the plan Auckland Council will manage Argentine ants (*Linepithema humile*) to protect values in the Hauraki Gulf Controlled Area to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is controlled to prevent spread within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

- 1) No person shall move or allow to be moved any Argentine ant to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
- 2) All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

3) All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on Argentine ant-free islands, in partnership with the Department of Conservation where appropriate. Includes long-term projects to eradicate populations on Kawau and Aotea / Great Barrier island group.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly Argentine ant-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of ants to offshore islands.
enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement. All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.2.2 Pest cat (*Felis catus*)

Pest cats are small-bodied carnivorous mammals (2-7kg as adults) with variable coat colours. Adults are active both day and night, switching activity patterns in response to opportunity, favouring small terrestrial mammals (rodents and rabbits) but prey-switching to take a wide variety of other taxa (birds, bats, reptiles, amphibians, invertebrates) according to their availability. Predation can reduce prey abundance, affect assemblage structure among prey species, and affect non-prey species and ecosystem processes such as pollination and seed dispersal via food web cascades. Cat predation is considered to be one of the main threats to tūturiwhatu / New Zealand dotterels, and juvenile kiwi and burrowing seabirds such as tāiko / black petrel and tītī / Cook's petrels are also at risk. Cats can also facilitate disease and parasite transmission to native species, particularly *Toxoplasma gondii*, which is dependent on cats to complete its lifecycle. Fatal toxoplasmosis has been reported in tutumairekurai / Hector's dolphins, terehu / bottle nose dolphins, kekeno / NZ fur seals, kiwi, kererū and kākā.



Landcare Research

Objective: Over the duration of the plan Auckland Council will manage pest cats¹⁸ (*Felis catus*) to protect values in places to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

- 1) No person shall move or allow to be moved any pest cat to or among islands within the Hauraki Gulf Controlled Area (as defined in Figure 3).
- 2) No person shall bring any cat within 200m of any cat-free island within the Hauraki Gulf Controlled Area.

¹⁸ Pest cat means any cat within the Hauraki Gulf Controlled Area that is not:

- i. Micro-chipped; and
- ii. Registered on the New Zealand Companion Animal Register.

- 3) All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
- 4) All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rules 1 and 2 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 3 and 4 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	<p>Undertake incursion responses on cat-free islands, in partnership with the Department of Conservation where appropriate.</p> <p>Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area.</p>
Monitoring and surveillance	<p>Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly cat-free islands, to determine the presence of new incursions and status of existing or historical sites.</p>
Enforcement	<p>Enforce conditions of transport within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators, and that all cats being moved within the Hauraki Gulf are micro-chipped and remain at all times a distance of at least 200m from any cat-free island.</p>
Education and advice	<p>Provide information and advice on responsible pet ownership (particularly de-sexing and micro-chipping). Provide information on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of cats to offshore pest-free islands.</p> <p>Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas.</p>
Requirement to act	<p>Cat owners to ensure owned cats are micro-chipped and registered if transporting cats to or among islands within Hauraki Gulf Controlled Area, and to all cats are kept a distance of at least 200m away from any cat-free islands at all times.</p> <p>All persons intending to move a building to or among Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement.</p> <p>All commercial transport operators within the Te Tīkapa Moana o Hauraki / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.3 Darwin's ant (*Doleromyrma darwiniana*)

Darwin's ants are small omnivorous insects (2-5mm) with dark brown heads and light brown bodies, which give off a strong odour when crushed. Impacts are expected to be similar to Argentine ants. Their preference for sweet foods may lead to the invasion of vineyards and orchards, and facilitate high densities of scale insects and aphids by tending them for honeydew, further impacting plant health. They are also likely to compete strongly with other native species that feed on honeydew or nectar. Predation by Darwin's ants has been implicated as a factor in the failure of the boneseed leaf roller moth biocontrol agent, thereby indirectly facilitating the spread of the pest plant.



Richard Toft, Entocol

Objective: over the duration of the plan Auckland Council will manage Darwin's ants (*Doleromyrma darwiniana*) to protect values in place to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is controlled to prevent spread within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any Darwin's ant to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on Darwin's ant-free islands, in partnership with the Department of Conservation where appropriate. Includes long-term projects to eradicate populations on Aotea / Great Barrier.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly Darwin's ant-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of ants to offshore islands.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement. All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.2.4 Feral pig (*Sus scrofa*)

Feral pigs are large (sometimes over 300kg), black to brown, stoutly built mammals with large heads and well-developed canine teeth. They actively scavenge during the day and will overturn large areas of soil to consume soil invertebrates, especially earthworms. In invaded ecosystems, they prey on and compete with native species, alter nutrient cycles, damage vegetation and soil, facilitate the spread of pest plants and plant diseases, including kauri dieback disease. They are of high risk to the primary production industry as vectors of bovine tuberculosis. International trading options may be reduced if the Aotearoa / New Zealand feral pig population became a reservoir for swine fever or foot and mouth disease. Feral pig attacks on humans are rare but could be potentially fatal.



Landcare Research

Objective: over the duration of the plan Auckland Council will manage feral pigs¹⁹ (*Sus scrofa*) to protect values in places to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any feral pig to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of this rule is to protect the values of the Hauraki Gulf Controlled Area.

¹⁹ A feral pig includes any pig that is not:

(a) held behind effective fences or otherwise constrained; and
(b) identified by ear tag

Principal measures of achievement:

Service delivery (control)	Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area. Respond to incursions on pig-free islands, in partnership with the Department of Conservation where appropriate.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas, particularly pig-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and ways to reduce biosecurity risks associated with keeping or hunting of pigs.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area.
Requirement to act	All persons in possession of pigs to comply with directions from Auckland Council biosecurity regarding adequate containment of pigs to prevent release from captivity.

7.1.2.5 Hedgehog (*Erinaceus europaeus*)

Hedgehogs are small brown to grey, insectivorous mammals with spiny coats. They are voracious nocturnal predators, consuming invertebrates, ground nesting birds' eggs and small reptiles. They also vector a wide variety of human, bird, pet and agricultural diseases, including bovine TB.



Department of Conservation

Objective: over the duration of the plan Auckland Council will manage hedgehogs (*Erinaceus europaeus*) to protect values in place to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is controlled to prevent spread within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any hedgehog to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on hedgehog-free islands, in partnership with the Department of Conservation where appropriate.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly hedgehog-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of hedgehogs to offshore islands.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement. All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.2.6 Mouse (*Mus musculus*)

Mice are small grey-brown or black rodent omnivores which can be found in almost every habitat type. They directly impact native reptile and invertebrate populations through predation but also indirectly, as a food source facilitating other invasive predators. Excessive consumption of seeds by mice can greatly reduce native seedling recruitment and potentially modify plant communities in invaded ecosystems. Mice are also particularly damaging to cereal production and the food services industry, attacking and contaminating stored produce at all stages.



Nga Manu Images

Objective: over the duration of the plan Auckland Council will manage mice (*Mus musculus*) to protect values in places to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any pest mouse to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

Principal measures of achievement:

Service delivery (control)	<p>Undertake incursion responses on mouse-free islands, in partnership with the Department of Conservation where appropriate.</p> <p>Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area.</p>
Monitoring and surveillance	<p>Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly mouse-free islands, to determine the presence of new incursions and status of existing or historical sites.</p>
Education and advice	<p>Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of mice to offshore islands.</p>
Enforcement	<p>Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.</p>
Requirement to act	<p>All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement.</p> <p>All commercial transport operators within Te Tīkapa Moana o Hauraki / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.7 Mustelids: Ferrets (*Mustela furo*), Stoats (*Mustela erminea*), and Weasels (*Mustela nivalis*)

Ferrets, stoats and mustelids belong to a group of animals known as mustelids. Ferrets are the largest of the mustelids (600-1,300g) and can be distinguished by a dark 'mask' across their eyes. Stoats are smaller (200–350g) with orange-brown coats and a black tip at end of the tail. Weasels are the smallest (60–120g), with orange-brown coats and a uniformly brown tail.

Mustelids are bold generalist predators and can have devastating impacts on native birds, amphibians, reptiles, molluscs, and insects. Ferrets mostly threaten ground nesting birds while stoats and weasels have contributed to the decline and extinction of many forest birds, particularly cavity nesting species. Mustelids also vector a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).



Stoat, Department of Conservation

Objective: over the duration of the plan Auckland Council will manage mustelids (*Mustela furo*, *Mustela erminea*, *Mustela nivalis*) to protect values in places to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any mustelid to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on mustelid-free islands, in partnership with the Department of Conservation where appropriate. Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly mustelid-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of mustelids to offshore islands.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement. All commercial transport operators within the Te Tīkapa Moana o Hauraki / the Hauraki Gulf to obtain and maintain Pest Free Warrant status. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.2.8 Plague skink (*Lampropholis delicata*)

Also known as : Rainbow skinks

Plague skinks are small brown lizards with an iridescent rainbow sheen to their scales visible under bright light. The skinks are generalist predators of a wide variety of invertebrates and are prevalent in suburban gardens, parks, disturbed sites, urban areas, open rocky land, farmland and scrub. They have higher reproductive rates and reach maturation faster than native skinks, reaching densities of 300-400 per 100m². Such high population densities can result in plague skinks out-competing native reptiles, particularly native copper skinks.



Objective: over the duration of the plan Auckland Council will manage Plague skinks (*Lampropholis delicata*) to protect values in place to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is controlled to prevent spread within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any Plague skink to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on Plague skink-free islands, in partnership with the Department of Conservation where appropriate.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly Plague skink-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of skinks to offshore islands.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	<p>All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement.</p> <p>All commercial transport operators within the Te Tīkapa Moana o Hauraki / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.9 Possum (*Trichosurus vulpecula*)

Possums are small marsupials with thick bushy tails, weighing between 1.4-6.4kg and can be grey, brown or black in colour. Possums will prey on eggs and chicks of various threatened birds, including kōkako, and compete for nest sites with hole-nesting birds, such as kiwi and parakeets. Heavy selective browsing by possums can suppress or eliminate preferred plants. This can alter the vegetation composition in invaded ecosystems and ultimately lead to the collapse of palatable canopy species, such as Northern rātā. Possums are also considered serious agricultural pests. They are vectors for bovine TB in cattle and compete directly with stock for pasture.



Nga Manu Images

Objective: over the duration of the plan Auckland Council will manage possums (*Trichosurus vulpecula*) to protect values in place to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any possum to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	<p>Undertake incursion responses on possum-free islands, in partnership with the Department of Conservation where appropriate.</p> <p>Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area.</p>
Monitoring and surveillance	<p>Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly possum-free islands, to determine the presence of new incursions and status of existing or historical sites.</p>
Education and advice	<p>Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of possums to offshore islands.</p>
Enforcement	<p>Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.</p>
Requirement to act	<p>All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement.</p> <p>All commercial transport operators within Te Tīkapa Moana o Hauraki / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.10 Rabbits (*Oryctolagus cuniculus*) and hares (*Lepus europaeus*)

Rabbits and hares are small terrestrial herbivorous mammals. Rabbits are about the size of a small domestic cat, often grey-brown in colour. Hares are larger than rabbits and have black tipped ears. They will heavily browse native seedlings and low-growing native plants in open habitats, such as sand dunes and grasslands, suppressing threatened species and altering vegetation composition. As prey species, they indirectly contribute to increased predation pressure on native species by supporting populations of introduced predators, including pest cats and mustelids. In agricultural systems, excessive browsing can cause major damage to pastures, with 7-10 rabbits estimated to eat as much as one sheep.



Landcare Research

Objective: over the duration of the plan Auckland Council will manage pest rabbits²⁰ (*Oryctolagus cuniculus*) and hares (*Lepus europaeus*) to protect values in place to reduce adverse effects on the environment, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any pest rabbit or hare to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

²⁰ Pest rabbit means any rabbit within the Hauraki Gulf Controlled Area that is not:

- i. One of the following breeds: New Zealand white, angora, Flemish giant, rex, chinchilla, Californian, Netherland dwarf, Dutch, tan, and silver fox.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on rabbit-free islands, in partnership with the Department of Conservation where appropriate. Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly rabbit-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of rabbits to offshore islands.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement. All commercial transport operators within the Te Tīkapa Moana o Hauraki / the Hauraki Gulf to obtain and maintain Pest Free Warrant status. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.2.1 Rats: ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), kiore (*R. exulans*)

Rats are small black, grey or brown mammals with naked tails. Rats occupy a wide range of terrestrial habitats throughout Aotearoa / New Zealand. Rats are generalist omnivores; their diet includes seed predation and preying on small animals such as invertebrates, reptiles, amphibians and juvenile birds. They compete with native birds for nests and burrows, and have been implicated in the decline of a number of threatened birds, particularly seabirds. Excessive consumption of seeds by rats can greatly reduce native seedling recruitment and ultimately modify plant communities in invaded ecosystems. Rats are particularly damaging to cereal production, stored products and the food services industry, and are a potential disease vector to humans.



Ship rat, Landcare Research

Objective: over the duration of the plan Auckland Council will manage rats (*Rattus rattus*, *Rattus norvegicus*, *Rattus exulans*) to protect values in places to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is managed within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. No person shall move or allow to be moved any pest rat to or within the Hauraki Gulf Controlled Area (as defined in Figure 3).
2. All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
3. All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least two weeks prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Undertake incursion responses on rat-free islands, in partnership with the Department of Conservation where appropriate. Manage the pest animal in Biodiversity Focus Areas within the Hauraki Gulf Controlled Area to levels that protect the values of the Hauraki Gulf Controlled Area.
Monitoring and surveillance	Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly rat-free islands, to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of rats to offshore islands.
Enforcement	Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.
Requirement to act	All persons intending to move a building to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to notify Auckland Council at least two weeks prior to intended date of movement, and to provide access for inspection within two days prior to the date of movement. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.3 Te noho wātea o te kitakita orotā / Exclusion pest pathogens

At the time of writing²¹, kauri dieback is not known from Hauraki Gulf islands, with the exception of Aotea / Great Barrier. There is no known cure for kauri dieback disease, and once present in a catchment it is difficult to contain spread of the disease. For these reasons, keeping kauri dieback off these defendable islands is a top regional priority. See also the Kohukohunui / Hunua exclusion zone (Section 7.5.4.) and Sustained Control programme for the remainder of the region (Section 7.8.4.2).

7.1.3.1 Kauri dieback disease (*Phytophthora agathidicida*)

Symptomatic kauri trees infected with kauri dieback disease exhibit root and collar rot, resin-exuding lesions, yellowing of leaf tissue, canopy thinning and mortality. Human-mediated movement of contaminated soil is the main cause of jump-dispersal between kauri forests but it can be spread locally by feral pigs. The disease can be incurably fatal to kauri trees of all ages and, in the absence of effective treatment, has mid to long-term potential to cause functional extinction of kauri as a canopy species. Kauri are ecosystem engineers, with profound effects on soil chemistry, and associated plant and animal communities. Consequently there is a potential for catastrophic loss of associated unique ecosystems.



Objective: over the duration of the plan Auckland Council will exclude kauri dieback (*Phytophthora agathidicida*) from establishing within kauri dieback exclusion zones (as identified in Figure 4) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of kauri dieback within kauri dieback exclusion zones.

Rules:

1. No person shall distribute, move or release kauri dieback disease in the Auckland region.
2. No person shall move untreated kauri plant material to or among Hauraki Gulf Controlled Area islands, unless the purpose of the movement is to dispose of the material at an approved Auckland Council containment landfill²².

²¹ 9 October 2017

²² Approved at time of writing:

1. Ridge Road Quarries, Ridge Road, Bombay (accepts soil only)

3. All commercial transport operators moving goods or people to or among Te Tikapa Moana o Hauraki / the Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.
4. All owners or occupiers of a commercial passenger boat or aircraft exit or entry point to the Hauraki Gulf Controlled Area islands must:
 - (i) provide information, supplied by Auckland Council, to passengers about kauri dieback disease;
 - (ii) provide space for an Auckland Council-maintained phytosanitary station for passengers to use to prevent the spread of kauri dieback disease.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 and 3 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

The purpose of rule 4 is to require the occupier of a place to carry out specified treatments or procedures to assist in preventing the spread of the pest.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

2. EnviroWaste Hampton Downs Landfill, 136 Hampton Downs Road, RD2, Te Kauwhata (accepts soil and organic material).

Other facilities may be approved over the lifetime of the plan. Updates, if any, to the list of approved landfills may be obtained on enquiry to Auckland Council.

Principal measures of achievement:

Service delivery (control)	<p>Provide and maintain phytosanitary stations at key entry and exit points to Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands.</p> <p>Enter any property where the pest pathogen is present within the specified geographic area of the programme and carry out management of this species.</p> <p>Manage known vectors, including feral pigs.</p>
Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance, to determine the presence of new incursions and status of existing or historical sites.</p>
Enforcement	<p>Enforce restrictions on the movement of the pest and kauri plant material.</p> <p>Enforce requirements for phytosanitary stations at entry and exit points to Te Tīkapa Moana o Hauraki / the Hauraki Gulf.</p> <p>Enforce conditions of transport within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.</p>
Education and advice	<p>Provide information and advice on identification and impacts of kauri dieback, and how to avoid spreading the pest.</p>
Requirement to act	<p>All persons to take practicable steps to avoid transport and distribution of kauri dieback e.g. ensure all footwear and other equipment are free of soil when exiting areas known to be infected with kauri dieback disease.</p> <p>Land occupiers of commercial entry or exit points to Te Tīkapa Moana o Hauraki / the Hauraki Gulf to make information available to all customers, and to allow Auckland Council to install and maintain phytosanitary stations.</p> <p>Persons moving kauri to or among Te Tīkapa Moana o Hauraki / the Hauraki Gulf islands to apply for an exemption (subject to hygiene status of source) or substitute with on-island sources.</p>
Research and development	<p>Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, and ecological impacts of kauri dieback disease on kauri and its ecosystem.</p>

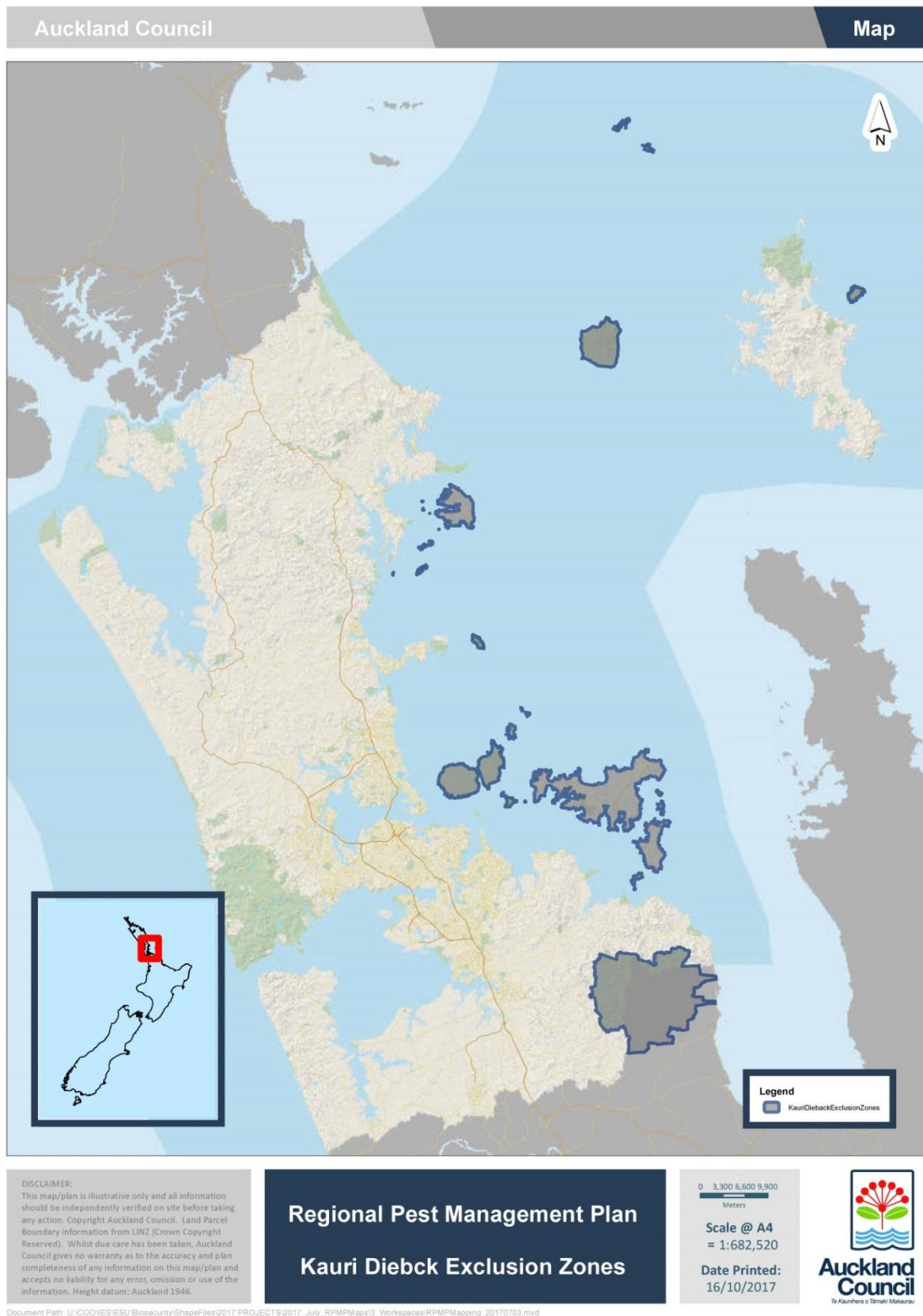


Figure 4 Exclusion zones in the Haruaki Gulf Controlled Area and Kohukohunui / Hunua Ranges where kauri diebck exclusion programmes will apply during the lifetime of the plan.

7.1.4 **Āta aukati noa i te tipu orotā / Progressive containment pest plants**

Rhamnus is too widespread in the Hauraki Gulf Controlled Area for eradication to be possible in the short term, but populations may be contained or reduced over time. Given this species' substantial impacts in these coastal ecosystems, intervention to prevent more extensive spread within the Hauraki Gulf is likely to be cost effective.

7.1.4.1 **Rhamnus (*Rhamnus alaternus*)**

Also known as: evergreen buckthorn

Rhamnus is an evergreen shrub up to about 5m high with glossy serrated leaves, small green flowers and dark glossy red or black fruit. It forms dense stands, preventing the recruitment of native plants in scrublands, forest margins and plantations. It will also act as low scrub on coastal cliffs, inshore and offshore islands and rocky outcrops.



Objective: over the duration of the plan Auckland Council will progressively contain rhamnus (*Rhamnus alaternus*) to reduce adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of rhamnus, within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. All owners or occupiers of any land within the Hauraki Gulf Controlled Area (as defined in Figure 3) who identify an infestation of rhamnus on that land must report the infestation to Auckland Council.

The purpose of this rule is to require a person to take specified actions to enable the management agency to determine or monitor the presence or distribution of the pest or a pest agent.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites. Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.
Requirement to act	Land occupiers to report suspected new infestations.

7.1.5 Wāhi whai tipu orotā / Site-led pest plants

These site-led pest plants are plants present in the Hauraki Gulf Controlled Area that cause adverse effects to the environmental, economic, social or cultural values of the Hauraki Gulf Controlled Area. The following programmes provide for these species to be controlled to protect the values of these islands.

7.1.5.1 Boxthorn (*Lycium ferocissimum*)

Boxthorn is a densely branched and spiny evergreen shrub up to 6m tall with creamy purple flowers and fleshy red fruit. It is a pest plant in coastal habitats; inhibiting the regeneration of native plants, ensnaring seabirds and impeding access to nesting sites. Spines can become imbedded in bone or soft tissue, resulting in infection and pseudo-tumours.



Objective: over the duration of the plan Auckland Council will manage boxthorn (*Lycium ferocissimum*) to protect values in places to prevent adverse effects on the economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: that the subject, that is capable of causing damage to the values of the Hauraki Gulf Controlled Area, is controlled within that area to an extent that protects the values of Te Tīkapa Moana o Hauraki / the Hauraki Gulf.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites. Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

7.1.5.2 Madeira vine (*Anredera cordifolia*)

Also known as: Madeira, mignonette vine, potato vine, lamb's tail.

Madiera vine is a perennial climbing vine up to 40m long with heart-shaped or oval fleshy leaves and drooping inflorescences of small fragrant cream flowers from January to April. It can rapidly invade disturbed forest and margins, plantations, gullies, scrublands, coastline, dunes and riparian margins by smothering and sometimes crushing understorey plants.



Objective: over the duration of the plan Auckland Council will manage Madeira vine (*Anredera cordifolia*) to protect values in place to prevent adverse effects on the environment and enjoyment of the natural environment.

Intermediate outcome: Madeira vine is controlled within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant within the Hauraki Gulf Controlled Area to levels that protect the ecological values of the Hauraki Gulf.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

7.1.5.3 Mile-a-minute (*Dipogon lignosus*)

Mile-a-minute is an evergreen perennial climbing vine, with pea-like white, pink or red flowers borne from July to January. It invades scrubland, forest margins, stream banks, wetlands, coastal areas including banks and open coastal forest, smothering trees and destroying forest structure. It is capable of nitrogen fixing and has the potential to alter nutrient cycling patterns, possibly favouring other exotic plants.



Objective: over the duration of the plan Auckland Council will manage Mile-a-minute (*Dipogon lignosus*) to protect values in place to prevent adverse effects on the environment and enjoyment of the natural environment.

Intermediate outcome: Mile-a-minute is controlled within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species, with priority given to work in Biodiversity Focus Areas.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites. Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

7.1.5.4 Moth plant (*Araujia hortorum*)

Moth plant is a perennial climber with scrambling stems, glossy leaves, white or pale pink flowers borne in clusters or singly, and fleshy pear-shaped fruit. It smothers and kills plants up to medium-high canopy, preventing recruitment in forest, coastline, cliffs, shrublands, mangroves, inshore and offshore islands, orchards and disturbed habitats. Based on its life-form, there can be long-term potential for catastrophic impacts on forest structure. Milky latex in stems, leaves and roots are poisonous and cause dermatitis.



Objective: over the duration of the plan Auckland Council will manage moth plant (*Araujia hortorum*) to protect values in place to reduce adverse effects on the environment, human health, enjoyment of the natural environment, and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga, as well as economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is controlled within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

Rules:

1. All owners or occupiers of land in the Hauraki Gulf Controlled Area (as defined in Figure 3) must destroy all moth plant on that land.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.2 Aotea / Great Barrier Island Group

E mau tonu ana i ngā moutere o Aotea te rahi o ngā uara kanorau-koiora o te rohe, mai i te noho kāinga mō te tāiko me te pāteke. Hei tohu o te hiranga nui o te āhua taketake tuku iho me te noho ārai o te matawhenua o te kāhui moutere o Aotea, tērā tēnei RPMP te tohi motuhake me te whakanui i a Aotea me ngā motu iti e horapa ana i a ia, ki ētahi momo hōtaka e aro nei ki te whakaiti iho i tō rātou pokea e te tipu orotā, i runga atu i te para huarahi hei aukati, kei uru atu he raru hōu.

Aotea / Great Barrier island group has retained some of the region's highest biodiversity values, including being home to threatened species such as the tāiko / black petrel and pāteke / brown teal. In recognition of Aotea / Great Barrier island group's outstanding natural heritage and defendable geography, this RPMP gives special recognition to Aotea / Great Barrier and the surrounding smaller islands in this group, through a range of programmes targeting low incidence pest plants for control, as well as managing pathways to prevent new incursions.



7.2.1 Te noho wātea o te Koiora Orotā / Exclusion pest animals

These exclusion pest animals are potential pests which are not known to be established in the Aotea / Great Barrier island group. These pest animals all have the potential to establish on Aotea / Great Barrier island group and are capable of causing adverse effects to the island's environmental, economic, human health, social or cultural values. Early intervention to manage pathways and respond in the event of incursions is a cost effective approach to prevent or minimise future costs of these pests within the high ecological value island group.

7.2.1.1 Bearded dragon (*Amphibolurus barbatus* syn. *Pogona barbata*)

Also known as: coastal or eastern bearded dragon
 Bearded dragons are grey-brown reptiles, between 55-58cm long and throats covered with distinctive spiny scales which can be raised to form a black "beard". As opportunistic omnivores, bearded dragons are likely to prey on native invertebrates and compete for food and resources with native lizards and birds. There is added potential for disease transmission to native reptiles (e.g. adenovirus infections, skin conditions, Bites to humans may cause prolonged swelling and bleeding with the risk of disease transmission to humans.



Objective: over the duration of the plan Auckland Council will exclude bearded dragons (*Pogona barbata*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of bearded dragons on the Aotea / Great Barrier island group.

Rules:

1. No person shall move or allow to be moved any bearded dragon to Great Barrier island group.
2. No person shall breed bearded dragons on Great Barrier island group.
3. No person shall distribute or release (or cause to be released or distributed), any bearded dragon on Great Barrier island group.

The purpose of rules 1 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.
Requirement to act	Pet owners to ensure secure containment and prevent breeding.

7.2.1.2 Blue-tongued skink: Common (*Tiliqua scincoides*) and blotched (*T. nigrolutea*)

Blue-tongued skinks are lizards up to 40-70cm long with distinctive blue tongues. They can either have dark bands around the body (common) or are mostly black with varying amounts of light brown, grey, yellow or orange blotches (blotched). They are likely to prey on native invertebrates, smaller lizards, birds and their eggs, and may compete with native species for food and other resources. There is further potential for disease and parasite transmission to other reptiles.



JJ Harrison

Objective: over the duration of the plan Auckland Council will exclude blue-tongued skinks (*Tiliqua scincoides* and *Tiliqua nigrolutea*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of blue-tongued skinks on the Aotea / Great Barrier island group.

Rules:

1. No person shall move or allow to be moved any blue-tongued skinks to Great Barrier island group.
2. No person shall breed blue-tongued skinks on Great Barrier island group.
3. No person shall distribute or release (or cause to be released or distributed), any blue-tongued skinks on Great Barrier island group.

The purpose of rules 1 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.
Requirement to act	Pet owners to ensure secure containment and prevent breeding.

7.2.1.3 Brown bullhead catfish (*Ameiurus nebulosus* syn. *Ictalurus nebulosus*)

Brown bullhead catfish are scaleless dark brown to olive green fish which are most easily distinguished by eight whiskery barbels around the mouth. Adults can grow up to 250-500mm long. They are opportunistic generalist feeders, which have been documented eating common bullies as well as a wide range of invertebrates including kōura. Their presence in wai māori / freshwater bodies can contribute to poor water clarity by extensive consumption of zooplankton, thereby exacerbating algal blooms. Bottom feeding can also cause the re-suspension of sediment and up-rooting of submerged aquatic plants. These impacts can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton.



Stephen Moore

Objective: over the duration of the plan Auckland Council will exclude brown bullhead catfish (*Ameiurus nebulosus*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of brown bullhead catfish on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible fishing as well as identification, impacts and control of the pest animal.

7.2.1.4 Canadian goose (*Branta canadensis*)

Canadian geese are large (4.5-5.5kg) light brown birds with black heads and white chinstraps. They can be very aggressive towards other wildlife; potential impacts on co-occurring bird species can include displacement from territories and mortality. Goose grazing on pastures can be at levels of appreciable economic impact but tend to be concentrated heavily on farms with the most suitable habitat. Canadian geese pose a high risk of bird strike at airports due to their substantial body size. Faecal contamination of water bodies, pasture and crops with pathogens such as *Salmonella* and *Escherichia coli*, including antibiotic-resistant strains, may pose a risk to human health.



Objective: over the duration of the plan Auckland Council will exclude Canadian geese (*Branta canadensis*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of Canadian geese on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal.

7.2.1.5 Eastern rosella (*Platycercus eximius*)

Eastern rosella are brightly coloured parakeets approximately 30cm long and 90-120g in weight; with red heads, white cheeks and mostly yellow-green bodies. They are seed predators, consuming seeds from a range of native plants including harakeke, totara and pōhutukawa, and nectar from puriri and other native plants. They are also implicated as a reservoir for transmission of Beak and Feather Disease Virus to native parrot species, which is likely to pose a higher risk as rosellas increase in range and population density.



Objective: over the duration of the plan Auckland Council will exclude eastern rosellas (*Platycercus eximius*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of eastern rosellas on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the release of the pest animal outside of containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.2.1.6 Eastern water dragon (*Intellagama lesueurii* syn. *Physignathus lesueurii lesueurii*)

Eastern water dragons are large lizards with brownish-grey bodies and black stripes along the ridge of the back, tail and limbs. Males are up to 1kg in weight and 80-90cm long. Females are shorter and lighter. They are likely to prey on a wide range of small terrestrial, freshwater and inter-tidal fauna, including insects, crabs, molluscs and crustaceans, and may impact upon native plants via herbivory. There is further potential to spread diseases such as *Salmonella* to native reptiles.



Margaret Stanley

Objective: over the duration of the plan Auckland Council will exclude eastern water dragons (*Intellagama lesueurii*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of eastern water dragon on the Aotea / Great Barrier island group.

Rules:

1. No person shall move or allow to be moved any eastern water dragon to Great Barrier island group.
2. No person shall breed eastern water dragons on Great Barrier island group.
3. No person shall distribute or release (or cause to be released or distributed), any eastern water dragon on Great Barrier island group.

The purpose of rules 1 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.
Requirement to act	Pet owners to ensure secure containment and prevent breeding.

7.2.1.7 Galah (*Eolophus roseicapillus*)

Galahs are colourful parrots weighing up to 325g, with white crowns, grey wings and pink chests. They are ground feeding grainivores, but will also eat buds, flowers, berries and insect larvae. They may compete with native hole-nesting birds for nest cavities and act as reservoirs or vectors of wildlife diseases and human pathogens. Galahs are a major pest of grain crops in Australia. The impact on grain crops is likely to worsen if galah populations increase in Tāmaki Makaurau / Auckland.



Objective: over the duration of the plan Auckland Council will exclude galahs (*Eolophus roseicapillus*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of galahs on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the release of the pest animal outside of containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.2.1.8 *Gambusia* (*Gambusia affinis*)

Gambusia are small (3.5-6cm), silver fish which occupy shallow margins of still or slow moving water bodies including lakes, wetlands, ponds and streams. *Gambusia* prey on zooplankton, eggs and larvae of fish, and a diverse range of aquatic and terrestrial macroinvertebrates. This can induce avoidance behaviours such as changes in habitat use in a range of native fish and crustaceans. Their presence in wai māori / freshwater bodies can contribute to poor water clarity by altering patterns of nutrient cycling via the consumption of zooplankton, subsequently exacerbating algal blooms.



Stephen Moore

Objective: over the duration of the plan Auckland Council will exclude *Gambusia* (*Gambusia affinis*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of *Gambusia* on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible fishing as well as identification, impacts and control of the pest animal.

7.2.1.9 Pest goldfish (*Carassius auratus*)

Pest goldfish are small-medium sized (100-400g) fish which may vary in colour; from red-gold, bronze-black through to olive-green. Pest goldfish are generalist feeders consuming aquatic plants, algae, insects, crustaceans, small fish and fish eggs; potentially competing with native fish for resources. The predation of zooplankton, up-rooting of aquatic plants and re-suspension of nutrients and sediments into the water column may contribute to reduced water clarity and algal blooms in invaded wai māori / freshwater ecosystems.



Objective: over the duration of the plan Auckland Council will exclude pest goldfish²³ (*Carassius auratus*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of goldfish on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, distribution, breeding and release of the pest animal outside of containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.
Requirement to act	Pet owners required to effectively contain goldfish.

²³ A pest goldfish includes any goldfish that is not held in effective containment or otherwise constrained in an enclosed water body on private land.

7.2.1.10 Indian ring-necked parakeet (*Psittacula krameri*)

Indian ring-necked parakeets are green parrots (38-42cm long) with a red band (males) or an indistinct emerald band (females) encircling their necks. They are highly aggressive to other species, including native birds and small mammals such as bats, and have the potential to competitively exclude other cavity-nesting species through eviction, early occupancy and successful defence of cavities. They pose further risk to native parrots as potential vectors of disease, including Beak and Feather Disease Virus. Overseas, Indian ring-necked parakeets are considered primary production pests and can cause economically significant damage to grain crops such as maize and may also attack fruit in orchards such as citrus, guava and grapes.



Objective: over the duration of the plan Auckland Council will exclude Indian ring-necked parakeets (*Psittacula krameri*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of Indian ring-necked parakeets on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the release of the pest animal outside of containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.

7.2.1.11 Koi carp (*Cyprinus carpio*)

Koi carp are an ornamental strain of common carp measuring up to 700mm long, variable in colour but can be distinguished by the presence of a pair of barbels. Koi carp can negatively impact submerged aquatic plant communities via plant uprooting and reduced light penetration, and alter invertebrate communities via predation and habitat modification. Waterfowl, native fish and kōura are also at risk from increased water turbidity, due to koi carp stirring sediment when feeding, and resource competition. Invasion may contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton.



Stephen Moore

Objective: over the duration of the plan Auckland Council will exclude koi carp (*Cyprinus carpio*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of koi carp on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible fishing as well as identification, impacts and control of the pest animal.

7.2.1.12 Monk parakeet (*Myiopsitta monachus*)

Also known as: Quaker parrots

Monk parakeets are medium sized greenish-grey parrots weighing between 90-120g. They will feed on vegetables, orchard fruit, and grain crops (e.g. maize and sunflower seeds) resulting in substantial crop losses and control efforts overseas. Native birds may be at risk via competition for food and disease transmission, and native vegetation may be impacted via feeding damage and herbivory. Monk parakeets will build chambered nests that may exceed 1000kg; nesting on power line poles, satellite dishes and other utility structures resulting in power outages, fires, and considerable time and money spent removing nests and repairing damage.



Murray Foubister

Objective: over the duration of the plan Auckland Council will exclude monk parakeets (*Myiopsitta monachus*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of monk parakeets on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the release of the pest animal outside of containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.

7.2.1.13 Perch (*Perca fluviatilis*)

Perch are olive green-grey fish (< 1kg) with six or more dark vertical bands across their sides. They can contribute to poor water clarity via the consumption of zooplankton, thereby exacerbating algal blooms. Feeding habits can also cause the re-suspension of sediment and up-rooting of submerged aquatic plants. Combined effects of zooplankton feeding and bottom feeding habits can contribute to lakes ‘flipping’ to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton. Perch presence has been associated with reduced abundance of common bullies, and impacts are likely on other native fish such as tuna (eels), inanga, galaxiids and smelt through predation, aggressive attacks and competition for prey.



Objective: over the duration of the plan Auckland Council will exclude perch (*Perca fluviatilis*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

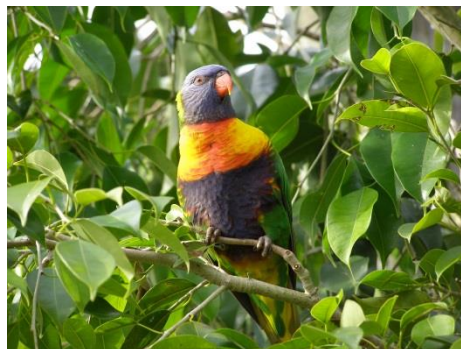
Intermediate outcome: to prevent the establishment of perch on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible fishing as well as identification, impacts and control of the pest animal.

7.2.1.14 Rainbow lorikeet (*Trichoglossus moluccanus*)

Rainbow lorikeets are brightly coloured long-tailed parrots (75-157g); with blue heads, green wings and orange-yellow breasts. They are potential reservoirs for transmission of parrot-specific diseases to native parrots. Beak and feather disease virus has been recorded in captive rainbow lorikeets in Aotearoa / New Zealand. They aggressively out-compete native nectar feeding avifauna including tūī, kōmako-bellbird and hihi. These combined effects make them a threat to Tikapa Moana o Hauraki / Hauraki Gulf islands habitats such as Hauturu / Little Barrier Island and Tiritiri Matangi Island. Unwanted Organism managed by the Department of Conservation and Ministry of Primary Industries as a National Interest Pest Response.



Objective: Over the duration of the plan Auckland Council will exclude rainbow lorikeets (*Trichoglossus moluccanus*) from establishing on the Great Barrier Island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, and their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of rainbow lorikeets on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (Control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and Surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the release of the pest animal outside of containment.
Education and Advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.

7.2.1.15 Red-eared slider (*Trachemys scripta elegans*, *T. scripta scripta*, *T. scripta troostii*)

Red-eared sliders are turtles with olive to brown carapaces patterned with yellow spots or stripes, and a distinctive red stripe behind each eye. They inhabit a wide variety of still or slow-moving water bodies including ponds, lakes, wetlands, rivers and drainage ditches. As opportunistic omnivores, potential impacts are likely via herbivory and the predation of zooplankton, molluscs, fish, frogs, crustaceans, insects, gastropods, birds and small reptiles. There are further risks to native reptiles and amphibians via disease transmission. Wetland bird reproductive success may be impacted through the displacement of parent birds from nests to use as basking sites. Feeding habits and associated activities are likely to result in food-web and ecosystem process impacts, and reduced water quality in invaded habitats.



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Objective: over the duration of the plan Auckland Council will exclude red-eared sliders and related sub-species (*Trachemys scripta elegans*, *T. scripta scripta*, *T. scripta troostii*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of red-eared slider turtles on the Aotea / Great Barrier island group.

Rules:

1. No person shall move or allow to be moved any red-eared slider to Great Barrier island group.
2. No person shall breed red-eared slider on Great Barrier island group.
3. No person shall distribute or release (or cause to be released or distributed), any red-eared slider on Great Barrier island group.

The purpose of rules 1 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.
Requirement to act	Pet owners to ensure secure containment and prevent breeding.

7.2.1.16 Rudd (*Scardinius erythrophthalmus*)

Rudd are fish with bright red fins, usually 200-250mm as adults, but can be larger. Extensive herbivory can negatively affect aquatic plant growth, survival and community composition, sometimes leading to aquatic plant collapse in lakes. Some high impact aquatic weeds, including hornwort, are selectively avoided by rudd and may thus be further competitively advantaged. They may compete with native fish such as smelt and common bullies for invertebrate prey. Facilitation of nutrient and sediment suspension in the water column and predation of zooplankton by rudd can contribute to regime shifting of lakes from clear to turbid states.



Stephen Moore

Objective: over the duration of the plan Auckland Council will exclude rudd (*Scardinius erythrophthalmus*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of rudd on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible fishing as well as identification, impacts and control of the pest animal.

7.2.1.17 Snake-neck turtle (*Chelodina longicollis*)

Snake-neck turtles are medium-sized turtles with characteristically long necks (approximately 60% of the shell length). They are likely to prey on a range of zooplankton, aquatic and terrestrial invertebrates, amphibians, carrion, fish and crustaceans. Snake-neck turtles can dig nesting burrows in the ground which may disturb gardens, golf courses, gravel roads and other recreational land. They are carriers of *Salmonella* and risk transmitting the disease to native reptiles and humans.



Objective: over the duration of the plan Auckland Council will exclude snake-neck turtles (*Chelodina longicollis*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of snake-neck turtles on the Aotea / Great Barrier island group.

Rules:

1. No person shall move or allow to be moved any snake-neck turtle to Great Barrier island group.
2. No person shall breed snake-neck turtles on Great Barrier island group.
3. No person shall distribute or release (or cause to be released or distributed), any snake-neck turtle on Great Barrier island group.

The purpose of rules 1 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.
Requirement to act	Pet owners to ensure secure containment and prevent breeding.

7.2.1.18 Sulphur-crested cockatoo (*Cacatua galerita*)

Sulphur crested cockatoos are large stocky white parrots with a forward-curving yellow crest. In the Tāmaki Makaurau / Auckland region farmers have reported damage to pecan nuts, walnuts, feijoas, and plum crops but cockatoos have also been recorded damaging various cereal crops nationally. Birds will often attack kauri, rimu and other species, stripping bark, eating the growing tips, seed, flowers and fruit, and digging into the trees with their beaks. There is also a potential risk the cockatoos will spread Psittacine Beak and Feather Disease to native parrots.



Objective: over the duration of the plan Auckland Council will exclude sulphur crested cockatoos (*Cacatua galerita*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of sulphur crested cockatoos on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the release of the pest animal outside of containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.

7.2.1.19 Tench (*Tinca tinca*)

Tench are olive green-bronze fish (30-70cm), distinguished by red eyes, two barbels, large soft-rayed fins and copious mucous. They can contribute to poor water clarity via the consumption of zooplankton, thereby exacerbating algal blooms. Bottom feeding also causes the re-suspension of sediment and up-rooting of submerged macrophytes. These combined effects can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton. Indirect effects to native fish species diversity via transmission of parasites, reduced water clarity, and/or competition for invertebrate prey are also likely.



Objective: over the duration of the plan Auckland Council will exclude tench (*Tinca tinca*) from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of tench on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on responsible fishing as well as identification, impacts and control of the pest animal.

7.2.2 Te noho wātea o te tipu orotā / Exclusion pest plants

These exclusion pest plants are potential pests which are not known to be established in the Aotea / Great Barrier island group. These pest plants all have the potential to establish on the Aotea / Great Barrier island group and are capable of causing adverse effects to the island's environmental, economic, human health, social or cultural values. Early intervention to manage pathways and respond in the event of incursions is a cost effective approach to prevent or minimise future costs of these pests within the high ecological value island group.

Objective: over the duration of the plan Auckland Council will exclude the pest plants specified below from establishing on the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of the pest plants specified below on the Aotea / Great Barrier island group.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on identification and impacts of the pest plant, and how to avoid spreading aquatic pest plants.

Alligator weed (*Alternanthera philoxeroides*)

Alligator weed is a perennial emergent aquatic bottom-rooted herb forming extensive floating mats on the water's surface but can also grow terrestrially, preferring damp ground. The dense mats can alter aquatic habitat structure (e.g. water flow, light penetration), alter invertebrate community composition and reduce native plant cover and diversity in wetlands and margins of water bodies. It will also displace valuable pasture species and block drainage channels, exacerbating flooding on farmland.



Brazilian rattlebox (*Sesbania punicea*)

Brazilian rattlebox is a deciduous shrub or small tree with red-orange flowers in showy inflorescences late spring-autumn and long winged seed pods. It will form dense almost monospecific stands, competitively excluding native plant species in perennial wetlands and watercourses, pasture, forest and scrub ecosystems. Dense growth in watercourses impedes water flow, exacerbates flooding, bank destabilisation and erosion, and can impede human access to watercourses. As a nitrogen fixing plant, it also has the potential to alter nutrient cycling regimes in invaded habitats.



Eric Hunt

Clematis flammula

Clematis flammula is a deciduous perennial woody climber, reaching up to 5-6m with white flowers between January and March and hairy plumed seeds. It has a smothering climbing habit and moderate shade tolerance therefore scrub and bush margins are most at risk of invasion, including in coastal areas. Uncertain to what extent intact forest is at risk. Closely related plants are highly invasive.



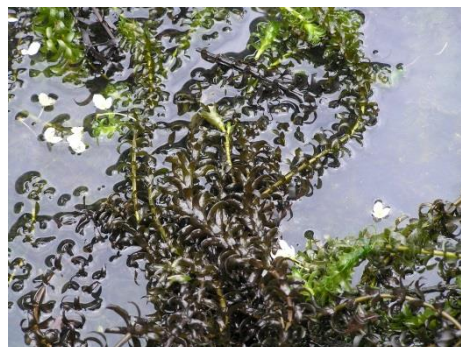
Eel grass (*Vallisneria australis*)

Eel grass is a bottom-rooted freshwater aquatic plant with strap-like leaves up to 5.5m long. Male flowers consist of large pollen-filled sacs produced at the base of mature plants. Female flowers are small and green and produced on the end of a very long, spirally coiled stalk that can extend to the water's surface. It is capable of forming dense stands which may displace other submerged plant species in suitable wai māori / freshwater habitats. These stands have the potential to impede drainage, exacerbating flooding, and impede recreational water uses. Entanglement in the pest plant can lead to drowning.



Egeria (*Egeria densa*)

Egeria is a bottom-rooted submerged perennial aquatic herb with long stems (3m and over) and white flowers borne at the water's surface between November and January. It forms dense stands displacing native aquatic plants and altering the habitat structure of macroinvertebrates and fish. Resultant impacts can include lowered dissolved oxygen levels, increased sedimentation, changes to primary production and nutrient cycling capacity of the invaded water body.



Elodea (*Elodea canadensis*)

Elodea is a submerged, bottom-rooting freshwater aquatic plant up to 5m tall, with small white and purple flowers borne at the surface of the water from November to January. It can reduce flow velocity and impede gas exchange in wai māori / freshwater ecosystems resulting in lowered dissolved oxygen levels and increased sedimentation. It may also impede water flow in drains, exacerbating flooding.



Hornwort (*Ceratophyllum demersum*)

Hornwort is a perennial submerged aquatic plant up to 7m tall which can be anchored to sediment by stems, or forms free-floating mats. Leaves are 10-40mm long, narrow, branched and whorled forming complex architecture. Hornwort forms dense monospecific stands which can displace all native submerged vegetation down to 15m depth. The dense stands alter water flow, increase flooding risk and impede recreational access of waterbodies. Because it can grow to greater depths than other aquatic pest plants, it is the species likely to have greatest impacts on deep-water charophyte meadows. Kōura are also likely to be especially impacted due to requirement for open habitat.



Rohan Wells, NIWA

Lagarosiphon/ oxygen weed (*Lagarosiphon major*)

Oxygen weed is a bottom-rooted submerged perennial aquatic herb with downward curving leaves, arranged in spirals on the stem. It is capable of forming dense stands; displacing native aquatic herb species, altering habitat availability for fish and invertebrates, and affecting dissolved oxygen levels by reducing gas exchange. The stands also can impede recreational water access to water bodies.



Rohan Wells, NIWA

Mickey Mouse plant (*Ochna serrulata*)

Mickey Mouse plant is a shrub up to 3m tall with serrated leaves and yellow flowers borne September to March. The fruit resemble the face of Mickey Mouse (black fruit attached to red sepals), and are produced in autumn. It is shade tolerant and bird dispersed, therefore has the potential to invade intact forest ecosystems. It is known to dominate scrub layers where invasive overseas, therefore impacts on native plants via competition and suppressing recruitment are likely.



Parrot's feather (*Myriophyllum aquaticum*)

Parrot's feather is a submerged, bottom-rooted perennial aquatic herb of which the top 10cm of foliage can be emergent. Sprawling foliage is pale grey-green and leaves are finely divided, feathery and arranged in whorls of 4 to 6. It is ranked as one of Aotearoa / New Zealand's worst aquatic pest plants, and is especially problematic in shallow, sheltered, nutrient rich lakes and wetlands. It can displace other plant species through rapid growth, shading and the release of biochemicals, thereby decreasing native plant species' richness. An increase in cover of parrot's feather is also associated with a decrease in invertebrate abundance and diversity in invaded water-bodies.



Rhamnus (*Rhamnus alaternus*)

Also known as: evergreen buckthorn

Rhamnus is an evergreen shrub up to about 5m high with glossy serrated leaves, small green flowers and dark glossy red or black fruit. It forms dense stands, preventing the recruitment of native plants in scrublands, forest margins and plantations. It will also act as low scrub on coastal cliffs, inshore and offshore islands and rocky outcrops.



Sharp rush (*Juncus acutus*)

Sharp rush is a perennial spiny rush up to 1m tall with sharp tips and clumped green to brown flower heads borne in summer followed by red, orange or brown fruit. It forms dense stands which can displace native salt marsh vegetation, impair plant recruitment, reduce native plant richness and alter invertebrate communities.



Sweet pittosporum (*Pittosporum undulatum*)

Sweet pittosporum is a shrub or small tree varying in height with wavy, prominently margined leaves, white bell shaped flowers and orange globular fruit. It is an invader of pasture, roadsides, coastal bluffs, cliffs and open scrubland but is also able to exploit gaps and edges to invade mature forest. Invasion is associated with reductions in native plant species richness and cover. It has the potential to hybridise with New Zealand *Pittosporum* spp. with impacts on genetic diversity possible.



7.2.3 Te murunga o te tipu orotā / Eradication pest plants

These eradication pest plants are present in low numbers or have a limited distribution within the Aotea / Great Barrier island group, and eradicating them appears to be feasible and cost-effective. These pests all have the potential to establish widely on Aotea / Great Barrier island group, and are capable of causing adverse effects to the islands' environmental, economic, human health, social or cultural values. Early intervention to prevent their extensive establishment is a cost effective approach to protecting the island from these pests, many of which are highly damaging elsewhere in the region.

Objective: over the duration of the plan Auckland Council will eradicate the pest plants specified below from the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to reduce the infestation level of the subject, or an organism being spread by the subject, to zero levels in an area in the short to medium term.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

Boneseed (*Chrysanthemoides monilifera*)

Boneseed is an evergreen shrub or small tree up to 3m in height with leathery irregularly serrated leaves, bright yellow flowers produced from September to February and hard oval green fruit which ripen to black. It is likely to crowd out native plants in open coastal areas or disturbed habitats, including freshly cleared forestry plantations. It may also alter plant community composition through allelopathy and competition, alter patterns of nutrient cycling, and facilitate other weeds. The plant is highly flammable and therefore a fire risk in invaded ecosystems.



Boxthorn (*Lycium ferocissimum*)

Boxthorn is a densely branched and spiny evergreen shrub up to 6m tall with creamy purple flowers and fleshy red fruit. It is a pest plant in coastal habitats; inhibiting the regeneration of native plants, invading coastal pastures, ensnaring seabirds and impeding access to nesting sites. Spines can become imbedded in bone or soft tissue, resulting in infection and pseudo-tumours.



Bushy asparagus (*Asparagus aethiopicus* syn. *A. densiflorus*)

Bushy asparagus is a scrambling perennial herb with a thick mat of tuberous roots, white flowers borne between October and March and red berries. Stems are hairy and bear 10mm long spines. Dense infestations are capable of excluding native vegetation particularly in coastal and forest ecosystems, and may impede recreational access to natural areas. Other impacts may be similar to climbing asparagus.



Cape pond weed (*Aponogeton distachyos*)

Cape pond weed is a bottom-rooted perennial aquatic plant with surface-floating linear leaves and white flowers borne on spikes emergent above the water's surface. Impacts appear to be relatively minor compared to some other aquatic weed species however there is some potential for competition with native freshwater vegetation, therefore this species is not desirable on Aotea / Great Barrier island group. There is also minor potential for entanglement of recreational equipment on long reaching stems.



Carex scoparia

Carex scoparia is a dense, green grass-like perennial sedge up to 90cm tall. Inflorescences have brown/green oblong spikes and are borne late spring to early summer. It invades wetlands and lake margins potentially out-competing native wetland plants, and altering habitat for native fauna (e.g. impeded fish access to spawning sites). Closely related species are invasive, capable of



forming almost monocultural swards, excluding native plant species and dramatically reducing plant diversity.

Climbing asparagus (*Asparagus scandens*)

Climbing asparagus is a scrambling or climbing perennial, with tuberous fleshy roots, thin scale-like leaves, red berries and long, usually white, solitary flowers. It smothers forest floor and understorey up to 4m, causing reductions in native plant abundance and species richness, and promoting further invasion by other pest plant species via raised light levels. In the long-term there is the potential for increased erosion through catastrophic loss of canopy and an overall transformative loss of forest ecosystems throughout the region.



Climbing gloxinia (*Lophospermum erubescens*)

Climbing gloxinia is a climbing perennial herb with triangular leaves and red, pink or white trumpet-shaped flowers borne January to March. Moderate impacts may be expected based on its smothering habit and history of invasiveness. It is capable of invading very harsh dry environments. Threatened species may be at risk in a wide range of habitats including in rocky outcrops, grasslands and forests.



Giant reed (*Arundo donax*)

Also known as: Bamboo reed, donax cane, arundo grass, cow cane, river cane, reed grass.

Giant reed is a sturdy perennial grass with large, spreading clumps of thick culms up to 6m tall, maize-like leaves and large fluffy purplish to silver inflorescences standing above the foliage. It invades riparian areas, wetlands and saltmarshes, altering hydrology by blocking water flow and displacing native plants by creating vast monocultures. Dense stands can impede drainage and exacerbate flooding in agricultural systems.



Grey willow (*Salix cinerea*)

Also known as: Pussy willow, Shrub willow, Grey sallow

Grey willow is a deciduous shrub or small tree up to 7m high with greenish grey to dark purple stems, oval leaves and 1.5–3.5cm long catkins appearing before the leaves. It forms vast dense stands and thickets causing blockages, flooding and structural changes in waterways. This can affect native plant species in wetlands and riparian ecosystems, through competition, shading and altered hydrology.



Hydrocotyle umbellata

Hydrocotyle umbellata is a semi-aquatic perennial, herb with tiny, white, star shaped flowers occurring in umbels of 10-60 flowers. It is a terrestrial plant in wet soils or aquatic in freshwater up to 1.5m deep. Appearance and growth form is variable depending on the invaded habitat type, either floating, creeping or mat forming. It forms dense monocultures that can exclude native plants and has the potential to hybridise with native *Hydrocotyle* spp. In agricultural systems, it may impact irrigation and drainage.



Mile-a-minute (*Dipogon lignosus*)

Mile-a-minute is an evergreen perennial climbing vine, with pea-like, white, pink or red flowers borne from July to January. It invades scrubland, forest margins, stream banks, wetlands, coastal areas including banks and open coastal forest; smothering trees and destroying forest structure. It is capable of nitrogen fixing and has the potential to alter nutrient cycling patterns, possibly favouring other exotic plants.



Moth plant (*Araujia hortorum*)

Moth plant is a perennial climber with scrambling stems, glossy leaves, white or pale pink flowers borne in clusters or single and fleshy, pear-shaped fruit. It smothers and kills plants up to medium-high canopy, preventing recruitment in forest, coastline, cliffs, shrublands, mangroves, inshore and offshore islands, orchards and disturbed habitats. Based on its life-form, there can be long-term potential for



catastrophic impacts on forest structure. Milky latex in stems, leaves and roots are poisonous and cause dermatitis.

Queensland poplar (*Homalanthus populifolius*)

Queensland poplar is a shrub or small tree up to 5m tall with heart-shaped leaves turning red during cooler months, and inconspicuous flowers, borne in racemes up to 17cm long. It has the potential to displace native plant species in scrubland, regenerating bush, pine forest and coastal ecosystems, and may become a notable pest plant of roadsides and gardens.



Weedbusters

Reed sweet grass (*Glyceria maxima*)

Reed sweet grass is an erect clumping perennial grass, reaching almost 2m, with long, branched yellow-green to purple tinged flower heads. It produces creeping rhizomes which can form dense mats that are attached at the bank but are floating in deeper water in still or slow moving water bodies. These dense mats can trap sediment and accumulate masses of decomposing vegetation; altering stream morphology, dissolved oxygen levels and other biophysical properties of invaded wai māori / freshwater ecosystems.



Rhaphiolepis / sexton's bride (*Rhaphiolepis umbellata*)

Rhaphiolepis/sexton's bride is a perennial shrub up to 3m tall with white and pink flowers borne in inflorescences between July and December, and purple-black fruit ripening between March and April. It invades coastal areas, particularly coastal cliffs, displacing native vegetation.



Rhus tree (*Toxicodendron succedaneum*)

Rhus tree is a deciduous tree up to 8m tall with pinnate leaves that turn red in autumn and yellow-green flowers borne in inflorescences up to 200mm long. It invades urban and coastal habitats, wastelands and bush margins and poses a high risk to human health. Contact with sap can cause severe contact dermatitis characterised by itchy, burning red welts and swelling. Rhus tree is also



rated as the most allergenic plant in New Zealand. Naturalisation can therefore substantially reduce enjoyment of the outdoor environment.

Spanish broom (*Spartium junceum*)

Spanish broom is a deciduous shrub up to 3m tall with yellow pea-like flowers borne in loose racemes during summer and autumn. It is invasive in disturbed sites, often on hill country but also including poor or retired pasture, cliffs, transport corridors and riparian margins. Spanish broom is capable of forming dense monospecific stands which can reduce the cover of native plants in invaded habitats. As a nitrogen fixer, it has the potential to alter plant community compositions, including facilitating other exotic plant invasions, through elevated soil nutrient levels.



Tree of heaven (*Ailanthus altissima*)

Tree of heaven is a deciduous tree, up to 25m tall with a strong unpleasant odour, pale green-white flowers borne in spring and seeds encapsulated by twisted papery sheaths in autumn. It is a coloniser of disturbed open habitats, capable of forming dense stands which suppress other plant species through chemical inhibition. The leaf litter is high in nitrogen and decomposes rapidly, altering nutrient cycling regimes in some ecosystems, and facilitating the invasion of other pest plant species. Root intrusions can damage culturally important archaeological sites.



