Mahere ā-Rohe Whakahaere Kaupapa
Koiora Orotā mō Tāmaki Makaurau

# Auckland Regional Pest Management Plan

## 2020 - 2030



**Find out more:** phone 09 301 0101
or visit aucklandcouncil.govt.nz

Auckland Council
Te Kaunihera o Tāmaki Makaurau

**Cover photo**
Ship rat eating a blackbird's egg.
© Nga Manu Images

## Regional Pest Management Plan 2020 - 2030

**Operative in part**

Pursuant to section 77 of the Biosecurity Act 1993 the Auckland Regional Pest Management Plan 2020 - 2030 is made operative, excluding the marine pest provisions (section 2.4 and section 7.7.11)

**THE COMMON SEAL** of the **AUCKLAND COUNCIL** was hereby affixed under the authority of council:




~~Mayor / Deputy Mayor~~ / Chief Executive / ~~Chief Officer~~

~~Deputy Mayor / Chief Executive / Chief Officer~~ / General Counsel

This plan became operative in part on 10 November 2020.

## Regional Pest Management Plan 2020 - 2030

**Operative**

Pursuant to section 77 of the Biosecurity Act 1993 the Auckland Regional Pest Management Plan 2020 - 2030 is made fully operative.

**THE COMMON SEAL** of the **AUCKLAND COUNCIL** was hereby affixed under the authority of council:




~~Mayor~~ / ~~Deputy Mayor~~ / Chief Executive / ~~Chief Officer~~

~~Deputy Mayor~~ / ~~Chief Executive~~ / ~~Chief Officer~~ / General Counsel

This plan became fully operative on 25 January 2021.

# Rārangi Kōrero / Table of Contents


1 Kupu Whakataki / Introduction ..... 1

1.1 Kaihora me ōna tikanga / Proposer and purpose ..... 2
1.2 Uhinga / Coverage ..... 2
1.3 Wā kawenga / Duration ..... 4
1.4 Arotake mahere / Plan review ..... 4

2 He rauhanga kōrero ā-mahere, ā-ture, ā-rautaki / Planning, statutory and strategic background ..... 5

2.1 Rauhanga ā-ture / Legislative background ..... 6
2.2 Te tarāwaho ārai koiora i waho o te kaunihera / Biosecurity framework outside the Council ..... 14
2.3 Te tarāwaho ārai koiora a te kaunihera / The Council's biosecurity framework ..... 19
2.4 Ārai Koiora ā-Moana / Marine Biosecurity ..... 26
2.5 Te hono ki ētahi atu Mahere Whakahaere Kaupapa Koiora Orotā / Relationship with other Pest Management Plans ..... 30
2.6 He Hononga ki te Ahunga o te Kaupapa Here ā-Motu / Relationship with the National Policy Direction ..... 31
2.7 Hononga ki a ngāi Māori / Relationship with Māori ..... 31
2.8 Whitiwhiti Kōrero / Consultation ..... 33

3 Kawenga me ngā herenga / Responsibilities and obligations ..... 34

3.1 Te tari whakahaere / The management agency ..... 35
3.2 Whakaeatanga me te āta panga rīhiti / Compensation and disposal of receipts ..... 35
3.3 Te hunga whai pānga / Affected parties ..... 35

4 He rāpopototanga o ngā hōtaka kei tēnei mahere ā-rohe whakahaere kaupapa koiora orotā / Summary of programmes in this RPMP ..... 39

4.1 Pikinga muinga koiora urutā / Pest infestation curve ..... 40
4.2 Ngā Hōtaka / Programmes ..... 41

5 Rārangi orotā / List of organisms declared as pests ..... 1

6 Tarāwaho whakahaere kaupapa koiora orotā / Pest management framework ..... 85

6.1 Hōtaka whakahaere kaupapa koiora orotā / Pest management programmes ..... 86
6.2 Ngā Whāinga / Objectives ..... 86
6.3 Ngā tikanga matua hei whakahaere kaupapa orotā / Principal measures to manage pests ..... 87
6.4 Ngā Ture / Rules ..... 88

7 Hōtaka ā-Orotā / Pest Programmes ..... 90

7.1 Te Rohe Āta Whakahaere o Tīkapa Moana / Hauraki Gulf Controlled Area ..... 91

7.2 Aotea / Great Barrier Island Group ..... 130
7.3 Moutere o Kawau / Kawau Island ..... 171
7.4 Moutere o Waiheke / Waiheke Island ..... 175
7.5 Whenua Papa Rēhia me ōna Rohe Hauropi Hiranga / Parkland with Significant Ecological Areas ..... 179
7.6 Ngā roto aronga matua / Priority lakes Rototoa and Tomarata ..... 225
7.7 Rohe katoa / Whole Region ..... 231

8 Whakaaturanga āhua orotā / Monitoring ..... 411

8.1 Te aroturuki i ngā mahi a te tari whakahaere / Monitoring the management agency's performance ..... 414
8.2 Te aroturuki i te whaihua o te mahere / Monitoring plan effectiveness ..... 415

9 Te mana kua uhia / Powers conferred ..... 416

10 Tuku tahua pūtea / Funding ..... 419

10.1 Ngā ara pūtea tahua me ngā take mō te tuku pūtea / Funding sources and reasons for funding ..... 420
10.2 Ngā utu manako hei whakarite i te mahere / Anticipated costs of implementing the plan ..... 420

11 Aronga / Definitions ..... 421

12 Āpitihanga / Appendix ..... 428

Āpitihanga 1 Te Takiwā o Kohukohunui mō te whakahaere kaupapa koiora orotā / Appendix 1 Hunua Pest Management Area ..... 429
Āpitihanga 2 Whenua Papa Rēhia me ōna Rohe Hauropi Hiranga / Appendix 2 Parkland with Significant Ecological Areas ..... 430
Āpitihanga 3 Ngā tino roto / Appendix 3 High Conservation Value Waterbodies ..... 462
Āpitihanga 4 Kuputohu o ngā koiora orotā / Appendix 4 Index of pest organisms ..... 463

## He Mihi

Tuia ki te rangi

Tuia ki te whenua

Tuia ki te moana

Tuia te here tangata

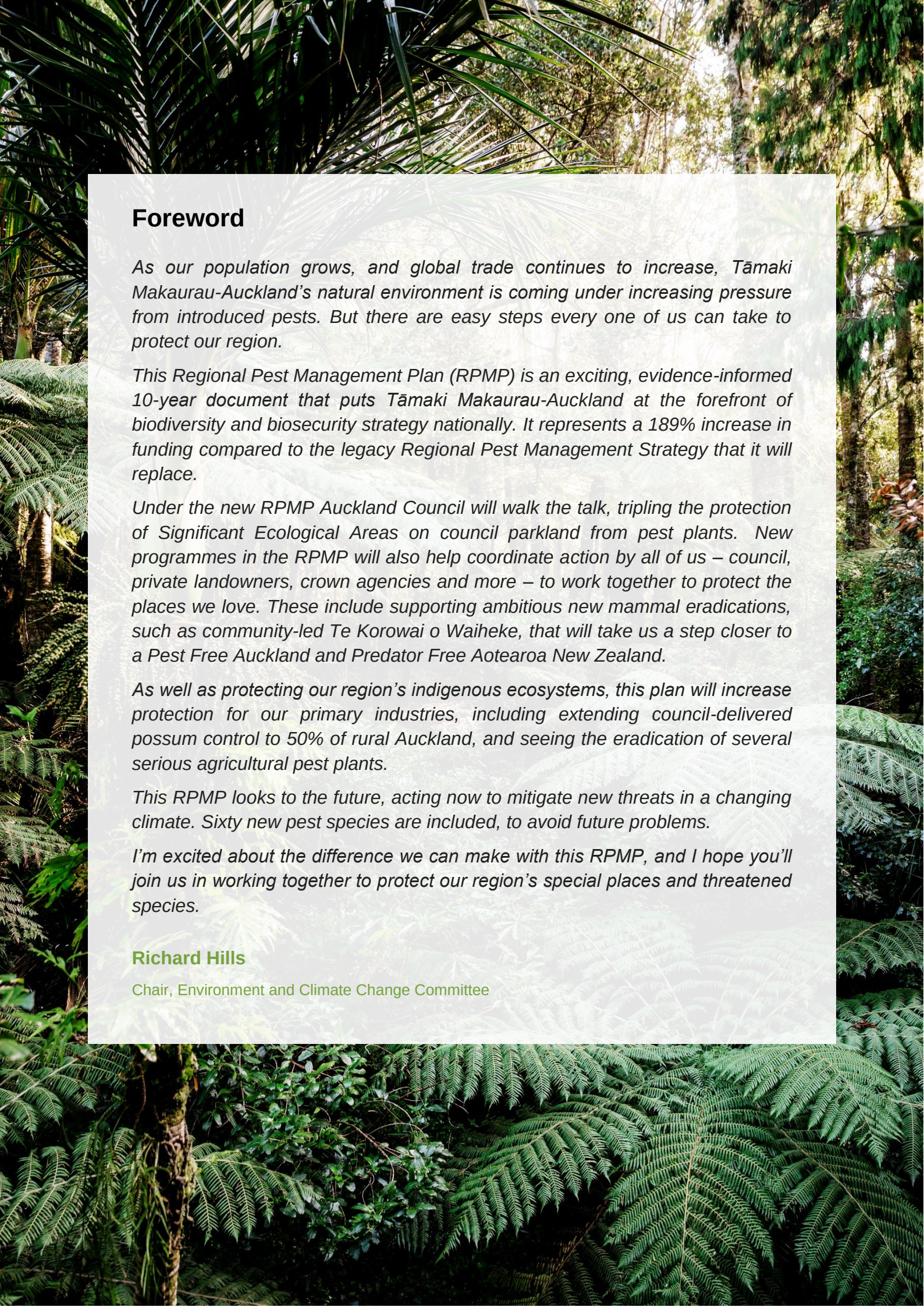
Ka rongo te pō ka rongo te ao.

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



## Foreword

*As our population grows, and global trade continues to increase, Tāmaki Makaurau-Auckland's natural environment is coming under increasing pressure from introduced pests. But there are easy steps every one of us can take to protect our region.*

*This Regional Pest Management Plan (RPMP) is an exciting, evidence-informed 10-year document that puts Tāmaki Makaurau-Auckland at the forefront of biodiversity and biosecurity strategy nationally. It represents a 189% increase in funding compared to the legacy Regional Pest Management Strategy that it will replace.*

*Under the new RPMP Auckland Council will walk the talk, tripling the protection of Significant Ecological Areas on council parkland from pest plants. New programmes in the RPMP will also help coordinate action by all of us – council, private landowners, crown agencies and more – to work together to protect the places we love. These include supporting ambitious new mammal eradications, such as community-led Te Korowai o Waiheke, that will take us a step closer to a Pest Free Auckland and Predator Free Aotearoa New Zealand.*

*As well as protecting our region's indigenous ecosystems, this plan will increase protection for our primary industries, including extending council-delivered possum control to 50% of rural Auckland, and seeing the eradication of several serious agricultural pest plants.*

*This RPMP looks to the future, acting now to mitigate new threats in a changing climate. Sixty new pest species are included, to avoid future problems.*

*I'm excited about the difference we can make with this RPMP, and I hope you'll join us in working together to protect our region's special places and threatened species.*

**Richard Hills**

Chair, Environment and Climate Change Committee



# 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). The purpose of the 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.

This RPMP empowers 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.

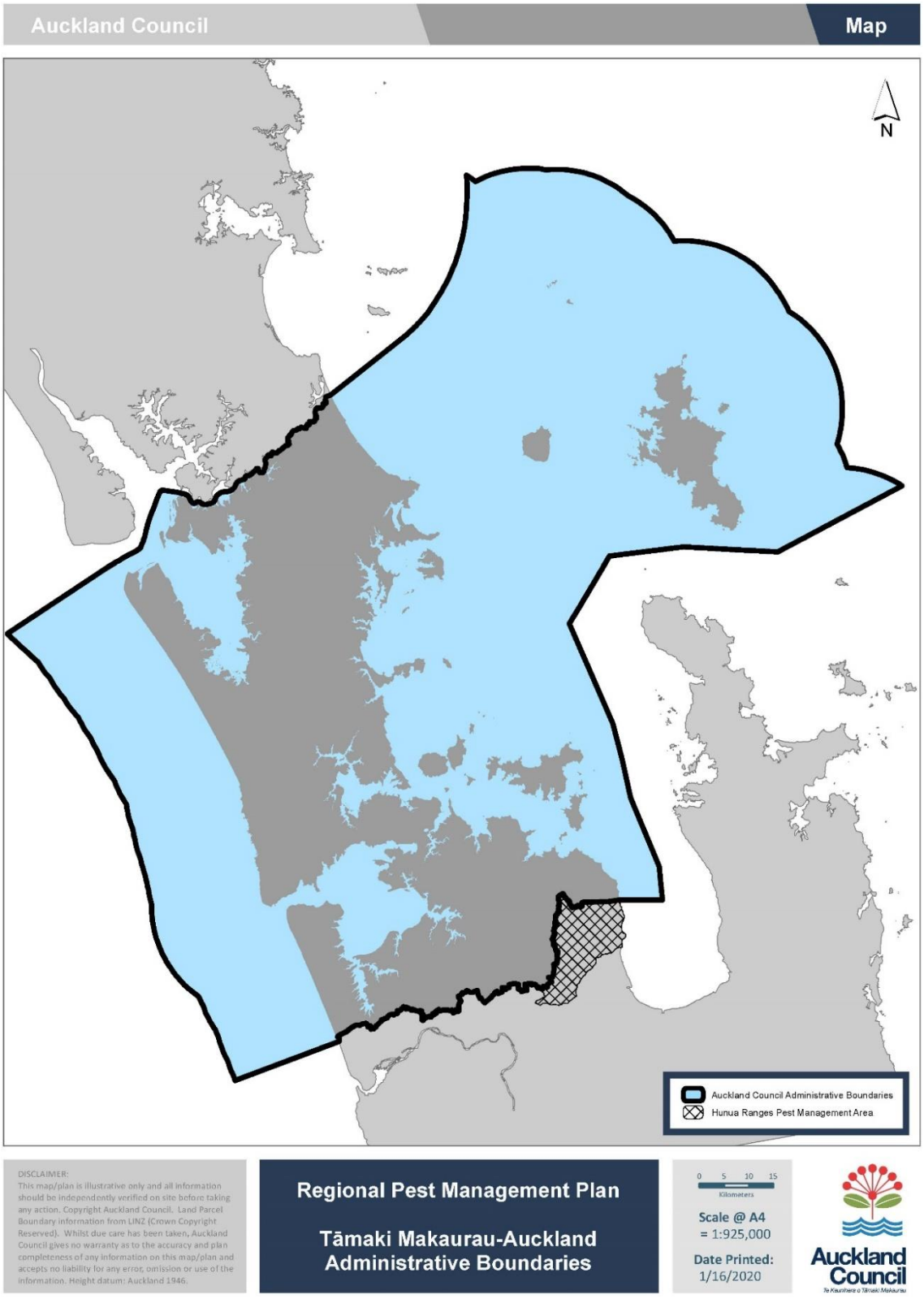
Section two of this document sets out the broader context of managing pests in Tāmaki Makaurau / Auckland, including an overview of the regulatory and non-regulatory actions of the Auckland Council which support the provisions of the RPMP.

Section four of the RPMP sets out the outcomes sought by the plan, and describes the high-level groups of programmes that work together to achieve these outcomes.

Section seven sets out the statutory programmes themselves, and accompanying objectives and interemediate outcomes for each programme.

## 1.2 Uhinga / Coverage

The 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 Map 1).




**Map 1. Administrative boundaries of the Tāmaki Makaurau / Auckland region and Hunua Ranges Pest Management Area[1].**

*[1] Auckland Council is also the management agency for that portion of the Hunua Ranges falling in the Waikato region ('Hunua Ranges Pest Management Area' in Map 1, see also section 2.5), 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 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 will 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 Arotake 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 rauhanga kōrero ā-mahere, ā-ture, ā-rautaki / Planning, statutory and strategic background

## 2.1 Rauhanga 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 6: Administrative provisions

Part 6 of the Biosecurity Act sets out a range of powers that authorised persons can utilise in pest management (e.g. the power to inspect, to give directions, or to apply article or substance to a place). Part 6 also provides for movement controls relating to certain sites, particularly Restricted Places and Controlled Areas. For instance a Controlled Area Notice (CAN) is in place in the Hauraki Gulf, and this Regional Pest Management Plan aligns programmes with that CAN.

#### Part 9: Miscellaneous provisions

Part 9 of the Biosecurity Act allows for the national 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. In such instances, the powers under the Biosecurity Act are held by central government (the Ministry for Primary Industries). While Council can still manage Unwanted Organisms, enforcement relies on delegation of powers from the Ministry to Council. 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, ramarama, maire, feijoa and Eucalyptus. To date, ramarama and pōhutukawa appear to be among the worst affected species, although it may take many years to fully understand the impacts of myrtle rust on native plant species and ecosystems. Auckland Council is contributing to a nationally coordinated approach to the new threat posed by myrtle rust, led by the Ministry for Primary Industries and including development of a national Myrtle Rust Long-term Strategy. As a primarily wind-borne pathogen, options for successful regional intervention through an RPMP are limited. However, once a fuller understanding of impacts and management options is developed, Council may consider addition of myrtle rust to this current or a future Regional Pest Management Plan. In the interim, Council will continue to rely on myrtle rust's Unwanted Organism status and the powers that status provides to the Ministry of Primary Industries (which, as noted above, may be delegated to Council if agreed with the Ministry).

### 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.

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 are driven by the purpose and principles of the RMA set out in Part 2. These include the requirement to sustain the potential of natural and physical resources, safeguard the life-supporting capacity of ecosystems and protect environmentally significant areas and habitats (ss5(2), 7(d) and 6(c) 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)(iiia)), the control of actual or potential effects of use, development or protection of land (including the 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 override 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 land occupiers and others. Pest control conditions attached to a consent required under the RMA have the purpose of avoiding, remedying, mitigating or offsetting adverse effects arising from that consent, or because a district or regional plan anticipates a certain level of environmental quality and management post-development.

The Council's primary resource management tool is the Auckland Unitary Plan which includes the Regional Policy Statement, the regional coastal plan and district and regional plans (with the exception of the district plan for the Tīkapa Moana / Hauraki Gulf Islands, where the Auckland Council District Plan (HGI Section) still applies until the AUP is amended to include this area).

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 Ērā atu ture whai pānga/ Other relevant legislation

Activities in implementing this plan must comply with (and not derogate from) other legislation specified in s7 of the Biosecurity Act. Particular relevant requirements are noted below.

- The **Wild Animal Control Act** 1977 declares deer, chamois or tahr, and wild pigs 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.
- Many of Council's parks are held and classified under the **Reserves Act** 1977. Similarly, Crown land within the region is also held under this 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).

### 2.1.5 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 Papa Atawhai 1987 me ngā Waeture Tauranga Ika / Conservation Act 1987 and Fisheries Regulations

There is a complicated regulatory framework around freshwater pest fish in New Zealand, involving the interaction of a number of Acts, Regulations and Rules. These should be considered alongside the provisions of this RPMP. The Conservation Act 1987 regulates freshwater fisheries by restricting and prohibiting fishing in certain circumstances, and restricting the transfer or release of live aquatic life into freshwater bodies. The Freshwater Fisheries Regulations 1983 contain several relevant provisions, including defining perch, tench and rudd as sports fish which may only be taken from freshwater under a licence issued by Fish and Game. See also individual species entries in Table 2 for species-specific details. Auckland Council will continue to consult with Fish and Game on the management of these species.

### 2.1.7 Ture o te Ora Kararehe / Animal Welfare Act 1999

It is an offence under the Animal Welfare Act 1999 to kill any animal such that it suffers unreasonable or unnecessary pain or distress. Although lethal control methods are unavoidable in many pest management situations, it is important to remember that these are sentient beings and that control methods must always comply with animal welfare obligations. The Animal Welfare Act restricts the types of traps and devices that may be used to control animals, and sets minimum requirements for checking of some forms of traps.

### 2.1.8 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 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). See section 4.2.6 for a summary of how this plan gives effect to the WRHAA.

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.

### 2.1.9 Ture Papa Rēhia mō Tīkapa Moana 2000 / Hauraki Gulf Marine Park Act 2000

The Hauraki Gulf Marine Park Act (HGMPA) relates to the entire Tīkapa Moana / 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 Tīkapa Moana / Hauraki Gulf, its islands, and catchments", "recognis[ing] the historic, traditional, cultural, and spiritual relationship of the tangata whenua with the Tīkapa Moana / Hauraki Gulf and its islands" and to "establish objectives for the management of the Tīkapa Moana / 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 4.2.1 and 0 for programmes in this plan applying to the Tīkapa Moana / Hauraki Gulf and its islands.



Piri and Puri, the conservation dogs protecting Tīkapa Moana / Hauraki Gulf and its islands from pests.

## 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

Fisheries New Zealand, in partnership with the Ministry for the Environment (MFE) and Department of Conservation (DOC) has proposed a National Environmental Standard for Marine Aquaculture (NES). NESs 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 the Ministry for Primary Industries' Aquaculture Biosecurity Handbook.

The proposed NES was released for public consultation between June and August 2017, public consultation closed on the 8 August 2017. At time of writing[2], the Ministers are yet to make a decision on the final shape of the NES, but a decision is expected within the coming months.

### 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:**

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

[2] *15 February 2019*

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 Hōtaka ā-Motu Mate Urutā Patu Kauri / Kauri dieback national programme

Effective management of kauri dieback required coordinated action among a wide range of agencies, organisations and individuals. Since 2007 Auckland Council has participated in a multi-agency national kauri dieback management programme in conjunction with tangata whenua, Ministry for Primary Industries, Department of Conservation and other regional councils. At the time of writing[3] this legacy programme is soon to be superseded by a national management agency to achieve enhanced alignment and effectiveness of kauri dieback management across kauri lands. The forthcoming national management agency will lead the implementation of a National Pest Management Plan for kauri dieback. Once the National Pest Management Plan is operative Auckland Council will assess whether a partial plan review under S100D of the Biosecurity Act is required to better align the Regional Pest Management Plan with the national plan.

In 2017, mana whenua Te Kawerau a maki declared a rāhui over the Waitākere Ranges to protect the ngahere from kauri dieback. Auckland Council subsequently closed parts of the parks network in recognition of this. Rāhui and park or track closures are also, at time of writing[4], supported by the use of Controlled Area Notices for parts of the Waitākere and Hunua Ranges, declared by the Ministry of Primary Industries under S131 of the Biosecurity Act. Council may continue the use of park closures with or without supporting Controlled Area Notices at these and other sites over the lifetime of the plan (see also section 4.2.7). Over the lifetime of the Regional Pest Management Plan Council will also continue to grow its partnerhip with mana whenua, including recognising and facilitating the use of rāhui and other customary management tools in the protection of kauri.

### 2.2.5 Te Whakaaetanga Tupu Orotā ā-Motu / National Pest Plant Accord

The National Pest Plant 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

[3] *20 December 2018*
[4] *1 February 2019*

spread derived from their status as Unwanted Organisms. Auckland Council will undertake monitoring and inspections of nurseries and online plant trade as part of implementing the Regional Pest Management Plan and National Pest Plant Accord.

### 2.2.6 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. Auckland Council will undertake monitoring and inspections of petshops and online pet trade as part of implementing the Regional Pest Management Plan, and this may be extended to cover any additional species at such time as the NPPBA becomes operative.

### 2.2.7 Ngā tūraru oranga tūmatanui mai i ngā orotā / Public health risks from pests

The Auckland Regional Public Health Service (ARPHS) is responsible for preventing disease and improving the health of the people in our region. Council will work with ARPHS where appropriate, including notification of any emerging pest issues that may present a human health risk. While protection of biodiversity and primary production are key to most of the pest management programmes in this Regional Pest Management Plan, some pests are also managed for their potential public health impacts. Giant hogweed, rhus tree and phoenix palms are among the most notable of these, but management of several other environmental pests can also have public health benefits (e.g. rats, agapanthus).

### 2.2.8 Anga rerenga rauropi ā-Kāwana / Central government biodiversity framework

The New Zealand Biodiversity Strategy 2000 - 2020 (NZBS) was developed by central government to fulfil in part commitments made by Aotearoa / New Zealand under the United Nations Convention on Biological Diversity. The strategy seeks to maintain and restore a full range of remaining natural habitats, ecosystems and viable populations of indigenous species. The strategy identifies that invasive pests pose the greatest single threat to indigenous biodiversity, and includes goals, objectives and actions intended to address this threat. In 2016 a targeted update of the Strategy was released as the New Zealand Biodiversity Action Plan 2016-2020. This too places emphasis on pest management as a key biodiversity management tool, and promotes a significant increase in predator and weed

control across public and private land. The NZBS is currently under review, and is expected to continue this emphasis.

Central government is also currently developing a National Policy Statement on Indigenous Biodiversity which will guide management of indigenous biodiversity under the Resource Management Act (RMA). It too is expected to address the threat posed by pests to indigenous biodiversity, and will provide further direction on the management of this under the RMA (including the Auckland Unitary Plan).



Surveying for mudfish in a South Head wetland

## 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, support and collaboration with community conservation volunteers. Facilitating the development and release of biocontrol agents is another aspect of Council's regional leadership role.

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

Over the lifetime of the RPMP, Council will take a regional leadership role in developing and facilitating data sharing with and among community conservation organisations to enhance effective collaboration in pest management. 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

Community groups/individuals and non-governmental organisations play an invaluable role in biosecurity for conservation. Supporting these people's efforts is a critical component of Council's regional leadership role in implementing the Regional Pest Management Plan, complementary to the regulatory components of the plan.

The Pest Free Auckland programme is a non-regulatory initiative to connect and amplify action by communities and land occupiers 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 has been established as a growing initiative, so that new projects can be added over time.

The programme comprises 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, land occupier 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, land occupiers and householders, mana whenua, schools, DOC and the private and philanthropic sectors.

### 2.3.3 Te Mahere a Tāmaki Makaurau / Auckland Plan 2050

The Auckland Plan 2050 is the Auckland Council's long term spatial and strategic document. It identifies environmental degradation as one of Tāmaki Makaurau / Auckland's key challenges. This challenge is addressed through six outcome areas, one of which - the Environment and Cultural Heritage Outcome - places emphasis on addressing poor environmental quality, including existing and future pests and the threat they pose to biodiversity, the economy and people. Provisions under this outcome area include a focus on encouraging Aucklanders to be stewards, protecting important natural areas and restoring environments as Tāmaki Makaurau / Auckland grows. The RPMP will contribute

to the achievement of the outcomes sought by the Auckland Plan by helping ensure effective management of pests in Tāmaki Makaurau / Auckland.

### 2.3.4 Te Mahere Pae-tawhiti / Long Term Plan 2018-2028

The 10-year budget (or Long-term Plan 2018-2028) sets out the priorities and funding for Council activities that are planned over a 10-year period, for the whole of Auckland Council. The Long-term Plan 2018-2028 introduced a natural environment targeted rate that provides funding for Council to deliver its implementation responsibilities in respect of this Regional Pest Management Plan and complementary biosecurity activities.

### 2.3.5 Rautaki Kanorau-koiora / Indigenous 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 focused, reflecting this pressing need.

Objectives in the Biodiversity Strategy are designed to cover most of the proactive work carried out by the Council to achieve biodiversity gains. The objectives emphasise the need to prioritise biodiversity actions so as to ensure resources are expended in the most effective and efficient way, to maximise biodiversity outcomes for ecosystems and species, and for the ecosystem services they provide to people. 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 identification and prioritisation process for all terrestrial ecosystem types within the region, and has targeted a number of important areas for active management – referred to as biodiversity focus areas. This in turn is reflected in the programmes in the RPMP (particularly in relation to site-led programmes) through the identification of strategic priority areas for comprehensive and integrated pest management responses in areas of high biodiversity value including the biodiversity focus areas (see Section 4 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 objectives which guide weed management activities:

1. Take an integrated approach to weed management and vegetation control.
2. Ensure best practice in weed management and vegetation control.
3. Minimise agrichemical use.
4. Minimise non-target effects of agrichemical use.
5. Ensure public health and safety.
6. Protect and enhance the environment.
7. Empower the community to manage weeds under the policy.
8. 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, Māori 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 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.

### 2.3.8 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 the Biological Heritage National Science Challenge, 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 ōna 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, Māori 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 systems 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.



Ship rat stealing a blackbird's egg
© Nga Manu Images

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

Auckland Council has identified the following areas as research priorities:

- Improved risk assessment tools, including through 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.

- Technological advances which materially assist in the scaleability of management interventions, particularly for pest plants, but also for other pests including mammals. For instance, technology such as drones may enable access to previously inaccessible infestations of pest plants on coastal cliffs, changing the cost and feasibility of pest plant management at important coastal sites. Similarly, telemetry, remote sensing and a range of other technologies have the potential to transform how Council delivers pest management over the lifetime of the plan.
- 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.

## 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 and craft movements and industries such as marine aquaculture. Introduced marine species spread to and within marine environments by way of biofouling on hulls and other equipment and in ballast, bilge or holding tank 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-indigenous marine species to the region in the future is inevitable. Introduced marine species have the potential to cause significant ecological, social, cultural 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 habitat and artificial surfaces and structures, spreading disease, and releasing toxic compounds. More than 260 non-indigenous marine species have been identified in Aotearoa / New Zealand, of which, over 140 species are known to occur in the Tīkapa Moana / 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 biosecurity management, a thorough understanding of the pest's biology and its ability to adapt and reproduce in the region's 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, thereby reducing efficacy. The marine environment poses access difficulties in comparison to land-based invasive species management. Because of these challenges, pathway management is by far the most impactful intervention point that can be targeted to protect the region from marine pests.

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. Because effective management of marine pests requires an inter-regional (national) approach, central government has a particularly important leadership and coordination role in relation to marine pest species, even for species where the goal is spread prevention rather than eradication. Central government will also be the lead agency in relation to programmes relating to government owned or administered areas (such as marine reserves).

As part of managing the risk of new-to-New Zealand marine pests, central government is also responsible for the production of craft risk management standards (CRMS).The 2018 Craft Risk Management Standard: Biofouling on Vessels Arriving to New Zealand specifies requirements for the management of biofouling risk associated with sea craft entering Aotearoa / New Zealand territorial waters from overseas.

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). A government Aquaculture Strategy is also forthcoming.

### 2.4.1 Whakahaere ara whāinga / Pathway management

Given the limitations on effective control of marine pests, and given 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 will focus on the management of the pathways, both within Tāmaki Makaurau / Auckland, and between Tāmaki Makaurau / Auckland and other regions.

As outlined in section 2.1.2, the Council has included provisions in its Unitary Plan relating to the level and cleaning of hull biofouling on boats and linking of biosecurity considerations to the provision and management of aquaculture, marinas and other activities. These rules cover the following sections of the RMA: discharge of contaminants to water ((Sections 15(1)(a) and 15B(1)(a)); deposit any substance in, on and under any foreshore or seabed ((Section12(1)(d)), and introduce or plant any marine pest in, on and under any foreshore or seabed (Sections 12(1)(f) and 12(3)(a)).

In addition, to provide for comprehensive management of marine pest pathways, council is advocating for inter-regional (national) marine pest pathway management, which may be in the form of an inter-regional marine pest pathway management plan. Because of this, Auckland Council has not set out to provide a full marine pest pathway management plan accompanying this Regional Pest Management Plan, but rather this RPMP identifies nine specific marine pest organisms and includes management of their pathways, both within Tāmaki Makaurau / Auckland, and between Tāmaki Makaurau / Auckland and other regions.

### 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 Toi Moana Regional Council, Gisborne District Council, Hawkes Bay Regional Council, DOC and MPI.

TON partners are in discussions around the development of an inter-regional marine pest pathway management plan, with the aim of having consistent rules across the four northernmost regions.

### 2.4.3 Sea Change – Tai Timu Tai Pari

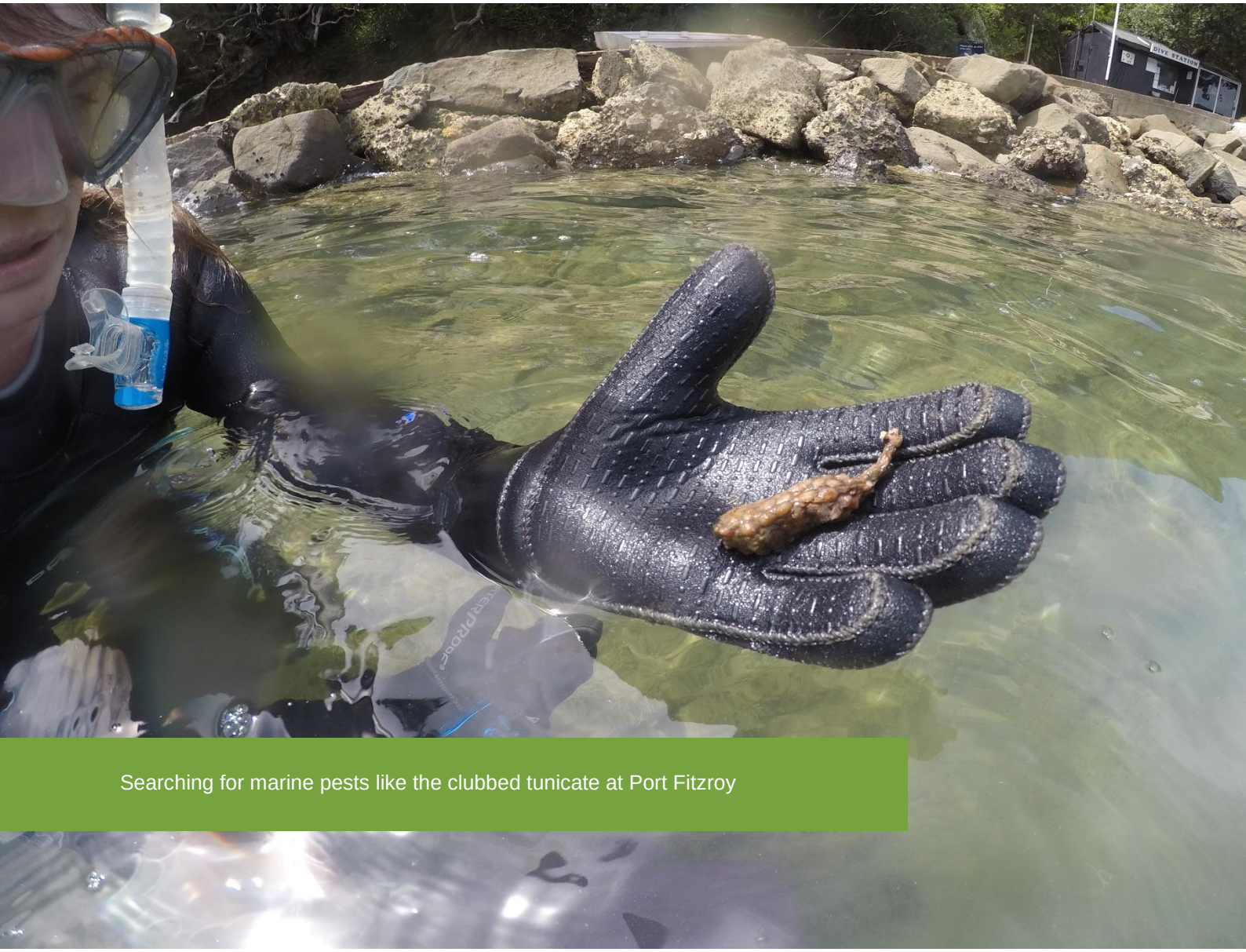
Sea Change – Tai Timu Tai Pari is a marine spatial plan for Tīkapa Moana o Hauraki / the Hauraki Gulf, developed as a collaborative effort between mana whenua, local and central government agencies, and local communities and interest groups.

The marine spatial plan identifies (amongst other things) that introduced marine species pose a serious threat to the marine ecosystems of the Tīkapa Moana o Hauraki / the Hauraki Gulf. In response to this threat, Sea Change – Tai Timu Tai Pari identifies the following

objectives for the management of marine pests in Tīkapa Moana o Hauraki / the Hauraki Gulf:

1. By 2020, develop pathway management plans and pest management plans to prevent the arrival and further spread of new and existing species and diseases, especially to high value areas.
2. By 2020, increase regional monitoring and surveillance efforts to be able to detect and respond quickly to new introduced species.
3. Where feasible, eradicate or control present species using available and evolving tools and methods.
4. Increase stewardship through an informed and engaged industry and public.

As set out below in section 2.4.2, a pathway plan for the upper North Island (including Auckland) is currently being scoped cooperatively by the Auckland Council, neighbouring councils, and central government. Further action by central government to progress the implementation of Sea Change – Tai Timu Tai Pari in conjunction with the Council and other stakeholders, is also expected, including potentially relating to biosecurity. It will be important to ensure that biosecurity actions in Tīkapa Moana o Hauraki / the Hauraki Gulf are integrated and coordinated to maximise the effectiveness of all responses.




Searching for marine pests like the clubbed tunicate at Port Fitzroy

## 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.

At time of writing[5], a National Pest Management Plan for kauri dieback is being developed. Once this national plan is operative Council will assess whether a partial plan review under S100D of the Biosecurity Act is required to better align the Regional Pest Management Plan with the national plan.

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, DOC, mana whenua, community groups and other stakeholders to progress this aspirational goal.

In November 2010 the boundary between the Auckland and Waikato regions was amended by the Local Government (Auckland Boundaries) Determination 2010. Consequently, 62 per cent of the Hunua Ranges Regional Park, all of the adjoining Waharau and Whakatiwai regional parks, and two of Auckland's most important municipal water supply dams – the Mangatangi and Mangatawhiri dams – are now located in the Waikato region. However, under the Local Government Act 2002, Auckland Council continues to own and manage the land and assets in the regional parks.

The Waikato Regional Pest Management Plan 2014-2024 (section 4.3) makes Auckland Council the management agency for that portion of the Hunua Ranges which falls within Waikato regional boundaries ('Hunua Ranges Pest Management Area', see Map 1 and Appendix 1). Rules in the Waikato RPMP for this area are consistent with those in the legacy Auckland Regional Pest Management Strategy 2007-2012 for possums, and feral deer,

[5] *1 February 2019*

goats and pigs. Waikato Regional Council rates collected within this area are provided to Auckland Council under a funding agreement between the two councils.

## 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 7 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 Cost Benefit Analysis that accompanied the Proposal. |
| 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. Details of the costs of compliance are set out in the Cost Benefit Analysis. |

## 2.7 Hononga ki a ngāi Māori / Relationship with Māori

Ko te whai wāhi o ngāi Māori ki te ārai koiora he wāhanga nui tonu o te kawe i te mana kaitiakitanga. He wāhi hiranga tonu e kawea ana e ngāi Māori e pā ana ki te whakahaere kaupapa koiora 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 Koiora Orotā (RPMP) i raro i te Ture Ārai Koiora he tiaki i te herenga i waenga i a ngāi 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 koiora 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 hapori ake. Ko te whaihua o ngā

whakahaere kaupapa koiora 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 o te katoa. Ahakoa he rahi ngā iwi me ngā rōpū e mahi tahi ana mai i roto me waho o 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.

Ahakoa 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 tauira 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 Ture Kāwanatanga ā-Rohe 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.

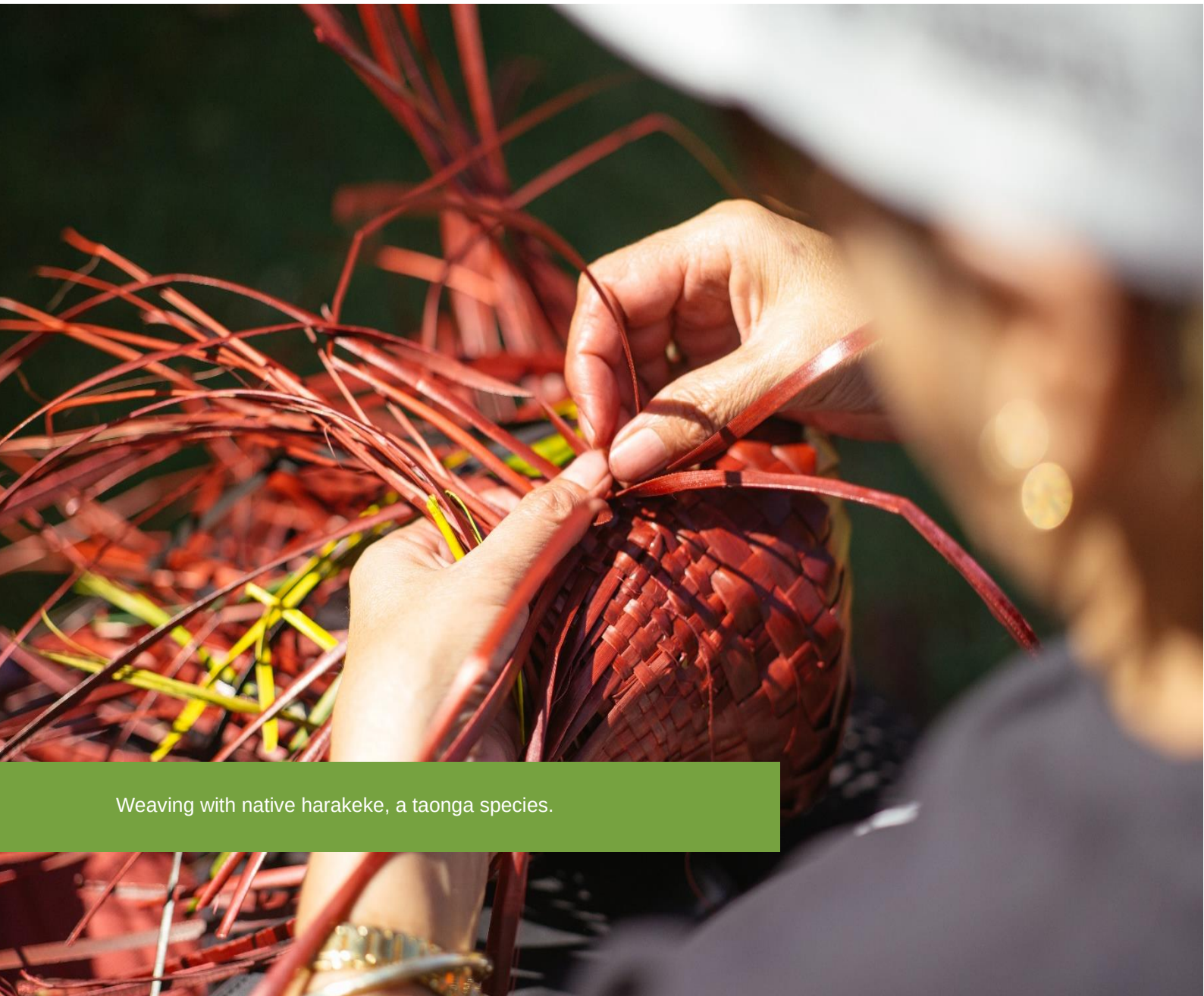
While the RPMP does not specify operational delivery methods, the Council will work with mana whenua to explore opportunities to partner with, collaborate with and empower mana whenua while implementing the plan. From this will come increased mana whenua capacity and capability in pest management, and economic development. Similarly, Council will learn and benefit from this collaboration, growing its capability in turn. 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. Council also acknowledges the value of mātauranga Māori and customary management tools such as rāhui for managing pests.

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 Whitiwhiti 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 and submission analysis.



Weaving with native harakeke, a taonga species.

# 3 Kawenga me ngā herenga / Responsibilities and obligations



## 3.1 Te tari whakahaere / The management agency

Auckland Council is the management agency responsible for implementing the 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 Local Government Act 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 RPMP.

How the Council will undertake its management responsibilities is set out in sections 6 and 7, and in the Council's operational plans, including the Weed Management Policy.

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

The 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 by Council provide any net proceeds, a person will be paid disbursement in the manner noted under s100I of the Biosecurity Act.

## 3.3 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, some of the key parties who also play a part in the management of pests in Auckland are listed below. Their roles are briefly explained below:

- the public (including community conservation groups)
- individuals (including but not limited to 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 Tīkapa Moana / Hauraki Gulf.

### 3.3.1 Te iwi tūmatanui / The public

Public awareness, behaviour, participation and support are fundamental to effective pest management. Increasing numbers of Aucklanders are actively involved in voluntary pest management – whether it's as individuals or members of community groups or non-governmental organisations, working on their own land or perhaps on public reserve land,

to protect ecological values or primary production. Some long-running community projects, such as Ark in the Park, Tāwharanui/Shakespear Open Sanctuary Supporters and various projects on offshore islands, have been rewarded by successful reintroductions of threatened species and flourishing ecosystems. As well as active pest management work, the public also plays an important role in pest management through day-to-day behaviours such as checking and cleaning gear before visiting a forest or island.

### 3.3.2 Ia 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 (in relation to places that are not physically occupied)
- 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.

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, occupiers must report pests to the Council. They must never sell, propagate, distribute or keep pests.

An 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 occupier is complying with biosecurity law.

While the 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 RPMP treats all private land equitably and emphasises the responsibilities and obligations of all land 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 occupiers are unknown, the Māori Land Court; or the Registrar of Companies may help to identify and communicate with them.

### 3.3.3 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 Aotearoa / New Zealand and under te Tiriti o Waitangi / 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 DOC and LINZ.

### 3.3.4 Kauhanga Ikiiki / Transport corridors (road and rail)

As long, linear landscape features, transport corridors (road and rail) are widely recognised as facilitating pest spread. Transport corridors also present a number of particular management challenges, including operational safety constraints, as well as being very narrow and affected by numerous neighbouring properties.

While control of pest plants throughout the transport corridor network is clearly desirable, this plan uses the parks site-led programme (see sections 4.2.5 and 7.5) to prioritise control to parts of the network running through particularly sensitive areas. This also recognises that control will be most effective if all land occupiers in an area are undertaking coordinated control, rather than lack of control on the transport network undermining control on adjacent land, or vice versa. As land occupiers, transport corridor operators have responsibilities in respect of all land occupier rules throughout this plan. In addition, the parks programme sets rules specific to transport corridors for agapanthus and Formosa lily.

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

For unformed ("paper") roads the responsibility for control of pests under the plan lies with the land occupier who physically occupies the land.

Auckland Transport is the roading authority for local roads/ road reserves, and the New Zealand Transport Agency is the roading authority for State Highways. Auckland Transport is the rail authority for local rail corridors, and KiwiRail is the rail authority for the national rail network.

### 3.3.5 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) (see 2.2.5 and 2.2.6 for further details). 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.

### 3.3.6 Umanga kaikawekawe i Tīkapa Moana / Commercial transport operators in the Hauraki Gulf

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



Red-eared slider turtle, banned from sale in Tāmaki Makaurau / Auckland
© Gail Rothaham



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

Much of this Regional Pest Management Plan is focused on giving effect to the Council's obligations to protect biodiversity in the region, articulated in the Indigenous Biodiversity Strategy (see also section 2.3.5).

Specifically the plan contributes to the following outcomes:

- A representative range of Auckland's indigenous ecosystems and sequences is conserved; and
- Indigenous threatened species are secured from regional extinction; and
- Maintenance or improvement of ecosystem services functions provided by indigenous species and ecosystems

This plan also manages pests that can affect primary production and other economic or cultural values, thereby contributing to other outcomes sought by Council, including those articulated in the Auckland Plan 2050 (see also section 2.3.3).

These biodiversity, economic and cultural outcomes are to be achieved through a complementary suite of regulatory and non-regulatory programmes. Some of these programmes, described below in section 4.2 and set out in section 7, work directly at priority places. Others protect these places and values by working at wider spatial scales. Some programmes also protect priority places indirectly by preventing future pest problems at a regional scale.

Each pest programme in this plan sets out objectives and intermediate outcomes, following the framework described in section 6.

## 4.1 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 1). 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 pests of the future. This may be either at a regional level, or for isolated sub-regional areas, for instance particular islands. 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 some 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. In deciding which sites should be prioritised for management, and for which pest species, the relative values of different sites are an important consideration, along with the extent that these values are vulnerable to different

types of pests. Site-led approaches aligned to the region's areas of highest biodiversity value and defendable geography are a key feature of this RPMP.

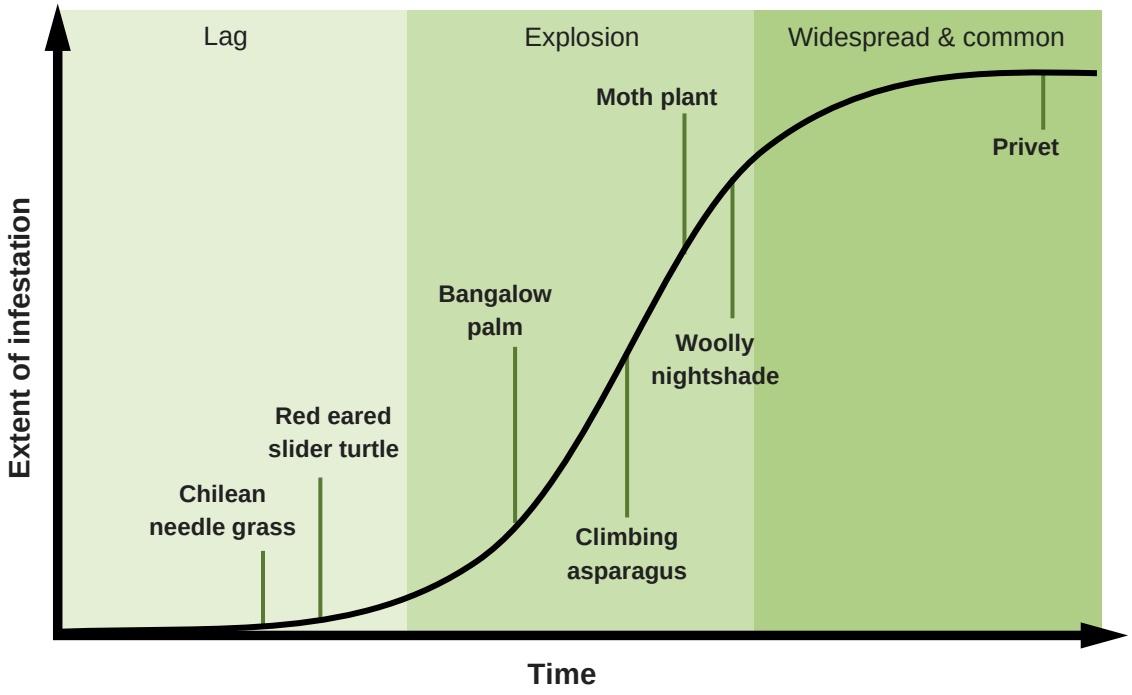



**Figure 1 Pest infestation curve model for the Tāmaki Makaurau / Auckland region 2019.**

## 4.2 Ngā Hōtaka / Programmes

### 4.2.1 Te Rohe Herenga Mana o Tīkapa Moana / Hauraki Gulf Controlled Area

Te Tīkapa Moana / 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 Tīkapa Moana / 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 Tīkapa Moana / 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 implements both statutory and voluntary approaches to reducing the risk of those pests hitchhiking ashore.

In 1999 the then Auckland Regional Council declared the Hauraki Gulf and all its islands a Controlled Area under the Biosecurity Act.

Council runs the Treasure Islands awareness and behaviour change programme in the Te Tīkapa Moana / Hauraki Gulf in partnership with DOC, to encourage voluntary behaviour change by people living in or visiting the Hauraki Gulf. 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 Tīikapa Moana / Hauraki Gulf islands in recognition 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. See section 7.1 for programmes.

### 4.2.2 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 will 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. See section 7.2 for programmes.

### 4.2.3 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. See section 7.3 for programmes.

### 4.2.4 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. The community-led initiative Te Korowai o Waiheke has a goal of eradicating rats and stoats from the island as part of a broader vision to protect and restore the island's native biodiversity. Corresponding rat and stoat eradication programmes (as well as Hauraki Gulf-wide pathway management programmes) in this RPMP support that community vision. See section 7.4 for programmes.

### 4.2.5 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 has an extensive network of regional and local parks which include some of the region's most important areas of native vegetation (e.g. Te Wao Nui a Tiriwa me Kohukohunui / Waitākere and Hunua Ranges) as well as fenced sanctuaries (Tāwharanui and Shakespear) that have enabled extensive reintroductions of threatened species. Auckland Council is committed to "walking the talk", role-modelling best-practice pest management on Council lands to protect these special

areas for all Aucklanders, now and into the future. This RPMP will coordinate the efforts of the Council, transport corridor operators (such as NZTA, KiwiRail 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)[6]. While the plan provides for enforcement of pest plant rules in buffer areas, Council will implement firstly through systematic community engagement to facilitate voluntary behaviour change.

Te Wao Nui a Tiriwa me Kohukohunui / Waitākere and Hunua are also singled out for additional protection for some species (e.g. see section 7.7.2). For instance, feral deer are currently not established in either Te Wao Nui a Tiriwa / Waitākere or Kohukohunui / Hunua; maintaining the deer-free status of these two areas is the top priority of the regional deer programme. Similary the plan contains restrictions on goat farming specifically in these two key areas, to ensure protection of the ranges. Furthermore, Te Wao Nui a Tiriwa me Kohukohunui / the Waitākere and Hunua Ranges are also identified as key operational priorities within regional programmes such as possum progressive containment.

See section 7.5 for programmes.



Te Wao Nui a Tiriwa / the Waitākere Ranges

### 4.2.6 Te Wao Nui a Tiriwa / The Waitākere Ranges

Te Wao Nui a Tiriwa / the Waitākere Ranges contains particularly high value parkland (mainly regional, some local parkland), representing one of the largest tracts of forest ecosystems on the region's mainland. The national significance of Te Wao Nui a Tiriwa / the Waitākere Ranges is recognised by the Waitākere Ranges Heritage Area Act (WRHAA), as outlined in Section 2.1.8. However the Waitākere Ranges faces particular biosecurity challenges, due to the extensive network of human communities and roads interspersed within these precious ecosystems.

The RPMP gives effect to the WRHAA by placing particular priority on protecting this area from pests, both through rules relating specifically to Te Wao Nui a Tiriwa / the Waitākere Ranges and by signalling in the principal measures of achievement within programmes that apply across wider spatial scales that Te Wao Nui a Tiriwa / the Waitākere Ranges are a key operational priority. Programmes that provide an elevated level of protection to Te Wao Nui a Tiriwa / the Waitākere Ranges beyond that afforded across the region can be found in the following sections of the plan:

- Section 7.5.1.1 Feral pig Parkland with Significant Ecological Areas site-led programme
    - Feral pigs to be managed to below ecological damage threshold (zero density, if feasible) in Te Wao Nui a Tiriwa / Waitākere.
- Section 7.5.1.2 Mustelids (ferrets, stoats and weasels) parks site-led programme
    - Mustelids to be managed in or around Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and protect the values of the parkland. Operational priority given to Te Wao Nui a Tiriwa / Waitākere, provided kauri dieback spread risk can be managed adequately.
- Section 7.5.1.3 Rats parks site-led programme
    - Rats to be managed in or around Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and protect the values of the parkland. Operational priority given to Te Wao Nui a Tiriwa / Waitākere, provided kauri dieback spread risk can be managed adequately.
- Section 7.5.2 and 7.5.3 Pest plants on and around ecologically significant parkland
    - Te Wao Nui a Tiriwa / Waitākere Ranges parkland is among key sites prioritised for site-led pest plant control in parks and in surrounding buffer zones to protect the value of these ecosystems.
- Section 7.7.2.1 Feral deer progressive containment
    - Prioritises protecting the feral deer-free status of Te Wao Nui a Tiriwa / Waitākere Ranges. Includes restrictions on movement of deer into the Waitākere Ranges.
- Section 7.7.2.2 Feral goat progressive containment

    - Prioritises protecting the feral goat-free status of Te Wao Nui a Tiriwa / Waitākere Ranges. Introduces rules to restrict goat farming within Te Wao Nui a Tiriwa / Waitākere Ranges.
- Section 7.7.2.3 Possum progressive containment
    - Prioritises protection of Te Wao Nui a Tiriwa / Waitākere Ranges.
- Section 7.7.2.4 Sulphur crested cockatoo progressive containment
    - Primary focus of containment programme is the population established within Te Wao Nui a Tiriwa / Waitākere Ranges.
- Section 7.7.3 Sustained Control pest animals
    - Control may occur as part of integrated management of all key pressures at priority sites.
- Section 7.7.4.1 Unowned cats, site-led control
    - Management of unowned cats, along with other key pressures, at sites with threatened birds, reptiles or amphibians. May include sites within Te Wao Nui a Tiriwa / Waitākere Ranges such as Ark in the Park, and coastal shore bird and seabird habitats.
- Section 7.7.5.2 Kauri dieback sustained control
    - Te Wao Nui a Tiriwa / Waitākere Ranges is a key operational priority for prevention of further spread and impact of kauri dieback disease.

In addition to the specific statutory programmes listed above, section 2.3.2 highlights Auckland Council's extensive support for community conservation activity under the umbrella of Pest Free Auckland. Supporting groups active within Te Wao Nui a Tiriwa / Waitākere Ranges is a particular priority due to the outstanding natural values being protected there. This is also referenced in the 'Principal Measures of Achievement' for many of the statutory pest programmes contained within the RPMP; many pest programmes in sections 7.5 and 7.7 note that advice and support to community pest control will prioritise activity in and around biodiversity focus areas.

### 4.2.7 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 Tīkapa Moana / 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 (see sections 7.1.3 and 7.5.4). This will be supported by a Sustained Control programme seeking to minimise spread around the remainder of the region (see section 7.7.5.2). These provisions are complemented by those in the Unitary Plan, as set out in section 2.1.2, as well as Council's functions as a land manager, which includes ability to close portions of the park or track

network. Park closures (with or without accompanying Controlled Area Notices) may be undertaken by Council in support of rāhui by mana whenua. Following the implementation of the forthcoming National Pest Management Plan for kauri dieback Council will assess whether a partial plan review under S100D of the Biosecurity Act is required to better align the Regional Pest Management Plan with the national plan (see also Section 2.2.4. Improved understanding of disease distribution (including confidence of absence in non-symptomatic areas) will be critical in guiding management.

### 4.2.8 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 (see section 7.2).

On the mainland, although most waterbodies have some pest species present, there is evidence that impacts are synergistic – increasing with increasing number of freshwater pests 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 (see freshwater pest programmes in sections 7.7.3 and 7.7.10).

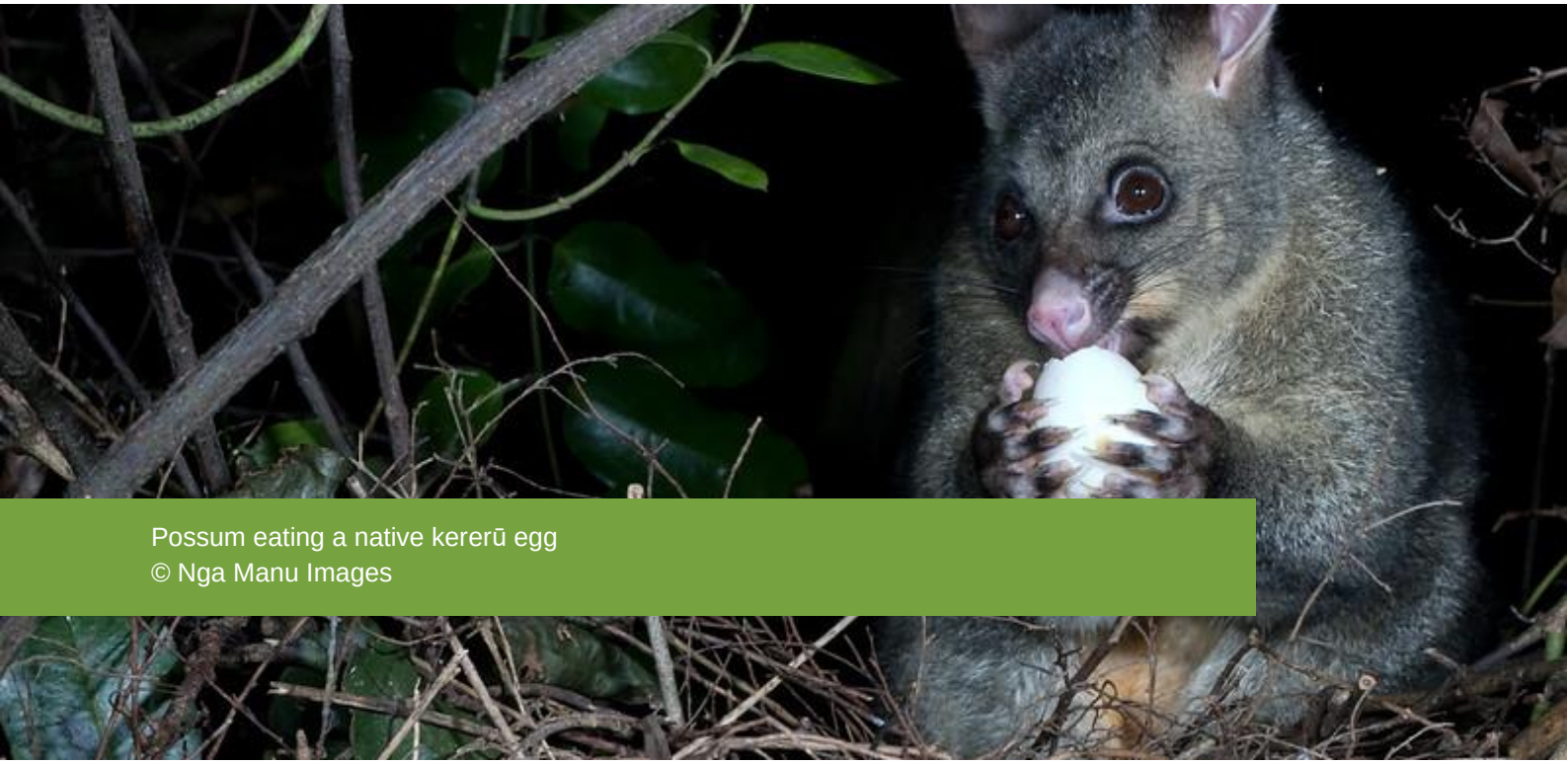
In addition, this RPMP recognises that some mainland sites retain high freshwater biodiversity values, but that these ecosystems are at imminent risk of collapse due to pests and other pressures. Therefore this RPMP implements a site-led approach to manage a suite of pest plants and animals at two top priority lakes, Tomarata and Rototoa, in conjunction with the local communities, mana whenua and NIWA (see section 7.6).

Both the site-led as well as pathway management elements of this plan require collaboration among many parties to ensure success. In implementation, Council will work with mana whenua, other organisations (such as other central and local government agencies, Fish and Game and research providers) as well as a diverse range of individuals and organisations that use or value freshwater (see also section 2.1.6 for national legislative context to freshwater management).

### 4.2.9 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 provides for increased possum control across much of rural mainland Tāmaki Makaurau / Auckland (see section 7.7.2.3).



Possum eating a native kererū egg
© Nga Manu Images

### 4.2.10 Rohe katoa / Whole region

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. 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 (see sections 7.7.6, 7.7.7, 7.7.8 and 7.7.9).
- 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 (see sections 7.7.3 and 7.7.10). 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 tor those active around biodiversity focus areas or areas of defendable geography such as islands and peninsulas.

# 5 **Rārangi orotā /** List of organisms declared as pests



© Dylan van Winkel

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 (e.g. vegetative fragments that may spread), 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 | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| Argentine ant | *Linepithema humile* | | | | ✓ | | | | | | | | | | | | ✓ | | | 96, 248 |
| Asian paddle crab | *Charybdis japonica* | | | | | | | | | | | | | | | | ✓ | | | 393 |
| Australian droplet tunicate | *Eudistoma elongatum* | | | | | | | | | | | | | | | | ✓ | | | 395 |
| bearded dragon | *Amphibolurus barbatus* syn. *Pogona barbata* | | | | | ✓ | | | | | | | | | | | ✓ | | | 131, 250 |

[7] *Indicates particular regard given to the Waitākere Ranges Heritage Area in one or more of the statutory programmes for that species.*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| blue-tongued skink | *Tiliqua scincoides and T. nigrolutea* | | | | | ✓ | | | | | | | | | | | ✓ | | | 133, 252 |
| brown bullhead catfish[8] | *Ameiurus nebulosus* syn. *Ictalurus nebulosus* | | | | | ✓ | | | | | | | ✓ | | | | ✓ | | | 135, 228, 254 |
| Canadian geese | *Branta canadensis* | | | | | ✓ | | | | | | | | | | | ✓ | | | 136, 256 |
| cat (unowned) | *Felis catus* | | | | ✓ | | | | | | | | | | | | | ✓ | ✓ | 98, 303 |
| *Clavelina oblonga* | *Clavelina oblonga* | | | | | | | | | | | | | | | | ✓ | | | 397 |
| Darwin's ant | *Doleromyrma darwiniana* | | | | ✓ | | | | | | | | | | | | ✓ | | | 101, 257 |
| eastern rosella | *Platycercus eximius* | | | | | ✓ | | | | | | | | | | | ✓ | | | 137, 259 |

*[8] Note also that the Fisheries (Amateur Fishing) Regulations 2013 (promulgated under the Fisheries Act 1993) provide that a person must not possess a live brown bullhead catfish. The Fisheries (Commercial Fishing) Regulations 2001 also provides that no person may sell live brown bullhead catfish.*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| eastern water dragon | *Physignathus lesueurii lesueurii* | | | | | ✓ | | | | | | | | | | | ✓ | | | 138, 261 |
| feral deer | *Cervus, Axis, Dama, Odocoileus, Elaphurus* spp. including any hybrid | ✓ | | | | | | | | | | | | | | ✓ | | | ✓ | 94, 236 |
| feral goat | *Capra hircus* | | | | | | | | | | | | | | | ✓ | | | ✓ | 238 |
| feral pig | *Sus scrofa* | | | | ✓ | | | | | ✓ | ✓ | | | | | | ✓ | | ✓ | 105, 175, 181, 263 |
| galah | *Cacatua roseicapilla* | | | | | ✓ | | | | | | | | | | | ✓ | | | 140, 265 |
| gambusia[9] | *Gambusia affinis* | | | | | ✓ | | | | | | | | | | | ✓ | | | 141, 267 |

[9] *Also an unwanted organism (Biosecurity Act 1993).*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| goldfish | *Carassius auratus* | | | | | ✓ | | | | | | | | | | | [10]✓ | | | 142, 269 |
| hedgehog | *Erinaceus europaeus* | | | | ✓ | | | | | | | | | | | | ✓ | | | 107, 270 |
| Indian ring-necked parakeet | *Psittacula krameri* | | | | | ✓ | | | | | | | | | | | ✓ | | | 143, 271 |
| Japanese mantis shrimp | *Oratosquilla oratoria* | | | | | | | | | | | | | | | | ✓ | | | 399 |
| koi carp[11] | *Cyprinus carpio* | | | | | ✓ | | | | | | | ✓ | | | | ✓ | | | 144, 273 |
| Lightbulb ascidian | *Clavelina lepadiformis* | | | | | | | | | | | | | | | | ✓ | | | 401 |
| magpie | *Gymnorhina sp.* | | | | | | | | | | | | | | | | ✓ | | | 275 |
| Mediterranean fanworm | *Sabella spallanzanii* | | | | | | | | | | | | | | | | ✓ | | | 403 |

[10] *When outside of containment*
[11] *Also an unwanted organism (Biosecurity Act 1993) and noxious fish (Freshwater Fisheries Regulations 1983).*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| monk parakeet | *Myiopsitta monachus* | | | | | ✓ | | | | | | | | | | | ✓ | | | 145, 276 |
| mouse | *Mus musculus* | | | | ✓ | | | | | | | | | | | | ✓ | | | 109, 277 |
| mustelids (ferret, stoat, weasel) | *Mustela furo, M. erminea* and *M.nivalis* | | | | ✓ | | | | ✓ | ✓ | ✓ | | | | | | ✓ | | ✓ | 111, 171, 175, 182, 278 |
| myna | *Acridotheres tristis* | | | | | | | | | | | | | | | | ✓ | | | 280 |
| perch[12] | *Perca fluviatilis* | | | | | ✓ | | | | | | | ✓ | | | | ✓ | | | 146, 228, 282 |
| plague skink (syn. rainbow skink) | *Lampropholis delicata* | | | | ✓ | | | | | | | | | | | | ✓ | | | 113, 284 |

[12] *Also a sports fish in Auckland/Waikato Fish and Game region (Freshwater Fisheries Regulations 1983).*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| possum | *Trichosurus vulpecula* | | | | ✓ | | | | ✓ | | | | | | | ✓ | | | ✓ | 115, 171, 244 |
| pyura sea squirts | *Pyura praepetualis*[13] and *P. doppelgangera* | | | | | | | | | | | | | | | | ✓ | | | 405 |
| rabbit and hare | *Oryctolagus cuniculus, Lepus europaeus* | | | | ✓ | | | | | | | | | | | | ✓ | | | 117, 286 |
| rainbow lorikeet | *Trichoglossus haematodus* and all hybrids | | | | | ✓ | | | | | | | | | | | ✓ | | | 147, 288 |
| rat | *Rattus rattus, Rattus norvegicus, Rattus exulans* | | | | ✓ | | | | ✓ | ✓ | ✓ | | | | | | ✓ | | ✓ | 119, 171, 175, 183, 289 |
| red-eared slider | *Trachemys scripta elegans, T. scripta* | | | | | ✓ | | | | | | | | | | | ✓ | | | 148, 291 |

[13] *Previously known as Pyura stolonifera praeputialis*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| | *scripta, T. scripta troostii* | | | | | | | | | | | | | | | | | | | |
| rook | *Corvus frugilegus* | | | | | | | | | | | | | ✓ | | | | | | 232 |
| rudd[14] | *Scardinius erythrophthalmus* | | | | | ✓ | | | | | | | ✓ | | | | ✓ | | | 150, 228, 294 |
| shingleback lizard | *Tiliqua rugosa* | | | | | | | | | | | | | | | | ✓[15] | | | 296 |
| snake-neck turtle | *Chelodina longicollis* | | | | | ✓ | | | | | | | | | | | ✓ | | | 151, 297 |
| styela sea squirt | *Styela clava* | | | | | | | | | | | | | | | | ✓ | | | 407 |
| sulphur-crested cockatoo | *Cacatua galerita* | | | | | ✓ | | | | | | | | | | ✓ | | | ✓ | 153, 246 |

[14] *Also a noxious fish (Freshwater Fisheries Regulations 1983), and sports fish in Auckland/Waikato Fish and Game region (Freshwater Fisheries Regulations 1983).*
[15] *When outside of containment*

| Animal | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[7] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | Site-led | | |
| tench[16] | *Tinca tinca* | | | | | ✓ | | | | | | | ✓ | | | | ✓ | | | 154, 228, 299 |
| wallaby | *Macropus*, *Petrogale* and *Wallabia* spp. | | | | | | | | ✓ | | | | | ✓[17] | | | | | | 171, 234 |
| wasp: *Vespula* and paper | *Vespula germanica, V. vulgaris, Polistes chinensis* and *P.humilis* | | | | | | | | | | | | | | | | ✓ | | | 301 |

[16] *Also a sports fish in Auckland/Waikato Fish and Game region (Freshwater Fisheries Regulations 1983).*
[17] *Remainder of region other than Kawau*

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

| Pathogen | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Hunua Ranges | Whole region | | | | | Waitākere[18] | Page(s) |
| Common name | Scientific name | 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 | *Ophiostoma novo-ulmi* | | | | | | | | | | | | | | | | ✓ | | | 308 |
| kauri dieback disease | *Phytophthora agathidicida* | ✓ | | | | | | | | | | | ✓ | | | | ✓ | | ✓ | 121, 222, 310 |

[18] *Indicates particular regard given to the Waitākere Ranges Heritage Area in one or more of the statutory programmes for that species.*

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

§ = land occupier responsibilities

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

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | 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 | *Selaginella kraussiana** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| African feather grass | *Cenchrus macrourus* syn. *Pennisetum macrourum** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| African pig's ear* | *Cotyledon orbiculata** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| agapanthus | *Agapanthus praecox*[20] | | | | | | | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 186, 327 |

[19] *Indicates particular regard given to the Waitākere Ranges Heritage Area in one or more of the statutory programmes for that species.*

[20] *For the purpose of this plan, agapanthus means:*

a) *Prior to 1 April 2022, all* Agapanthus praecox *tall form cultivars (those exceeding 600mm height); and*

b) *From 1 April 2022*, all Agapanthus praecox *cultivars, except for any low fertility cultivar which is determined by Auckland Council to produce less than 2% viable seeds compared to high fertility cultivars that were evaluated under the same conditions and location. Cultivars already meeting this test will be listed on the Auckland Botanic Gardens website http://www.aucklandbotanicgardens.co.nz/*

| Plant | | Programme | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| *Akebia trifoliata* | *Akebia trifoliata* | | | | | | | | | | | | | | ✓ | | | | | 313 |
| alder | *Alnus glutinosa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| alligator weed | *Alternanthera philoxeroides** | | | | | ✓ | | | | | ✓ | | | | | | ✓ | | ✓ | 155, 215, 327 |
| aristea | *Aristea ecklonii** | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| artillery plant | *Lamium galeobdolon* syn. *Galeobdolon luteum* syn. *Lamiastrum galeobdolon** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| arum lily | *Zantedeschia aethiopica**[21] | | | | | | | | | | | | | | | | ✓ | | | 327 |