Tree privet (*Ligustrum lucidum*)

Tree privet is a medium sized evergreen tree growing up to 10m tall with white, fragrant flowers borne in clusters during spring-summer and poisonous purple-black berries. It displaces native shrubs and trees and can form dense stands which dominate the canopy layer and prevent recruitment of native species, thereby altering vegetation structure and diversity in forest and shrubland ecosystems. Root intrusions can damage archaeological features on maunga and other significant wāhi. Some people may have a reaction to privet, often as a cross-reactivity to their main



allergens.

Water plantain (*Alisma plantago-aquatica*)

Water plantain is an emergent perennial herb up to 1m tall with oval leaves and multi-branched clusters of small pale lilac flowers produced in summer. It invades wetlands and other slow-moving water bodies impeding water flow, trapping debris causing silt to build up and potentially displacing native species where it occurs. It will also grow in damp pasture and has the potential to exacerbate flooding due to impeded drainage ditches.



Wild ginger (*Hedychium gardnerianum* and *H. flavescens*)

Also known as: Kahili ginger (*H. gardnerianum*), Yellow ginger (*H. flavescens*)

Both wild ginger species are herbaceous perennial plants that can grow up to 3m tall with large green leaves and orange berries. Kahili ginger has yellow flowers with red stamens, and yellow ginger has creamy flowers. They form dense stands preventing recruitment and suppressing up to 90% of native vegetation in forest ecosystems, potentially resulting in long-term impacts on forest composition. Invasion may alter decomposition and nutrient cycling patterns, and increase erosion in the long-term through loss of canopy.



Woolly nightshade (*Solanum mauritianum*)

Woolly nightshade is a perennial shrub or small tree, up to 4m high with grey-green furry leaves, violet flowers and dull yellow berries. It forms dense stands in disturbed scrub or forest, roadsides, pasture margins, urban areas and riparian margins, inhibiting the regeneration of native plant species in invaded sites. It can displace pasture grasses and clover, reducing food availability for stock, and will colonise clear-felled areas in forestry plantations. Direct or indirect contact with the plant may cause skin irritation and respiratory problems.



7.2.4 **Āta aukati noa i te tipu orotā / Progressive containment pest plants**

These progressive containment pest plants are present in low numbers or have a limited distribution within the Aotea / Great Barrier island group, yet have the potential to be highly damaging pests if they were to become widespread on the islands. Eradication may not be feasible in the short-term (for instance some species have very long-lived seed banks). Nonetheless, progressively containing these species is a cost effective approach to preventing their spread and impact on this high ecological value island group.

Objective: over the duration of the plan Auckland Council will progressively contain the pest plants specified below to zero density from the Aotea / Great Barrier island group to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of the pest plant over time.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

Kangaroo acacia (*Acacia paradoxa*)

Kangaroo acacia is a perennial shrub up to 3m with 10mm long spines, inflorescences of many yellow flowers and leaves reduced to winged leaf stalks. It can form extremely dense stands potentially excluding native vegetation in open or disturbed sites including coastal areas, scrubland and forest margins. It is a nitrogen-fixing plant, potentially altering soil fertility, nutrient cycling dynamics and plant community compositions in invaded ecosystems.



Purple groundsel (*Senecio elegans*)

Purple groundsel is an annual herb up to 60cm tall displaying deeply lobed leaves and purple flowers with yellow discs borne August-May. It invades coastal systems, the region's highest value dune ecosystems being most at risk. It is likely to out-compete co-occurring native plants, and has faster growth rates and a longer flowering period than some closely related native species.



Royal fern (*Osmunda regalis*)

Royal fern is a tall deciduous perennial fern with fronds up to 3m long. It forms dense stands in wetlands and freshwater ecosystems, which are likely to impact on native fauna and flora through mechanisms such as competition or habitat restructuring. It has the potential for obstructing access and reducing enjoyment of the natural freshwater environment, and may impact on the mauri of wai māori.



Smilax (*Asparagus asparagoides*)

Smilax is a scrambling perennial plant with branched green stems up to 3m and greenish-white flowers appearing between July and August, followed by red berries. It forms dense patches and smothers low growing plants and seedlings, usually in low canopy forests or coastal habitats. These dense stands can also obstruct access to recreational areas and smother garden plants.



7.3 Moutere o Kawau / Kawau Island



7.3.1 Te murunga o te tipu orotā / Eradication pest animals

Kei te motu o Kawau anake te huinga warapi i te rohe o Tāmaki Makaurau. He mea wetiwheti tēnei ki tuawhenua nei, ina hoki te raru o ngā ngahere taketake me ngā pāmu i te warapi. Heoi anō rā, he raru anō hoki tō te muru anake i ngā warapi i Kawau, pērā i te āhei o te piki ake o ngā koiara orotā whakataetae mai pērā i te kiore, te paihamu, ngā tupu orotā rānei. Koia ngā hōtaka te whai ake nei, te aro ki te muru i ngā koiara orotā i Kawau pērā i te kiore, te wīhara, te paihamu me te warapi anō hoki hei tiaki i a Kawau me te rohe i ngā whakaweti a te warapi, hei karo hoki i ngā raru te tūpono ake i te patu noa iho i ngā warapi. Ka whakahaeretia e te Kaunihera o Tāmaki Makaurau tēnei hōtaka, ina kitea he pūtea tautoko mai i waho kē. Ko te muru koiara orotā i te moutere noho e te tangata he ahunga hōu e taea ai te taumata o Tāmaki Makaurau Orotā Kore/ Aotearoa Konihi Kore 2050.

Kawau Island holds the only population of wallabies in the Tāmaki Makaurau / Auckland region. This poses a very real risk to the mainland, with wallabies having severe impacts on native forest as well as pastoral farming. However, eradication of wallabies, alone, from Kawau has the potential to have perverse outcomes, such as creating an advantage for competing pests like rats and possums or pest plants. The following programmes combine to cover a multi-species eradication of pest mammals from Kawau, including rats, stoats

and possums as well as wallabies, to protect Kawau and the region from the threat of wallabies, while also avoiding unintended outcomes that might arise from managing wallabies in isolation. Auckland Council will manage this programme, contingent on external funding contributions. Eradication of pest mammals from an inhabited island also represents a step-change achievement towards achievement of Pest Free Auckland / Predator Free New Zealand 2050.

Objective: over the duration of the plan Auckland Council will eradicate the pest animals specified below from Kawau Island to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to reduce the infestation level of the subject to zero levels in an area in the short to medium term.

Principal measures of achievement:

Service delivery (control)	<p>Coordinate a multi-species eradication in collaboration with the Department of Conservation, Local Board, mana whenua and community.</p> <p>Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.</p> <p>Protect the island from reinvasion following eradication, through implementation of Hauraki Gulf Controlled Area programmes.</p>
Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.</p>
Enforcement	<p>Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal, including pathway measures to prevent reinvasion following eradication.</p>
Education and advice	<p>Provide information and advice on pest animal identification, impacts and control.</p> <p>Provide information and advice on how to avoid spreading the pest animal.</p>

Possum (*Trichosurus vulpecula*)

Possums are small marsupials with thick bushy tails, weighing between 1.4-6.4kg and can be grey, brown or black in colour. Possums will predate on eggs and chicks of various threatened birds, including kōkako, and compete for nest sites with hole-nesting birds, such as kiwi and parakeets. Heavy plant browsing by possums can suppress or eliminate preferred plants by selective browsing. This can alter the vegetation composition in invaded ecosystems and ultimately lead to the collapse of palatable canopy species, such as Northern rata. Possums are also considered serious agricultural pests. They are vectors for bovine TB in cattle and compete directly with stock for pasture.



Nga Manu Images

Rats: ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*)

Rats are small black, grey or brown mammals with naked tails. Rats occupy a wide range of terrestrial habitats throughout Aotearoa / New Zealand. Rats are generalist omnivores, their diet includes seed predation, and preying on small animals such as invertebrates, reptiles, amphibians and juvenile birds. They compete with native birds for nests and burrows, and have been implicated in the decline of a number of threatened birds, particularly seabirds. Excessive consumption of seeds by rats can greatly reduce native seedling recruitment and ultimately modify plant communities in invaded ecosystems. Rats are particularly damaging to cereal production, stored products and the food services industry, and are a potential disease vector to humans.



Ship rat, Landcare Research

Mustelids: ferrets (*Mustela furo*), stoats (*Mustela erminea*), and weasels (*Mustela nivalis*)

Ferrets, stoats and mustelids belong to a group of animals known as mustelids. Ferrets are the largest of the mustelids (600-1,300g) and can be distinguished by a dark 'mask' across their eyes. Stoats are smaller (200–350g) with orange-brown coats and a black tip at end of the tail. Weasels are the smallest (60–120g), with orange-brown coats and a uniformly brown tail.



Stoat, Department of Conservation

Mustelids are bold generalist predators and can

have devastating impacts on native birds, amphibians, reptiles, molluscs, and insects. Ferrets mostly threaten ground nesting birds while stoats and weasels have contributed to the decline and extinction of many forest birds, particularly cavity nesting species. Mustelids also vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).

Wallaby (*Macropus*, *Petrogale* and *Wallabia* spp.)

Wallabies are medium-sized, semi-nocturnal marsupial mammals. They compete directly with livestock for pasture and have a substantial diet overlap with sheep resulting in large production losses in the sheep and beef industry. They also damage newly planted radiata pine plantations, browse native forest seedlings and destroy understorey, favouring kamahi and māhoe.



7.4 Moutere o Waiheke / Waiheke Island



7.4.1 Te murunga o te kararehe orotā / Eradication pest animals

He kāinga a Waiheke nō te tini manu takutai moana, repo kei te rarua te kōkopu, me te rahi atu o ngā uara kanorau-koiora e whakawetihia ana e te orotā. Tēra a Waiheke te noho hei kāinga hōu mō ētahi momo hōu kei te rarua, pērā i te kiwi, ina taea ngā koiora orotā te muru. Āpiti atu ki tērā he poto noa te kauhoe atu i Waiheke ki ētahi atu motu orotā-kore, ina ka noho tonu ngā koiora orotā pērā i te kiore me te wīhara i runga o Waiheke, ka mau tonu te āhei kia pokea anō aua moutere. Ko ngā hōtaka e whai ake nei e aro ana ki te muru i te hia momo koiora orotā i Waiheke mai i te kiore, te wīhara me te poaka puihi. Ka whakahaeretia e te Kaunihera o Tāmaki Makaurau tēnei hōtaka, ina kitea he pūtea tautoko mai i waho kē. Ko te muru koiora orotā i te moutere nohoa e te tangata he ahunga hōu e taea ai te taumata o Tāmaki Mākaurau Orotā Kore / Aotearoa Konihi Kore 2050.

Waiheke is home to many native shorebirds, wetlands with threatened kōkopu, and other high biodiversity values that are threatened by pests. Waiheke has the potential to be home to new threatened species introductions, such as kiwi, if mammalian pests are removed. In addition, Waiheke is within swimming distance of other pest-free islands, and while pests such as rats and stoats remain on Waiheke this poses a source of on-going reinvasion of surrounding islands. The following programmes combine to cover a multi-species eradication of pest mammals from Waiheke, including rats, stoats and feral pigs. Auckland Council will manage these programmes, contingent on external funding contributions. Eradication of pest mammals from an inhabited island also represents a step-change achievement towards achievement of Pest Free Auckland / Predator Free New Zealand 2050.

Objective: over the duration of the plan Auckland Council will eradicate the pest animals specified below from Waiheke Island to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to reduce the infestation level of the subject to zero levels in an area in the short to medium term.

Principal measures of achievement:

Service delivery (control)	<p>Coordinate a multi-species eradication in collaboration with the Department of Conservation, Local Board, mana whenua and community.</p> <p>Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.</p> <p>Protect the island from reinvasion following eradication, through implementation of Hauraki Gulf Controlled Area programmes.</p>
Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.</p>
Enforcement	<p>Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal, including pathway measures to prevent reinvasion following eradication.</p>
Education and advice	<p>Provide information and advice on pest animal identification, impacts and control.</p> <p>Provide information and advice on how to avoid spreading the pest animal.</p>

Feral pigs²⁴ (*Sus scrofa*)

Feral pigs are large (sometimes over 300kg), black to brown, stoutly built mammals with large heads and well-developed canine teeth. They actively scavenge during the day and will overturn large areas of soil to consume soil invertebrates, especially earthworms. In invaded ecosystems, they prey on and compete with native species, alter nutrient cycles, damage vegetation and soil, facilitate the spread of weeds and plant diseases, including kauri dieback disease. They are of high risk to the primary production industry as vectors of bovine tuberculosis. International trading options may be reduced if the Aotearoa / New Zealand feral pig population became a reservoir for swine fever or foot and mouth disease. Feral pig attacks on humans are rare but could be potentially fatal.



Landcare Research

²⁴ A feral pig includes any pig that is not:

- (a) held behind effective fences or otherwise constrained; and
- (b) identified by ear tag

Rodents: ship rats (*Rattus rattus*), norway rats (*Rattus norvegicus*)

Rats are small black, grey or brown mammals with naked tails. Rats occupy a wide range of terrestrial habitats throughout Aotearoa / New Zealand. Rats are generalist omnivores, their diet includes seed predation, and preying on small animals such as invertebrates, reptiles, amphibians and juvenile birds. They compete with native birds for nests and burrows, and have been implicated in the decline of a number of threatened birds, particularly seabirds. Excessive consumption of seeds of native plants by rats can greatly reduce seedling recruitment and ultimately modify plant communities in invaded ecosystems. Rats are also considered primary production pests, and are particularly damaging to cereal production and stored products. They are domestic pests, a nuisance to the food services industry and a potential disease vector to humans.



Ship rat, Landcare Research

Mustelids: ferrets (*Mustela furo*), stoats (*Mustela erminea*), and weasels (*Mustela nivalis*)

Ferrets, stoats and mustelids belong to a group of animals known as mustelids. Ferrets are the largest of the mustelids (600-1,300g) and can be distinguished by a dark 'mask' across their eyes. Stoats are smaller (200–350g) with orange-brown coats and a black tip at end of the tail. Weasels are the smallest (60–120g), with orange-brown coats and a uniformly brown tail.



Stoat, Department of Conservation

Mustelids are bold generalist predators and can have devastating impacts on native birds, amphibians, reptiles, molluscs, and insects. Ferrets mostly threaten ground nesting birds while stoats and weasels have contributed to the decline and extinction of many forest birds, particularly cavity nesting species. Mustelids also vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).

7.5 Whenua Papa Rēhia me ōna Rohe Hauropi Hiranga / Parkland with Significant Ecological Areas

Ko Tāmaki Makaurau te tāone nui pokea rawa e te tarutaru. Ina tirohia te rārangi roa o te tupu orotā kei konei, e tūpono noa mai rānei ki te rohe, he pai kē atu pea te aukati i te rahi o te tipu orotā i ngā wāhi kanorau-koiora uara nui i te aro ki te rārangi momo poto nei puta noa i te rohe. Kua whakarite te Kaunihera o Tāmaki Makaurau kia “hīkoitia e ia tana kupu”, mā te tauira whakahaere tōtika rawa hei aukati mate orotā i ngā whenua o te kaunihera. Ko ngā hōtaka e whai ake nei ka tuitui i ngā mahi a te kaunihera, te hunga mahi kawekawe, (pērā i a NZTA me Auckland Transport) me ngā kaupupuri whenua kia hua ai ngā painga kanorau-koiora mai i te mahi tahi a te katoa ki te tiaki i ngā whenua papa rēhia me ōna Rohe Hauropi Hiranga. Ka tohu hoki aua hōtaka i te take tiaki kararehe orotā i ngā whenua papa rēhia marihi kia tūturu ai ō rātou whiwhi ki ngā hua o te kotahi o ngā mahi whakahaere.

Tāmaki Makaurau / Auckland is the weediest city in the country. Given the long list of existing and emerging pest plant species in the region, controlling a whole suite of pest plants at sites of high biodiversity value can be a more effective approach than targeting a smaller list of species for region-wide control. Auckland Council is also committed to “walking the talk”, role-modelling best-practice pest management on council lands. The following programmes will coordinate the efforts of the council, transport corridor operators (such as NZTA and Auckland Transport) and private land owners to ensure maximum biodiversity benefits are achieved through collective action to protect parkland containing Significant Ecological Areas (SEAs)²⁵. The following programmes also provide for pest animal control on high value parkland, to ensure these areas receive comprehensive integrated management.

²⁵ SEAs are areas of significant indigenous vegetation and significant habitats of indigenous fauna, which must be protected as a matter of national importance in line with Section 6(c) of the RMA.



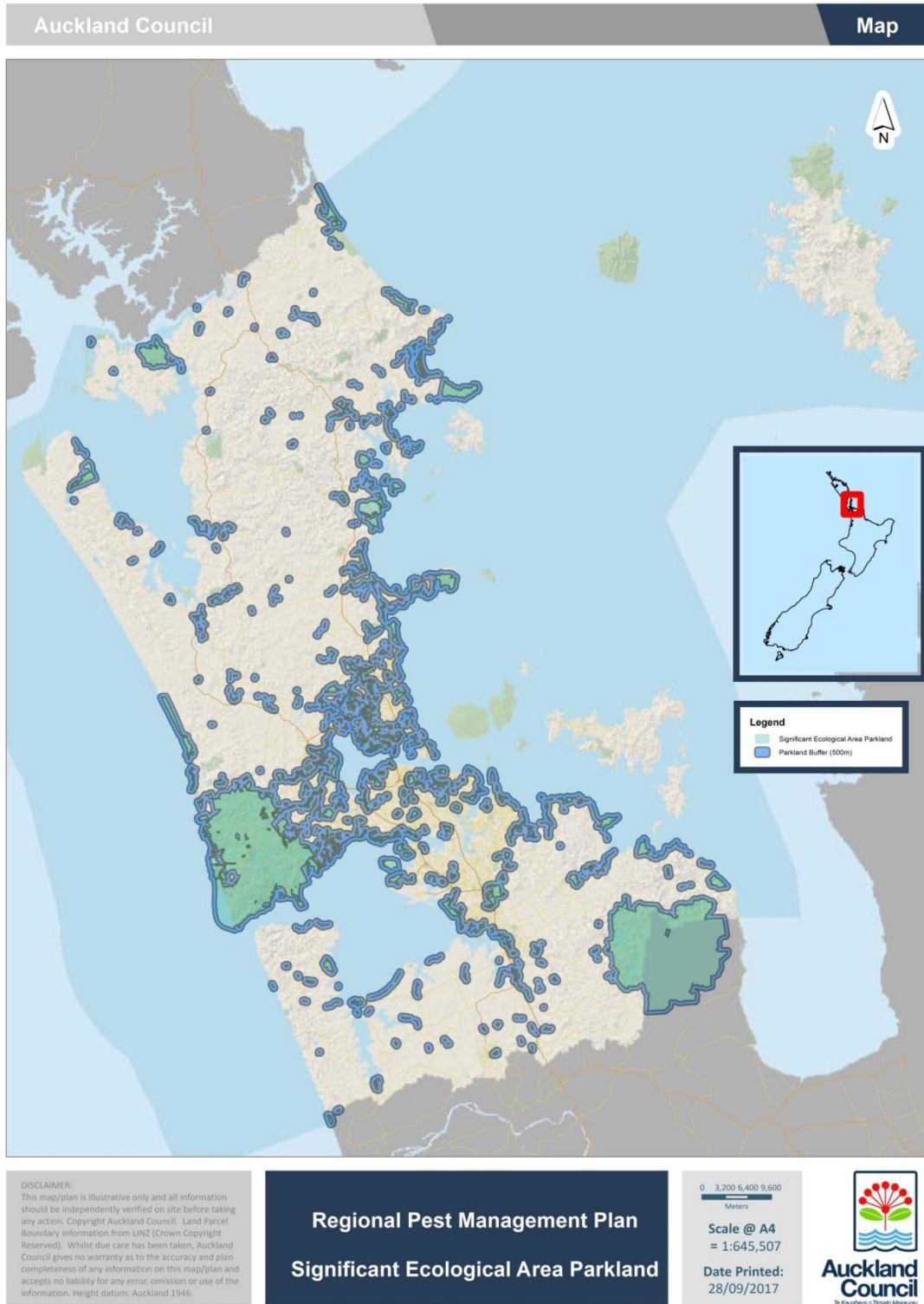


Figure 5 Specified geographic areas where Parkland with Significant Ecological Areas site-led programmes will apply during the lifetime of the plan. For some pest plant species, Auckland Council will undertake pest plant management in the buffer areas as well as on-park, while for other species rules require pest plants to be managed in buffer areas by the land owners in those buffer areas (see section 7.5.2). See Appendix 1 for detailed maps and list of park names.

7.5.1 Wāhi whai kararehe orotā / Site-led pest animals

The pest animals in the following section are all capable of causing extensive damage to native ecosystems and the native plants and animals that call those ecosystems home. The following programmes provide for management of pest animals on high ecological value parkland to levels that will protect the ecological integrity of that parkland.

7.5.1.1 Feral pigs (*Sus scrofa*)

Feral pigs are large (sometimes over 300kg), black to brown, stoutly built mammals with large heads and well-developed canine teeth. They actively scavenge during the day and will overturn large areas of soil to consume soil invertebrates, especially earthworms. In invaded ecosystems, they prey on and compete with native species, alter nutrient cycles, damage vegetation and soil, facilitate the spread of weeds and plant diseases, including kauri dieback disease. They are of high risk to the primary production industry as vectors of bovine tuberculosis. International trading options may be reduced if the Aotearoa / New Zealand feral pig population became a reservoir for swine fever or foot and mouth disease. Feral pig attacks on humans are rare but could be potentially fatal.



Landcare Research

Objective: over the duration of the plan Auckland Council will manage feral pigs²⁶ (*Sus scrofa*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

²⁶ A feral pig includes any pig that is not:

(a) held behind effective fences or otherwise constrained; and
(b) identified by ear tag

Principal measures of achievement:

Service delivery (control)	Feral pigs maintained below ecological damage thresholds in Waitākere, Kohukohunui / Hunua and other Significant Ecological Areas on parkland to protect the values of that parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest animal identification, impacts and control, and responsible hunting practices.

7.5.1.2 Mustelids: ferrets (*Mustela furo*), stoats (*Mustela erminea*), and weasels (*Mustela nivalis*)

Ferrets, stoats and weasels belong to a group of animals known as mustelids. Ferrets are the largest of the mustelids (600-1,300g) and can be distinguished by a dark ‘mask’ across their eyes. Stoats are smaller (200–350g) with orange-brown coats and a black tip at end of the tail. Weasels are the smallest (60–120g), with orange-brown coats and a uniformly brown tail.



Stoat, Department of Conservation

Mustelids are bold generalist predators and can have devastating impacts on native birds, amphibians, reptiles, molluscs, and insects. Ferrets mostly threaten ground nesting birds while stoats and weasels have contributed to the decline and extinction of many forest birds, particularly cavity nesting species. Mustelids also vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).

Objective: over the duration of the plan Auckland Council will manage Mustelids (*Mustela furo*, *Mustela erminea*, *Mustela nivalis*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest animal in Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.

7.5.1.3 Rodents (*Rattus rattus*, *Rattus norvegicus*, *Rattus exulans*)

Rats are small black, grey or brown mammals with naked tails. Rats occupy a wide range of terrestrial habitats throughout Aotearoa / New Zealand. Rodents are generalist omnivores, their diet includes seed predation, and preying on small animals such as invertebrates, reptiles, amphibians and juvenile birds. They compete with native birds for nests and burrows, and have been implicated in the decline of a number of threatened birds, particularly seabirds. Excessive consumption of seeds by rodents can greatly reduce native seedling recruitment and ultimately modify plant communities in invaded ecosystems. Rats are particularly damaging to cereal production, stored products and the food services industry, and are a potential disease vector to humans.



Ship rat, Landcare Research

Objective: over the duration of the plan Auckland Council will manage rats (*Rattus rattus*, *Rattus norvegicus*, *Rattus exulans*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest animal in Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.

7.5.2 Wāhi whai tipu orotā /Site-led pest plants managed on-park and in surrounding buffer areas

The pest plants in the following section are all capable of damaging native ecosystems, in some cases having the potential to lead to wide-scale canopy collapse and ecosystem loss on our region's parkland if not adequately managed. The species in this section are subject to management programmes both on-park and in a 500m buffer around parkland. For some species, Auckland Council will undertake pest plant management in the buffer areas as well as on-park, while for other species rules require pest plants to be managed in buffer areas by the land owners in those buffer areas.

7.5.2.1 Agapanthus (*Agapanthus praecox* syn. *A. orientalis* and cultivars)

Agapanthus is a perennial evergreen herb with leathery leaves and erect stems that terminate in many white, blue or purple flowered umbels. Plant height ranges from 100-500mm for dwarf forms and up to 1.2m for tall forms. It forms almost monocultural infestations which exclude native vegetation, especially in coastal areas including cliffs and rocky outcrops. It ranks in the top ten plants resulting in calls to the National Poisons Centre. Rhizomes and other plant parts are toxic if ingested, resulting in vomiting and diarrhoea. Contact allergens are capable of causing rashes, burning sensations and mouth ulcerations, especially in children.



Objective: over the duration of the plan Auckland Council will manage agapanthus (all *Agapanthus* cultivars) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any transport corridor land that is located within 500m of the boundary of any park which is managed for Agapanthus (as defined in Figure 5) must control all agapanthus on that land prior to seed set.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to mow plants when instructed.

7.5.2.2 Bushy asparagus (*Asparagus aethiopicus* syn. *A. densiflorus*)

Bushy asparagus is a scrambling perennial herb with a thick mat of tuberous roots, white flowers borne between October and March and red berries. Stems are hairy and bear 10mm long spines. Dense infestations are capable of excluding native vegetation particularly in coastal and forest ecosystems, and may impede recreational access to natural areas. Other impacts may be similar to climbing asparagus.



Objective: over the duration of the plan Auckland Council will manage bushy asparagus (*Asparagus aethiopicus*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any land that is located within 500m of the boundary of a park which is managed for bushy asparagus (as defined in Figure 5), and where Auckland Council has undertaken initial control on that land, must undertake follow up control of all bushy asparagus on that land.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland and in surrounding buffer land to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.3 Climbing asparagus (*Asparagus scandens*)

Climbing asparagus is a scrambling or climbing perennial, with tuberous fleshy roots, thin scale-like leaves, red berries and long, usually white, solitary flowers. It smothers forest floor and understorey up to 4m, causing reductions in native plant abundance and species richness, and promoting further invasion by other pest plant species via raised light levels. In the long-term there is the potential for increased erosion through catastrophic loss of canopy and an overall transformative loss of forest ecosystems throughout the region.



Objective: over the duration of the plan Auckland Council will manage climbing asparagus (*Asparagus scandens*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any land that is located within 500m of the boundary of a park which is managed for climbing asparagus (as defined in Figure 5), and where Auckland Council has undertaken initial control on that land, must undertake follow up control of all climbing asparagus on that land.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant with Significant Ecological Areas on parkland and in surrounding buffer land to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.4 Coast banksia (*Banksia integrifolia*)

Coast banksia is a large shrub or tree up to 15m high with rough bark, narrowly elliptical leaves, cylindrical inflorescences bearing numerous pale yellow to green flowers and woody fruiting cones. It grows in coastal and lowland sites, often on sand dunes, along roadsides, forest margins, and other open habitats; shading out existing vegetation and transforming the habitat.



Objective: over the duration of the plan Auckland Council will manage coast banksia (*Banksia integrifolia*) to protect values in place to prevent adverse effects on the sustainability and recreational values of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland and in surrounding buffer land to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.

7.5.2.5 Formosa lily (*Lilium formosanum*)

Formosa lily is a perennial herb with erect unbranched stems up to 1m tall and large, white tinged with purple, trumpet-like flowers, mainly borne January-March but sometimes year round. It is most invasive in disturbed or open coastal ecosystems including sand dunes, cliff faces and forest canopy gaps where it forms dense stands. Coastal species potentially at risk from competition may include culturally significant species such harakeke.



Objective: over the duration of the plan Auckland Council will manage Formosa lily (*Lilium formosanum*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any transport corridor land that is located within 500m of the boundary of a park which is managed for formosa lily (as defined in Figure 5) must control all formosa lily on that land prior to seed set.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on Parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.6 Jasmine (*Jasminum polyanthum*)

Also known as: Pink jasmine, white jasmine

Jasmine is a wiry evergreen climber up to 12m tall which produces an abundance of reddish-pink flower buds in late winter and early spring, followed by fragrant star-like white flowers. It is a rapid and vigorous climber, able to invade dense forest and smother all vegetation in the subcanopy. It is also capable of forming dense groundcover, preventing native seedling establishment in forest and disturbed ecosystems.



Objective: over the duration of the plan Auckland Council will manage jasmine (*Jasminum polyanthum*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland and in surrounding buffer land to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

7.5.2.7 Madeira vine (*Anredera cordifolia*)

Also known as: Madeira, mignonette vine, potato vine, lamb's tail.

Madeira vine is a perennial climbing vine up to 40m long with heart-shaped or oval fleshy leaves and drooping inflorescences of small fragrant cream flowers from January to April. It can rapidly invade disturbed forest and margins, plantations, gullies, scrublands, coastline, dunes and riparian margins by smothering and sometimes crushing understorey plants.



Objective: over the duration of the plan Auckland Council will manage Madeira vine (*Anredera cordifolia*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland and in surrounding buffer land to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.8 Moth plant (*Araujia hortorum*)

Moth plant is a perennial climber with scrambling stems, glossy leaves, white or pale pink flowers borne in clusters or singly, and fleshy pear-shaped fruit. It smothers and kills plants up to medium-high canopy, preventing recruitment in forest, coastline, cliffs, shrublands, mangroves, inshore and offshore islands, orchards and disturbed habitats. Based on its life-form, there can be long-term potential for catastrophic impacts on forest structure. Milky latex in stems, leaves and roots are poisonous and cause dermatitis.



Objective: over the duration of the plan Auckland Council will manage moth plant (*Araujia hortorum*) to protect values in places to prevent adverse effects on the sustainability of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any land that is located within 500m of the boundary of a park (as defined in Figure 5) must destroy all moth plant (*Araujia hortorum*) on that land.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant within Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section, to protect the values of nearby parkland. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.9 Norfolk Island hibiscus (*Lagunaria patersonii*)

Objective: over the duration of the plan Auckland Council will manage Norfolk Island hibiscus (*Lagunaria patersonii*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is progressively controlled in or near high priority management units within Significant Ecological Areas on parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.

7.5.2.10 Rhamnus (*Rhamnus alaternus*)

Also known as: evergreen buckthorn

Rhamnus is an evergreen shrub up to about 5m high with glossy serrated leaves, small green flowers and dark glossy red or black fruit. It forms dense stands, preventing the recruitment of native plants in scrublands, forest margins and plantations. It will also act as low scrub on coastal cliffs, inshore and offshore islands and rocky outcrops.



Objective: over the duration of the plan Auckland Council will manage rhamnus (*Rhamnus alaternus*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on Parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

- | |
|---|
| <ol style="list-style-type: none">1. All owners or occupiers of any land that is located within 500m of the boundary of a park (as defined in Figure 5) must destroy all rhamnus (<i>Rhamnus alaternus</i>) on that land. |
|---|

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.11 Wild ginger (*Hedychium gardnerianum* and *H. flavescens*)

Also known as: Kahili ginger (*H. gardnerianum*),
Yellow ginger (*H. flavescens*)

Both wild ginger species are herbaceous perennial plants that can grow up to 3m tall with large green leaves and orange berries. Kahili ginger has yellow flowers with red stamens and yellow ginger has creamy flowers. They form dense stands preventing recruitment and suppressing up to 90% of native vegetation in forest ecosystems, potentially resulting in long-term impacts on forest composition. Invasion may alter decomposition and nutrient cycling patterns, and increase erosion in the long-term through loss of canopy.



Objective: over the duration of the plan Auckland Council will manage wild ginger (*Hedychium gardnerianum* and *H. flavescens*) to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any land that is located within 500m of the boundary of a park (as defined in Figure 5) must destroy all wild ginger (*Hedychium gardnerianum*, *H. flavescens*) on that land.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.2.12 Woolly nightshade (*Solanum mauritianum*)

Woolly nightshade is a perennial shrub or small tree, up to 4m high with grey-green furry leaves, violet flowers and dull yellow berries. It forms dense stands in disturbed scrub or forest, roadsides, pasture margins, urban areas and riparian margins, inhibiting the regeneration of native plant species in invaded sites. It can displace pasture grasses and clover, reducing food availability for stock, and will colonise clear-felled areas in forestry plantations. Direct or indirect contact with the plant may cause skin irritation and respiratory problems.



Objective: over the duration of the plan Auckland Council will manage woolly nightshade (*Solanum mauritianum*) to protect values in places to prevent adverse effects on the sustainability of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Rules:

1. All owners or occupiers of any land that is located within 500m of the boundary of a park (as defined in Figure 5) must destroy all woolly nightshade (*Solanum mauritianum*) on that land.

Rule 1 is a good neighbour rule.

The purpose of this rule is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant within Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section, to protect the values of nearby parkland.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.5.3 Wāhi whai tipu orotā / Site-led pest plants managed on-park only

The pest plants in the following section are all capable of damaging native ecosystems, in some cases having the potential to lead to wide-scale loss of native biodiversity in our region's parkland if not adequately managed. The pest plants in the following section are subject to management programmes on parkland but unlike the species in the preceding section, the following programmes do not provide for management in buffer areas around parkland.

Objective: over the duration of the plan Auckland Council will manage the pest plants specified below to protect values in places to prevent adverse effects on the sustainability of natural ecosystems on public parkland, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within that parkland to an extent that protects the values of that parkland.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant on Significant Ecological Areas on parkland to levels that protect the values of the parkland.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.

Aristea (*Aristea ecklonii*)

Aristea is an evergreen perennial, with woody rhizomes, leaves up to 40cm long and numerous blue flowers in 5 to 7-flowered clusters. It is prevalent on roadsides but forest, scrubland, coastlines, herbfields, rocky and bare lands are also suitable habitats. It forms dense, long-lived stands in open sites and moderate shade, preventing seedlings of native species from establishing. In forest ecosystems, it may open canopy, leading to succession by introduced shrubs, vines and grasses.



Alligator weed (*Alternanthera philoxeroides*)

Alligator weed is a perennial emergent aquatic bottom-rooted herb forming extensive floating mats on water's surface but can also grow terrestrially, preferring damp ground. The dense mats can alter aquatic habitat structure (e.g. water flow, light penetration), alter invertebrate community composition and reduce native plant cover and diversity in wetlands and margins of water bodies. It will also displace valuable pasture species and block drainage channels, exacerbating flooding on farmland.



Bangalow palm (*Archontophoenix cunninghamii*)

Bangalow palm is a tall palm, with an undivided trunk, pinnate leaves, hanging inflorescences and globose scarlet fruit, growing up to 14m in Tāmaki Makaurau / Auckland (25m in native range). It seeds prolifically and can be very long-lived; some Aotearoa / New Zealand specimens known to have been planted prior to 1840s. It is highly invasive in South America, dominating forests and out-competing native South American palms. In Aotearoa / New Zealand it has the potential to displace native species, especially culturally significant nikau palms which occupy similar niches but have been shown to be poorer competitors under controlled conditions. Because it is shade tolerant and bird dispersed, it has potential to invade intact native forest, especially through seedling bank exploitation of light gaps.



Blue morning glory (*Ipomoea indica*)

Blue morning glory is a high-climbing, perennial plant with twining stems, three-lobed hairy leaves and blue to purple tubular flowers borne in clusters from January to December. It can completely smother and suppress other plant species on the ground or in the canopy, in forest and scrub margins, around gardens and plantations.



Boneseed (*Chrysanthemoides monilifera*)

Boneseed is an evergreen shrub or small tree up to 3m in height with leathery irregularly serrated leaves, bright yellow flowers produced from September to February and hard oval green fruit which ripen to black. It is likely to crowd out native plants in open coastal areas or disturbed habitats, including freshly cleared forestry plantations. It may also alter plant community composition through allelopathy and competition, alter patterns of nutrient cycling, and facilitate other weeds. The plant is highly flammable and therefore a fire risk in invaded ecosystems.



Boxthorn (*Lycium ferocissimum*)

Boxthorn is a densely branched and spiny evergreen shrub up to 6m tall with creamy purple flowers and fleshy red fruit. It is a pest plant in coastal habitats; inhibiting the regeneration of native plants, invading coastal pastures, ensnaring seabirds and impeding access to nesting sites. Spines can become imbedded in bone or soft tissue, resulting in infection and pseudo-tumours.



Chinese fan palm (*Trachycarpus fortunei*)

Also known as: Chinese windmill palm, Chusan palm
Chinese fan palm is a 4-12m tall palm with an unbranched trunk, fan shaped leaves and sharp marginal teeth on the petioles. Fruit are yellow but turn blue-black with age. The large leaves cast deep shade, reducing native seedling recruitment and growth. Urban reserves are most at risk of invasion due to human cultivation of the plant in surrounding areas. Intact forests in remote areas



are also at risk long-term due to bird-mediated seed dispersal and shade tolerance, potentially resulting in dominance of the forest understorey. Invasion may also result in the modification of soil biota communities and nutrient cycling impacts in these ecosystems. There is the potential for direct competition with taonga species such as nikau.

Chinese privet (*Ligustrum sinense*)

Chinese privet is an evergreen or semi-deciduous shrub to small tree up to 5m tall with white, fragrant flowers borne in clusters during spring-summer and purple-black fruit. It displaces native shrubs and trees and can form dense stands which dominate the canopy layer and prevent recruitment of native species, thereby altering vegetation structure and diversity in forest and shrubland ecosystems. Root intrusions can damage archaeological features on maunga and other significant wāhi. Some people may have a reaction to privet, often as a cross-reactivity to their main allergens.



Giant reed (*Arundo donax*)

Also known as: bamboo reed, donax cane, arundo grass, cow cane, river cane, reed grass.

Giant reed is a sturdy perennial grass with large, spreading clumps of thick culms up to 6m tall, maize-like leaves and large fluffy purplish to silver inflorescences standing above the foliage. It invades riparian areas, wetlands and saltmarshes, altering hydrology by blocking water flow and displacing native plants by creating vast monocultures. Dense stands can impede drainage and exacerbating flooding in agricultural systems.



Japanese honeysuckle (*Lonicera japonica*)

Japanese honeysuckle is an evergreen climber with dark green leaves and paired fragrant white flowers with yellow corollas. The vine can grow up to 15m/year and will quickly form dense monospecific mats which smother and suppress native vegetation, harbour mice and facilitate other invasive plants in disturbed sites, river banks, bare ground, scrubland, forest margins, fragments or gaps. In orchards it is a host of



several pathogens, and in forestry plantations it will overgrow young plants and inhibit growth of some pine species through allelopathy.

Norfolk Island hibiscus (*Lagunaria patersonii*)

Norfolk Island hibiscus is a long-lived evergreen tree up to 15m tall with white to pink flowers borne predominantly between September-April. It is tolerant to harsh conditions and has the potential to compete with co-occurring native plants. Coastal ecosystems currently appear to be most at risk from invasion, but wetlands are probably also at risk due to occupancy of swamps in native range.



Monkey apple (*Syzygium smithii* syn. *Acmena smithii*)

Monkey apple is a tree up to 15m tall with glossy leaves, creamy coloured flowers borne October-January and white or pale pink/mauve fleshy fruit. It colonises native forest, especially exposed ridges, edges and regenerating secondary scrub. It is also capable of recruiting below closed canopy due to high shade tolerance, therefore intact forests are at risk of invasion. In the long-term, invasion may lead to transformative change to forest composition and structure.



Pampas grass (*Cortaderia jubata* and *C. selloana*)

Pampas grass is a clump-forming grass up to 4m tall, with sharp leaves, erect dense fluffy white to purple flower heads that fade to dirty white or brown in cooler months. It readily colonises burnt or disturbed sites and quickly becomes very dense, replacing native plants in coastal ecosystems and other open or disturbed habitats. It also provides habitat for possums, rats, and mustelids. In forestry plantations it can quickly become very dense, smothering young trees and being a nuisance during harvesting. Build-up of dead leaves, leaf bases and flowering stalks can create a significant fire hazard in invaded areas.



Phoenix palm (*Phoenix canariensis*)

Phoenix palm is a stocky palm tree with a trunk reaching up to 6m tall, large segmented leaves and orange-yellow berries. Sharp spines on the leaves are capable of causing severe injury requiring hospitalisation, with children especially at risk. It competitively excludes native vegetation due to its large size and spines, which are unpalatable to grazers. Numerous threatened species are potentially at risk in coastal ecosystems including dunes, saline wetlands, cliffs and coastal forest. It also has the potential to facilitate other invasive plants as epiphytes (e.g. climbing asparagus, ladder fern and Morton Bay fig) and provides habitat for a variety of invasive exotic birds.



Tree privet (*Ligustrum lucidum*)

Tree privet is a medium sized evergreen tree growing up to 10m tall with white, fragrant flowers borne in clusters during spring-summer and poisonous purple-black berries. It displaces native shrubs and trees and can form dense stands which dominate the canopy layer and prevent recruitment of native species, thereby altering vegetation structure and diversity in forest and shrubland ecosystems. Root intrusions can damage archaeological features on maunga and other significant wāhi. Some people may have a reaction to privet, often as a cross-reactivity to their main allergens.



Royal fern (*Osmunda regalis*)

Royal fern is a tall deciduous perennial fern with fronds up to 3m long. It forms dense stands in wetlands and freshwater ecosystems, which are likely to impact on native fauna and flora through mechanisms such as competition or habitat restructuring. It has the potential for obstructing access and reducing enjoyment of the natural freshwater environment, and may impact on the mauri of wai māori.



Salt water paspalum (*Paspalum vaginatum*)

Salt water paspalum is a perennial grass with long creeping stolons and leathery, grey-green leaf blades, up to 8cm long. It can dominate high priority ecosystems including tidal flat margins and coastal habitats, forming near monocultures which exclude native plants and alter plant community composition. Burrowing fauna such as crabs may be excluded in invaded habitats, and invertebrate communities shifted towards more terrestrial assemblages. Monocultures can also alter foraging habitat and food availability for shore birds, leading to avoidance of invaded areas by some bird species overseas, and can alter spawning and feeding grounds of culturally important fish such as pātiki / flounder.



Sharp rush (*Juncus acutus*)

Sharp rush is a perennial spiny rush up to 1m tall with sharp tips and clumped green to brown flower heads borne in summer followed by red, orange or brown fruit. It forms dense stands which can displace native salt marsh vegetation, impair plant recruitment, reduce native plant richness and alter invertebrate communities.



Tasmanian ngaio (*Myoporum insulare* incl. hybrids)

Tasmanian ngaio is a large shrub to small tree with oval leaves, white flowers with purple dots borne between September and June and long, purple fruit. It competes with native coastal plants and hybridises readily with closely related and culturally important native ngaio (*M. laetum*), potentially affecting the gene pool of the native species. It is toxic to humans and livestock.



7.5.4 Te noho wātea o te kitakita orotā / Exclusion pest pathogens: kauri dieback disease (*Phytophthora agathidicida*)

At the time of writing²⁷, kauri dieback is not known from Kohukohunui / Hunua. There is no known cure for kauri dieback disease, and once present in a catchment it is difficult to contain spread of the disease. For these reasons, keeping kauri dieback out of this large tract of high value kauri forest, much of which is council parkland, is a top regional priority. See also Tīkapa Moana o Hauraki / Hauraki Gulf section for Tīkapa Moana o Hauraki / Hauraki Gulf exclusion zone (section 7.1.3.1).

Symptomatic kauri trees infected with kauri dieback disease exhibit root and collar rot, resin-exuding lesions, yellowing of leaf tissue, canopy thinning and mortality. Human-mediated movement of contaminated soil is the main cause of jump-dispersal between kauri forests but it can be spread locally by feral pigs. The disease can be incurably fatal to kauri trees of all ages and, in the absence of effective treatment, has mid- to long-term potential to cause functional extinction of kauri as a canopy species. Kauri are ecosystem engineers, with profound effects on soil chemistry, and associated plant and animal communities. Consequently there is a potential for catastrophic loss of associated unique ecosystems.



Objective: over the duration of the plan Auckland Council will exclude kauri dieback (*Phytophthora agathidicida*) from establishing within kauri dieback exclusion zones (as identified in Figure 6) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of kauri dieback within kauri dieback exclusion zones.

Rules:

1. No person shall distribute, move or release kauri dieback disease in Auckland.
2. No person shall move soil, or plants, or animals contaminated with soil, or goods contaminated with soil, into the Hunua kauri dieback exclusion zone (as identified in Figure 6), unless sourced from an Auckland Council approved supplier²⁸.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

²⁷ 9 October 2017

²⁸ An approved supplier is any supplier accredited under the New Zealand Plant Producers Incorporated Nursery Production Farm Management System NIASA module or equivalent. <http://nzppi.co.nz/fms>

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest pathogen is present within the specified geographic area of the programme and carry out management of this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance, to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the movement of the pest and risk goods.
Education and advice	Provide information and advice on identification and impacts of kauri dieback, and how to avoid spreading the pest.
Requirement to act	All persons to take practicable steps to avoid transport and distribution of kauri dieback e.g. ensure all footwear and other equipment are free of soil when exiting areas known to be infected with kauri dieback disease. Persons moving goods into Kohukohunui / Hunua kauri dieback exclusion zone to ensure all goods are free of soil. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.
Research and development	Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, and ecological impacts of kauri dieback disease on kauri and its ecosystem.

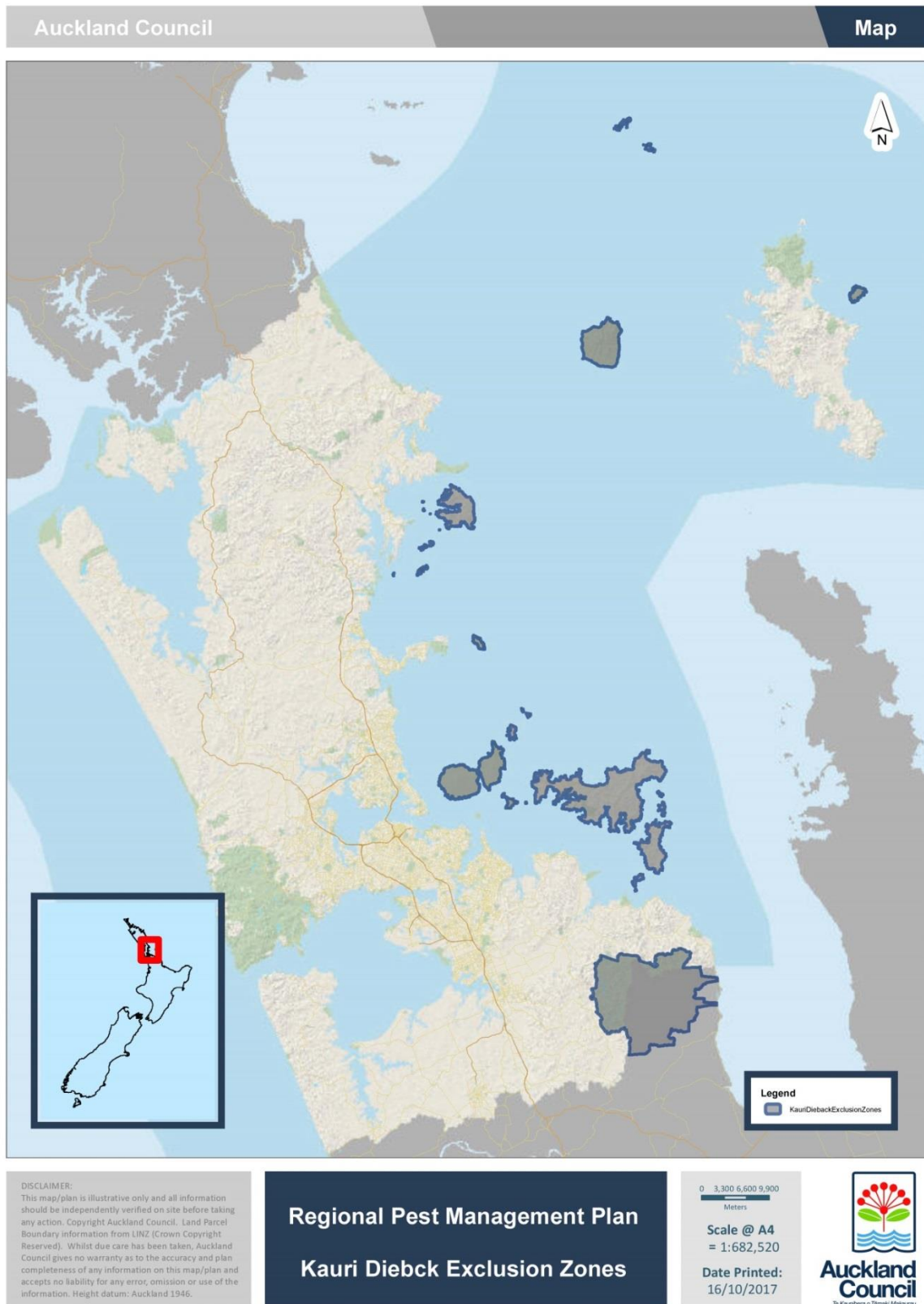


Figure 6 Exclusion zones in the Kohukohunui / Hunua Ranges and Haruaki Gulf Controlled Area where kauri dieback exclusion programmes will apply during the lifetime of the plan.

7.6 Ngā roto aronga matua / Priority lakes Rototoa and Tomarata

Kua heke kē te pai o ngā wai māori o Tāmaki Makaurau, kua uru kē atu ētahi momo orotā. Ahakoa he orotā kei Tomarata me Rototoa, kei runga e mau tonu ana ki ōnā wai māori, ōna uara kanorau-koiora. Engari, e tūpono hinga ēnei pūnaha hauropi nā ngā āhua orotā me ētahi atu pēhitanga, e ngaro ai pea ētahi o ngā māra tipu whāngai ora ki te pūnaha hauropi o te wai, tae atu hoki ki te ngaro o te waikaka - he ika wai māori. Ko ngā wāhanga e whai ake nei e hāngai ana ki te aro, ki te whāinga i te wāhi motuhake e taea ai ngā tipu me ngā koiora orotā te aukati i ēnei roto matua e rua, hei tiaki me te whakaora ake anō i ēnei pūnaha hauropi.

Most wai māori / freshwater bodies in mainland Tāmaki Makaurau / Auckland are degraded, with some pest species already present. While Tomarata and Rototoa do have some pests present, they retain relatively high freshwater biodiversity values. However, these ecosystems are at imminent risk of collapse due to pests and other pressures, leading to the likely loss of charophyte meadow ecosystems from the region, and loss of important populations of at-risk native species such as waikaka / black mudfish. The following sections encompass a site-led approach to manage a suite of pest plants and animals at these two top priority lakes to protect and restore these ecosystems.



7.6.1 Wāhi whai tipu orotā / Site-led pest plants

Objective: over the duration of the plan Auckland Council will manage the pest plants specified below to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems of priority lakes, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to priority lakes, is controlled within the lakes to an extent that protects the values of the lakes.

Principal measures of achievement:

Service delivery (control)	Manage the pest plant in priority lakes to levels that protect the values of the lakes, as part of an integrated multi-species programme.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest plant identification, impacts and control. Provide support and advice to community groups undertaking pest management in and around priority lakes.
Research and development	Collaborate with research agencies to improve tools and understanding of freshwater invasive species management.

Egeria (*Egeria densa*)

Egeria is a bottom-rooted submerged perennial aquatic herb with long stems (3m and over) and white flowers borne at the water's surface between November and January. It forms dense stands displacing native aquatic plants and altering the habitat structure of macroinvertebrates and fish. Resultant impacts can include lowered dissolved oxygen levels, increased sedimentation, changes to primary production and nutrient cycling capacity of the invaded water body.



Hornwort (*Ceratophyllum demersum*)

Hornwort is a perennial submerged aquatic plant up to 7m tall which can be anchored to sediment by stems, or form free-floating mats. Leaves are 10-40mm long, narrow, branched and whorled forming complex architecture. Hornwort forms dense monospecific stands which can displace all native submerged vegetation down to 15m depth. The dense stands alter water flow, increase flooding risk and impede recreational access of waterbodies. Because it can grow to greater depths than other aquatic weeds, it is the species likely to have greatest impacts on deep-water charophyte meadows. Kōura are also likely to be especially impacted due to requirement for open habitat.



Rohan Wells, NIWA

7.6.2 Wāhi whai kararehe orotā / Site-led pest animals

Objective: over the duration of the plan Auckland Council will manage the pest animals specified below to protect values in place to prevent adverse effects on the sustainability and recreational enjoyment of natural ecosystems of priority lakes, and the ecological processes and biological diversity therein.

Intermediate outcome: that the subject, that is capable of causing damage to priority lakes, is controlled within the lakes to an extent that protects the values of the lakes.

Principal measures of achievement:

Service delivery (control)	Manage the pest animal in priority lakes to levels that protect the values of the lakes, as part of an integrated multi-species programme.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide support and advice to community groups undertaking pest management in and around priority lakes.
Research and development	Collaborate with research agencies to improve tools and understanding of freshwater invasive species management.

**Brown bullhead catfish (*Ameiurus nebulosus*
syn. *Ictalurus nebulosus*)**

Brown bullhead catfish are scale-less dark brown to olive green fish which are most easily distinguished by eight whiskery barbels around the mouth. Adults can grow up to 250-500mm long. They are opportunistic generalist feeders, which have been documented eating common bullies as well as a wide range of invertebrates including kōura. Their presence in freshwater bodies can contribute to poor water clarity by extensive consumption of zooplankton, thereby exacerbating algal blooms. Bottom-feeding can also cause the re-suspension of sediment and up-rooting of submerged aquatic plants. These impacts can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton.



Stephen Moore

Koi carp (*Cyprinus carpio*)

Koi carp are an ornamental strain of common carp measuring up to 700mm long which are variable in colour but can be distinguished by the presence of a pair of barbels. Koi carp can negatively impact submerged aquatic plant communities via plant uprooting and reduced light penetration, and alter invertebrate communities via predation and habitat modification. Waterfowl, native fish and kōura are also at risk from increased water turbidity, due to koi carp stirring sediment when feeding, and resource competition. Invasion may contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton.



Stephen Moore

Perch (*Perca fluviatilis*)

Perch are olive green-grey fish (< 1kg) with six or more dark vertical bands across their sides. They can contribute to poor water clarity via the consumption of zooplankton, thereby exacerbating algal blooms. Feeding habits can also cause the re-suspension of sediment and up-rooting of submerged aquatic plants. Combined effects of zooplankton feeding and bottom feeding habits can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton. Perch presence has shown to reduce the abundance of common bullies, and impacts are likely on other native fish such as tuna (eels), inanga, galaxiids and smelt through predation, aggressive attacks and competition for prey.



Rudd (*Scardinius erythrophthalmus*)

Rudd are fish with bright red fins, usually 200-250mm as adults, but can be larger. Extensive herbivory can negatively affect aquatic plant growth, survival and community composition, sometimes leading to aquatic plant collapse in lakes. Some high impact aquatic weeds, including hornwort, are selectively avoided by rudd and may thus be further competitively advantaged. They may compete with native fish such as smelt and common bullies for invertebrate prey. Facilitation of nutrient and sediment suspension in the water column and predation of zooplankton by rudd can contribute to regime shifting of lakes from clear to turbid states.



Stephen Moore

Tench (*Tinca tinca*)

Tench are olive green-bronze fish (30-70cm), distinguished by red eyes, two barbels, large soft-rayed fins and copious mucous. They can contribute to poor water clarity via the consumption of zooplankton, thereby exacerbating algal blooms. Bottom-feeding also causes the re-suspension of sediment and up-rooting of submerged macrophytes. These combined effects can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton. Indirect effects to



native fish species diversity via transmission of parasites, reduced water clarity, and/or competition for invertebrate prey are also likely.

7.7 Rohe katoa / Whole Region

Ahakoia he rahi ngā hōtaka o tēnei RPMP e aro ana ki te ārai matawhenua me ngā wāhi he rahi ngā kanorau-koiora, ko ētahi hōtaka ka āhei te whakamau puta noa, tata rānei ki te katoa o te rohe. He rerekē tonu ngā hua ka puta i ēnei hōtaka tae atu ki ōna āhua whakamahi, ka whakamāramatia i ngā wāhanga te whai ake nei.

While many of the programmes in this RPMP are targeted to defendable geography and sites of highest biodiversity, some programmes are applied across all, or almost all, of the region. These programmes vary widely in their outcomes and associated delivery mechanisms, as described in the following sections.



7.7.1 Te noho wātea o te Koiora Orotā / Exclusion pest animals

The following pest animal species are not known to be established either in the Tāmaki Makaurau / Auckland region (rooks) or part of the region (wallabies; absent from the region with the exception of Kawau). If either of these pests were to become widely established, their impacts could be severe. Therefore early intervention to prevent establishment would be a cost effective approach in the event of an incursion.

7.7.1.1 Rook (*Corvus frugilegus*)

Rooks are large black birds with a violet-blue glossy sheen, between 20 and 30cm long. Rooks feed on invertebrates and plant material. They cause extensive damage to maize, peas, squash, green feed and cereal crops and uproot pasture searching for grass grubs in pasture. They are also urban nuisance pests and can aggressively attack on people.



Objective: over the duration of the plan Auckland Council will exclude rooks (*Corvus frugilegus*) from establishing in the region to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of rooks in the Tāmaki Makaurau / Auckland region.

Rules:

1. No person shall cause to breed any rook within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any rook within the Auckland region.
3. No person shall sell or offer for sale any rook within the Auckland region.

The purpose of these rules is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on pest animal identification, impacts and control.

7.7.1.2 Wallaby (*Macropus*, *Petrogale* and *Wallabia* spp.)

Wallabies are medium-sized, semi-nocturnal marsupial mammals. They compete directly with livestock for pasture and have a substantial diet overlap with sheep resulting in large production losses in the sheep and beef industry. They also damage newly planted radiata pine plantations, browse native forest seedlings and destroy understorey, favouring kamahi and māhoe.



Objective: over the duration of the plan Auckland Council will eradicate wallabies (*Macropus*, *Petrogale* and *Wallabia* spp.) from within the Tāmaki Makaurau / Auckland region to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of wallabies in the Tāmaki Makaurau / Auckland region, other than the existing population on Kawau Island.

Rules:

1. No person shall cause to breed any wallaby within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any wallaby within the Auckland region.
3. No person shall sell or offer for sale any wallaby within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of these rules is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Service delivery (control)	Incursion responses to all sightings of wallabies within the region outside of Kawau Island. Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on pest animal identification, impacts and control.

7.7.2 **Āta aukati noa i te kararehe / Progressive Containment animals**

These progressive containment pest animals are present in Tāmaki Makaurau / Auckland at sufficient numbers or distributions that eradication may not be possible in the short term. Nonetheless, all are species that could be suppressed to much lower levels than they are currently at, thereby substantially and cost effectively reducing future impacts.

7.7.2.1 Feral deer (*Cervus*, *Axis*, *Dama*, *Odocoileus*, *Elaphurus* spp.)

Feral deer are medium to large-sized ungulates. Red deer have reddish-brown coats and can reach 180kg. Fallow deer are much smaller and have a chestnut coloured coat. Heavy and selective deer browsing on native plants, particularly schefflera/pate, three-finger, lancewood, and hen and chicken fern, can radically change forest structure and impact below-ground processes by altering the nature of litter inputs into the soil. Feral deer are also spill-over hosts and potential reservoirs of bovine TB.



Objective: over the duration of the plan Auckland Council will progressively contain feral deer²⁹ (*Cervus*, *Axis*, *Dama*, *Odocoileus*, *Elaphurus* spp. including any hybrid) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of feral deer in the Tāmaki Makaurau / Auckland region, over time.

Rules:

1. No person shall release from containment any deer in any part of the Auckland region.
2. No person shall move or distribute any deer into the Hauraki Gulf Controlled Area, Hunua and Waitākere ranges (as defined in Figure 7), or onto or between any of the areas.

The purpose of rules 1 and 2 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

A feral deer includes any deer that is not:

- (a) being kept or farmed in accordance with the Wild Animal Control Act 1977; and
- (b) identified in accordance with the National Animal Identification and Tracing Act 2012.