[21] *Green goddess variety listed in the NPPA only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| Asiatic/ Japanese knotweed | *Reynoutria japonica* syn. *Fallopia japonica, R. sachalinensis* syn. *F. sachalinensis** and hybrids | | | | | | | | | | | | | | | ✓ | | | | 322 |
| asparagus species | *Asparagus drepanophyllus* and *A. umbellatus* | | | | | | | | | | | | | | ✓ | | | | | 313 |
| Australian sedge | *Carex longebrachiata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| baccharis | *Baccharis halimifolia* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| balloon vine and small balloon vine | *Cardiospermum grandiflorum** and *C. halicacabum** | | | | | | | | | | | | | | ✓ | | | | | 313 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | 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 | *Phyllostachys aurea, Phyllostachys nigra, Pleioblastus auricomus, Pleioblastus hindsii, Pseudosasa japonica, Chimonobambusa quadrangularis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| banana passionfruit | *Passiflora tripartita* var. *mollissima, P. mixta* and *P. tarminiana** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| bangalow palm | *Archontophoenix cunninghamiana* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| barberry | *Berberis glaucocarpa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| bartlettina | *Bartlettina sordida* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Bathurst bur | *Xanthium spinosum* | | | | | | | | | | | | | | | | ✓§ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| berry heath | *Erica baccans* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| black wattle | *Acacia mearnsii* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| blackberry (wild aggregates) | *Rubus fruticosus* agg. | | | | | | | | | | | | | | | | ✓ | | | 327 |
| bladderwort species | *Utricularia arenaria*, U. gibba*, U. livida* and *U. sandersonii* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| blue morning glory | *Ipomoea indica** | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| blue passion flower | *Passiflora caerulea** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| blue spur flower | *Plectranthus ecklonii* and *P. grandis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Bolivian fuchsia | *Fuchsia boliviana** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| bomarea | *Bomarea caldasii* and *B. multiflora** | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| boneseed | *Chrysanthemoides monilifera** | | | | | | ✓ | | | | ✓ | | | | | | ✓ | | ✓ | 160, 215, 327 |
| boxthorn | *Lycium ferocissimum* | | | | ✓ | | ✓ | | | | ✓ | | | | | | ✓ | | ✓ | 127, 160, 215, 327 |
| Brazilian pepper tree | *Schinus terebinthifolius** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Brazilian rattlebox | *Sesbania punicea* | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| broomsedge | *Andropogon virginicus* | | | | | | | | | | | | | | ✓ | | | | | 313 |
| brush wattle | *Paraserianthes lophantha* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 327 |
| buddleia | *Buddleja davidii* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| bur daisy | *Calotis lappulacea* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| burdock | *Arctium minus* | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| bushy asparagus | *Asparagus aethiopicus** syn. *A. densiflorus* | | | | | | ✓ | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 160, 188, 327 |
| buttercup bush | *Senna septemtrionalis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Californian bulrush | *Schoenoplectus californicus** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Californian thistle | *Cirsium arvense* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Canary Island ivy | *Hedera helix* subsp. *canariensis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Cape honey flower | *Melianthus major* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Cape ivy | *Senecio angulatus* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Cape pond weed | *Aponogeton distachyos* | | | | | | ✓ | | | | | | | | | | | | | 160 |
| Cape sundew | *Drosera capensis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| carex | *Carex divulsa* | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| *Carex scoparia* | *Carex scoparia* | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |
| castor oil plant | *Ricinus communis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| cat's claw creeper | *Macfadyena unguis-cati** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| cathedral bells | *Cobaea scandens** | | | | | | | | | | | | | | | ✓ | | | | 322 |
| *Cenchrus* spp. (except kikuyu grass and pearl barley) | *Cenchrus* spp.* syn. *Pennisetum* spp. (excl. *C. clandestinus* and *C. americanus)* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| century plant | *Agave americana* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Chilean flame creeper | *Tropaeolum speciosum** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Chilean glory creeper | *Eccremocarpus scaber** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Chilean needle grass | *Nassella neesiana** | | | | | | | | | | | | | | ✓ | | | | | 313 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| Chilean rhubarb | *Gunnera tinctoria** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Chinese fan palm | *Trachycarpus fortunei* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| Chinese holly grape | *Mahonia lomariifolia* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| chocolate vine | *Akebia quinata** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| *Clematis flammula* | *Clematis flammula** | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| climbing asparagus | *Asparagus scandens** | | | | | | ✓ | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 160, 191, 327 |
| climbing dock | *Rumex sagittatus* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| climbing gloxinia | *Lophospermum erubescens* | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |
| climbing spindle berry | *Celastrus orbiculatus** | | | | | | | | | | | | | | | ✓ | | | | 322 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| coast banksia | *Banksia integrifolia* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 193, 327 |
| coltsfoot | *Tussilago farfara** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| cotoneaster | *Cotoneaster glaucophyllus* and *C. franchetii* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| crack willow | *Salix fragilis** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| creeping fig | *Ficus pumila* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| dally pine | *Psoralea pinnata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Darwin's barberry | *Berberis darwinii** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| devil's fig | *Solanum torvum* | | | | | | | | | | | | | | ✓ | | | | | 313 |
| devil's tail | *Persicaria perfoliata* syn. *Polygonum perfoliatum* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| divided sedge | *Carex divisa* | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| drooping prickly pear | *Opuntia monacantha* and other spp. | | | | | | | | | | | | | | | | ✓ | | | 327 |
| dusky coral pea | *Kennedia rubicunda** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| eel grass | *Vallisneria australis** | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| egeria | *Egeria densa** | | | | | | ✓ | | | | | | ✓ | | | | ✓ | | | 160, 226, 327 |
| elaeagnus | *Elaeagnus* x *reflexa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| elephant's ear | *Alocasia macrorrhiza* syn. *A. brisbanensis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| elodea | *Elodea canadensis* | | | | | ✓ | | | | | | | | | | | ✓[22] | | | 155, 327 |

[22] *Outside of secure containment only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| English ivy | *Hedera helix* subsp. *helix* | | | | | | | | | | ✓ | | | | | | ✓ | | | 327 |
| false tamarisk | *Myricaria germanica** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| fatsia | *Fatsia japonica* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| ferny asparagus | *Asparagus plumosus** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| firethorn* | *Pyracantha angustifolia* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Formosa lily | *Lilium formosanum** | | | | | | | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 195, 327 |
| furcraea | *Furcraea foetida, F. parmentieri* and *F. selloa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| German ivy | *Senecio mikanioides* syn. *Delairea odorata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| giant hogweed | *Heracleum mantegazzianum** | | | | | | | | | | | | | ✓ | | | | | | 312 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| giant reed | *Arundo donax** | | | | | | ✓ | | | | ✓ | | | | | | ✓ | | ✓ | 160, 215, 327 |
| giant rhubarb | *Gunnera manicata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| goat's rue | *Galega officinalis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| gorse | *Ulex* spp. | | | | | | | | | | ✓ | | | | | | ✓§ | ✓ | ✓ | 327 |
| great reedmace | *Typha latifolia** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| green cestrum | *Cestrum parqui** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| grey willow | *Salix cinerea** | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |
| guava | *Psidium cattleianum* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Guinea grass | *Megathyrsus maximus* syn. *Panicum maximum** [23] | | | | | | | | | | | | | | | | ✓ | | | 327 |

[23] pubiglumis *variety listed in the NPPA only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| gypsywort | *Lycopus europaeus* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| hakea | *Hakea* spp. | | | | | | | | | | | | | | | | ✓ | | | 327 |
| hawkweed | *Pilosella* spp. syn. *Hieracium* spp.* [24] | | | | | | | | | | | | | | | | ✓ | | | 327 |
| hawthorn | *Crataegus monogyna* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| heather | *Calluna vulgaris** (excluding double flowered cultivars) | | | | | | | | | | | | | | | | ✓ | | | 327 |
| hemlock | *Conium maculatum* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Himalayan honeysuckle | *Leycesteria formosa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| holly-leaved senecio | *Senecio glastifolius* | | | | | | | | | | | | | | | | ✓ | | | 327 |

[24] *Pilosella × stoloniflora group listed in the NPPA only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| hornwort | *Ceratophyllum demersum** | | | | | ✓ | | | | | | | ✓ | | | | ✓ | | | 155, 226, 327 |
| horsetail | *Equisetum* spp.* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| houttuynia | *Houttuynia cordata** | | | | | | | | | | | | | | | ✓ | | | | 322 |
| *Hydrocotyle umbellata* | *Hydrocotyle umbellata* | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |
| iceplant | *Carpobrotus edulis* and hybrids* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Italian arum | *Arum italicum* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Italian jasmine | *Jasminum humile** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Japanese cherry | *Prunus serrulata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Japanese honeysuckle | *Lonicera japonica** | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| Japanese spindle tree | *Euonymus japonicus** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Japanese walnut | *Juglans ailantifolia** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| jasmine | *Jasminum polyanthum* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 202, 327 |
| kangaroo acacia | *Acacia paradoxa* | | | | | | | ✓ | | | | | | | | | ✓ | | | 168, 327 |
| khasia berry | *Cotoneaster simonsii** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| kudzu vine | *Pueraria montana* syn. *P. lobata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| lagarosiphon, oxygen weed | *Lagarosiphon major** | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| lantana | *Lantana camara** | | | | | | | | | | | | | | | ✓[25] § | | | | 318 |

[25] *Rural Auckland only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| lizard's tail | *Saururus cernuus* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| lodgepole pine[26] | *Pinus contorta** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| loquat | *Eriobotrya japonica* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Madeira vine | *Anredera cordifolia** | | | | | | | ✓ | | | ✓ | | | | | | ✓ | | ✓ | 168, 215, 327 |
| male fern | *Dryopteris filix-mas* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| marram grass | *Ammophila arenaria* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| marshwort | *Nymphoides montana** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| Mexican daisy | *Erigeron karvinskianus** | | | | | | | | | | | | | | | | ✓ | | | 327 |

[26] *Wilding pines are also subject to a nationally coordinated management programme, see http://www.wildingconifers.org.nz/about-us/programme-2/*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | 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 devil | *Ageratina adenophora* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Mexican feather grass | *Nassella tenuissima** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| Mexican water lily | *Nymphaea mexicana** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Mickey Mouse plant | *Ochna serrulata** | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| mile-a-minute | *Dipogon lignosus** | | | | | | | ✓ | | | | | | | | | ✓ | | | 168, 327 |
| mist flower | *Ageratina riparia* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| monkey apple | *Syzygium smithii* syn. *Acmena smithii** | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| montbretia | *Crocosmia* x *crocosmiiflora* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Montpellier broom | *Genista monspessulana* | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| | syn. *Teline monspessulana* | | | | | | | | | | | | | | | | | | | |
| Morton Bay fig | *Ficus macrophylla* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| moth plant | *Araujia sericifera* syn. *Araujia hortorum** | | | | ✓ § | | ✓ | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 128, 160, 204, 327 |
| nardoo | *Marsilea mutica* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| nassella tussock | *Nassella trichotoma** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| needle grass | *Austrostipa rudis* | | | | | | | | | | | | | | | ✓ | | | | 322 |
| nodding thistle | *Carduus nutans* | | | | | | | | | | | | | | | | ✓§ | | | 327 |
| Noogoora bur | *Xanthium strumarium* syn. *occidentale* | | | | | | | | | | | | | | | ✓ | | | | 324 |
| Norfolk Island hibiscus | *Lagunaria patersonii* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| nutgrass | *Cyperus rotundus* | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| old man's beard | *Clematis vitalba** | | | | | | | | | | | | | | | ✓ | | | | 322 |
| oxylobium | *Callistachys lanceolata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| palm grass | *Setaria palmifolia* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| pampas grass | *Cortaderia jubata** and *C. selloana** | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| paperbark poplar | *Melaleuca quinquenervia* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| parrot's feather | *Myriophyllum aquaticum** | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| perennial nettle | *Urtica dioica* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| periwinkle | *Vinca major* | | | | | | | | | | ✓ | | | | | | ✓ | | | 327 |
| phoenix palm | *Phoenix canariensis* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| *Phragmites karka* | *Phragmites karka* | | | | | | | | | | | | | | ✓ | | | | | 313 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| pitted crassula | *Crassula multicava** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| plectranthus | *Plectranthus ciliatus** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| plumeless thistle | *Carduus acanthoides* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Port Jackson fig | *Ficus rubiginosa** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| prickly-leaved wattle | *Acacia verticillata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| privet, Chinese | *Ligustrum sinense* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| privet, tree | *Ligustrum lucidum** | | | | | | ✓ | | | | ✓ | | | | | | ✓ | | ✓ | 160, 215, 327 |
| purple groundsel | *Senecio elegans* | | | | | | | ✓ | | | | | | | | | | | | 168 |
| queen of the night | *Cestrum nocturnum** | | | | | | | | | | | | | | | | ✓ | | | 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| Queensland poplar | *Homalanthus populifolius** | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |
| Queensland umbrella tree | *Schefflera actinophylla* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| ragwort | *Jacobaea vulgaris* (syn.*Senecio jacobaea*) | | | | | | | | | | | | | | | | ✓ | | | 327 |
| red dragon | *Persicaria microcephala* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| red valerian | *Centranthus ruber* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| reed sweet grass | *Glyceria maxima* | | | | | | ✓ | | | | | | | | | | ✓ | | | 327 |
| rhamnus | *Rhamnus alaternus** | | | ✓ | | ✓ | | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 125, 155, 209, 327 |
| rhaphiolepis / Sexton's bride | *Rhaphiolepis umbellata* | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| rhus tree | *Toxicodendron succedaneum* syn. *Rhus succedanea* | | | | | | ✓ | | | | | | | | | | ✓ | | | 327 |
| rough tree fern | *Cyathea cooperi** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| royal fern | *Osmunda regalis** | | | | | | | ✓ | | | ✓ | | | | | | ✓ | | ✓ | 168, 215, 327 |
| rum cherry | *Prunus serotina** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| saffron thistle | *Carthamus lanatus* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| *Sagittaria* spp. | *Sagittaria**[27] spp. (except *S. teres*) | | | | | | | | | | | | | | | ✓ | | | | 322 |
| salt water paspalum | *Paspalum vaginatum* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| scrambling lily | *Geitonoplesium cymosum* | | | | | | | | | | | | | | ✓ | | | | | 313 |

[27] *Sagittaria montevidensis, S. sagittifolia and S. platyphylla listed in the NPPA only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| *Selaginella* spp. | *Selaginella martensii, S. moellendorffii, S. uncinata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Senegal tea | *Gymnocoronis spilanthoides** | | | | | | | | | | | | | | | ✓ | | | | 322 |
| sharp rush | *Juncus acutus* | | | | | ✓ | | | | | ✓ | | | | | | ✓ | | ✓ | 155, 215, 327 |
| sheep's bur | *Acaena agnipila* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| skeleton weed | *Chondrilla juncea* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| smilax | *Asparagus asparagoides** | | | | | | | ✓ | | | | | | | | | ✓ | | | 168, 327 |
| snow poppy | *Eomecon chionantha** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| soap aloe | *Aloe maculata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Spanish broom | *Spartium junceum* | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| Spanish heath | *Erica lusitanica* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| spartina | *Spartina alterniflora, S. anglica* and *S.* x *townsendii* | | | | | | | | | | | | | | | ✓[28] | ✓[29] | | | 322, 327 |
| spiny broom | *Calicotome spinosa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| strangling fig | *Ficus microcarpa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| sweet briar | *Rosa rubiginosa* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| sweet pea shrub | *Polygala myrtifolia* (excl. cv. 'Grandiflora')* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| sweet pittosporum | *Pittosporum undulatum** | | | | | ✓ | | | | | | | | | | | ✓ | | | 155, 327 |
| Sydney golden wattle | *Acacia longifolia* | | | | | | | | | | | | | | | | ✓ | | | 327 |

[28] *Excluding Kairapara Harbour*
[29] *Kaipara Harbour only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| Taiwan cherry[30] | *Prunus campanulata* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| Tasmanian ngaio | *Myoporum insulare* and hybrids* | | | | | | | | | | ✓ | | | | | | ✓ | | ✓ | 215, 327 |
| tradescantia | *Tradescantia fluminensis** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| tree lupin | *Lupinus arboreus* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| tree of heaven | *Ailanthus altissima** | | | | | | ✓ | | | | | | | | | | ✓ | | | 160, 327 |
| tuber ladder fern | *Nephrolepis cordifolia** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| tutsan | *Hypericum androsaemum** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| undaria | *Undaria pinnatifida* | | | | | | | | | | | | | | | | ✓ | | | 409 |
| variegated thistle | *Silybum marianum* | | | | | | | | | | | | | | | | ✓§ | | | 327 |

[30] *Excludes sterile cultivars 'Mimosa' and 'Pink clouds'*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| velvet groundsel | *Roldana petasitis* (syn. *Senecio petasitis*) | | | | | | | | | | | | | | | | ✓ | | | 327 |
| water plantain | *Alisma plantago-aquatica* | | | | | | ✓ | | | | | | | | | | | | | 160 |
| water poppy | *Hydrocleys nymphoides** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| water primrose | *Ludwigia peploides* subsp. *montevidensis** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| white-edged nightshade | *Solanum marginatum** | | | | | | | | | | | | | | ✓ | | | | | 313 |
| wild broom | *Cytisus scoparius* (excl. cultivated varieties) | | | | | | | | | | | | | | | ✓[31] | | | | 322 |
| wild ginger | *Hedychium gardnerianum** and *H. flavescens** | | | | | | ✓ | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 160, 211, 327 |

[31] *Service delivery in rural Auckland only*

| Plant | | Programme | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hauraki Gulf Controlled Area | | | | Aotea Great Barrier Island | | | Kawau Island | Waiheke Island | Parks | | Priority lakes | Whole region | | | | | Waitākere[19] | Page(s) |
| Common name | Scientific name | Exclusion | Eradication | Progressive containment | Site-led | Exclusion | Eradication | Progressive containment | Eradication | Eradication | Site-led | GNR | Site-led | Exclusion | Eradication | Progressive containment | Sustained control | GNR | | |
| wild kiwifruit | *Actinidia* species (wild varieties only) | | | | | | | | | | | | | | | ✓§ | | | | 320 |
| woolly nightshade | *Solanum mauritianum** | | | | | | ✓ | | | | ✓ § | ✓ | | | | | ✓ | | ✓ | 160, 213, 327 |
| yellow bristle grass | *Setaria pumila* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| yellow flag iris | *Iris pseudacorus** | | | | | | | | | | | | | | | | ✓ | | | 327 |
| yellow guava | *Psidium guajava* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| yellow passionfruit | *Passiflora ligularis* | | | | | | | | | | | | | | | | ✓ | | | 327 |
| yellow water lily | *Nuphar lutea** | | | | | | | | | | | | | | | | ✓ | | | 327 |

**Table 5 Organisms managed under national-led programmes, which may be assisted by Auckland Council.**

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



# 6 Tarāwaho whakahaere kaupapa koiora orotā / Pest management framework

© Ngā Manu Images

## 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 – occupiers of a place 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. Monitoring and surveillance – inspection by the Council may include:
    - visiting properties or doing surveys to determine whether pests are present (surveillance), 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)
    - taking limited control actions, where doing so is effective and cost efficient
    - monitoring effectiveness of control.
3. Enforcement:
    - managing compliance to regulations (rule enforcement, action on default, prosecution, exemptions)
4. Service delivery (control) – the Council may deliver the service:
    - where it is funded to do so
    - by providing control tools, including sourcing and distributing biological agents, or provisions (e.g. traps, chemicals).

5. Education and advice – the Council may:
    - provide general purpose education, advice, awareness, behaviour change, and publicity activities to land occupiers and the public about pests and pathways (and control of them)
    - encourage land owners occupiers to control pests
    - facilitate or fund community and land 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 occupiers
    - encourage land occupiers and other persons to report any pests they find or to control them
6. Research and development:
    - facilitate or commission research independently or in collaboration with other parties.

## 6.4 Ngā Ture / Rules

Rules play an integral role in securing many of the pest management outcomes sought by the 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).

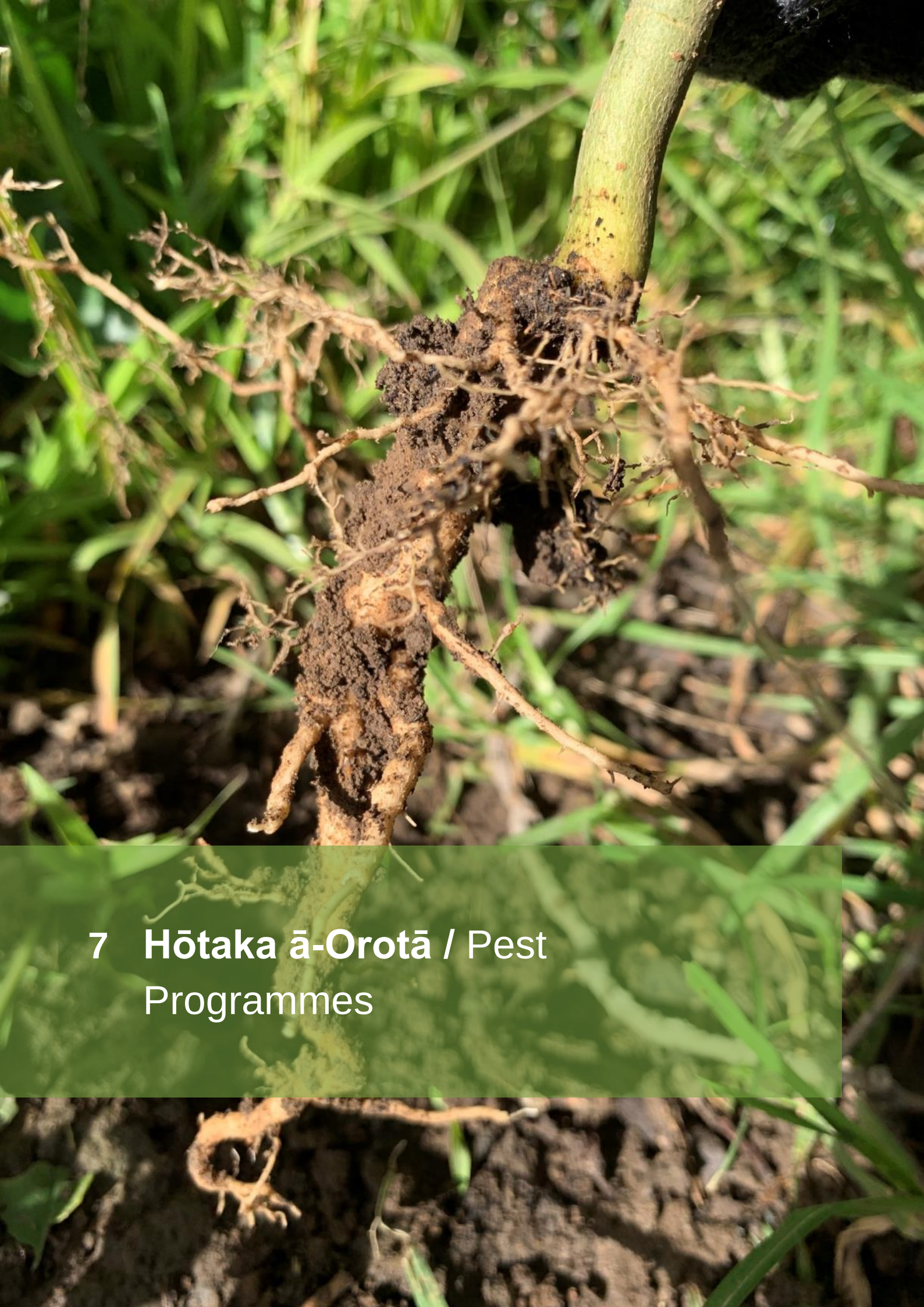
Exemptions may apply to any or all of the rules contained within this RPMP, on written application to Auckland Council.

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 occupiers, or a specified class of occupier
- identify the pest to be managed
- state that the pest must already be present on the occupier's land
- state that the 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 occupiers of any transport corridor land that is located within the buffer area, as defined in Map 6, of a park which is managed for Formosa lily, must control all Formosa lily on that land prior to seed set.



# 7 **Hōtaka ā-Orotā /** Pest Programmes

The following sections set out the statutory programmes of this plan, which work together as described above in section 4.2. Where there is any inconsistency between two or more programmes for any given species which apply to one site,the more stringent programme applies.

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

Ko Tīkapa 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 koiora 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 koiora orotā-kore kē. Nā ēnei murunga i āhei ai te whakahoki ake anō i ētahi o ngā momo i te noho wehi ki Tīkapa Moana.

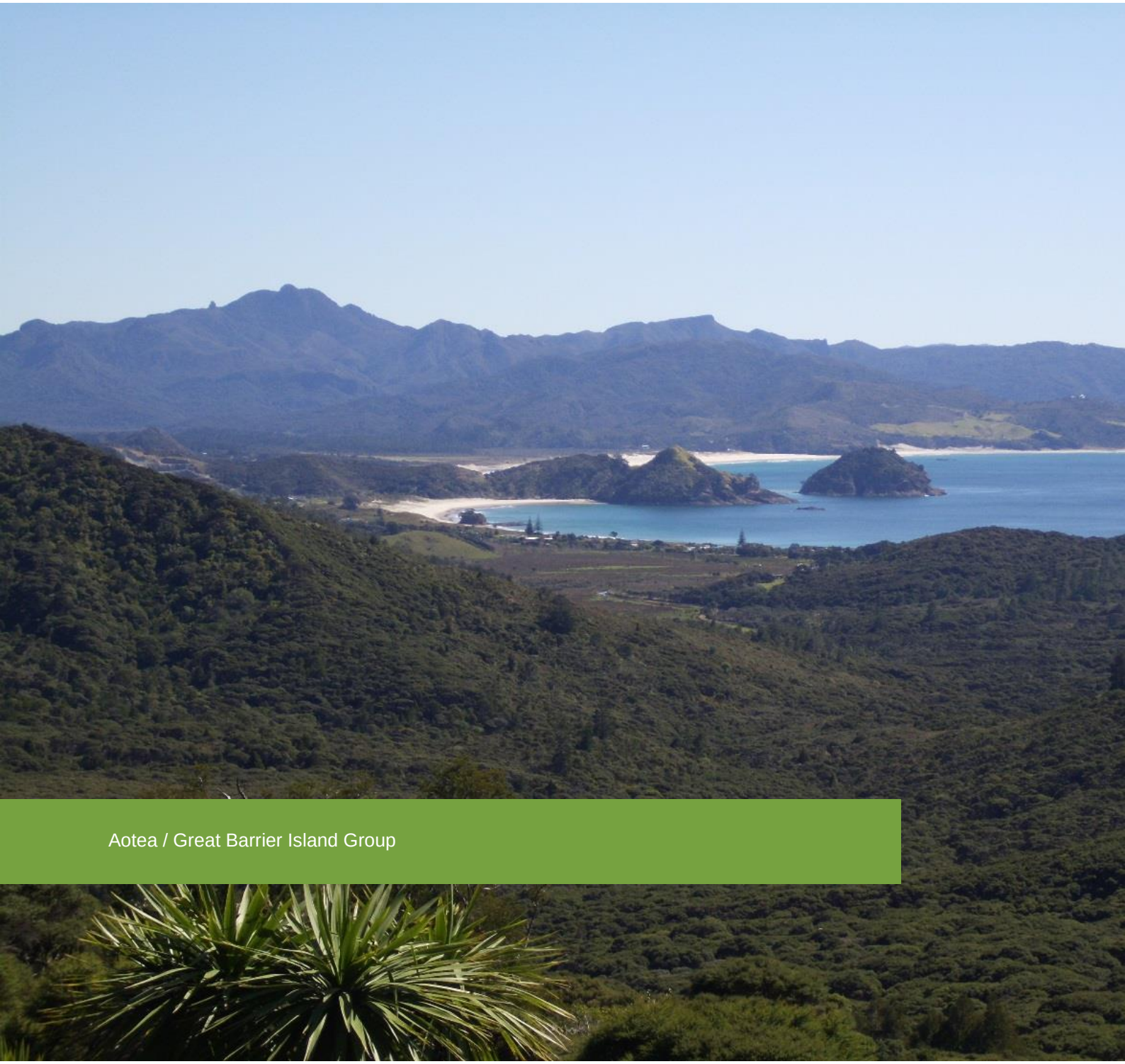
Ko tā ngā hōtaka e whai ake nei he tiaki i ngā tikanga hauropi whakahira me te noho ārai o te matawhenua o ngā moutere o Tīkapa Moana, mā roto atu i ngā whakaritenga e āhei ai te aukati i te hora tonu o ngā orotā ki ētahi atu moutere hōu (tae atu ki ngā ture mau Raihana Orotā-Kore o te hunga whai umanga kaikawekawe), āpiti hoki ko te mana o te kaunihera me ngā kaipupuri 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 defendable, 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 Tīkapa Moana / Hauraki Gulf islands such as Tiritiri Matangi, Rotoroa and Rangitoto-Motutapu. The subsequent success of these islands as sanctuaries is testament to the collaborative vision, financial investment and sustained hard work of many individuals and organisations across community groups, non-government orgnaisations and agencies such as Department of Conservation and Auckland Council.

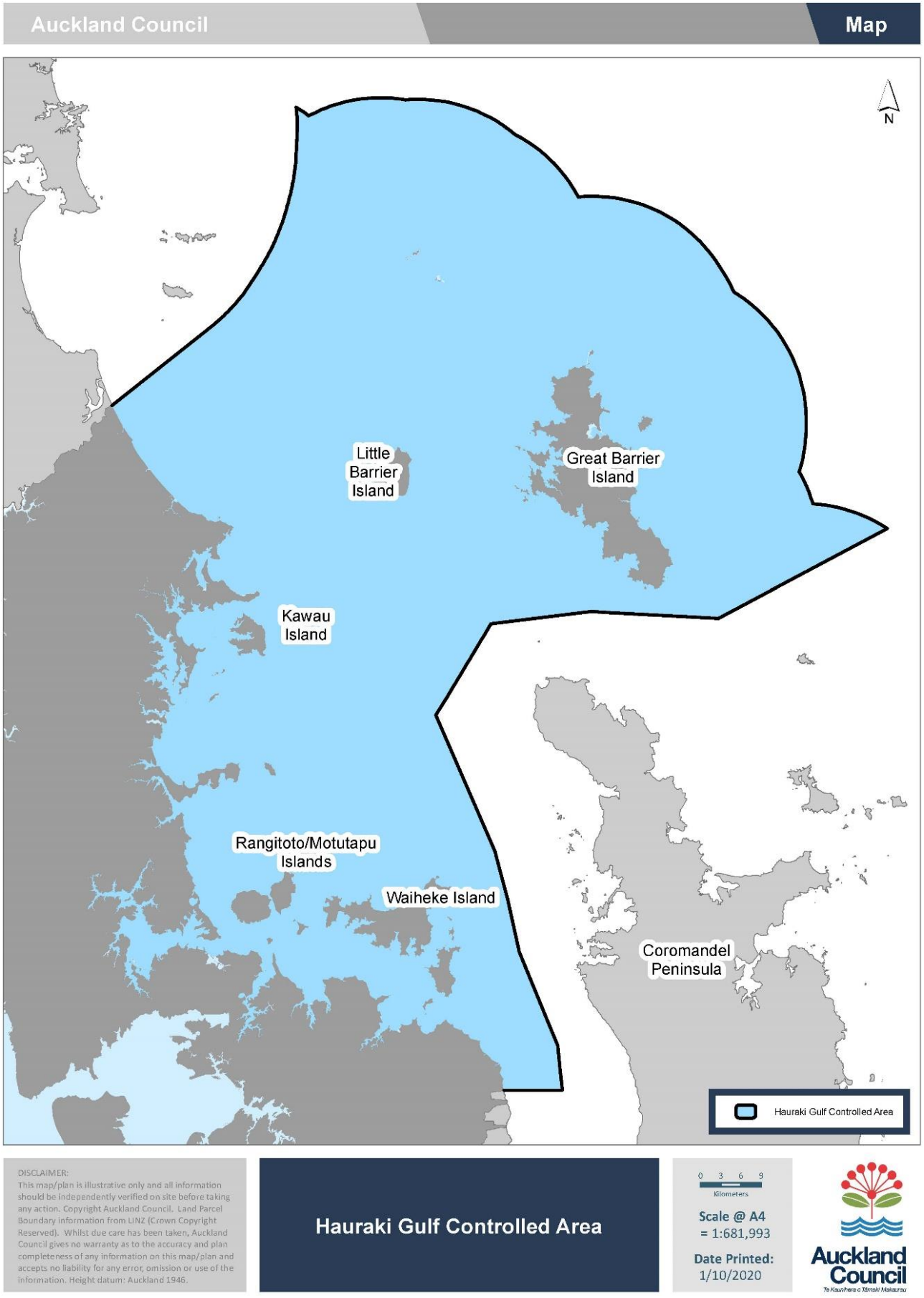
The following programmes protect the high ecological values and strategically defendable geography of Te Tīkapa Moana / the Hauraki Gulf islands, through a combination of measures to prevent further spread of pests to new islands (with rules including Pest Free Warrants for commercial transport operators), along with control by Council or land occupiers to manage pests at certain sites to prevent or reduce impacts. Auckland Council is the management agency for the Hauraki Gulf Controlled Area. In addition to all rules and default powers provided under this Regional Pest Management Plan, species named anywhere in this Regional Pest Management Plan may also be subject to controls under the Hauraki Gulf Controlled Area. The species subject to controls under the Hauraki Gulf

Controlled Area are specified in the Controlled Area Notice. Boundaries of the Hauraki Gulf Controlled Area are shown in Map 2.

The subsequent sections set out programmes to eradicate, exclude or contain named pests from individual islands, namely Aotea / Great Barrier Island Group, and Moutere o Waiheke / Waiheke Island. In addition to these, Council may undertake incursion responses for other low incidence species on islands as required over the lifetime of the plan.



## Aotea / Great Barrier Island Group




**Map 2. Area where Hauraki Gulf Controlled Area pest programmes apply.**

## 7.1.1 Te noho wātea o te kararehe 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 / the Hauraki Gulf islands, to protect the values of those islands and past investment in island eradications. Council may, at its discretion, undertake incursion responses to species other than those listed in the following section.

### 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/patete, three-finger, horoeka/lancewood, and mouku/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 deer[32] (*Cervus, Axis, Dama, Odocoileus, Elaphurus* spp. including any hybrid) from the Hauraki Gulf Controlled Area to prevent adverse effects on the environment.

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

**Rules:**

7.1.1.1.1 No person shall move or distribute any deer into the Hauraki Gulf Controlled Area (as defined in Map 2).

The purpose of rule 7.1.1.1.1 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.

[32] *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 / 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 tupu 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 / 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:** “protecting values in places” which means 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:**

7.1.2.1.1 No person shall move or allow to be moved any Argentine ant to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.1.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.1.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 7.1.2.1.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.1.2 and 7.1.2.1.3 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council. |

### 7.1.2.2 Unowned cat

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. Cat predation is 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 and Maui's dolphins, terehu / bottle nose dolphins, kēkeno / NZ fur seals, kiwi, kererū/kukupā and kākā. However, cats are also Aotearoa / New Zealand's most popular companion animal, and Auckland Council recognises the need to balance wildlife protection with protection of companion animal values.



Manaaki Whenua Landcare Research

**Objective:** Over the duration of the plan Auckland Council will manage cats 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.

**Intermediate outcome:** "protecting values in places" which means that cats, that are capable of causing damage to the Hauraki Gulf Controlled Area, are controlled within the Hauraki Gulf Controlled Area to an extent that protects the values of that place.

**Rules:**

7.1.2.2.1 No person shall move or allow to be moved any unowned[33] cat to or among islands within the Hauraki Gulf Controlled Area (as defined in Map 2)

[33] *Unowned cat means:*

*a) Any cat which is not:*

*i. Microchipped, or otherwise identified with owner's name and address; and*

*ii. Registered on the New Zealand Companion Animal Register https://www.animalregister.co.nz/; and*

*b) which is within any site that contains a resident or breeding or roosting population of any regionally or nationally threatened bird, reptile or amphibian, and is in a rural area.*

7.1.2.2.2 No person shall bring any cat within 200m of any cat-free island within the Hauraki Gulf Controlled Area.

7.1.2.2.3 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.2.4 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rules 7.1.2.2.1 and 7.1.2.2.2 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.2.3 and 7.1.2.2.4 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

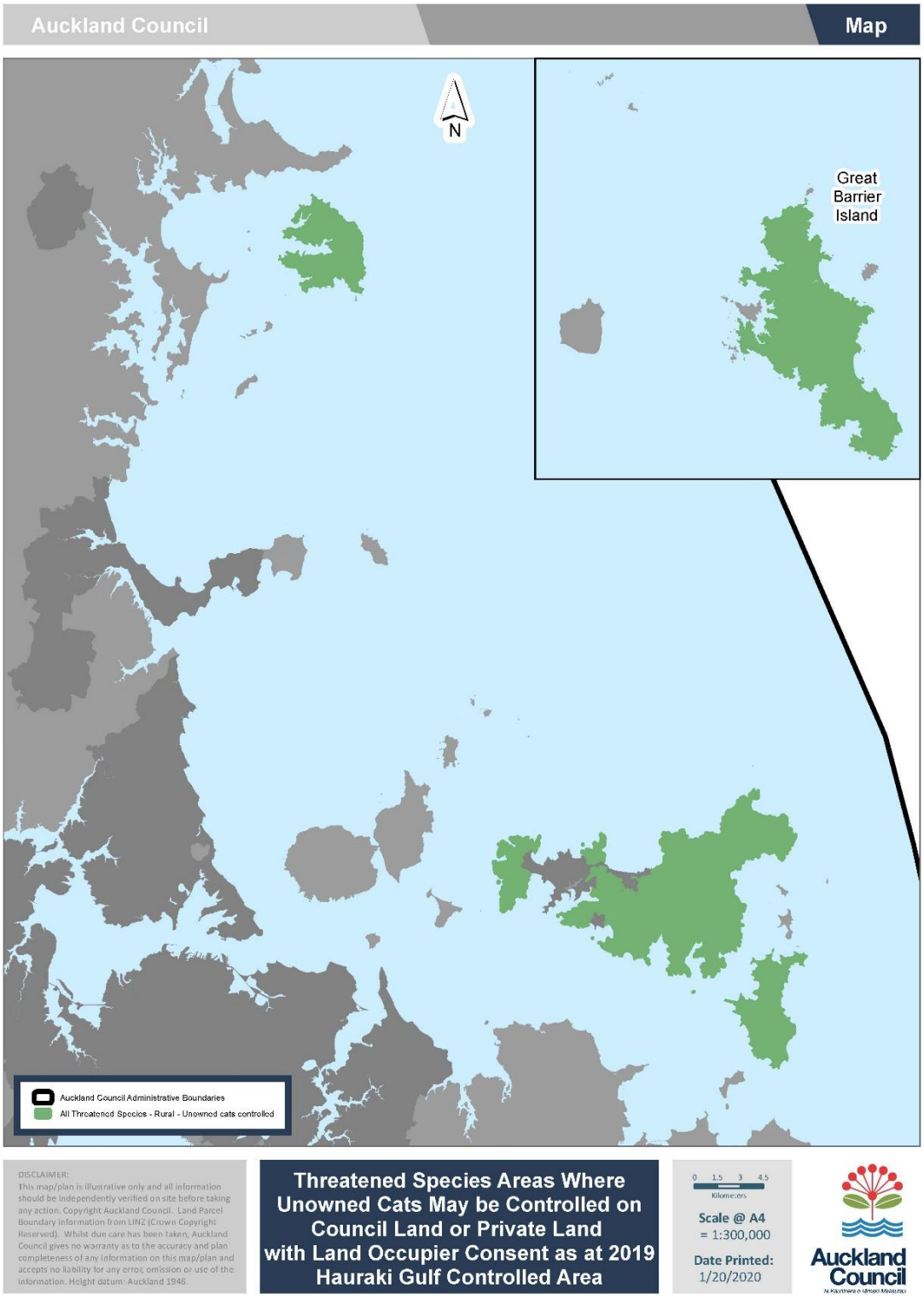
A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Undertake incursion responses on cat-free islands, in partnership with the Department of Conservation where appropriate.<br>Council may undertake control of unowned cats as part of integrated management of other pest threats to protect threatened species. Accordingly, Council may consider unowned cat control at sites meeting the follow criteria:<br>a. the site contains a resident or breeding or roosting population of any threatened native bird, reptile or amphibian species; and<br>b. the site is within a rural area; and<br>c. where that site is:<br>i. public land; or<br>ii. private land with consent of the private land occupier.<br>Map 3 indicatively shows the extent of sites meeting these threatened species criteria based on current knowledge as at January 2019.<br>Sites shown in Map 4 are intensively managed and of particular value to threatened species programmes. At these sites, Council may control any cat as a pest in accordance with the Biosecurity Act 1993, to prevent recovery programmes being undermined. |

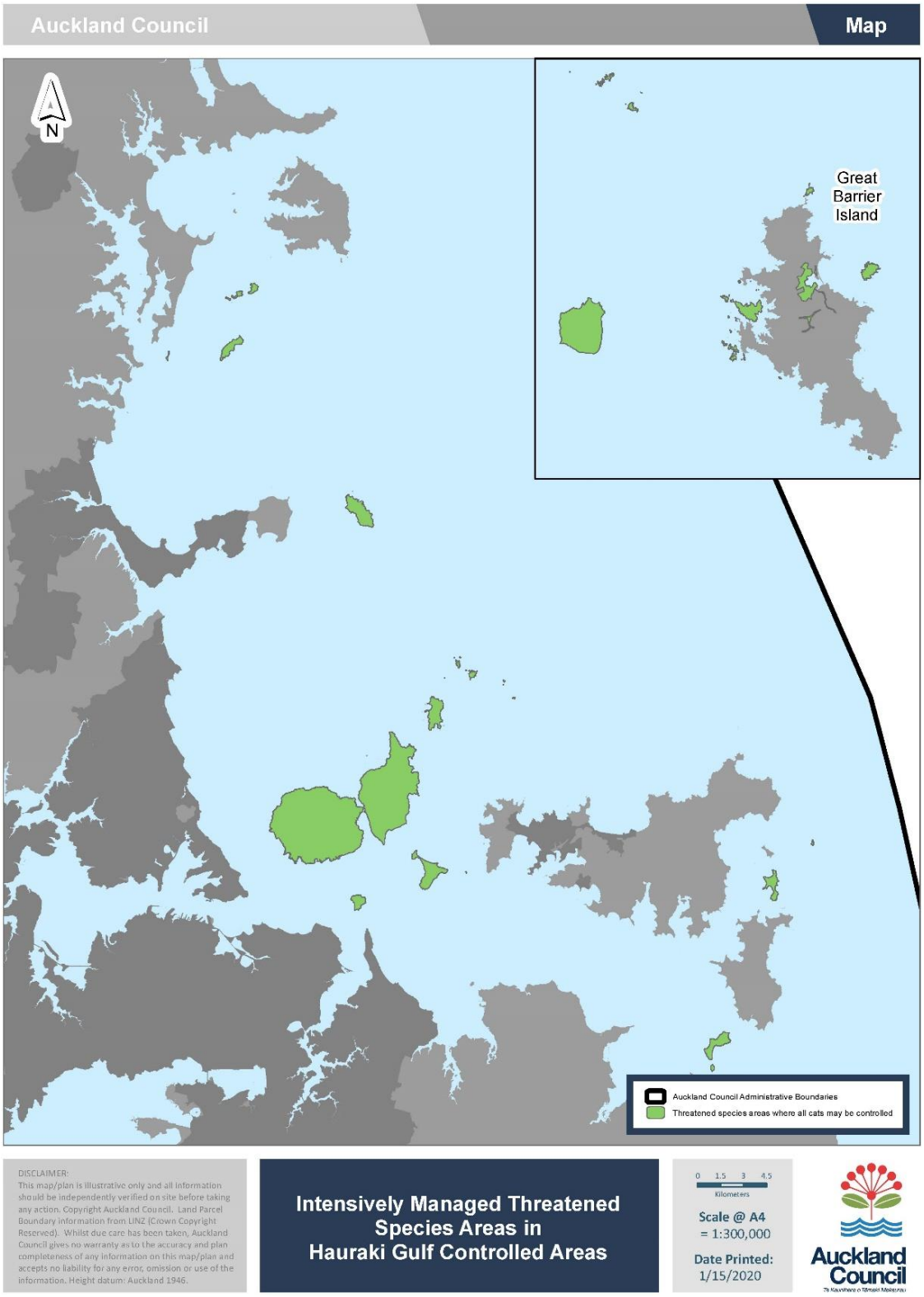
*Note: based on current knowledge of species distributions at time of writing, sites that meet these criteria are shown in Map 3. Note also cat control will only be undertaken on public land or on private land with consent of land occupier (see principle measures of achievement overleaf).*
*Note: this programme does not prevent the continuing sale and distribution of cats within the region.*

| | |
|---|---|
| Monitoring and surveillance | Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of cat-free islands, to determine the presence of new incursions and status of existing or historical sites. Undertake inspections, monitoring and surveillance of unowned cat populations in and around sites containing threatened species. |
| Enforcement | 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 microchipped and remain at all times a distance of at least 200m from any cat-free island. |
| Education and advice | Provide information and advice on responsible pet ownership (particularly de-sexing, microchipping, registration on the Companion Animal Register and containment options). Advice will be prioritised to communities near threatened species populations or biodiversity focus areas to assist cat owners in these areas to minimise the impacts of their companion animals on nearby wildlife.<br>Provide information on impacts and management of cats, and how to reduce risk of accidental introduction of cats to offshore pest-free islands.<br>Notify communities near intended cat management at least 4 weeks prior to control of unowned cats.<br>Provide advice and support to community groups undertaking cat management, with priority given to activity in or around biodiversity focus areas or threatened species populations. |
| Requirement to act | Cat owners to ensure owned cats are microchipped and registered if transporting cats to or among islands within Hauraki Gulf Controlled Area, and to ensure all cats are kept a distance of at least 200m away from any cat-free island at all times.<br>All persons intending to move a building to or among Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council. |




**Map 3 Indicative distribution of threatened species populations within rural areas in the Hauraki Gulf Controlled Area, based on current knowledge of species' distributions as of 2019. Unowned cats may be controlled in rural areas to protect threatened species on Council land or on private land with land occupier consent[34].**

[34] *Any sites where unowned cat control is actually planned to be carried out can be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*




**Map 4 Intensively managed sites for threatened species protection. Any cat may be controlled at these sites[35].**

[35] *Any sites where cat control is actually planned to be carried out can be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*

### 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:** "protecting values in places" which means 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:**

7.1.2.3.1 No person shall move or allow to be moved any Darwin's ant to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.3.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.3.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 7.1.2.3.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.3.2 and 7.1.2.3.3 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>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, and 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.



Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will manage feral pigs[36] (*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:** "protecting values in places" which means 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:**

7.1.2.4.1 No person shall move or allow to be moved any feral pig to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

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.

[36] *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 and around biodiversity focus areas within the Hauraki Gulf Controlled Area to levels that enhance ecosystem function and resilience, and protect the values of the Hauraki Gulf Controlled Area.<br>Respond to incursions on pig-free islands, in partnership with the Department of Conservation where appropriate. See also section 7.4.1 for eradication of feral pigs from Waiheke. |
| 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, and ear tagging for identification. |

### 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:** "protecting values in places" which means 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:**

7.1.2.5.1 No person shall move or allow to be moved any hedgehog to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.5.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.5.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 7.1.2.5.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.5.2 and 7.1.2.5.3 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>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:** "protecting values in places" which means 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:**

7.1.2.6.1 No person shall move or allow to be moved any mouse to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.6.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.6.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days 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 7.1.2.6.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.6.2 and 7.1.2.6.3 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) | Undertake incursion responses on mouse-free islands, in partnership with the Department of Conservation where appropriate.<br>Consider management of the pest animal in biodiversity focus areas within the Hauraki Gulf Controlled Area to levels that enhance ecosystem function and resilience, and 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 mouse-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 mice 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council. |

### 7.1.2.7 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.

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:** "protecting values in places" which means 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:**

7.1.2.7.1 No person shall move or allow to be moved any mustelid to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.7.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.7.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 7.1.2.7.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.7.2 and 7.1.2.7.3 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 (see also Waiheke and Kawau eradications in sections 0 and 7.4).<br>Manage the pest animal in and around biodiversity focus areas within the Hauraki Gulf Controlled Area to levels that enhance ecosystem function and resilience, and 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>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 100m$^2$. Such high population densities can result in plague skinks out-competing native reptiles, particularly native mokomoko kapa/ 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:** “protecting values in places” which means 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:**

7.1.2.8.1 No person shall move or allow to be moved any plague skink to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.8.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.8.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 7.1.2.8.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.8.2 and 7.1.2.8.3 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 | All persons intending to move a building to or among Te Tīkapa Moana / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council. |

### 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:** "protecting values in places" which means 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:**

7.1.2.9.1 No person shall move or allow to be moved any possum to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.9.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.9.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

The purpose of rule 7.1.2.9.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.9.2 and 7.1.2.9.3 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 possum-free islands, in partnership with the Department of Conservation where appropriate (see also section 7.3.1 for eradication programme on Kawau, representing the last remaining possum population within 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 possum-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 possums 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council. |

### 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 unowned 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.



Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will manage pest rabbits[37] (*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:** "protecting values in places" which means 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:**

7.1.2.10.1 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 Map 2).

7.1.2.10.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.10.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

[37] *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; and*
- *ii. Securely contained*

The purpose of rule 7.1.2.10.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.10.2 and 7.1.2.10.3 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 rabbit-free islands, in partnership with the Department of Conservation where appropriate.<br>Manage the pest animal in and around biodiversity focus areas within the Hauraki Gulf Controlled Area to levels that enhance ecosystem function and resilience, and 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>All commercial transport operators within the Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.<br>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council. |

### 7.1.2.11 Rats: ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), kiore[38] (*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.



Manaaki Whenua 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:** "protecting values in places" which means 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:**

7.1.2.11.1 No person shall move or allow to be moved any rat to or within the Hauraki Gulf Controlled Area (as defined in Map 2).

7.1.2.11.2 All commercial transport operators moving goods or people to or among Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.2.11.3 All persons intending to move a building to or among islands in the Hauraki Gulf Controlled Area must notify Auckland Council at least ten working days prior to movement, to arrange inspection and approval by Auckland Council.

[38] *Council acknowledges that kiore are culturally significant for mana whenua and the need for operational engagement with mana whenua where relevant.*

The purpose of rule 7.1.2.11.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.1.2.11.2 and 7.1.2.11.3 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 (see also sections 7.3and 7.4 for Kawau and Waiheke eradications).<br>Manage the pest animal in and around biodiversity focus areas within the Hauraki Gulf Controlled Area to levels that enhance ecosystem function and resilience, and 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 / the Hauraki Gulf islands to notify Auckland Council at least ten working days prior to intended date of movement, and to provide access for inspection within two working days prior to the date of movement.<br>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 writing[39], 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 7.7.5.2).

### 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 Map 5) 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:** "exclusion" which means to prevent the establishment of kauri dieback within kauri dieback exclusion zones.

**Rules:**

7.1.3.1.1 No person shall distribute, move or release kauri dieback disease in the Auckland region.

7.1.3.1.2 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 landfill[40].

[39] *1 February 2019*
[40] *Approved at time of writing:*

7.1.3.1.3 All commercial transport operators moving goods or people to or among Te Tīkapa Moana / the Hauraki Gulf Islands must attain and maintain Pest Free Warrant accreditation.

7.1.3.1.4 All 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 7.1.3.1.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.1.3.1.2 and 7.1.3.1.3 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 7.1.3.1.4 is to require the occupier of a place to carry out specified treatments or procedures to assist in preventing the spread of the pest.

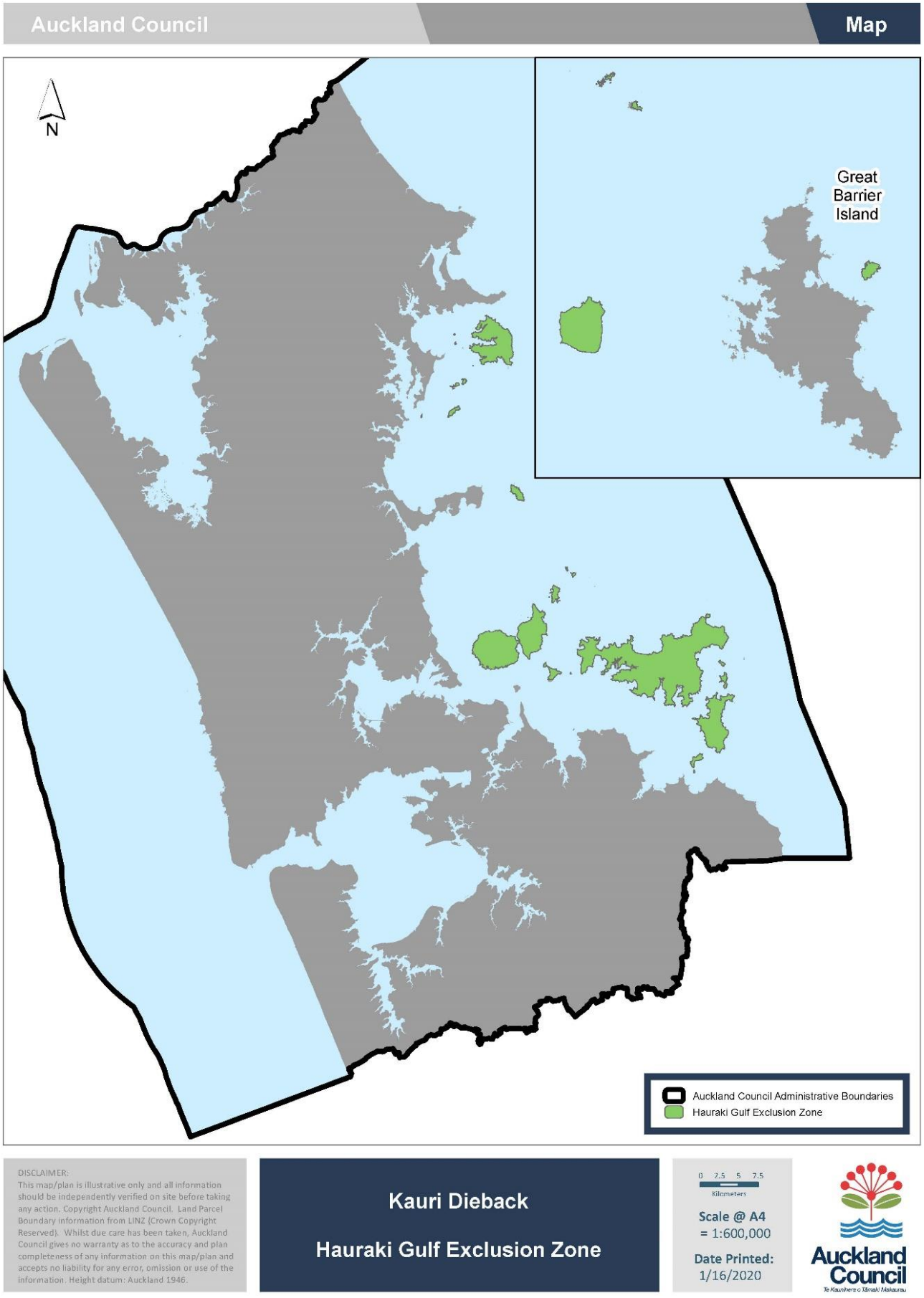
A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

1. *Ridge Road Quarries, Ridge Road, Bombay (accepts soil only)*
2. *EnviroWaste Hampton Downs Landfill, 136 Hampton Downs Road, RD2, Te Kauwhata (accepts soil and organic material).*
3. *Waste Management's Redvale Landfill, Landfill Acess Road, Dairy Flat (the use of a bin liner is required at this landfill) – accepts soil and organic matter.*

*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) | Provide and maintain phytosanitary stations at key entry and exit points to Te Tīkapa Moana / the Hauraki Gulf islands.<br>Enter any property within the specified geographic area of the programme and carry out management of this species.<br>Manage known vectors, including feral pigs. |
| Monitoring and surveillance | Undertake inspections, monitoring and surveillance, to determine the presence of new incursions and status of existing or historical sites. Specifically, improve understanding of disease absence (or presence) in non-symptomatic areas.<br>Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across kauri lands. |
| Enforcement | Enforce restrictions on the movement of the pest and kauri plant material.<br>Enforce requirements for phytosanitary stations at entry and exit points to Te Tīkapa Moana / the Hauraki Gulf.<br>Enforce conditions of transport within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators. |
| 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, especially when exiting areas known to be infected with kauri dieback disease or entering any island.<br>Land occupiers of commercial entry or exit points to Te Tīkapa Moana / the Hauraki Gulf to make information available to all customers, and to allow Auckland Council to install and maintain phytosanitary stations.<br>Persons moving kauri to or among Te Tīkapa Moana / the Hauraki Gulf islands to apply for an exemption (subject to hygiene status of source) or substitute with on-island sources. |
| 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. |




**Map 5 Hauraki Gulf kauri dieback exclusion zone.**

## 7.1.4 Aukati haere noa i te tupu 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:** "progressive containment" which means to contain or reduce the geographic distribution of rhamnus, within the Hauraki Gulf Controlled Area over time.

**Rules:**

7.1.4.1.1 All occupiers of any land within the Hauraki Gulf Controlled Area (as defined in Map 2) 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 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.<br>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 tupu 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:** "protecting values in places" which means that the subject, that is capable of causing damage to the Hauraki Gulf Controlled Area, is controlled within that area to an extent that protects the values of Te Tīkapa Moana / the Hauraki Gulf.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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.<br>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 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, mānawa/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:** "protecting values in places" which means that the subject, that is capable of causing damage to Waiheke and Rākino islands is controlled within Waiheke and Rākino islands to an extent that protects the values of those places.

Note: although contained within the Hauraki Gulf Controlled Area section of the plan, this moth plant programme applies only on Waiheke and Rākino, reflecting the relatively lower infestations on these islands, and past history of investment relative to other islands (though see also eradication programme on Aotea in section 7.2.3). The Department of Conservation manages moth plant on its own islands outside of this Regional Pest Management Plan framework.

**Rules:**

7.1.5.2.1 All occupiers of land on Waiheke or Rākino island must destroy all moth plant on that land.

The purpose of rule 7.1.5.2.1 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 key risk areas to determine the presence of new infestations and status of existing or historical sites. |
| Enforcement | Enforce land occupier responsibility to control the pest plant pursuant to the rules in this section.<br>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 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.

In addition to those species identified below in section 7.2, Hauraki Gulf-wide programmes may also be used specifically to protect Aotea / Great Barrier. For instance under section 7.1.2.1, bringing a rat to Aotea / Great Barrier is not allowed, and Council may undertake an incursion response if Norway rats are detected on Aotea / Great Barrier. Similarly, region-wide pest plant eradication programmes (such as old man's beard) apply equally on Aotea / Great Barrier as they do elsewhere in the region. Council may also undertake incursion responses on Aotea / Great Barrier for additional species outside of this Regional Pest Management Plan if deemed appropriate.



Aotea / Great Barrier island group

## 7.2.1 Te noho wātea o te kararehe 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:** "exclusion" which means to prevent the establishment of bearded dragons on the Aotea / Great Barrier island group.

**Rules:**

7.2.1.1.1 No person shall move or allow to be moved any bearded dragon to Great Barrier island group.

7.2.1.1.2 No person shall breed bearded dragons on Great Barrier island group.

7.2.1.1.3 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 7.2.1.1.1 and 7.2.1.1.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.2.1.1.2 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 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:** "exclusion" which means to prevent the establishment of blue-tongued skinks on the Aotea / Great Barrier island group.

**Rules:**

7.2.1.2.1 No person shall move or allow to be moved any blue-tongued skinks to Great Barrier island group.

7.2.1.2.2 No person shall breed blue-tongued skinks on Great Barrier island group.

7.2.1.2.3 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 7.2.1.2.1 and 7.2.1.2.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.2.1.2.2 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 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:** "exclusion" which means 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 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:** "exclusion" which means to prevent the establishment of Canadian geese on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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 rosellas 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, tōtara and pōhutukawa, and nectar from pūriri 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:** "exclusion" which means to prevent the establishment of eastern rosellas on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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:** “exclusion” which means to prevent the establishment of eastern water dragons on the Aotea / Great Barrier island group.

**Rules:**

7.2.1.6.1 No person shall move or allow to be moved any eastern water dragon to Great Barrier island group.

7.2.1.6.2 No person shall breed eastern water dragons on Great Barrier island group.

7.2.1.6.3 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 7.2.1.6.1 and 7.2.1.6.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.2.1.6.2 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 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 granivores, 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:** "exclusion" which means to prevent the establishment of galahs on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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:** "exclusion" which means to prevent the establishment of gambusia on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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 goldfish[41] (*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:** "exclusion" which means to prevent the establishment of goldfish on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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. |

[41] *A pest goldfish means any goldfish that is not:*
*a) held in effective containment on private land; or*
*b) 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:** "exclusion" which means 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 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:** "exclusion" which means to prevent the establishment of koi carp on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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:** “exclusion” which means to prevent the establishment of monk parakeets on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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), īnanga, galaxiids and paraki/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:** "exclusion" which means to prevent the establishment of perch on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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 haematodus*)

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 Tīkapa Moana / 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 haematodus*) 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:** “exclusion” which means to prevent the establishment of rainbow lorikeets on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (Control) | Enter any property 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.



© Rod Morris, Department of Conservation

**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:** "exclusion" which means to prevent the establishment of red-eared slider turtles on the Aotea / Great Barrier island group.

**Rules:**

7.2.1.15.1 No person shall move or allow to be moved any red-eared slider to Great Barrier island group.

7.2.1.15.2 No person shall breed red-eared slider on Great Barrier island group.

7.2.1.15.3 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 7.2.1.15.1 and 7.2.1.15.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.2.1.15.2 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 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 paraki/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:** "exclusion" which means to prevent the establishment of rudd on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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:** "exclusion" which means to prevent the establishment of snake-neck turtles on the Aotea / Great Barrier island group.

**Rules:**

7.2.1.17.1 No person shall move or allow to be moved any snake-neck turtle to Great Barrier island group.

7.2.1.17.2 No person shall breed snake-neck turtles on Great Barrier island group.

7.2.1.17.3 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 7.2.1.17.1 and 7.2.1.17.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.2.1.17.2 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 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:** "exclusion" which means 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 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:** "exclusion" which means to prevent the establishment of tench on the Aotea / Great Barrier island group.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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 tupu 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. Council will undertake active surveillance across the Aotea / Great Barrier island group to detect new pest plant incursions. Council may, at its discretion, undertake incursion responses to species other than those listed in the following section.

**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:** "exclusion" which means 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 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.

### 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*)



Rohan Wells, NIWA

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.

### 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 tupu 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:** "eradication" which means 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) | Enter any property 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.



### 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.



### 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.

### 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, mānawa/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 Aukati haere noa i te tupu 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:** "progressive containment" which means to contain or reduce the geographic distribution of the pest plant to an area over time.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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.

### 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.

### 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.

### 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 kararehe orotā / Eradication pest animals

Kei te motu o Kawau anake te huinga warapi i te rohe o Tāmaki Makaurau. He mea wetiweti 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 koiora 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 koiora 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 koiora orotā i te moutere nohoa e te tangata he ahunga hōu e taea ai te taumata o Tāmaki Makaurau Orotā Kore/ Aotearoa Konihi Kore 2050.




Kawau island is home to kiwi, rare native plant species and large areas of regenerating native bush. Situated in close proximity to Tāwharanui and Shakespear Open Sanctuaries, as well as other pest-free islands, Kawau has the potential to become home to many more native birds if invasive mammals are removed from the island and habitat regenerates. 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. In addition to mammal eradications, this plan provides for on-going eradication of Argentine ants from Kawau, under section 7.1.2.1.

**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:** “eradication” which means 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) | Coordinate a multi-species eradication in collaboration with the Department of Conservation, Local Board, mana whenua and community.<br>Enter any property within the specified geographic area of the programme and carry out control work on this species.<br>Protect the island from reinvasion following eradication, through implementation of Hauraki Gulf Controlled Area programmes. |
| 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, including pathway measures to prevent reinvasion following eradication. |
| Education and advice | Provide information and advice on pest animal identification, impacts and control.<br>Provide information and advice on how to avoid spreading the pest animal. |

### 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 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

### 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, Manaaki Whenua Landcare Research

### 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.

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 are also a vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).



Stoat, Department of Conservation

### 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 kāmahi 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 Makaurau 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. The community-led initiative Te Korowai o Waiheke has a goal of eradicating rats and stoats from the island as part of a broader vision to protect and restore the island's native biodiversity. 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 contribute to these programmes, contingent on continued 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 and Te Korowai o Waiheke partners 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:** "eradication" which means 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) | Contribute to a multi-species eradication in collaboration with the Department of Conservation, Local Board, mana whenua and community.<br>Enter any property within the specified geographic area of the programme and carry out control work on these species.<br>Protect the island from reinvasion following eradication, through implementation of Hauraki Gulf Controlled Area programmes. |
| 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, including pathway measures to prevent reinvasion following eradication. |
| Education and advice | Provide information and advice on pest animal identification, impacts and control.<br>Provide information and advice on how to avoid spreading the pest animal. |

### Feral pigs[42] (*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, and 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.



Manaaki Whenua Landcare Research

### 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 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, Manaaki Whenua Landcare Research

[42] *A feral pig includes any pig that is not:*
*a) held behind effective fences or otherwise constrained; and*
*b) identified by ear tag*

### 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.

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 are also a vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).



Stoat, Department of Conservation

## 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 kaipupuri 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. Tāmaki Makaurau / Auckland has an extensive network of regional and local parks which include some of the region’s most important areas of native vegetation (e.g. Te Wao Nui a Tiriwa me Kohukohunui / Waitākere and Hunua Ranges Regional Parks) as well as fenced sanctuaries (Tāwharanui and Shakespear) that have enabled extensive reintroductions of threatened species. Auckland Council is committed to “walking the talk”, role-modelling best-practice pest management on Council lands to protect these special areas for all Aucklanders, now and into the future. 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)[43]. Rule enforcement will be implemented following systematic community engagement to facilitate voluntary pest plant management, rather than on a reactive complaints basis.

The following programmes also provide for pest animal control on high value parkland, to ensure these areas receive comprehensive integrated management. There are no requirements for nearby land occupiers to control pest animals in the manner required for pest plants (although see Section 7.7.2 for rules relating to deer and goat farming in the Waitākere and Hunua Ranges). While there are no statutory rules for pest animal control by surrounding land occupiers, Council will prioritise such areas for support of voluntary action by individuals and community groups. See also sections 4.2.5 and 4.2.6.

*[43] 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. See Definitions section for further detail.*

### 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, particularly in Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges, to levels that will protect the ecological integrity of that parkland. Other pest animals (such as possums, deer and goats) may also be controlled on parkland, under region-wide programmes in section 7.7.



Te Rau Puriri Regional Park, South Head

### 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, and 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.



Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will manage feral pigs[44] (*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:** "protecting values in places" which means 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) | Feral pigs maintained below ecological damage thresholds in Te Wao Nui a Tiriwa / Waitākere, Kohukohunui / Hunua and other Significant Ecological Areas on parkland to enhance ecosystem function and resilience, and protect the values of that parkland. Zero or near zero density will be aimed for to reduce the spread of kauri dieback in the Waitākere Ranges, if feasible. |
| 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. |

[44] *A feral pig includes any pig that is not:*
*a) held behind effective fences or otherwise constrained; and*
*b) identified by ear tag*

### 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.

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 are also a vector of a wide range of agricultural diseases including canine distemper and bovine tuberculosis (TB).



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 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:** "protecting values in places" which means 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 or around Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and protect the values of the parkland. Priority given to protection of Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges, provided kauri dieback spread risk can be managed adequately. |
| 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 Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges and other biodiversity focus areas. |

### 7.5.1.3 Rats (*Rattus rattus, Rattus norvegicus, Rattus exulans*[45])

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.



Manaaki Whenua 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:** "protecting values in places" which means 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:**

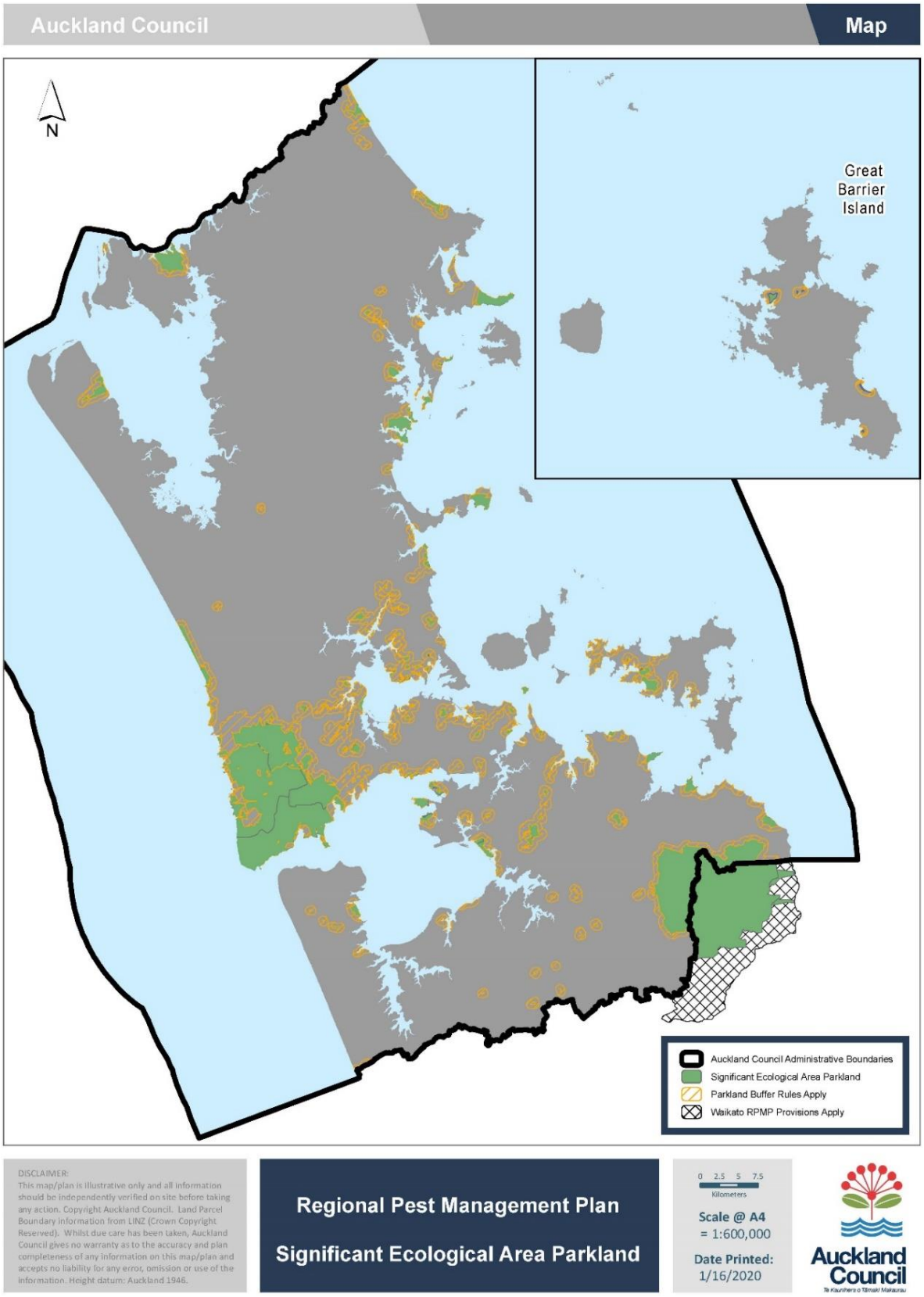
| | |
|---|---|
| Service delivery (control) | Manage the pest animal in or around Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and protect the values of the parkland. Priority given to protection of Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges, provided kauri dieback spread risk can be managed adequately. |
| 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 Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges and other biodiversity focus areas. |

[45] *Council acknowledges that kiore are culturally significant for mana whenua and the need for operational engagement with mana whenua where relevant.*

### 7.5.2 Wāhi whai tupu 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 c.500m buffer around parkland, focusing on Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges and other high ecological value parkland in the region (see Map 6 and Appendix 2). Land occupier obligations within the buffer area apply across all land tenures, including transport corridors and Crown land as well as private property. 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 occupiers in those buffer areas.

Operational implementation of buffer rules will involve a substantial community engagement and education component to encourage land occupiers to recognise and voluntarily remove pest plants, where possible delivered in collaboration with community conservation volunteers. This will be supported by rule enforcement when required. In contrast with the legacy approach of enforcement on receipt of complaint, enforcement in park buffers will be delivered in a systematic, planned manner, with sites phased in over the lifetime of the plan. If the buffer programme proves successful, and budget allows, similar buffer rules may be introduced to buffer more parks and/or priority Significant Ecological Areas on other land tenure, or to address further pest plant species, either in the RPMP 2029-2039, or sooner by partial plan review of the current RPMP. An operational review of the buffer programme will be conducted within five years of the plan becoming operative, to assess progress. Council will also annually assess progress in buffer implementation and provide updates to interested community groups. Council will actively seek opportunities to accelerate buffer implementation through collaboration with community groups and other interested parties.




**Map 6 Areas[46] where Parkland with Significant Ecological Areas site-led pest plant programmes apply.**

*[46] Note, see Appendix 2 for more detailed local maps. These parks and Good Neighbour Rule buffer areas can also be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*

### 7.5.2.1 Agapanthus[47]

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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.1.1 All occupiers of any transport corridor land that is located within the buffer area, as defined in Map 6, of any park which is managed for agapanthus, must destroy all agapanthus on that land prior to seed set.

Rule 7.5.2.1.1 is a good neighbour rule.

The purpose of rule 7.5.2.1.1 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.

[47] *For the purpose of this plan, agapanthus means:*
- *a) Prior to 1 April 2022, all Agapanthus praecox tall form cultivars (those exceeding 600mm height); and*
- *b) From 1 April 2022, all Agapanthus praecox cultivars, except for any low fertility cultivar which is determined by Auckland Council to produce less than 2% viable seeds compared to high fertility cultivars that were evaluated under the same conditions and location. Cultivars already meeting this test will be listed on the Auckland Botanic Gardens website* http://www.aucklandbotanicgardens.co.nz/

### Principal measures of achievement:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant on Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and 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 land 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.<br>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 occupiers of transport corridor land to control plants when instructed to prevent seed set. |

### 7.5.2.2 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.



**Objective:** over the duration of the plan Auckland Council will manage blue morning glory (*Ipomoea indica*) 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:** “protecting values in places” which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience and 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. |

### 7.5.2.3 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.3.1 All occupiers of any land that is located within the buffer area, as defined in Map 6, of any park which is managed for bushy asparagus and where Auckland Council has undertaken initial destruction of bushy asparagus on that land, must undertake follow up destruction of all bushy asparagus on that land.