Principal measures of achievement:

Service delivery (control)	<p>Provide support to the Department of Conservation as the lead agency in managing deer in the region.</p> <p>Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species, prioritising control operations by their relative contribution to excluding deer from Kohukohunui / Hunua and Waitākere, and secondarily by protecting other Biodiversity Focus Areas.</p>
Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.</p>
Education and advice	<p>Provide information and advice on responsible domestic ownership and containment as well as identification and impacts of the pest animal.</p> <p>Encourage reporting of sightings of feral deer.</p> <p>Provide advice and support to community groups undertaking pest animal control.</p>
Enforcement	<p>Enforce prohibition on release.</p> <p>Enforce prohibition on possession and movement of deer within Kohukohunui / Hunua Ranges and Te Wao Nui a Tiriwa / Waitākere Ranges.</p>

7.7.2.2 Feral goat (*Capra hircus*)

Feral goats are even-toed hoofed, monochromatic or mixture of black, white and brown ungulates. Males weigh c.45-55kg, females c.25-35kg. Browsing causes reductions in vegetation cover and density, loss of plant species richness, prevents regeneration and alters plant community composition in favour of unpalatable species. Feral populations can act as disease reservoirs for farmed goats and cause damage to farm fences resulting in livestock escapes.



Objective: over the duration of the plan Auckland Council will progressively contain feral goats³⁰ (*Capra hircus*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of feral goats in Tāmaki Makaurau / Auckland, over time.

Rules:

1. No person shall release from containment any goat in any part of the Auckland region.
2. No person shall move or distribute any goat into the Hauraki Gulf Controlled Area or the Hunua and Waitākere ranges (as defined in Figure 7), or onto or between any of the areas, unless the goat is a British alpine, toggenburg, nubian, saanen, or sable dairy goat.
3. No person shall farm or keep any goat on any island within the Hauraki Gulf Controlled Area or in the Hunua and Waitākere ranges (as defined in Figure 7 Specified geographical areas where exclusion rules will apply as part of the feral deer and feral goat progressive containment programmes during the lifetime of the plan.), except in relation to the British alpine, toggenburg, nubian, saanen, or sable dairy goat.
4. Any person farming or keeping a goat in accordance with rule 3 must meet the minimum goat fencing requirement.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1 and 2 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

³⁰ A feral goat includes any goat that is not:

(a) held behind effective fences or otherwise constrained; and
 (b) identified in accordance with an animal identification device approved under the National Animal Identification and Tracing Act 2012.

The purpose of rules 3 and 4 is to regulate activities that may affect measures taken to implement the plan.

Minimum goat fencing requirement means:

- (a) In relation to an existing fence with conventional post, wire and batten, a fence that is:
- i. minimum overall fence height of 1100 mm; and
 - ii. a maximum of 5 m spacing between posts; and
 - iii. a minimum of 7 wires with maximum spacing of 200 mm between top wires; and
 - iv. spaces between wires gradually decreasing to 100 mm between bottom two wires; and,
 - v. the bottom wire is a maximum of 100 mm above the ground; and
 - vi. a minimum of 5 battens per bay; and
 - vii. all wires must be strained to a minimum 150 kgs of tension; and
 - viii. all materials are structurally sound; and
 - ix. which has been topped up with a netting fence that is:
 - i. minimum overall fence height 1550 mm; and
 - ii. any new wires are minimum gauge of 2.5 mm high tensile galvanised; and
 - iii. any existing, end and angle strainers must have at minimum a 2.1 m long round with minimum diameter 150 mm dug in and wired on to attach netting to; and
 - iv. a batten of dimensions 1500 x 50 x 40 mm must be installed beside any existing posts to attach netting to; and
 - v. minimum netting specifications of height 600 mm, stay wire width 300 mm and 5 line wires; and
 - vi. an overlap may be created onto existing fence if required.
- (b) In relation to a new fence, a fence that is:
- i. minimum overall fence height 1550 mm; and
 - ii. any wires are minimum gauge of 2.5 mm high tensile galvanised; and
 - iii. the bottom wire is a maximum of 100 mm above the ground; and
 - iv. any end strainers are 3 m long rounds with minimum 200 mm diameter; and
 - v. any angle strainers are 2.7 m long rounds with minimum 200 mm diameter; and
 - vi. any stays are 2.7 m long rounds with minimum diameter 120 mm; and
 - vii. any posts are 2.4 m long rounds with minimum diameter 120 mm; and
 - viii. a maximum of 4.5 m spacing between posts; and
 - ix. two electrified outriggers at 300mm and 1200mm spacing; and
 - i. a minimum of 5 battens per bay; and
 - ii. minimum batten dimensions are 1500 x 50 x 40 mm; and
 - iii. 11 wires with a maximum spacing of 200 mm between top wires; and
 - iv. spaces between wires gradually decreasing to 100 mm between bottom two wires; or

- v. is comprised of netting with minimum height 1550 mm, stay wire width 300 mm and 11 line wires.

(c) In relation to any gate, whether new or top-up, a gate that is:

- i. the same height as the adjoining fence; and
- ii. the bottom of the gate is a maximum of 100 mm above the ground at all points including over any ditches or hollows; and
- iii. all components are structurally sound.

Electric type fences do not comply, as shortages and vegetation growth may lead to non-compliance.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species. Over the lifetime of the plan, progressively contain feral goat populations across the entire region.
Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide information and advice on conditions relating to keeping of goats. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas, or in defendable or strategic geographic locations such as peninsulas, islands and corridors.
Enforcement	Enforce conditions on goat farms within the Hauraki Gulf Controlled Area and the Hunua or Waitākere ranges buffer zones. Enforce conditions on movement of goats to or within the Hauraki Gulf Controlled Area. Enforce Sections 52 and 53 of the Biosecurity Act, preventing the breeding, exhibition, sale and distribution of the pest.

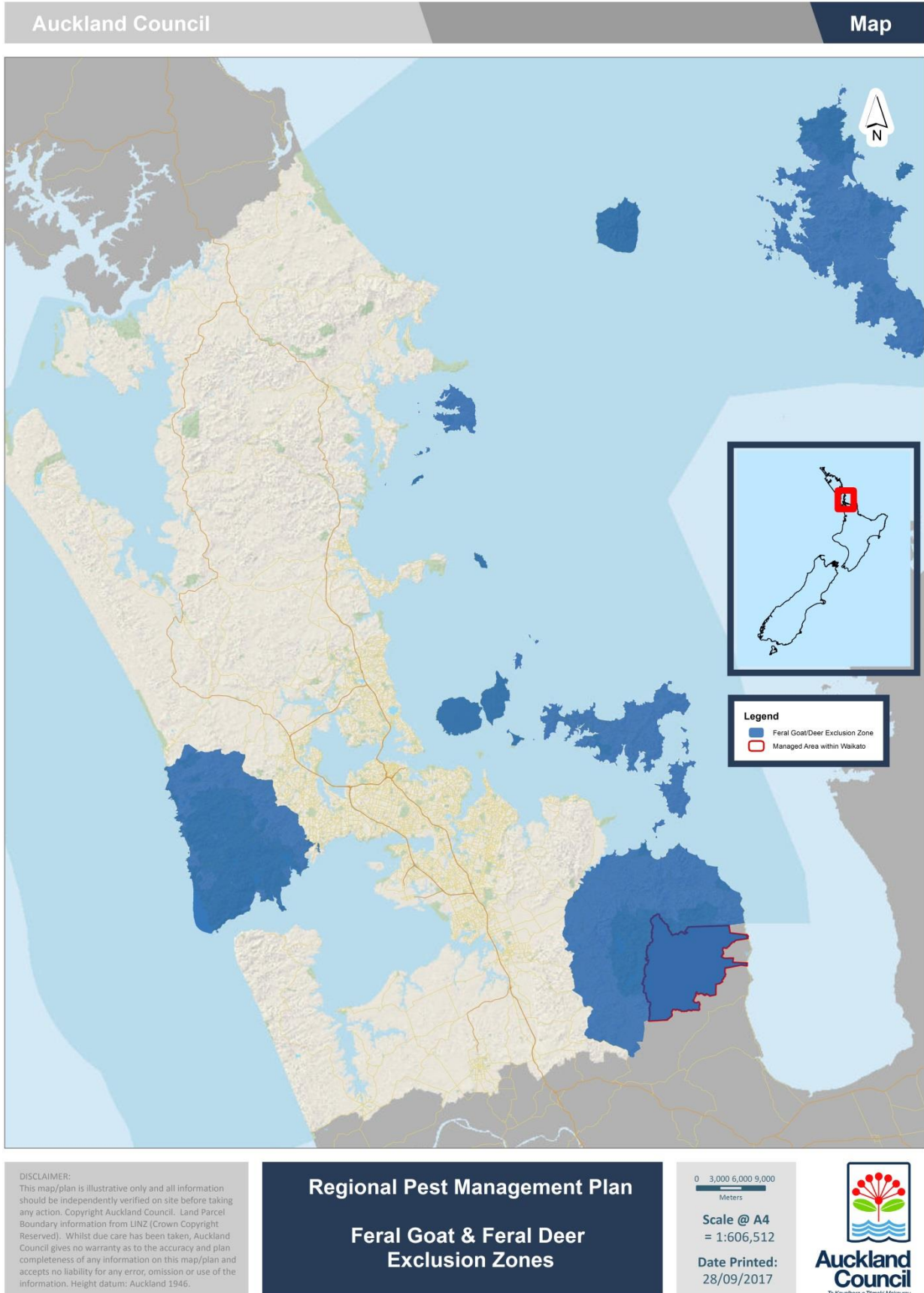


Figure 7 Specified geographical areas where exclusion rules will apply as part of the feral deer and feral goat progressive containment programmes during the lifetime of the plan.

7.7.2.3 Possum (*Trichosurus vulpecula*): rural areas

Possums are small marsupials with thick bushy tails, weighing between 1.4-6.4kg and can be grey, brown or black in colour. Possums will prey on eggs and chicks of various threatened birds, including kōkako, and compete for nest sites with hole-nesting birds, such as kiwi and parakeets. Heavy plant browsing by possums can suppress or eliminate preferred plants by selective browsing. This can alter the vegetation composition in invaded ecosystems and ultimately lead to the collapse of palatable canopy species, such as Northern rātā. Possums are also considered serious agricultural pests. They are vectors for bovine TB in cattle and compete directly with stock for pasture.



Nga Manu Images

Objective: over the duration of the plan Auckland Council will progressively contain possums (*Trichosurus vulpecula*) in rural Tāmaki Makaurau / Auckland (as defined in Figure 8) to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of possums, to contain or reduce the geographic distribution of possums, in rural Tāmaki Makaurau / Auckland, over time.

Rules:

1. No person shall cause to breed any possum within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any possum within the Auckland region.
3. No person shall sell or offer for sale any possum within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest animal is present within the specified geographic area of the programme and carry out control work on this species. Set up and maintain possum control (aiming for at or below 3-5% Residual Trap Catch) in staged blocks.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on pest animal identification, impacts and control.

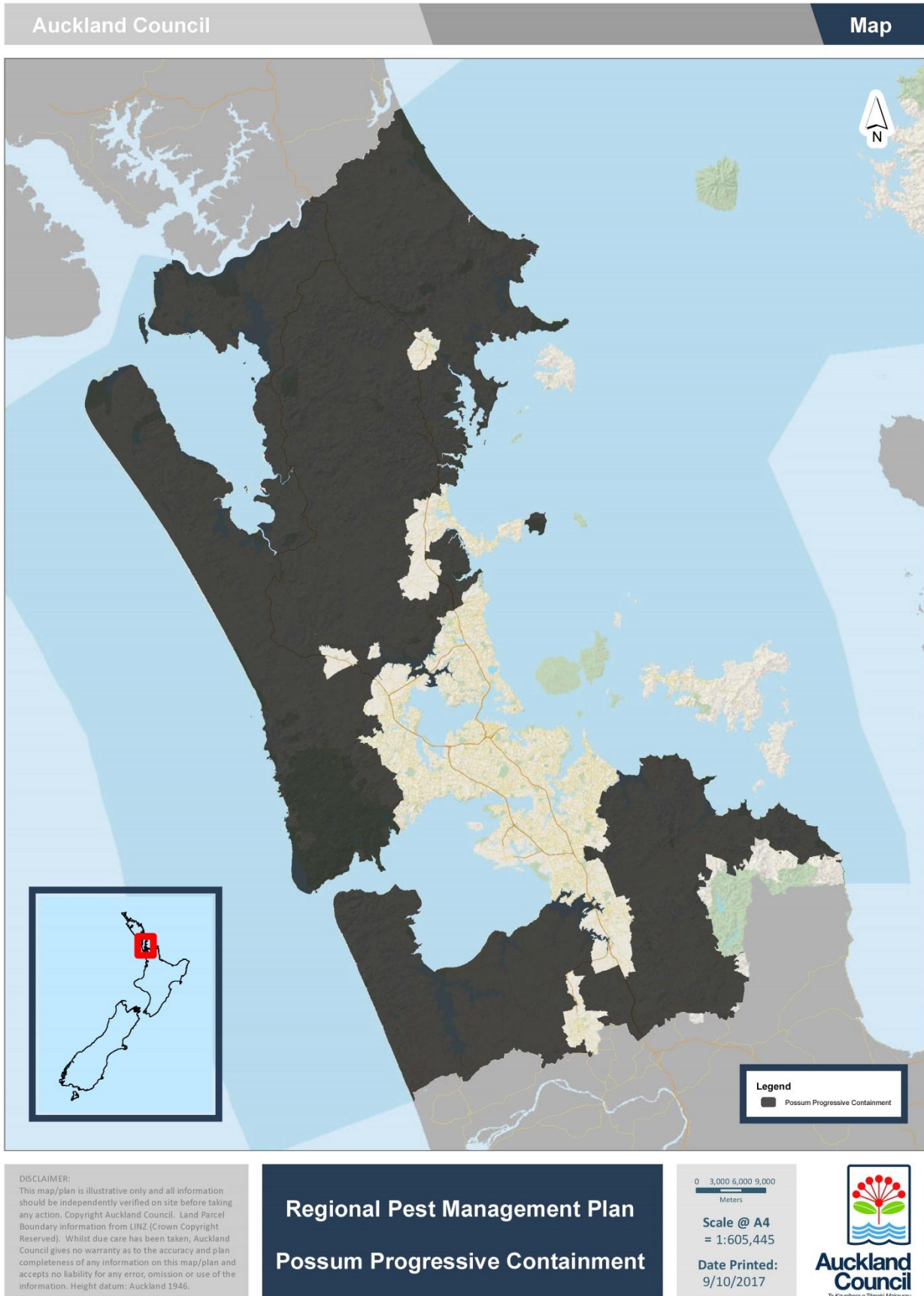


Figure 8 Specified geographic area where the rural progressive containment programme for possums will apply during the lifetime of the plan.

7.7.2.4 Sulphur crested cockatoo (*Cacatua galerita*)

Sulphur crested cockatoos are large stocky white parrots with a forward-curving yellow crest. In the Tāmaki Makaurau / Auckland region farmers have reported damage to pecan nuts, walnuts, feijoas, and plum crops but the cockatoos have also been recorded damaging various cereal crops nationally. Birds will often attack kauri, rimu and other species, stripping bark, eating the growing tips, seed, flowers and fruit, and digging into the trees with their beaks. There is also a potential risk the cockatoos will spread Psittacine Beak and Feather Disease to native parrots.



Objective: over the duration of the plan Auckland Council will progressively contain sulphur crested cockatoos (*Cacatua galerita*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of sulphur crested cockatoos in the Tāmaki Makaurau / Auckland region, over time.

Rules:

1. No person shall cause to breed any sulphur-crested cockatoo within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any sulphur-crested cockatoo within the Auckland region.
3. No person shall sell or offer for sale any sulphur-crested cockatoo within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Service delivery	Progressively control naturalised populations of sulphur crested cockatoo within the region, with priority given to Biodiversity Focus Areas.
Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3 Te mau tonu o te patu kararehe orotā / Sustained Control pest animals

The species in the following Sustained Control programmes vary greatly in their distribution across the region; some are currently present only in containment (e.g. as pets), while others are already well established in the wild and spreading. Nonetheless, all these species have the potential for economic and/or environmental impacts, and for all of these species there is value in reducing the risk of humans assisting the establishment or further spread of pest populations. The following programmes therefore manage these pest animals through rules and accompanying education and awareness programmes designed to reduce risk of pests being spread through activities such as recreational fishing, pet ownership, movement of risk goods, and recreational use of natural areas.

7.7.3.1 Argentine ant (*Linepithema humile*)

Argentine ant workers are uniformly light brown insects, wingless and are roughly 2–3mm long. Queens are larger (10-12mm) and dark brown. They have a broad diet and impact on many invertebrate species through predation, competition and interference, and will also predate on hatchlings in nests. They feed extensively on honeydew produced by aphids and scale insects, and therefore protect these insects from predators. This can majorly impact on the horticulture industry and will often kill fruit trees due to an increase in scale insects. Production losses in the poultry industry can be caused by Argentine ants killing hatchlings, and to the apiculture industry due to hive robbing. Argentine ants will often bite humans and can become major nuisances in homes and gardens.



Richard Toft, Entecol

Objective: over the duration of the plan Auckland Council will sustainably control Argentine ants (*Linepithema humile*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide education and advice for control of Argentine ants, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any Argentine ant within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any Argentine ant within the Auckland region.
3. No person shall sell or offer for sale any Argentine ant within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental spread of the pest animal to new locations.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.2 Bearded dragon (*Amphibolurus barbatus* syn. *Pogona barbata*)

Also known as: coastal or eastern bearded dragon
 Bearded dragons are grey-brown reptiles, between 55-58cm long and throats covered with distinctive spiny scales which can be raised to form a black "beard". As opportunistic omnivores, bearded dragons are likely to predate on native invertebrates and compete for food and resources with native lizards and birds. There is added potential for disease transmission to native reptiles (e.g. adenovirus infections, skin conditions). Bites to humans may cause prolonged swelling and bleeding with the risk of disease transmission to humans.



Objective: over the duration of the plan Auckland Council will sustainably control bearded dragons (*Pogona barbata*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of bearded dragons, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any bearded dragon within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any bearded dragon within the Auckland region.
3. No person shall sell or offer for sale any bearded dragon within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.7.3.3 Blue tongued skink: common (*Tiliqua scincoides*) and blotched (*T. nigrolutea*)

Blue tongued skinks are lizards up to 40-70cm long with distinctive blue tongues. They can either have dark bands around the body (common) or are mostly black with varying amounts of light brown, grey, yellow or orange blotches (blotched). They are likely to prey on native invertebrates, smaller lizards, birds and their eggs, and may compete with native species for food and other resources. There is further potential for disease and parasite transmission to other reptiles.



JJ Harrison

Objective: over the duration of the plan Auckland Council will sustainably control blotched blue tongued skinks (*Tiliqua nigrolutea*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of blotched blue tongued skinks, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any blue tongued skink within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any blue tongued skink within the Auckland region.
3. No person shall sell or offer for sale any blue tongued skink within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.7.3.4 Brown bullhead catfish (*Ameiurus nebulosus*)

Brown bullhead catfish are scaleless dark brown to olive green fish which are most easily distinguished by eight whiskery barbels around the mouth. Adults can grow up to 250-500mm long. They are opportunistic generalist feeders, which have been documented eating common bullies as well as a wide range of invertebrates including kōura. Their presence in wai māori / freshwater bodies can contribute to poor water clarity by extensive consumption of zooplankton, thereby exacerbating algal blooms. Bottom-feeding can also cause the re-suspension of sediment and up-rooting of submerged aquatic plants. These impacts can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton.



Stephen Moore

Objective: over the duration of the plan Auckland Council will sustainably control brown bullhead catfish (*Ameiurus nebulosus*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of brown bullhead catfish, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release from containment any brown bullhead catfish in any part of the Auckland region.
2. No person may fish for brown bullhead catfish in High Conservation Value water bodies or anywhere in the Hauraki Gulf Controlled Area.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade. Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest, its release from containment, and fishing in High Conservation Value water bodies.
Education and advice	Provide information and advice on responsible fishing. Provide information and advice on identification, impacts and control of the pest animal.

7.7.3.5 Canadian goose (*Branta canadensis*)

Canadian geese are large (4.5-5.5kg) light brown birds with black heads and white chinstraps. They can be very aggressive towards other wildlife; potential impacts on co-occurring bird species can include displacement from territories and mortality. Goose grazing on pastures can be at levels of appreciable economic impact but tend to be concentrated heavily on farms with the most suitable habitat. Canadian geese pose a high risk of bird strike at airports due to their substantial body size. Faecal contamination of water bodies, pasture and crops with pathogens such as *Salmonella* and *Escherichia coli*, including antibiotic-resistant strains, may pose a risk to human health.



Objective: over the duration of the plan Auckland Council will sustainably control Canadian geese (*Branta canadensis*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of Canadian geese, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any Canadian goose within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any Canadian goose within the Auckland region.
3. No person shall sell or offer for sale any Canadian goose within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest animal.
Education and advice	Provide information and advice on identification, impacts and control of the pest animal.

7.7.3.6 Pest cat (*Felis catus*)

Pest cats are small-bodied carnivorous mammals (2-7kg as adults) with variable coat colours. Adults are active both day and night, switching activity patterns in response to opportunity, favouring small terrestrial mammals (rodents and rabbits) but prey-switching to take a wide variety of other taxa (birds, bats, reptiles, amphibians, invertebrates) according to their availability. Predation can reduce prey abundance, affect assemblage structure among prey species, and affect non-prey species and ecosystem processes such as pollination and seed dispersal via food web cascades. Cat predation is considered to be one of the main threats to tūturiwhatu / New Zealand dotterels, and juvenile kiwi and burrowing seabirds such as tāiko / black petrel and tīfī / Cook's petrels are also at risk. Cats can also facilitate disease and parasite transmission to native species, particularly *Toxoplasma gondii*, which is dependent on cats to complete its lifecycle. Fatal toxoplasmosis has been reported in tutumairekurai / Hector's dolphins, terehu / bottle nose dolphins, kekeno / NZ fur seals, kiwi, kererū and kākā.



Landcare Research

Objective: over the duration of the plan Auckland Council will sustainably control pest cats³¹ (*Felis catus*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going management of pest cats, to reduce their impacts on values and spread to other properties.

Rules:

- 1) No person shall abandon, or cause to be abandoned, any cat within the Auckland region.
- 2) No person shall feed any cat on any park that contains a Significant Ecological Area within the Auckland region.
- 3) Any owner of a cat must ensure their cat does not enter a site that is being actively managed as part of national population management for a threatened species vulnerable to cat predation, as defined in Figure 9.

³¹ Pest cat means any cat within the Tāmaki Makaurau / Auckland region that is not:

- i. Micro-chipped; and
- ii. Registered on the New Zealand Companion Animal Register

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 2 and 3 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Service delivery (control)	Control pest cats within Biodiversity Focus Areas as part of integrated management of those areas to levels that protect the biodiversity values of those areas. Control any cat at sites being managed as part of national threatened species recovery programmes to levels that protect that threatened species at that site as part of national management of the threatened species meta-population.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.
Education and advice	Provide information and advice on responsible pet ownership (particularly de-sexing, micro-chipping, home range size and containment options) as well as identification, impacts and control of the pest animal, particularly to communities near Biodiversity Focus Areas. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas and threatened species populations.
Enforcement	Enforce prohibitions on cat colonies and abandonment.

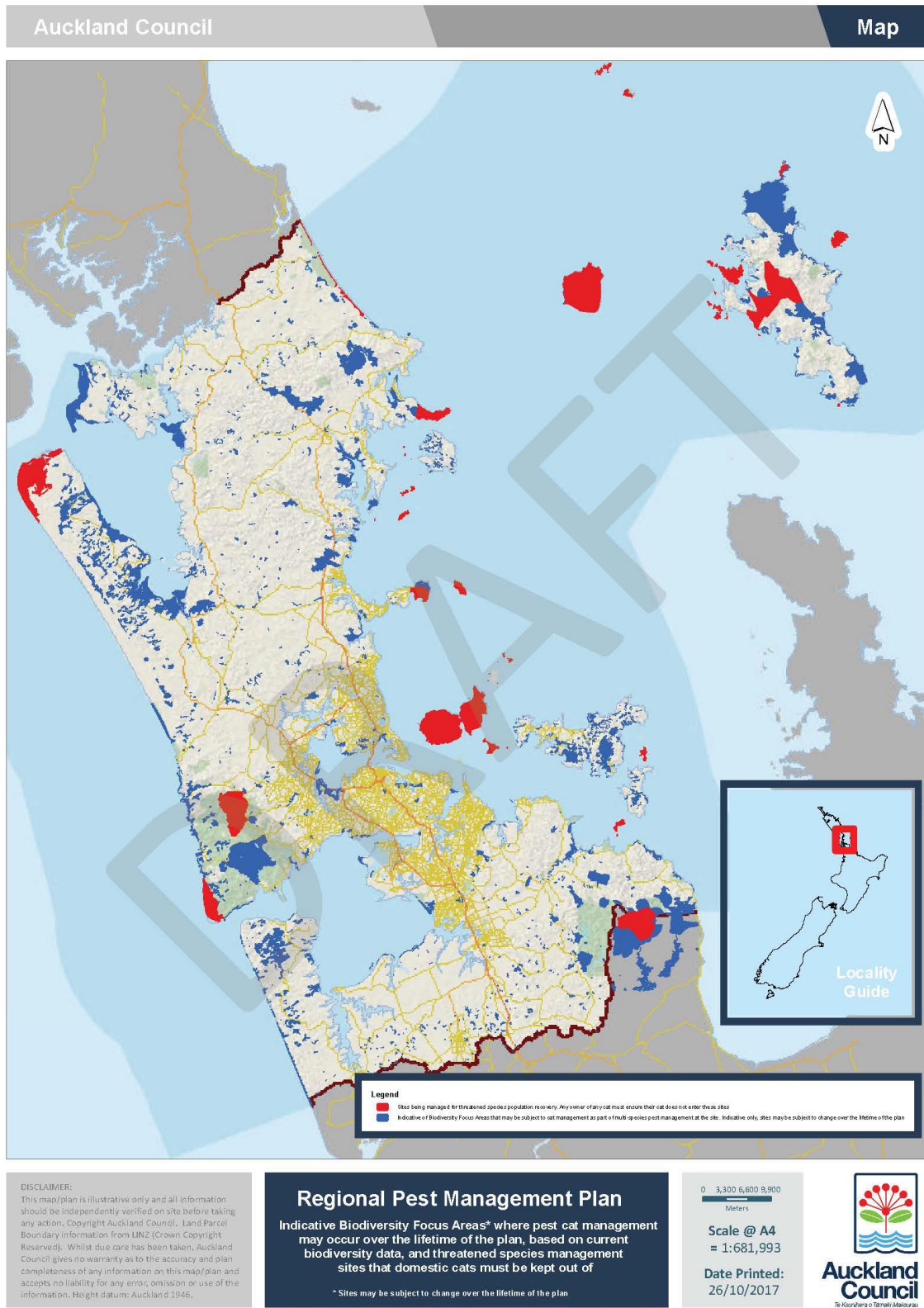


Figure 9. Specified geographic areas that owners must prevent cats from entering because these sites are being managed to protect threatened species populations (red) and indicative Biodiversity Focus Areas where pest cats may be managed as part of multi-species pest control for biodiversity protection (blue). Blue sites are indicative only and may be subject to change over the lifetime of the plan.

7.7.3.7 Darwin’s ant (*Doleromyrma darwiniana*)

Darwin’s ants are small omnivorous insects (2-5mm) with dark brown heads and light brown bodies, which give off a strong odour when crushed. Impacts are expected to be similar to Argentine ants. Their preference for sweet foods may lead to the invasion of vineyards and orchards, and facilitate high densities of scale insects and aphids by tending them for honeydew, further impacting plant health. They are also likely to compete strongly with other native species that feed on honeydew or nectar. Predation by Darwin’s ants has been implicated as a factor in the failure of the boneseed leaf roller moth biocontrol agent, thereby indirectly facilitating the spread of the pest plant.



Richard Toft, Entocol

Objective: over the duration of the plan Auckland Council will sustainably control Darwin’s ants (*Doleromyrma darwiniana*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide education and advice for control of Darwin’s ants, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any Darwin’s ant within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any Darwin’s ant within the Auckland region.
3. No person shall sell or offer for sale any Darwin’s ant within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidentally spread the pest animal to new locations.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.8 Eastern rosella (*Platycercus eximius*)

Eastern rosella are brightly coloured parakeets approximately 30cm long and 90-120g in weight; with red heads, white cheeks and mostly yellow/green bodies. They are seed predators, consuming seeds from a range of native plants including harakeke, totara and pōhutukawa, and nectar from puriri and other native plants. They are also implicated as a reservoir for transmission of Beak and Feather Disease Virus to native parrot species. This is likely to be the most important ecological impact, and is likely to pose a higher risk as rosellas increase in range and population density.



Objective: over the duration of the plan Auckland Council will sustainably control eastern rosella (*Platycercus eximius*) outside of containment to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of eastern rosella, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any eastern rosella within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any eastern rosella within the Auckland region.
3. No person shall sell or offer for sale any eastern rosella within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.7.3.9 Eastern water dragon (*Intellagama lesueurii* syn. *Physignathus lesueurii lesueurii*)

Eastern water dragons are large lizards with brownish-grey bodies and black stripes along the ridge of the back, tail and limbs. Males are up to 1kg in weight and 80-90cm long. Females are shorter and lighter. They are likely to prey on a wide range of small terrestrial, freshwater and inter-tidal fauna, including insects, crabs, molluscs and crustaceans, and may impact upon native plants via herbivory. There is further potential to spread diseases such as *Salmonella* to native reptiles.



Margaret Stanley

Objective: over the duration of the plan Auckland Council will sustainably control eastern water dragons (*Intellagama lesueurii*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of eastern water dragons, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any eastern water dragon within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any eastern water dragon within the Auckland region.
3. No person shall sell or offer for sale any eastern water dragon within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.7.3.10 Feral pig (*Sus scrofa*)

Feral pigs are large (sometimes over 300kg), black to brown, stoutly built mammals with large heads and well-developed canine teeth. They actively scavenge during the day and will overturn large areas of soil to consume soil invertebrates, especially earthworms. In invaded ecosystems, they prey on and compete with native species, alter nutrient cycles, damage vegetation and soil, facilitate the spread of weeds and plant diseases, including kauri dieback disease. They are of high risk to the primary production industry as vectors of bovine tuberculosis. International trading options may be reduced if the Aotearoa / New Zealand feral pig population became a reservoir for swine fever or foot and mouth disease. Feral pig attacks on humans are rare but could be potentially fatal.



Landcare Research

Objective: over the duration of the plan Auckland Council will sustainably control feral pigs³² (*Sus scrofa*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of feral pigs, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall distribute or release (or cause to be released or distributed), any feral pig within the Auckland region.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

³² A feral pig includes any pig that is not:
 (a) held behind effective fences or otherwise constrained; and
 (b) identified by ear tag

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control, as well as responsible hunting practices and containment of domestic pigs.
Enforcement	Enforce prohibition on abandonment.
Service delivery	Discretion to undertake feral pig control anywhere in region if required to protect Biodiversity Focus Areas.

7.7.3.11 Galah (*Eolophus roseicapillus*)

Galahs are colourful parrots weighing up to 325g, with white crowns, grey wings and pink chests. They are ground feeding grainivores, but will also eat buds, flowers, berries and insect larvae. They may compete with native hole-nesting birds for nest cavities and act as reservoirs or vectors of wildlife diseases and human pathogens. Galahs are a major pest of grain crops in Australia. The impact on grain crops is likely to worsen if galah populations increased in Tāmaki Makaurau / Auckland.



Objective: over the duration of the plan Auckland Council will sustainably control galahs (*Eolophus roseicapillus*) outside of containment to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of galahs, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any galah within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any galah within the Auckland region.
3. No person shall sell or offer for sale any galah within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

7.7.3.12 *Gambusia (Gambusia affinis)*

Gambusia are small (3.5-6cm), silver fish which occupy shallow margins of still or slow moving water bodies including lakes, wetlands, ponds and streams. *Gambusia* prey on zooplankton, eggs and larvae of fish, and a diverse range of aquatic and terrestrial macroinvertebrates. This can induce avoidance behaviours such as changes in habitat use in a range of native fish and crustaceans. Their presence in wai māori / freshwater bodies can contribute to poor water clarity by altering patterns of nutrient cycling via the consumption of zooplankton, subsequently exacerbating algal blooms.



Stephen Moore

Objective: over the duration of the plan Auckland Council will sustainably control *Gambusia (Gambusia affinis)* to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of gambusia, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release from containment any gambusia in any part of the Auckland region.
2. No person may fish for gambusia in High Conservation Value water bodies or anywhere in the Hauraki Gulf Controlled Area.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade. Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest, its release from containment, and fishing.
Education and advice	Provide information and advice on responsible fishing. Provide information and advice on identification, impacts and control of the pest animal.

7.7.3.13 Pest goldfish (*Carassius auratus*)

Pest goldfish are small-medium sized (100-400g) fish which may vary in colour; from red-gold, bronze-black through to olive-green. Pest goldfish are generalist feeders consuming aquatic plants, algae, insects, crustaceans, small fish and fish eggs; potentially competing with native fish for resources. The predation of zooplankton, up-rooting of aquatic plants and re-suspension of nutrients and sediments into the water column may contribute to reduced water clarity and algal blooms in invaded freshwater ecosystems.



Objective: over the duration of the plan Auckland Council will sustainably control pest goldfish³³ (*Carassius auratus*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of goldfish, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release goldfish (*Carassius auratus*) from containment within the Auckland region.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.
Enforcement	Enforce prohibition of release from secure containment.

³³ A pest goldfish includes any goldfish that is not held in effective containment or otherwise constrained in an enclosed water body on private land.

7.7.3.14 Hedgehog (*Erinaceus europaeus*)

Hedgehogs are small brown to grey, insectivorous mammals with spiny coats. They are voracious nocturnal predators, consuming invertebrates, ground nesting birds' eggs and small reptiles. They also vector a wide variety of human, bird, pet and agricultural diseases, including bovine TB.



Department of Conservation

Objective: over the duration of the plan Auckland Council will sustainably control hedgehogs (*Erinaceus europaeus*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of hedgehogs, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any hedgehog within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any hedgehog within the Auckland region.
3. No person shall sell or offer for sale any hedgehog within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas, or in defendable or strategic geographic locations such as peninsulas, islands and corridors.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.15 Indian ring-necked parakeet (*Psittacula krameri*)

Indian ring-necked parakeets are green parrots (38-42cm long) with a red band (males) or an indistinct emerald band (females) encircling their necks. They are highly aggressive to other species, including native birds and small mammals such as bats, and have the potential to competitively exclude other cavity-nesting species through eviction, early occupancy and successful defence of cavities. They pose further risk to native parrots as potential vectors of disease, including Beak and Feather Disease Virus. Overseas, Indian ring-necked parakeets are considered primary production pests and can cause economically significant damage to grain crops such as maize and may also attack fruit in orchards such as citrus, guava and grapes.



Objective: over the duration of the plan Auckland Council will sustainably control Indian ring-necked parakeets (*Psittacula krameri*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of Indian ring-necked parakeets, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any Indian ring-necked parakeet within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any Indian ring-necked parakeet within the Auckland region.
3. No person shall sell or offer for sale any Indian ring-necked parakeet within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.16 Koi carp (*Cyprinus carpio*)

Koi carp are an ornamental strain of common carp measuring up to 700mm long which are variable in colour but can be distinguished by the presence of a pair of barbels. Koi carp can negatively impact submerged aquatic plant communities via plant uprooting and reduced light penetration, and alter invertebrate communities via predation and habitat modification. Waterfowl, native fish and kōura are also at risk from increased water turbidity, due to koi carp stirring sediment when feeding, and resource competition. Invasion may contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton.



Stephen Moore

Objective: over the duration of the plan Auckland Council will sustainably control koi carp (*Cyprinus carpio*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of koi carp, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release from containment any koi carp in any part of the Auckland region.
2. No person may fish koi carp in High Conservation Value water bodies or anywhere in the Hauraki Gulf Controlled Area.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade. Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest, its release from containment, and fishing in High Conservation Value water bodies.
Education and advice	Provide information and advice on responsible fishing. Provide information and advice on identification, impacts and control of the pest animal.

7.7.3.17 Magpie (*Gymnorhina sp.*)

Magpies are black and white piebald birds of medium size (up to 350g) with red eyes. They compete aggressively for territory in groups, restricting the movement of native birds in rural landscapes. They prey upon threatened species such as lizards and may vector diseases to native birds. Aggressive swooping attacks can cause road strike and will sometimes wound pedestrians and pets in parkland and other open spaces during breeding season.



Objective: over the duration of the plan Auckland Council will sustainably control magpies (*Gymnorhina sp.*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of magpies, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any magpie within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any magpie within the Auckland region.
3. No person shall sell or offer for sale any magpie within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.18 Monk parakeet (*Myiopsitta monachus*)

Also known as: Quaker parrots

Monk parakeets are medium sized greenish-grey parrots weighing between 90-120g. They will feed on vegetables, orchard fruit, and grain crops (e.g. maize and sunflower seeds) resulting in substantial crop losses and control efforts overseas. Native birds may be at risk via competition for food and disease transmission, and native vegetation may be impacted via feeding damage and herbivory. Monk parakeets will build chambered nests that may exceed 1000kg; nesting on power line poles, satellite dishes and other utility structures resulting in power outages, fires, and considerable time and money spent removing nests and repairing damage.



Murray Foubister

Objective: over the duration of the plan Auckland Council will sustainably control monk parakeets (*Myiopsitta monachus*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of monk parakeets, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any monk parakeet within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any monk parakeet within the Auckland region.
3. No person shall sell or offer for sale any monk parakeet within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.19 Mouse (*Mus musculus*)

Mice are small grey-brown or black rodent omnivores which can be found in almost every habitat type. They directly impact native reptile and invertebrate populations through predation but also indirectly, as a food source facilitating other invasive predators. Excessive consumption of seeds by mice can greatly reduce native seedling recruitment and potentially modify plant communities in invaded ecosystems. Mice are also particularly damaging to cereal production and the food services industry, attacking and contaminating stored produce at all stages.



Nga Manu Images

Objective: over the duration of the plan Auckland Council will sustainably control mice (*Mus musculus*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of mice, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall abandon, or cause to be abandoned, any mouse within the Auckland region.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas, or in defendable or strategic geographic locations such as peninsulas, islands and corridors.
Enforcement	Enforce restrictions on abandonment of the pest.

7.7.3.20 Mustelid: ferrets (*Mustela furo*), stoats (*Mustela erminea*), and weasels (*Mustela nivalis*)

Ferrets, stoats and weasels belong to a group of animals known as mustelids. Ferrets are the largest of the mustelids (600-1,300g) and can be distinguished by a dark 'mask' across their eyes. Stoats are smaller (200–350g) with orange-brown coats and a black tip at end of the tail. Weasels are the smallest (60–120g), with orange-brown coats and a uniformly brown tail.

Mustelids are bold generalist predators and can have devastating impacts on native birds, amphibians, reptiles, molluscs, and insects. Ferrets mostly threaten ground nesting birds while stoats and weasels have contributed to the decline and extinction of many forest birds, particularly cavity nesting species. Mustelids also vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).



Stoat, Department of Conservation

Objective: over the duration of the plan Auckland Council will sustainably control mustelids (*Mustela furo*, *Mustela erminea*, *Mustela nivalis*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of mustelids, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any mustelid within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any mustelid within the Auckland region.
3. No person shall sell or offer for sale any mustelid within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas, or in defensible or strategic geographic locations such as peninsulas, islands and corridors.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Service delivery	Discretion to undertake control anywhere in region if required to protect Biodiversity Focus Areas.

7.7.3.21 Myna (*Acridotheres tristis*)

Myna are small (100-140g) brown, black and white birds with a yellow patch behind the eye. They out-compete native birds for food, territory and nests; potentially affecting native cavity nesting species such as native parrots. Sometimes they will even attack other bird’s nests, destroying eggs and young. Feeding can damage native fruit without dispersing seed and predation can threaten vulnerable insects. Birds carry mites, lice, flies, worms, microbial diseases which may be transmitted to humans and other animals.



Objective: over the duration of the plan Auckland Council will sustainably control mynas (*Acridotheres tristis*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of mynas, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any myna within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any myna within the Auckland region.
3. No person shall sell or offer for sale any myna within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.22 Perch (*Perca fluviatilis*)

Perch are olive green-grey fish (< 1kg) with six or more dark vertical bands across their sides. They can contribute to poor water clarity via the consumption of zooplankton, thereby exacerbating algal blooms. Feeding habits can also cause the re-suspension of sediment and up-rooting of submerged aquatic plants. Combined effects of zooplankton feeding and bottom-feeding habits can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton. Perch presence has shown to reduce the abundance of common bullies, and impacts are likely on other native fish such as tuna (eels), inanga, galaxiids and smelt through predation, aggressive attacks and competition for prey.



Objective: over the duration of the plan Auckland Council will sustainably control perch (*Perca fluviatilis*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of perch, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release from containment any perch in any part of the Auckland region.
2. No person may fish for perch in any High Conservation Value water body in the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade. Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest, its release from containment, and fishing in High Conservation Value water bodies.
Education and advice	Provide information and advice on responsible fishing. Provide information and advice on identification, impacts and control of the pest animal.

7.7.3.23 Plague skink (*Lampropholis delicata*)

Also known as: rainbow skinks

Plague skinks are small brown lizards with an iridescent rainbow sheen to their scales visible under bright light. The skinks are generalist predators of a wide variety of invertebrates and are prevalent in suburban gardens, parks, disturbed sites, urban areas, open rocky land, farmland and scrub. They have higher reproductive rates and reach maturation faster than native skinks, reaching densities of 300-400 per 100m². Such high population densities can result in plague skinks out-competing native reptiles, particularly native copper skinks.



Objective: over the duration of the plan Auckland Council will sustainably control plague skinks (*Lampropholis delicata*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of plague skinks, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any plague skink within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any plague skink within the Auckland region.
3. No person shall sell or offer for sale any plague skink within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental spread of the pest animal to new locations.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.1 Possum (*Trichosurus vulpecula*): remainder of region (urban mainland)

Possums are small marsupials with thick bushy tails, weighing between 1.4-6.4kg and can be grey, brown or black in colour. Possums will prey on eggs and chicks of various threatened birds, including kōkako, and compete for nest sites with hole-nesting birds, such as kiwi and parakeets. Heavy plant browsing by possums can suppress or eliminate preferred plants by selective browsing. This can alter the vegetation composition in invaded ecosystems and ultimately lead to the collapse of palatable canopy species, such as Northern rātā. Possums are also considered serious agricultural pests. They are vectors for bovine TB in cattle and compete directly with stock for pasture.



Nga Manu Images

Objective: over the duration of the plan Auckland Council will sustainable control possums (*Trichosurus vulpecula*) not covered by other management programmes elsewhere in this plan to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of possums, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any possum within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any possum within the Auckland region.
3. No person shall sell or offer for sale any possum within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas, or in defendable or strategic geographic locations such as peninsulas, islands and corridors.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.2 Rabbits and hares (*Oryctolagus cuniculus*, *Lepus europaeus*)

Rabbits and hares are small terrestrial herbivorous mammals. Rabbits are about the size of a small domestic cat, often grey-brown in colour. Hares are larger than rabbits and have black tipped ears. They will heavily browse native seedlings and low-growing native plants in open habitats, such as sand dunes and grasslands; suppressing threatened species and altering vegetation compositions. As prey species, they indirectly contribute to increased predation pressure on native species by supporting populations of introduced predators, including pest cats and mustelids. In agricultural systems, excessive browsing can cause major damage to pastures, with 7-10 rabbits estimated to eat as much as one sheep.



Landcare Research

Objective: over the duration of the plan Auckland Council will sustainably manage pest rabbits³⁴ and hares (*Oryctolagus cuniculus*, *Lepus europaeus*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going management of pest rabbits, to reduce their impacts on values and spread to other properties.

Rules:

- 1) No person shall abandon, or cause to be abandoned, any rabbit or hare within the Auckland region.
- 2) All owners or occupiers of any land within the Auckland region (Owner A) must destroy all rabbits on that land to or below Level 3 on the Modified McLean Scale within 500m of any property boundary that is adjacent to or nearby land where that land owner or occupier (Owner B) is destroying all rabbits on that land to or below Level 4 on the Modified McLean Scale within 500m of their property boundary with Owner A's land

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

Rule 2 is a good neighbour rule.

³⁴ Pest rabbit means any rabbit within the Auckland region that is not:

- i. One of the following breeds: New Zealand white, angora, Flemish giant, rex, chinchilla, Californian, Netherland dwarf, Dutch, tan, and silver fox.

Principal measures of achievement:

Service delivery (control)	Facilitate rabbit calicivirus biocontrol within the region.
Education and advice	<p>Provide information and advice on identification, impacts and control of the pest animal.</p> <p>Provide advice and support to community groups undertaking pest animal control or revegetation planting, with priority given to activity in or around Biodiversity Focus Areas, or in defensible or strategic geographic locations such as peninsulas, islands and corridors.</p> <p>Provide information and advice on responsible pet ownership (including identity of breeds exempt from pest status).</p>
Enforcement	<p>Enforce restriction on the sale, breeding, distribution and exhibition of the pest and prohibition on release from containment.</p> <p>Enforce good neighbour rule.</p>
Requirement to act	Landowners to undertake rabbit control in accordance with good neighbour rule.

Level on Modified McLean Scale (2012)	Visual evidence of rabbit infestation
1	No sign found. No rabbits seen.
2	Very infrequent sign present. Unlikely to see rabbits.
3	Pellet heaps spaced 10m or more apart on average. Odd rabbits seen; sign and some pellet heaps showing up.
4	Pellet heaps spaced between 5m and 10m apart on average. Pockets of rabbits; sign and fresh burrows very noticeable
5	Pellet heaps spaced 5m or less apart on average. Infestation spreading out from heavy pockets.
6	Sign very frequent with pellet heaps often less than 5m apart over the whole area. Rabbits may be seen over the whole area.
7	Sign very frequent with 2-3 pellet heaps often less than 5m apart over the whole area. Rabbits may be seen in large numbers over the whole area.
8	Sign very frequent with 3 or more pellet heaps often less than 5m apart over the whole area. Rabbits likely to be seen in large numbers over the whole area.

7.7.3.3 Rainbow lorikeet (*Trichoglossus moluccanus*)

Rainbow lorikeets are brightly coloured long-tailed parrots (75-157g); with blue heads, green wings and orange-yellow breasts. They are potential reservoirs for transmission of parrot-specific diseases to native parrots. Beak and feather disease virus has been recorded in captive rainbow lorikeets in Aotearoa / New Zealand. They aggressively out-compete native nectar feeding avifauna including tūī, kōmako-bellbird and hihi. These combined effects make them a threat to Tikapa Moana o Hauraki / Hauraki Gulf islands habitats such as Hauturu / Little Barrier Island and Tiritiri Matangi Island. Unwanted Organism managed by the Department of Conservation and Ministry of Primary Industries as a National Interest Pest Response.



Objective: over the duration of the plan Auckland Council will sustainably control rainbow lorikeet (*Trichoglossus moluccanus*) outside of containment to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of rainbow lorikeets, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any rainbow lorikeet within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any rainbow lorikeet within the Auckland region.
3. No person shall sell or offer for sale any rainbow lorikeet within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.

7.7.3.4 Rats: ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), kiore (*R. exulans*)

Rats are small black, grey or brown mammals with naked tails. Rats occupy a wide range of terrestrial habitats throughout Aotearoa / New Zealand. Rats are generalist omnivores, their diet includes seed predation, and preying on small animals such as invertebrates, reptiles, amphibians and juvenile birds. They compete with native birds for nests and burrows, and have been implicated in the decline of a number of threatened birds, particularly seabirds. Excessive consumption of seeds by rats can greatly reduce native seedling recruitment and ultimately modify plant communities in invaded ecosystems. Rats are particularly damaging to cereal production, stored products and the food services industry, and are a potential disease vector to humans.



Ship rat, Landcare Research

Objective: over the duration of the plan Auckland Council will sustainably manage rats (*Rattus rattus*, *R. norvegicus*, *R. exulans*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of pest rats, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall distribute or release (or cause to be released or distributed), any rat within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas, or in defendable or strategic geographic locations such as peninsulas, islands and corridors.
Enforcement	Enforce prohibition on the breeding, exhibition, sale and distribution of the pest.
Service delivery	Discretion to undertake control anywhere in region if required to protect Biodiversity Focus Areas.

7.7.3.5 Red-eared slider (*Trachemys scripta elegans*, *T. scripta scripta*, *T. scripta troostii*)

Red-eared sliders are turtles with olive to brown carapaces patterned with yellow spots or stripes, and a distinctive red stripe behind each eye. They inhabit a wide variety of still or slow-moving water bodies including ponds, lakes, wetlands, rivers and drainage ditches. As opportunistic omnivores, potential impacts via herbivory and the predation of zooplankton, molluscs, fish, frogs, crustaceans, insects, gastropods, birds and small reptiles are likely. There are further risks to native reptiles and amphibians via disease transmission. Wetland bird reproductive success may be impacted through the displacement of parent birds from nests to use as basking sites. Feeding habits and associated activities are likely to result in food-web and ecosystem process impacts, and reduced water quality in invaded habitats.



© Rod Morris, Department of Conservation

Objective: over the duration of the plan Auckland Council will sustainably control red-eared sliders and related sub-species (*Trachemys scripta elegans*, *T. scripta scripta*, *T. scripta troostii*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of red-eared sliders, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any red-eared slider within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any red-eared slider within the Auckland region.
3. No person shall sell or offer for sale any red-eared slider within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.

7.7.3.6 Rudd (*Scardinius erythrophthalmus*)

Rudd are fish with bright red fins, usually 200-250mm as adults, but can be larger. Extensive herbivory can negatively affect aquatic plant growth, survival and community composition, sometimes leading to aquatic plant collapse in lakes. Some high impact aquatic weeds, including hornwort, are selectively avoided by rudd and may thus be further competitively advantaged. They may compete with native fish such as smelt and common bullies for invertebrate prey. Facilitation of nutrient and sediment suspension in the water column and predation of zooplankton by rudd can contribute to regime shifting of lakes from clear to turbid states.



Stephen Moore

Objective: over the duration of the plan Auckland Council will sustainably control rudd (*Scardinius erythrophthalmus*) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of rudd, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release from containment any rudd in any part of the Auckland region.
2. No person may fish for rudd in any High Conservation Value water body in the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade. Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest, its release from containment, and fishing.
Education and advice	Provide information and advice on responsible fishing. Provide information and advice on identification, impacts and control of the pest animal.

7.7.3.7 Shingleback lizard (*Tiliqua rugosa*)

Shingleback lizards are reptiles up to 40cm long with large heads, short blunt tails and dark blue tongues. They are slow-moving; therefore predation impacts are likely to be confined mainly to some native invertebrates. The potential for disease transmission to other reptiles may be the most important risk.



Margaret Stanley

Objective: over the duration of the plan Auckland Council will sustainably control pest shingleback lizards (*Tiliqua rugosa*³⁵) to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of shingleback lizards, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release (or cause to be released), any shingleback lizard within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Enforcement	Enforce restrictions on the release of individuals from secure containment. Sale and distribution is still allowed within the region, provided animals are maintained in secure containment.
Education and advice	Provide information and advice on responsible pet ownership as well as identification and impacts of the pest animal.

³⁵ A pest shingleback lizard is one that is not effectively held in secure containment.

7.7.3.8 Snake-neck turtle (*Chelodina longicollis*)

Snake-neck turtles are medium-sized turtles with characteristically long necks (approximately 60% of the shell length). They are likely to predate on a range of zooplankton, aquatic and terrestrial invertebrates, amphibians, carrion, fish and crustaceans. Snake-neck turtles can dig nesting burrows in the ground which may disturb gardens, golf courses, gravel roads and other recreational land. They are carriers of *Salmonella* and risk transmitting the disease to native reptiles and humans.



Objective: over the duration of the plan Auckland Council will sustainably control snake-neck turtles (*Chelodina longicollis*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of snake-neck turtles, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any snake-neck turtle within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any snake-neck turtle within the Auckland region.
3. No person shall sell or offer for sale any snake-neck turtle within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest.
Education and advice	Provide information and advice on responsible pet ownership as well as identification, impacts and control of the pest animal.

7.7.3.9 Tench (*Tinca tinca*)

Tench are olive green-bronze fish (30-70cm), distinguished by red eyes, two barbels, large soft-rayed fins and copious mucous. They can contribute to poor water clarity via the consumption of zooplankton, thereby exacerbating algal blooms. Bottom-feeding also causes the re-suspension of sediment and up-rooting of submerged macrophytes. These combined effects can contribute to lakes 'flipping' to an alternative stable state devoid of vegetation, with turbid water dominated by phytoplankton. Indirect effects to native fish species diversity via transmission of parasites, reduced water clarity, and/or competition for invertebrate prey are also likely.



Objective: over the duration of the plan Auckland Council will sustainably control tench (*Tinca tinca*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of tench, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall release from containment any tench in any part of the Auckland region.
2. No person may fish for tench in any High Conservation Value water body in the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

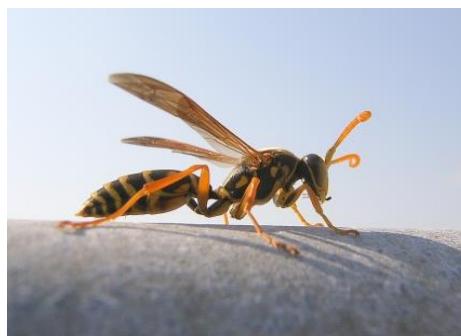
The purpose of rule 2 is to regulate activities that may affect measures taken to implement the plan.

Principal measures of achievement:

Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance of pet shops, markets and online pet trade.</p> <p>Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new incursions and status of existing or historical sites.</p>
Enforcement	<p>Enforce restrictions on the sale, breeding, distribution and exhibition of the pest, its release from containment, and fishing.</p>
Education and advice	<p>Provide information and advice on responsible fishing.</p> <p>Provide information and advice on identification, impacts and control of the pest animal.</p>

7.7.3.10 Wasp: German (*Vespula germanica*), common (*V. vulgaris*), Asian paper (*Polistes chinensis*), Australian paper (*P. humilis*)

Vespula and paper wasps are social insects that build intricate nests out of fiber. Paper wasps have thinner abdomens than *Vespula* wasps and can be distinguished by their habit of flying with legs hanging down. Both demonstrate aggressive behaviour and pose a risk to human health; stings can require medical attention and sometimes cause death from anaphylactic shock in extreme cases. They are serious primary production pests; attacking grazing livestock and workers, causing forestry operations to stop, and robbing beehives of honey in the apiculture industry. In natural ecosystems, wasps compete with native birds and invertebrates that also consume honeydew, changing the behaviour of native honeydew feeders. They prey on a range of invertebrates, including native species. Predation of many invertebrate species can be so high that the probability of individuals surviving a season can be close to zero.



Asian paper wasp

Objective: over the duration of the plan Auckland Council will sustainably control wasps (*Vespula vulgaris*, *V. germanica*, *Polistes chinensis*, *P. humilis*) to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide education and advice for control of wasps, to reduce their impacts on values and spread to other properties.

Rules:

1. No person shall cause to breed any wasp within the Auckland region.
2. No person shall distribute or release (or cause to be released or distributed), any wasp within the Auckland region.
3. No person shall sell or offer for sale any wasp within the Auckland region.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rules 1, 2 and 3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

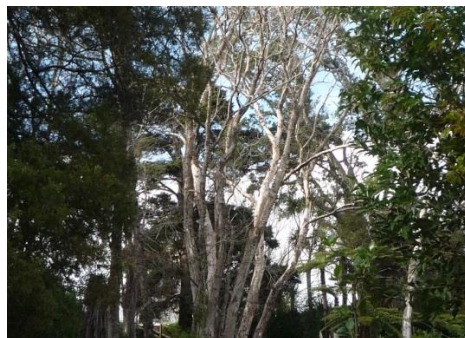
Principal measures of achievement:

Education and advice	Provide information and advice on pest animal identification, impacts and control. Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Biodiversity Focus Areas.
Research	Collaborate with other parties to facilitate research and development of improved control tools.
Enforcement	Enforce prohibition on the breeding, exhibition, sale and distribution of the pest.

7.7.4 Te mau tonu o te patu kitakita urutā / Sustained Control pest pathogens

7.7.4.1 Dutch elm disease (*Ophiostoma novo-ulmi*)

Dutch elm disease is a fungal pathogen, infecting elm trees (*Ulmus* spp. and *Zelkova* spp.) spread predominantly by elm bark beetles (*Scolytus multistriatus*) but also through human-mediated spread of elm wood. The fungus causes mortality of infected trees, sometimes as rapidly as within a few days. Tāmaki Makaurau / Auckland is estimated to have approximately 30,000 elm trees with a potential for impacts on iconic trees in parks, as well as elms in private gardens.



Objective: over the duration of the plan Auckland Council will sustainably control Dutch elm disease (*Ophiostoma novo-ulmi*) to prevent adverse effects on economic well-being, the environment, human health and enjoyment of the natural environment.

Intermediate outcome: to provide for on-going control of Dutch elm disease, to reduce its impacts on values and spread to other properties.

Rules:

1. No person shall distribute, move or release Dutch elm disease in Auckland.
2. No person shall move any untreated Dutch elm plant material within the Auckland region.
3. All owners or occupiers of land in the Auckland region must destroy all elm plants on that land that have been identified as being infected with Dutch elm disease, when instructed by an authorised person.
4. Where Auckland Council has instructed an owner or occupier of land to destroy Dutch elm plants under rule 3, the owner or occupier must mulch the Dutch elm material and the Dutch elm material must not be moved further than 500m from the site of the parent tree for at least three months after mulching
5. Any vehicle, machinery or other equipment used in connection with untreated Dutch elm plant material must be cleaned with any of the following or equivalent disinfectants, Sterigene, 5% bleach, or 80% ethanol or methylated spirits, prior to removal from the site.
6. No person shall store elm wood for firewood or any other purpose within the Auckland region.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

The purpose of rule 3 is to require the destruction of goods if the goods may contain or harbour the pest or otherwise pose a risk of spreading the pest.

The purpose of rules 4 and 6 is to regulate the use or disposal of organic material.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of known sites, to determine the presence of new incursions and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest pathogen. Enforce landowner obligation to remove infected trees and associated hygiene measures. Enforce restriction on elm firewood.
Education and advice	Provide information and advice on identification and impacts of the pest pathogen, and how to avoid spreading the pest.
Requirement to act	Land owners or occupiers to destroy plants when instructed, and comply with hygiene requirements.

7.7.4.2 Kauri dieback disease (*Phytophthora agathidicida*)

Symptomatic kauri trees infected with kauri dieback disease exhibit root and collar rot, resin-exuding lesions, yellowing of leaf tissue, canopy thinning and mortality. Human-mediated movement of contaminated soil is the main cause of jump-dispersal between kauri forests but it can be spread locally by feral pigs. The disease can be incurably fatal to kauri trees of all ages and, in the absence of effective treatment, has mid to long-term potential to cause functional extinction of kauri as a canopy species. Kauri are ecosystem engineers, with profound effects on soil chemistry, and associated plant and animal communities. Consequently there is a potential for catastrophic loss of associated unique ecosystems.



Objective: over the duration of the plan Auckland Council will sustainably control kauri dieback (*Phytophthora agathidicida*) to prevent adverse effects on economic well-being, the environment, the enjoyment of natural environments and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of kauri dieback, to reduce its impacts on values and spread to other locations.

Rules:

1. No person shall distribute, move or release kauri dieback disease in Auckland.
2. No person shall move any untreated kauri plant material, soil, or goods contaminated with soil, into or out of an area within three times the drip line of any New Zealand kauri tree, unless the purpose of the movement is to dispose of the material at an Auckland Council approved containment landfill³⁶.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 2 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

³⁶ Approved at time of writing:

3. Ridge Road Quarries, Ridge Road, Bombay (accepts soil only)
4. EnviroWaste Hampton Downs Landfill, 136 Hampton Downs Road, RD2, Te Kauwhata (accepts soil and organic material).

Other facilities may be approved over the lifetime of the plan. Updates, if any, to the list of approved landfills may be obtained on enquiry to Auckland Council.