Rule 7.5.2.3.1 is a good neighbour rule.

The purpose of rule 7.5.2.3.1 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:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant on Significant Ecological Areas on parkland and in surrounding buffer land to levels that enhance ecosystem function and resilience, and 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 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.<br>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 occupiers to destroy plants when instructed. |

### 7.5.2.4 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.4.1 All occupiers of any land that is located within the buffer area, as defined in Map 6, of a park which is managed for climbing asparagus and where Auckland Council has undertaken initial destruction of climbing asparagus on that land, must undertake follow up destruction of all climbing asparagus on that land.

Rule 7.5.2.4.1 is a good neighbour rule.

The purpose of rule 7.5.2.4.1 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 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 enhance ecosystem function and resilience, and 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 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.<br>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 occupiers to destroy plants when instructed. |

### 7.5.2.5 Coast banksia (*Banksia integrifolia*)

Also known as: Coastal banksia

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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience, and 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.<br>Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around biodiversity focus areas. |

### 7.5.2.6 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.



**Objective:** over the duration of the plan Auckland Council will manage English ivy (*Hedera helix* subsp. *helix*) 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:** “protecting values in places” which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience and 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. |

### 7.5.2.7 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:** “protecting values in places” which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.7.1 All occupiers of any transport corridor land that is located within the buffer area, as defined in Map 6, of a park which is managed for Formosa lily, must destroy all Formosa lily on that land prior to seed set.

Rule 7.5.2.7.1 is a good neighbour rule.

The purpose of rule 7.5.2.7.1 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:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant on Significant Ecological Areas on Parkland to levels that enhance ecosystem function and resilience, and 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 occupier responsibility to control the pest plant pursuant to the rules in this section.<br>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.<br>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 occupiers of transport corridor land to destroy plants when instructed. |

### 7.5.2.8 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.



**Objective:** over the duration of the plan Auckland Council will manage giant reed (*Arundo donax*) 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience and 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. |

### 7.5.2.9 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.



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

**Intermediate outcome:** “protecting values in places” which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

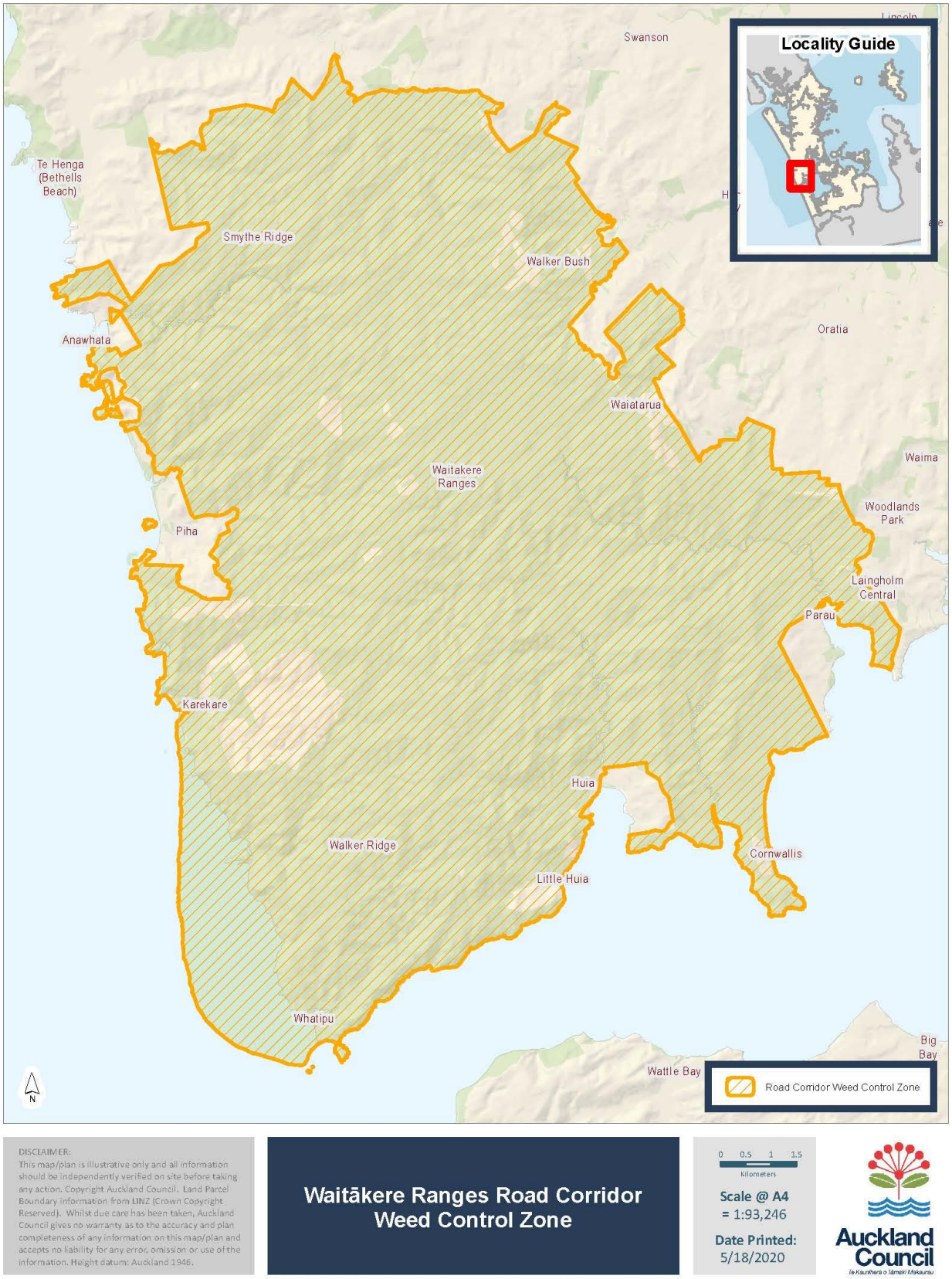
7.5.2.9.1 All occupiers of any transport corridor land that is located within the Waitākere Ranges road corridor weed control zone, as defined in Map 7, must destroy all gorse on that transport corridor land.

The purpose of rule 7.5.2.9.1 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.

### Principal measures of achievement:

| | |
|---|---|
| Service delivery (control) | Manage gorse in priority low stature ecosystems such as dunes and wetlands, and where gorse may pose a significant fire risk to the ecology of the site, within the Waitākere Ranges and other Significant Ecological Areas on parkland, to levels that enhance ecosystem function and resilience, and 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 occupier responsibility to control the pest plant pursuant to the rules in this section.<br>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.<br>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 occupiers of transport corridor land to destroy plants when instructed. |

Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Waitākere Ranges Road Corridor Weed Control Zone**

0 0.5 1 1.5
Kilometers
Scale @ A4 = 1:93,246
Date Printed: 5/18/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Map 7 Gorse and pampas rules apply to transport corridor land within the mapped area of Waitākere Ranges regional parkland.

### 7.5.2.10 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.



**Objective:** over the duration of the plan Auckland Council will manage Japanese honeysuckle (*Lonicera japonica*) 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience and 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. |

### 7.5.2.11 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience, and 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. |

### 7.5.2.12 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience, and 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.<br>Provide advice and support to community groups undertaking pest plant control, with priority given to activity in or around biodiversity focus areas. |

### 7.5.2.13 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, mānawa/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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.13.1 All occupiers of any land that is located within the buffer area, as defined in Map 6, of a park which is managed for moth plant, must destroy all moth plant on that land.

Rule 7.5.2.13.1 is a good neighbour rule.

The purpose of rule 7.5.2.13.1 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:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant within Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and 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 occupier responsibility to control the pest plant pursuant to the rules in this section, to enhance ecosystem function and resilience, and protect the values of nearby parkland.<br>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 occupiers to destroy plants when instructed. |

### 7.5.2.14 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.



**Objective:** over the duration of the plan Auckland Council will manage pampas (*Cortaderia jubata* and *C. selloana*) 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:** “protecting values in places” which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.14.1 All occupiers of any transport corridor land that is located within the Waitākere Ranges road corridor weed control zone, as defined in Map 7, must destroy all pampas on that transport corridor land.

The purpose of rule 7.5.2.14.1 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.

### Principal measures of achievement:

| | |
|---|---|
| Service delivery (control) | Manage pampas in priority coastal and wetland ecosystems and where pampas may pose a fire risk to the ecology of the site, within the Waitākere Ranges and other Significant Ecological Areas on parkland, to levels that enhance ecosystem function and resilience, and 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 occupier responsibility to control the pest plant pursuant to the rules in this section.<br>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.<br>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 occupiers of transport corridor land to destroy plants when instructed. |

### 7.5.2.15 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.



**Objective:** over the duration of the plan Auckland Council will manage periwinkle (*Vinca major*) 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around 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 enhance ecosystem function and resilience and 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. |

### 7.5.2.16 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on Parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.16.1 All occupiers of any land that is located within the buffer area, as defined in Map 6, of a park which is managed for rhamnus, must destroy all rhamnus on that land.

Rule 7.5.2.16.1 is a good neighbour rule.

The purpose of rule 7.5.2.16.1 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:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant on Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and 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 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.<br>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 occupiers to destroy plants when instructed. |

### 7.5.2.17 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:** “protecting values in places” which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.17.1 All occupiers of any land that is located within the buffer area, as defined in Map 6, of a park which is managed for wild ginger, must destroy all wild ginger on that land.

Rule 7.5.2.17.1 is a good neighbour rule.

The purpose of rule 7.5.2.17.1 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:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant on Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and 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 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.<br>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 occupiers to destroy plants when instructed. |

### 7.5.2.18 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:** "protecting values in places" which means that the subject, that is capable of causing damage to Significant Ecological Areas on parkland, is controlled within and around that parkland to an extent that protects the values of that parkland.

**Rules:**

7.5.2.18.1 All occupiers of any land that is located within the buffer area, as defined in Map 6, of a park which is managed for woolly nightshade, must destroy all woolly nightshade on that land.

Rule 7.5.2.18.1 is a good neighbour rule.

The purpose of rule 7.5.2.18.1 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:

| | |
|---|---|
| Service delivery (control) | Manage the pest plant within Significant Ecological Areas on parkland to levels that enhance ecosystem function and resilience, and 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 occupier responsibility to control the pest plant pursuant to the rules in this section, to enhance ecosystem function and resilience, and protect the values of nearby parkland. |
| Education and advice | Provide information and advice on pest plant identification, impacts and control.<br>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 occupiers to destroy plants when instructed. |

### 7.5.3 Wāhi whai tupu 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 preceeding section, the following programmes do not provide for management in buffer areas around parkland. These species have been included in recognition of their particulalrly problematic nature across the park network, but this Regional Pest Management Plan programme does not preclude Council undertaking control of other plant species, or on parkland not included within this statutory programme, under Council's general role as a land manager.

**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:** "protecting values in places" which means 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 enhance ecosystem function and resilience, and 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.<br>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 cunninghamiana*)



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.

### 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.



### 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.



### 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.

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



Also known as: lilly pilly

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.

### 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.



### 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 writing[48], 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 / Hauraki Gulf section for Tīkapa Moana o Hauraki / Hauraki Gulf exclusion zone (section 7.1.3.1) and Sustained Control programme for the remainder of the region (section 7.7.5.2).

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 Map 8) 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:** "exclusion" which means to prevent the establishment of kauri dieback within kauri dieback exclusion zones.

**Rules:**

7.5.4.1.1 No person shall distribute, move or release kauri dieback disease in Auckland.

7.5.4.1.2 No person shall move soil, or plants, or animals contaminated with soil, or goods contaminated with soil, into the Hunua kauri dieback exclusion zone

[48] *9 October 2017*

(as identified in Map 8), unless sourced from an Auckland Council approved supplier[49].

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

The purpose of rule 7.5.4.1.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

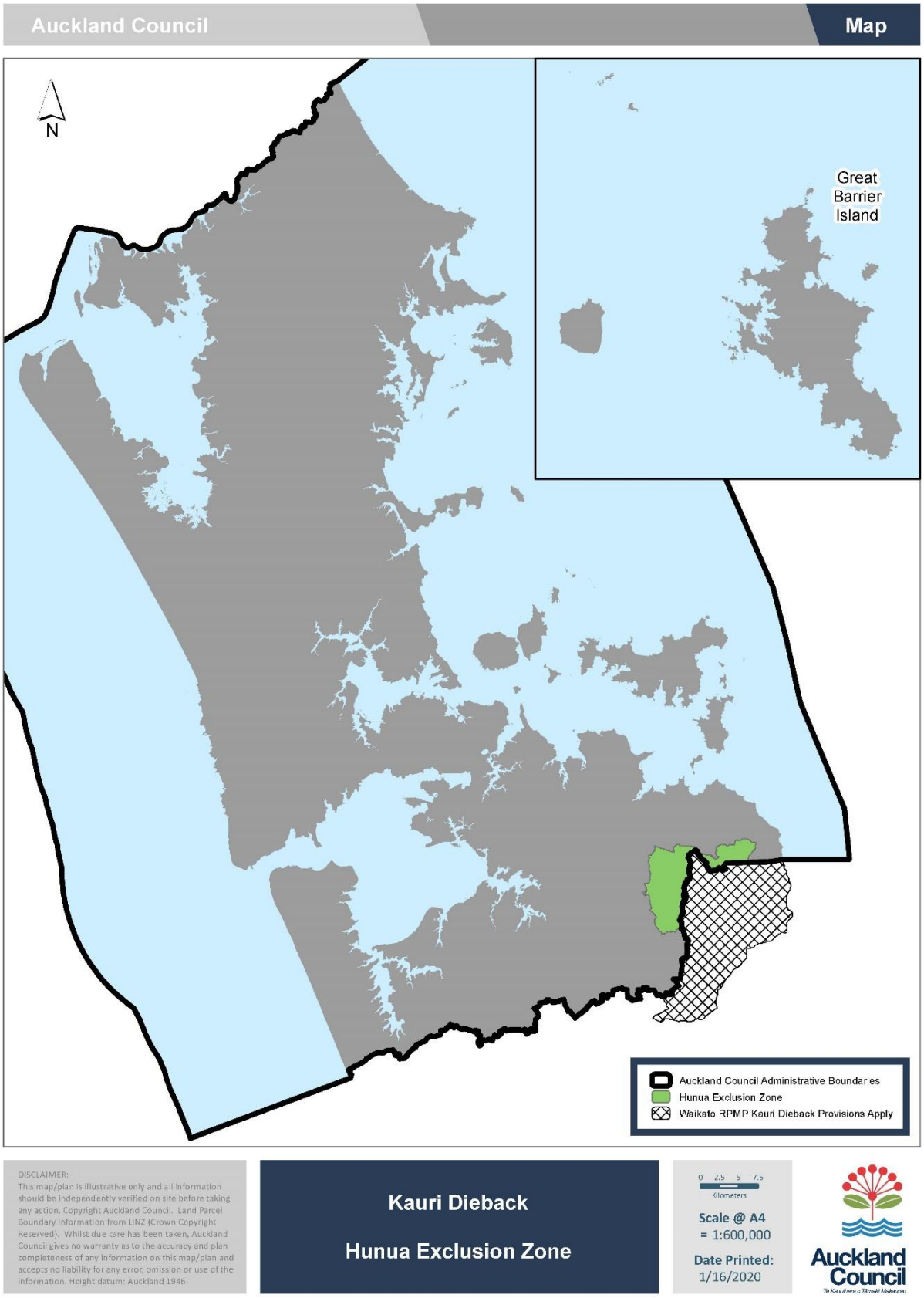
The purpose of rule 7.5.4.1.2 is to regulate the movement of goods that may contain or harbour the pest or otherwise pose a risk of spreading the pest.

Rule 7.5.4.1.2 comes into force on 1 April 2020.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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. Specifically, improve understanding of disease absence (or presence) in non-symptomatic areas.<br>Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across kauri lands. |
| 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.<br>Persons moving goods into Kohukohunui / Hunua Regional Park 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. |

[49] *An approved supplier is any supplier certified under the New Zealand Plant Production Biosecurity Scheme core standard and kauri dieback schedule https://nzppi.co.nz/advocacy/107-696/protecting-our-nurseries-and-industry-from-biosecurity-hazards*



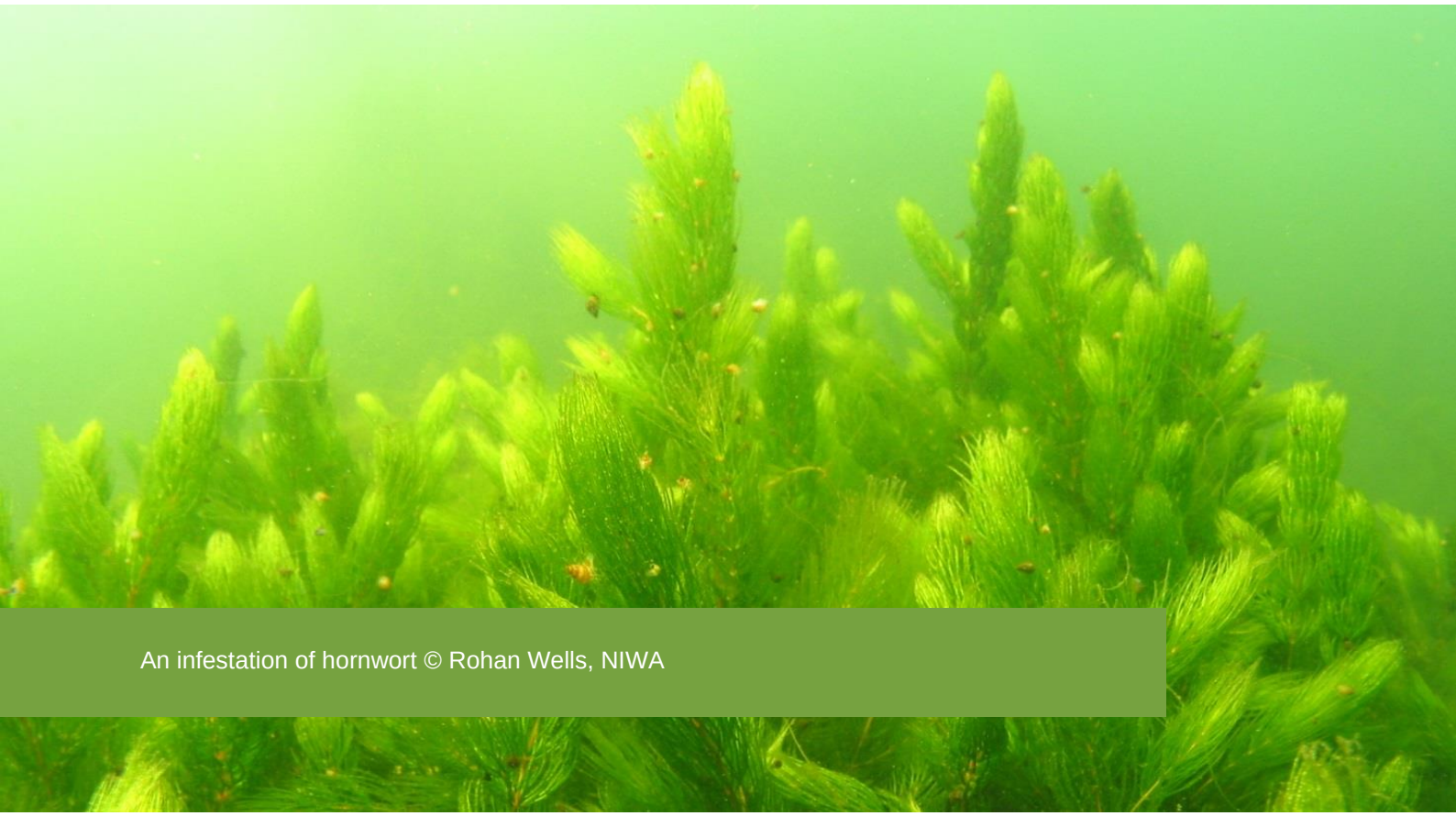

**Map 8. Kohukohunui / Hunua Ranges Regional Park kauri dieback exclusion zone[50].**

[50] *Note: the Hunua exclusion area can also be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*

## 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 tupu 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. Other pest species may also be managed at these sites if required over the lifetime of the plan. These programmes will take an adaptive management approach, informed by research and monitoring of progress towards outcomes (biodiversity and water quality) (see also 4.2.8).



An infestation of hornwort © Rohan Wells, NIWA

### 7.6.1 Wāhi whai tupu 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:** “protecting values in places” which means that the subject, that is capable of causing damage to lakes Tomarata and Rototoa, 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 lakes Tomarata and Rototoa to levels that enhance ecosystem function and resilience, and 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. Monitor progress towards outcomes sought at sites (biodiversity and water quality) to inform management approaches. |
| Education and advice | Provide information and advice on pest plant identification, impacts and control.<br>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:** “protecting values in places” which means that the subject, that is capable of causing damage to lakes Tomarata and Rototoa, 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 lakes Tomarata and Rototoa to levels that enhance ecosystem function and resilience, and 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. Monitor progress towards outcomes sought at sites (biodiversity and water quality) to inform management approaches. |
| Education and advice | Provide information and advice on pest animal identification, impacts and control.<br>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), īnanga, galaxiids and paraki/smelt through predation, aggressive attacks and competition for prey.

### Rudd (*Scardinius erythrophthalmus*)



Stephen Moore

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 paraki/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.

### 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

Ahakoa 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.



Tāmaki Makaurau Auckland CBD and beyond.

## 7.7.1 Te noho wātea o te kararehe 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 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:** "exclusion" which means to prevent the establishment of rooks in the Tāmaki Makaurau / Auckland region.

**Rules:**

7.7.1.1.1 No person shall cause to breed any rook within the Auckland region.

7.7.1.1.2 No person shall distribute or release (or cause to be released or distributed), any rook within the Auckland region.

7.7.1.1.3 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 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 kāmahi 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:** "exclusion" which means to prevent the establishment of wallabies in the Tāmaki Makaurau / Auckland region, other than the existing population on Kawau Island.

**Rules:**

7.7.1.2.1 No person shall cause to breed any wallaby within the Auckland region.

7.7.1.2.2 No person shall distribute or release (or cause to be released or distributed), any wallaby within the Auckland region.

7.7.1.2.3 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 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. |

See also section 7.3 for Kawau eradication.

## 7.7.2 Aukati haere 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. While taking a regional approach in the long-term, containment strategies for these species will also focus on prioritising significant sites first, notably Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges.

### 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/patete, three-finger, horoeka/lancewood, and mouku/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 deer[51] (*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:** "progressive containment" which means to contain or reduce the geographic distribution of feral deer in the Tāmaki Makaurau / Auckland region, over time.

**Rules:**

7.7.2.1.1 No person shall release from containment any deer in any part of the Auckland region.

7.7.2.1.2 No person shall move or distribute any deer into the Hauraki Gulf Controlled Area, Hunua and Waitākere Ranges (as defined in Map 9), or onto or between any of the areas.

[51] *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.*

The purpose of rules 7.7.2.1.1 and 7.7.2.1.2 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.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Provide support to the Department of Conservation as the lead agency in managing deer in the region.<br>Enter any property within the specified geographic area of the programme and carry out control work on this species, prioritising control operations by their relative contribution to 1) preventing establishment of new deer species in the region (e.g. Sika), 2) excluding deer from Kohukohunui / Hunua and Te Wao Nui a Tiriwa / Waitākere, 3) protecting other biodiversity focus areas and 4) protecting the deer-free status of Northland. |
| 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 domestic ownership and containment as well as identification and impacts of the pest animal.<br>Encourage reporting of sightings of feral deer.<br>Provide advice and support to community groups undertaking pest animal control. |
| Enforcement | Enforce prohibition on release.<br>Enforce prohibition on possession and movement of deer within Kohukohunui / Hunua Ranges and Te Wao Nui a Tiriwa / Waitākere Ranges. |

See also section 7.1.1 for Hauraki Gulf Controlled Area Exclusion programme.

### 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 goats[52] (*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:** "progressive containment" which means to contain or reduce the geographic distribution of feral goats in the Tāmaki Makaurau / Auckland region, over time.

**Rules:**

7.7.2.2.1 No person shall release from containment any goat in any part of the Auckland region.

7.7.2.2.2 No person shall move or distribute any goat into the Hauraki Gulf Controlled Area or the Hunua and Waitākere Ranges (as defined in Map 9), or onto or between any of the areas, unless the goat is a British alpine, toggenburg, nubian, saanen, or sable dairy goat.

7.7.2.2.3 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 Map 9), except in relation to the British alpine, toggenburg, nubian, saanen, or sable dairy goat.

7.7.2.2.4 Any person farming or keeping a goat in accordance with rule 7.7.2.2.3 must:

a) meet the minimum goat fencing requirement; or
b) tether any goat not contained within fencing that meets the minimum fencing requirement.

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

[52] *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 7.7.2.2.1 and 7.7.2.2.2 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rules 7.7.2.2.3 and 7.7.2.2.4 is to regulate activities that may affect measures taken to implement the plan.

**Minimum goat fencing requirement means:**

1. In relation to an existing fence with conventional post, wire and batten, a fence that is:
    a. a minimum overall fence height of 1175 mm; and
    b. a maximum of 5 m spacing between posts; and
    c. a minimum of 7 wires with maximum spacing of 200 mm between top wires; and
    d. spaces between wires gradually decreasing to 100 mm between bottom two wires; and,
    e. the bottom wire is a maximum of 100 mm above the ground; and
    f. a minimum of 1m spacing between battens; and
    g. all wires must be strained to a minimum 150 kgs of tension; and
    h. all materials are structurally sound; and
    i. swing or driven footing in all dips or hollows; and
    j. which has been topped up with a top up 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 50 mm must be installed beside any existing posts to attach netting to; and
        v. minimum top up 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.
2. In relation to a new conventional post wire and batten fence, a fence that has:
    a. minimum overall fence height 1550 mm; and
    b. any wires are minimum gauge of 2.5 mm high tensile galvanised; and
    c. the bottom wire is a maximum of 70 mm above the ground along a bulldozed line or equivalent[53]; and
    d. any end strainers are 3 m long rounds with minimum 200 mm diameter; and

[53] *Note that bulldozing may carry additional risk of spreading kauri dieback disease. Equipment should be clean and environmental disturbance in fence construction should be minimized.*

e. any angle strainers are 2.7 m long rounds with minimum 200 mm diameter; and

f. no internal stays; and

g. any posts are 2.4 m long rounds with minimum diameter 120 mm; and

h. a maximum spacing between posts of

i. 5 metres on land with less than 30 degree ground slope; or

ii. 4 metres on land with ground slope between 30 degrees to less than 45 degrees; or

iii. 3 metres on land with ground slope of 45 degrees or more; and

i. swing or driven footing in all dips or hollows; and

j. is constructed alongside any water body with an appropriate setback sufficient to avoid any slumping which may cause a breach of the fencing standard; and

k. two electrified outriggers at 300mm and 1200mm spacing; and

l. a minimum of 1m spacing between battens; and

m. minimum batten dimensions are 1500 x 50 x 40 mm; and

n. 11 wires with a maximum spacing from bottom to top of 114mm, 114mm, 127mm, 139mm, 165mm, 178mm, 178mm, 178mm, 178mm, 178mm; and

o. all wires must be strained to a minimum 150 kilograms of tension.

3. In relation to a new netting fence, a fence that has:

a. minimum overall fence height 1550 mm; and

b. been constructed of tight lock deer netting; and

c. no internal stays; and

d. any stay wires are 300mm wide; and

e. a minimum of 11 line wires; and

f. the bottom of the netting is a maximum of 70 mm above the ground; and

g. any end strainers are 3 m long rounds with minimum 200 mm diameter; and

h. any angle strainers are 2.7 m long rounds with minimum 200 mm diameter; and

i. swing or driven footing in all dips or hollows; and

j. any posts are 2.4 m long rounds with minimum diameter 120 mm; and

k. a maximum spacing between posts of

i. 5 metres on land with less than 30 degree ground slope; or

ii. 4 metres on land with ground slope between 30 degrees to less than 45 degrees; or

iii. 3 metres on land with ground slope of 45 degrees or more.

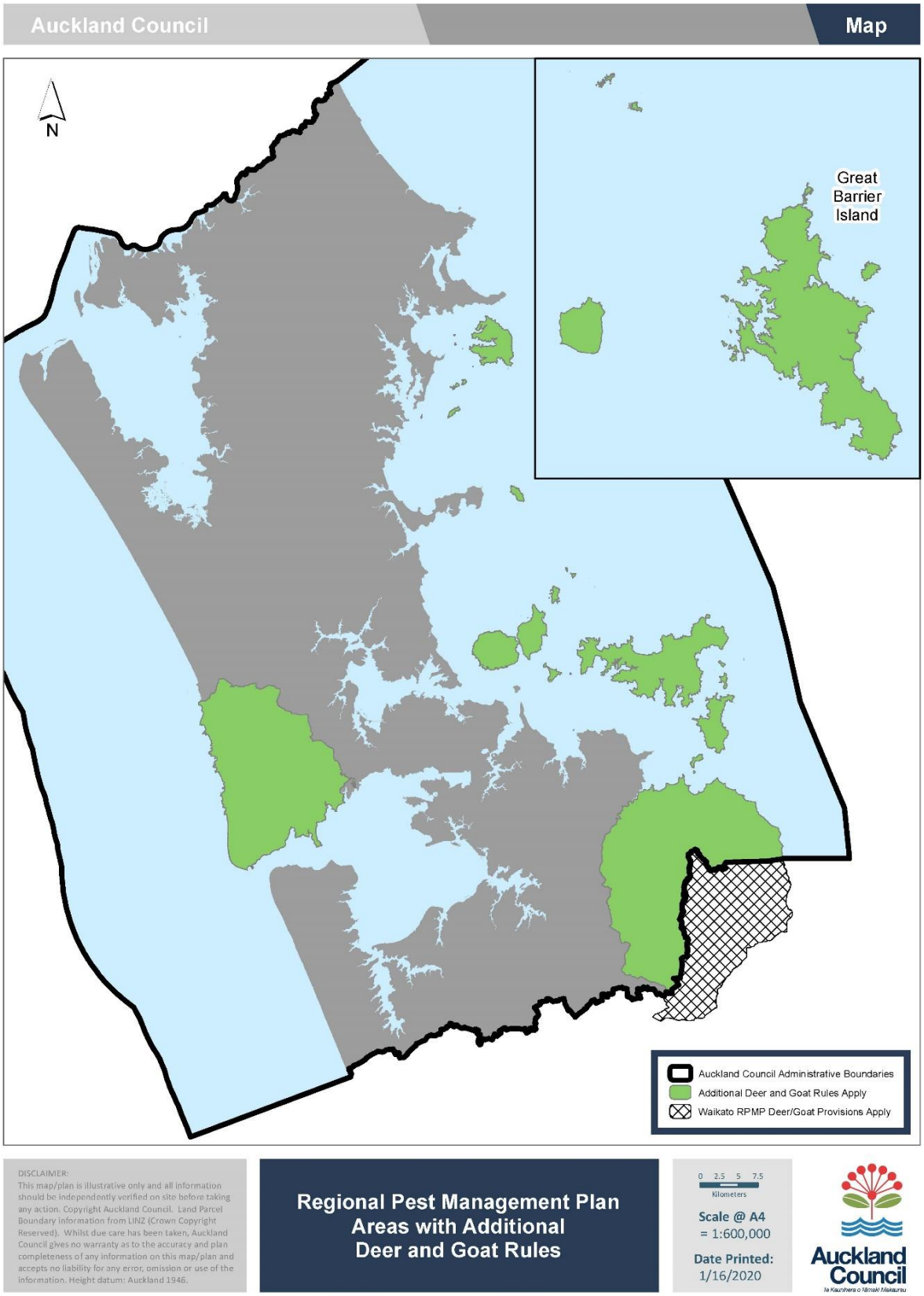
4. In relation to any gate, whether new or top-up, a gate that is:
    a. the same height as the adjoining fence; and
    b. the bottom of the gate is a maximum of 100 mm above the ground at all points including over any ditches or hollows; and
    c. all components are structurally sound.
5. In relation to any fence across any water body, that fence must have a flood gate that:
    a. is constructed of H3 treated 100mm x 50mm timber; and
    b. is suspended from an overhead wire or rail in such a way that the spacings will allow the passage of water but will not allow stock including goats to pass through; and
    c. swings freely; and
    d. is panelled in partitions; and
    e. has a cross-bar positioned in the top third of the floodgate; and
    f. is on the downstream side of any culvert.

Wire netting may not be used in floodgate construction. Flood gates may not be a single solid panel.

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 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, prioritising control operations by their relative contribution to excluding feral goats from Kohukohunui / Hunua and Te Wao Nui a Tiriwa / Waitākere, and secondarily by protecting other biodiversity focus areas. |
| Education and advice | Provide information and advice on pest animal identification, impacts and control.<br>Provide information and advice on conditions relating to keeping of goats.<br>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.<br>Enforce conditions on movement of goats to or within the Hauraki Gulf Controlled Area.<br>Enforce Sections 52 and 53 of the Biosecurity Act, preventing the breeding, exhibition, sale and distribution of the pest. |




**Map 9. Areas where additional rules apply as part of the feral deer (7.7.2.1) and feral goat (7.7.2.2) progressive containment programmes[54].**

[54] *Note: these areas can also be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*

### 7.7.2.3 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 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 Tāmaki Makaurau / Auckland 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:** “progressive containment” which means to contain or reduce the geographic distribution of possums, in the Tāmaki Makaurau / Auckland region, over time.

**Rules:**

7.7.2.3.1 No person shall cause to breed any possum within the Auckland region.

7.7.2.3.2 No person shall distribute or release (or cause to be released or distributed), any possum within the Auckland region.

7.7.2.3.3 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 rule 7.7.2.3.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.2.3.2 and 7.7.2.3.3 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 within the specified geographic area of the programme and carry out control work on this species. Control to be prioritised to rural areas of high biodiversity value, including the Waitākere Ranges, or strategic geography (e.g. peninsulas). Set up and maintain possum control in staged blocks, aiming for at or below 2-5% Residual Trap Catch, depending on the values being protected at the site, and specifically aiming for below 2% in the Waitākere Ranges. Control may also be delivered at smaller scale in high biodiversity value urban 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 animal. |
| Education and advice | Provide information and advice on pest animal identification, impacts and control.<br>Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around Te Wao Nui a Tiriwa / the Waitākere Ranges and Kohukohunui / Hunua Ranges and other biodiversity focus areas, or in defendable or strategic geographic locations such as peninsulas, islands and corridors. |

See also section 7.1.2.9 for Hauraki Gulf Controlled Area site-led programme, and section 7.3 for Kawau eradication.

### 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:** "progressive containment" which means to contain or reduce the geographic distribution of sulphur-crested cockatoos in the Tāmaki Makaurau / Auckland region, over time.

**Rules:**

7.7.2.4.1 No person shall cause to breed any sulphur-crested cockatoo within the Auckland region.

7.7.2.4.2 No person shall distribute or release (or cause to be released or distributed), any sulphur-crested cockatoo within the Auckland region.

7.7.2.4.3 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 rule 7.7.2.4.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.2.4.2 and 7.7.2.4.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.2.4.1, 7.7.2.4.2 and 7.7.2.4.3 come into force on 1 April 2021.

### Principal measures of achievement:

| | |
|---|---|
| Service delivery | Progressively control naturalised populations of sulphur-crested cockatoos within the region, with priority given to protection of Te Wao Nui a Tiriwa / Waitākere Ranges and other 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

## 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. In some instances, Council may also undertake direct control of pest animals as well, generally aligned with biodiversity focus 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:** “sustained control” which means to provide for ongoing control of Argentine ants, to reduce their impacts and spread to other properties.

### Rules:

7.7.3.1.1 No person shall cause to breed any Argentine ant within the Auckland region.

7.7.3.1.2 No person shall distribute or release (or cause to be released or distributed), any Argentine ant within the Auckland region.

7.7.3.1.3 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 rule 7.7.3.1.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.1.2 and 7.7.3.1.3 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. |

See also section 7.1.2.1 for Hauraki Gulf Controlled Area site-led programme, including eradication on Aotea and Kawau.

### 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:** “sustained control” which means to provide for ongoing control of bearded dragons, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.2.1 No person shall cause to breed any bearded dragon within the Auckland region.

7.7.3.2.2 No person shall distribute or release (or cause to be released or distributed), any bearded dragon within the Auckland region.

7.7.3.2.3 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 rule 7.7.3.2.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.2.2 and 7.7.3.2.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.2.1, 7.7.3.2.2 and 7.7.3.2.3 come into force on 1 April 2021.

### Principal measures of achievement:

| | |
|---|---|
| Service delivery | Council may undertake incursion responses to prevent population establishment outside of captivity. |
| 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 infestations outside of containment and status of existing or historical sites. |
| 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 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:** "sustained control" which means to provide for ongoing control of blotched blue tongued skinks, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.3.1 No person shall cause to breed any blue tongued skink within the Auckland region.

7.7.3.3.2 No person shall distribute or release (or cause to be released or distributed), any blue tongued skink within the Auckland region.

7.7.3.3.3 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 rule 7.7.3.3.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.3.2 and 7.7.3.3.3 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. Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations outside of containment and status of existing or historical sites. |
| 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 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:** "sustained control" which means to provide for ongoing control of brown bullhead catfish, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.4.1 No person shall distribute or release (or cause to be released or distributed) any brown bullhead catfish in any part of the Auckland region.

7.7.3.4.2 No person may fish for brown bullhead catfish in High Conservation Value water bodies or their catchments (see Appendix 3), 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 7.7.3.4.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.3.4.2 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.<br>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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme and section 7.6.2 for priority lakes site-led programme.

### 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:** "sustained control" which means to provide for ongoing control of Canadian geese, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.5.1 No person shall cause to breed any Canadian goose within the Auckland region.

7.7.3.5.2 No person shall distribute or release (or cause to be released or distributed), any Canadian goose within the Auckland region.

7.7.3.5.3 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 rule 7.7.3.5.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.5.2 and 7.7.3.5.3 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.6 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:** "sustained control" which means to provide for ongoing control of Darwin's ants, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.6.1 No person shall cause to breed any Darwin's ant within the Auckland region.

7.7.3.6.2 No person shall distribute or release (or cause to be released or distributed), any Darwin's ant within the Auckland region.

7.7.3.6.3 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 rule 7.7.3.6.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.6.2 and 7.7.3.6.3 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. |

See also section 7.1.2.3 for Hauraki Gulf Controlled Area site-led programme.

### 7.7.3.7 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, tōtara and pōhutukawa, and nectar from pūriri 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:** "sustained control" which means to provide for ongoing control of eastern rosella, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.7.1 No person shall cause to breed any eastern rosella within the Auckland region.

7.7.3.7.2 No person shall distribute or release (or cause to be released or distributed), any eastern rosella within the Auckland region.

7.7.3.7.3 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 rule 7.7.3.7.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.7.2 and 7.7.3.7.3 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.8 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:** "sustained control" which means to provide for ongoing control of eastern water dragons, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.8.1 No person shall cause to breed any eastern water dragon within the Auckland region.

7.7.3.8.2 No person shall distribute or release (or cause to be released or distributed), any eastern water dragon within the Auckland region.

7.7.3.8.3 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 rule 7.7.3.8.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.8.2 and 7.7.3.8.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.8.1, 7.7.3.8.2 and 7.7.3.8.3 come into force on 1 April 2021.

### 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 infestations outside of containment and status of existing or historical sites. |
| 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.9 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, and 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.



Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will sustainably control feral pigs[55] (*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:** "sustained control" which means to provide for ongoing control of feral pigs, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.9.1 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 7.7.3.9.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

[55] *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 release. |
| Service delivery | Discretion to undertake feral pig control anywhere in region if required to protect biodiversity focus areas. |

See also section 7.1.2.4 for Hauraki Gulf Controlled Area site-led programme.

### 7.7.3.10 Galah (*Eolophus roseicapillus*)

Galahs are colourful parrots weighing up to 325g, with white crowns, grey wings and pink chests. They are ground feeding granivores, 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:** "sustained control" which means to provide for ongoing control of galahs, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.10.1 No person shall cause to breed any galah within the Auckland region.

7.7.3.10.2 No person shall distribute or release (or cause to be released or distributed), any galah within the Auckland region.

7.7.3.10.3 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 rule 7.7.3.10.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.10.2 and 7.7.3.10.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.10.1, 7.7.3.10.2 and 7.7.3.10.3 come into force on 1 April 2021.

### 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.11 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:** "sustained control" which means to provide for ongoing control of gambusia, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.11.1 No person shall distribute or release (or cause to be released or distributed) any gambusia in any part of the Auckland region.

7.7.3.11.2 No person may fish for gambusia in High Conservation Value water bodies or their catchments (see Appendix 3), 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 7.7.3.11.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.3.11.2 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.<br>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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme and section 7.6.2 for priority lakes site-led programme.

### 7.7.3.12 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 goldfish[56] (*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:** "sustained control" which means to provide for ongoing control of goldfish, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.12.1 No person shall release from containment (or cause to be released) any goldfish within the Auckland region.

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

The purpose of rule 7.7.3.12.1 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

[56] *A pest goldfish means any goldfish that is not:*
*a) held in effective containment on private land; or*
*b) otherwise constrained in an enclosed water body on private land.*

### 7.7.3.13 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:** "sustained control" which means to provide for ongoing control of hedgehogs, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.13.1 No person shall cause to breed any hedgehog within the Auckland region.

7.7.3.13.2 No person shall distribute or release (or cause to be released or distributed), any hedgehog within the Auckland region.

7.7.3.13.3 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 rule 7.7.3.13.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.13.2 and 7.7.3.13.3 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.<br>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. |

See also section 7.1.2.5 for Hauraki Gulf Controlled Area site-led programme.

### 7.7.3.14 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:** "sustained control" which means to provide for ongoing control of Indian ring-necked parakeets, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.14.1 No person shall cause to breed any Indian ring-necked parakeet within the Auckland region.

7.7.3.14.2 No person shall distribute or release (or cause to be released or distributed), any Indian ring-necked parakeet within the Auckland region.

7.7.3.14.3 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 rule 7.7.3.14.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.14.2 and 7.7.3.14.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.14.1, 7.7.3.14.2 and 7.7.3.14.3 come into force on 1 April 2021.

### 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.15 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:** "sustained control" which means to provide for ongoing control of koi carp, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.15.1 No person shall distribute or release (or cause to be released or distributed) any koi carp in any part of the Auckland region.

7.7.3.15.2 No person may fish koi carp in High Conservation Value water bodies or their catchments (see Appendix 3), 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 7.7.3.15.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.3.15.2 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.<br>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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme and section 7.6.2 for priority lakes site-led programme.

### 7.7.3.16 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:** "sustained control" which means to provide for ongoing control of magpies, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.16.1 No person shall cause to breed any magpie within the Auckland region.

7.7.3.16.2 No person shall distribute or release (or cause to be released or distributed), any magpie within the Auckland region.

7.7.3.16.3 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 rule 7.7.3.16.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.16.2 and 7.7.3.16.3 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. |

### 7.7.3.17 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:** "sustained control" which means to provide for ongoing control of monk parakeets, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.17.1 No person shall cause to breed any monk parakeet within the Auckland region.

7.7.3.17.2 No person shall distribute or release (or cause to be released or distributed), any monk parakeet within the Auckland region.

7.7.3.17.3 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 rule 7.7.3.17.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.17.2 and 7.7.3.17.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.17.1, 7.7.3.17.2 and 7.7.3.17.3 come into force on 1 April 2021.

### 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.18 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.



Ngā 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:** "sustained control" which means to provide for ongoing control of mice, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.18.1 No person shall release (or cause to be released), 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 7.7.3.18.1 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.<br>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 release of the pest. |

See also section 7.1.2.6 for Hauraki Gulf Controlled Area site-led programme.

### 7.7.3.19 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 are also a 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:** "sustained control" which means to provide for ongoing control of mustelids, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.19.1 No person shall cause to breed any mustelid within the Auckland region.

7.7.3.19.2 No person shall distribute or release (or cause to be released or distributed), any mustelid within the Auckland region.

7.7.3.19.3 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 rule 7.7.3.19.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.19.2 and 7.7.3.19.3 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.<br>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. |
| Service delivery (control) | Discretion to undertake control anywhere in region if required to protect biodiversity focus areas. |

See also section 7.1.2.7 for Hauraki Gulf Controlled Area site-led programme, and sections 7.3 and 7.4 for eradications on Kawau and Waiheke.

### 7.7.3.20 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 and 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:** "sustained control" which means to provide for ongoing control of mynas, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.20.1 No person shall cause to breed any myna within the Auckland region.

7.7.3.20.2 No person shall distribute or release (or cause to be released or distributed), any myna within the Auckland region.

7.7.3.20.3 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 rule 7.7.3.20.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.20.2 and 7.7.3.20.3 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. |

### 7.7.3.21 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), īnanga, galaxiids and paraki/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:** "sustained control" which means to provide for ongoing control of perch, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.21.1 No person shall distribute or release (or cause to be released or distributed) any perch in any part of the Auckland region.

7.7.3.21.2 No person may fish for perch in any High Conservation Value water body or their catchments (see Appendix 3) in the Auckland region.

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

The purpose of rule 7.7.3.21.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.3.21.2 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.<br>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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme and section 7.6.2 for priority lakes site-led programme.

### 7.7.3.22 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 100m$^2$. Such high population densities can result in plague skinks out-competing native reptiles, particularly native mokomoko kapa/ 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:** "sustained control" which means to provide for ongoing control of plague skinks, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.22.1 No person shall cause to breed any plague skink within the Auckland region.

7.7.3.22.2 No person shall distribute or release (or cause to be released or distributed), any plague skink within the Auckland region.

7.7.3.22.3 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 rule 7.7.3.22.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.22.2 and 7.7.3.22.3 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. |

See also section 7.1.2.8 for Hauraki Gulf Controlled Area site-led programme.

### 7.7.3.23 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 composition. As prey species, they indirectly contribute to increased predation pressure on native species by supporting populations of introduced predators, including unowned 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.



Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will sustainably manage pest rabbits[57] 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:** "sustained control" which means to provide for ongoing management of pest rabbits and hares, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.23.1 No person shall abandon, or cause to be abandoned, any rabbit or hare within the Auckland region.

The purpose of rule 7.7.3.23.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

[57] *Pest rabbit means any rabbit within the Auckland region that is not:*
*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 calcivirus biocontrol within the region. Undertake site-led control to protect biodiversity focus areas. |
| Education and advice | Provide information and advice on identification, impacts and control of the pest animal.<br>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 defendable or strategic geographic locations such as peninsulas, islands and corridors.<br>Provide information and advice on responsible pet ownership (including identity of breeds exempt from pest status). |
| Enforcement | Enforce restriction on the sale, breeding, distribution and exhibition of the pest and prohibition on release from containment. |

See also section 7.1.2.10 for Hauraki Gulf Controlled Area site-led programme.

### 7.7.3.24 Rainbow lorikeet (*Trichoglossus haematodus*)

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 Tīkapa Moana / 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 haematodus*) 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:** "sustained control" which means to provide for ongoing control of rainbow lorikeets, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.24.1 No person shall cause to breed any rainbow lorikeet within the Auckland region.

7.7.3.24.2 No person shall distribute or release (or cause to be released or distributed), any rainbow lorikeet within the Auckland region.

7.7.3.24.3 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 rule 7.7.3.24.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.24.2 and 7.7.3.24.3 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.25 Rats: ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), kiore[58] (*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, Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will sustainably manage pest rats[59] (*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:** "sustained control" which means to provide for ongoing control of pest rats, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.25.1 No person shall release from containment (or cause to be released), any rat within the Auckland region.

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

The purpose of rule 7.7.3.25.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

[58] *Council acknowledges that kiore are culturally significant for mana whenua and the need for operational engagement with mana whenua where relevant.*

[59] A pest rat includes:

a) any *Rattus rattus* or *Rattus exulans*; and

*b)* any *Rattus norvegicus* that is not held in effective containment

### Principal measures of achievement:

| | |
|---|---|
| Education and advice | Provide information and advice on pest animal identification, impacts and control.<br>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.<br>Provide information and advice on responsible pet ownership. |
| 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. |

See also section 7.1.2.11 for Hauraki Gulf Controlled Area site-led programme, and sections 7.3 and 7.4 for eradications on Kawau and Waiheke.

### 7.7.3.26 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:** "sustained control" which means to provide for ongoing control of red-eared sliders, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.26.1 No person shall cause to breed any red-eared slider or other sub-species of *Trachemys scripta* within the Auckland region.

7.7.3.26.2 No person shall distribute or release (or cause to be released or distributed), any red-eared slider or other sub-species of *Trachemys scripta* within the Auckland region.

7.7.3.26.3 No person shall sell or offer for sale any red-eared slider or other sub-species of *Trachemys scripta* within the Auckland region.

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

The purpose of rule 7.7.3.26.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.26.2 and 7.7.3.26.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.26.1, 7.7.3.26.2 and 7.7.3.26.3 come into force on 1 April 2021.

**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 infestations outside of containment and status of existing or historical sites. |
| 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.27 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 paraki/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:** "sustained control" which means to provide for ongoing control of rudd, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.27.1 No person shall distribute or release (or cause to be released or distributed) any rudd in any part of the Auckland region.

7.7.3.27.2 No person may fish for rudd in any High Conservation Value water body or their catchments (see Appendix 3) in the Auckland region.

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

The purpose of rule 7.7.3.27.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.3.27.2 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.<br>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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme and section 7.6.2 for priority lakes site-led programme.

### 7.7.3.28 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.

Pest outside of\cure co



Margaret Stanley

**Objective:** over the duration of the plan Auckland Council will sustainably control pest shingleback lizards (*Tiliqua rugosa*[60]) 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:** "sustained control" which means to provide for ongoing control of shingleback lizards, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.28.1 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 7.7.3.28.1 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. |
| Monitoring and surveillance | Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations outside of containment and status of existing or historical sites. |

[60] *A pest shingleback lizard is one that is not effectively held in secure containment.*

### 7.7.3.29 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:** "sustained control" which means to provide for ongoing control of snake-neck turtles, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.29.1 No person shall cause to breed any snake-neck turtle within the Auckland region.

7.7.3.29.2 No person shall distribute or release (or cause to be released or distributed), any snake-neck turtle within the Auckland region.

7.7.3.29.3 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 rule 7.7.3.29.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.29.2 and 7.7.3.29.3 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

Rules 7.7.3.29.1, 7.7.3.29.2 and 7.7.3.29.3 come into force on 1 April 2021.

### 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 infestations outside of containment and status of existing or historical sites. |
| 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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme.

### 7.7.3.30 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:** "sustained control" which means to provide for ongoing control of tench, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.30.1 No person shall distribute or release (or cause to be released or distributed) any tench in any part of the Auckland region.

7.7.3.30.2 No person may fish for tench in any High Conservation Value water body or their catchments (see Appendix 3) in the Auckland region.

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

The purpose of rule 7.7.3.30.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.3.30.2 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.<br>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. |

See also section 7.2.1 for Aotea / Great Barrier Exclusion programme and section 7.6.2 for priority lakes site-led programme.

### 7.7.3.31 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:** "sustained control" which means to provide for ongoing control of wasps, to reduce their impacts and spread to other properties.

**Rules:**

7.7.3.31.1 No person shall cause to breed any wasp within the Auckland region.

7.7.3.31.2 No person shall distribute or release (or cause to be released or distributed), any wasp within the Auckland region.

7.7.3.31.3 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 rule 7.7.3.31.1 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.3.31.2 and 7.7.3.31.3 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.<br>Provide advice and support to community groups undertaking pest animal control, with priority given to activity in or around biodiversity focus areas. |
| Research and development | 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 Wāhi whai kararehe orotā / Site-led animals

### 7.7.4.1 Unowned cat

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. Cat predation is 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 and Maui's dolphins, terehu / bottle nose dolphins, kēkeno / NZ fur seals, kiwi, kererū/kukupā and kākā. However, cats are also Aotearoa / New Zealand's most popular companion animal, and Auckland Council recognises the need to balance wildlife protection with protection of companion animal values.



Manaaki Whenua Landcare Research

**Objective:** over the duration of the plan Auckland Council will manage cats to protect values in places to reduce adverse effects on 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:** "protecting values in places" which means that cats, that are capable of causing damage to threatened species areas, are controlled within sites containing threatened species populations to an extent that protects the threatened species values of those places.

**Rules:**

7.7.4.1.1 No person shall abandon, or cause to be abandoned, any cat within the Auckland region.

7.7.4.1.2 No person shall feed any cat on any park within the Auckland region that contains a resident or breeding or roosting population of any threatened native bird, reptile or amphibian.

7.7.4.1.3 Any owner of a cat must ensure their cat does not enter an intensively managed site as defined in Map 11.

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

The purpose of rule 7.7.4.1.1 is to specify the circumstances in which the subject may be communicated, released, or otherwise spread.

The purpose of rules 7.7.4.1.2 and 7.7.4.1.3 is to regulate activities that may affect measures taken to implement the plan.

**Principal measures of achievement:**

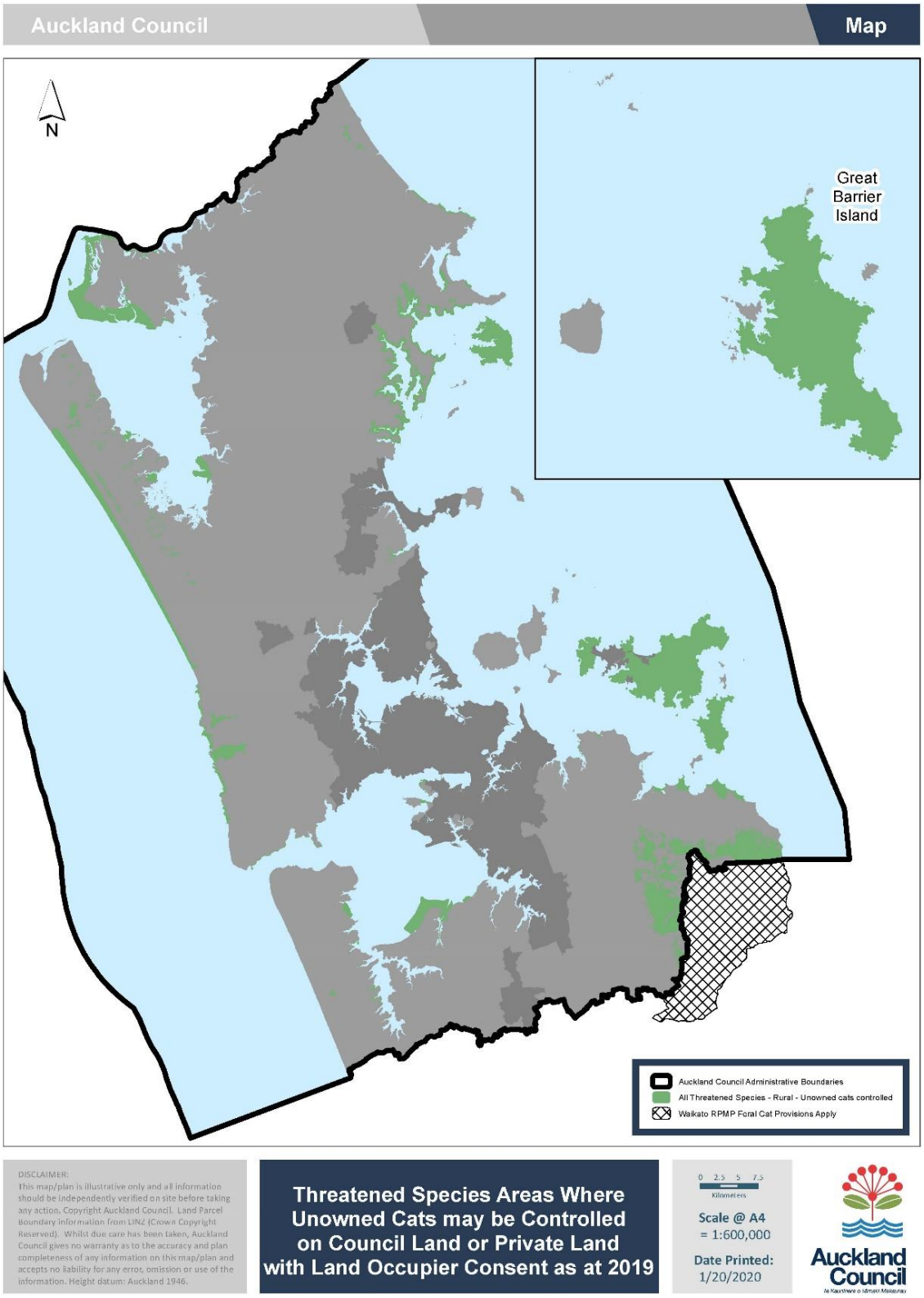
| | |
|---|---|
| Service delivery (control) | Provide subsidised de-sexing and microchipping for owned cats living near threatened species populations.<br>Council may undertake control of unowned[61] cats as part of integrated management of other pest threats to protect threatened species. Accordingly, Council may consider unowned cat control at sites meeting the follow criteria:<br>a. the site contains a resident or breeding or roosting population of any threatened native bird, reptile or amphibian species; and<br>b. the site is within a rural area; and<br>c. where that site is:<br>i. public land; or<br>ii. private land with consent of the private land occupier.<br>Map 10 indicatively shows the extent of sites meeting these threatened species criteria based on current knowledge as at January 2019.<br>Sites shown in Map 11 are intensively managed and of particular value to threatened species programmes. At these sites, Council may manage any cat as a pest in accordance with the Biosecurity Act 1993, to prevent recovery programmes being undermined. |
| Monitoring and surveillance | Undertake inspections, monitoring and surveillance of unowned cat populations in and around sites containing threatened species. |

[61] *Unowned cat means:*
- *a) any cat which is not:*
  - *i. Microchipped, or otherwise identified with owner's name and address; and*
  - *ii. Registered on the New Zealand Companion Animal Register* https://www.animalregister.co.nz/*; and*
- *b) which is within any site that contains a resident or breeding or roosting population of any regionally or nationally threatened bird, reptile or amphibian, and is in a rural area.*

*Note: based on current knowledge of species distributions at time of writing, sites that meet these criteria are shown in Map 10. Note also cat control will only be undertaken on public land or on private land with consent of land occupier (see principle measures of achievement overleaf).*
*Note: this programme does not prevent the continuing sale and distribution of cats within the region.*

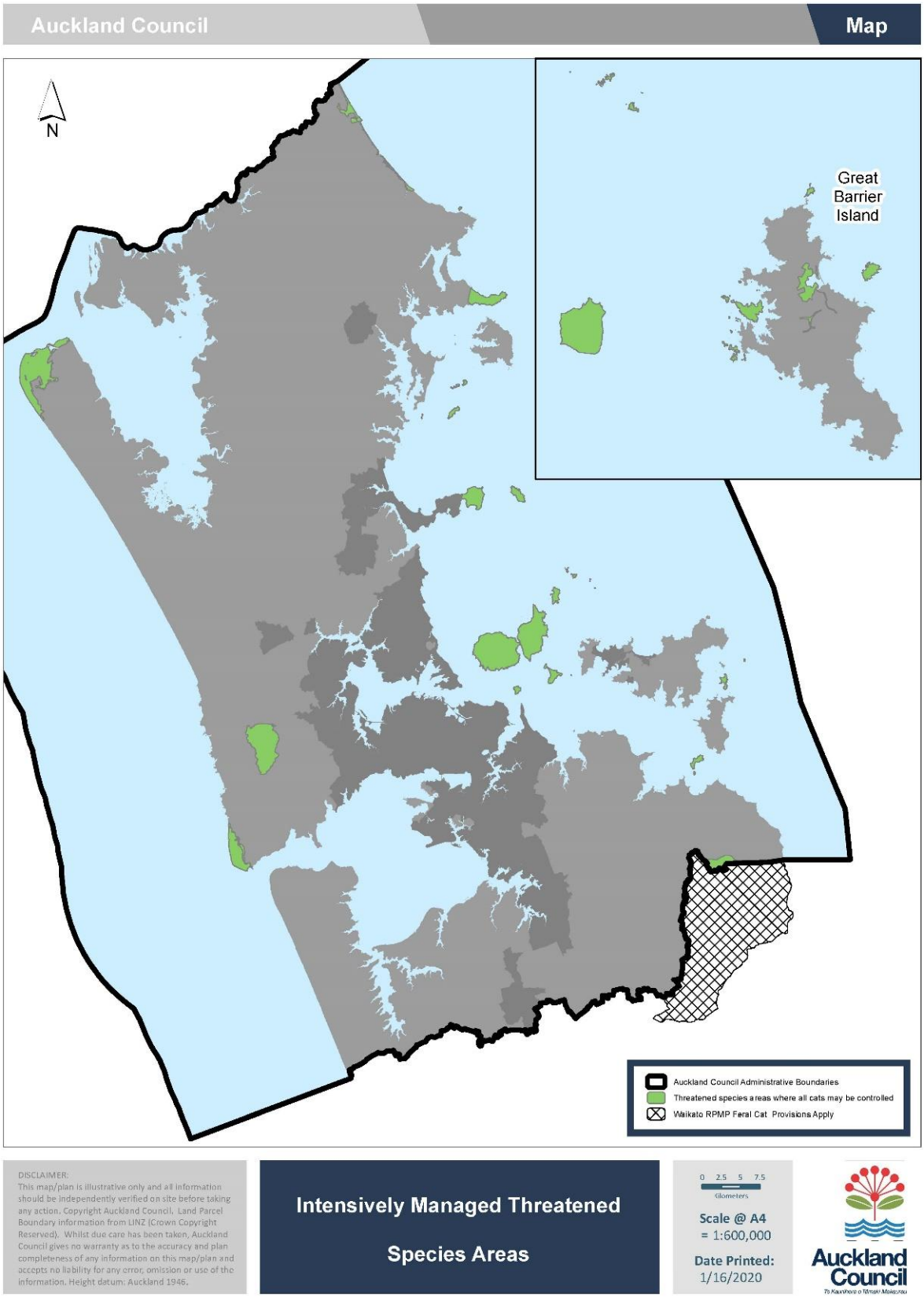
| | |
|---|---|
| Education and advice | Provide information and advice on responsible pet ownership (particularly de-sexing, microchipping, registration on the Companion Animal Register, home range size and containment options) as well as impacts and management of cats. Advice will be prioritised to communities near threatened species populations or biodiversity focus areas to assist cat owners in these areas to minimise the impacts of their companion animals on nearby wildlife.<br>Notify communities near intended cat management at least 4 weeks prior to control of unowned cats.<br>Provide advice and support to community groups undertaking cat management, with priority given to activity in or around biodiversity focus areas and threatened species populations. |
| Enforcement | Enforce prohibition on feeding cats or cat colonies on parkland that is home to threatened species. Enforce prohibition of abandonment. |

See also section 7.1.2.2 for Hauraki Gulf Controlled Area site-led programme.




**Map 10. Indicative distribution of threatened species populations in rural areas, based on current knowledge of species' distributions as of 2019. Unowned cats may be controlled in rural areas to protect threatened species on Council land or on private land with land occupier consent[62].**

[62] *Any sites where unowned cat control is actually planned to be carried out can be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*




**Map 11. Intensively managed sites for threatened species protection[63]. Any cat may be controlled at these sites.**

[63] *Any sites where cat control is actually planned to be carried out can be viewed at higher resolution online at https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html*

## 7.7.5 Te mau tonu o te patu kitakita urutā / Sustained Control pest pathogens

### 7.7.5.1 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:** "sustained control" which means to provide for ongoing control of Dutch elm disease, to reduce its impacts and spread to other properties.

**Rules:**

7.7.5.1.1 No person shall distribute, move or release Dutch elm disease in Auckland.

7.7.5.1.2 No person shall move any untreated Dutch elm plant material within the Auckland region.

7.7.5.1.3 All 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.

7.7.5.1.4 Where Auckland Council has instructed an occupier of land to destroy Dutch elm plants under rule 3, the 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

7.7.5.1.5 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.

7.7.5.1.6 No person shall store elm wood for firewood or any other purpose within the Auckland region.

The purpose of rule 7.7.5.1.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.5.1.2 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 7.7.5.1.3 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 7.7.5.1.4 and 7.7.5.1.6 is to regulate the use or disposal of organic material.

The purpose of rule 7.7.5.1.5 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:**

| | |
|---|---|
| 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 land occupier 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 occupiers to destroy plants when instructed, and comply with hygiene requirements. |

### 7.7.5.2 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:** "sustained control" which means to provide for ongoing control of kauri dieback, to reduce its impacts and spread to other locations.

**Rules:**

7.7.5.2.1 No person shall distribute, move or release kauri dieback disease in Auckland.

7.7.5.2.2 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 landfill[64].

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

The purpose of rule 7.7.5.2.1 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

[64] *Approved at time of writing:*
1) *Ridge Road Quarries, Ridge Road, Bombay (accepts soil only)*
2) *EnviroWaste Hampton Downs Landfill, 136 Hampton Downs Road, RD2, Te Kauwhata (accepts soil and organic material).*

*Waste Management's Redvale Landfill, Landfill Acess Road, Dairy Flat (the use of a bin liner is required at this landfill) – accepts soil and organic matter. 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.*

The purpose of rule 7.7.5.2.2 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 | Installation and maintenance of phytosanitary stations at key exit and entry points on parkland, to minimise human-mediated spread of disease.<br>Upgrade and maintain walking tracks on parkland, to minimise human-mediated spread of disease.<br>Manage known vectors, including feral pigs.<br>Priority to be given to Te Wao Nui a Tiriwa / the Waitākere Ranges. |
| Monitoring and surveillance | Undertake inspections, monitoring and surveillance to determine the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across kauri lands. |
| Enforcement | Enforce restrictions on the sale, propagation, distribution and exhibition of the pest pathogen.<br>Enforce restrictions on movement of kauri material, soil and contaminated goods into and out of drip line zones around kauri trees. |
| Education and advice | Provide information and advice on identification, impacts and how to prevent spread of the pest pathogen, including mitigating impacts of earthworks and treeworks. Encourage nursery industry accreditation to the New Zealand Plant Production Biosecurity Scheme core standard and kauri dieback schedule[65] |
| Requirement to act | 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.<br>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. |
| Research and development | 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 *P. multivora*. |

[65] https://nzppi.co.nz/advocacy/107-696/protecting-our-nurseries-and-industry-from-biosecurity-hazards

## 7.7.6 Te noho wātea o te tupu 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.

### 7.7.6.1 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:** “exclusion” which means to prevent the establishment of giant hogweed in the Tāmaki Makaurau / Auckland region.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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. |

### 7.7.7 Te murunga o te tupu 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:** “eradication” which means 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) | Enter any property 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.<br>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 montana*)

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.



Weedbusters

### *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.



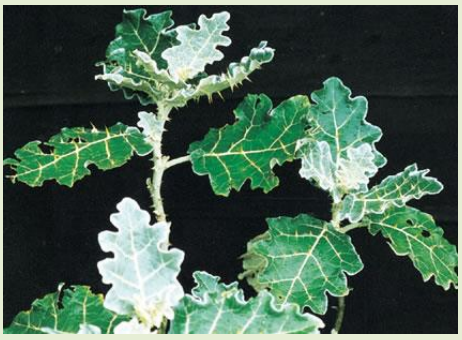
### Water poppy (*Hydrocleys nymphoides*)

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.



## 7.7.8 Aukati haere noa i te tupu orotā me ngā ture here ā-kaipupuri whenua / Progressive Containment pest plants with land occupier 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. Land occupiers are required to undertake control of the species in the following section.

### 7.7.8.1 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:** “progressive containment” which means to contain or reduce the geographic distribution of lantana to an area over time.

**Rules:**

7.7.8.1.1 All occupiers of land in rural Auckland must destroy all lantana on that land.

The purpose of rule 7.7.8.1.1 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 occupier responsibility to control the pest plant pursuant to the rules in this section, upon complaint by immediately affected neighbours.<br>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 destroy plants when instructed. |

### 7.7.8.2 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:** "progressive containment" which means to contain or reduce the geographic distribution of wild kiwifruit to an area over time.

**Rules:**

7.7.8.2.1 All occupiers of land in the Auckland region that includes abandoned or former kiwifruit orchards must control all wild kiwifruit on that land.

7.7.8.2.2 No person shall dispose of kiwifruit in such a manner as to promote the establishment of wild kiwifruit populations.

The purpose of rule 7.7.8.2.1 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 7.7.8.2.2 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 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 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. Provide information and advice on the National Psa-V Pest Management Plan. |
| Requirement to act | Land occupiers to destroy plants when instructed. |

## 7.7.9 Aukati haere noa i te tupu 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:** "progressive containment" which means to contain or reduce the geographic distribution of the pest plant, to an area over time.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery (control) | Enter any property 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.<br>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 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.



### Noogoora bur (*Xanthium strumarium* syn. *occidentale*)

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

### 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 tauranga mātaitai 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 Map 12.

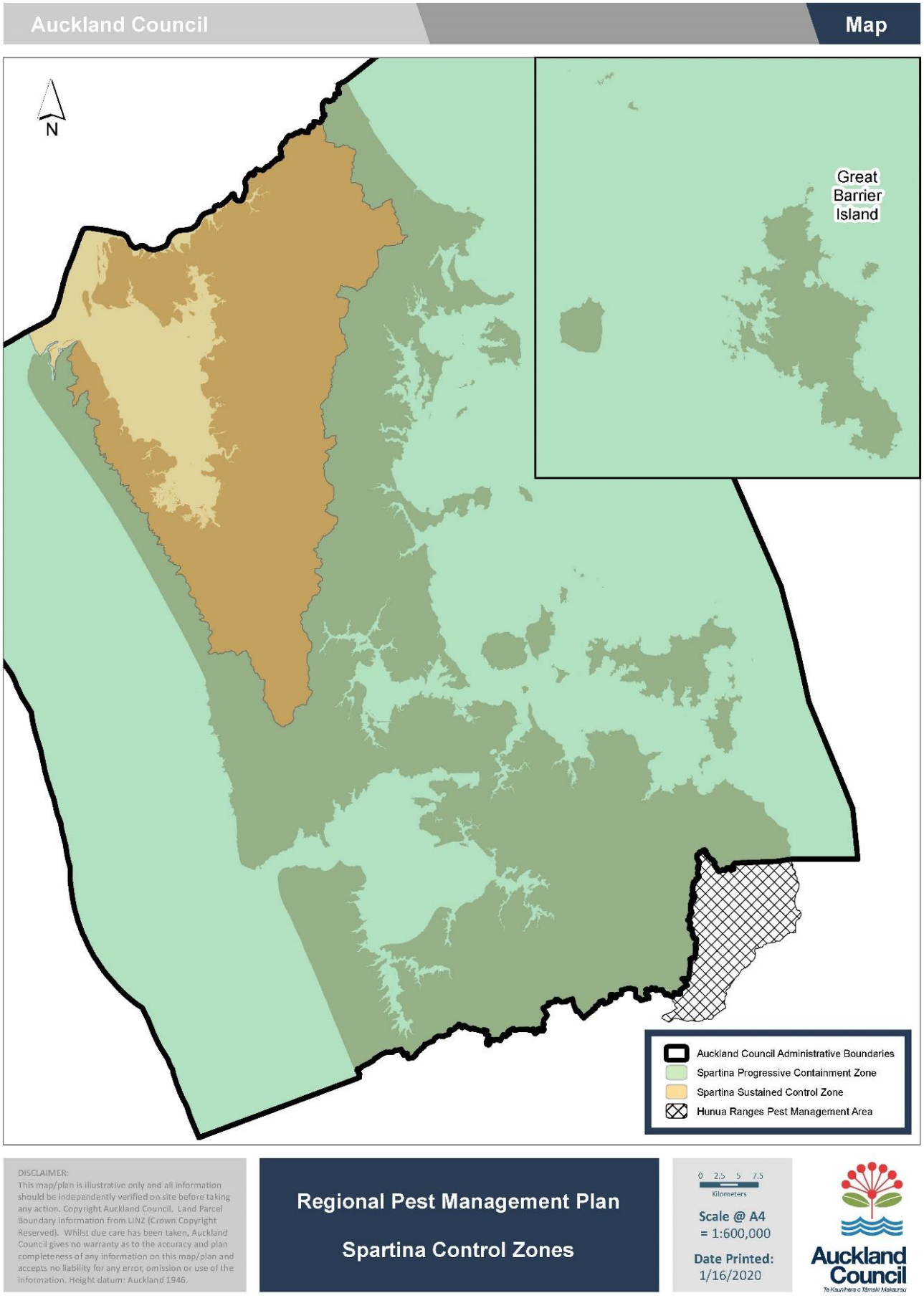
See also Sustained Control programme for Kaipara harbour (section 7.7.10).

### 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 Council service delivery applies only to rural Auckland.




**Map 12. Areas where spartina management programmes apply.**

## 7.7.10 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 land occupiers 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:** "sustained control" which means to provide for ongoing control of the pest plants specified below, to reduce their impacts and spread to other properties.

**Rules:**

7.7.10.1.1 No person shall cause to breed any Sustained Control Pest Plant within the Auckland region.

7.7.10.1.2 No person shall distribute or release (or cause to be released or distributed), any Sustained Control Pest Plant within the Auckland region.

7.7.10.1.3 No person shall sell or offer for sale any Sustained Control Pest Plant within the Auckland region.

7.7.10.1.4 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.

7.7.10.1.5 Despite rule 7.7.10.1.4, 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. This exception does not apply to the following freshwater pest plants: alligator weed, bladderwort, Chilean rhubarb, eel grass, egeria, hornwort, giant reed, lagarosiphon, parrot's feather, reed sweet grass, water primrose.

7.7.10.1.6 All 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 7.7.10.1.1, 7.7.10.1.2, 7.7.10.1.3, 7.7.10.1.4 and 7.7.10.1.5 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.10.1.6 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.

Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for the following species: bamboo species, berry heath, black wattle, Brazilian rattlebox, Californian thistle, *Carex scoparia*, century plant, Chinese holly grape, dally pine, divided sedge, giant rhubarb, guava, hakea, holly-leaved senecio, *Hydrocotyle umbellata,* loquat, marram grass, Mexican devil, prickly-leaved wattle, red dragon, red valerian, salt water paspalum, *Selaginella* spp., sharp rush, Spanish broom, Sydney golden wattle, tree lupin.

Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2021 for the following species: alder, bangalow palm, Canary Island ivy, Chinese fan palm, creeping fig, fatsia, furcraea, Japanese cherry, Morton Bay fig, Queensland umbrella tree, soap aloe, yellow guava.

**Principal measures of achievement:**

| | |
|---|---|
| Service delivery | Facilitate the development and release of biocontrol for targeted species, which may include (but not limited to) 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.<br>Undertake monitoring and surveillance of biocontrol agent dispersal and impacts.<br>Undertake surveillance to understand emerging trends in pest plant naturalisations and impacts. |
| 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.<br>Provide information and advice on responsible gardening practices including safe disposal of organic refuse, and alternative planting choices.<br>Support nursery industry initiatives, including breeding of low fertility forms, aimed at reducing biosecurity risk of nursery stock.<br>Provide advice and support to community groups undertaking pest plant control, with priority given firstly to activity in or around biodiversity focus areas and secondly to work in or around SEAs. Facilitate community biocontrol activity for moth plant, tradescantia and other ecologically damaging pest plants of high priority to the community. Facilitate coordination within the region and inter-regionally to improve pest management outcomes through aligned action, including data sharing. |
| Research and development | Facilitate research on pest plant impacts and management tools, including but not limited to biocontrol and emerging technology such as drones that may improve ability to deliver effective pest plant control in remote or difficult to access areas. |
| Requirement to act | Land 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.

### Agapanthus[66]



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.

### 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.

Note: Rules in this section come into force for alder on 1 April 2021.

[66] *For the purpose of this plan, agapanthus means:*

*a) Prior to 1 April 2022, all Agapanthus praecox tall form cultivars (those exceeding 600mm height); and*

*b) From 1 April 2022, all Agapanthus praecox cultivars, except for any low fertility cultivar which is determined by Auckland Council to produce less than 2% viable seeds compared to high fertility cultivars that were evaluated under the same conditions and location. Cultivars already meeting this test will be listed on the Auckland Botanic Gardens website* http://www.aucklandbotanicgardens.co.nz/

### 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 (*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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for bamboo species.

**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 cunninghamiana*)



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.

Note: Rules in this section come into force for bangalow palm on 1 April 2021.

### 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:**

7.7.10.1.7 All occupiers of any land that is located within rural Auckland must destroy all Bathurst bur plants on that land.

The purpose of rule 7.7.10.1.7 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*)



Mike Wilcox

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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for berry heath.

### 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*)



Forest and Bird

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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for black wattle.

### 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 mānawa/mangroves, salt marshes, grasslands and other terrestrial habitats. It is also capabale of chemically inhibiting the growth and abundance of co-occurring native plants via the release of biochemicals into the soil.

### Brazilian rattlebox (*Sesbania punicea*)



Eric Hunt

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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Brazilian rattlebox.

### 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*)



Trevor James, Agresearch

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.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Californian thistle.



### 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 teeth 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for *Carex scoparia*.

### 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 unguis-cati*)

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 Rangitoto may be vulnerable to invasion.



### Century plant (*Agave americana*)

Century plant is a perennial succulent with sharp teeth on the margins of its large, fleshy leaves. A 7-10m tall flower head is produced when the plant is about 10 years old. Invades sand dunes, cliffs and other coastal ecosystems. Can form dense monocultures that suppress native plants. Often spread in dumped garden waste.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for century plant.



Weedbusters

### 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 sub-shrub 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 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.

Note: Rules in this section come into force for Chinese fan palm on 1 April 2021.



### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Chinese holly grape.



Rebecca Stanley

### Chocolate vine (*Akebia quinata*)

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 Rangitoto 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for dally pine.

### 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 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 out-competes 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for divided sedge.



John Smith-Dodsworth

### 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-purplish 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.

### Elodea[67] (*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.

[67] *Pest outside of secure containment only.*

### 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 contact dermatitis in some people.

Note: Rules in this section come into force for fatsia on 1 April 2021.



Colin Ogle

### 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 foetida, F. parmentieri* and *F. selloa*)



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 impacts are probable due to the lack of functionally equivalent native species.

Note: Rules in this section come into force for furcraea on 1 April 2021.

### German ivy (*Senecio mikanioides*)



Weedbusters

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.

### 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.

**Rules:**

7.7.10.1.8 All occupiers of any land that is located within rural Auckland (Occupier A) must destroy all gorse plants on that land within 10m[68] of any property boundary that is adjacent to land being used for commercial primary production (Occupier B) and where that land occupier (Occupier B) is destroying all gorse on that land.

This rule is a Good Neighbour Rule.

The purpose of rule 7.7.10.1.8 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.

[68] *On steeply sloping land this will be interpreted as 10m horizontally out from the boundary.*

### 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 feral pigs by creating an important food source.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for guava.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for holly-leaved senecio.



### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for *Hydrocotyle umbellata*.



### 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.

Note: Rules in this section come into force for Japanese cherry on 1 April 2021.



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 to be 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 kereru/kukupā, allowing it able to invade intact canopy native vegetation and potentially dominate the mid-tier canopy. It is likely to be advantaged by warmer temperatures under climate change.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for loquat.

### 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 filix-mas*)



Jeremy Rolfe

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.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for marram grass.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Mexican devil.

### 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*)

Also known as: lilly pilly

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 (*Crocosmia 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, feral pigs and birds through copious year-round fruit production.

Note: Rules in this section come into force for Morton Bay fig on 1 April 2021.

### 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, mānawa/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:**

7.7.10.1.9 All occupiers of land in the Auckland region must destroy all nodding thistle plants on that land.

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

The purpose of rule 7.7.10.1.9 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 ciliatus*)



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, feral 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for prickly-leaved wattle.



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 patete (*S. digitata)* may directly be impacted through competition or other mechanisms.

Note: Rules in this section come into force for Queensland umbrella tree on 1 April 2021.



### 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 extent, to the highly invasive closely related species Chinese knotweed *P. chinensis*.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for red dragon.



© Acabashi

### 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 Rangitoto. Threatened short stature species may be especially vulnerable to shading and competition for other resources.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for red valerian.



Colin Ogle

### 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 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 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 mānuka-kānuka 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*)



Trevor James, Agresearch

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.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for salt water paspalum.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for *Selaginella* spp.

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for sharp rush.



### 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.

Note: Rules in this section come into force for soap aloe on 1 April 2021.



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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Spanish broom.



### 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 tauranga mātaitai 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 Map 12.

See also Progressive Containment programme for remainder of region (section 7.7.9).



### 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 plant 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 Rangitoto, could be at risk as other introduced *Ficus* species have been found in these habitats. Pōhutukawa, mānawa/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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Sydney golden wattle.

### Taiwan cherry (*Prunus campanulata*)[69]



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.

[69] *Excludes sterile cultivars 'Mimosa' and 'Pink clouds'. Auckland Council may consider other applications for exemptions over the life time of the plan where cultivars can be shown to be sterile.*

### 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.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for tree lupin.



### 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:**

7.7.10.1.10 All occupiers of land in the Auckland region must destroy all variegated thistle plants on their land.

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

The purpose of rule 7.7.10.1.10 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 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*)



Stefan Iefnaer

Yellow bristle grass is an annual grass 25-35cm tall, with green or yellow-green leaves, often red-purplish 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.

### 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 feral 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

## 7.7.11 Te mau tonu o te patu orotā ā-Moana / Sustained Control marine pests

Marine pest organisms can cause adverse effects to the environmental, economic, social or cultural values of the region. Once marine pests are established, control options are often limited. Therefore pathway management to prevent spread to new areas is the top priority. Most of the following pest species are already present in the Tāmaki Makaurau / Auckland, but the following programmes aim to slow their further spread, and therefore impact, within the region.

Many marine pest organisms attach themselves to hard surfaces, which means they can be spread by human movement of vessels and other craft, aquaculture equipment, and other equipment and goods including scuba and fishing gear. They can also be captured in bilge, ballast or holding tank waters and spread to other areas when such waters are discharged from a vessel.

Tāmaki Makaurau / Auckland is highly connected to other regions of Aotearoa / New Zealand through the movement of both commercial and recreational vessels, and it is likely that new species will continue to be introduced and spread. However, effective management systems would reduce the rate of spread and prevent some new species from establishing. The rules in the following section are largely aligned with a number of regional and territorial authorities, to assist in reducing the human-mediated spread of pests between regions, as well as within Tāmaki Makaurau / Auckland itself. Aligned rules will also make compliance easier for vessels moving between regions. In particular, the level of allowable biofouling is based on the Level of Fouling Protocol, providing for consistency with other regions and the Craft Risk Management Standard: Biofouling on Vessels Arriving to New Zealand.




View of Te Tīkapa Moana / the Hauraki Gulf from Buckleton Bay

### 7.7.11.1 Asian paddle crab (*Charybdis japonica*)

The Asian paddle crab is a relatively large swimming crab with paddle-like hind legs. The shell can reach 12 cm across. Adults have six distinct spines or spikes on each side of the shell below the eyes, and five prominent spines on the upper surface of each claw. The crab ranges in colour from pale-green or olive green to a deep chestnut brown with purplish markings on the shell. It is typically found in estuaries where there is firm sand, muddy fine sand, or muddy-shelly fine sand. The crab is very aggressive, displacing native crabs (pāpaka) and preying on a variety of native and aquaculture species including shellfish, fish, other crustaceans and polychaete worms. It is also a carrier of diseases that may greatly impact other crustaceans.



**Objective:** over the duration of the plan Auckland Council will sustainably control Asian paddle crabs (*Charybdis japonica*) 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:** "sustained control" which means to provide for ongoing control of Asian paddle crabs, to reduce their impacts and spread to other locations.

**Rules:**

7.7.11.1.1 No person shall cause to breed any Asian paddle crab within the Auckland region.

7.7.11.1.2 No person shall distribute or release (or cause to be released or distributed), any live Asian paddle crab[70] within the Auckland region.

7.7.11.1.3 No person shall sell or offer for sale any live Asian paddle crab within the Auckland region.

7.7.11.1.4 All persons who, intentionally or accidentally, catch any Asian paddle crab within the Auckland region must destroy[71] any such crabs immediately.

7.7.11.1.5 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

[70] *Includes eggs and larvae.*
[71] *For the purposes of the rules in this plan, 'destroy' means to kill or dispose of in a manner that will not allow the pest to reinfest an area. Dead individuals may be transported and eaten, provided that doing so does not distribute viable eggs.*

7.7.11.1.6 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.1.1, 7.7.11.1.4, 7.7.11.1.5 and 7.7.11.1.6 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.1.2 and 7.7.11.1.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. Any person in possession of any live Asian paddle crab to destroy any such crab. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.2 Australian droplet tunicate (Eudistoma elongatum)

Also known as: Eudistoma sea squirt

The Australian droplet tunicate is a type of sea squirt that is firm and gelatinous to the touch. It forms large colonies that attach to hard surfaces and look like clusters of white or cream coloured cylindrical tubes. Colonies are generally 5-30 cm long, but can sometimes reach 1.5 m long. The tunicate can inhabit a wide range of habitats and but is generally found in soft-bottomed tidal habitats and on hard surfaces such as wharf piles, aquaculture equipment and mangrove roots. It is most commonly spread as fouling on marine farming equipment and occasionally on boat hulls. It grows rapidly and will often reach high abundances in summer months; altering tidal habitats and competing with native species for space and food.



H. Blomfield

**Objective:** over the duration of the plan Auckland Council will sustainably control Australian droplet tunicate (*Eudistoma elongatum*) 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:** "sustained control" which means to provide for ongoing control of Australian droplet tunicate, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.2.1 No person shall cause to breed any Australian droplet tunicate within the Auckland region.

7.7.11.2.2 No person shall distribute or release (or cause to be released or distributed), any Australian droplet tunicate within the Auckland region.

7.7.11.2.3 No person shall sell or offer for sale any Australian droplet tunicate within the Auckland region.

7.7.11.2.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

7.7.11.2.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.2.1, 7.7.11.2.4 and 7.7.11.2.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.2.2 and 7.7.11.2.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.3 *Clavelina oblonga*

*Clavelina oblonga* is a tunicate that forms large colonies on hard surfaces such as marinas and rocky sub-tidal and inter-tidal habitats. The tunicate is most commonly spread as fouling on boat hulls. This species is relatively newly documented as an invasive species, so its potential impacts are still uncertain. However, given its ability to form large colonies, it is likely to be able to outcompete native species and may impact upon the mauri of the moana.



**Samantha Happy**

**Objective:** over the duration of the plan Auckland Council will sustainably control *Clavelina oblonga* 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:** "sustained control" which means to provide for ongoing control of *Clavelina oblonga*, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.3.1 No person shall cause to breed any *Clavelina oblonga* within the Auckland region.

7.7.11.3.2 No person shall distribute or release (or cause to be released or distributed), any *Clavelina oblonga* within the Auckland region.

7.7.11.3.3 No person shall sell or offer for sale any *Clavelina oblonga* within the Auckland region.

7.7.11.3.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

7.7.11.3.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.3.1, 7.7.11.3.4 and 7.7.11.3.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.3.2 and 7.7.11.3.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.4 Japanese mantis shrimp (*Oratosquilla oratoria)*

The Japanese mantis shrimp is a large light grey mantis shrimp that can grow up to 185 millimetres long. It has two long spiny claws that it uses to capture food. The Japanese mantis shrimp has maroon ridges running down the mid-length of its body and a tail fan with a blue and yellow outer surface (grey and yellow in native species). Japanese mantis shrimp live in burrows in soft sediments, sand and mud in sheltered bays and estuaries. The Japanese mantis shrimp preys on a wide variety of important kaimoana species including native shrimps (kōurara / tarawera), crabs and juvenile fish and competes for resources with other crustaceans; thereby altering benthic communities.



Dr. S.

**Objective:** over the duration of the plan Auckland Council will sustainably control Japanese mantis shrimp (*Oratosquilla oratoria*) 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:** "sustained control" which means to provide for ongoing control of Japanese mantis shrimp, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.4.1 No person shall cause to breed any Japanese mantis shrimp within the Auckland region.

7.7.11.4.2 No person shall distribute or release (or cause to be released or distributed), any live Japanese mantis shrimp[72] within the Auckland region.

7.7.11.4.3 No person shall sell or offer for sale any live Japanese mantis shrimp within the Auckland region.

7.7.11.4.4 All persons who, intentionally or accidentally, catch any Japanese mantis shrimp within the Auckland region must destroy[73] any such shrimps immediately.

7.7.11.4.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

*[72] Includes eggs and larvae.*

*[73] For the purposes of the rules in this plan, 'destroy' means to kill or dispose of in a manner that will not allow the pest to reinfest an area. Dead individuals may be transported and eaten, provided that doing so does not distribute viable eggs.*

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

The purpose of rules 7.7.11.4.1, 7.7.11.4.4, and 7.7.11.4.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.4.2 and 7.7.11.4.3 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 to determine compliance with rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. |
| Requirement to act | All persons in charge of a craft to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. Any person in possession of any live Japanese mantis shrimp to destroy any such shrimp. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.5 Lightbulb ascidian (*Clavelina lepadiformis*)

The lightbulb tunicate forms colonies of transparent tubes about 5cm long, with white, yellow or pink bands that make it appear to glow like a light bulb. It can form large colonies on hard surfaces such as marinas and rocky sub-tidal and inter-tidal habitats. The lightbulb tunicate is most commonly spread as fouling on boat hulls. This species is relatively newly documented as an invasive species, so its potential impacts are still uncertain. However, given its ability to form large colonies, it is likely to be able to outcompete native species and may impact upon the mauri of the moana.



Samantha Happy

**Objective:** over the duration of the plan Auckland Council will sustainably control lightbulb ascidian (*Clavelina lepadiformis*) 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:** "sustained control" which means to provide for ongoing control of lightbulb ascidian, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.5.1 No person shall cause to breed any lightbulb ascidian within the Auckland region.

7.7.11.5.2 No person shall distribute or release (or cause to be released or distributed), any lightbulb ascidian within the Auckland region.

7.7.11.5.3 No person shall sell or offer for sale any lightbulb ascidian within the Auckland region.

7.7.11.5.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

7.7.11.5.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.5.1, 7.7.11.5.4 and 7.7.11.5.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.5.2 and 7.7.11.5.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.6 Mediterranean fanworm (*Sabella spallanzanii*)

Mediterranean fanworm is a large tube-dwelling bristle worm typically found in estuaries and sheltered sites up to depths of around 30 metres. It has a flexible, leathery tube, up to 80 centimetres tall, topped with a single, spiral fan of feeding tentacles, often banded orange, purple or white. It attaches to a wide variety of hard surfaces including rocks, wood, steel, concrete, shellfish and artificial materials, and is most commonly spread as fouling species on moored vessels. Mediterranean fanworm can form dense beds that are likely to out-compete other species, clog fishing gear and dredges, and interfere with biological processes. It has the potential to compete with native filter-feeding organisms for food and space which can impact upon the mauri of the moana. In high densities, Mediterranean fanworm is likely to also impact commercially on important kaimoana species including mussels (kuku / kūtai), oysters (tio), and scallops (tipa / tupa).



Geoff Read

**Objective:** over the duration of the plan Auckland Council will sustainably control Mediterranean fanworm (*Sabella spallanzanii*) 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:** “sustained control” which means to provide for ongoing control of Mediterranean fanworm, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.6.1 No person shall cause to breed any Mediterranean fanworm within the Auckland region.

7.7.11.6.2 No person shall distribute or release (or cause to be released or distributed), any Mediterranean fanworm within the Auckland region.

7.7.11.6.3 No person shall sell or offer for sale any Mediterranean fanworm within the Auckland region.

7.7.11.6.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed ‘light fouling’.

7.7.11.6.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.6.1, 7.7.11.6.4 and 7.7.11.6.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.6.2 and 7.7.11.6.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.7 Pyura sea squirts (*Pyura praepetualis*[74] and *P. doppelgangera*)

The pyura sea-squirt has a sack-like body with a brown, or reddish-brown, leathery skin often coated with sand. Each sea squirt has two mounds representing siphons or holes for inhaling and exhaling sea water. Adults grow up to 15 centimetres or more in height and around 3-5 centimetres in diameter. The only visible difference between the two species of pyura sea-squirt is that *Pyura praepetualis* generally grows to a larger size. They generally inhabit the low to mid-intertidal, zone as well as shallow subtidal areas less than 12m deep. They primarily colonise rocky platforms and outcrops, rock pools and the underside of rock overhangs, but are also found on artificial structures such as oyster farms and wharf piles. The pyura sea squirts are aggressive competitors for space and have the potential to significantly alter the structure and composition of native intertidal communities; displacing important kaimoana species such as the green lipped mussel (kuku / pōrohe).



**Objective:** over the duration of the plan Auckland Council will sustainably control Pyura sea squirts (*Pyura praepetualis* and *P. doppelgangera*) 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:** "sustained control" which means to provide for ongoing control of Pyura sea squirts, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.7.1 No person shall cause to breed any Pyura sea squirts within the Auckland region.

7.7.11.7.2 No person shall distribute or release (or cause to be released or distributed), any Pyura sea squirts within the Auckland region.

7.7.11.7.3 No person shall sell or offer for sale any Pyura sea squirts within the Auckland region.

7.7.11.7.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

[74] *Previously known as Pyura stolonifera praeputialis*

7.7.11.7.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.7.1, 7.7.11.7.4 and 7.7.11.7.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.7.2 and 7.7.11.7.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.8 Styela sea squirt (*Styela clava*)

Also known as: Clubbed tunicate, leathery sea squirt. Steyla sea squirt is a large, brown, solitary sea squirt with a leathery appearance and wart-like projections. It has a long, club-shaped body and uses a short, tough stalk to attach to hard artificial or natural surfaces. It is most commonly found at depths of less than 25m but has been observed at 40m deep. It is frequently transported as biofouling on vessels and other mobile marine structures. The Styela sea squirt can multiply rapidly and form dense colonies, competing with native and important filter feeders for space and food. This can disrupt native ecosystems and may impact upon the mauri of the moana. The Styela sea squirt can also add significant maintenance costs to marine structures and vessels through its fouling behaviour.



Matthieu Sontag

**Objective:** over the duration of the plan Auckland Council will sustainably control Styela (*Styela clava*) 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:** "sustained control" which means to provide for ongoing control of Styela, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.8.1 No person shall cause to breed any Styela within the Auckland region.

7.7.11.8.2 No person shall distribute or release (or cause to be released or distributed), any Styela within the Auckland region.

7.7.11.8.3 No person shall sell or offer for sale any Styela within the Auckland region.

7.7.11.8.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

7.7.11.8.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.8.1, 7.7.11.8.4 and 7.7.11.8.5 is to regulate activities that may affect measures taken to implement the plan.

The purpose of rules 7.7.11.8.2 and 7.7.11.8.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

### 7.7.11.9 Undaria (*Undaria pinnatifida*)

Also known as: wakame, Japanese kelp, Asian seaweed

Undaria is a large seaweed that grows to 1-2 metres long. Mature plants are golden brown to green-brown in colour, crinkly in appearance and have a distinct midrib. Undaria can tolerate a broad range of temperatures and light levels and grow on a variety of surfaces. It can produce millions of spores and is also frequently transported as biofouling on vessels. These characteristics allow it to spread rapidly and form dense underwater forests; outcompeting native canopy-forming algal species, altering habitats and impacting associated marine faunal communities.



K.Neill & S.Miller, NIWA

**Objective:** over the duration of the plan Auckland Council will sustainably control Undaria (*Undaria pinnatifida*) 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:** "sustained control" which means to provide for ongoing control of Undaria, to reduce their impacts and spread to other properties.

## Rules:

7.7.11.9.1 No person shall cause to breed any Undaria within the Auckland region.

7.7.11.9.2 No person shall distribute or release (or cause to be released or distributed), any Undaria within the Auckland region.

7.7.11.9.3 No person shall sell or offer for sale any Undaria within the Auckland region.[75]

7.7.11.9.4 All owners or person in charge of any craft in the Auckland region must ensure that the level of fouling on the hull and in niches of the craft does not exceed 'light fouling'.

7.7.11.9.5 Any craft entering any marine water body in the Auckland region from the land must be free of all ballast water, bilge water, holding tank water or sea water held in any other container.

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

The purpose of rules 7.7.11.9.1, 7.7.11.9.4 and 7.7.11.9.5 is to regulate activities that may affect measures taken to implement the plan.

[75] *Note this applies only to live propagules. Processed food products may still be sold.*

The purpose of rules 7.7.11.9.2 and 7.7.11.9.3 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 to determine compliance with biofouling standards and other rules, the presence of new incursions and status of existing or historical sites. Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across Tāmaki Makaurau / Auckland and other regions. |
| Education and advice | Provide information and advice on how to prevent spread of the marine pest, including effective hygiene procedures to reduce the risk of accidental spread on marine farming equipment, hulls, in bilge, ballast or holding tank water or by other human activity. Implement voluntary behaviour change interventions to address high risk pathways. |
| Enforcement | Enforce restrictions on the sale, breeding, distribution and exhibition of the pest in its live state. Enforce restrictions on movement of ballast, bilge and holding tank water in relation to craft entering any marine waterbody from land. Enforce hull biofouling standard to ensure no more than a slime layer and/or goose barnacles are present. |
| Requirement to act | All persons in charge of a craft to undertake such hygiene measures as required to ensure biofouling is never more than a slime layer and/or goose barnacles, and to ensure craft are free of all ballast water, bilge water and holding tank water when entering any marine waterbody from land. |
| Research and development | Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, pest species' adaptations and interactions within the marine environment, and ecological impacts of the marine pest on at-risk habitats and ecosystems. |

# 8 Whakaaturanga āhua orotā / Monitoring



© Ngā Manu Images

## 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 Tīkapa Moana / 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.



Capturing, tagging and releasing tench to estimate the population size at Lake Tomarata.

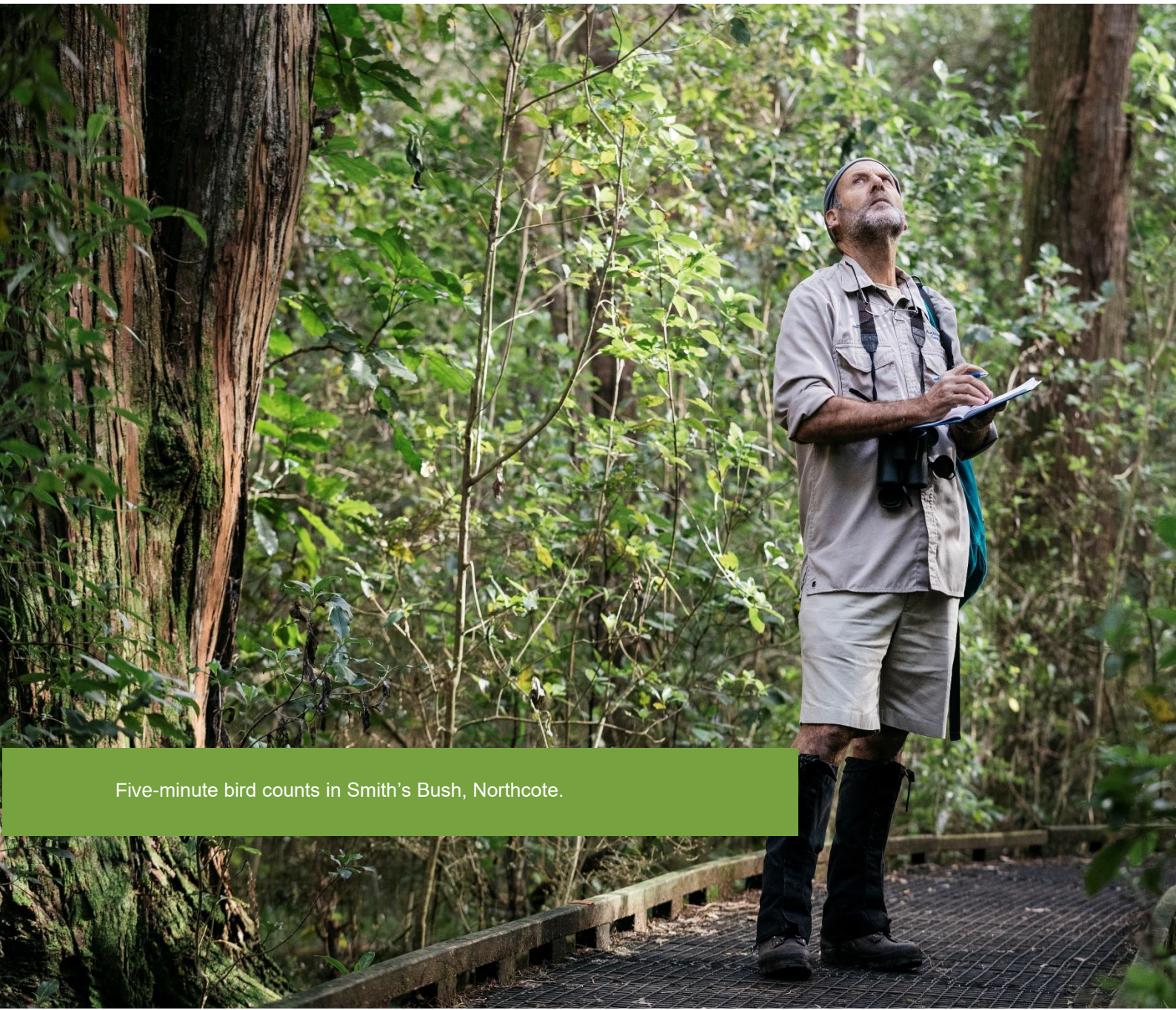
**Table 6 Monitoring objectives**

| Anticipated result | Indicator | Method of monitoring | Frequency of monitoring | Frequency of reporting |
|---|---|---|---|---|
| Exclusion | Presence/ absence | Active and 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 are received | Annually and as required |
| Progressive containment | Presence/ absence, distribution and extent, life cycle status | Field surveys 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. | Ongoing and in accordance with operational plans, and outcome values being monitored. 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 occupiers.



Five-minute bird counts in Smith's Bush, Northcote.

## 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 kua 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 7 or any other such relevant powers under the Act, where necessary, to help implement this plan.

**Table 7 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 seize abandoned goods | Section 119 |
| Power to intercept risk goods | Section 120 |
| Power to examine organisms | Section 121 |
| Power to apply article or substance to place | Section 121A |
| 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.

An 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.

In the event that the Minister amends the Biosecurity (Infringement Offences) Regulations 2010 to provide for infringement notices to be applied to rules in Regional Pest Management Plans, Auckland Council may apply the use of infringement notices to any rule in this plan that provides for an offence under s154N(19).

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 occupiers of land are asked for information (under s43 of the Biosecurity Act).



# 10 **Tuku tahua pūtea /** Funding

© Ngā Manu Nature Images

## 10.1 Ngā ara pūtea tahua me ngā take mō te tuku pūtea / Funding sources and reasons for funding

The Act requires that funding is thoroughly examined. This includes the reason for, and source of, all 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 programme, the regional community may reasonably bear some costs in achieving the outcome through a general rate.

## 10.2 Ngā utu manako hei whakarite i te mahere / Anticipated costs of implementing the plan

Council has decided to fund implementation of the plan through a combination of general rates and a targeted rate that applies throughout the region. The natural environment targeted rate provides approximately $161m for Auckland Council's implementation of this Regional Pest Management Plan over 10 years, in addition to $85m from a general rate. Additional funding will be sought from strategic partnerships, specifically for mammal eradications on Kawau and Waiheke islands. In the case of Waiheke, at time of writing[76] over $3.4m of aligned funding is already committed by other parties through Te Korowai o Waiheke.

[76] *1 February 2019*



# 11 **Aronga /** Definitions

Unless the context clearly indicates otherwise, the following terms, as used in the plan, have the meanings set out below.

| | |
|---|---|
| Abandon | Means to cease to support or to give up completely. |
| 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. Includes any egg, larva, pupa or other reproductive material. |
| 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. |
| Biodiversity focus area | Biodiversity focus areas are specific sites or spatial areas that have been identified by Auckland Council's Biodiversity Group to assist in conserving examples of the full range of indigenous ecosystems and species that are found in the region. Biodiversity focus areas are non-statutory, but enable Council to prioritise its effort and spend on ecosystem management activities to retain a representative range of the region's ecosystems. |
| Breed | For the purposes of this plan, means to breed, propagate or otherwise multiply the pest. |
| 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. |
| Communicate | For the purposes of this plan, means to move from one location to another. |
| Container | For the purposes of this plan, container includes but is not limited to any kayak, chilli bin, bucket or other vessel in which sea water may be transported. |

| | |
|---|---|
| Costs and benefits | Costs and benefits of any kind, whether monetary or non-monetary, and whether quantifiable or non-quantifiable. |
| Craft | For the purposes of this plan, craft means (i) an aircraft, ship, boat, or other machine or vessel used or able to be used for the transport of people or goods, or both, by air or sea; and (ii) an oil rig; and (iii) a structure or installation that is transported by being towed through the sea. |
| Critically endangered | For the purposes of this plan, means any species classified as nationally or regionally 'Critical' according to New Zealand Threat Classification System criteria. |
| Destroy | For the purposes of the rules in this plan, means to kill or dispose of in a manner that will not allow the pest to reinfest an area. |
| 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. |
| Ecosystem | A dynamic complex of plant, animal and microorganism communities and their non-living environment, interacting as a functional unit. |
| Effective containment | Conditions under which the subject would not reasonably be expected to escape into a wild state. |
| Effects | Unless the context otherwise requires, the term 'effects'<br>(a) includes the following, regardless of scale, intensity, duration or frequency:<br>(i) a positive or adverse effect; and<br>(ii) a temporary or permanent effect; and<br>(iii) a past, present or future effect; and<br>(iv) a cumulative effect that arises over time or in combination with other effects; and<br>(b) also includes the following:<br>(i) a potential effect of high probability; and<br>(ii) a potential effect of low probability that has a high potential impact. |

| | |
|---|---|
| Enclosed water body | For the purposes of this plan, means a water body that is entirely separated from any other water body, such that any contents of the water body would not reasonably be expected to reach any other water body without human assistance. For completeness, this means there must not be any water courses entering or exiting the water body, and the water body must be situated in such a position that inundation by flooding of nearby water bodies would not reasonably be expected. |
| Environment | Includes:<br>(a) ecosystems and their constituent parts, including people and their communities; and<br>(b) all natural and physical resources; and<br>(c) amenity values; and<br>(d) the aesthetic, cultural, economic and social conditions that affect or are affected by any matter referred to in paragraphs (a) to (c). |
| 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. |
| Fish (v) | For the purpose of rules in Section 7.7.3 to fish means to catch, take or harvest any pest fish and includes:<br>(a) any other activity that may reasonably be expected to result in the catching, taking or harvesting of any pest fish; or<br>(b) any attempt to catch, take or harvest any pest fish. |
| 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. |
| 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.<br>See section 2 and Part 5 of that Act. |
| Occupier | (a) in relation to any place physically occupied by any person, means that person; and<br>(b) in relation to any other place, means the owner of the place; and<br>(c) in relation to any place, includes any agent, employee, or other person, acting or apparently acting in the general management or control of the place. |
| Organism | Organism:<br>(a) does not include a human being or a genetic structure derived from a human being;<br>(b) includes a microorganism;<br>(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);<br>(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;<br>(e) includes a reproductive cell or developmental stage of an organism;<br>(f) includes any particle that is a prion. |
| 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. |
| Priority lake | Sites included in the statutory programmes set out in section 7.6 of this plan, namely Rototoa and Tomarata. |
| Progressive containment | To contain or reduce the geographic distribution of a pest to an area over time. |

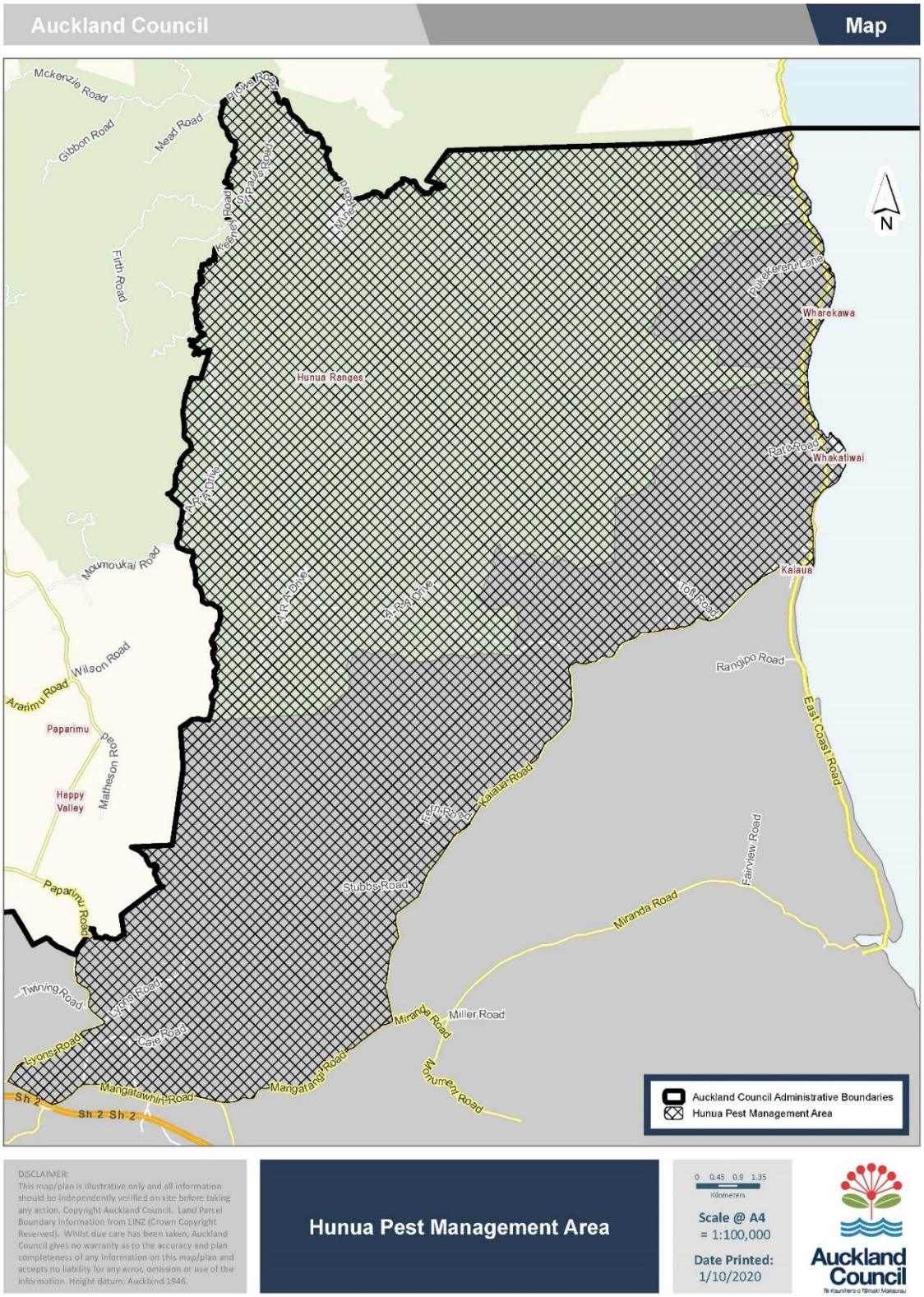
| | |
|---|---|
| Propagation | To grow new plants from seeds or from pieces cut from an existing plant, or to make a plant produce more plants. |
| Plant | Any grass, tree, shrub, herb, flower, nursery stock, culture, vegetable, or other vegetation, and also includes the fruit, seed, spore, portion or product of any plant. Includes all aquatic plants. |
| Rail | Any rail corridor, whether in active use or not, as defined by the parcel boundary. |
| Region | As determined by the Local Government Act 2002:<br>(a) means the region of a regional council;<br>(b) includes the district of a territorial authority, if the territorial authority is a unitary authority. |
| 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.<br>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.<br>See the interpretation and Part 5 of that Act. |
| Release | For the purpose of this plan, means to set at liberty or allow to go at large, whether or not the act is deliberate or is a result of negligence or lack of care by the person having the pest organism in his ownership or care. |
| 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. |
| Rural Auckland | For the purpose of this plan, means that part of the region designated rural by the Rural Urban Boundary as mapped in the Auckland Unitary Plan https://unitaryplanmaps.aucklandcouncil.govt.nz/upviewer/. |
| Rural Urban Boundary | The boundary which defines the extent of urban development and the areas to be kept as rural areas in the Auckland region, as mapped in the Auckland Unitary Plan: https://unitaryplanmaps.aucklandcouncil.govt.nz/upviewer/. |
| 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. |
| Significant Ecological Area | Areas of significant indigenous vegetation or significant habitats of indigenous fauna located either on land or in freshwater environments. In order to maintain indigenous biodiversity these areas are protected from the adverse effects of subdivision, use and development under the Unitary Plan<br>http://unitaryplan.aucklandcouncil.govt.nz/Images/Auckland%20Unitary%20Plan%20Operative/Chapter%20D%20Overlays/1.%20Natural%20Resources/D9%20Significant%20Ecological%20Areas%20Overlay.pdf<br>https://unitaryplanmaps.aucklandcouncil.govt.nz/upviewer/. |
| 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. |
| Species | For the purpose of this plan, a species includes all cultivars, varieties and forms of that species, unless otherwise stated; but excludes any hybrids of that species with another species, unless otherwise stated. |
| Sustained control | To provide for the ongoing control of a pest to reduce its impacts on values and its spread to other properties. |
| Threatened | For the purposes of this plan, means any species classified as nationally or regionally 'Threatened' according to New Zealand Threat Classification System criteria. For completeness, this includes sub-categories 'Critical', 'Endangered' and 'Vulnerable'. |
| Transport corridor | Any road or rail corridor, as defined above. |
| 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. Untreated timber also includes woodchips and sawdust. |
| Urban Auckland | Means that part of the region designated urban by the Rural Urban Boundary as mapped in the Auckland Unitary Plan maps https://unitaryplanmaps.aucklandcouncil.govt.nz/upviewer/. |