Principal measures of achievement:

Service delivery	<p>Installation and maintenance of phytosanitary stations at key exit and entry points on parkland, to minimise human-mediated spread of disease.</p> <p>Upgrade and maintain walking tracks on parkland, to minimise human-mediated spread of disease.</p> <p>Manage known vectors, including feral pigs.</p>
Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance to determine the presence of new incursions and status of existing or historical sites.</p>
Enforcement	<p>Enforce restrictions on the sale, propagation, distribution and exhibition of the pest pathogen.</p> <p>Enforce restrictions on movement of kauri material, soil and contaminated goods into and out of drip line zones around kauri trees.</p>
Education and advice	<p>Provide information and advice on identification, impacts and how to prevent spread of the pest pathogen, including mitigating impacts of earthworks and treeworks.</p>
Requirement to act	<p>All persons to take practicable steps to avoid movement and distribution of kauri dieback e.g. ensure all footwear and other equipment are free of soil when exiting areas known to be infected with kauri dieback disease.</p> <p>All persons moving untreated kauri plant material, soil, or goods contaminated with soil, into or out of an area within three times the drip line of any New Zealand kauri tree must ensure that material is moved directly to an Auckland Council approved containment landfill.</p>
Research and development	<p>Contribute to multi-agency facilitation of research and development in detection and control tools, understanding pathways of spread, and ecology of kauri and kauri dieback disease and other kauri pathogens such as <i>P. multivora</i>.</p>

7.7.5 Te noho wātea o te tipu orotā ā-takiwā whānui / Region-wide exclusion pest plant

Giant hogweed is not currently known to be present in the Tāmaki Makaurau / Auckland region. Early intervention in response to an incursion is likely to be a cost effective approach to prevent extensive spread and impact. Furthermore, Auckland Council is appropriately placed to undertake such management given the personal protective equipment and technical knowledge required to safely manage this plant to avoid severe chemical burns.

7.7.5.1 Giant hogweed (*Heracleum mantegazzianum*)

Also known as: cow parsnip, giant carrot.

Giant hogweed is a perennial herb which can grow up to 5m tall, has large serrated leaves and produces large clusters of green or white flowers. It is capable of forming dense infestations along riparian and forest margins, suppressing native vegetation and exposing banks to erosion during periods of seasonal dieback. Contact with the plant can cause photodermatitis in humans often resulting in severe reactions, including blistering and lesions requiring medical treatment.



Elaine Iddon

Objective: over the duration of the plan Auckland Council will exclude giant hogweed (*Heracleum mantegazzianum*) from establishing in the region to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to prevent the establishment of giant hogweed in the Tāmaki Makaurau / Auckland region.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on identification and impacts of the pest plant.

7.7.6 Te murunga o te tipu orotā ā-takiwā whānui / Region-wide eradication pest plants

These eradication pest plants are present in low numbers or have a limited distribution within Tāmaki Makaurau / Auckland. These pests have the potential to establish widely in the region, and are capable of causing adverse effects to the environmental, economic, human health, social or cultural values of the region. Early intervention to eradicate these species to prevent them becoming widespread within the region is likely to be a cost effective management approach.

Objective: over the duration of the plan Auckland Council will eradicate the pest plants specified below from the Tāmaki Makaurau / Auckland region to prevent adverse effects on economic well-being, the environment, human health, the enjoyment of natural environments and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to reduce the infestation level of the subject, or an organism being spread by the subject, to zero levels in an area in the short to medium term.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites. Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

African feather grass (*Cenchrus macrourus* syn. *Pennisetum macrourum*)

Also known as: veld grass

African feather grass is a perennial clump forming grass which can grow up to 2m tall. Flower heads are long, white to purple, with barbed bristles. It is an aggressive invader, which particularly threatens native species in grassland, scrubland, wetland and sand-dune habitats. Dense clumps may restrict access to natural areas.



Akebia trifoliata

Also known as: three leaf Akebia

Akebia trifoliata is a climbing semi-deciduous vine with trifoliate leaves and cup shaped purple flowers. It can be spread deliberately as a traditional medicinal herb. It is shade tolerant and therefore likely to invade native forest by smothering vegetation.



Asparagus species (Asparagus drepanophyllus and A. umbellatus)

Also known as: asparagus fern

Asparagus drepanophyllus and *A. umbellatus* are perennial, fleshy herbs. Both species have the potential to be very invasive on cliffs, rocky outcrops, shrubland, woodland and in coastal ecosystems, based on the highly invasive nature of related *Asparagus* species.



Asparagus umbellatus

Balloon vine and small balloon vine (Cardiospermum grandiflorum and C. halicacabum)

Also known as: love in a puff

Balloon vine and small balloon vine are woody perennial vines with coarsely toothed leaves, fragrant clusters of white/yellow flowers and inflated, papery seed pods. The vines aggressively smother native vegetation in wetlands, forest and riparian margins, either at ground level or in canopies up to 10m tall, sometimes eventuating in canopy collapse.



Broomsedge (*Andropogon virginicus*)

Also known as: bluestem, whiskey grass
Broomsedge is a perennial grass with narrow clumps of green stems and leaves up to 1m high, turning purplish to straw coloured as it ages. It is highly competitive in a range of open habitats, including pasture, wetlands and clear-felled forestry areas, often smothering existing vegetation and altering soil composition via the release of biochemicals.



Chilean needle grass (*Nassella neesiana*)

Chilean needle grass is a tufted perennial grass with large drooping purplish flowerheads which grows up to 1m tall. The grass is highly invasive in pasture and has sharp seeds which can penetrate pelts and cause blindness in livestock.



Devil's fig (*Solanum torvum*)

Also known as: Turkey berry
Devil's fig is a perennial shrub with white star shaped flowers and yellow stamens. It can grow up to 4m tall in a range of disturbed ecosystems including plantations, pasture and native forest margins. In pasture, it suppresses forage and can create impassable thickets. In native ecosystems, it can provide habitat, fruit and seeds for pest mammals.



Forest and Kim Starr

Great reedmace (*Typha latifolia*)

Also known as: broadleaf cattail, common cattail, giant reedmace
Great reedmace is a perennial aquatic reed with dark brown sausage-shaped inflorescences borne in early summer. It can quickly invade and monopolise wetlands and other shallow freshwater habitats, suppressing native vegetation and altering flow regimes. It has the potential to directly compete or hybridise with threatened taonga species raupō.



Paul Champion

Green cestrum (*Cestrum parqui*)

Also known as: green poison berry, ink berry, Chilean cestrum, willow-leaved jessamine

Green cestrum is a deciduous woody shrub, up to 3m tall with clusters of yellow to green tubular flowers and small black berries. It has the potential to outcompete native plants in forest, scrub and riparian habitats and is highly poisonous when consumed.



Marshwort (*Nymphoides geminata*)

Marshwort is a perennial water lily with floating heart shaped leaves and fringed yellow flowers present during summer. It forms thick mats which smother vegetation, impede drainage, interfere with recreational activities on waterways and potentially impact upon the mauri of wai māori.



Mexican feather grass (*Nassella tenuissima*)

Mexican feather grass is a densely tufted perennial tussock grass up to 70cm tall with feathery flower heads borne in spring. It is unpalatable to livestock and can displace valuable pasture species through selective grazing. It has the potential to out-compete native plants in coastal habitats and affect native fauna by altering the habitat structure.



Nassella tussock (*Nassella trichotoma*)

Nassella tussock is a perennial tussock grass up to 1m tall with fine, wiry leaves and drooping purplish seed heads. It can be invasive in open habitats, including pasture, coastal areas and rocky scrublands. It is unpalatable to livestock, particularly sheep, and therefore can displace valuable pasture species through selective grazing.



Phragmites karka

Phragmites karka is a perennial reed up to 4m tall with golden brown, feathery seed heads. It can dominate plant communities in fresh and brackish wetlands, estuaries and wet grasslands, often forming dense monocultures and outcompeting threatened plants. It has the potential to interfere with recreational activities on waterways and may impact upon the mauri of wai māori and whanga / harbours.



Scrambling lily (Geitonoplesium cymosum)

Scrambling lily is an evergreen perennial climber which vigorously climbs and strangles host plants up to 12m tall. It bears white to purplish-green flowers with bright yellow anthers in small clusters during spring and summer. It can form dense infestations in native forest, woodlands and potentially stream banks.



Water poppy (Hydrocleys nymphoides)

Water poppy is a perennial aquatic herb with thick glossy floating leaves attached to rubbery creeping stems that form dense mats on a water surface. Flowers are yellow with a purple centre. It can aggressively colonise freshwater habitats; shading out submerged vegetation and restructuring aquatic plant and invertebrate communities.



White-edged nightshade (Solanum marginatum)

White-edged nightshade is a perennial shrub with prickly stems and berry like fruit. Leaves are also prickly and are chalky white on the underside. It has the potential to invade a range of open native habitats including sand dunes, scrub and forest margins. Dense thickets can impact upon production in pasture and forestry plantations and can ultimately decrease land value. All parts of the plant are poisonous and sharp spines can cause minor injuries.



7.7.7 **Āta aukati noa i te tipu orotā me ngā ture here ā-kaipupuri whenua / Progressive Containment pest plants with landowner rules**

These progressive containment pest plants are present in moderately low numbers or have a limited distribution within the Tāmaki Makaurau / Auckland region, yet have the potential to be highly damaging pests if they were to become widespread. Eradication may not be feasible, nonetheless progressively containing these species is a cost effective approach to prevent their more extensive spread and impact within the region. Landowners are required to undertake control of the species in the following section.

7.7.7.1 **Lantana (*Lantana camara*)**

Lantana is an aromatic, prickly shrub growing up to 3m tall with small pink to yellow flowers borne in inflorescences and clusters of blue-black fruit. It readily invades pasture, reducing productivity, and is toxic to livestock. It also has the potential to alter vegetation structure in coastal scrubland, dunes and other open or low-stature plant communities.



Objective: over the duration of the plan Auckland Council will progressively contain lantana (*Lantana camara*) to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of lantana over time.

Rules:

1. All owners or occupiers of land in the Auckland region must destroy all lantana (*Lantana camara*) on that land.

The purpose of rule 1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section, upon complaint by immediately affected neighbours. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.7.7.2 Noogoora bur (*Xanthium strumarium*)

Also known as: common cockle bur

Noogoora bur is an erect, annual herb with blotchy purple stems and small yellow flowers. It is poisonous to livestock and produces hooked burs which cause sores in livestock mouths and hooves. It is a nuisance pest of pasture and crops, especially maize.



Trevor James, Agresearch

Objective: over the duration of the plan Auckland Council will progressively contain Noogoora bur (*Xanthium strumarium*) to reduce adverse effects on economic well-being.

Intermediate outcome: to contain or reduce the geographic distribution of Noogoora bur over time.

Rules:

1. All owners or occupiers of land in the Auckland region must destroy all Noogoora bur (*Xanthium strumarium*) on that land.

The purpose of rule 1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section, upon complaint by immediately affected neighbours. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.7.7.3 Wild kiwifruit (*Actinidia* spp. (wild varieties only))

Also known as: Chinese gooseberry

Wild kiwifruit is a vigorous perennial vine with large leaves and densely hairy edible fruit. It can rapidly form dense blankets of tangled stems which smother and overtop vegetation in native and plantation forest, gullies, shelterbelts and scrubland. It is host of *Pseudomonas syringae* pv. *Actinidiae* (PSA), a serious pathogen of commercial kiwifruit which imposes significant costs on the kiwifruit industry.



Objective: over the duration of the plan Auckland Council will progressively contain wild kiwifruit (*Actinidia* spp.) to reduce adverse effects on economic well-being, the environment, the enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of wild kiwifruit, over time.

Rules:

1. All owners or occupiers of land in the Auckland region that includes abandoned or former kiwifruit orchards must control all wild kiwifruit (*Actinidia* spp.) on that land.
2. No person shall dispose of kiwifruit in such a manner as to promote the establishment of wild kiwifruit (*Actinidia* spp.) populations.

The purpose of rule 1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

The purpose of rule 2 is to regulate the use or disposal of organic material.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species, with priority given to sites in proximity of Biodiversity Focus Areas.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce landowner/occupier responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice relating to the problems caused by wild kiwifruit. Provide information on alternative means of fruit disposal and methods of controlling infestations
Requirement to act	Land owners or occupiers to destroy plants when instructed.

7.7.8 **Āta aukati noa i te tipu orotā ki ngā hōtaka ārai e horahia ana e te Kaunihera o Tāmaki Makaurau / Progressive Containment Pest Plants with Auckland Council delivered control programmes**

These progressive containment pest plants are present in low numbers or have a limited distribution within the Tāmaki Makaurau / Auckland region, yet have the potential to be highly damaging pests if they were to become widespread. Eradication may not be feasible. Nonetheless, progressively containing these species is a cost effective approach to prevent their more extensive spread and impact within the region. Auckland Council will undertake management of the species in the following section at all sites where they are known to occur in the region.

Objective: over the duration of the plan Auckland Council will progressively contain the pest plants specified below to reduce adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to contain or reduce the geographic distribution of the pest plant, to the region over time.

Principal measures of achievement:

Service delivery (control)	Enter any property where the pest plant is present within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites. Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

Asiatic knotweed (*Fallopia japonica*, *F. multiflora* and *F. sachalinensis*)

Also known as: Japanese knotweed, he shou wu, fo-ti

Asiatic knotweed is a perennial herb with branched reddish stems and drooping racemes of white flowers, which is often used as a traditional medicine. It can form dense, long-lived thickets which exclude other species and prevent native seedling recruitment in riparian and forest margins.



Weedbusters

Cathedral bells (*Cobaea scandens*)

Cathedral bells is a vigorous perennial climber with large, round bell shaped flowers which are green and fragrant when young in early summer and turn deep purple late summer to autumn. It can smother all plants up to medium height canopy and prevent the recruitment of native seedlings in scrub, forest, riparian and coastal ecosystems.



Climbing spindle berry (*Celastrus orbiculatus*)

Climbing spindle berry is a deciduous climber with spined stem, serrated leaves, yellow to orange berries and clusters of small pale green flowers in spring. It is capable of achieving 90% cover in forest ecosystems, smothering plants beneath, leading to canopy collapse and suppressing native seedling recruitment. Densely layered thickets have the potential to overtop plantation trees and impede recreational access to natural areas.



Houttuynia (*Houttuynia cordata*)

Also known as: chameleon plant, yu xing cao
Houttuynia is a deciduous ground cover herb with creeping stems up to 1m tall, heart shaped leaves and small white flowers borne in summer. Based on its life form and rapid ability to overtake gardens, it has the potential to impact forest and wetland ecosystems by suppressing native seedling recruitment and altering canopy composition.



Needle grass (*Austrostipa rudis*)

Needle grass is an erect, wiry perennial tussock grass up to 1.3m tall with large drooping purplish seed heads. It is able to crowd out native coastal plants and desirable pasture species and will also invade native grasslands, bush margins and open woodland.



Old man's beard (*Clematis vitalba*)

Old man's beard is a deciduous climber reaching up to 20m with creamy white flowers from December to May followed by grey, hairy seeds with distinctive white plumes borne in clusters. It attaches to its host with tendrils and invades forests and riparian margins by smothering canopy, often resulting in canopy collapse.



Sagittaria species (*Sagittaria* spp. (excl. *S. teres*))

Also known as: arrowhead

Sagittaria species are a group of emergent perennial aquatic herbs ranging from 1-2m tall. Many of the species produce inflorescences of pale-coloured flowers in summer. It is capable of forming dense infestations which can trap sediment resulting in channel infilling, blocked drainage ditches, impeded recreational activities, displaced native aquatic vegetation and potentially impacting upon mauri of wai māori.



NIWA

Senegal tea (*Gymnocoronis spilanthoides*)

Senegal tea is an emergent aquatic perennial herb up to 1.5m tall bearing white clover like flowers between December and May. It often forms floating mats that block streams and drainage tunnels, altering water flow dynamics and exacerbating flooding. It has the potential to replace many short-stature herbaceous wetland plant communities and may impact upon the mauri of wai māori.



Spartina (*Spartina alterniflora*, *S. anglica* and *S. x townsendii*)

Spartina is an erect perennial grass growing up to 1m tall with fleshy rhizomes enabling plants to spread to form dense clumps or swards. It can reduce large estuaries and shallow harbours to thin drains surrounded by rough pastures and will trap sediment, raising levels above the high tide mark. It destroys intertidal zonation and habitat, and smothers mahinga mātaītai shellfish beds thereby preventing kaimoana harvesting. Adventive grasses often succeed spartina, creating dry meadows, and leading to immense biodiversity loss.



Spartina progressive containment programme applies only to the area defined in Figure 10 See also Sustained Control programme for Kaipara harbour (section 7.7.9).

Wild broom (*Cytisus scoparius* (excl. cultivated varieties))

Wild broom is a dense perennial shrub up to 2m tall with small, hairy leaves, pea-like yellow flowers and dark flattened seedpods produced in spring-summer. It invades pasture and forestry plantations, forming thick stands and greatly reducing productivity. It also competes with native plants in shrubland, grasslands, montane, open forest and riparian habitats, and can alter soil chemistry via nitrogen fixing.



Wild broom progressive containment applies only to rural areas defined in Figure 11. See also Sustained Control programme for urban areas (section 7.7.9).

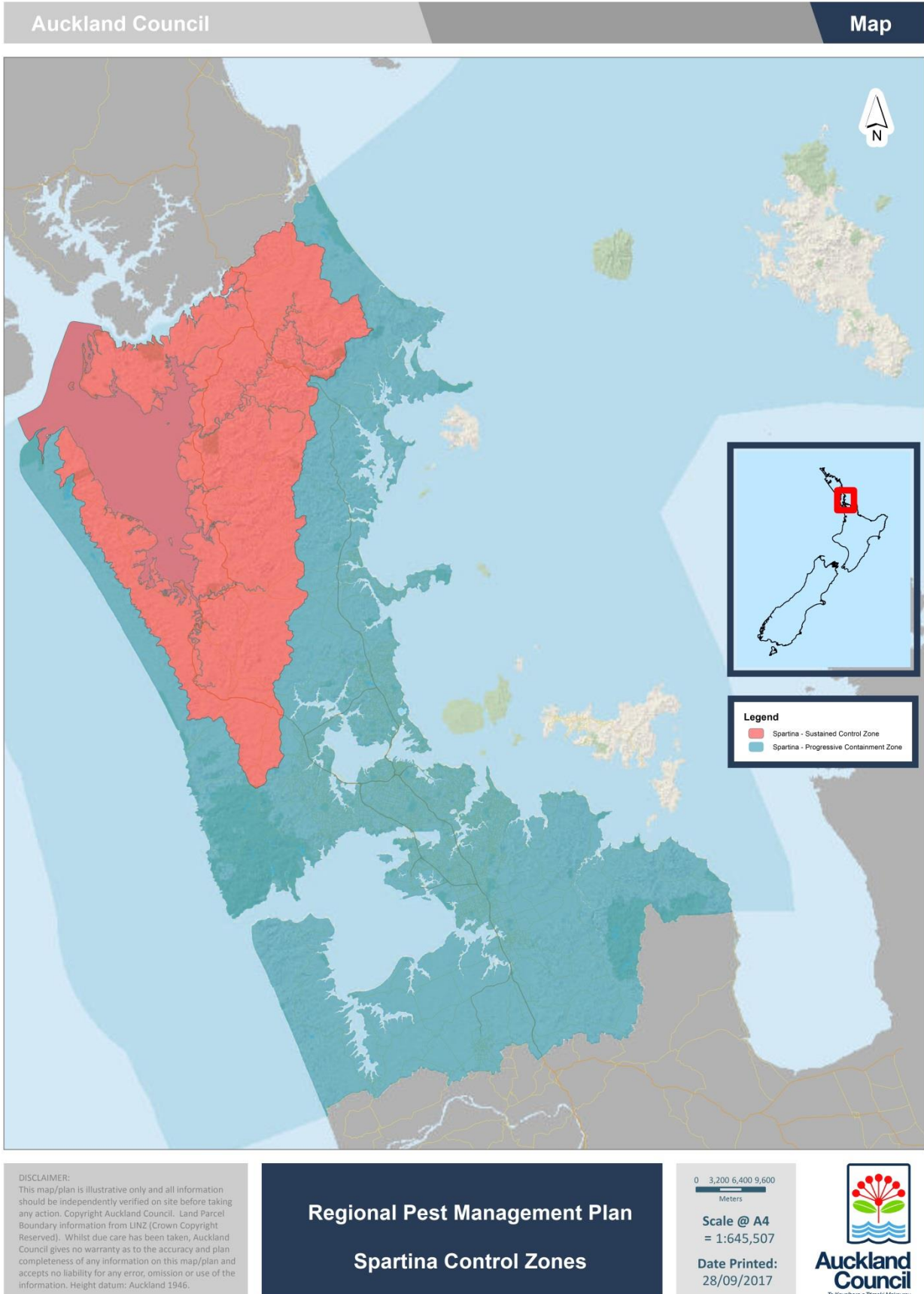


Figure 10 Specified geographic areas where spartina management programmes will apply during the lifetime of the plan.

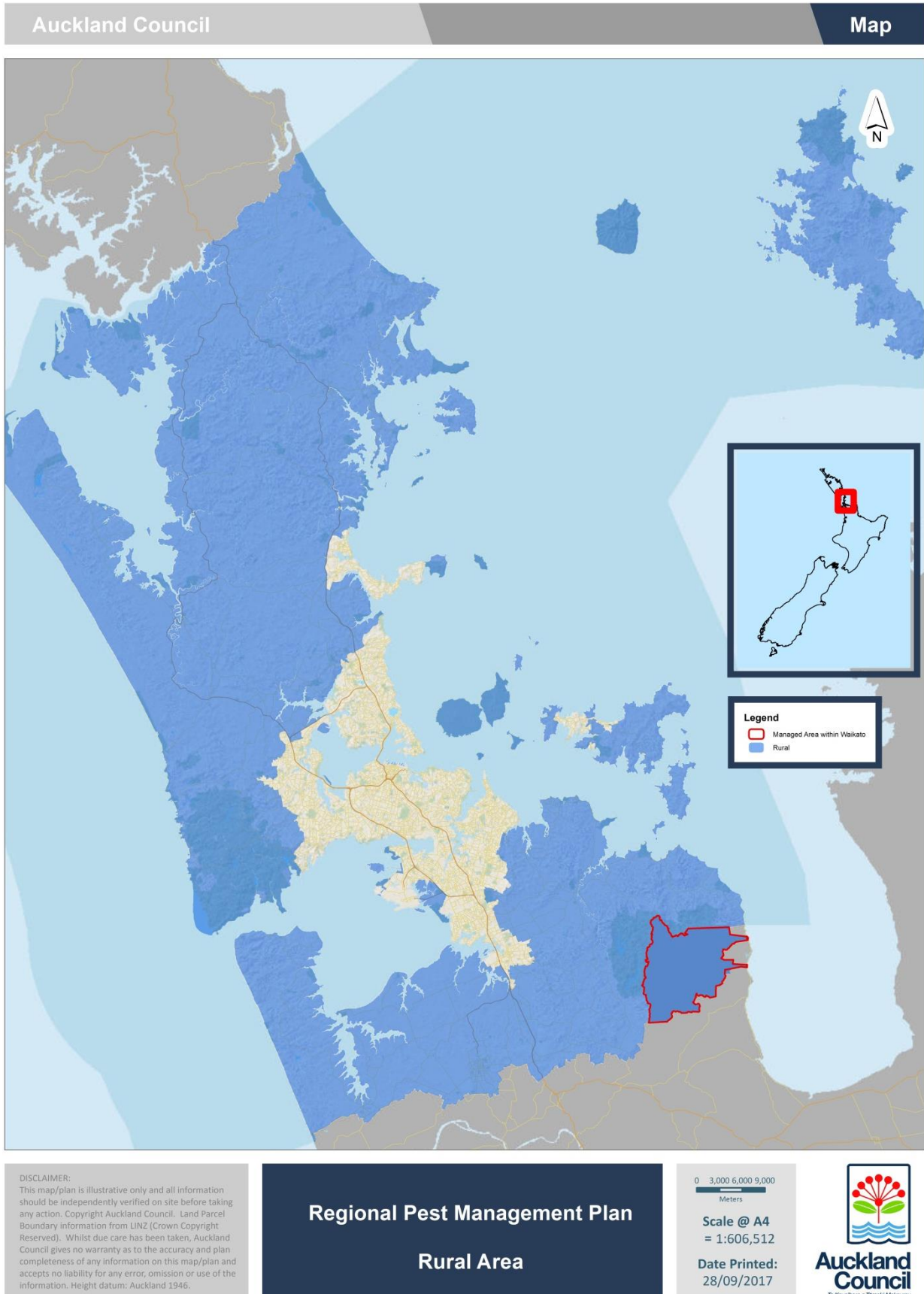


Figure 11 Specified geographic areas where the rural progressive containment programme for wild broom will apply during the lifetime of the plan.

7.7.9 Te mau tonu o te patu tupu orotā / Sustained Control pest plants

The species in the following Sustained Control programmes vary greatly in their distribution across the region; some are not currently known to be established in the region, while others are already widespread pest plants. Nonetheless, all these species have the potential for economic and/or environmental impacts, and for all of these species there is value in reducing the risk of humans assisting the establishment or further spread of pest populations. The following programmes therefore manage these pest plants through rules and accompanying education and awareness programmes designed to reduce risk of pests being spread through gardening and other activities, and also to encourage landowners to undertake pest management on their own properties.

Objective: over the duration of the plan Auckland Council will sustainably control the pest plants specified below to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

Intermediate outcome: to provide for on-going control of the pest plants specified below, to reduce its impacts on values and spread to other properties.

Rules:

1. No person may plant or allow to be planted any Sustained Control Pest Plant (specified below) on or in any land within the Auckland region.
2. Despite rule 1, a person may transfer or allow to be transferred an existing Sustained Control Pest Plant planted on their land from one location to another location within the boundaries of the same property.
3. All owners or occupiers of land in the Auckland region must destroy any Sustained Control Pest Plant that has been planted on their land in breach of the RPMP, if directed to do so by an authorised person.

The purpose of rules 1 and 2 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 3 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Principal measures of achievement:

Service delivery	Facilitate the development and release of biocontrol for targeted species: African club moss, alligator weed, blue morning glory, boneseed, boxthorn, Californian thistle, climbing asparagus, giant reed, gorse, grey willow, hornwort, Japanese honeysuckle, jasmine, moth plant, Mexican daisy, pampas grass, privet (tree and Chinese), ragwort, rhamnus, royal fern, salt water paspalum, tradescantia, tutsan, wild ginger and woolly nightshade.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	<p>Provide information and advice on pest plant identification, impacts and control.</p> <p>Provide information and advice on responsible gardening practices including safe disposal of organic refuse, and alternative planting choices.</p> <p>Support nursery industry initiatives, including breeding of low fertility forms, aimed at reducing biosecurity risk of nursery stock.</p> <p>Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around Biodiversity Focus Areas.</p>
Requirement to act	Land owners or occupiers to destroy plants when instructed.

African club moss (*Selaginella kraussiana*)

African club moss is a mat-forming fern ally with irregular branched stems, small leaves (2-4mm) arranged in rows and rounded cones. It grows rapidly and forms dense mats that can cover forest floors thereby excluding native ground cover plant species, preventing the establishment of seedlings and altering habitat structure for native invertebrates. Suppression of native understorey by African club moss may increase light levels in forests, enabling other pest plant species to establish.



African pig's ear (*Cotyledon orbiculata*)

Also known as: pig's ear, round-leafed navel-wort, elk horn

African pig's ear is a succulent up to 1m tall with grey-green leaves and bell-shaped orange, red or pink flowers borne on stems up to 50cm high. It is capable of forming dense clumps in coastal ecosystems and displaces native coastal vegetation.



Agapanthus³⁷ (*Agapanthus praecox* syn. *A. orientalis* and cultivars)

Agapanthus is a perennial evergreen herb with leathery leaves and erect stems that terminate in many white, blue or purple flowered umbels. Plant height ranges from 100-500mm for dwarf forms and up to 1.2m for tall forms. It forms almost monocultural infestations which exclude native vegetation, especially in coastal areas including cliffs and rocky outcrops. It ranks in the top ten plants resulting in calls to the National Poisons Centre. Rhizomes and other plant parts are toxic if ingested, resulting in vomiting and diarrhoea. Contact allergens are capable of



³⁷ *Agapanthus* for the purpose of this RPMP means all *agapanthus* cultivars, except for:

- (c) *Agapanthus* 'Agapetite'; *A. 'Finn'*; *A. 'Gold Drops'*; *A. 'Golden Drop'*; *A. 'Goldstrike'*; *A. 'Pavlova'*; *A. 'Sarah'*; *A. 'Thunderstorm'*; and
- (d) any other low fertility cultivar which is determined by Auckland Council to produce less than 2% viable seeds compared to fertile cultivars that were evaluated under the same conditions and location.

causing rashes, burning sensations and mouth ulcerations, especially in children.

Alder (*Alnus glutinosa*)

Also known as: common alder

Alder is a deciduous tree up to 15m tall with fissured bark, toothed leaves and distinctive catkins late winter to spring. It dominates and simplifies riparian and wetland ecosystems, restructuring plant communities from low-stature to tree-dominated habitats. It has the ability to fix nitrogen thereby altering nutrient cycling regimes in invaded habitats. Pulses of rapidly decomposing litter into waterways can reduce dissolved oxygen levels, increase nitrogen levels and alter stream invertebrate communities. Dense stands may restrict access to waterways and contact with pollen may cause allergies.



Alligator weed (*Alternanthera philoxeroides*)

Alligator weed is a perennial emergent aquatic bottom-rooted herb forming extensive floating mats on water's surface but can also grow terrestrially, preferring damp ground. The dense mats can alter aquatic habitat structure (e.g. water flow, light penetration), alter invertebrate community composition and reduce native plant cover and diversity in wetlands and margins of water bodies. It will also displace valuable pasture species and block drainage channels, exacerbating flooding on farmland.



Aristea (*Aristea ecklonii*)

Aristea is an evergreen perennial, with woody rhizomes, leaves up to 40cm long and numerous blue flowers in 5 to 7-flowered clusters. It is prevalent on roadsides but forest, scrubland, coastlines, herbfields, rocky and bare lands are also suitable habitats. It forms dense, long-lived stands in open sites and moderate shade, preventing seedlings of native species from establishing. In forest ecosystems, it may open canopy, leading to succession by introduced shrubs, vines and grasses.



Artillery plant (*Lamium galeobdolon*)

Also known as: aluminium plant

Artillery plant is a perennial herb with pointed, coarsely toothed leaves which are mostly green but feature distinctive large silver-grey patches on the upper surface. It forms large, dense, single-species clumps or mats, smothering native vegetation and preventing its regeneration in disturbed bush, scrubland, fernland and forest margins.



Arum lily (*Zantedeschia aethiopica*)

Also known as: calla lily

Arum lily is a clump-forming perennial herb to 1.5m tall bearing white flowers with yellow spikes from late winter to late summer and dark leathery arrowhead-shaped leaves. It is capable of forming dense mono-cultures that exclude other plant species in wetlands, riparian margins and damp forest gullies. It displaces valuable pasture species, especially in damp sites and is toxic to livestock.



Australian sedge (*Carex longebrachiata*)

Also known as: drooping sedge

Australian sedge is a perennial deep-rooted tussock up to 90cm tall with long drooping leaves and very small flowers, borne on drooping inflorescences up to 90cm long. It is predominantly a pest of poor or overgrazed pasture, forming dense swards which are unpalatable to livestock, reducing productivity where present. It may also suppress the growth of native grasses or other short stature plants in grassland or scrub ecosystems.



Baccharis (*Baccharis halimifolia*)

Also known as: cotton-seed tree; groundsel bush; groundsel tree

Baccharis is an evergreen glabrous, multi-branched shrub up to 4m tall with toothed oblong leaves, cotton-like seed heads and small cream flowers borne February to May. Baccharis is primarily a threat to pastoral grazing; reducing the movement of livestock and pasture productivity. It has further potential to suppress native species in rocky



outcrops, wetlands and other habitats.

**Bamboo spp. (*Phyllostachys aurea*,
Phyllostachys nigra, *Pleioblastus auricomus*,
Pleioblastus hindsii, *Pseudosasa japonica*,
Chimonobambusa quadrangularis)**

This group of perennial running-type bamboo species can form dense thickets up to 6-7m tall, with vigorous spreading rhizomes. Impacts are likely to be localised, with neighbouring properties, urban bush fragments, riparian areas and wetlands most at risk from urban plantings or dumping of garden waste. They are able to form dense mono-specific stands which exclude other plant species, likely leading to reductions in plant diversity, simplified stand structure and altered faunal assemblages. These impenetrable stands have the potential to impede access to natural areas.



**Banana passionfruit (*Passiflora tripartita* var.
mollissima, *P. mixta* and *P. tarminiana*)**

Also known as: wild blue-crown, wild passion vine
Banana passionfruit is a perennial high climbing vine (8-10m) with three-lobed leaves, pink flowers and green ripening to orange-yellow fruit containing edible pulp with small black seeds. It is fast growing, potentially smothering native vegetation and preventing the establishment of new seedlings. It may also facilitate exotic birds and mammals, particularly feral pigs, through provision of food resource. It is a host of *Passiflora* latent virus (PLV), to which economically important species *P. edulis* and *P. ligularis* are susceptible, and therefore poses a risk to the horticultural industry.



**Bangalow palm (*Archontophoenix*
cunninghamii)**

Bangalow palm is a tall palm, with an undivided trunk, pinnate leaves, hanging inflorescences, globose scarlet fruit, growing up to 14m in Tāmaki Makaurau / Auckland (25m in native range). It seeds prolifically and can be very long-lived; some New Zealand specimens known to have been planted prior to 1840s. It is highly invasive in South



America, dominating forests and out-competing native South American palms. In Aotearoa / New Zealand it has the potential to displace native species, especially culturally significant nikau palms which occupy similar niches but have been shown to be poorer competitors under controlled conditions. Because it is shade tolerant and bird dispersed, it has potential to invade intact native forest, especially through seedling bank exploitation of light gaps.

Barberry (*Berberis glaucocarpa*)

Barberry is an evergreen or semi-deciduous spiny shrub up to 4-7m tall with toothed leathery leaves, yellow flowers borne in clusters from October to November and reddish black berries. Barberry replaces desirable pasture species, reducing grazing area and impeding livestock movement. Can displace native species in open habitats including scrubland, coastal areas and disturbed forest.



Bartlettina (*Bartlettina sordida*)

Bartlettina is an erect evergreen perennial shrub (1-2m tall) with densely hairy, large leaves and fluffy clusters of pink-purple flowers produced from November to January. It occurs mainly in disturbed areas and scrub margins, and is shade tolerant, fast growing and capable of forming dense stands that could potentially exclude native plants.



Bathurst bur (*Xanthium spinosum*)

Bathurst bur is an erect, spiny summer annual plant up to 1m tall with inconspicuous flowers and fruit (burs) bearing hooked spines. It is predominantly a pest of production ecosystems. Burs adhere to sheep wool, contaminating and reducing the value of the yield. Spines prevent stock from grazing and can damage stock feet or hinder stock movement. It can displace desirable pasture plants and is weedy in maize and other summer crops, potentially reducing crop yield.



Rules:

1. All owners or occupiers of any land that is located within rural Auckland (as defined in Figure 12) must destroy all Bathurst bur (*Xanthium spinosum*) plants on that land.

The purpose of rule 1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

Berry heath (*Erica baccans*)

Berry heath is a shrub up to 2m tall with pink/red, small flowers, borne in bunches from August to December. Impacts are likely to be restricted to a relatively narrow range of terrestrial ecosystems including gumlands, coastal cliffs and mānuka shrublands, but within these may have moderate impact. It competes with native early successional species such as mānuka and is advantaged by fire; therefore it is likely to increase in dominance at frequently disturbed sites.



Mike Wilcox

Blackberry (wild aggregates) (*Rubus fruticosus* agg.)

Also known as: bramble, cut leaf blackberry
Wild blackberry is a prickly perennial scrambling, woody shrub up to 2m tall with thorned stems, white to pink flowers and red fruit eventually ripening to black. It invades pasture, reducing pasture production and stock-carrying capacity, and injuring stock. It can dominate forestry plantations, impeding access for manual operations and reducing overall yield. In natural ecosystems, it displaces closely related native species and smothers low growing native vegetation in a range of habitat types. It is also a host for blackberry rust *Phragmidium violaceum*, which has been found infecting endemic tātarāmoa / bush lawyer *R. cissoides*.



Black wattle (*Acacia mearnsii*)

Black wattle is a tree best distinguished by its dark green leaves, subdivided into leaflets, and cream flower heads borne in racemes from July-September. It is capable of forming dense stands, competing with other plant species in scrubland, coastal areas and riparian margins. As a nitrogen fixer with rapid decomposition rates, it can modify soil chemistry, moisture content and microbial function in invaded habitats, indirectly impacting vegetation and invertebrate communities.



Forest and Bird

Bladderwort (*Utricularia arenaria*, *U. gibba*, *U. livida* and *U. sandersonii*)

Bladderwort is a group of carnivorous perennial aquatic herbs with small globose traps that suck invertebrate prey inwards when triggered by external hairs. They form dense sprawling mats which float at or just below the water's surface with the aid of tiny round bladders. Bladderworts spread aggressively and are potentially a serious threat to small turf-forming species and native *Utricularia* species in freshwater ecosystems. Impacts to submerged vegetation are possible due to shading; this may result in reduced oxygen levels within sediment, and consequent changes in sediment chemistry.



Blue morning glory (*Ipomoea indica*)

Blue morning glory is a high-climbing, perennial plant with twining stems, three lobed hairy leaves and blue to purple tubular flowers borne in clusters from January to December. It can completely smother and suppress other plant species on the ground or in the canopy, in forest and scrub margins, around gardens and plantations.



Blue passion flower (*Passiflora caerulea*)

Blue passion flower is a perennial high climbing vine with spiralling tendrils, blue-purple and white flowers borne during summer-autumn and fruit which ripens from green to yellow. It is fast growing, potentially smothering native vegetation and preventing the establishment of new seedlings in forest, riparian and coastal ecosystems. It may also facilitate exotic birds and mammals through the provision of food resources.



Blue spur flower (*Plectranthus ecklonii* and *P. grandis*)

Blue spur flower is a group of soft-wooded shrubs up to 2m tall with irregularly serrated leaves and erect flower heads made up of small tubular violet flowers produced from December to May. It has the potential to outcompete native plants due to clonal spread and the ability to form dense smothering clumps. Bush margins and disturbed forest may be most at risk from invasion.



Bolivian fuchsia (*Fuchsia boliviana*)

Bolivian fuchsia is an evergreen shrub up to 3m tall with densely hairy leaves and pink/red flowers, borne in drooping racemes. It is fast growing, and will potentially out-compete native *Fuchsia* spp. and other native plants in forest, shrub and riparian ecosystems. Hybridisation between *Fuchsia* spp. populations is well documented and may result in the loss of genetic diversity where Bolivian fuchsia co-occurs with populations of native kōhutuhutu *Fuchsia* spp.



Bomarea (*Bomarea caldasii* and *B. multiflora*)

Also known as: climbing alstroemeria, Bomaria
Bomarea is a perennial vine with thin, elongated leaves, red, orange or gold tubular flowers hanging in clusters from summer to winter and bright orange fruit from May to August. It is known to outcompete, strangle and smother native forest and riparian species, shading out seedlings and altering successional recruitment. Interactions with the plant are likely to cause dermatitis or allergic reactions.



Weedbusters

Boneseed (*Chrysanthemoides monilifera*)

Boneseed is an evergreen shrub or small tree up to 3m in height with leathery irregularly serrated leaves, bright yellow flowers produced from September to February and hard oval green fruit which ripen to black. It is likely to crowd out native plants in open coastal areas or disturbed habitats, including freshly cleared forestry plantations. It may also alter plant community composition through allelopathy and competition, alter patterns of nutrient cycling, and facilitate other weeds. The plant is highly flammable and therefore a fire risk in invaded ecosystems.



Boxthorn (*Lycium ferocissimum*)

Boxthorn is a densely branched and spiny evergreen shrub up to 6m tall with creamy purple flowers and fleshy red fruit. It is a pest plant in coastal habitats; inhibiting the regeneration of native plants, invading coastal pastures, ensnaring seabirds and impeding access to nesting sites. Spines can become imbedded in bone or soft tissue, resulting in infection and pseudo-tumours.



Brazilian pepper tree (*Schinus terebinthifolius*)

Also known as: Christmas berry

Brazilian pepper tree is a large shrub or small tree up to 3m tall with pinnate leaves, small, white flowers borne in late summer/autumn and red fleshy fruit. It is fast growing, displacing native vegetation in a range of ecosystems including mangroves, salt marshes, grasslands and other terrestrial habitats. It is also capable of chemically inhibiting the growth and abundance of co-occurring native plants via the release of biochemicals into the soil.



Brazilian rattlebox (*Sesbania punicea*)

Brazilian rattlebox is a deciduous shrub or small tree with red-orange flowers in showy inflorescences late spring-autumn and long winged seed pods. It will form dense almost monospecific stands, competitively excluding native plant species in perennial wetlands and watercourses, pasture, forest and scrub ecosystems. Dense growth in watercourses impedes water flow, exacerbates



Eric Hunt

flooding, bank destabilisation and erosion, and can impede human access to watercourses. As a nitrogen fixing plant, it also has the potential to alter nutrient cycling regimes in invaded habitats.

Brush wattle (*Paraserianthes lophantha*)

Brush wattle is a small tree or shrub with frond like leaves and green-yellow flowers, grouped in cylindrical inflorescences borne May-August, followed by flat seed pods up to 15cm long. It is a pest plant in open disturbed sites including riverbanks, sand dunes and other coastal habitats, out-competing native plants and potentially facilitating other exotic pest plants via nitrogen fixation.



Buddleia (*Buddleja davidii*)

Also known as: buddleja, butterfly bush
Buddleia is a semi-deciduous shrub up to 3m tall with small purple/pink/white flowers borne in conical clusters between December and April. It is a strong competitor capable of displacing co-occurring species in early-rotation plantation forests and a variety of disturbed habitats, forming dense thickets and altering vegetation composition trajectories.



Bur daisy (*Calotis lappulacea*)

Bur daisy is a small, many-branched perennial herb with small yellow, spherical flowers year-round that dry into tough brown spheres with hooks. It displaces desirable pasture plants, especially on poor pasture, and is a serious contaminant of wool. Similar native plants in dry rocky outcrops or open disturbed ecosystems may be at risk from competition.



Trevor James, Agresearch

Burdock (*Arctium minus*)

Burdock is a bushy thistle-like forb up to 1.5m tall with flowers borne between January and April as spiky green spheres with pink, purple or lavender centres, and bracts becoming hooked when dry. It infests pasture; tainting milk if foraged in large quantities, contaminating sheep wool with burs and injuring livestock. It is also a reservoir for a range of fungal diseases that may impact plants in the horticulture industry. Interaction with the plant may cause contact dermatitis and toxic seed hairs may be irritating to pets and humans.



Bushy asparagus (*Asparagus aethiopicus* syn. *A. densiflorus*)

Bushy asparagus is a scrambling perennial herb with a thick mat of tuberous roots, white flowers borne between October and March and red berries. Stems are hairy and bear 10mm long spines. Dense infestations are capable of excluding native vegetation particularly in coastal and forest ecosystems, and may impede recreational access to natural areas. Other impacts may be similar to climbing asparagus.



Buttercup bush (*Senna septemtrionalis*)

Buttercup bush is a shrub up to 2m tall with yellow flowers borne December to June and seed pods up to 10cm long. Copious seed production, rapid growth and persistent seed bank allow buttercup bush to persistently dominate open, disturbed sites such as riparian margins, forest edges and scrub, excluding co-occurring native vegetation.



Californian bulrush (*Schoenoplectus californicus*)

Californian bulrush is a dense clumping rush, up to 4m tall with triangular stems, drooping inflorescence of small brown flowers borne November-April followed by small cream-grey nuts. It forms tall dense stands in brackish river margins and estuaries, excluding co-occurring native sedge species. There is further potential to alter soil conditions in invaded habitats by stabilising sand



bars and river margins.

Californian thistle (*Cirsium arvense*)

Californian thistle is a perennial herb with long spiny leaves, red/pink/purple flowers borne on shoots between December-February and fluffy white tufts of hairs (female flowers). It is a major primary production pest; infesting pasture and subsequently reducing milk and animal yields due to herbivore avoidance. Spines injure farm animals' mouths, promoting 'scabby mouth disease' and seed heads contaminate wool. Pasture management to mitigate impacts can involve considerable costs to farmers, including cost of herbicide use and additional fertiliser use.



Canary Island ivy (*Hedera helix* subsp. *canariensis*)

Canary Island ivy is an evergreen perennial root-climbing plant with three-lobed irregularly patterned leaves, yellow-green flowers borne in umbels in August-December and deep purple-black berries. Impacts are likely to be similar to closely related subspecies English ivy. It forms dense groundcover mats, thereby preventing the regeneration of native species, impacting ground-active invertebrate communities and providing favoured habitat for rodents in native bush. Contact with the plant can cause red, itchy, burning contact dermatitis.



Bernd Sauerwein

Cape honey flower (*Melianthus major*)

Cape honey flower is an evergreen shrub (up to 2m) with frond-like leaves, foul smelling, red-brown flowers produced between July and April and papery seed capsules. It is capable of forming dense stands which can shade out native plants, particularly in dune systems and disturbed ecosystems. It is highly poisonous; deaths from consumption recorded in both humans and livestock.



Cape ivy (*Senecio angulatus*)

Cape ivy is a perennial scrambling herb up to c.2m tall with toothed, arrow-shaped leaves and yellow flowers borne March-August. Open coastal ecosystems and regenerating forest may be most at risk from invasion, with native species being out-competed or smothered by scrambling thickets. Thickets may locally obstruct access to recreational areas.



Cape sundew (*Drosera capensis*)

Cape sundew is a carnivorous perennial low growing herb with bright green, linear leaves bearing coloured (usually red) tentacle-like hairs tipped with a sticky sap that attracts and captures small insects. It displaces small native plants in wetland ecosystems, including native sundews and may capture native insects, thereby altering local invertebrate communities.



Carex (*Carex divulsa*)

Also known as: meadow sedge, grey sedge, divided sedge

Carex is a long-lived perennial tussock-forming sedge with long flower spikes made up of interrupted small brown or green flowers. It displaces pasture species, invades apple orchards and is a potential reservoir for rust fungi which could impact horticultural plants. In natural ecosystems, it can colonise forest margins and grasslands and will compete with native grass species such as patiti.



Carex scoparia

Carex scoparia is a dense, green grass-like perennial sedge up to 90cm tall. Inflorescences have brown/green oblong spikes and are borne late spring to early summer. It invades wetlands and lake margins potentially out-competing native wetland plants, and altering habitat for native fauna (e.g. impeded fish access to spawning sites). Closely related species are invasive, capable of forming almost monocultural swards, excluding native plant species and dramatically reducing plant diversity.



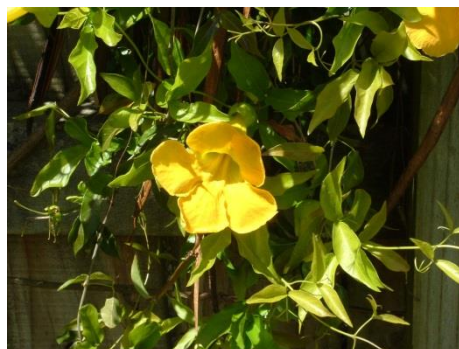
Castor oil plant (*Ricinus communis*)

Castor oil plant is a perennial shrub or small tree (up to 4m tall) with a highly variable form but generally bearing large, sharply serrated glossy leaves which are green, red, purple or brown. It may outcompete and shade out other plant species in disturbed habitats, pasture and cleared forestry plantations. It is extremely poisonous and poses a risk to humans, livestock, native herbivorous and frugivorous animals, and pets. Seeds can kill adult humans if ingested. It is also strongly allergenic and contact with sap can cause rashes.



Cat's claw creeper (*Macfadyena unguiscati*)

Cat's claw creeper is a perennial woody vine with yellow trumpet flowers borne in spring and seed capsules up to 95cm long. It is capable of smothering trees, causing canopy collapse, or growing as a dense groundcover mat, suppressing the regeneration of vegetation in riparian and forest ecosystems. It has been recorded strangling trees in plantation forests, often resulting in tree mortality.



Weedbusters

Cenchrus spp. (*Cenchrus* spp. syn. *Pennisetum* spp. excl. kikuyu and pearl barley; *C. clandestinus* and *C. americanus*)

Cenchrus species are a group of perennial-annual tufted, rhizomatous or straggling grasses. They out-compete and inhibit the growth of native plants in coastal ecosystems. They are consequently associated with reductions in native plant species richness and changes in vegetation structure. Overseas, *Cenchrus* spp. are invasive on scoria lava, therefore Rangitōtō may be vulnerable to invasion.



Chilean flame creeper (*Tropaeolum speciosum*)

Chilean flame creeper is a perennial climber capable of reaching at least 10m into canopy with five-fingered leaves, tubular red/pink flowers borne November-April and blue-black berries. It suppresses native plants via smothering and shading in forest and scrub ecosystems. Bird dispersal has the potential to facilitate spread to inaccessible areas.



Department of Conservation

Chilean glory creeper (*Eccremocarpus scaber*)

Chilean glory creeper is a perennial climbing subshrub up to 6m with tubular orange/red flowers borne in inflorescences September-May. It suppresses co-occurring vegetation via smothering habitat. Scrub, forest edges and riparian margins are most at risk from invasion.



Weedbusters

Chilean rhubarb (*Gunnera tinctoria*)

Chilean rhubarb is a clump-forming, herbaceous perennial up to 2.5m tall by 4m wide, with very large prickly leaves and minute flowers occurring in early summer. It most commonly naturalises in coastal and riparian areas; forming dense colonies that shade-out or suppress native plants and reduce the seed rain from adjacent species. It is a potential threat to culturally important plants including harakeke and watercress.



Chinese fan palm (*Trachycarpus fortunei*)

Also known as: Chinese fan palm, Chinese windmill palm, chusan palm

Chinese fan palm is a 4-12m tall palm with an unbranched trunk, fan shaped leaves and sharp marginal teeth on the petioles. Fruit are yellow but turn blue-black with age. The large leaves cast deep shade, reducing native seedling recruitment and growth. Urban reserves are most at risk of invasion due to human cultivation of the plant in surrounding areas. Intact forests in remote areas are also at risk long-term due to bird-mediated seed dispersal and shade tolerance, potentially resulting in dominance of the forest understorey. Invasion may also result in the modification of soil biota



communities and nutrient cycling impacts in these ecosystems. There is the potential for direct competition with taonga species such as nikau.

Chinese holly grape (*Mahonia lomariifolia*)

Chinese holly grape is a perennial evergreen shrub up to 4-5m tall with spiky leaves, yellow flowers borne in upright, terminal racemes during winter and oval green berries ripening to purple. It is shade tolerant, and known to invade closed canopy vegetation in forest ecosystems, forming thickets which exclude other understorey plants.



Rebecca Stanley

Chocolate vine

Chocolate vine is a deciduous or evergreen (climate dependent) climbing plant up to 20m with palmate leaves and brown-purple flowers, borne in spring. It is a vigorous climber capable of smothering native vegetation and preventing recruitment. It is partially shade tolerant, capable of invading margins or light gaps of intact native forest. Shrublands and re-vegetated or regenerating plant communities are most at risk.



Weedbusters

Clematis flammula

Clematis flammula is a deciduous perennial woody climber, reaching up to 5-6m with white flowers between January and March and hairy plumed seeds. It has a smothering climbing habit and moderate shade tolerance therefore scrub and bush margins are most at risk of invasion, including in coastal areas. Uncertain to what extent intact forest is at risk. Closely related plants are highly invasive.



Climbing asparagus (*Asparagus scandens*)

Climbing asparagus is a scrambling or climbing perennial, with tuberous fleshy roots, thin scale-like leaves, red berries and long, usually white, solitary flowers. It smothers forest floor and understorey up to 4m, causing reductions in native plant abundance and species richness, and promoting further invasion by other pest plant species via raised light levels. In the long-term there is the potential for increased erosion through catastrophic loss of canopy and an overall transformative loss of forest



ecosystems throughout the region.

Climbing dock (*Rumex sagittatus*)

Also known as: creeping dock, rambling dock
Climbing dock is a scrambling perennial vine trailing to 4m long with heart-shaped yellow or pink-red fruit, arrow-shaped leaves and small, green to pink flowers. It is a fast grower, scrambling over plants up to 3m tall, replacing low canopy plants and preventing the establishment of native seedlings in disturbed forest, scrub, coastal and riparian ecosystems.



Climbing gloxinia (*Lophospermum erubescens*)

Climbing gloxinia is a climbing perennial herb with triangular leaves and red, pink or white trumpet-shaped flowers borne January to March. Moderate impacts may be expected based on its smothering habit and history of invasiveness. It is capable of invading very harsh dry environments. Threatened species may be at risk in a wide range of habitats including in rocky outcrops, grasslands and forests.



Coast banksia (*Banksia integrifolia*)

Coast banksia is a large shrub or tree up to 15m high with rough bark, narrowly elliptical leaves, cylindrical inflorescences bearing numerous pale yellow to green flowers and woody fruiting cones. It grows in coastal and lowland sites, often on sand dunes, along roadsides, forest margins, and other open habitats; shading out existing vegetation and transforming the habitat.



Coltsfoot (*Tussilago farfara*)

Coltsfoot is a perennial herb with deeply lobed, toothed leaves and yellow flowers in spring. It is mat-forming and an aggressive grower therefore may out-compete other plant species in moist habitats including riparian margins and wetlands. It is reported as competitive against pasture grasses and contains alkaloids which can be toxic to livestock and humans. It may also compete strongly with crop plants.



Weedbusters

Cotoneaster (*Cotoneaster glaucophyllus* and *C. franchetii*)

Cotoneaster are evergreen shrubs up to 3m tall with small white flowers borne in clusters and poisonous red berries. They are capable of forming dense thickets which prevent the regeneration of other plant species in coastal scrubland and grasslands, including on ngā tūpuna maunga.



Crack willow (*Salix fragilis*)

Also known as: brittle willow

Crack willow is a shrub or tree to 25m high with green to brown stems that make an audible crack when bent and long catkins. It can affect native plant species in wetlands and riparian sites through competition, shading and altered hydrology. It causes blockages, flooding and structural changes in waterways and may alter soil decomposition cycles.



Weedbusters

Creeping fig (*Ficus pumila*)

Creeping fig is a perennial climber up to 10m+ with purple to pink fruit. It is a vigorous climber, shade tolerant and capable of smothering co-occurring vegetation on rock walls and scoria faces. Based on other fig species, there is a high risk of the obligate pollinating wasp establishing in Aotearoa / New Zealand in the future, increasing the chances of creeping fig naturalising. High value sites such as Rangitōtō and Maungawhau / Mt Eden rock forest may be at risk.



Colin Ogle

Dally pine (*Psoralea pinnata*)

Dally pine is a perennial evergreen shrub or small tree up to 5m tall with long thin leaflets and pea-shaped white-blue flowers borne November to January. It has the potential to dominate short-stature plant communities such as gumlands and herbfields through competition and nitrogen-fixation. It may replace mānuka in early successional ecosystems, potentially impacting upon the mānuka honey industry.



Darwin's barberry (*Berberis darwinii*)

Darwin's barberry is an evergreen shrub able to reach 10m in forest with needle-sharp spines, serrated leaves and golden flowers hanging in clusters from July to February, followed by purplish-black berries. It is a serious forestry pest, likely to infest understorey in thinned stands, and may impact the horticultural industry as a carrier of various plant pathogens. It outgrows and outcompetes native plants in disturbed forest and scrubland, altering forest understorey and light regimes.



Devil's tail (*Persicaria perfoliata*)

Also known as: mile-a-minute weed, tearthumb. Devil's tail is a sprawling vine up to 6m long with downward pointing hooks on the stems and undersides of the leaves, small white flowers and metallic blue fruit. It is a pest of nurseries and forestry plantations, impairing juvenile tree growth. It is likely to outcompete and smother native plants in forest gaps, riparian areas and other open, disturbed habitats. Barbs may injure children and pets.



Divided sedge (*Carex divisa*)

Divided sedge is a tufted perennial sedge growing up to 80cm with green maturing to pale brown inflorescences, consisting of overlapping spikes. It is capable of forming almost monocultural swards, excluding native species and sometimes resulting in loss of plant zonation across brackish coastal habitats. It has further potential to impact on the mauri and customary uses of a range of wetland ecosystems.



John Smith-Dodsworth

Dragon tree (*Dracaena draco*)

Dragon tree is a long lived (300+ years) succulent tree exceeding 20m in height. It has been recorded naturalising in Tāmaki Makaurau / Auckland, including the Tīkapa Moana o Hauraki / Hauraki Gulf Islands, mostly in coastal ecosystems and urban bush fragments near to sources of propagule pressure from gardens, but has the potential to



reach more isolated ecosystems due to its bird-dispersed seeds.

Drooping prickly pear (*Opuntia monacantha* and other spp.)

Drooping prickly pear is a group of large cacti with oval or circular stem segments and thick cylindrical trunks that have a drooping habit on larger specimens. It has the potential to decrease native plant cover in coastal ecosystems due to competitive exclusion and may out-compete native plants for pollinators, resulting in potential impacts on native plants' seed-set and/or invertebrate pollinator communities. Stem-succulent species are not characteristic of the native flora, and invasion by such species represents a substantial structural change to the ecosystem. Invasion may impede access to coastal areas due to sharp spines.



Dusky coral pea (*Kennedia rubicunda*)

Dusky coral pea is a scrambling perennial leguminous vine with clusters of dark red-pink-purple pea-shaped flowers held in inflorescences between August and December. It has a rapid growth rate and smothers shrubs and trees, particularly in open or forest edge habitats.



Eel grass (*Vallisneria australis*)

Eel grass is a bottom-rooted freshwater aquatic plant with strap-like leaves up to 5.5m long. Male flowers consist of large pollen-filled sacs produced at the base of mature plants. Female flowers are small and green and produced on the end of a very long, spirally coiled stalk that can extend to the water's surface. It is capable of forming dense stands which may displace other submerged plant species in suitable wai māori / freshwater habitats. These stands have the potential to impede drainage, exacerbating flooding, and impede recreational water uses. Entanglement in the weed can lead to drowning.



Egeria (*Egeria densa*)

Egeria is a bottom-rooted submerged perennial aquatic herb with long stems (3m and over) and white flowers borne at the water's surface between November and January. It forms dense stands displacing native aquatic plants and altering the habitat structure of macroinvertebrates and fish. Resultant impacts can include lowered dissolved oxygen levels, increased sedimentation, changes to primary production and nutrient cycling capacity of the invaded water body.



Elaeagnus (*Elaeagnus x reflexa*)

Elaeagnus is a dense evergreen scrambling perennial shrub with stems up to 20m, leaves with irregular wavy margins, small pale white or brown flowers borne in clusters in autumn and red/orange fruit. It smothers co-occurring vegetation, especially in regenerating bush, forest margins and canopy gaps. It is also capable of forming dense thickets that may impede recreational access to natural areas.



Elephant's ear (*Alocasia macrorrhiza* syn. *A. brisbanensis*)

Also known as: spoon lily

Elephant's ear is a perennial herb up to c.2m tall with large arrow-shaped leaves and numerous small cream flowers produced in summer and autumn. It is capable of forming dense stands which may displace native plants in wetlands and other damp habitats. It is poisonous and can invade damp pasture, therefore may be avoided by livestock. Contact with the plant can lead to skin and eye irritation.



Elodea³⁸ (*Elodea canadensis*)

Elodea is a submerged, bottom-rooting freshwater aquatic plant up to 5m tall, with small white and purple flowers borne at the surface of the water from November to January. It can reduce flow velocity and impede gas exchange in freshwater ecosystems resulting in lowered dissolved oxygen levels and increased sedimentation. It may also impede water flow in drains, exacerbating flooding.



English ivy (*Hedera helix* subsp. *helix*)

English ivy is an evergreen perennial root-climbing plant with lobed leaves, numerous yellow-green flowered umbels from August to December and deep purple or black berries. It forms dense monocultural groundcover, substantially lowering ground-level light availability and preventing regeneration of other vegetation in roadsides, native forest and riparian ecosystems. Dense mats combined with rapidly decomposing litter have potential to alter decomposition dynamics and nutrient cycling within invaded ecosystems. Contact with the plant can cause contact dermatitis.



False tamarisk (*Myricaria germanica*)

False tamarisk is an evergreen shrub up to 2m tall with small, pink flowers borne in summer. It is capable of colonising riparian margins and braided river beds. It can reduce available habitat for nesting birds in braided riverbeds, while also providing cover for predators.



Trevor James, Agresearch

Fatsia (*Fatsia japonica*)

Fatsia is a shrub or small tree up to 6m tall with large glossy leaves, black fruit and white flowers borne in umbels between March and May. It is shade tolerant and bird dispersed and therefore capable of invading intact native bush. It is capable of forming multi-stemmed thickets which, with its very large leaves, cast deep shade preventing native species regeneration below. It is poisonous if ingested and the leaves are allergenic, causing



Colin Ogle

³⁸ Pest outside of secure containment only.

contact dermatitis in some people.

Ferny asparagus (*Asparagus plumosus*)

Ferny asparagus is a scrambling perennial plant with widely branched stems, purple to black berries and small, white flowers borne November and December. Based on closely related invasive species, ferny asparagus has the potential to smother native vegetation, reducing regeneration leading to canopy collapse, and may be associated with altered invertebrate communities. Native forest and coastal habitats are most at risk from invasion.



Firethorn (*Pyracantha angustifolia*)

Firethorn is an evergreen spiny shrub growing over 2.5m tall with densely hairy stems, white flowers borne in clusters between December-January and yellow to orange fruit. Firethorn is capable of restructuring woody plant communities, including acting as a nurse plant for privet, in semi-open or disturbed sites.



Formosa lily (*Lilium formosanum*)

Formosa lily is a perennial herb with erect unbranched stems up to 1m tall and large, white tinged with purple, trumpet-like flowers, mainly borne January-March but sometimes year round. It is most invasive in disturbed or open coastal ecosystems including sand dunes, cliff faces and forest canopy gaps where it forms dense stands. Coastal species potentially at risk from competition may include culturally significant species such as harakeke.



Furcraea (*Furcraea* spp.)

Furcraea are perennials up to 3m wide with fleshy or leathery leaves held in rosettes, and conspicuous spines or minute teeth along the leaf margins. It forms monocultures in coastal and other open ecosystem potentially excluding native plant species and altering habitat structure for native animals. Ecosystem processes are impacts probable due to the lack of functionally equivalent native species.



German ivy (*Senecio mikanioides*)

Also known as: water ivy, parlor ivy

German ivy is a perennial scrambling vine up to 5m bearing lobed bright green leaves and yellow button-like flowers. It aggressively smothers the understorey in coastal areas, riparian and forest margins and clearfelled forestry plantations, suppressing seedling regeneration and facilitating other invasive vines. It is toxic to aquatic animals and terrestrial invertebrates.



Weedbusters

Giant reed (*Arundo donax*)

Also known as: bamboo reed, donax cane, arundo grass, cow cane, river cane, reed grass.

Giant reed is a sturdy perennial grass with large, spreading clumps of thick culms up to 6m tall, maize-like leaves and large fluffy purplish to silver inflorescences standing above the foliage. It invades riparian areas, wetlands and saltmarshes, altering hydrology by blocking water flow and displacing native plants by creating vast monocultures. Dense stands can impede drainage and exacerbate flooding in agricultural systems.



Giant rhubarb (*Gunnera manicata*)

Giant rhubarb is a clump-forming, herbaceous perennial up to 2.5m tall by 4m wide, with very large prickly leaves. It competes with native plant species, reducing native biodiversity in riparian margins, wetlands, coastal areas and cliffs. The large leaves can also prevent native seedlings from growing underneath them.



Dinkum

Goat's rue (*Galega officinalis*)

Goat's rue is a perennial clumping herb up to 1m tall with purple or white pea-like flowers borne in spikes. It invades pastures and if consumed can be toxic to livestock. Potential mechanisms for impacts in riparian margins and riverbeds include nitrogen fixation and competition with native plant species.



Gorse (*Ulex* spp.)

Gorse is a spiny perennial shrub up to 4m tall with yellow pea-like flowers produced from May to November and explosive seed pods. It is a serious pest of the primary production industry where it will readily invade forestry plantations and pasture, reducing food for livestock. It also forms dense stands and out-competes native vegetation in shrubland, forest margins and coastal habitats. Native forest succession through gorse can result in a different vegetation composition and lower diversity than succession through native early succession plants. Its nitrogen-fixing capacity can increase soil nitrogen in invaded areas, to the detriment of specialised plants including herbs and orchids. Dense prickly stands can impede access to recreational and culturally important sites.



Grey willow (*Salix cinerea*)

Also known as: pussy willow, shrub willow, grey sallow

Grey willow is a deciduous shrub or small tree up to 7m high with greenish grey to dark purple stems, oval leaves and 1.5–3.5cm long catkins appearing before the leaves. It forms vast dense stands and thickets causing blockages, flooding and structural changes in waterways. It can affect native plant species in wetlands and riparian ecosystems, through competition, shading and altered hydrology.



Guava (*Psidium cattleianum*)

Guava is a large perennial shrub or small tree up to 6m tall with smooth, oval leaves, white flowers borne from January to March and green ripening to dark purple-red fruit. It is highly shade tolerant, and therefore capable of invading intact native forest vegetation. It has the potential to form monocultures in a wide variety of ecosystems and is associated with reduced recruitment of native species beneath dense guava stands. Guava can re-structure the vegetation profile of forests, reducing the density of the understorey and overstorey while increasing canopy volume in the midstorey. There is also potential to exacerbate impacts from animal pests such as possums and



pigs by creating an important food source.

Guinea grass (*Megathyrsus maximus*)

Also known as: green panic grass, elephant grass, buffelgrass

Guinea grass is a perennial bunchgrass with erect stems reaching up to 3.5m height and reddish spikelets. It has the potential to be problematic in the horticultural industry as an aggressive invader of crops, orchards and vineyards and as an alternative host for insect pests and diseases of cereal crops. It is a strong competitor and invader of open habitats, including grasslands and riparian ecosystems, and is a potential fire hazard, capable of increasing fire severity and spread.



Gypsywort (*Lycopus europaeus*)

Gypsywort is an emergent aquatic perennial herb up to 1m tall with toothed leaves and small, white to pale pink flowers borne summer-autumn. It is particularly invasive in wetlands and riparian margins, spreading rapidly via water movement once in a catchment, followed by localised vegetative spread. It is fast growing and has the potential to displace native vegetation in invaded ecosystems.



Hakea (*Hakea* spp.)

Also known as: prickly hakea, willow-leaved hakea
Hakea are large shrubs or small trees with spiny or soft leaves and white and yellow flowers. It is a dominant competitor in open sites with low fertility soil including low forest, scrub, coastal and gumland habitats. It alters moisture regimes, adds to fire risk, alters vegetation succession and contributes to the local extinction of rare native fern, orchid and shrub species.



Trevor James, Agresearch

Hawkweed (*Pilosella* spp. syn. *Hieracium* spp.)

Hawkweeds are perennial broadleaf herbs 15-40cm in height with narrow leaves and yellow to orange flower heads produced during spring and summer. Hawkweed infestations can reduce feed plant cover and the productivity of pasture, in some cases farmland has been abandoned as a result of lost productivity. They prefer cooler climates but have broad environmental tolerances and may invade grasslands, scrubland or riparian margins, potentially excluding native plant species.



Weedbusters

Hawthorn (*Crataegus monogyna*)

Hawthorn is a deciduous shrub or small tree (5-14m high) with thorny stems, coarsely toothed leaves and small white flowers produced in spring followed by dark red fruit. Dense hawthorn thickets can exclude native plants in grasslands, scrublands and disturbed native forest. It can also facilitate exotic birds and mammals via the provision of a food resource. Root intrusion on tūpuna maunga affects threatened plants and archaeological features.



Heather (*Calluna vulgaris* excl. double flowered cultivars)

Heather is a bushy evergreen perennial shrub up to 50cm tall with woody stems, small stalkless leaves and small purple bell shaped flowers produced in spring. It can invade poor quality pasture, reducing the cover of preferred food plants and lowering productivity. Dense thickets can out-compete native plants in tussock, grasslands and herbfields. It can also reduce the diversity of native invertebrates by altering the availability of resources and habitat structure.



Udo Schmidt

Hemlock (*Conium maculatum*)

Also known as: poison hemlock

Hemlock is an annual, biennial or perennial herb, 1–2.5m tall with fernlike leaves and clusters of small, white flowers. It is pest plant of poorly drained habitat including riparian margins, swamp, forest margins and pasture. It is acutely poisonous and poses severe health risks to humans, livestock and native animals upon ingestion. Severe cases can be



fatal.

Himalayan honeysuckle (*Leycesteria formosa*)

Himalayan honeysuckle is a perennial shrub up to 2m tall with heart-shaped leaves, drooping spikes of white funnel-shaped flowers produced from December to May and dark purple berries in autumn. It is fast growing and forms dense stands that may exclude native plants in native and plantation forest, shrubland and riparian margins. It can rapidly dominate disturbed forest areas, potentially competing with native colonisers such as tutu.



Holly-leaved senecio (*Senecio glastifolius*)

Also known as: pink ragwort

Holly leaved senecio is an erect short-lived perennial herb up to 2m tall with serrated leaves and daisy-like purple flowers borne from September to November. It is capable of shading and displacing small-stature native plant species in a range of coastal native habitats.



Hornwort (*Ceratophyllum demersum*)

Hornwort is a perennial submerged aquatic plant up to 7m tall which can be anchored to sediment by stems, or forms free-floating mats. Leaves are 10-40mm long, narrow, branched and whorled forming complex architecture. Hornwort forms dense monospecific stands which can displace all native submerged vegetation down to 15m depth. The dense stands alter water flow, increase flooding risk and impede recreational access of waterbodies. Because it can grow to greater depths than other aquatic weeds, it is the species likely to have greatest impacts on deep-water charophyte meadows. Kōura are also likely to be especially impacted due to requirement for open habitat.



Rohan Wells, NIWA

Horsetail (*Equisetum* spp.)

Horsetails are erect perennial fern-allies, rush-like in appearance, with erect jointed stems and spore cones borne in spring. They are capable of invading croplands and pasture, and are toxic to livestock. In wetland and riparian margins they are highly competitive, frequently excluding other vegetation and altering nutrient cycles.



Hydrocotyle umbellata

Hydrocotyle umbellata is a semi-aquatic perennial, herb with tiny, white, star shaped flowers occurring in umbels of 10-60 flowers. It is a terrestrial plant in wet soils or aquatic in freshwater up to 1.5m deep. Appearance and growth form is variable depending on the invaded habitat type, either floating, creeping or mat forming. It forms dense monocultures that can exclude native plants and has the potential to hybridise with native *Hydrocotyle* spp. In agricultural systems, it may impact irrigation and drainage.



Iceplant (*Carpobrotus edulis* and hybrids)

Iceplant is a perennial succulent herb with stems up to 6m long and red, pink or yellow flowers borne from October to February. It invades coastal habitats, directly impacting on native plant species through smothering, competition for space and other resources, and indirectly via soil chemistry modification. Impacts include reduced germination and survival of native plants, resulting in reductions in native species' richness at invaded sites. It will also hybridise readily with related native species, impacting on the genetic diversity of the native species.



Italian arum (*Arum italicum*)

Italian arum is a perennial herb, up to 60cm tall with arrow-shaped leaves with cream veins and floral inflorescences comprised of a yellow spike surrounded by a pale green or cream bract. It is poisonous and avoided by livestock when invasive in pasture. It forms dense ground-cover, shading out small native plants and preventing native seedling recruitment in disturbed forest and



scrublands.

Italian jasmine (*Jasminum humile*)

Italian jasmine is an evergreen shrub up to 2.5m tall with yellow, tubular flowers borne year round and glossy black fruit. It can form monospecific patches, excluding native species and preventing native seedling recruitment in a diverse range of habitats, including forest, scrubland and coastal habitats.



Weedbusters

Japanese cherry (*Prunus serrulata*)

Japanese cherry is a deciduous tree up to 12m tall with toothed leaves, pink or white flowers borne in spring and red-black fruit. It is capable of invading native forest, competing with and displacing native plants. Closely related species are highly invasive overseas and are known to reduce plant functional diversity in invaded forests. Japanese cherry has the potential to substantially increase in abundance in forest ecosystems due to bird-dispersed seed.



Jeremy Rolfe

Japanese honeysuckle (*Lonicera japonica*)

Japanese honeysuckle is an evergreen climber with dark green leaves and paired fragrant white flowers with yellow corollas. The vine can grow up to 15m/year and will quickly form dense monospecific mats which smother and suppress native vegetation, harbour mice and facilitate other invasive plants in disturbed sites, river banks, bare ground, scrubland, forest margins, fragments or gaps. In orchards it is a host of several pathogens, and in forestry plantations it will overgrow young plants and chemically inhibit plant growth of some pine species



Japanese spindle tree (*Euonymus japonicas*)

Also known as: winged euonymus, Japanese laurel
Japanese spindle tree is an evergreen shrub or small tree up to 7m height with glossy leaves, fleshy pink seed capsules and clusters of small and greenish flowers. It forms dense stands, assumed to crowd out native plants and prevent seedling recruitment, in disturbed bush, forest margins, scrubland and coastal ecosystems.



Japanese walnut (*Juglans ailantifolia*)

Japanese walnut is a deciduous wide-spreading tree up to 15m tall with red, pink or purple flowers borne October to November. It is capable of forming dense stands and chemically inhibiting the growth of other plants, excluding native plant species in riparian and wetland habitats.



Weedbusters

Jasmine (*Jasminum polyanthum*)

Also known as: pink jasmine, white jasmine.

Jasmine is a wiry evergreen climber up to 12m tall which produces an abundance of reddish-pink flower buds in late winter and early spring, followed by fragrant star-like white flowers. It is a rapid and vigorous climber, able to invade dense forest and smother all vegetation in the subcanopy. It is also capable of forming dense groundcover, preventing native seedling establishment in forest and disturbed ecosystems.



Kangaroo acacia (*Acacia paradoxa*)

Kangaroo acacia is a perennial shrub up to 3m with 10mm long spines, inflorescences of many yellow flowers and leaves reduced to winged leaf stalks. It can form extremely dense stands potentially excluding native vegetation in open or disturbed sites including coastal areas, scrubland and forest margins. It is a nitrogen-fixing plant, potentially altering soil fertility, nutrient cycling dynamics and plant community compositions in invaded ecosystems.



Khasia berry (*Cotoneaster simonsii*)

Khasia berry is a deciduous or semi-evergreen erect shrub up to 4m tall with small white or pink flowers borne November to December and orange-red berries. It is capable of forming dense stands which exclude native plant species in semi-open to open habitats, including pasture, open shrubland, forest margins, plantation forests and coastal habitats.



Kudzu vine (*Pueraria montana* syn. *P. lobata*)

Kudzu vine is a herbaceous to semi-woody, scrambling, trailing or climbing vine up to 30m long with large lobed leaves and spikes of reddish-purple, pea-like flowers. It is a very aggressive competitor in native forest, shrubland and riparian margins; altering forest disturbance regimes, out-shading and girdling small trees and chemically inhibiting the growth of co-occurring plants.



Forest and Kim Starr

Lagarosiphon/oxygen weed (*Lagarosiphon major*)

Oxygen weed is a bottom-rooted submerged perennial aquatic herb with downward curving leaves, arranged in spirals on the stem. It is capable of forming dense stands; displacing native aquatic herb species, altering habitat availability for fish and invertebrates, and affecting dissolved oxygen levels by reducing gas exchange. The stands can also impede recreational water access to water bodies.



Rohan Wells, NIWA

Lizard's tail (*Saururus cernuus*)

Also known as: swamp lily, mouse's ear

Lizard's tail is a perennial emergent freshwater aquatic herb with branches bearing spikes of white inflorescences that resemble a lizard's tail. It is able to dominate the herb layer in wetlands, marshes, swamps, streams and, lake edges, potentially shading out submerged species.

**Lodgepole pine (*Pinus contorta*)**

Lodgepole pine is a shrub to medium-sized tree that can live over 350 years, with cones that persist on the tree and winged seeds. It is capable of forming monocultural stands in open mid-high elevation areas. Invasion is associated with reductions in species richness and a shift towards non-native dominance of soil fungal communities. Impacts are likely too mainly on light-demanding short-stature plant species following vegetation structure alteration from open habitat to forest.



Jeremy Rolfe

Loquat (*Eriobotrya japonica*)

Loquat is an evergreen tree up to 8m tall with thick, leathery and wrinkled leaves, white flowers borne in many-flowered inflorescences from April to November and yellow fruit. It is shade tolerant and can be dispersed into forest via kererū, allowing it able to invade intact canopy native vegetation and potentially dominate the mid-tier canopy. It is likely to be advantage by warmer temperatures under climate change.



Madeira vine (*Anredera cordifolia*)

Also known as: Madeira, mignonette vine, potato vine, lamb's tail.

Madeira vine is a perennial climbing vine up to 40m long with heart-shaped or oval fleshy leaves and drooping inflorescences of small fragrant cream flowers from January to April. It can rapidly invade disturbed forest and margins, plantations, gullies, scrublands, coastline, dunes and riparian margins by smothering and sometimes crushing understorey plants.



Male fern (*Dryopteris filixmas*)

Male fern is a perennial fern with round sori produced through autumn and winter. It is shade tolerant, therefore intact forest is at risk of invasion, especially riparian margins, though disturbed forest may be at higher risk. It occupies a similar niche to native forest-dwelling ferns therefore may competitively displace natives in invaded ecosystems.



Jeremy Rolfe

Marram grass (*Ammophila arenaria*)

Marram grass is a densely tufted perennial grass up to 1m tall with white-golden flower heads borne November to March. It is capable of forming extensive areas of almost monospecific cover in sand dune habitats. It traps sand, leading to substantial changes in sand dune morphology, creating dunes that are taller, steeper, more regular and more stable. It displaces native dune species such as pīngao, via rapid sand accumulation and associated burial of competing plants. It can also



reduce shore bird nesting habitat through altered dune architecture.

Mexican daisy (*Erigeron karvinskianus*)

Mexican daisy is a perennial herbaceous daisy up to 40cm tall with pink, purple or white flowers borne September to May. It forms dense groundcover mats which are observed to suppress co-occurring short-stature plants and recruitment in ecosystems that contain many at risk plant species (e.g. coastal herbfields, gumlands and off-shore islands). Based on its life-form, it may have the potential to alter functional composition of ground invertebrate communities in invaded areas.



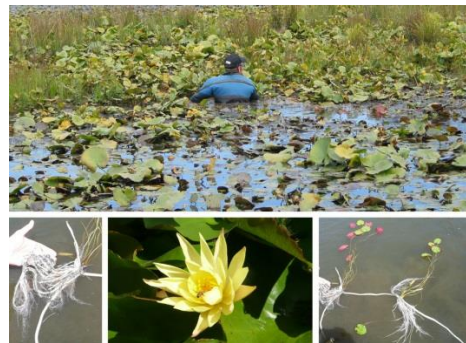
Mexican devil (*Ageratina adenophora*)

Mexican devil is a herb to sub-shrub approximately 1-2m tall with diamond-shaped leaves and white flowers borne in dense clusters from August to March. It invades pasture and is poisonous to horses, potentially fatal. It is capable of displacing native plants in wetland and riparian habitats, through direct competition for resources, and potentially also via chemical inhibition and altered soil microbial activity.



Mexican water lily (*Nymphaea Mexicana*)

Mexican water lily is a perennial bottom-rooted aquatic herb with floating heart-shaped leaves and yellow flowers borne above the water surface from October to December. It forms dense mats which can reduce dissolved oxygen levels in the water column by preventing gas exchange between water and air, and may suppress submerged aquatic plants by shading. Impacts on fish, zooplankton and other species resulting from low dissolved oxygen are probable.



Rohan Wells, NIWA

Mickey Mouse plant (*Ochna serrulata*)

Mickey Mouse plant is a shrub up to 3m tall with serrated leaves and yellow flowers borne September to March. The fruit resemble the face of Mickey Mouse (black fruit attached to red sepals), and are produced in autumn. It is shade tolerant and bird dispersed, therefore has the potential to invade intact forest ecosystems. It is known to dominate scrub layers where invasive overseas, therefore impacts on native plants via competition and suppressing recruitment are likely.



Mile-a-minute (*Dipogon lignosus*)

Mile-a-minute is an evergreen perennial climbing vine, with pea-like, white, pink or red flowers borne from July to January. It invades scrubland, forest margins, stream banks, wetlands, coastal areas including banks and open coastal forest; smothering trees and destroying forest structure. It is capable of nitrogen fixing and has the potential to alter nutrient cycling patterns, possibly favouring other exotic plants.



Mist flower (*Ageratina riparia*)

Also known as: mistweed, river eupatorium. Mist flower is a many-stemmed, erect or scrambling herb 0.5-1.5m tall with long coarsely serrated leaves and clusters of small white flowers produced from August to January. It forms dense colonies in wetlands, scrub and other damp habitats, smothering native plants, including *Hebe* spp. and preventing their regeneration. It is very likely to infest riparian margins where it causes sediment buildup, altering flow regimes and potentially causing flooding.



Weedbusters

Monkey apple (*Syzygium smithii* syn. *Acmena smithii*)

Monkey apple is a tree up to 15m tall with glossy leaves, creamy coloured flowers borne October-January and white or pale pink/mauve fleshy fruit. It colonises native forest, especially exposed ridges, edges and regenerating secondary scrub. It is also capable of recruiting below closed canopy due to



high shade tolerance, therefore intact forests are at risk of invasion. In the long-term, invasion may lead to transformative change to forest composition and structure.

Montbretia (*Crocsmia x crocosmiiflora*)

Montbretia is a clump-forming perennial herb with sword-shaped leaves, up to 90cm tall and orange flower heads overtopping the foliage January-February. Dense stands have been observed to exclude native vegetation. Open grasslands and riparian habitats are most at risk from invasion.



Weedbusters

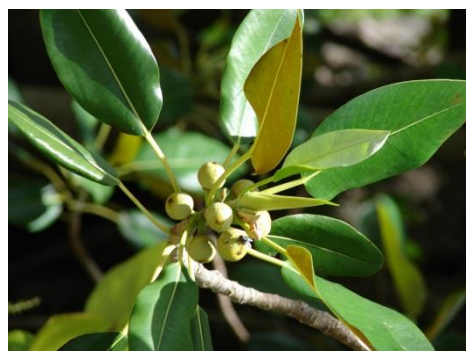
Montpellier broom (*Genista monspessulana*)

Montpellier broom is an evergreen perennial shrub up to 3m high with clusters of pea-like yellow flowers produced during May-November. It can form dense thickets in pasture, reducing grazing capacity and impeding movement of stock. Seeds and leaves are poisonous to stock. It competes with tree seedlings in plantations, reducing productivity. In native forest and scrubland ecosystems it out-competes vegetation and increases soil nitrogen, altering native species composition and facilitating invasion by other weed species. Thickets can provide shelter for invasive animals (e.g. rabbits).



Morton bay fig (*Ficus macrophylla*)

Morton bay fig seedlings often begin as epiphytes, growing on other trees, but eventually become large free-standing buttressed trees (up to 30m tall), often killing the host tree in the process. It has the potential to impact on native plants through competition, shading of understorey and by strangling host plants. It is bird-dispersed and therefore capable of colonising remote intact forest. There is further potential to restructure frugivore communities; including supporting elevated populations of vertebrate pests such as possums, pigs and birds through copious year-round fruit production.



Moth plant (*Araujia hortorum*)

Moth plant is a perennial climber with scrambling stems, glossy leaves, white or pale pink flowers borne in clusters or singly, and fleshy pear-shaped fruit. It smothers and kills plants up to medium-high canopy, preventing recruitment in forest, coastline, cliffs, shrublands, mangroves, inshore and offshore islands, orchards and disturbed habitats. Based on its life-form, there can be long-term potential for catastrophic impacts on forest structure. Milky latex in stems, leaves and roots are poisonous and cause dermatitis.



Nardoo (*Marsilea mutica*)

Also known as: smooth nardoo, Australian water clover, clover fern

Nardoo is a perennial aquatic fern with clover-like leaves floating flat on the water surface or held up on leaf stalks from damp ground. It reportedly shades out native, bottom-rooted aquatic plants, and competes with small native plants in wetlands and around lake edges. Impacts are likely to be moderately severe based on lifeform.



Trevor James, Agresearch

Nodding thistle (*Carduus nutans*)

Also known as: musk thistle

Nodding thistle is an annual or biennial thistle with spiny leaves and erect flower stems bearing drooping purple flowers during spring-summer. It suppresses valued pasture plants through shading and chemical inhibition, and impedes livestock access to forage due to spines. It is most problematic in over-grazed or drought-stressed pasture.



Rules:

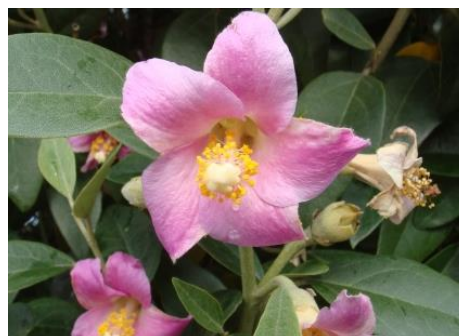
1. All owners or occupiers of land in the Auckland region must destroy all nodding thistle plants (*Carduus nutans*) on that land.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

Norfolk Island hibiscus (*Lagunaria patersonii*)

Norfolk Island hibiscus is a long-lived evergreen tree up to 15m tall with white to pink flowers borne predominantly between September-April. It is tolerant to harsh conditions and has the potential to compete with co-occurring native plants. Coastal ecosystems currently appear to be most at risk from invasion, but wetlands are probably also at risk due to occupancy of swamps in native range.



Nutgrass (*Cyperus rotundus*)

Also known as: purple nut sedge

Nutgrass is an erect perennial rush up to 35cm tall with simple umbels of rayed inflorescences during summer. It invades a wide range of crops including maize, asparagus, root vegetables, vineyards and orchards, reducing crop yields. There is the potential for nutgrass to out-compete native species in wetlands, riparian margins and coastal areas. There is also potential for hybridisation with the closely related *C. ustulatus*.



Oxylobium (*Callistachys lanceolata*)

Oxylobium is a tall evergreen shrub (3-8m high) with dense racemes of yellow/orange pea-like flowers borne in spring. It has the potential to impact native species in a variety of short-stature plant communities including in coastal, grassland and scrubland ecosystems, through competition and altered nutrient cycling. Elevated nitrogen levels may have the potential to facilitate invasion by other exotic plants.



Palm grass (*Setaria palmifolia*)

Palm grass is a large dense perennial grass up to 1.5m tall with large, elongate leaf blades and small white flowers borne on spikelets in summer. Palm grass is capable of forming dense stands in a range of native ecosystem types including urban bushland, forest margins and riparian margins. It may displace native plant species and prevent recruitment. Leaf litter breaks down rapidly which may speed up nutrient cycling rates and potentially



facilitate the invasion of other weeds.

Pampas grass (*Cortaderia jubata* and *C. selloana*)

Pampas grass is a tall clump-forming grass up to 4m, with sharp leaves, erect dense fluffy flower heads which are white-pinkish/purple but fade to dirty white-yellow/brown in cooler months. It will readily colonise burnt or disturbed sites and quickly becomes very dense, replacing native ground covers, shrubs, and ferns in coastal ecosystems and other open, disturbed habitats. It will also provide habitat for possums, rats, and mustelids. In forestry plantations it will quickly become very dense, smothering young trees and being a nuisance during harvesting. Build-up of dead leaves, leaf bases and flowering stalks creates a significant fire hazard in primary production and recreational areas.



Paperbark poplar (*Melaleuca quinquenervia*)

Paperbark poplar is an evergreen tree up to 20-30m tall that sheds bark in pale, papery layers and produces white flowers with pronounced stamens. It is capable of displacing native plants in freshwater and saline wetlands and open terrestrial ecosystems. It forms dense monocultural forests with sparse understorey, thus altering vegetation structure and reducing plant species' diversity. Probable impacts on macrofauna resulting from altered vegetation structure. High concentrations of essential oils make the foliage highly flammable, burning at very high temperatures. Damage to infrastructure and other economic losses from large fires can be substantial.



Parrot's feather (*Myriophyllum aquaticum*)

Parrot's feather is a submerged, bottom-rooted perennial aquatic herb of which the top 10cm of foliage can be emergent. Sprawling foliage is pale grey-green and leaves are finely divided, feathery and arranged in whorls of 4 to 6. It is ranked as one of Aotearoa / New Zealand's worst aquatic pest plants, and is especially problematic in shallow, sheltered, nutrient rich lakes and wetlands. It can



displace other plant species through rapid growth, shading and the release of biochemicals, thereby decreasing native plant species richness. An increase in cover of parrot's feather is also associated with a decrease in invertebrate abundance and diversity in invaded water-bodies.

Perennial nettle (*Urtica dioica*)

Perennial nettle is a herbaceous plant (1-2m high in summer but dies down in winter) with hairy stinging stems and leaves, and white to greenish flowers during summer months. It has the potential to form dense clumps, outcompeting native plants in a range of disturbed or moist native habitats. Stinging leaves can cause pain and swelling and stands may impede access to natural areas, particularly in riparian zones.



Periwinkle (*Vinca major*)

Also known as: bigleaf periwinkle, large periwinkle, greater periwinkle and blue periwinkle. Periwinkle is a scrambling perennial herbaceous groundcover plant or vine with solitary blue-violet flowers. It is a vector of Pierce's disease which infects grapes and would greatly impact vineyards. It smothers the ground, especially on stream banks, preventing native seedling regeneration and altering erosion and flow regimes.



Phoenix palm (*Phoenix canariensis*)

Phoenix palm is a stocky palm tree with a trunk reaching up to 6m tall, large segmented leaves and orange-yellow berries. Sharp spines on the leaves are capable of causing severe injury requiring hospitalisation, with children especially at risk. It competitively excludes native vegetation due to its large size and spines, which are unpalatable to grazers. Numerous threatened species are potentially at risk in coastal ecosystems including dunes, saline wetlands, cliffs and coastal forest. It also has the potential to facilitate other invasive plants as epiphytes (e.g. climbing asparagus, ladder fern and Morton Bay fig) and provides habitat for a variety of invasive exotic birds.



Pitted crassula (*Crassula multicava*)

Also known as: fairy crassula

Pitted crassula is a perennial succulent herb with creeping stems and pink-red flowers produced during spring and summer months. It is capable of forming dense mats which prevent the regeneration of other plant species. Coastal, island and volcanic cone ecosystems are most at risk from invasion, including under partial tree canopy. Hybridisation has been recorded with closely related species meaning there is potential for hybridisation with native *Crassula* spp.



Plectranthus (*Plectranthus ciliates*)

Also known as: speckled spur flower, blue spur flower

Plectranthus is a trailing or straggling herb or shrub, with serrated leaves which are purple underneath, and clusters of white and purple flowers. It forms dense mats and suppresses native seedling regeneration in a wide range of ecosystems including coastal, forest and shrubland habitats.



Plumeless thistle (*Carduus acanthoides*)

Also known as: bastard nodding thistle, Tapapa thistle, welted thistle

Plumeless thistle is a biennial or annual thistle with with spiny, sometimes woolly stems and foliage and purple inflorescences. It aggressively infests pastures, reducing forage quality and accessibility to stock. Spines can cause injuries to humans and livestock.



Port Jackson fig (*Ficus rubiginosa*)

Port Jackson fig is an evergreen multi-stemmed tree up to c.15m tall with large leathery leaves and small green flowers which develop into yellow-red fruit. Ecosystems with harsh rocky substrates and pōhutukawa (*Metrosideros* spp.) forests are likely to be most at risk from invasion, including volcanic cones and coastal cliffs. Invaded *Metrosideros* forests have reduced above-ground biomass and altered vegetation structure. Potential impacts on frugivore communities could include acting as a



resource for possums, pigs and rodents.

Prickly-leaved wattle (*Acacia verticillata*)

Also known as: prickly moses

Prickly-leaved wattle is a short-lived shrub or small tree with reduced spikey leaves, pale yellow flowers grouped on inflorescences that extend beyond the leaves during September-November. It is rated as having extremely high invasiveness potential based on its history of weediness overseas. It prefers disturbed habitats; coastal dune ecosystems and wetlands may be especially vulnerable due to frequent disturbance, suitable habitat and a lack of structurally equivalent native vegetation. Mass recruitment following fire or soil disturbance can lead to almost impenetrable stands with little understorey.



Jeremy Rolfe

Privet: tree (*Ligustrum lucidum*) and Chinese (*L. sinense*)

Tree privet is a medium sized evergreen tree growing up to 10m tall. Chinese privet is an evergreen or semi-deciduous shrub to small tree up to 5m tall. Both plants have white, fragrant flowers borne in clusters during spring-summer and purple-black fruit. Privet displaces native shrubs and trees and can form dense stands which dominate the canopy layer and prevent recruitment of native species, thereby altering vegetation structure and diversity in forest and shrubland ecosystems. Root intrusions can damage archaeological features on tūpuna maunga and other significant wāhi. Some people may have a reaction to privet, often as a cross-reactivity to their main allergens.



Tree privet

Queen of the night (*Cestrum nocturnum*)

Queen of the night is a perennial shrub up to 2.5m tall with greenish-white tubular flowers borne in November-March and glossy white berries. Formation of dense stands can prevent recruitment of native plant species in forest margins, stream banks, slips and other light gaps. It is poisonous and may cause hay-fever symptoms, reducing the enjoyment of the natural environment.



Weedbusters

Queensland poplar (*Homalanthus populifolius*)

Queensland poplar is a shrub or small tree up to 5m tall with heart-shaped leaves turning red during cooler months, and inconspicuous flowers, borne in racemes up to 17cm long. It has the potential to displace native plant species in scrubland, regenerating bush, pine forest and coastal ecosystems, and may become a notable pest plant of roadsides and gardens.



Weedbusters

Queensland umbrella tree (*Schefflera actinophylla*)

Queensland umbrella tree is a multi-stemmed tree up to 10m tall with large glossy compound leaves and red or pink flowers borne in large, branched clusters near the top of the tree. It is bird-dispersed, shade-tolerant and fast growing therefore competitive exclusion and replacement of intact native vegetation could be expected, particularly in association with warming climatic conditions. The closely related taonga species patē (*S. digitata*) may directly be impacted through competition or other mechanisms.



Ragwort (*Jacobaea vulgaris* syn. *Senecio jacobaea*)

Also known as: tansy ragwort, St James' wort
Ragwort is an erect biennial or perennial herb, usually growing to 60cm with bright yellow flowers clustered at the end of the branches. It forms dense stands in pasture, potentially reducing pasture production, and is toxic to livestock. Ragwort can also invade open scrubland and may be associated with an altered abundance of some invertebrate species. Extensive handling of the plant can cause skin irritation and allergies.



Red dragon (*Persicaria microcephala*)

Red dragon is a perennial herbaceous vine which can be distinguished by foliage turning red in spring and small white to pink flowers borne in autumn. It is capable of forming dense mats up to 1m tall, or taller, scrambling over other plants or structures. It has the potential to invade a wide variety of ecosystems including riparian and forest margins. Impacts are likely to be similar, although to a lesser



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extent, to the highly invasive closely related species Chinese knotweed *P. chinensis*.

Red valerian (*Centranthus ruber*)

Red valerian is a perennial herb up to 80cm tall with bluish green leaves and pink, red or white flowers borne from November-June. It is invasive overseas, displacing native vegetation, and is likely to be most problematic in dry, rocky coastal ecosystems in Tāmaki Makaurau / Auckland, including Rangitōtō. Threatened short stature species may be especially vulnerable to shading and competition for other resources.



Reed sweet grass (*Glyceria maxima*)

Reed sweet grass is an erect clumping perennial grass, reaching almost 2m, with long, branched yellow-green to purple tinged flower heads. It produces creeping rhizomes which can form dense mats that are attached at the bank but are floating in deeper water in still or slow moving water bodies. These dense mats can trap sediment and accumulate masses of decomposing vegetation; altering stream morphology, dissolved oxygen levels and other biophysical properties of invaded freshwater ecosystems.



Rhamnus (*Rhamnus alaternus*)

Also known as: evergreen buckthorn
Rhamnus is an evergreen shrub up to about 5m high with glossy serrated leaves, small green flowers and dark glossy red or black fruit. It forms dense stands, preventing the recruitment of native plants in scrublands, forest margins and plantations. It will also act as low scrub on coastal cliffs, inshore and offshore islands and rocky outcrops.



Rhaphiolepis/sexton's bride (*Rhaphiolepis umbellate*)

Rhaphiolepis/sexton's bride is a perennial shrub up to 3m tall with white and pink flowers borne in inflorescences between July and December, and purple-black fruit ripening between March and April. It invades coastal areas, particularly coastal cliffs, displacing native vegetation.



Rhus tree (*Toxicodendron succedaneum*)

Rhus tree is a deciduous tree up to 8m tall with pinnate leaves that turn red in autumn and yellow-green flowers borne in inflorescences up to 200mm long. It invades urban and coastal habitats, wastelands and bush margins and poses a high risk to human health. Contact with sap can cause severe contact dermatitis characterised by itchy, burning red welts and swelling. Rhus tree is also rated as the most allergenic plant in Aotearoa / New Zealand. Naturalisation can therefore substantially reduce the ability to enjoy the outdoor environment.



Rough tree fern (*Cyathea cooperi*)

Also known as: Australian tree fern
Rough tree fern is a sporophyte up to 8-12m tall that predominantly invades disturbed rainforest and forest edges, but has the potential to also invade relatively undisturbed forest and manuka-kanuka gumlands. It is a highly efficient competitor, displacing co-occurring native ferns in its invasive range overseas. Its strategy of rapid growth and rapid decomposition alters nutrient cycling in its invasive range overseas compared with co-occurring native ferns.



Peter de Lange

Royal fern (*Osmunda regalis*)

Royal fern is a tall deciduous perennial fern with fronds up to 3m long. It forms dense stands in wetlands and freshwater ecosystems, which are likely to impact on native fauna and flora through mechanisms such as competition or habitat restructuring. It has the potential for obstructing access and reducing enjoyment of the natural freshwater environment, and may impact on the mauri of wai māori.



Rum cherry (*Prunus serotina*)

Rum cherry is a medium-sized deciduous tree 15 - 20m in height with glossy, toothed leaves, white flowers borne in clusters late spring and drupes of green to purple-black fruit. Bird dispersed seeds combined with efficient gap utilisation may enable rum cherry to invade forest as well as shrubland and grassland. Thickets can reduce plant species- and functional-diversity in invaded ecosystems. Fruit could provide a food resource for exotic mammals (e.g. possums and rats).



John Smith Dodsworth

Saffron thistle (*Carthamus lanatus*)

Also known as: woolly distaff thistle, downy safflower

Saffron thistle is a winter annual or biennial herb with glossy spined leaves and yellow flowers bearing a bract of prickles below. It is an unpalatable pasture pest competitive with desirable pasture species. Infestations can impede stock movement and sharp spines cause injuries to the eyes and mouths of grazing animals. It can compete with crops, and impede harvesting equipment with tough stems. It is also likely to be a reservoir of crop viruses and bacteria.



Trevor James, Agresearch

Salt water paspalum (*Paspalum vaginatum*)

Salt water paspalum is a perennial grass with long creeping stolons and leathery, grey-green leaf blades, up to 8cm long. It can dominate high priority ecosystems including tidal flat margins and coastal habitats, forming near monocultures which exclude native plants and alter plant community composition. Burrowing fauna such as crabs may be excluded in invaded habitats, and invertebrate communities shifted towards more terrestrial assemblages. Monocultures can also alter foraging habitat and food availability for shore birds, leading to avoidance of invaded areas by some bird species overseas, and can alter spawning and feeding grounds of culturally important fish such as pātiki / flounder.



***Selaginella* spp. (*Selaginella martensii*, *S. moellendorffii*, *S. uncinata*)**

Selaginella spp. are creeping perennial fern allies with irregular, branched stems and glossy, green scale-like 'leaves' (microphylls). They grow rapidly and can form dense mats in damp habitats including disturbed and intact forest and riparian margins. They have the potential to exclude native ground cover plants and prevent establishment of seedlings in invaded ecosystems. Closely related African club moss *S. kraussiana* is invasive in Aotearoa / New Zealand.



Sharp rush (*Juncus acutus*)

Sharp rush is a perennial spiny rush up to 1m tall with sharp tips and clumped green to brown flower heads borne in summer followed by red, orange or brown fruit. It forms dense stands which can displace native salt marsh vegetation, impair plant recruitment, reduce native plant richness and alter invertebrate communities.



Sheep's bur (*Acaena agnipila*)

Sheep's bur is a clump-forming perennial herb with toothed leaflets, spiny purple flowers anthered on narrow flower spikes and fruit covered in numerous, red barbed spines. It is predominantly a pest of the sheep and beef industry, contaminating wool when burrs become tangled in sheep wool.



Harry Rose

Skeleton weed (*Chondrilla juncea*)

Skeleton weed is a biennial or perennial herb with yellow flowers borne in December-March. It is primarily a pest of disturbed or production ecosystems and has the potential to invade over-grazed pastures, vineyards and cereal crops.



Leo Michels

Smilax (*Asparagus asparagoides*)

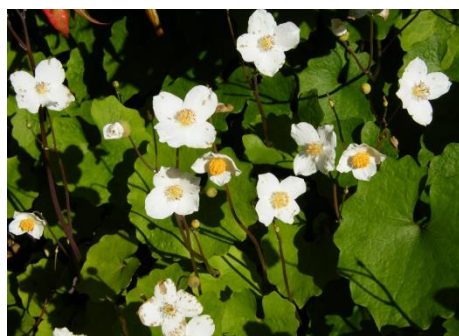
Smilax is a scrambling perennial plant with branched green stems up to 3m and greenish-white flowers appearing between July and August, followed by red berries. It forms dense patches and smothers low growing plants and seedlings, usually in low canopy forests or coastal habitats. These dense stands can also obstruct access to recreational areas and smother garden plants.



Snow poppy (*Eomecon chionantha*)

Also known as: Chinese woodland poppy, Chinese bloodroot, dawn poppy

Snow poppy is a low growing perennial herb with small leathery scallop-shaped leaves, white and yellow flowers and stems that ooze orange sap if crushed. It can form dense monospecific mats, smothering native plants and preventing native seedling establishment in moist sites, including the understorey of bush ecosystems.



Weedbusters

Soap aloe (*Aloe maculata*)

Soap aloe is a perennial succulent with thick grey-blue frosted leaves bearing toothed margins and racemes of yellow, orange, pink or red flowers, erect at first then drooping. It has a history of naturalisation overseas, with a documented ability to form extensive localised infestations covering hundreds of square meters in which it is presumed to displace native plant species. Coastal and island ecosystems are most at risk of invasion by soap aloe. Impacts on fauna are also probable due to altered habitat structure and resource availability.



Stan Shebs

Spanish broom (*Spartium junceum*)

Spanish broom is a deciduous shrub up to 3m tall with yellow pea-like flowers borne in loose racemes during summer and autumn. It is invasive in disturbed sites, often on hill country but also including poor or retired pasture, cliffs, transport corridors and riparian margins. Spanish broom is capable of forming dense monospecific stands which can reduce the cover of native plants in invaded habitats. As a nitrogen fixer, it has the



potential to alter plant community compositions, including facilitating other exotic plant invasions, through elevated soil nutrient levels.

Spanish heath (*Erica lusitanica*)

Spanish heath is a perennial shrub growing up to 2m tall with leaves in whorls of 3-4 and small, red, pink or white flowers borne in racemes during March-December. It can be a serious problem in infertile hill country pasture, especially in areas of high rainfall, being unpalatable to stock. Short-stature native plant communities such as herbfields, dune slacks, fernland and scrubland are most at risk from invasion and potential displacement by Spanish heath.



Weedbusters

Spartina (*Spartina alterniflora*, *S. anglica* and *S. x townsendii*)

Spartina is an erect perennial grass growing up to 0.5-1m tall with fleshy rhizomes enabling plants to spread to form dense clumps or swards. It can reduce large estuaries and shallow harbours to thin drains surrounded by rough pastures and will trap sediment, raising levels above the high tide mark. It destroys intertidal zonation and habitat, and smothers mahinga mātaītai shellfish beds thereby preventing kaimoana harvesting. Adventive grasses often succeed spartina, creating dry meadows, and leading to immense biodiversity loss.



Spartina Sustained Control programme applies only to Kaipara harbour as defined in Figure 13.

See also Progressive Containment programme for remainder of region (section 0).

Spiny broom (*Calicotome spinosa*)

Spiny broom is a many-branched perennial shrub up to 3m tall with spines up to 40mm long, solitary, yellow flowers borne spring-summer and flattened seed pods. It forms dense stands that may reduce the grazing potential of pasture and out-compete tree seedlings in plantation forest. Thickets can shade out native plants species and compete for resources. It is a nitrogen fixer and can increase soil nitrogen to the detriment of low nutrient specialist native species, potentially facilitating other exotic species.



Trevor James, Agresearch

Strangling fig (*Ficus microcarpa*)

Strangling fig is an evergreen tree when mature with thick, leathery leaves and tiny flowers, hidden within the fig-like reddish fruit. The pollinator wasp has recently arrived in Tāmaki Makaurau / Auckland, therefore the reproductive potential is high. It is likely to compete with and strangle native plants, and shade out seedlings and understorey species as it has done overseas. Vegetation communities on volcanic cones, including Rangitōtō, could be at risk as other introduced *Ficus* species have been found in these habitats. Pōhutukawa, mangrove and other forest types may also be at risk, particularly in coastal areas. Fruit may facilitate introduced birds and mammals through provision of food source.



Forest and Bird

Sweet briar (*Rosa rubiginosa*)

Sweet briar is a dense, perennial, deciduous shrub (2-3m high) with stems bearing thorns and clusters of pink flowers produced in spring-summer. It can invade unimproved pasture, reducing the cover of desirable pasture species and thereby pasture productivity. Thickets can also impede the movement of stock and farm vehicles. It is an aggressive coloniser of disturbed native vegetation including open shrubland, disturbed forest and riparian edges, often excluding native plant species.



Sweet pea shrub (*Polygala myrtifolia* excl. cv. 'Grandiflora')

Sweet pea shrub is a perennial evergreen legume-like shrub less than 2m tall with three-petalled purple and green flowers borne January to December. It forms dense stands which vigorously displace native coastal shrub species, but can also invade forest margins, scrubland, cliffs, open land, islands and tussock land.



Sweet pittosporum (*Pittosporum undulatum*)

Sweet pittosporum is a shrub or small tree varying in height with wavy, prominently margined leaves, white bell shaped flowers and orange globular fruit. It is an invader of pasture, roadsides, coastal bluffs cliffs and open scrubland but is also able to exploit gaps and edges to invade mature forest. Invasion is associated with reductions in native plant species richness and cover. It has the potential to hybridise with New Zealand *Pittosporum* spp. with impacts on genetic diversity possible.



Sydney golden wattle (*Acacia longifolia*)

Sydney golden wattle is a shrub or small tree up to 10m tall with cylindrical spikes of pale creamy-yellow flowers produced in July-August. It is capable of forming dense monospecific stands in open or disturbed habitats, out-competing other plant species by casting shade and altering other soil characteristics. Dune systems and other priority ecosystems including gumlands and islands are most at risk. It accumulates dense layers of nitrogen-enriched but slowly decomposing leaf litter which can alter soil organic matter content, soil microbial communities, soil moisture and nutrient cycling. It also has the potential to facilitate invasion of other exotic plant species through elevated soil nutrient levels.



Taiwan cherry (*Prunus campanulata*)

Taiwan cherry is a deciduous tree up to 8m with red bell-shaped flowers July-September followed by glossy red cherry fruit. It invades native forest and is likely to displace native plants. Closely related species are highly invasive overseas, and known to reduce plant functional diversity in invaded forests. It has the potential to substantially increase in abundance and distribution in natural ecosystems throughout Tāmaki Makaurau / Auckland due to bird-dispersed introduction pressure.



Tasmanian ngaio (*Myoporum insulare* incl. hybrids)

Tasmanian ngaio is a large shrub to small tree with oval leaves, white flowers with purple dots borne between September and June and long, purple fruit. It competes with native coastal plants and hybridises readily with closely related and culturally important native ngaio (*M. laetum*), potentially affecting the gene pool of the native species. It is toxic to humans and livestock.



Tradescantia (*Tradescantia fluminensis*)

Tradescantia is a monocotyledonous perennial herb with shining leaves and white flowers borne December-January. It rapidly forms dense ground cover layers up to 60cm tall, inhibiting regeneration of native species by preventing seeds from reaching the ground and by smothering seedlings. Native forest seedling species' richness and abundance decrease exponentially with increasing tradescantia biomass. In the long-term this has the potential to lead to non-replacement of the forest canopy, and transformative impacts on forest structure, composition and function.



Tree lupin (*Lupinus arboreus*)

Tree lupin is a perennial shrub up to 3m tall yellow pea-like flowers borne in inflorescences up to 30cm long during October-May. It mostly invades coastal ecosystems and is associated with changes to dune plant community composition and the declines of some native plant species. It is a nitrogen-fixer and accumulates leaf litter, which may alter nutrient cycling and facilitate the invasion of other exotic plants through increased nutrient availability. The flowers provide attractive floral resources for honey bees and other pollinators, and are known to increase the seed set of other pest plant species occurring nearby.



Tree of heaven (*Ailanthus altissima*)

Tree of heaven is a deciduous tree, up to 25m tall with a strong unpleasant odour, pale green-white flowers borne in spring, and seeds encapsulated by twisted papery sheaths in autumn. It is a coloniser of disturbed open habitats, capable of forming dense stands which suppress other plant species through chemical inhibition. The leaf litter is high in nitrogen and decomposes rapidly, altering nutrient cycling regimes in some ecosystems, and facilitating the invasion of other weed species. Root intrusion can damage culturally important archaeological sites.



Tuber ladder fern (*Nephrolepis cordifolia*)

Also known as: tuber sword fern

Tuber ladder fern is a tuft-forming fern with hairy potato-like tubers and upright evergreen fronds (30-120cm tall). It is able to form dense stands which suppress the regeneration of native plant species in forest habitats, rocky outcrops, coastal scrublands, wetland and riparian margins.



Tutsan (*Hypericum androsaemum*)

Tutsan is a semi-evergreen perennial shrub up to 1.5m high bearing yellow flowers with large green sepals from November to February and berries ripening from green to black. Invasion of forestry plantations and pasture can result in a loss of productivity, and cause photosensitisation and dermatitis in livestock. It is a fast growing coloniser in native forest, riparian areas and scrub, forming dense stands that crowd out native plants and suppress seedling recruitment. Large stands have the potential to affect habitat availability and food resources for native and pest animals.



Variegated thistle (*Silybum marianum*)

Also known as: milk thistle

Variegated thistle is a large annual or biennial prickly thistle up to 2.5m tall with variegated leaves and purple flowers borne late spring-summer. It competes with valued pasture plants and may be toxic to livestock, causing drowsiness, staggering and diarrhoea. It is most competitive in poor pasture; advantaged by drought, disturbance and high fertility soils.



Rules:

1. All owners or occupiers of land in the Tāmaki Makaurau / Auckland region must destroy all variegated thistle plants (*Silybum marianum*) on their land.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

Velvet groundsel (*Roldana petasitis* syn. *Senecio petasitis*)

Velvet groundsel is a perennial shrub up to 2m tall with large lobed leaves and composite yellow flowers borne in large bunches during winter-spring. Its dense growth can shade out and exclude other plant species; potentially altering the composition and structure of invaded plant communities. Coastal ecosystems and forest edges may be most at risk from invasion. It is poisonous if ingested and may cause skin irritation when handled.



Water primrose (*Ludwigia peploides* subsp. *montevidensis*)

Water primrose is a perennial emergent aquatic plant with creeping or floating stems and yellow flowers borne from November-February. It invades damp pasture around margins of invaded water bodies, displacing valuable forage species. It forms dense mats in freshwater and damp habitats; displacing other vegetation, clogging waterways, impeding water flow and reducing dissolved oxygen levels. It may also adversely affect fish,



invertebrates and other fauna through habitat alteration.

Wild broom (*Cytisus scoparius* excl. cultivated varieties)

Wild broom is a dense, multi-stemmed, perennial shrub approximately 2m tall with yellow pea-like flowers produced in spring-summer and hairy seedpods, maturing from green to black. It can invade pasture and form dense stands that reduce grazing capacity and impede stock movement. Seeds and leaves are poisonous and are usually avoided by stock. It invades plantations, competing with tree seedlings and can take over land at significant economic cost in lost productivity. It competes with native vegetation in shrublands, grasslands, open forest and riparian areas, shading out ground cover species and seedlings. Thickets may provide shelter for invasive animals (e.g. rabbits).



Wild broom sustained control programme applies only to urban areas. See also progressive containment programme for rural areas as defined in Figure 11 (section 7.7.8).

Wild ginger (*Hedychium gardnerianum* and *H. flavescens*)

Also known as: kahili ginger (*H. gardnerianum*), yellow ginger (*H. flavescens*)

Both wild ginger species are herbaceous perennial plants that can grow up to 3m tall with large green leaves and orange berries. Kahili ginger has yellow flowers with red stamens and yellow ginger has creamy flowers. They form dense stands preventing recruitment and suppressing up to 90% of native vegetation in forest ecosystems, potentially resulting in long-term impacts on forest composition. Invasion may alter decomposition and nutrient cycling patterns, and increase erosion in the long-term through loss of canopy.



Woolly nightshade (*Solanum mauritianum*)

Woolly nightshade is a perennial shrub or small tree, up to 4m high with grey-green furry leaves, violet flowers and dull yellow berries. It forms dense stands in disturbed scrub or forest, roadsides, pasture margins, urban areas and riparian margins, inhibiting the regeneration of native plant species in invaded sites. It can displace pasture grasses and clover, reducing food availability for stock, and will colonise clear-felled areas in forestry plantations. Direct or indirect contact with the plant may cause skin irritation and respiratory problems.



Yellow bristle grass (*Setaria pumila*)

Yellow bristle grass is an annual grass 25-35cm tall, with green or yellow-green leaves, often red-purple near base and a cylindrical seed head consisting of numerous spikelets. It is a major pasture pest; some farms may have up to 40% yellow bristle grass cover. It is palatable to stock during its vegetative stage, but of poor nutritional value and may be associated with mouth ulcers and lesions in cattle. Stock will avoid the grass following seed head emergence (January-May). It can reduce feed production by up to 20%, resulting in reduced milk production and costs associated with supplementary feed and pasture renovation.



Stefan Iefner

Yellow flag iris (*Iris pseudacorus*)

Yellow flag iris is a perennial herb up to 1.5m tall with sword-shaped leaves and yellow flowers borne from September-December on erect stalks. It can invade waterlogged pasture where it can impede drainage and is poisonous to livestock. In wetlands and freshwater ecosystems it can form monocultures which displace other plant species. Dense rhizome mats can impede or alter stream flow and morphology through increased sediment accumulation.



Yellow guava (*Psidium guajava*)

Yellow guava is a shrub or small tree up to 3m tall with white or yellow flowers borne July-March and yellow fruit. Fast growing invasive species likely to be advantaged by climate change. Fruit have the potential to exacerbate impacts from animal pests including pigs and possums by providing a food source.



Yellow passionfruit (*Passiflora ligularis*)

Yellow passionfruit is a vigorous perennial liane with showy white, purple and pink flowers produced in summer and edible fruit in autumn-winter. Where invasive overseas this climber covers the tree canopy, suppressing growth of other species. Closely related taxa invade native vegetation in Aotearoa / New Zealand, competing with native plants and potentially facilitating exotic mammal invasions through the provision of food resource. It is likely to be advantaged by climate change and impacts may be moderately high if extensive invasion occurs.



Dick Culbert

Yellow water lily (*Nuphar lutea*)

Also known as: brandy bottle

Yellow water lily is a perennial aquatic plant with both floating oval leaves and submerged very thin leaves. Flowers are yellow and held above the water surface in spring-summer. Dense mats may suppress submerged aquatic plants by shading and can have indirect impacts on plankton by providing refuges from fish predation. Invasion can alter patterns of nutrient storage in sediment and may reduce dissolved oxygen levels in the water column.



Rohan Wells, NIWA

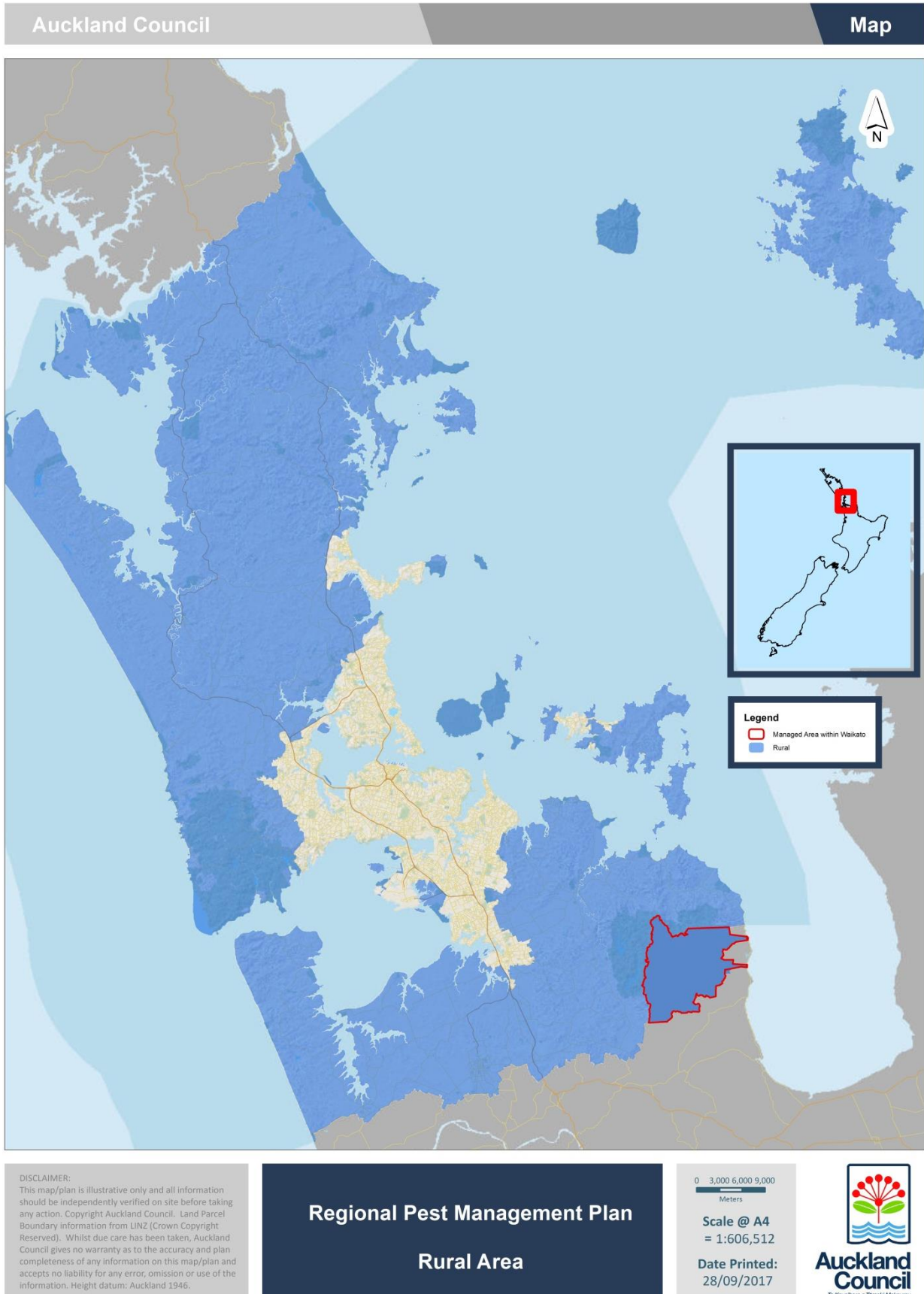


Figure 12 Specified geographic areas where rural landowner rule for Bathurst bur will be conducted over the lifetime of the plan.

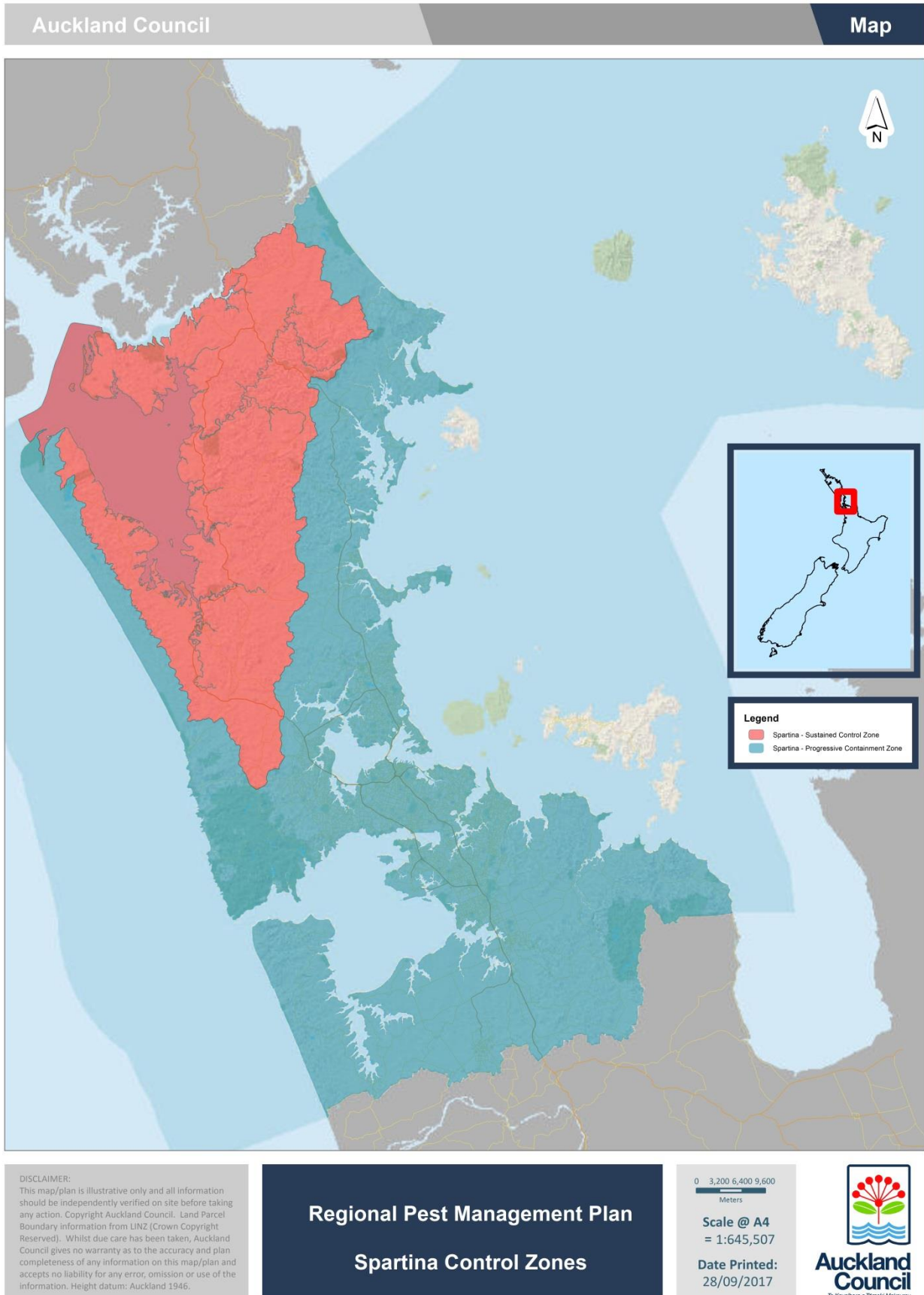


Figure 13 Specified geographic areas where spartina management programmes will apply over the lifetime of the plan.

8 Whakaaturanga āhua orotā / Monitoring

Costs associated with surveillance and monitoring have been built into cost-benefit analyses for all programmes in this RPMP.

Surveillance is particularly important for programmes aiming to exclude or eradicate pests from parts of the region, including protection of past island eradications. In the Te Tikapa Moana o Hauraki / Hauraki Gulf in particular, Auckland Council, in conjunction with the Department of Conservation, maintains an extensive network of traps and detection devices along with other surveillance methods such as the use of scent detection dogs to detect and respond to incursions on pest-free islands. Similarly, on-going island-wide pest plant survey work on Aotea / Great Barrier island group is critical to identifying pest plant incursions early and therefore increasing the chances of successful management. Other site-led programmes such as pest plant management on parkland require follow-up operational and outcome monitoring to assess the efficacy of the management programmes.

The council will look to improve the robustness of its monitoring regimes over the lifetime of this plan, particularly by improving data management systems. Another aspect of monitoring that the council will look to improve over the lifetime of the plan will be in assessing the efficacy of behaviour-change initiatives, to ensure programmes that seek to manage pests by influencing human behaviour (e.g. kauri dieback, Treasure Islands, freshwater pathway management) are successfully utilising best-practice social science to influence environmental outcomes.

Anticipated result	Indicator	Method of monitoring	Frequency of monitoring	Frequency of reporting
Exclusion	Presence/absence	Passive field surveys when undertaking other service delivery, public reports	As reports are received and while undertaking other field activities.	Annually and as required
Eradication	Presence/absence, distribution and extent, life cycle status	Field surveys, public reports	Frequency determined by species' time to sexual maturity to prevent reproduction, or as reports	Annually and as required

			are received	
Progressive containment	Presence/absence, distribution and extent, life cycle status	Field survey and public reports	Frequency determined by species' time to sexual maturity to prevent reproduction, or as reports are received	Annually and as required
Sustained control	Output and outcome based, pest trend monitoring	Species led national inspection protocols (e.g. NPPA, NPPBA), public reports.	Ongoing and in accordance with operational plans	Annually and as required
Site-led	Output and outcome based, including trends in pests being controlled and site values being protected (e.g. native vegetation recruitment).	Field surveys, public reports.	On-going and in accordance with operational plans, and outcome values being monitored. For pest plants frequency may be determined by pest species' time to sexual maturity	Annually and as required

8.1 Te aroturuki i ngā mahi a te tari whakahaere / Monitoring the management agency's performance

Auckland Council is the management agency. As the management agency responsible for implementing the Plan, the council will:

- prepare an operational plan within three months of the Plan being approved
- review the operational plan annually, and amend it if needed
- report on the operational plan each year, within five months after the end of each financial year
- implement the Plan in line with the operational plans
- maintain up-to-date databases of complaints, pest levels and densities, and responses from land owners and/or occupiers.

8.2 Te aroturuki i te whaihua o te mahere / Monitoring plan effectiveness

Monitoring the effects of the Plan will ensure that it continues to achieve its purpose. It will also check that relevant circumstances have not changed to such an extent that the Plan requires review. A review may be needed if:

- the Biosecurity Act is changed, and a review is needed to ensure that the Plan is not inconsistent with the Act
- other harmful organisms create, or have the potential to create, problems that can be resolved by including those organisms in the Plan
- monitoring shows the problems from pests or other organisms to be controlled (as covered by the Plan) have changed significantly
- circumstances change so significantly that the council believes a review is appropriate.

If the Plan does need to be reviewed under such circumstances, it will be reviewed in line with s100D of the Biosecurity Act. Such a review may extend, amend or revoke the Plan, or leave it unchanged.

The procedures to review the Plan will include officers of Auckland Council:

- assessing the efficiency and effectiveness of the principal measures (specified for each pest and other organism (or pest group or organisms) to be controlled to achieve the objectives of the Plan
- assessing the impact the pest or organism (covered by the Plan) has on the region and any other harmful organisms that should be considered for inclusion in the Plan
- liaising with other agencies and key interest groups on the effectiveness of the Plan.

A review is initiated by a proposal made by Auckland Council giving reasons for the proposal and setting out:

- any proposed amendments; or
- any proposed replacement parts of the plan.

The review must follow s68-78, including consultation requirements, to the extent that these sections are relevant to the proposed changes.

9 Te mana uhia / Powers conferred

The Principal Officer (Chief Executive) of Auckland Council may appoint authorised persons to exercise the functions, powers and duties under the Biosecurity Act in relation to a RPMP.

Auckland Council will use those statutory powers of Part 6 of the Biosecurity Act as shown in Table 5, where necessary, to help implement this Plan.

Table 5 Powers from Part 6 of the Biosecurity Act to be used.

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

Note: Any non-compliance with the Biosecurity Act, or contravention of any rules under the RPMP will be subject to the enforcement provisions under Part 8 of the Biosecurity Act.

9.1 Te mana i raro i ētahi atu wāhanga o te Ture / Powers under other sections of the Biosecurity Act

A land owner and/or occupier or any person in breach of a plan rule creates an offence under s154N(19) of the Biosecurity Act, where the rule provides for this. Auckland Council can seek prosecution under s157(5) of the Biosecurity Act for those offences.

A Chief Technical Officer (employed under the State Sector Act 1988) may appoint authorised people to implement other biosecurity law considered necessary. One example is where restrictions on selling, propagating and distributing pests (under s52 and s53 of

the Biosecurity Act) must be enforced. Another example is where owners and/or occupiers of land are asked for information (under s43 of the Biosecurity Act).

10 Tuku tahua pūtea / Funding

10.1 Kupu whakataki / Introduction

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

- analysing the costs and benefits of the plan and any reasonable alternative measures
- noting how much any person will likely benefit from the plan
- noting how any person's actions or inactions may contribute to creating, continuing or making worse the problems that the plan proposes to resolve
- noting the reason for allocating costs
- noting whether any unusual administrative problems or costs are expected in recovering the costs from any person who is required to pay.

10.2 He tātaritanga i ngā hua me ngā utu / Analysis of benefits and costs

An analysis of the expected benefits and costs associated with implementing the plan, and reasonable alternative measures, has been undertaken. The analysis is contained within the Auckland Council Proposed Regional Pest Management Plan Cost-Benefit Analysis Report, published alongside this document.

10.3 Ngā hunga ka whiwhi me ngā kaitakakino ake / Beneficiaries and exacerbators

An analysis of the expected beneficiaries and exacerbators associated with implementing the plan has been undertaken. The analysis is contained within the Auckland Council Proposed Regional Pest Management Plan Cost Allocation Analysis Report, published alongside this document.

10.4 Ngā ara pūtea tahua me ngā take mō te tuku pūtea / Funding sources and reasons for funding

The Biosecurity Act 1993 and the Local Government (Rating) Act 2002 require that funding is sought from:

- People who have an interest in the Plan
- Those who benefit from the Plan
- Those who contribute to the pest problem

Funding must be sought in a way that reflects economic efficiency and equity. In general, efficiency is best achieved by targeting costs to those closest to a particular work where those paying can act in respect of those works. If the person deciding has to pay for the results of their action or inaction, they may change their behaviour to minimise costs. Doing so would lead to the least-cost outcome for society. But if another person pays those costs, the incentive to change behaviour is minimal. This may lead to a higher cost for society. Efficiency includes close targeting of costs to benefits and to those contributing to the problem (exacerbators). Where a collective public good is the primary benefit of the proposed programme, the regional community may reasonably bear some costs in achieving the outcome through a general rate.

10.5 Ngā utu e tūmanakohia ana hei whakarite i te mahere / Anticipated costs of implementing the plan

The costs for implementing the full suite of programmes contained in the RPMP is \$301.15m (see table below).

The Long-Term plan consultation will consider the amount of funding that will be available to implement the Regional Pest Management Plan. Consequently, consultation on the proposed plan is being run concurrently with Long-Term plan consultation.

None of the currently proposed funding options that are being consulted on in the Long-Term plan provide sufficient funding to implement all of the work programmes that comprise the proposed plan. However, the programmes in the proposed plan are scalable. You can find out more information about the proposed funding options in the LTP consultation document.

The operative plan will be adopted taking into account the outcome of both consultation processes.

Programme grouping	10 year cost for 2018-2028
Managing pest plants and animals on parkland	\$142.44m
Kauri dieback and Dutch elm disease	\$51.48m
Hauraki Gulf island programmes	\$35.28m
Aotea / Great Barrier	\$1.16m
Kawau	\$1.85m
Waiheke	\$5.91m
Regional possum control	\$40.41m
Freshwater pest programmes	\$5.53m
Region wide exclusion, eradication, progressive containment pest plants	\$3.83m
Region wide sustained control, progressive containment and exclusion pest animal programmes	\$10.62m
Region wide sustained control pest plants	\$8.55
Total over 10 years	\$307.15m

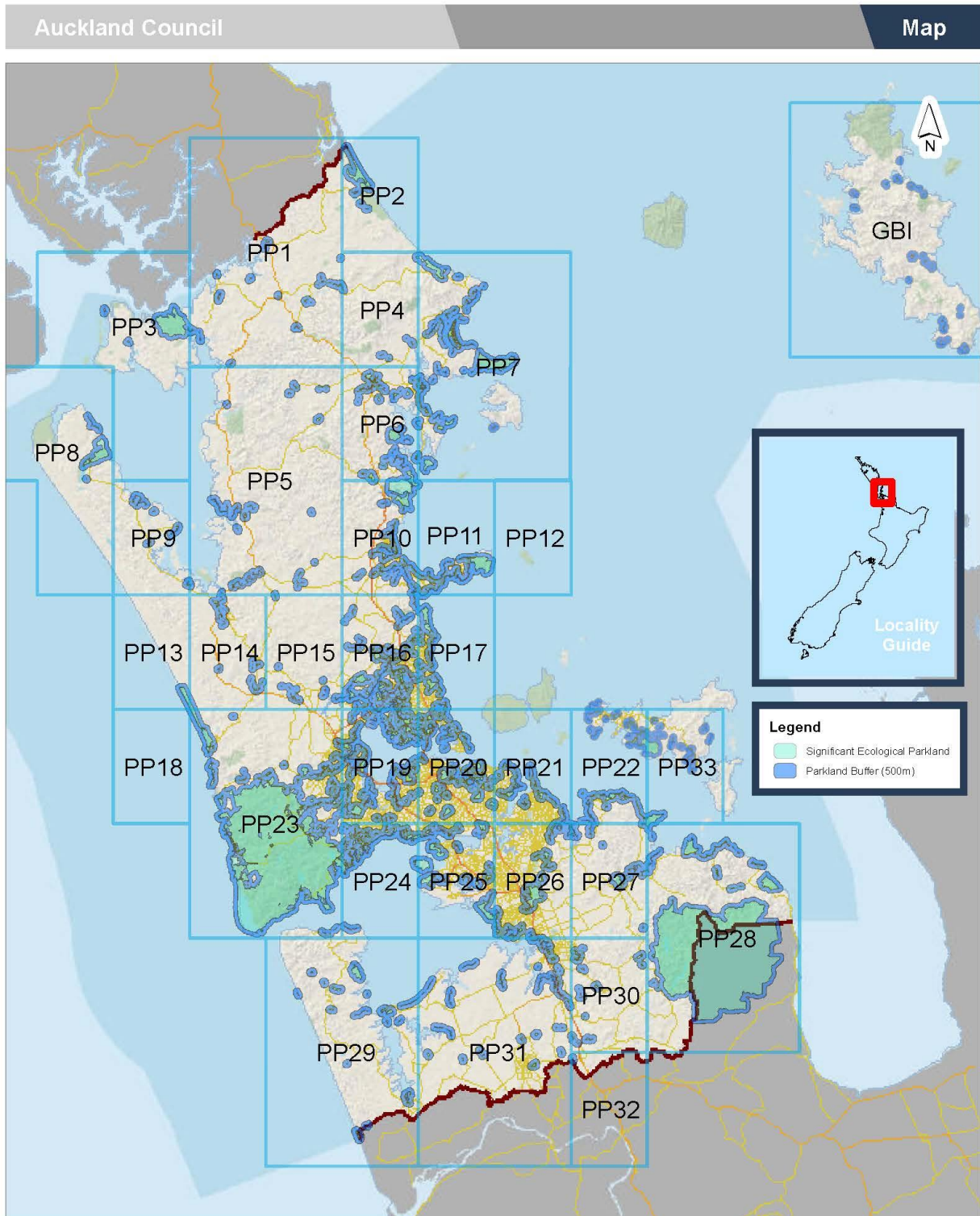
Papa kupu / Glossary

Animal	Any mammal, bird, fish, reptile or other vertebrate; any insect or other invertebrate. Any living organism, except a plant, micro-organism or a human being.
Animal pest	An animal declared a pest in a national or regional pest management plan.
Biodiversity	The variability among living organisms from all habitats, including terrestrial, marine and other aquatic ecosystems and the ecological systems of which they are part of. This includes diversity within species, between species and of ecosystems.
Building	A temporary or permanent movable or immovable structure (including a structure intended for occupation by people, animals, machinery, or chattels) and includes a vehicle or motor vehicle (including a vehicle or motor vehicle as defined in section 2(1) of the Land Transport Act 1998) that is immovable and is occupied by people on a permanent or long-term basis (Building Act 2004).
Biological control	Applying a natural enemy that will prey upon or adversely affect a pest with the intention of reducing the level of infestation of the pest.
Commercial transport operator	Commercial transport operators moving goods or people to or among islands in the Hauraki Gulf Controlled Area. Includes, but is not limited to, operators transporting by ferry, commercial ship, aircraft, or hirage of kayaks or other recreational craft.
Costs and benefits	Costs and benefits of any kind, whether monetary or non-monetary, and whether quantifiable or non-quantifiable.
Disease	A disease is an impairment of the normal state of an organism that interrupts or modifies its vital functions. All species of plants, wild and cultivated alike are subject to disease.
Distribute	To propagate, offer for sale or sell, transport, release or in any way spread a pest, whether for commercial gain or not. Distribution has a corresponding meaning.
Ecosystems	A dynamic complex of plant, animal and microorganism communities and their non-living environment, interacting as a functional unit.
Effects	<p>Unless the context otherwise requires, the term 'effects'</p> <p>(a) includes the following, regardless of scale, intensity, duration or frequency:</p> <ul style="list-style-type: none"> (i) a positive or adverse effect; and (ii) a temporary or permanent effect; and (iii) a past, present or future effect; and (iv) a cumulative effect that arises over time or in combination with other effects; and <p>(b) also includes the following:</p> <ul style="list-style-type: none"> i. a potential effect of high probability; and ii. a potential effect of low probability that has a high potential impact.
Environment	<p>Includes:</p> <p>(a) ecosystems and their constituent parts, including people and their</p>

	<p>communities; and</p> <p>(b) all natural and physical resources; and</p> <p>(c) amenity values; and</p> <p>(d) the aesthetic, cultural, economic and social conditions that affect or are affected by any matter referred to in paragraphs (a) to (c).</p>
Eradication	To reduce the infestation level of a pest to zero levels in an area in the short to medium term.
Exclusion	To prevent the establishment of a pest or group of pests.
Exotic plant	Introduced plants that are not native to New Zealand.
Hauraki Gulf Controlled Area	That part of the Hauraki Gulf Controlled Area within the Auckland region.
Incursion	A recent occurrence of a plant or animal species previously unknown in the given area. Usually refers to highly invasive species.
Management agency	The body specified as the management agency in a pest management plan or a pathway management plan.
Mauri	The essential quality and vitality of a being or entity.
National Pest Plant Accord	A cooperative agreement between Nursery and Garden Industry New Zealand, regional councils and government departments with biosecurity responsibilities, to prevent the sale and/or distribution of specified pest plants where horticultural trade is the most significant way of spreading the plant in New Zealand.
National Policy Direction	The direction approved under section 57 of the Biosecurity Act 1993. Its purpose is to ensure pest management plans provide the best use of available resources and align with one another, when necessary. See section 2 and Part 5 of that Act.
Occupier	<p>(a) in relation to any place physically occupied by any person, means that person; and</p> <p>(b) in relation to any other place, means the owner of the place; and</p> <p>(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.</p>
Organism	<p>Organism:</p> <p>(a) does not include a human being or a genetic structure derived from a human being;</p> <p>(b) includes a microorganism;</p> <p>(c) subject to paragraph (a), 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);</p> <p>(d) 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 Biosecurity Act 1993;</p> <p>(e) includes a reproductive cell or developmental stage of an organism;</p> <p>(f) includes any particle that is a prion.</p>
Pathogen	An infectious agent such as a virus, bacterium, prion, fungus, viroid or parasite that causes disease in its host. The host may be an animal, a plant, a fungus or even another microorganism.
Pest	An organism specified as a pest in a national or regional pest management plan.
Pest plant	A plant that has been declared a pest in a national or regional pest management plan.

Progressive containment	To contain or reduce the geographic distribution of a pest to an area over time.
Propagation	To grow new plants from seeds or from pieces cut from an existing plant, or to make a plant produce more plants.
Plant	Any grass, tree, shrub, herb, flower, nursery stock, culture, vegetable, or other vegetation, and also includes the fruit, seed, spore, portion or product of any plant. Includes all aquatic plants.
Regional Pathway Management Plan	A plan for the prevention or management of the spread of harmful organisms made under Part 5 of the Biosecurity Act 1993. See the interpretation and Part 5 of that Act.
Regional Pest Management Plan	A regional plan for the eradication or effective management of a particular pest or pests made under Part 5 of the Biosecurity Act 1993. See the interpretation and Part 5 of that Act.
Rule	A rule included in a pest management plan in accordance with section 73 of the Biosecurity Act 1993. A breach of a rule constitutes an offence under the Biosecurity Act 1993.
Secure containment	Means to keep an organism in a facility or structure that effectively prevents the escape or passage of that organism.
Sell	Includes barter; and also includes offering, exposing, or attempting to sell, or having in possession for sale, or sending or delivery for sale, causing or allowing to be sold, offered, or exposed for sale, and also includes any disposal whether for valuable consideration or not. 'Sale' has a corresponding meaning.
Site led pest programme	A pest programme that contains, reduces or controls the pest(s) within a place to an extent that protects the values of that place.
Sustained control	To provide for the ongoing control of a pest to reduce its impacts on values and its spread to other properties.
Untreated kauri plant material	Any part of any living kauri plant including but not limited to wood, bark, leaves, seeds, or any part of any dead kauri plant that has not been subject to timber processing.
Wai māori	Fresh water.

Āpitihangā 1 Whenua Papa Rēhia me ōna Rohe Hauropi Hiranga / Appendix 1 Parkland with Significant Ecological Areas



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Regional Pest Management Plan Significant Ecological Area Parkland

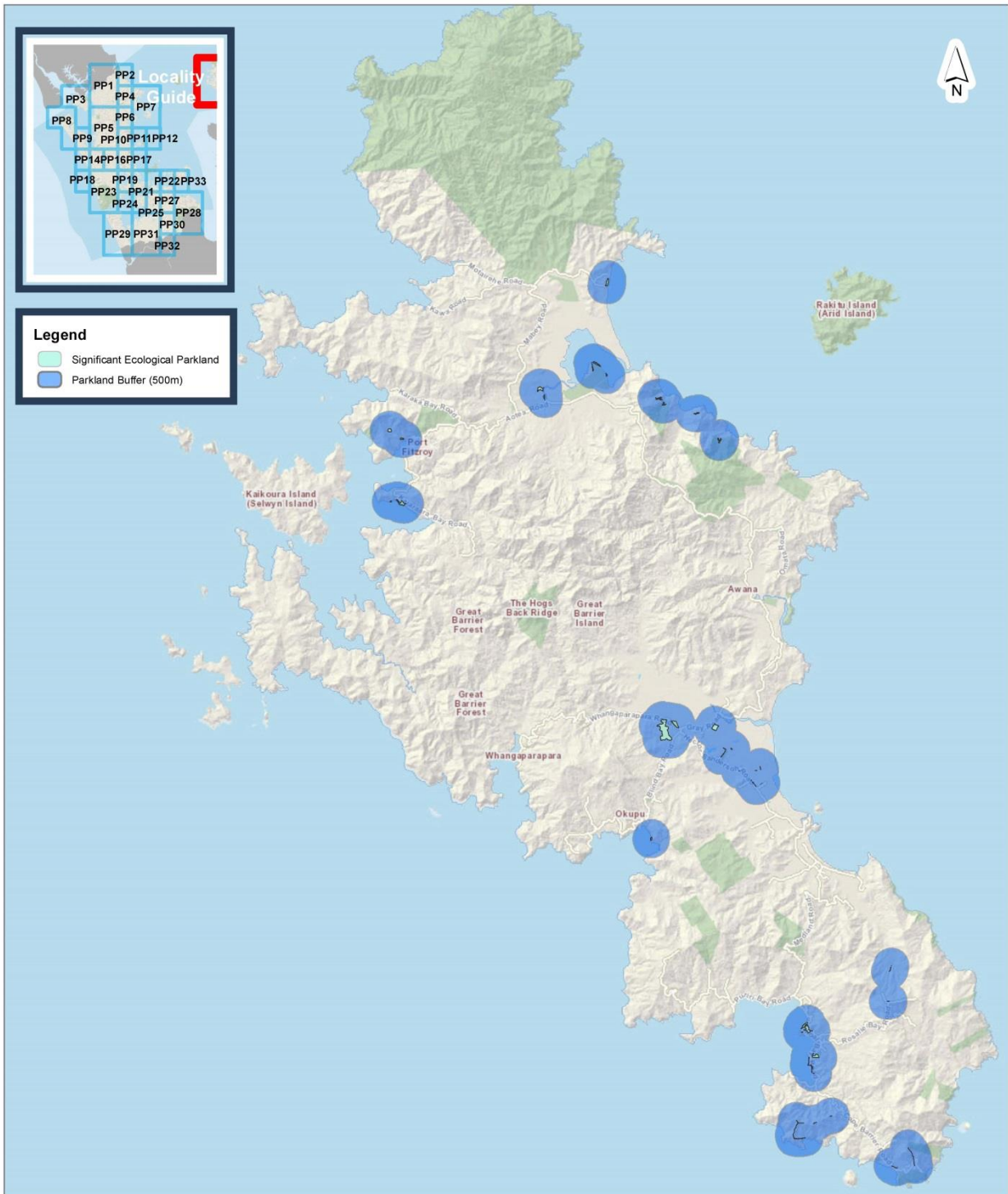
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Auckland Council
Te Kōwhiri o Tāmaki Makaurau

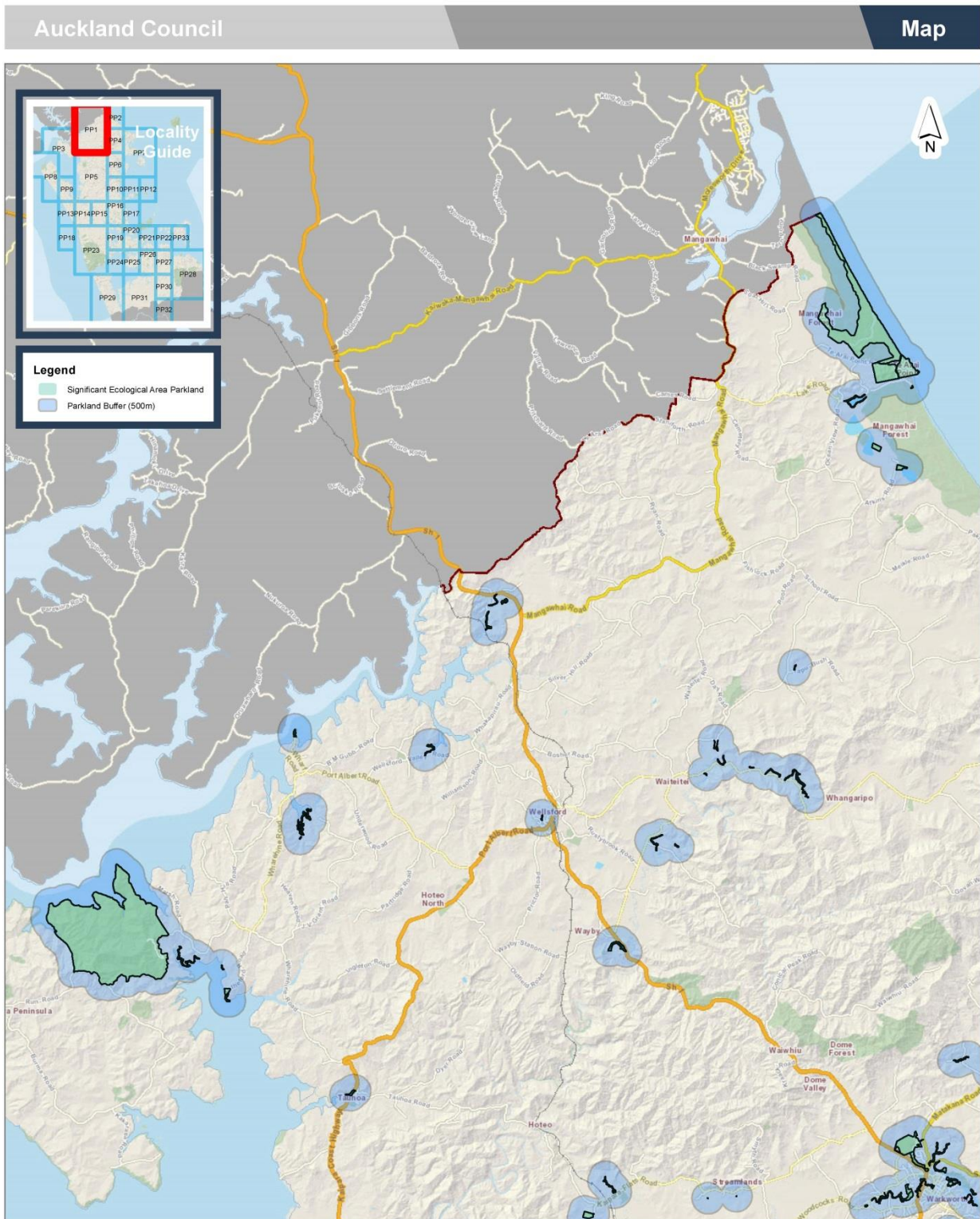


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Regional Pest Management Plan
Significant Ecological Area Parkland
Aotea (Great Barrier Island)

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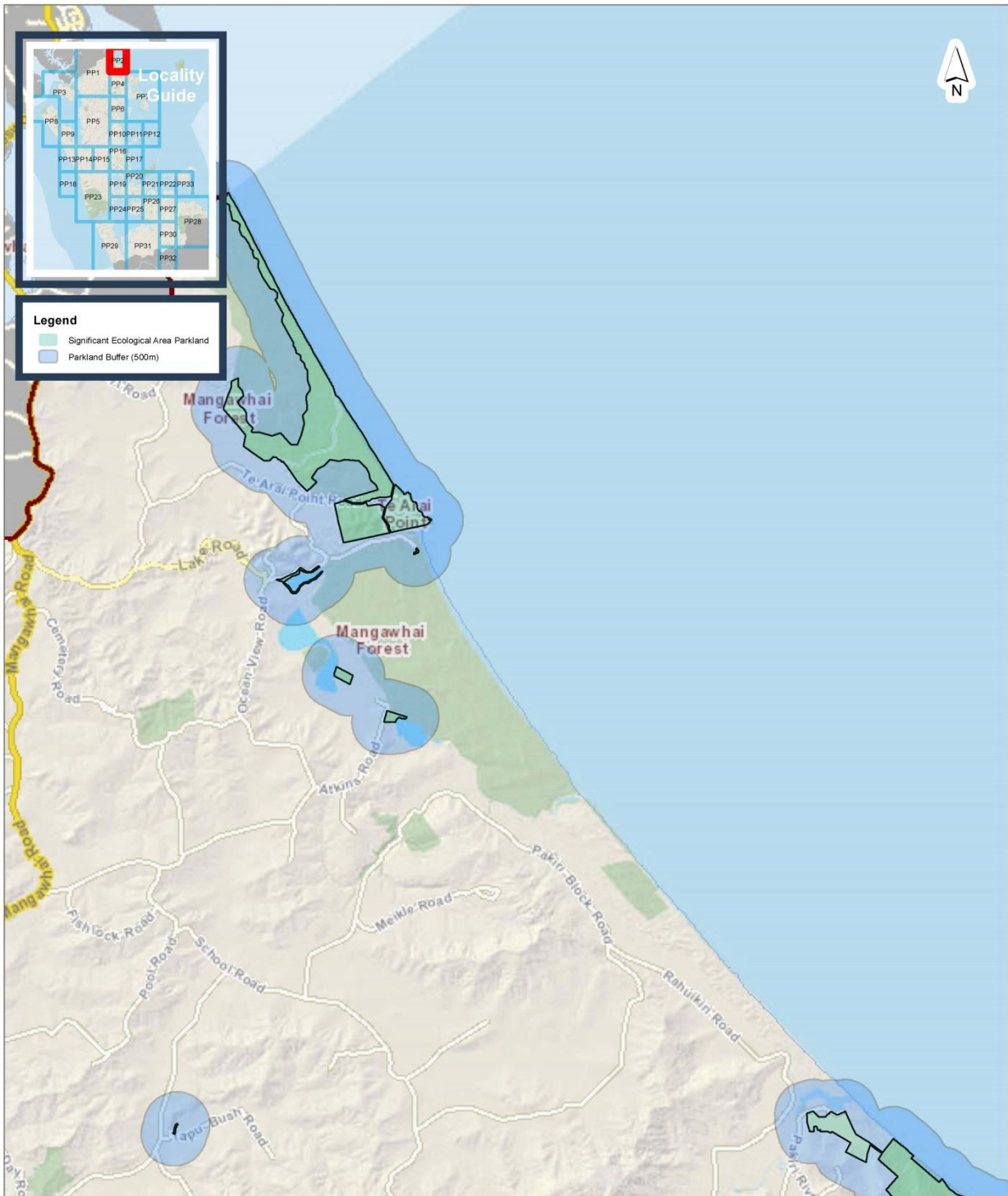


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Regional Pest Management Plan
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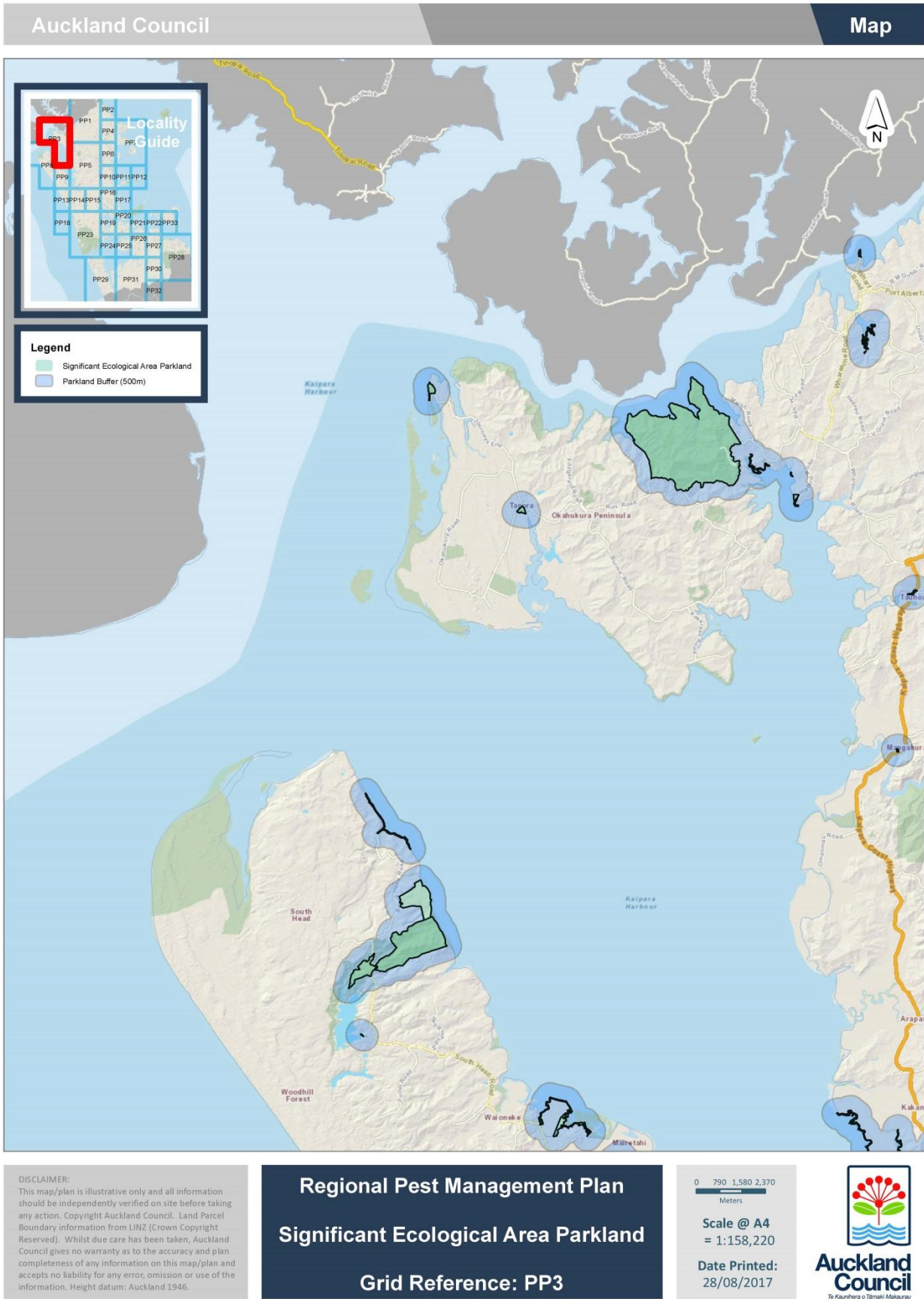


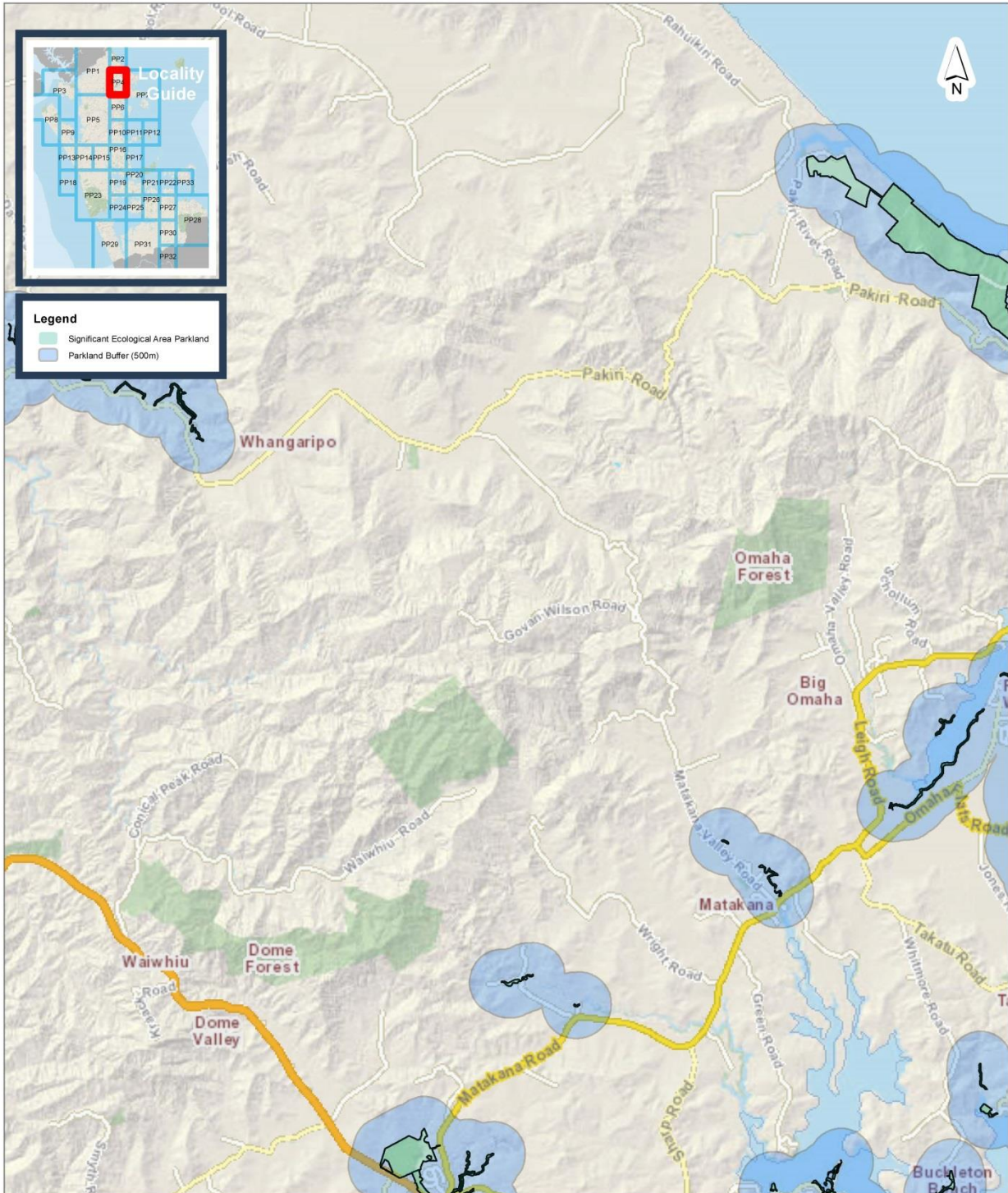
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Regional Pest Management Plan
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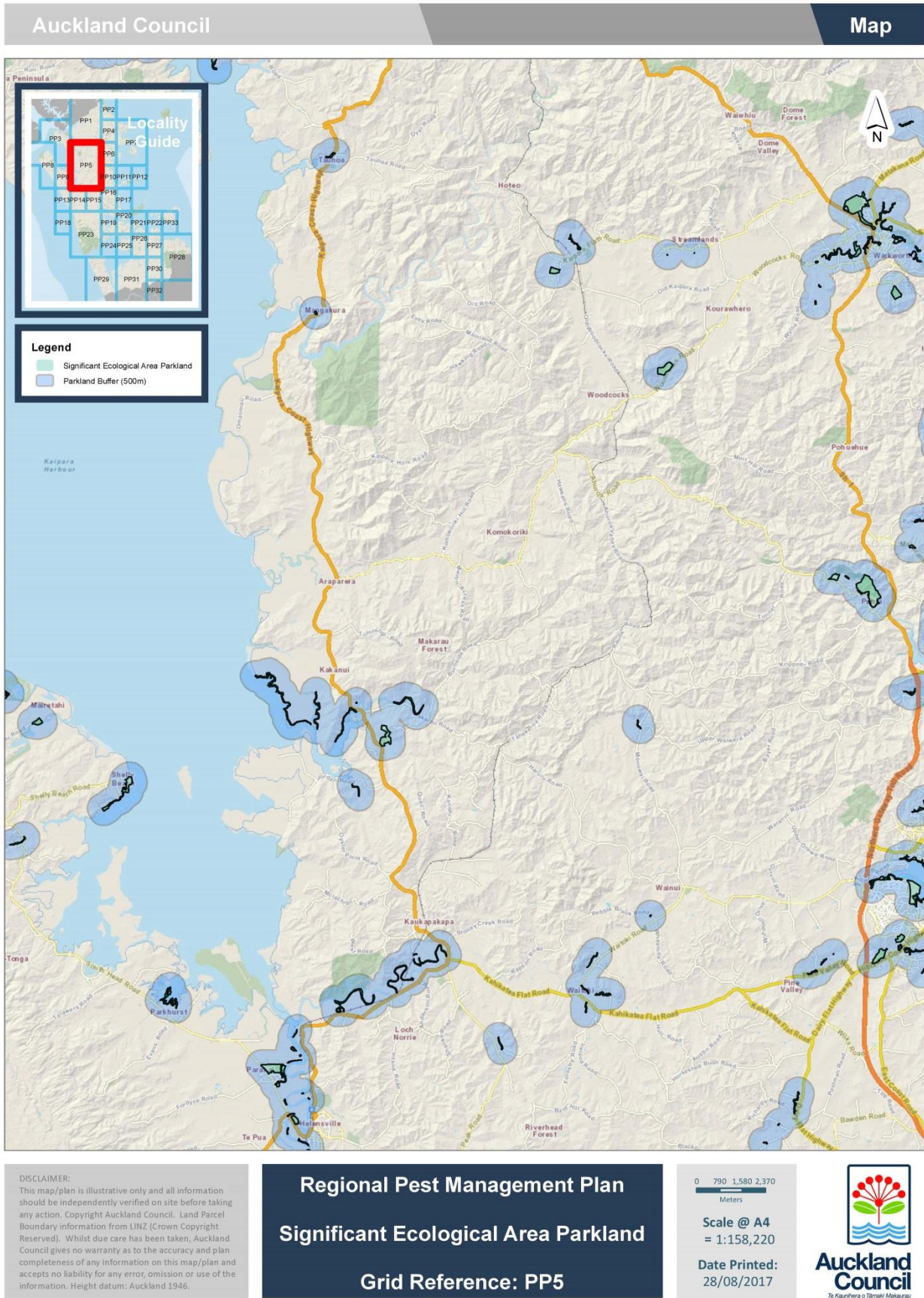


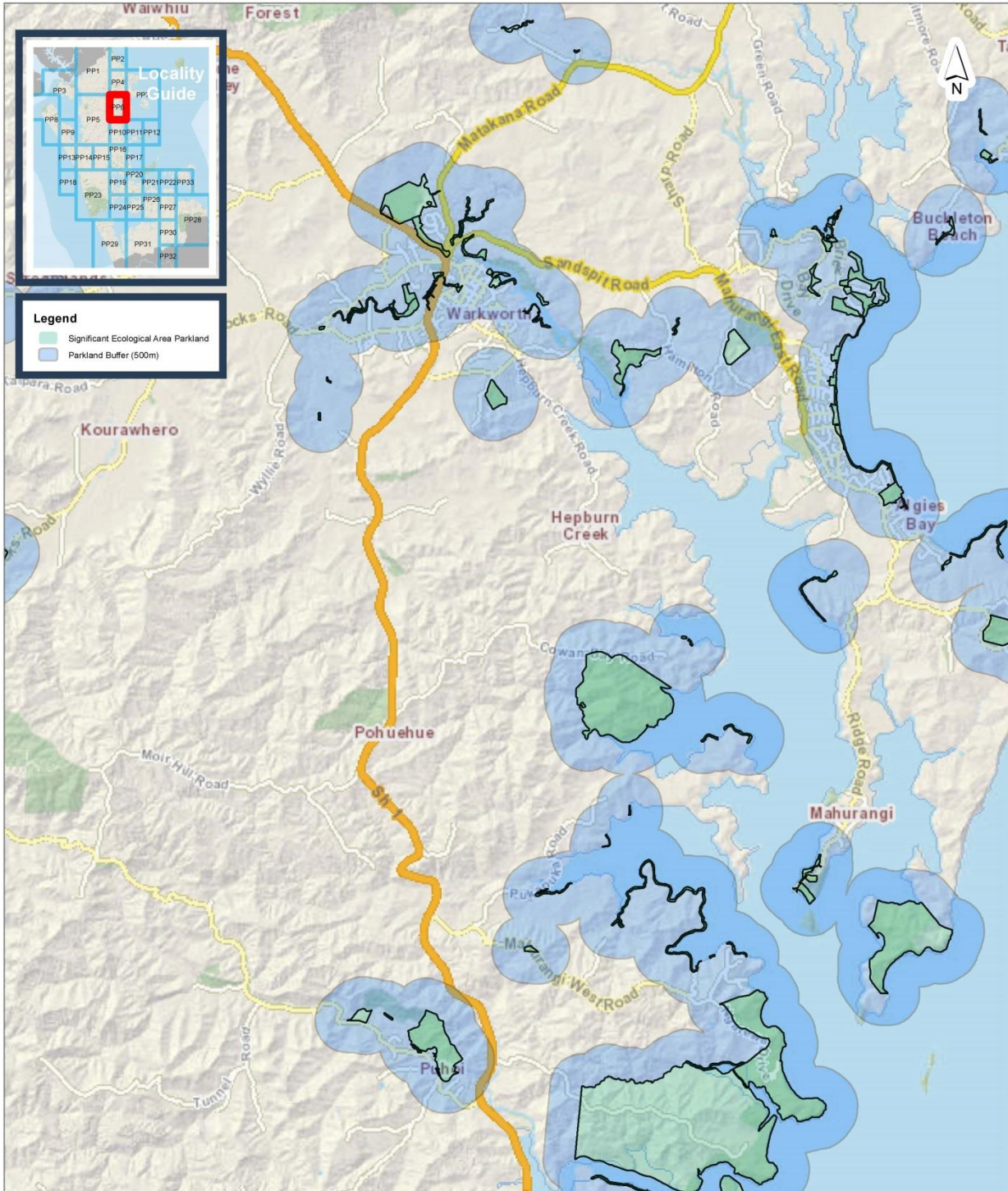
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Regional Pest Management Plan
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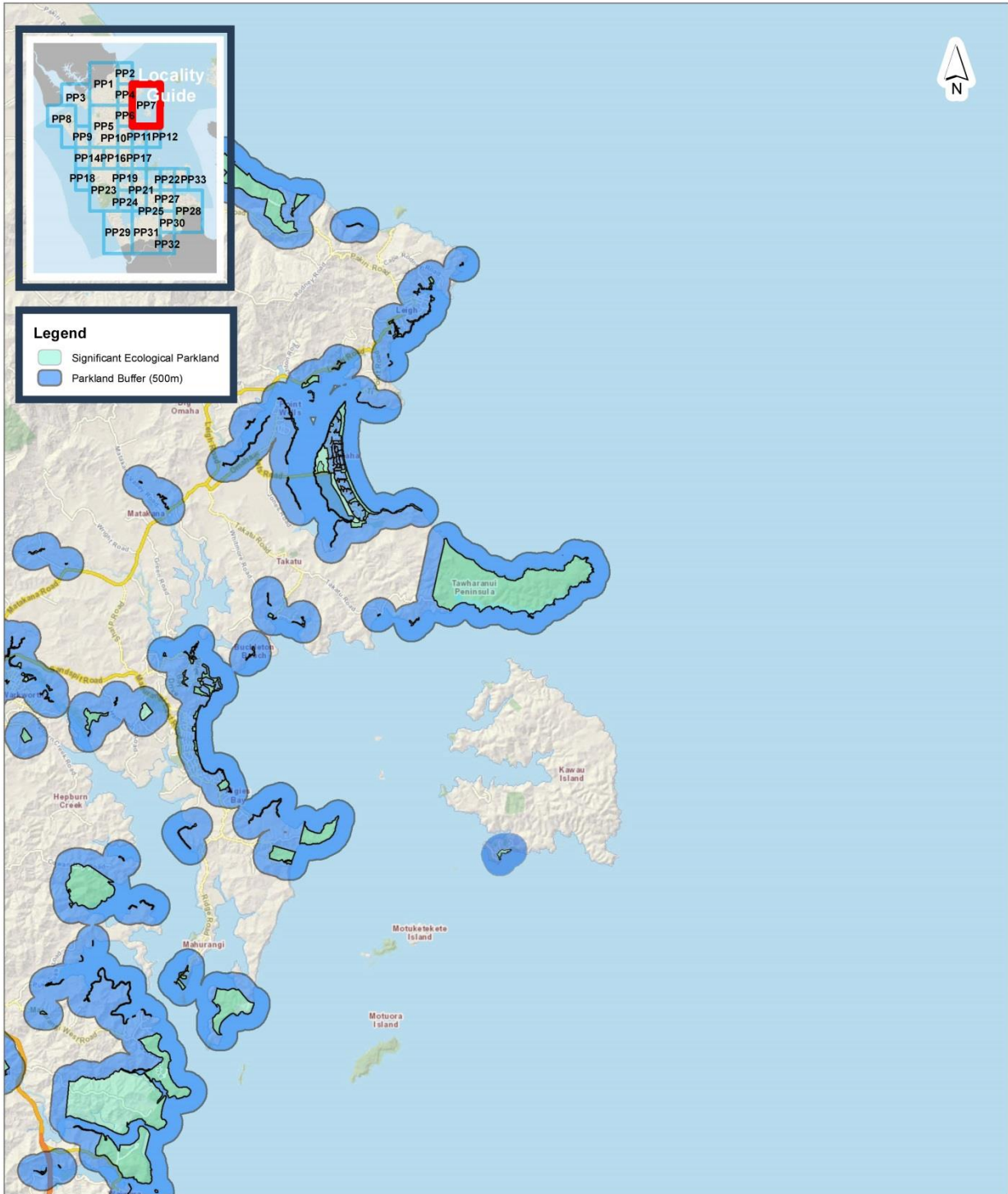


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Regional Pest Management Plan
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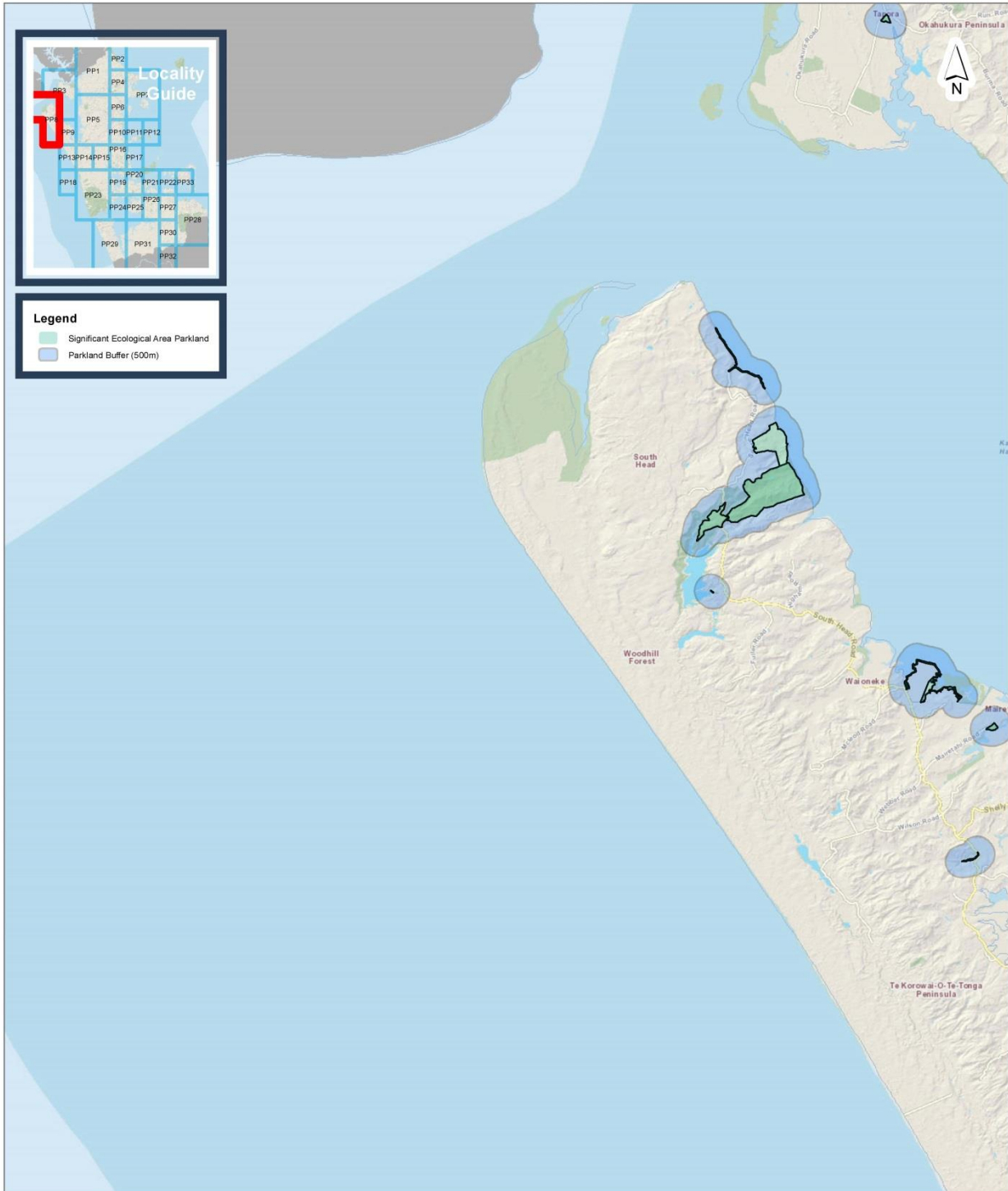


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Regional Pest Management Plan
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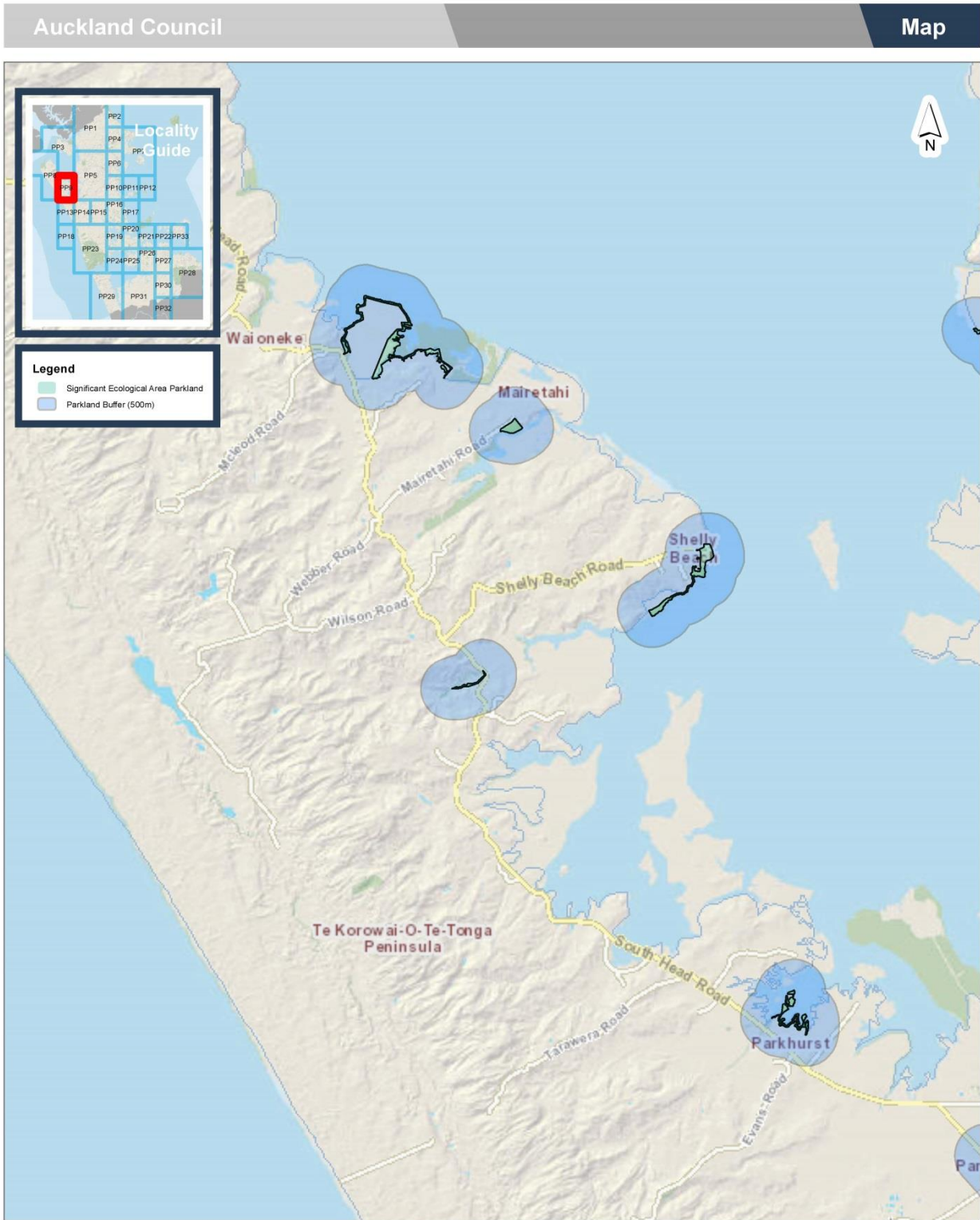


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP8

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Date Printed:
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Regional Pest Management Plan
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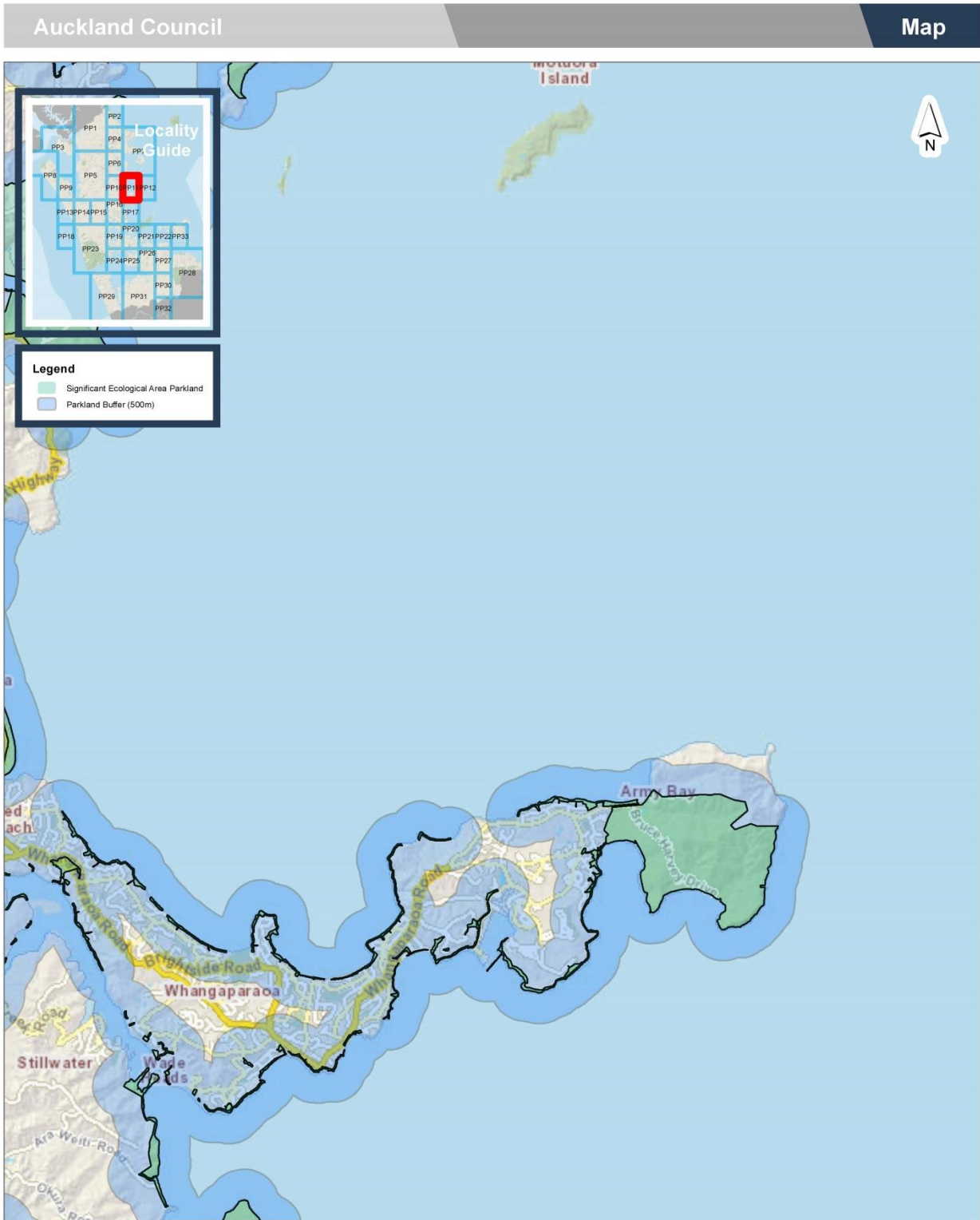


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Regional Pest Management Plan
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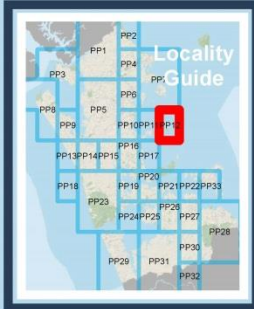


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP11

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Date Printed:
28/08/2017





Legend

- Significant Ecological Area Parkland
- Parkland Buffer (500m)

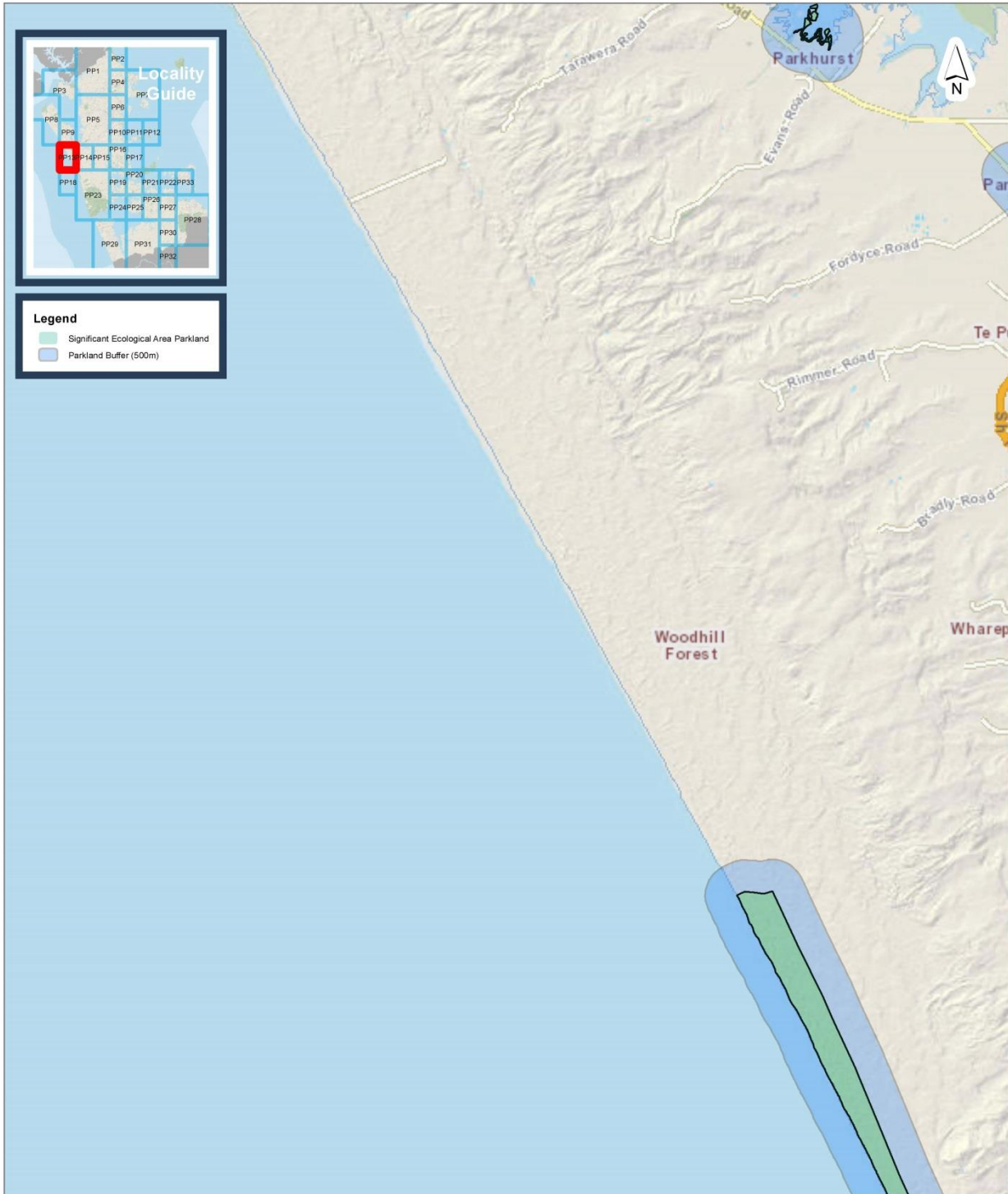


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Regional Pest Management Plan
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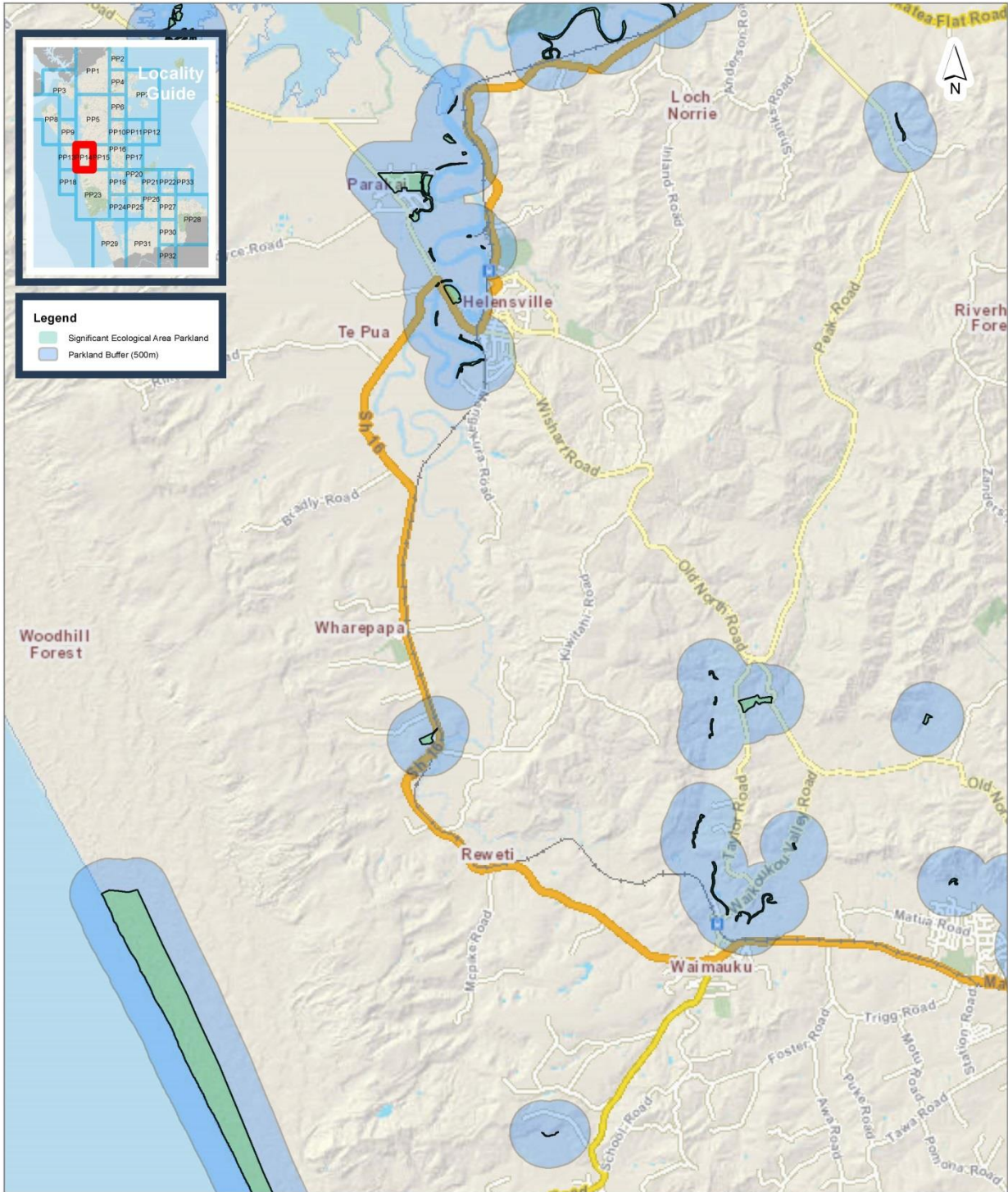


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Regional Pest Management Plan
Significant Ecological Area Parkland
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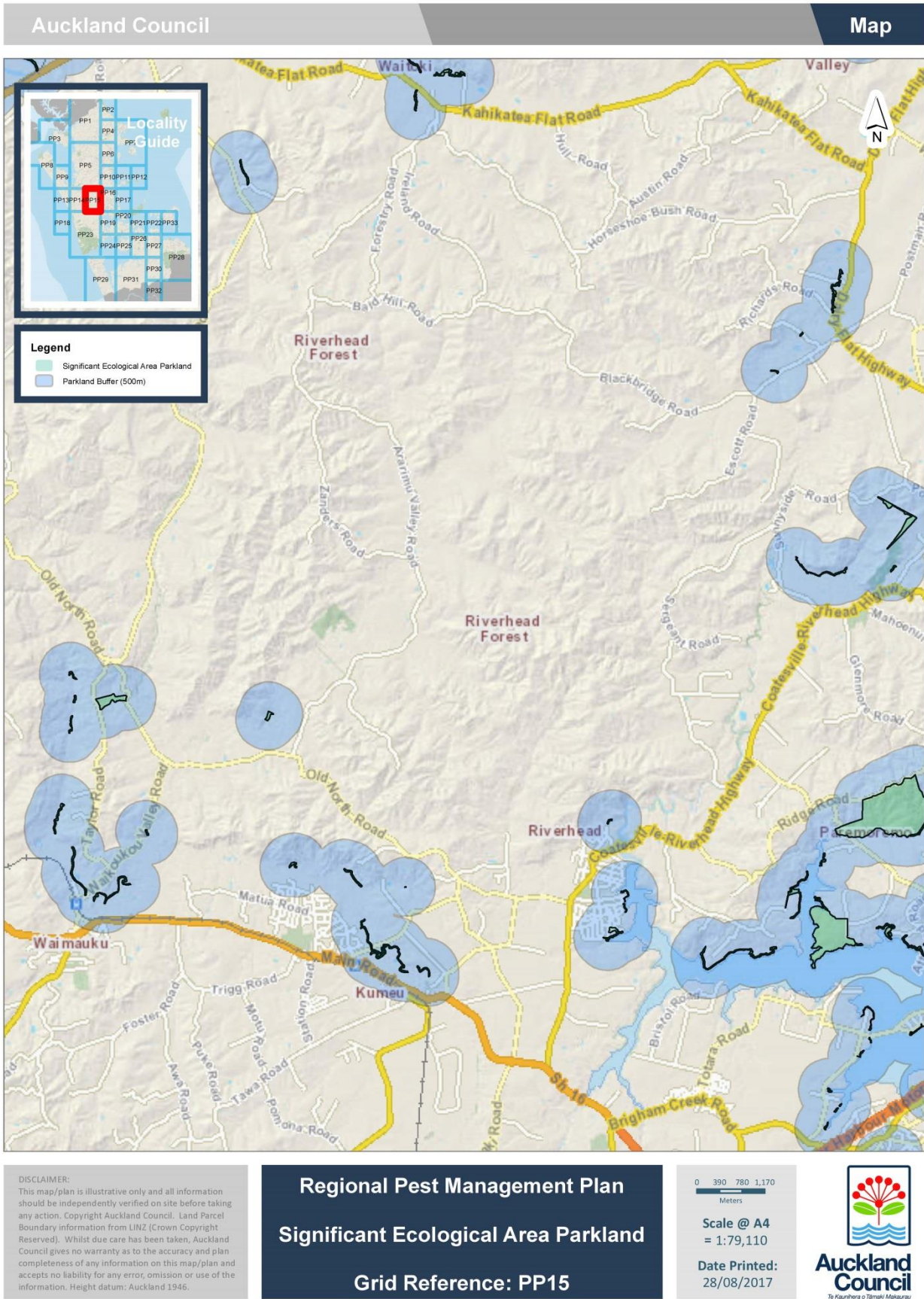
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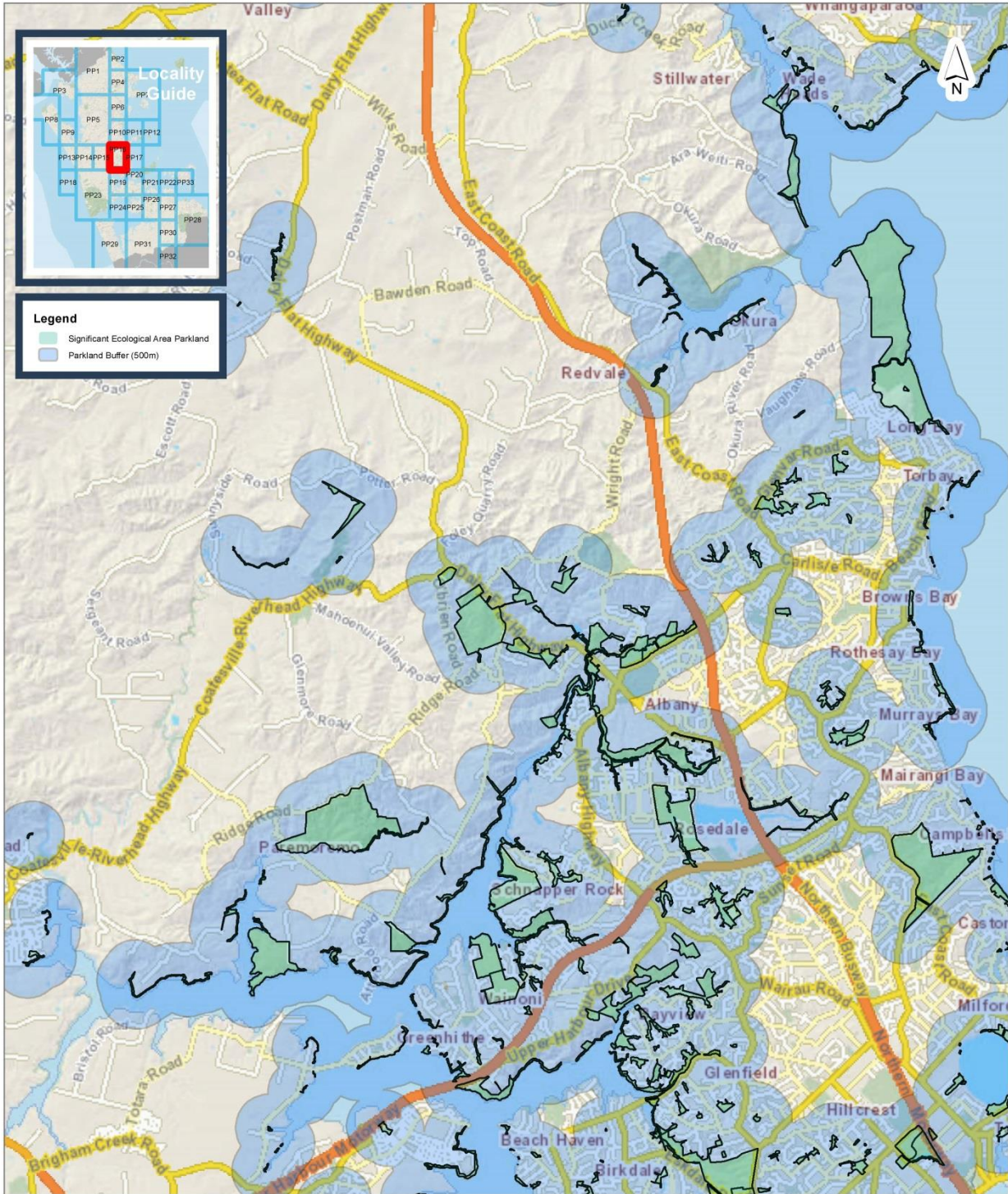
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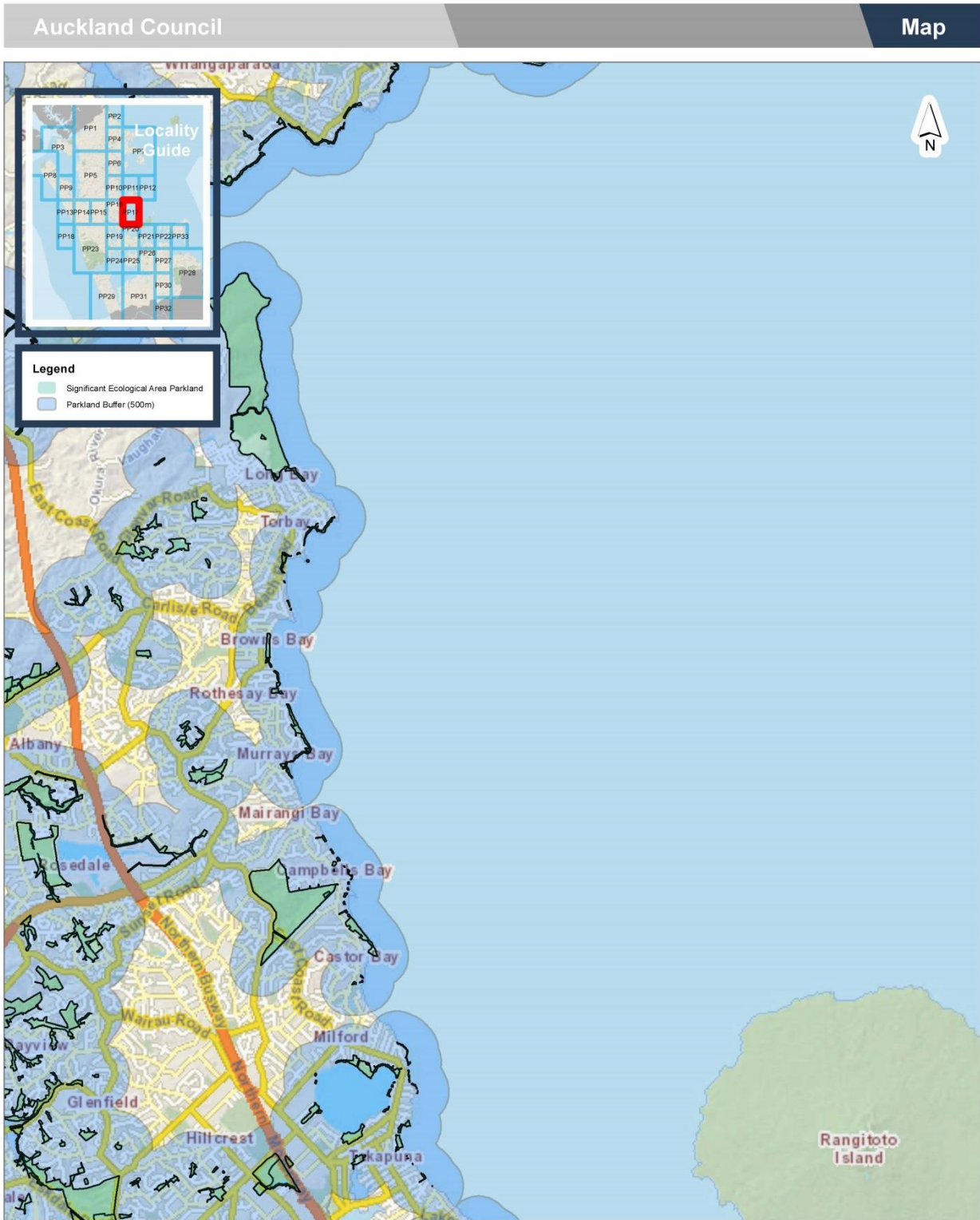


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP16

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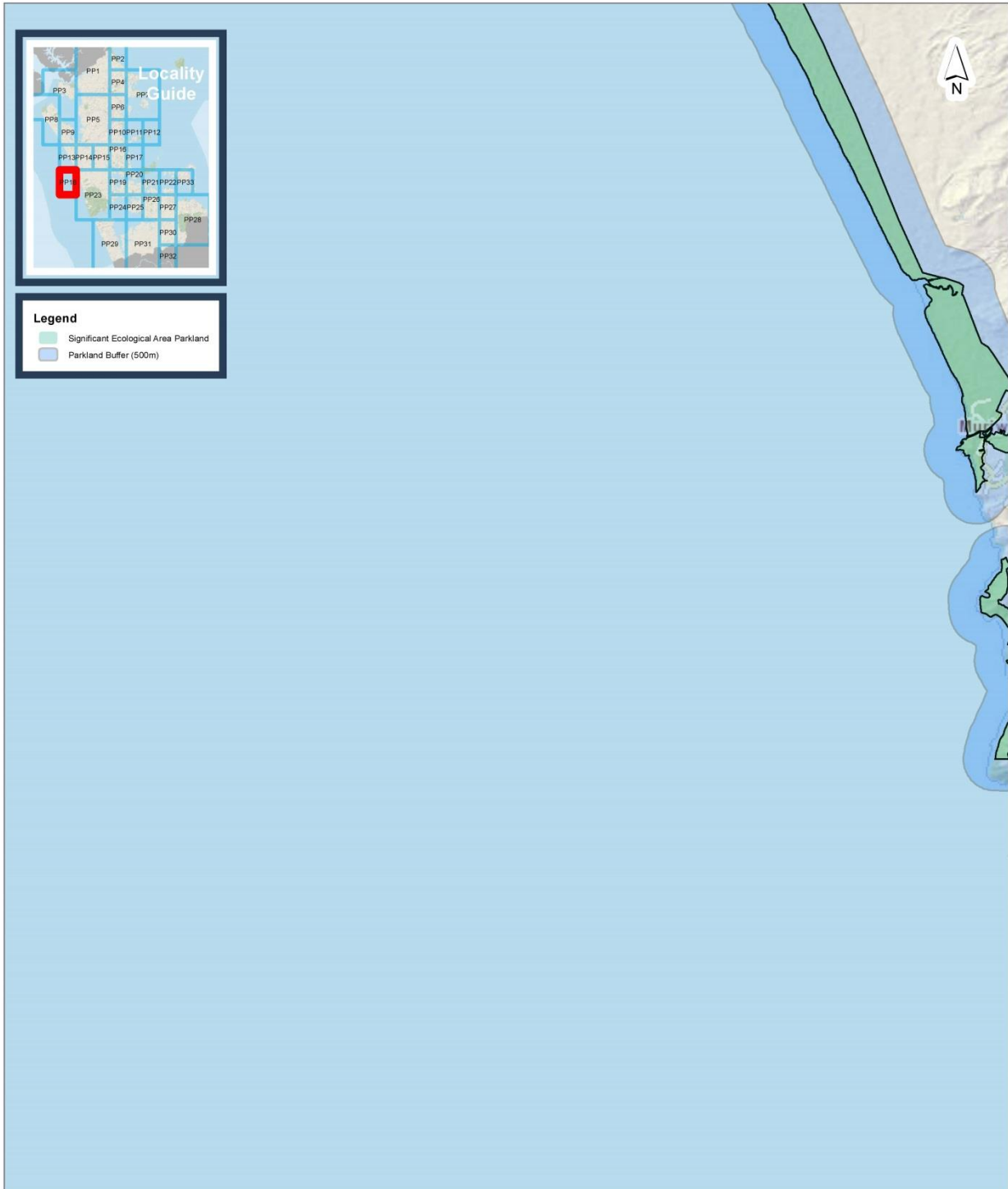


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP17

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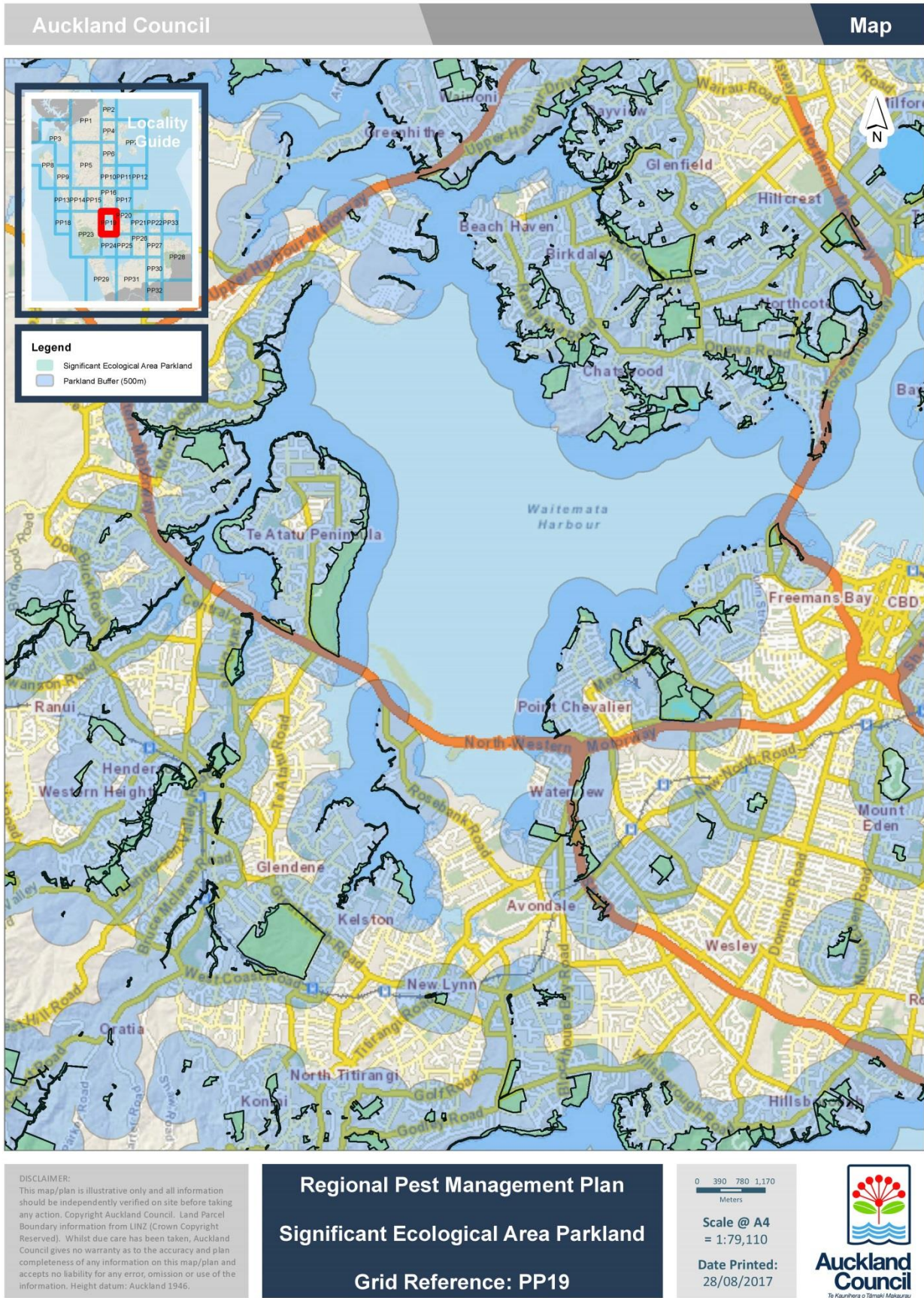


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Regional Pest Management Plan
Significant Ecological Area Parkland
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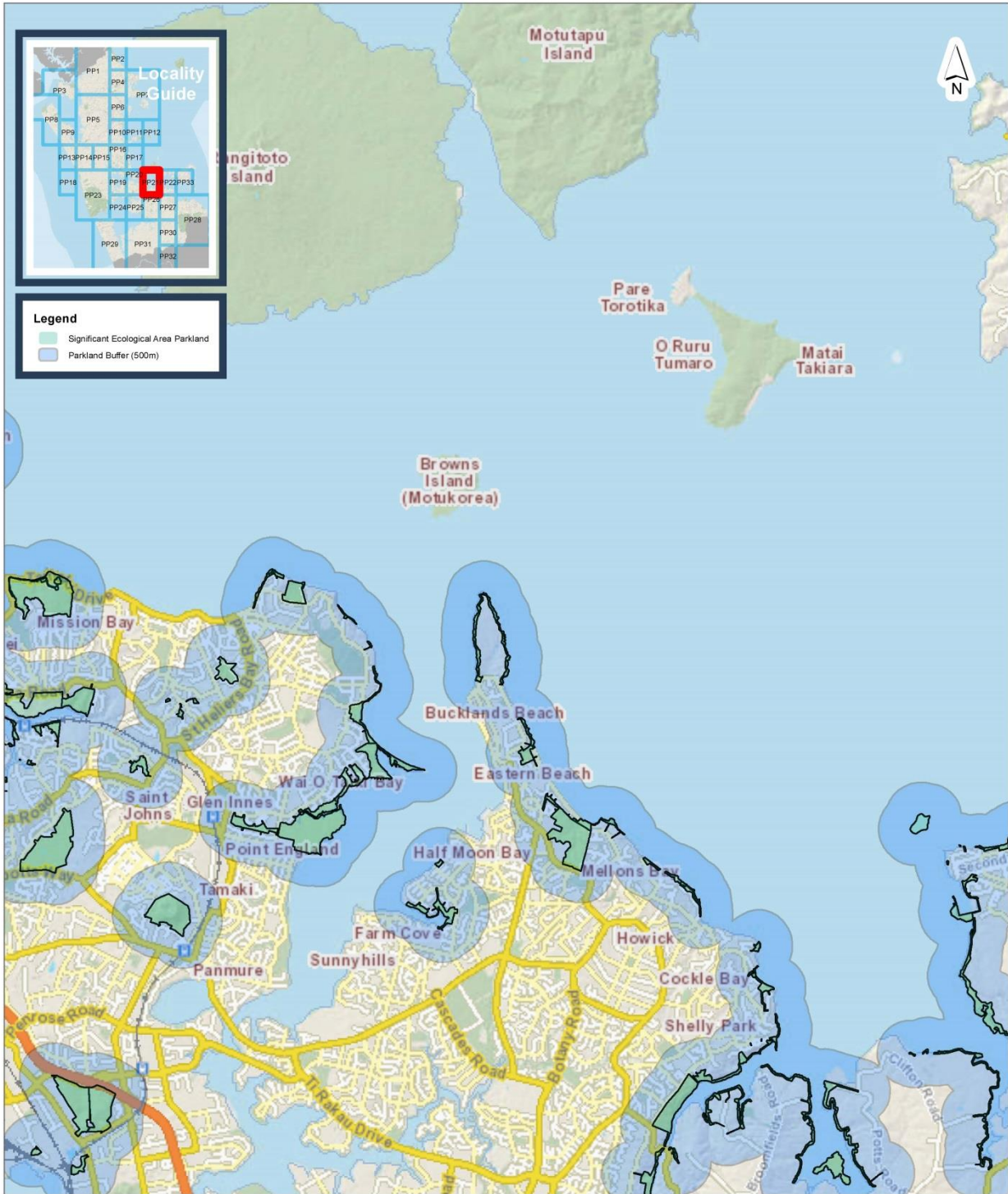


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP20

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 Date Printed:
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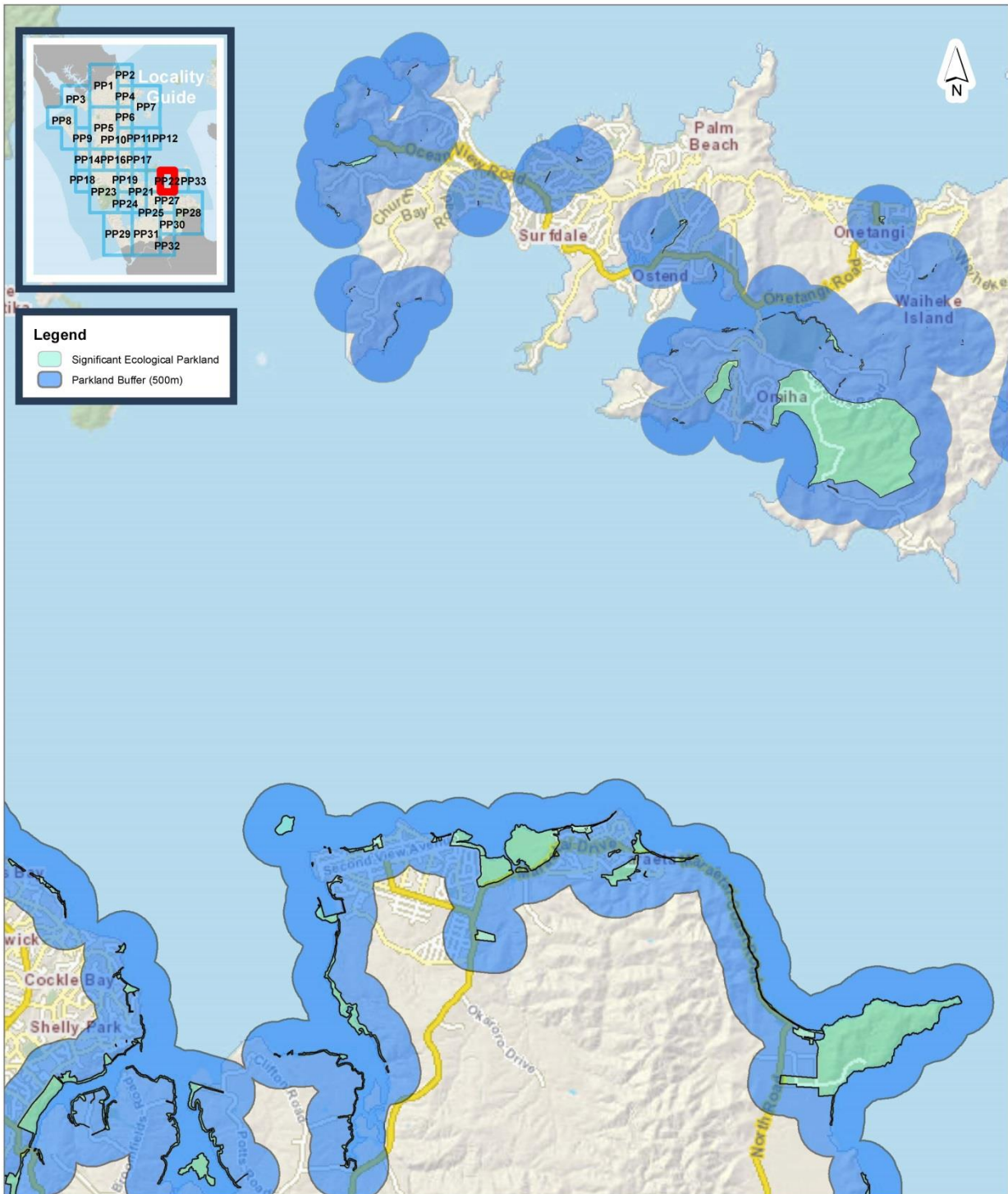


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP21

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,110
 Date Printed:
 28/08/2017



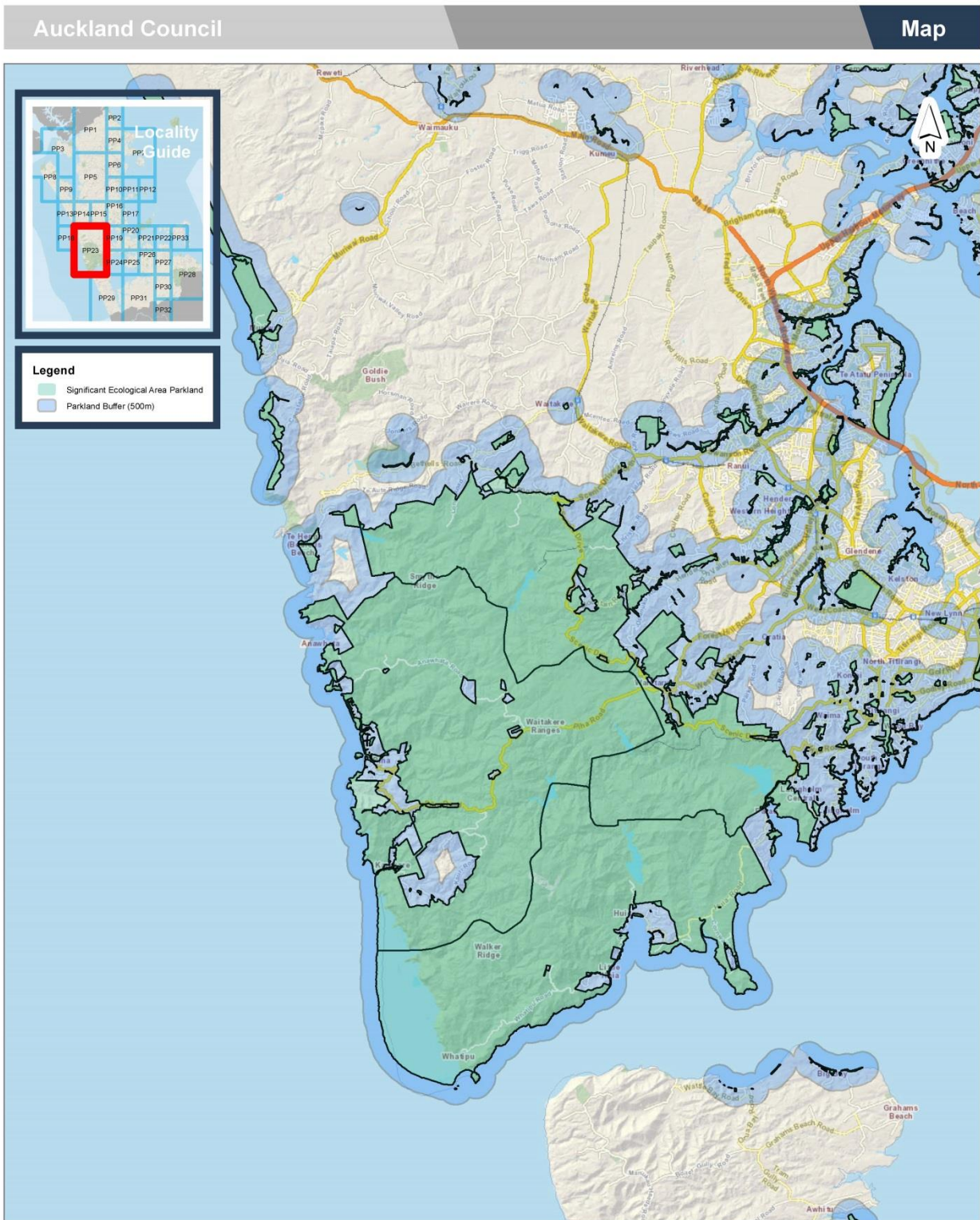


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP22

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,170
 Date Printed:
 19/10/2017



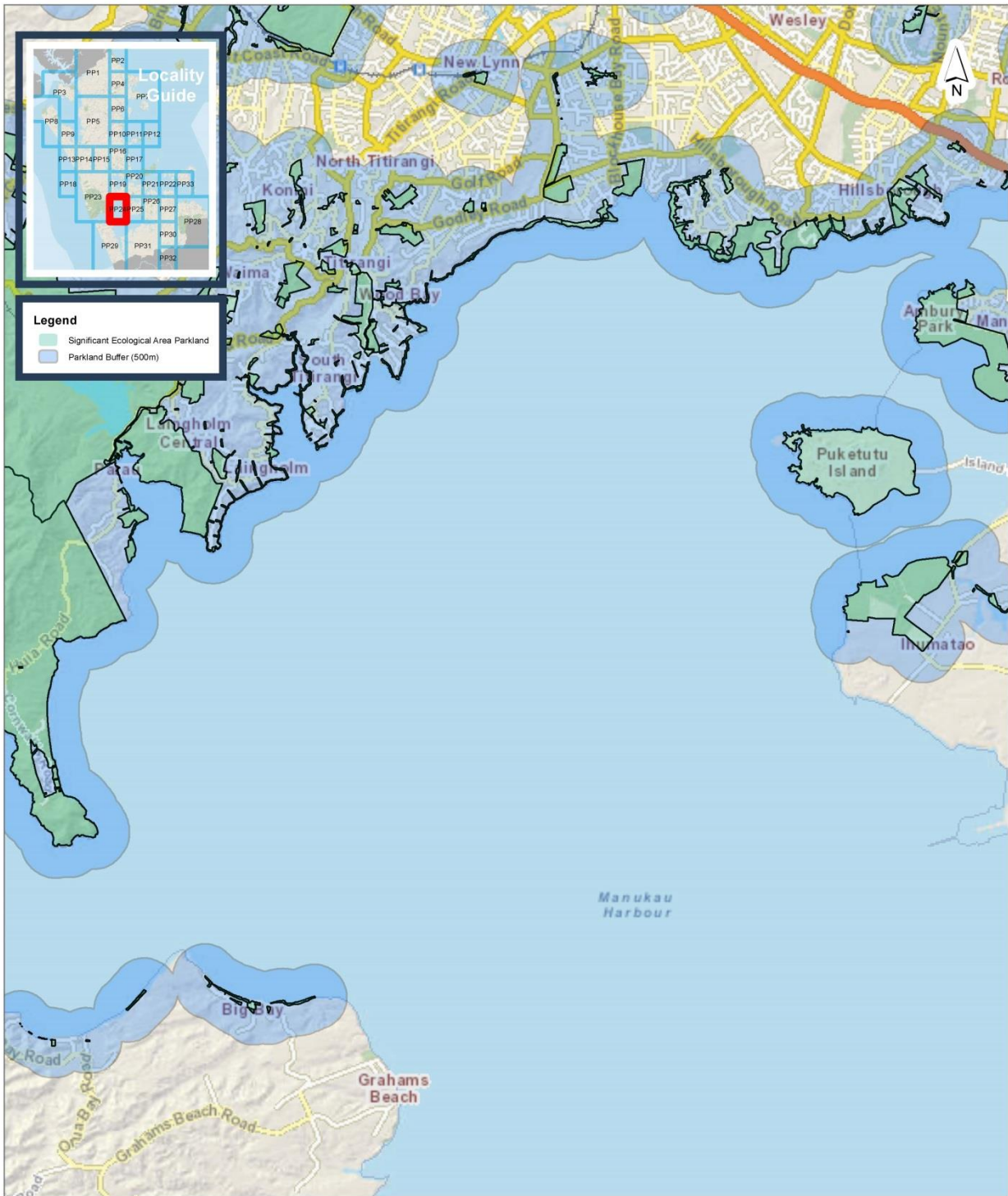


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP23

0 790 1,580 2,370
 Meters
 Scale @ A4
 = 1:158,220
 Date Printed:
 28/08/2017



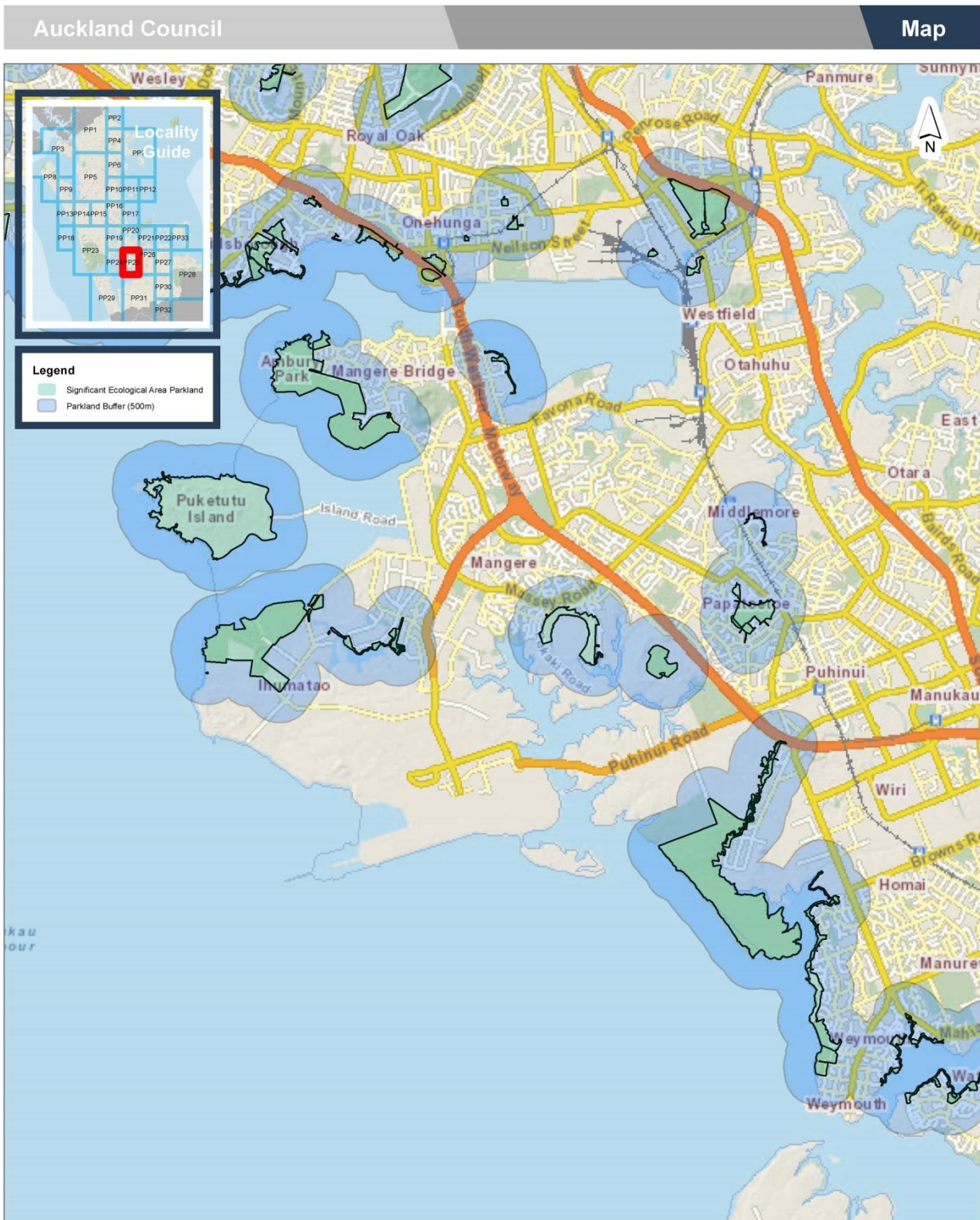


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP24

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,110
 Date Printed:
 28/08/2017





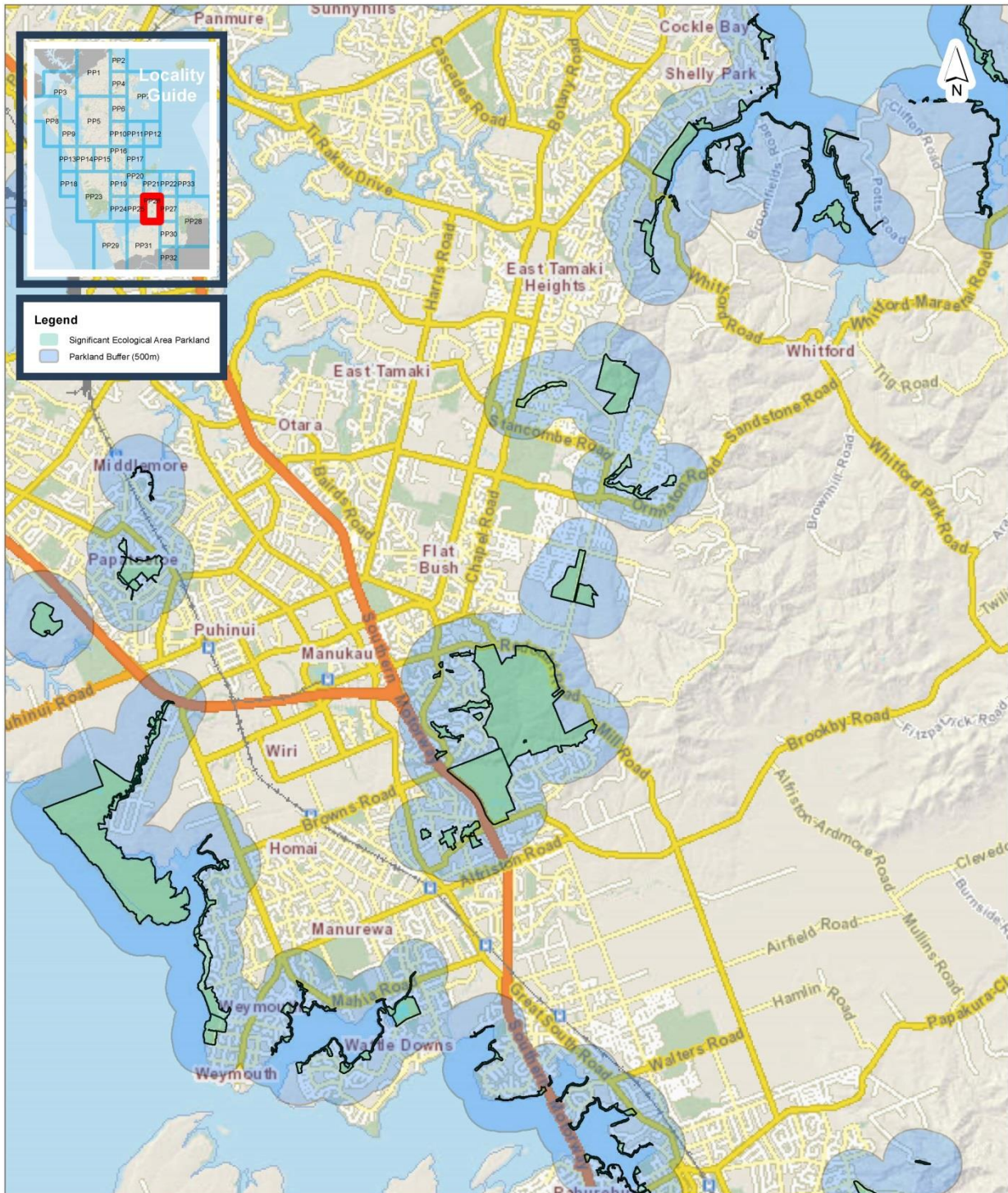
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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP25

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,110
 Date Printed:
 28/08/2017



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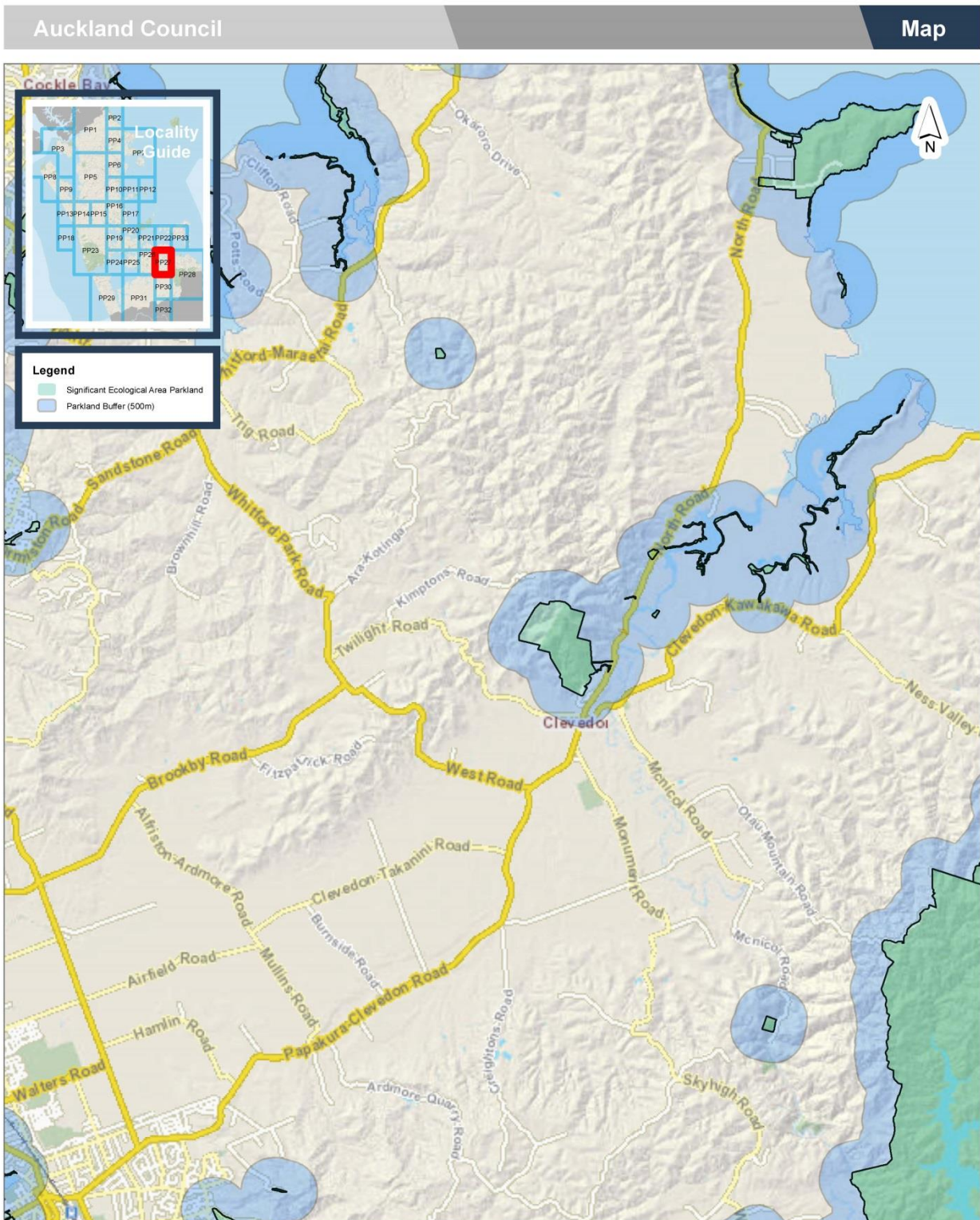


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP26

0 390 780 1,170
Meters
Scale @ A4
= 1:79,110
Date Printed:
28/08/2017





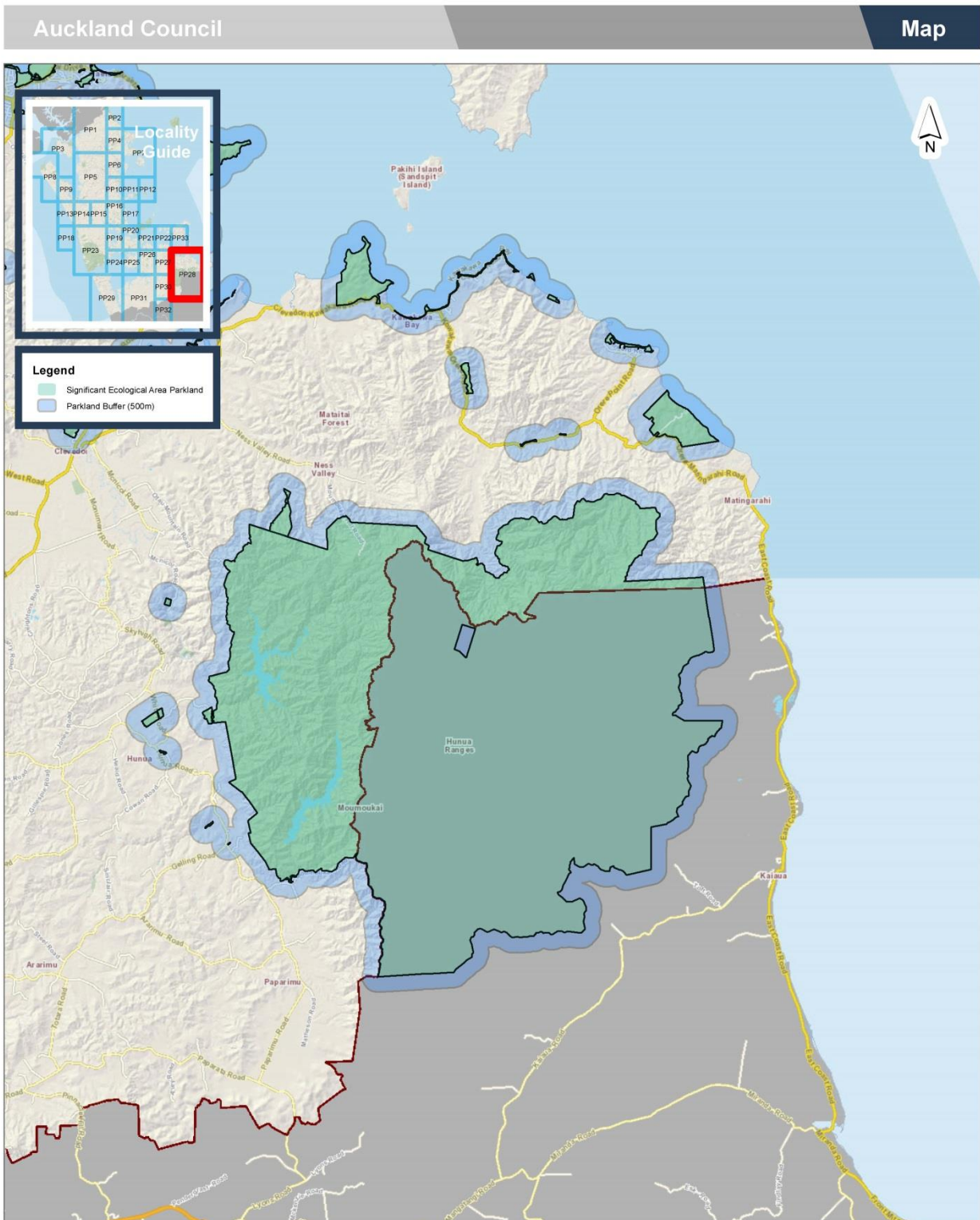
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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP27

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,110
 Date Printed:
 28/08/2017



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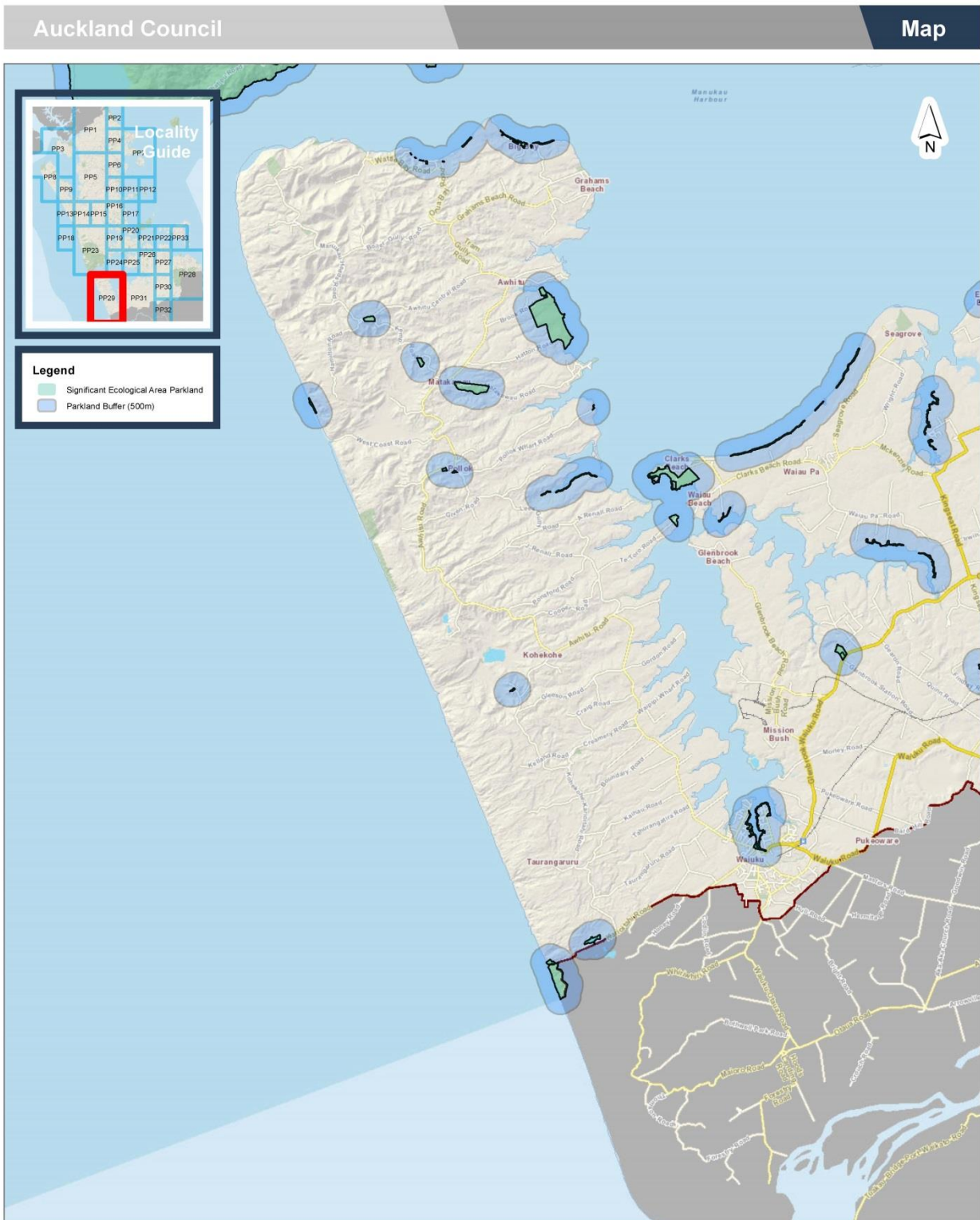


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP28

0 790 1,580 2,370
 Meters
Scale @ A4
 = 1:158,220
Date Printed:
 28/08/2017





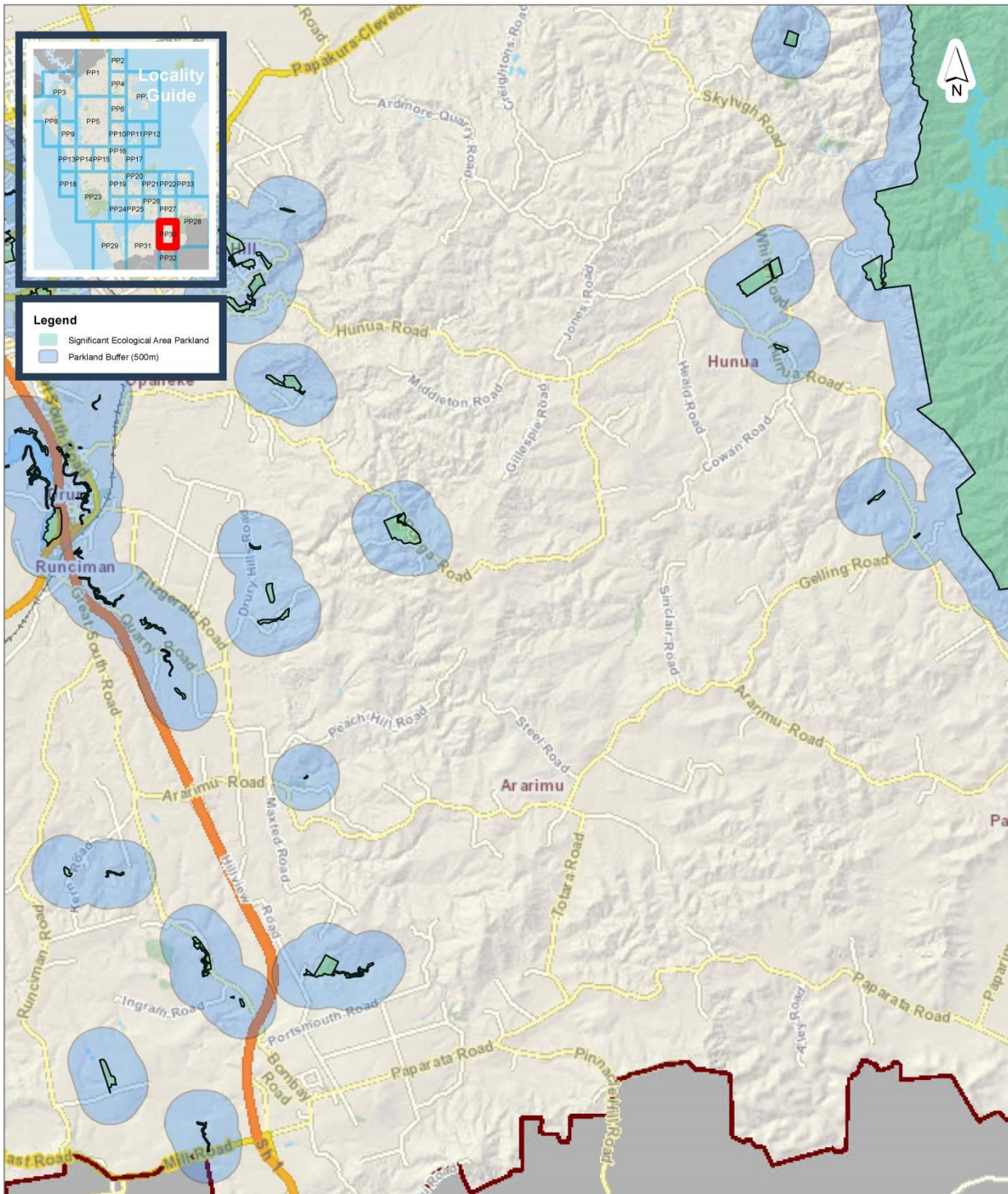
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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP29

0 790 1,580 2,370
 Meters
 Scale @ A4
 = 1:158,220
 Date Printed:
 28/08/2017



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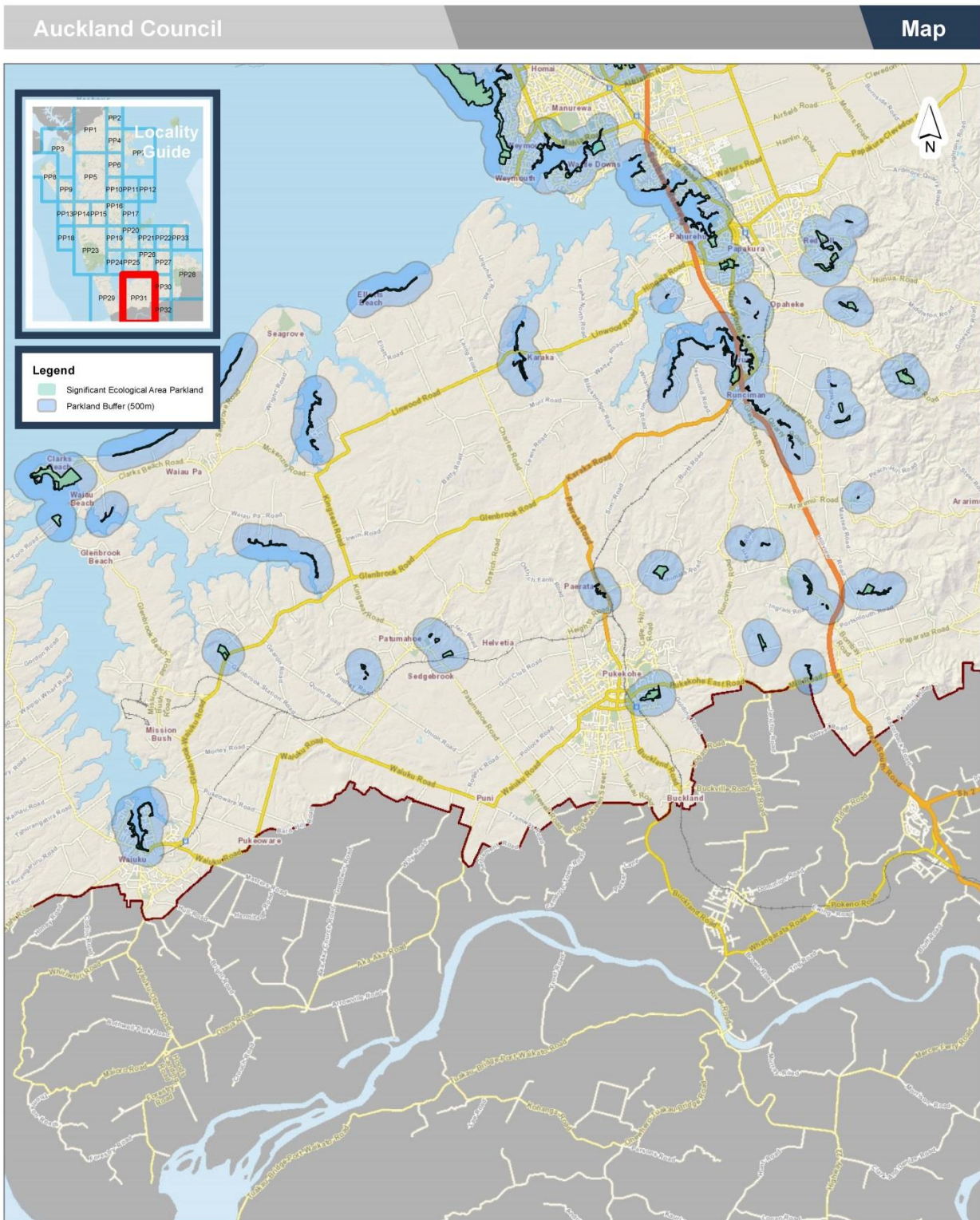


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP30

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,110
 Date Printed:
 28/08/2017



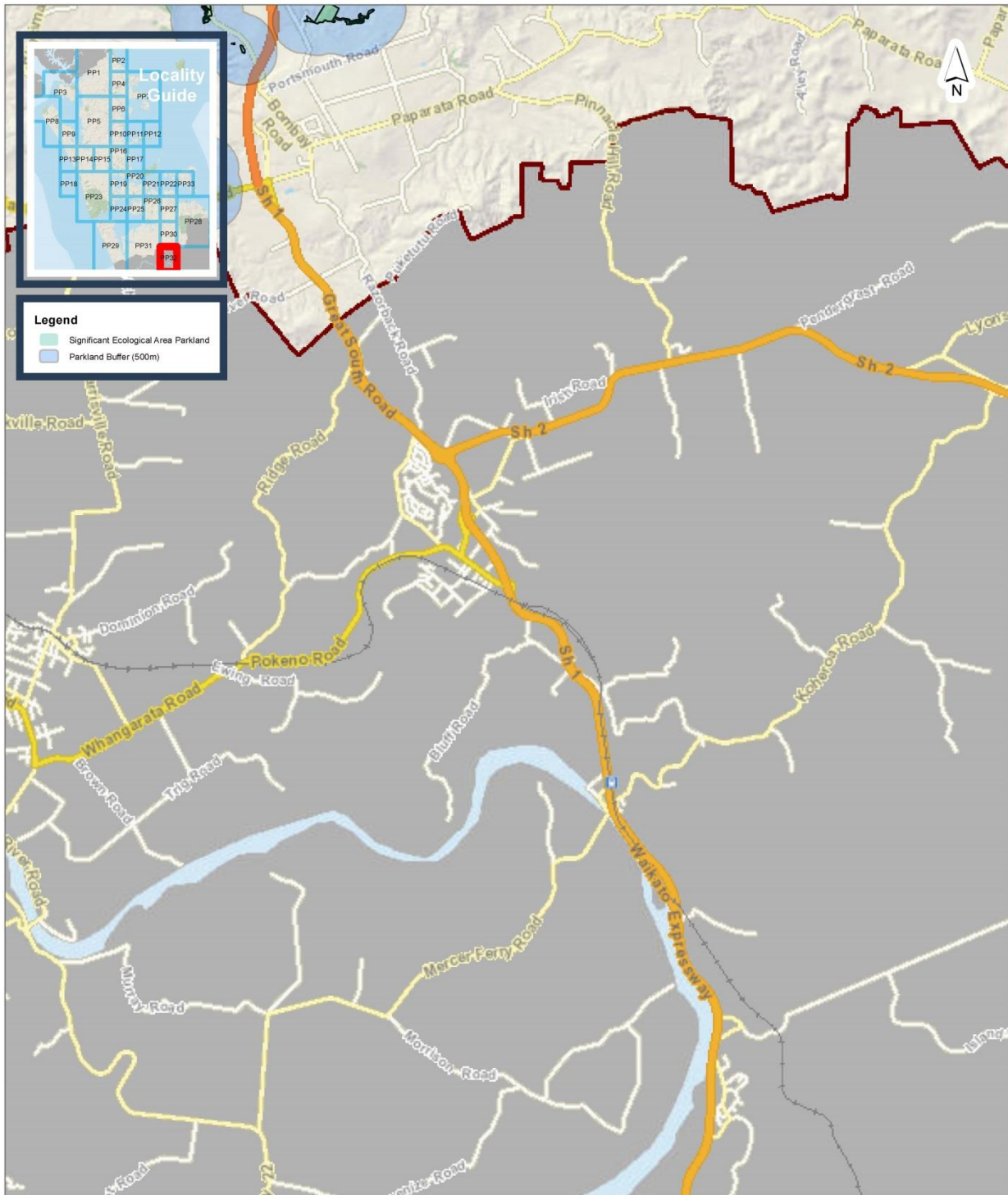


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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP31

0 790 1,580 2,370
 Meters
 Scale @ A4
 = 1:158,220
 Date Printed:
 28/08/2017





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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP32

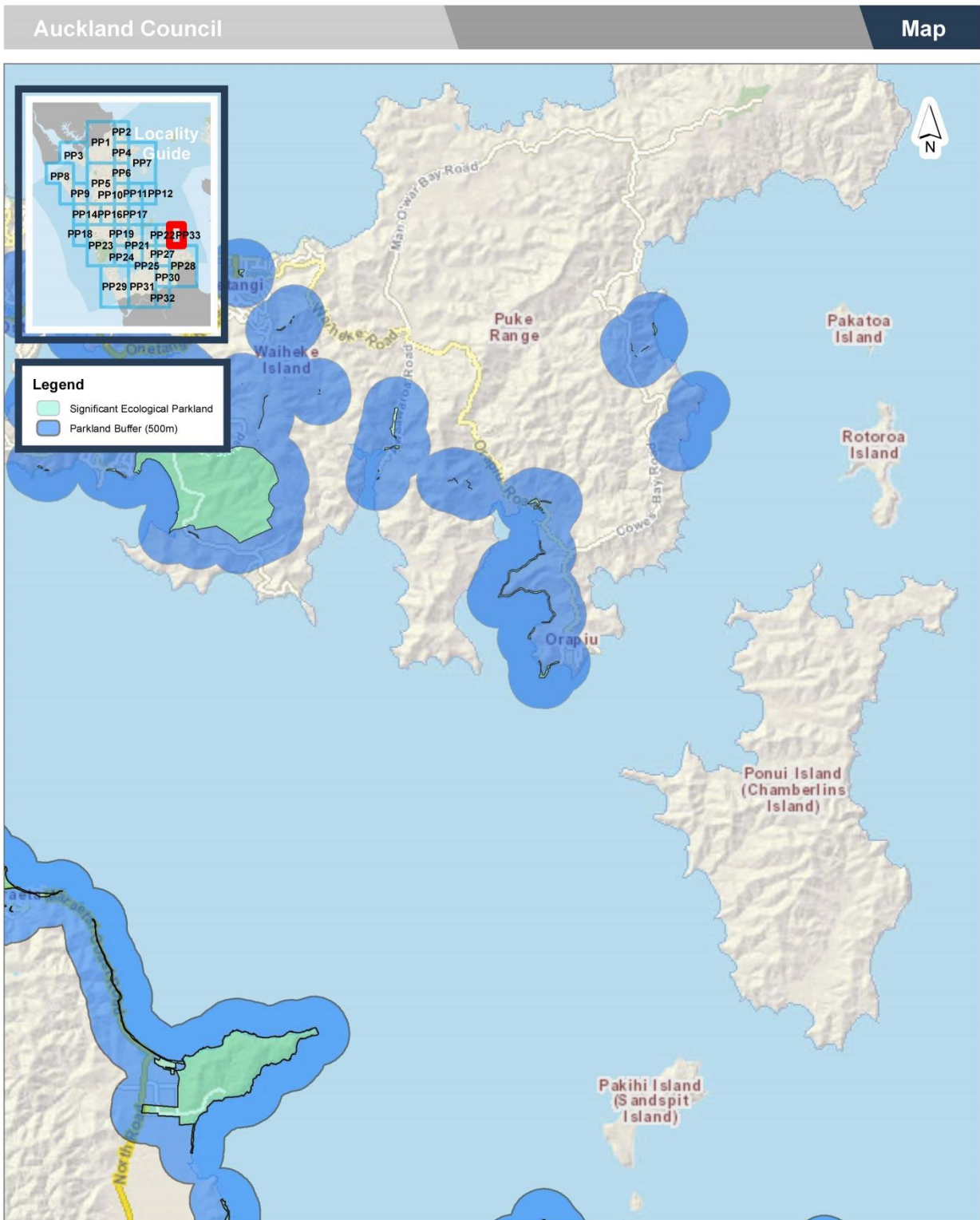
0 390 780 1,170
 Meters

Scale @ A4
 = 1:79,110

Date Printed:
 28/08/2017



Auckland Council
 Te Kauhanga o Tamaki Makaurau



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Regional Pest Management Plan
Significant Ecological Area Parkland
Grid Reference: PP33

0 390 780 1,170
 Meters
 Scale @ A4
 = 1:79,170
 Date Printed:
 19/10/2017



Parks included in Significant Ecological Areas on parkland site-led programme

Aberley Reserve
Aberley Road Stormwater Pond
Achilles Point
Admirals Court Reserve
Aeroview Drive Esplanade Reserve
Aerovista Place Reserve
Akatea Park
Akoranga Reserve
Alan Tanner Reserve
Alan Wood Reserve
Albacore Reserve
Albany Heights Reserve
Albany Heights West Reserve
Alberon Reserve
Albert Dennis Reserve
Albro Lane
Aldersgate Reserve
Alex Jenkins Memorial
Algies Bay Reserve
Alice Eaves Scenic Reserve
Ambury Regional Park
Amelia Place Esplanade Reserve
Anaharta Reserve
Anamata Stream Reserve
Anderson Road Matakana
Andersons Beach Reserve
Anne Mclean Reserve
Anns Creek Reserve
Anzac Bay Reserve
Arama Reserve
Arapito Foreshore Reserve
Arapito Plantation Reserve
Arapito Reserve
Ararimu Stream
Arcadia Reserve
Archibald Park
Ardern Lookout Reserve
Ariki Reserve
Arkles Bay Beachfront Reserve
Arkles Strand Esplanade Reserve
Armour Bay Reserve
Aronia Way No. 2 Reserve
Aronui Esplanade
Arran Bay Esplanade Reserve
Arrenway Reserve
Arundel Reserve
Atarua Way
Atiu Regional Park
Atkin Reserve A
Attwood Reserve
Auburn Street Reserve
Auckland Domain Premier
Auckland Zoological Park
Awaawaroa Esplanade Reserve
Awaawaroa Wetland Reserve
Awanohi Reserve Redvale
Awaruku Reserve
Awatea Reserve
Awhiorangi Reserve
Awhitu Central Recreation Res (Leased)
Awhitu Regional Park
Ayr Reserve
Baddeleys Beach Reserve
Baddeleys Creek
Balboa Reserve
Balmain Reserve
Bamfield Reserve
Banyan Drive Reserve
Bardia Esplanade Reserve
Bassett Reserve
Bath Street Reserve
Bayfield Park
Bayswater Esplanade Reserve
Beach Road Reserves
Beaufort Reserve
Beauvoir Avenue
Belfast Reserve
Bella Vista Reserve
Bellbird Rise Reserve
Belle-Mer Place
Bendalls Esplanade
Berechiah Gardens
Berneckers Landing
Bethells Road Esplanade Reserv
Big Bay Reserve
Big King Reserve
Big Muddy Creek Landing
Bill Haresnape Walk

Birds Beach Recreation Reserve	Cartmel Reserve
Birdwood Park	Cascade Reserve
Birkenhead War Memorial Park	Castleton Reid Reserve
Bishop Park	Catherine Esplanade
Blackpool Cemetery Reserve	Cement Works
Blair Park (Stanley Point)	Centennial Park - Campbells Bay
Bleakhouse Road Promontory Reserve	Centorian Reserve
Blockhouse Bay Beach Reserve	Centreway Reserve
Blue Bell-Thistle-Day Dawn Walkway	Chapman Strand
Blue Heron Rise Esplanade	Charles Prevost Drive Reserve
Bluebird Reserve	Chatham Reserve
Bluewater Place Foreshore	Chatswood Reserve
Bonito Scenic Reserve	Chelsea Estate Heritage Park
Bonnie Brae Reserve	Cheltenham Beach Reserve
Border Road Esplanade	Chelverton Reserve
Borneo Reserve	Chenery Road Esplanade Accessway
Botanic Gardens Regional Park	Chilcott Brae
Boyd Rd Esplanade	Children's Forest
Bramley Drive Reserve	Chisbury Terrace Reserve
Brassey Road Reserve	Chorley Reserve
Bremner Esplanade Reserve	Chrisarda Reserve
Brick Bay Drive	Church Bay Esplanade Reserve
Brick Bay Drive - Puriri Place Reserve	Church Hill, 8
Brookfield Park	Church Street Reserve
Brookfield Stream Reserve	Churchill Reserve
Broomfields Point Reserve	City View Reserve
Browns Bay Beach Reserve	Claris Airfield & Parking
Bruce Scott Reserve	Clark Rd Esplanade Reserve
Brylee Drive Reserve	Clark Street Common
Buckleton Beach Reserve	Clarks Beach Boat Ramp
Burnside Escarpment	Clarks Beach Rd Esplanade Reserves
Burundi Ave Foreshore	Clarks Beach Rec Res&Golf Club
Bush Road Plantation	Claude Able Reserve
Bush Road Reserve	Claverdon Park
Bushglen Reserve	Clevedon Kawakawa Road 202r
Bushlands Highway Strip Reserve	Clevedon Kawakawa Road Eplanade 342r
Butterworth Block	Clevedon Kawakawa Road Esplanade 300r
Bycroft Reserve	Clevedon Kawakawa Road Esplanade 300r
Campbells Bay Esplanade Reserve	Clevedon Kawakawa Road Esplanade 368r
Campbells Beach Reserve	Clevedon Kawakawa Road Esplanade 730r
Capes Rd Local Purpose Reserve	Clevedon Kawakawa Road Esplanade 852r
Capriole Reserve	Clevedon Scenic Reserve
Captain Springs Reserve	Cliff Road
Captains Bush	Clifftop W/Way - Churchill - Rothesay
Caravan Park (The Promenade)	Clifftop W/Way - Masterton To Beechwood
Caribbean Sportsfield	Clifftop W/Way - Murrays To Churchill
Carlton Crescent 90r	Clifton Rd Esplanade 371r
Carmen Reserve	Clifton Road Esplanade 339r
Carter Road Esplanade	Clifton Road Walkway

Clinton Road-Baddeleys Beach Walkway	Doc - North Head
Clive Howe Road Scenic Reserve	Dolphin Bay Walkway
Clovelly Road Walkway No 1	Dominion Reserve
Clovelly Road Walkway No 3	Don Buck Corner
Cobblestone Lane	Don Buck Prim Rec Reserve
Cobham Reserve	Dormer Rd Esplanade Reserve
Cochran Esplanade	Double Bay Place Reserve
Cochran Stream Esplanade	Douglas Scenic Reserve
Cochrane-Mckenzie Reserve	Dove Myer Robinson Park
Cockle Bay Reserve	Driving Esplanade
Colin Dale Park	Drury Esplanade Reserve.
Colwill Esplanade	Drury Hills Esplanade Reserve
Conifer Grove Esplanade Reserve	Drury Sports Complex
Constable Road Muriwai	Duck Creek Warkworth
Constellation Reserve	Dudding Avenue Reserve
Cooper - Lea Reserve	Dudding Park Sportsfield
Corban Estate Esplanade	Duder Regional Park
Corbans Estate	Duncansby Lookout & Esplanade Reserve
Coulthards Scenic Reserve	Dune Walkway
Cowes Bay Esplanade Reserve	Dungarvon-Blue Bell Walkway
Coxs Bay Esplanade	Durbin Reserve
Cox's Bay Reserve	Dyke Rd Esplanade Reserve
Coyle Park	East Avenue Tiri Road Esplanade Reserve
Craigavon Park	Eastern Beach
Cranwell Esplanade	Eastern Beach Caravan Park
Cranwell Park	Eastvale Reserve
Cremorne Road Reserve	Edward Jonkers Reserve
Crocodile Island	Elam Street Walkway
Crown Reserve	Ellet Rd Esplanade Reserve
Crows Park	Ellets Beach
Crum Park	Embassy Reserve
Curacao Place Esplanade Reserve	Emlyn Place
Cyril French Park	Eric Armishaw Park
Dacre Historic & Esplanade Reserve	Eskdale Reserve
Daffodil Scenic Reserve	Esplanade Reserve Off Industrial Place
Danica Reserve	Eugenia Rise No 2
David Nathan Park	Eugenia Rise No 3
Davies Bay Reserve	Evanda Link Reserve
Dawnhaven Esplanade	Everglade Drive No 3
Day Dawn-Blue Bell-Darroch Walkway	Everglade Drive No 5
Days Bridge Esplanade Reserve	Everglade Park
De Luen Ave Beachfront Reserve	Ewelme Cottage
Debbie Chamberlain Reserve	Excelsior Way Reserve
Deborah Reserve	Exeter Reserve
Delamore Walkway	Fairhaven Walk
Dene Court Reserve	Fairlands Reserve Esplanade
Dept Defence Tamaki	Falls Park
Dingle Dell Reserve	Falls Rd River Esplanade Reserve
Doc - Kaipatiki Road	Falstaff Place Reserve

Fawcett Esplanade
Fawcett Scenic Reserve
Fernbank Stormwater Reserve
Fernglen Reserve
Fernhill Escarpment
Fernwood Grove
Ferry Parade Plt Reserve
Ferry Road Reserve
Fidelis Avenue Reserve
Fisher Road
Fishermans Rock Reserve
Fishermans Wharf
Fitzwilliam Drive Reserve
Flexman Place Landing Reserve
Foothills Lane Reserve
Forest Glen Esplanade
Fort Takapuna Reserve
Foster Ave Walkway
Foster Bay Reserve
Foster Hill Lane
Foster Strand
Fowler Reserve
Francis Kendall Reserve
Fred Andersen Reserve
Freda Kirkwood Walkway
French Bay Esplanade
French Bay Reserve
Fulmen Accessway
Gair Lookout
Game Reserve
Garden Court Grounds
Garden Road Plant Reserve
Garden Road Walkway
Gentlemans Walkway
George Deane Place Reserve
George Kern Scenic Reserve
George Pannill Reserve
Gerontius Reserve
Gibbons Road 41 Rental House
Gill Esplanade
Gills Reserve
Gittos Domain
Glen Atkinson Reserve A
Glenbrook Road Recreation Reserve
Glencourt Reserve
Glendhu Scenic Reserve
Glenelg Reserve
Glensk Road Plant Reserve - 1
Glensk Road Plant Reserve - 2
Glenfern Regional Park
Glenfield Cemetery
Glenmary Place Reserve
Glenvar Glade Reserve
Gloria Park
Gloucester Park North
Glover Park
Gold Hole
Gold Street Reserve
Goldsworthy Bay
Golf Course Reserve
Goodwin South Reserve
Goodwood Drive Reserve
Gooseberry Flat
Gordons Road Esplanade Reserve
Gould Reserve
Grampian Road Retention Dam
Grannys Bay Reserve
Great Barrier Golf Course
Green Bay Beach
Green Point Reserve
Greenbough Reserve
Greenhithe Upper Harbour Reserve
Greenwood Road Pakiri
Greers Road Foreshore
Gretel Scenic Reserve
Greville Reserve
Gribblehirst Park
Gulf Harbour Marina Hammerhead Reserve
Gulf Harbour To Matakatia Esplanade
Gully Reserve
Hadfield Street Reserve
Halls Beach - Northcote Point
Halsey Esplanade Reserve
Hamilton Beach Reserve
Hamilton Rd Esplanade Reserve
Hamilton Road Waiuku
Hamlins Hill
Hamlins Hill Regional Park
Hampton Mews
Handley Plantation Reserve
Hanford Place Foreshore
Harataonga Walkway
Harbour Reserve
Harbour View Esplanade Reserve
Harbour View Reserve
Harbour View Road Coastal Reserve
Harbourview - Orangihina
Harbutt Reserve

Harmel Reserve
Harrowglen Reserve
Hart Domain
Hastie Avenue Reserve
Hatfields Beach Reserve
Haururu Stream Monowai Road
Hawke Crescent Accessway
Hawke Crescent Esplanade 21r
Hayley Lane Reserve
Heath Reserve
Hector Sanderson Road Airfield
Helena Park
Helensville River Reserve
Hellyers Esplanade Reserve
Henderson Creek Esplanade
Henderson Park - Henderson
Henderson Park - Takapuna
Henderson Valley Green
Henderson Valley Park
Henderson Valley Scenic
Hendry Reserve
Henry's Scenic Reserve
Herald Island Fire Stn & Po
Herne Bay Beach
Heron Park
Heron Point Reserve
Herrings Cove
Hfop: Godley Court
Hfop: Hillcrest Court
Hibiscus Reserve
Highfield Garden & The Glade Reserve
Hilders Park
Hillcrest Grove Reserve
Hillcrest Reserve
Hillsborough Cemetery 1
Hillsborough Reserve 1
Hillsdale Reserve
Hillside Crescent Street Gardens
Himalaya Reserve
Hinemoa Park
Hingaia Stream Esplanade Reserve
Hoani Waititi Marae
Hobson Bay Esplanade Reserve
Hobson Bay Walkway 1
Hobsonville Esplanade
Hochstetter Pond (The Grotto Wetland)
Holland Reserve
Home Bay Beach Reserve
Homewood Reserve
Hooton Reserve
Horseshoe Bay Reserve
Hosking Reserve
Hoteo Recreational Reserve
Hoteo River Wayby Valley
Hughes Esplanade
Huia Domain
Huia Scenic Reserve
Hukanui Reserve
Huntermville Reserve
Huntly Road Reserve
Hunua Domain Recreation Reserve
Hunua Ranges Regional Park
Hunua Road Esplanade Reserves
Ida Way - Rita Way Reserve
Inaka Esplanade
Ingram Rd Esplanade Reserve
Inwards Reserve
Island Bay Reserve
Jacaranda Avenue Esplanade Reserve
Jack Colvin Park
Jack Lachlan Drive Esplanade Reserve
Jacobs Ladder And St Marys Bay Walkway
Jaggers Bush
Jamieson Bay Esplanade Reserve
Jane Gifford-Meiklejohn Walkway
Jelas/Moffat Esplanade Reserve
Jessie Rise Stormwater Pond
Jessie Tonar Reserve
John Kay Park
Jonkers Road Recreation Reserve (Prov)
Joydon Place Reserve
Judges Bay Reserve
Jutland Reserve
Kaiaraara Bay Esplanade Res 1
Kaimoana Street Esplanade Reserve
Kaipara Coast Highway Kakanui
Kaipara Flats Rd Recreation Reserve
Kaipara Reserve
Kaipara River Helensville
Kaipara River Parakai
Kaipara River Waimauku
Kaipatiki Esplanade Reserve
Kanuka Reserve (Albany)
Karaka Bay
Karaka Cove
Karaka Esplanade Reserve - Provisional
Karaka Park
Karamatura Reserve

Karekare Plant Reserve
Karekare Reserve
Karekare Scenic Reserve
Karekare Valley Scenic
Karioitahi Reserve
Katrina Esplanade
Kaukapakapa River
Kauri Esplanade
Kauri Glen Reserve
Kauri Park
Kauri Park Extn
Kauri Plant Reserve
Kauri Point Centennial Park
Kauri Point Domain
Kauri Reserve
Kauri View Reserve
Kaurimu Park
Kaurimu Stream Reserve - Central
Kaurimu Stream Reserve - South
Kawa Glade
Kawaka Reserve
Kawakawa Bay Foreshore
Kawakawa Coast Rd Reserve
Kawakawa Coast Road Esplanade 193r
Kawakawa Orere Rd Esplanade 600r
Kawakawa-Orere Road 280r
Kawakawa-Orere Road 674r
Kawerau Reserve
Kay Road Bale Fill
Kell Park
Kellys Bridge Esplanade
Kellys Road Island 81r
Kelmar Scenic Reserve
Kelvin Reserve
Kelvin Strand
Kemp Road Scenic Reserve
Kennedy Park
Kent Terrace Esplanade Riverhead
Kepa Bush Reserve
Kerema Reserve
Kereru Reserve
Kerr-Taylor Park
Kiernan Esplanade
Killarney Park
Kimberly Grove
King Street Reserve
Kingsclere Place Reserve
Kingsway Reserve
Kingswood Reserve
Kinloch Reserve
Kirks Bush
Kirks Bush - Butterworth House
Kitchener Park
Kitemoana Corner
Kitewaho Plant Reserve - 1
Kitewaho Plant Reserve - 2
Kitewaho Reserve
Kitewao Street Esplanade Reserve
Kiwi Esplanade (Bird Refuge & Pump Hse)
Kiwi Esplanade (Open Foreshore)
Kohu Plantation Reserve
Kohuora Park
Koki Reserve
Konini Pt Reserve - 1
Konini Pt Reserve - 2
Kourawhero Stream Hall Lane
Kowhai Beach Reserve
Kowhai Park
Kowhai Reserve
Kowhai Valley Track
Kuakarau Bay Forest
Kumeu River
Kurt Brehmer Walkway
Kyle Reserve
Kyle Road Esplanade Reserve
Kyle Road Reserve
La Rosa Garden Reserve
Ladies Bay Beach
Lady Jane Franklin Botanical Reserve
Lady Phoenix Reserve
Laingholm Drive Esplanade
Laingholm Scenic Reserve
Laings Esplanade
Lake Ototoa Reserve
Lake Pupuke
Lake Tomarata Reserve
Lake Wainamu Scenic Reserve
Lake Whatihua
Lancelot Reserve
Landing Road Reserve
Landing Road Walkway
Lauderdale Reserve
Laurel Oak Reserve
Laurie Gibbons Memorial Park
Laurie Southwick Parade
Laurieston Park
Lawrie Road Landfill
Le Roys Bush Reserve

Lees Gully Rd Local Purpose Reserve	Mahe Park
Leigh Auton Reserve-Spinnaker Bay	Mahia Road Stream
Leigh Cemetery	Mahoe Glade Stormwater Reserve
Leigh Harbour Cove Walkway	Mahoe Plantation Reserve
Leigh Scenic Reserve	Mahoe Walk
Lemington Reserve	Mahurangi East Road
Lendenfield Reserve	Mahurangi Regional Park
Les Waygood Park	Mahurangi River Kowhai View
Limeburners Reserve	Mahurangi River Sandspit Road
Lincoln Park Esplanade Reserve	Mahurangi West Road Esplanade
Linear Walkway	Mairangi Bay Beach Reserve
Linley Reserve	Mairetahi Landing Reserve
Linwood Rd Esplanade Reserve	Makarau Bridge Reserve
Little Huia Beach	Makarau River
Little Manly Beach Reserve	Malaspina Reserve
Little Muddy Creek	Malters / Helvetia Road
Little Shoal Bay Foreshore Reserve	Manawa Wetland Reserve
Little Shoal Bay Reserve - Northcote Pt	Mangakura Reserve
Lloyd Road Esplanade Riverhead	Mangemangeroa Reserve
Lone Kauri Glade	Manly Park
Lone Kauri Reserve	Manuka Neighbourhood Reserve
Long Bay Regional Park	Manuka Reserve
Long Bay/Beach Road	Manukau Cruising Club
Longford Park Esplanade Reserve	Manukau Domain
Longford Park Link Reserve	Manukau Margin Reserve
Longford Park Reserve	Manuhiri Reserve
Lookout Reserve	Manutewhau Reserve
Lopdell Hall And House	Manutewhau Walk
Lopdell Plantation Reserve	Marae Reserve
Lorikeet Reserve	Marae Road Esplanade Reserve
Lot 12 Dp 207570 & Lot 14 Dp 62623	Maraetai Community Hall Grounds
Lot 2 Dp 76164 & Lot 4 Dp 159755 Bethels Road	Maraetai Esplanade Reserve
Lot 3 Dp 170992, Lot 5 Dp 170992	Maraetai Library Reserve
Lot 6 Dp 170992	Maraetai Park
Lot 6 Dp 98580	Marama Plantation Reserve
Lot 7 Dp 170992, Lot 8 Dp 170992	Marama Street
Lot 8 Dp 163546 South Head Road Mairetahi	Marellen Drive Beach Reserve
Lower Mauku Forestry Reserve	Margan Bush
Lowtherhurst Reserve	Margan Green
Lucas Creek Scenic Reserve	Marian Roberts Reserve
Lucas Esplanade Reserve	Marina Esplanade
Luckens Reserve	Marina View Reserve
Lucy Moore Memorial Park	Marine Parade Esplanade Reserve
Lynfield Cove Reserve	Marine Parade Plantation Reser
Lynfield Reserve	Marine Parade Reserve
Lynn Reserve	Mariner Grv, Algies Bay Espl Rsve
Macleans Park	Martin Jugum Reserve
Macpherson Reserve	Martins Bay Grounds
Macwhinney Reserve	Martyn Farm Estate Esplanade Reserve

Martyn Wilson Fields & Sonia Res	Mountain Reserve - Henderson Valley
Matakana River Esplanades	Mountain Road Esplanade Reserv
Matakatia Parade Beachfront Reserve	Mt Atkinson Park
Matakatia Parade Reserve	Mt St John Domain
Matakatia Scenic Reserve	Muriel Fisher Reserve
Matakawau Recreation & Plantation Res	Muriwai Beach Playground (Doc)
Matheson Bay Reserve	Muriwai Regional Park
Maungawhau Domain (Mt Eden)	Muriwai Village Green
Maybury Reserve	Murphys Bush Reserve
Maygrove Esplanade Reserve	Murrays Bay Beach Reserve
Mcelandoney Reserve	Musick Point Esplanade Reserve
Mcelroy Reserve	Musson Track
Mcelroy Scenic Reserve	Napuka Road Plantation
Mckenzie Avenue - Arkles Strand	Narrow Neck Beach
Mcleods Farm	Needles Eye
Mcnicol Road 661r	Neweys Corner
Mcrobbie Rd Esplanade Reserve	Newmarket Park
Meharg Reserve	Ngapipi Cliff Reserve
Mellons Bay	Ngapipi Reserve
Meola Reef Reserve	Ngapuhi Reserve
Metro Park - East	Nikau Reserve
Michael Joseph Savage Memorial	Nimrod Esplanade
Middlemore Crescent	North Piha Esplanade
Miha Road Reserve	North Piha Strand
Mildred Amy Kerr-Taylor Recreation Reserve	North Road 927r
Mill Rd Esplanade Reserve	North Road Esplanade 224r
Mill Rd Esplanade Reserve Helensville	North Road Esplanade 261r
Millbrook Esplanade	North Road Esplanade 286r
Millbrook Road Reserve	North Road Esplanade 781r
Millers Hill Subdivision Walkway	North Shore Memorial Park
Millers Look Out	Northboro Reserve
Millwater Park Bush Reserve	Northcross Reserve
Millwater Parkway	Northwood Reserve
Minnehaha Reserve	Norwood Estate Park
Miraka Place Reserve	Norwood Road Esplanade Reserve
Miranda Reserve	Norwood Road Stormwater Reserve
Moana Reserve	Oak Park
Mohenui Stream Coatesville	Oakley Creek Walkway
Moire Park	Obrien Reserve
Mokihi Reserve - Provisional	Obrien Reserve North
Mollyhawk Reserve	O'brien Road Te Whau Road Bridle
Montgomerie Road Reserve	Ocean View Road Plantation Reserve
Moreton Drive Bush Reserve	Oceanview Recreation Reserve 1
Morrison Scenic Reserve	Odin Place Reserve
Mosquito Bay	Odlin Corner
Motorway Buffer Reserve	Okewa Reserve
Motukaraka Reserve (Aka Flat Island)	Okewa Reserve & Beach
Moumoukai Rd Esplanade Reserve	Okiwi Airfield
Mount Wellington Domain	Okiwi River Reserve

Okoka Bay Dead Dog Walkway
Okoromai-Clansman Reserve
Okupu Reserve 3
Okura Esplanade Reserve
Okura River Esplanade
Old Coachway Road Scenic Reserve
Old Mill Reserve
Old Service Centre Build. Great Barrier
Omaha Beach Boat Launching & Wharf
Omaha Beach Reserve
Omaha Blk Access Road Espl Reserve
Omaha Estuary
Omaha Estuary Causeway Reserve
Omaha Golf Course Bush
Omaha Reserve
Omaha River Point Wells
Omaha South Quarry Reserve
Omana Ave Esplanade Reserve
Omana Esplanade
Omana Regional Park
Omega Reserve
Omega Stormwater Pond
Omeru Scenic Reserve
Omaha Beach Reserve
Omaha Store & Hall
One Tree Hill Domain
Onehunga Bay Reserve
Oneills Cemetery Park
Onepoto Domain
Onetangi Cemetery
Onetangi Sports Park (Rangihoua)
Onewa Domain
Onya Reserve
Opango Creek Reserve
Opanuku Esplanade
Opanuku Marginal Strip Reserve
Opanuku Reserve
Opanuku Road Bush Reserve
Opanuku Stream Reserve
Opou Reserve
Orakei Basin
Orakei Creek Esplanade Reserve
Orakei Road Cnr
Oratia Esplanade
Orere Point Beach Reserve
Orere Point Regional Park
Orewa Marine Parade Reserve
Orewa North Lookout
Orewa Reserve
Orford Park
Orpheus Road Boatramp
Orua Bay Reserves
Oruamo Place Esplanade Reserve
Oruarangi Road Esplanade 490r
Oruarangi Road Reserve
Orwell Road Stormwater Pond
Otanerua Reserve
Otau Mountain Road 601r
Oteha Valley Reserve
Otitori Reserve
Otitori Scenic Reserve
Otuataua Stonefields Reserve
Outlook Reserve
Owairaka Domain
Owen's Green
Owhanake Matiatia Walkway
Pacific Parade Coastal Reserve
Paerata Bush Scenic Reserve
Pahiki Reserve
Pahurehure Esplanade Reserve
Pakihi Point Cemetery Reserve
Pakiri Regional Park Land
Palmetto Place Reserve
Palomino Esplanade
Pamela Place Reserve
Parakai Recreation Reserve
Pareira Esplanade
Pareira Reserve
Paremoremo Creek Esplanade Reserve
Paremoremo Esplanade Access Reserve
Paremoremo Scenic Reserve
Paremuka Esplanade
Paremuka Esplanade Reserve
Paremuka Lakeside
Paritai Reserve
Park Hill Reserve
Park Point Walkway
Park Reserve
Park View To Island View 3
Parnell Salt Water Baths
Parrs Park
Parry Kauri Park
Pascoe Quarry Reserve
Patiki Reserve Esplanade
Patuone Reserve
Paturua Esplanade
Paturua Way

Pavilion Park No1	Puhoi Pioneers Memorial Park Domain
Pemberton Reserve	Puhoi River
Pendrell Reserve	Puhoi River Wenderholm Esplanade
Penguin Drive	Pukaki Crater Reserve (Leased)
Philomel Reserve	Pukapuka Road Esplanades
Phyllis Reserve	Pukekiwiriki Pa
Pigeonwood Reserve	Pukemateko Reserve Omaha South
Piha Domain	Puketutu Island, Mangere Bridge
Piha Esplanade Reserve	Purata Park
Piha South Road Reserve	Puriri Rd Esplanade 9r
Pin Oak Reserve	Quarry Lake Reserve
Pine Harbour Park	Quinton Park
Pinecrest Drive	R18 Winscombe Street
Pioneer Park	Racecourse Road Esplanade Reserve
Pitt Avenue Foreshore	Rahopara Pa (Kennedy Point)
Plantation Reserve (Gbi)	Rahui Kahika Reserve
Platts Mills Reserve	Rahui Reserve
Plumer Domain	Rahui Te Kiri Reserve
Plymouth Reserve	Railside Esplanade Reserve
Pohutukawa Avenue Esplanade Reserve	Railway Embankment
Point England Reserve	Rakauananga Point Esplanade
Point Resolution	Rame Esplanade Reserve
Point View Reserve	Rangatira Reserve
Point Wells Foreshore Reserve	Rangitopuni Stream Dairy Flat
Pokorua Historic Reserve	Raroa Park
Pollok Recreation Reserve	Ravello Rise Reserve
Pollok School Grounds	Ray Small Park
Pollok Wharf Road Reserve	Raymond Reserve
Pompalier Reserve / Cemetery	Rayner Road / Sylvan Glade Res
Poplar Road Esplanade Reserve	Realm Esplanade
Port Albert Wharf Reserve	Red Hill Scenic Reserve
Portage Road Reserve 282r (Leased)	Redfern Nature Reserve
Portal Place	Refuse Site
Porterfield Road Esplanade Reserve	Remembrance Reserve
Portland Reserve	Remu Reserve
Possum Ladder	Renata Esplanade
Potts Road Esplanade Reserve	Rerewai Reserve
Pounamu Reserve	Retreat Park
Pourewa Creek	Riddell Road Beach Access
Powell Street Esplanade Reserve	Ridge Reserve
Powrie Reserve	Ridgewood Reserve
Pratt Rd Esplanade Reserve	Rimu Esplanade
Prawn Farm	Rita Way_Excelsior Way_Lagoon Way
Prince Edward Park	Riverhaven Drive
Promenade Reserve	Riverhaven Drive Esplanade
Pt Erin Park	Riverside Drive Recreation Reserve
Puhinui Reserve	Riverside Reserve
Puhoi Cemetery	Riverside Road Esplanade
Puhoi Fire Station	Roberta Crescent

Roberta Reserve
Rock Isle Beach Reserve
Rock Isle Road Public Toilets
Rogers Park
Rooseville Park
Roscommon Drainage Reserve
Roscommon Road 93r - Drainage Reserve
Rosecamp Road Foreshore
Rosedale Park
Rosemount Rd Esplanade Reserve
Rotary Grove (Northcote)
Rotary Grove (Warkworth)
Rothesay Bay Beach Reserve
Roy Clements Treeway
Ruahine Walkway
Ruaiti Road End
Ruapotaka Reserve
Run Road Esplanades
Ruru Reserve
Rutherford Road Nature Reserve
Sanders Reserve
Sandspit Rd Esplanade Reserve
Sandspit Reserve - Rodney
Sandspit Road - Brick Bay Drive
Sandspit Road Walkways
Sandy Bay Reserve
Sandys Parade
Saunders Reserve - Avondale
Scandrett Regional Park
Scenic Drive North Plant
Scenic Drive Reserve
Schopolo East
Schopolo Reserve
Scotts Landing Wharf
Seacliffe Road Foreshore Reserve
Seaview Road Plant Reserve - 1
Seaview Road Plant Reserve - 2
Seaview Walkway
Seddon Fields
Seibel Park
Seibel Scenic Reserve (Doc)
Sentinel Road Reserve
Serenity Reserve
Serwayne Walk
Settlers Grove Walkways
Seymour Road 26
Seymour Road Esplanade Reserve
Shakespear Esplanade Reserve
Shakespear Regional Park
Shakespear Road Reserve
Shays Reserve
Shelly Bay Reserve
Shelly Beach Reserve
Sherrybrooke Esplanade
Shoal Bay Esplanade Reserve
Shoal Bay Reserve
Shoesmith Domain Recreation Reserve
Shona Esplanade Reserve
Shore Road Reserve
Silvana Park
Silver Moon Reserve
Silverdale Street
Silverdale War Memorial Park
Singer Park
Sir Keith Park Memorial Airfield
Sir Peter Blake Reserve
Sispara Place Reserve
Sister Rene Shadbolt Park
Slipper Lake Reserve
Slippery Creek Esplanade Reserve
Slippery Creek Reserve
Smiths Bush Scenic Reserve
Snells Beach (Sunrise Boulevard)
Snells Beach Esplanade
Soldiers Bay Accessway
Soldiers Memorial Reserve
Sonja Reserve
South Avenue Reserve
South Cove Wharf
South Head Road Haranui
South Head Road Waioneke
South Piha Plantation Reserve
South Titirangi PI Reserve
South Titirangi Rec Reserve
Southdown Reserve
Southern Park
Span Farm Esplanade
Speedy Bush Reserve
Spinella Reserve
Spinnaker Strand
Spoonbill Reserve
Spray Crescent Reserve
Springbank Esplanade
Squirells Reserve
St Heliers Bay Beach Reserve
St Johns Bush
St Leonards Beach
St Lucia Reserve

Stables Landing Reserve	Tamahere Reserve
Stancich Reserve	Tamakae Reserve
Standish Reserve	Tamaki Drive (Kelly Tarltons)
Stanmoroff Walkway	Tamaraki Reserve
Stanley Point / Cyril Bassett Lookout	Tane Reserve
Stanley Point Esplanade Reserve	Tane Walk
Stanmore Bay East Beach Reserve	Tanekaha Reserve
Stanmore Bay Marginal Strip	Tangiwai Reserve
Stanmore Bay Park	Tapapakanga Regional Park
Stanmore Bay Rd-Ardern Ave Accessway	Tapora Recreation Reserve
Stanmore Bay West Beach Reserve	Tapu Bush Esplanade Reserve
Stokes Pt / Northcote Reserve	Tasman View Esplanade
Stone Rd Esplanade Reserve	Tauhinu Reserve
Stone Rd Forest And Quarry Reserve	Tauhoa Landing Reserve
Strand Reserve Waiwera	Taumanu Reserve
Strathfield Lane Esplanade Reserve	Taumata Scenic Reserve (Provisional)
Stredwick Reserve	Taumatarea Esplanade
Success-Dungarvon-Dornie Walkway	Taunton Terrace
Sulphur Beach Reserve	Taunton Terrace Reserve Road
Sunburst Reserve & Tamatea Espl	Tawa Esplanade
Sunhill Scenic Reserve	Tawari Reserve
Sunkist Bay Reserve	Tawharanui Regional Park
Sunline Esplanade	Tawhitokino Regional Park
Sunline Park	Tawini Road Bush Reserve
Sunnyhaven Avenue Reserve	Taylor Rd Esplanade Reserve
Sunnyvale Park & Ride	Taylors Bay Road Reserve
Sunrise Boulevard & Dalton Rd	Te Ara Tahuna Cycleway Pohutukawa/Moffat
Sw Storage Basin Res - 15 Seymour Rd	Te Arai Forestry South
Sw Storage Basin Reserve - 2 Mt Lebanon Lane	Te Arai Point Regional Park
Swann Beach Reserve	Te Aroha Reserve Accessway
Swanson Scenic Reserve	Te Henga Park
Swanson Stream Esplanade Reserve	Te Matuku Bay Esplanade Res 1
Sykes Road Foreshore	Te Matuku To Awaroa Walkway
Sylvan Glade Plantation Reserv	Te Moau Rsv & River Espl, Parakai Av
Sylvan Park	Te Muri Regional Park
Sylvan Reserve	Te Naupata Reserve
Sylvania Crescent Esplanade Rese	Te Pahi Stream Naumai
Tahapa Reserve	Te Pene Reserve (Aka Tracey's Walkway)
Tahapa Reserve East	Te Puru Drive Park
Tahuna Torea Nature Reserve	Te Puru Park
Taihinui Historical Reserve	Te Rangi Hiroa/Birdwood Winery
Tainui Reserve	Te Rau Puriri Regional Park
Taipari Strand	Te Toki Reserve
Taitapu Park	Te Toro Recreation Reserve
Takahe Reserve	Te Wharau Creek Esplanade Reserve
Takapuna Beach	Te Wharau Reserve
Takaranga Reserve	Te Whau Esplanade Reserve 1
Takatu Road Esplanades	Telephone Road
Takutai Reserve	Temuka Gardens

Thatcher Street Reserve
The Avenue Esplanade Reserve
The Esplanade - Manly Beachfront (East)
The Esplanade - Manly Beachfront (West)
The Knoll
The Landing
The Landing - Riverhead
The Sandspit
The Trusts Arena
Third Reserve
Thomas Bloodworth Park
Thomas Grace Scenic Reserve
Thornes Bay
Three Kings Reserve
Three Streams Reserve
Ti Point Road Esplanade
Ti Point Walkway
Timothy Reserve
Tindalls Bay Road Plantation Reserve
Tindalls To Coal Mine Bay Esplanade
Tindalls To Crown Road Esplanade
Tinopai Reserve
Tiri Reserve
Tiri Road Esplanade
Titan Place Reserve
Titirangi Beach
Titirangi Bush Reserve
Titirangi War Memorial
Titirangi Way PI Reserve
Todds Walkway
Torbay Heights
Totara Park
Totara Road Esplanade Leigh
Totara Views Reserve
Trading Esplanade
Tree View Reserve
Trelawny Reserve
Trig Hill Walkways
Troon Place Reserve
Trusts Esplanade Reserve
Tuakura Reserve
Tudor Park Drive Esplanade Reserve
Tuff Crater
Tui Glen Esplanade
Tui Glen Reserve
Tuna Place Reserve
Ulster Road Esplanade Reserve
Umupuia Coastal Reserve
Umupuia Foreshore (Waimanu To Duders)
Unsworth Quarry
Unsworth Reserve
Upland Glade
Upland Road Walkway
Upper Whangateau Road Esplanade
Urlich Esplanade Reserve
Valderama Reserve
Vale Park
Valerie Close Esplanade Reserve
Vaughans Road
Verran Road Esplanade Reserve
Verran Road Gully Reserve
Victory Glade
View Road Bush Reserve
Vintage Reserve
Vipond Road Beach Reserve
Vitasovich Esplanade
Volante Park
Wade Heads Esplanade
Wade Landing Reserve
Wade River Road Reserves & Berm
Waharau Regional Park
Waiake Beach Reserve
Waiarohia Esplanade
Waiatarua Reserve
Waiatarua Reserve - Waiatarua
Waiau Pa Esplanades
Waiheke Cemetery Reserve
Waikitiroa Reserve
Waikomiti Esplanade
Waikopou Bay Esplanade Reserve
Waikopua Road 130r
Waikoukou Valley Esplanade Reserves
Waikowhai Park
Waikumete Cemetery
Waima Crescent Boylan Terrace
Waimahia Park
Waimanu Bay Reserve
Waimanu Rd Te Hana
Waimanu Reserve
Waimoko Glen Reserve
Wainoni Park North
Wainoni Park South
Wai-O-Taiki Nature Reserve
Wairaki Stream Reserve
Wairangi Road Reserve
Waireia River Wharehine Road
Waitakere Central Regional Park
Waitakere North Regional Park

Waitakere Quarry	Weymouth Foreshore
Waitakere Quarry Scenic Reserve (Prov)	Weza Lane
Waitakere South Regional Park	Whakanewha Regional Park
Waitakere War Memorial Park	Whakatiwai Regional Park
Waitakere West Regional Park	Whale Cove Reserve
Waitaramoa Reserve	Whangapoua Esplanade Reserve
Waitawa Regional Park	Whangaripo Valley Rd Espl Reserve
Waiteitei Stream Tomarata Valley Road	Whangateau Hall Grounds
Waiti Bay Reserve	Whangateau Harbour Esplanade Reserve
Waitoki Stream Colgan Lane	Whangateau Holiday Park Grounds
Waitoki Stream Kahikatea Flat Road	Whangateau Recreation Reserve Islands
Waitoki Stream Pebble Brook Road	Whangateau Reserve
Waituna Park	Wharepapa Reserve
Waiuku Netball, Golf & Squash Clubs (Leased)	Wharf Reserve - Albany
Waiwera Place Reserve	Wharf Reserve - Waiheke
Waiwera River Fowler Access Road	Wharf Road Wilma Road Walkway
Waka Aranga Creek Reserve	Wharua Reserve
Walpole Avenue Reserve	Whau Esplanade
Walter Strevens Reserve	Whenua Rangatira
Warkworth Showgrounds	Wheraroa Creek Jordan Road
Warner Park	Whisper Cove
Warner Walk	Whitaker Road Reserve
Water Right Gully Walkway	White Bluff Reserve
Wattle Bay	Whitecliffs Dr Esplanade Reserve
Wattle Downs Esplanade Reserve	Whitford Point Reserve
Wattle Farm Ponds Reserve	Whitford Road Esplanade 284r
Wautaiti Stream Riverhead	Wickstead Strand
Weiti Esplanade Reserve Accessway	William Fraser Reserve
Weiti River Foundry Road	Wilson Beach Reserve
Weiti River Lennon Access Road	Windmill Park
Weiti River Titan Place	Windsor Park
Weiti Stream Pine Valley Road	Winscombe Street
Wekatahi Reserve	Winstones Cove
Wellsford Valley Road	Wirihana Park
Welsh Hills Reserve	Wiseley Esplanade
Wenderholm Regional Park	Witford Scenic Reserve
Wesley Bay Glade	Withiel Thomas
West Harbour Esplanade - East	Wonderview Rd/Cotterell St Espl
West Harbour Esplanade - West	Wood Bay Reserve
Western Park - Laingholm	Wood Bay Way
Western Reserve	Woodcocks Kawaka Reserve
Western Reserve To Centreway	Woodcote Scenic Reserve
Western Springs Lakeside	Woodfern Reserve
Western Springs Outer Fields	Woodlands Avenue Reserve
Western Springs Stadium Complex	Woodlands Park
Westmere Lemington Esplanade	Woodside Glen
Westmere Park	Woodside Reserve
Westmere Park Weona Place Access	Worker Road Reserve
Westwell Rd Street Reserve	York Road Reserve

21 Te Oneroa Way - Provisional
229 - 231 Orakei Road
229 Dairy Flat Highway - Third Party
26 Blockhouse Bay Road (Provisional)
29 Falls Road, Te Henga
341-347 Henderson Valley Road
35 Mill Road Helensville
36 Hibiscus Coast Highway
430 Sunnyside Road Coatesville
45a Kauri Point Road Reserve
537 West Coast Road Esplanade
855 Whitford-Maraetai Rd Whitford
8r Redcrest Avenue, Papakura

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