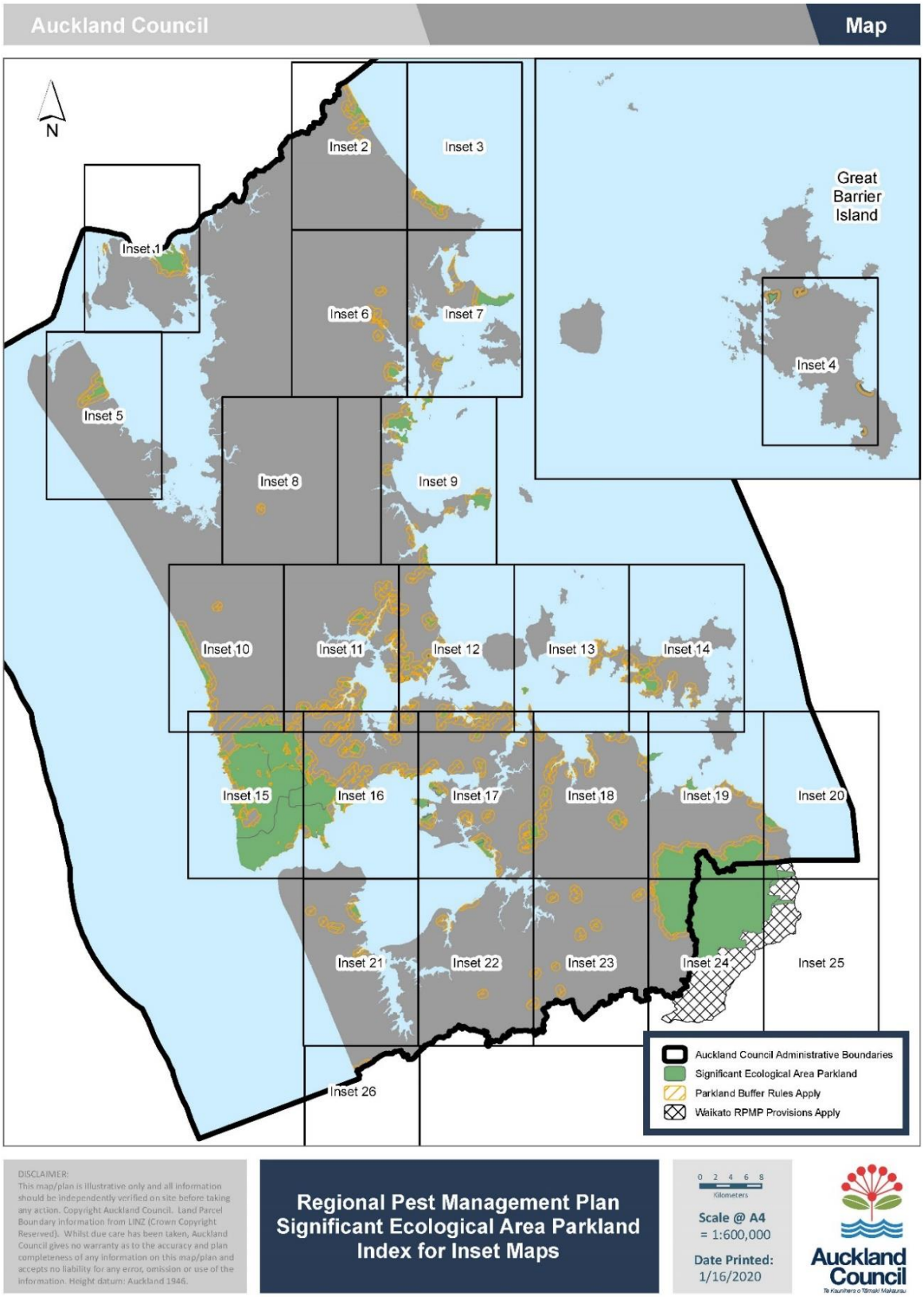


# 12 **Āpitihanga** / Appendix

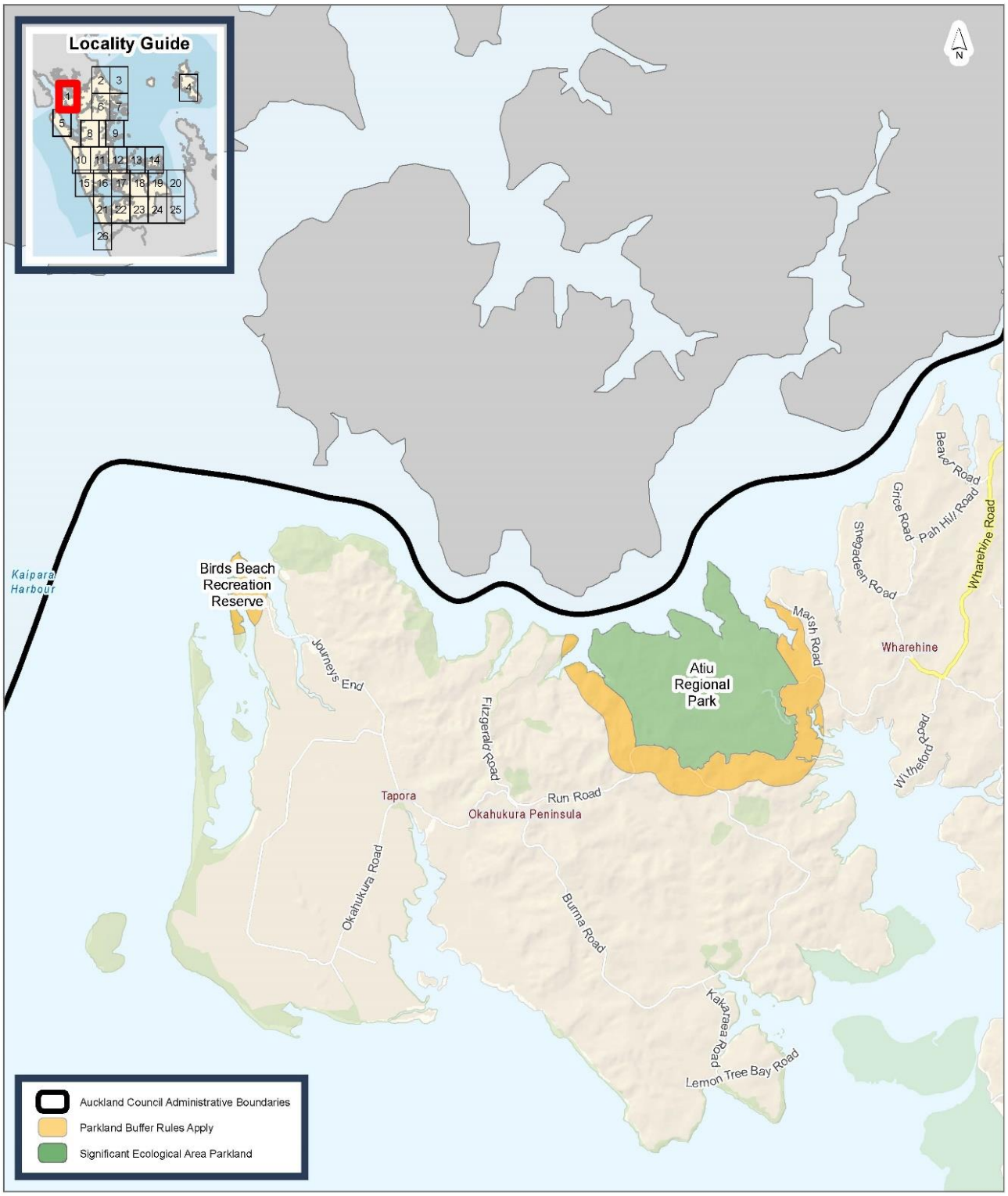
# Āpitihanga 1 Te Takiwā o Kohukohunui mō te whakahaere kaupapa koiora orotā / Appendix 1 Hunua Pest Management Area



# Āpitihanga 2 Whenua Papa Rēhia me ōna Rohe Hauropi Hiranga / Appendix 2 Parkland with Significant Ecological Areas



Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 1**

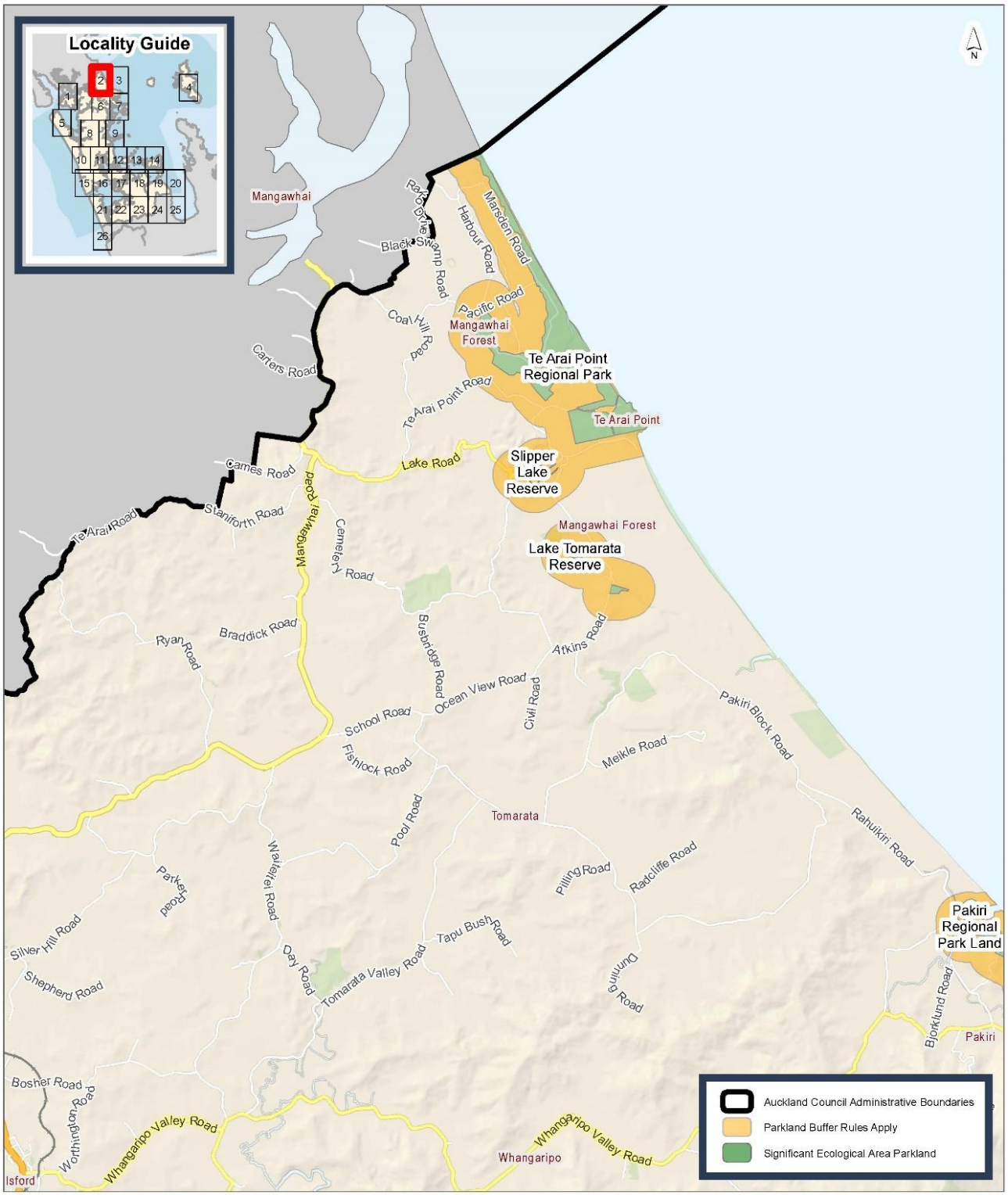
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,145

Date Printed:
1/6/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 2**

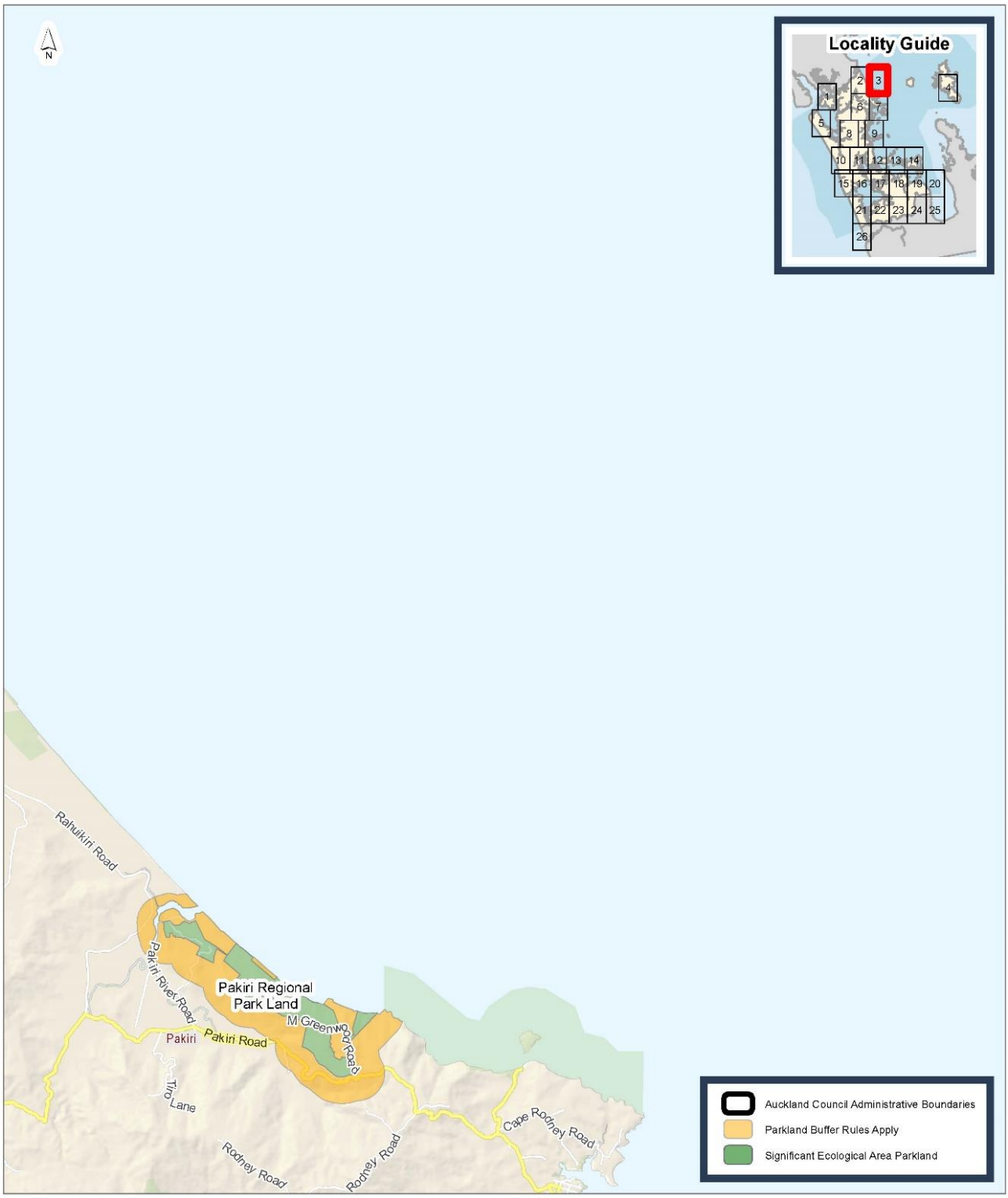
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/10/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 3**

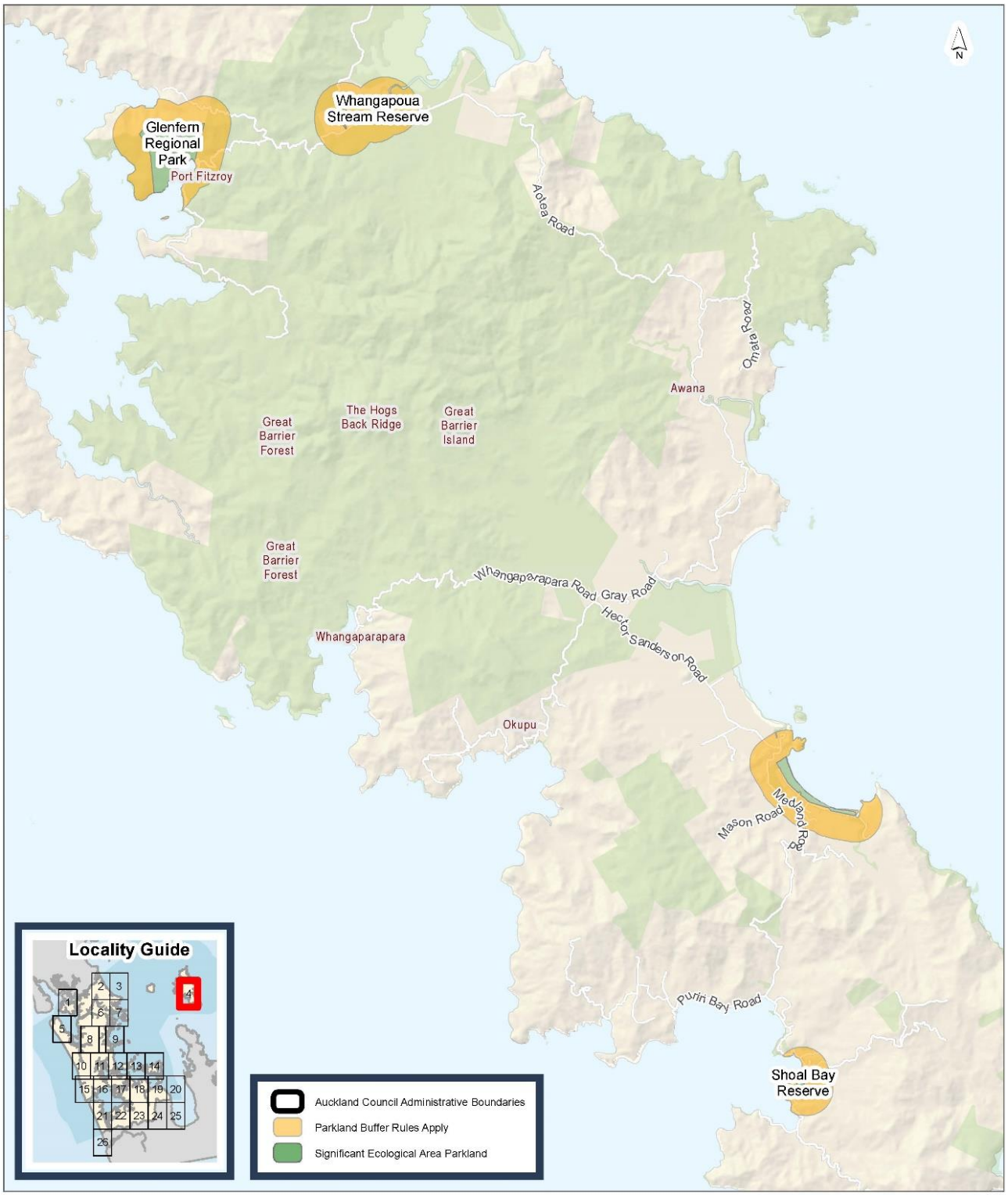
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/10/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 4**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,145

Date Printed:
1/6/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 5**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,145

Date Printed:
1/6/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 6**

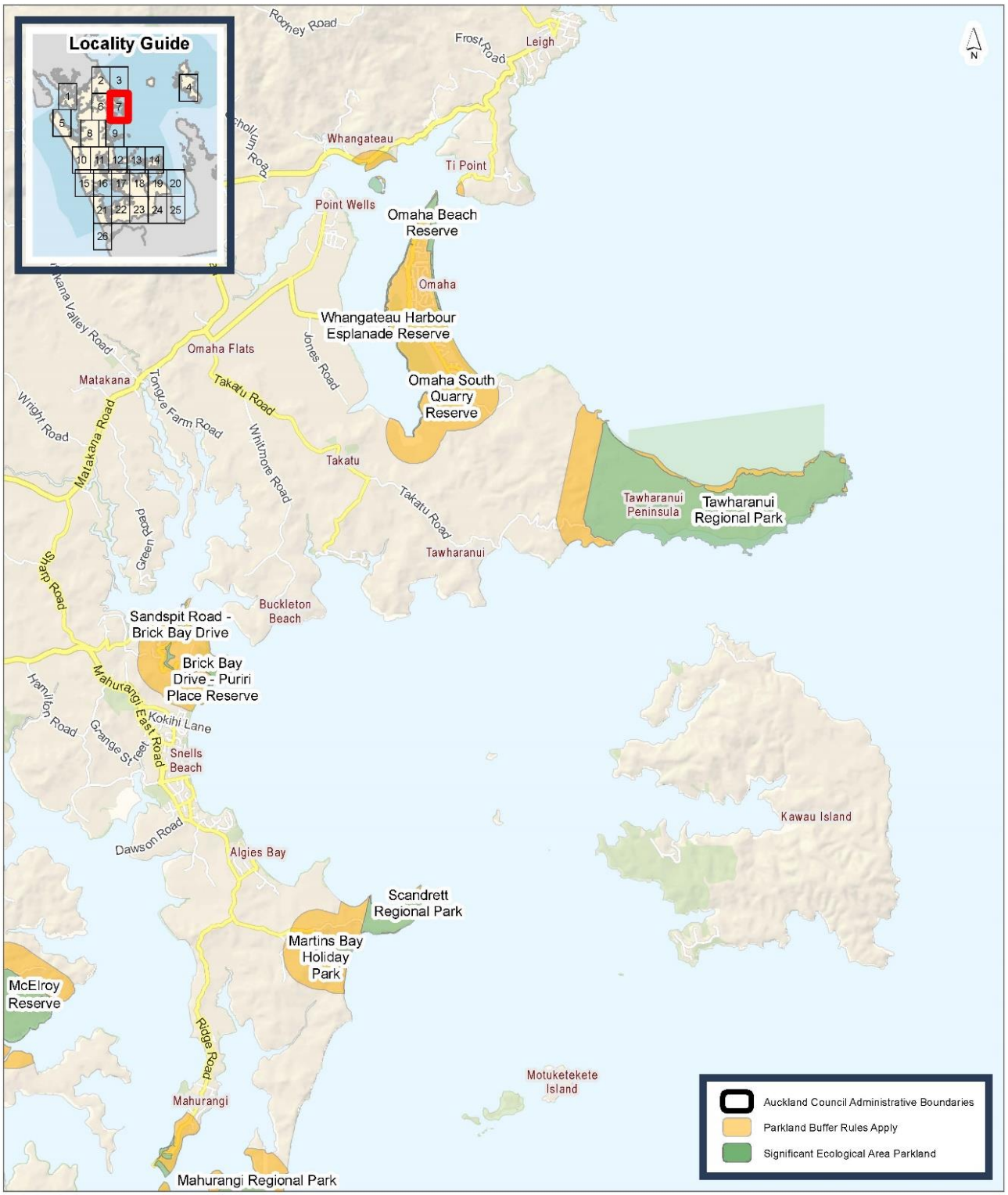
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/10/2020

Auckland Council

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 7**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/10/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 8**

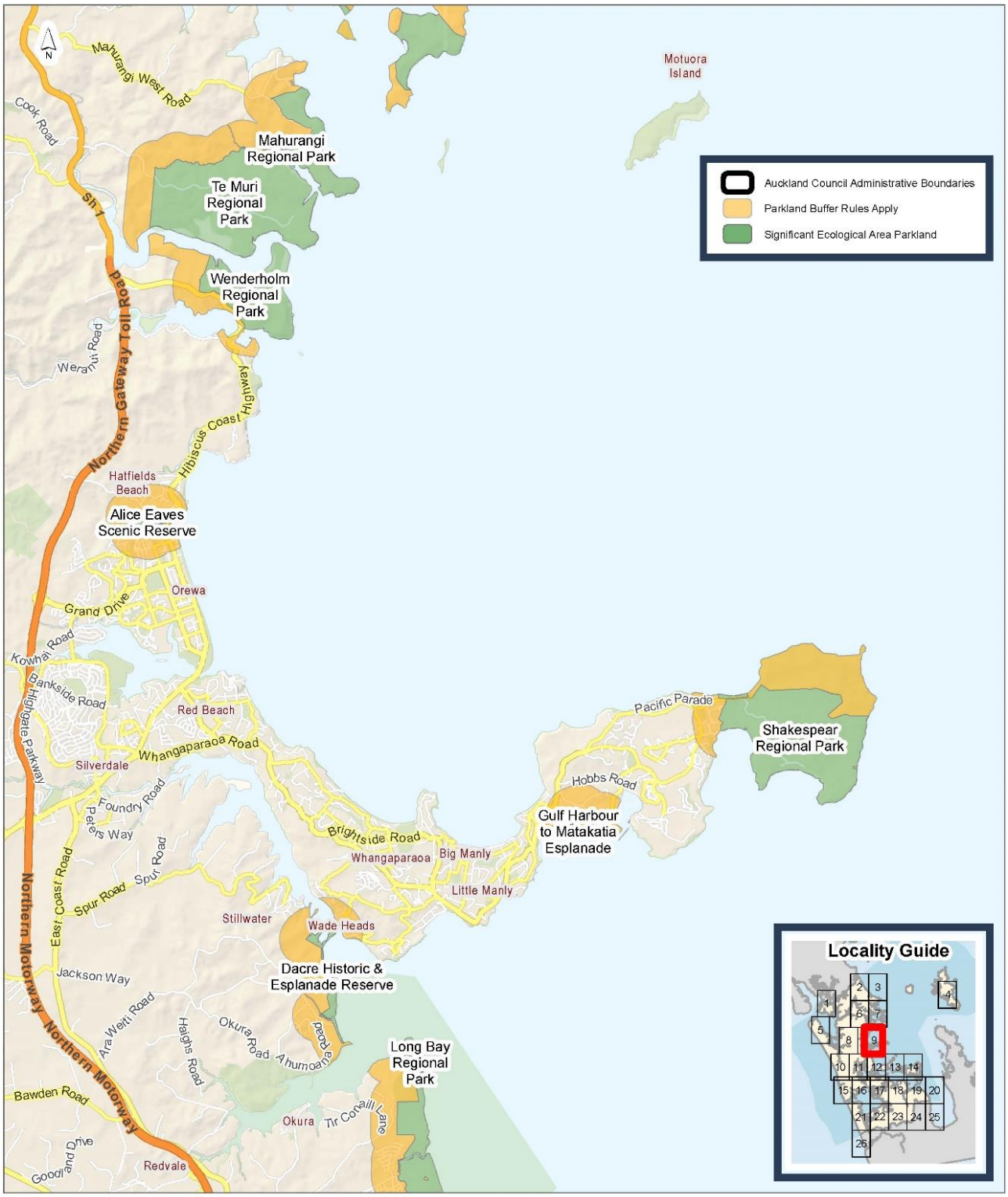
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/9/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 9**

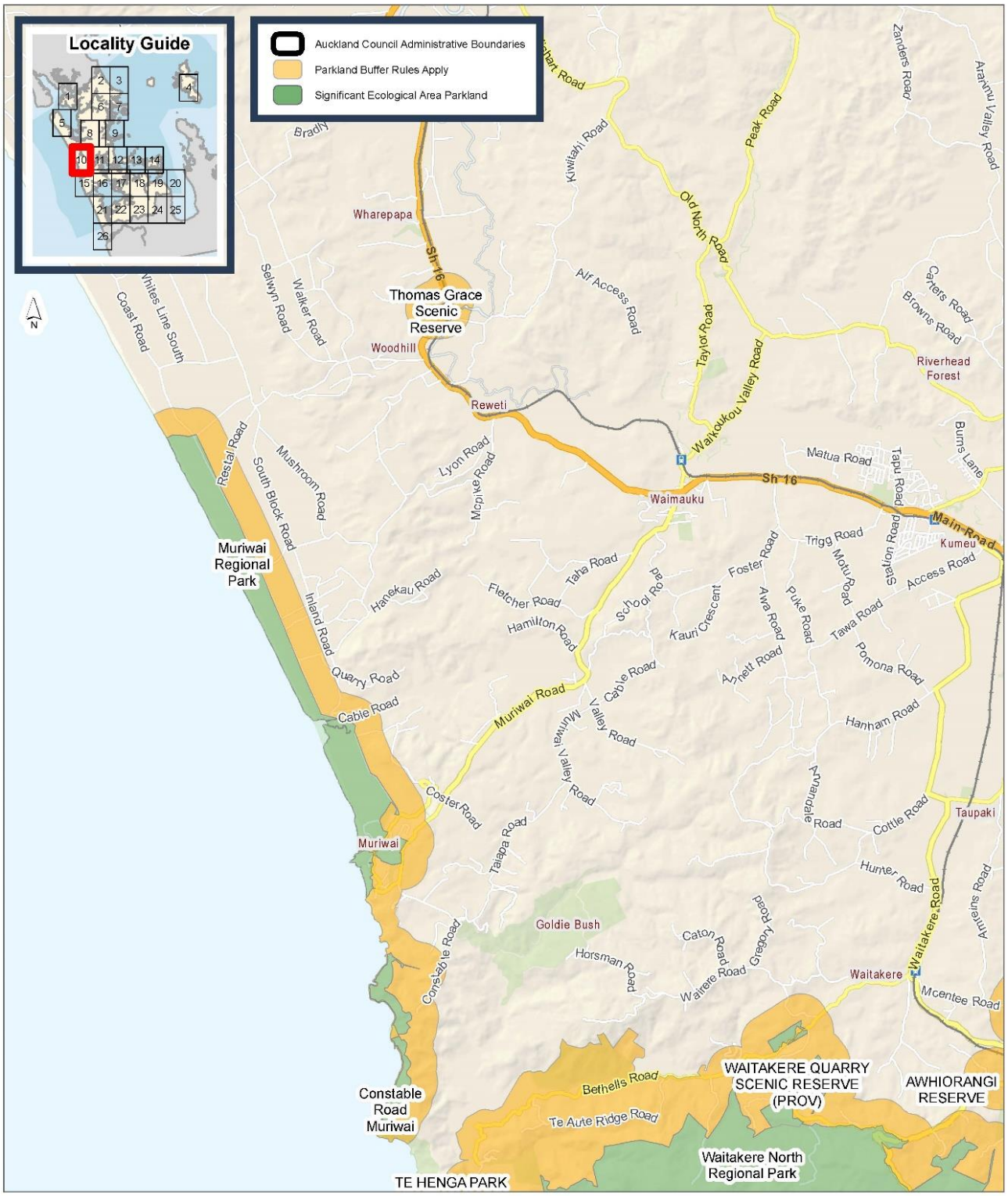
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/10/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 10**

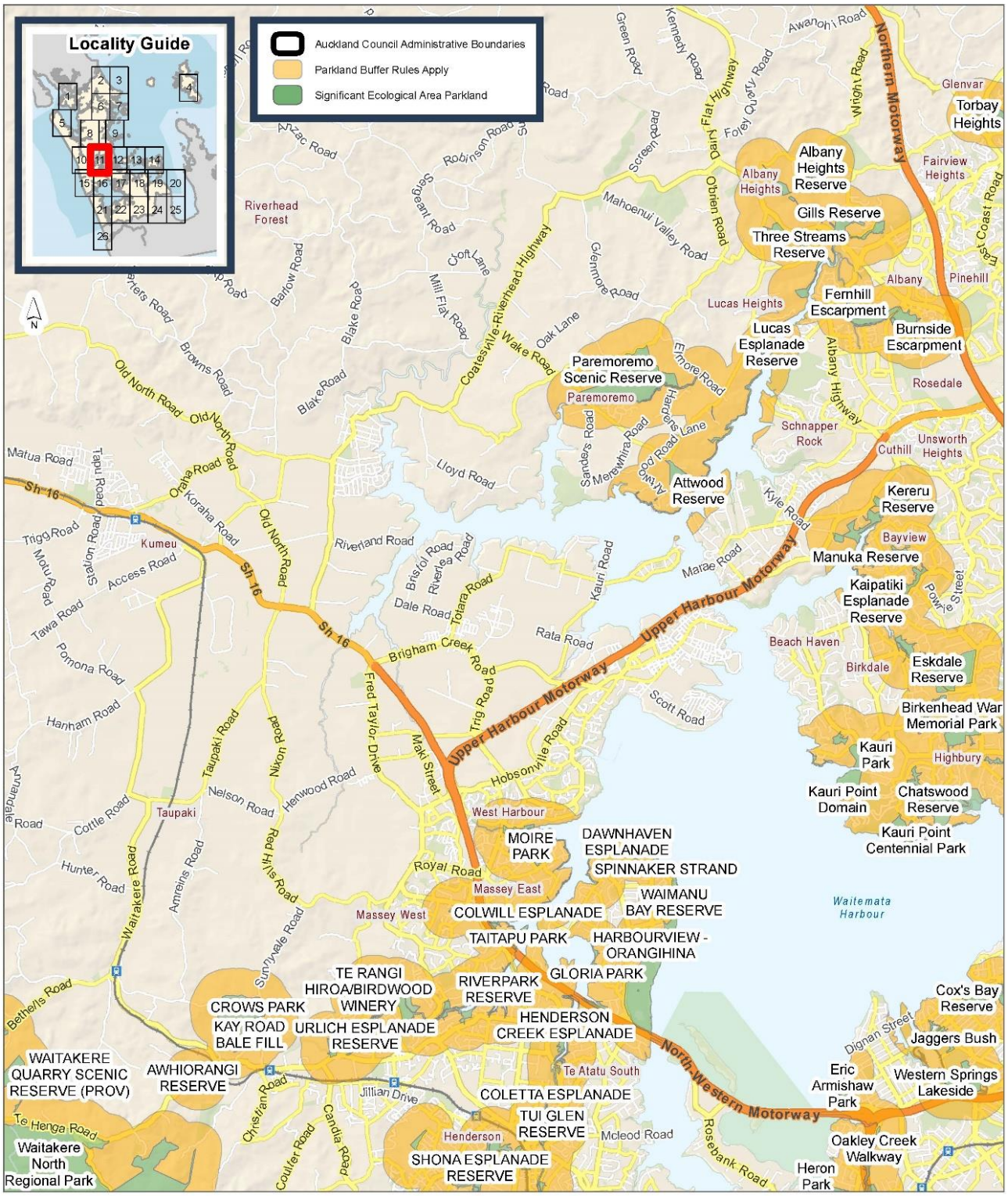
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 11**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 12**

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 13**

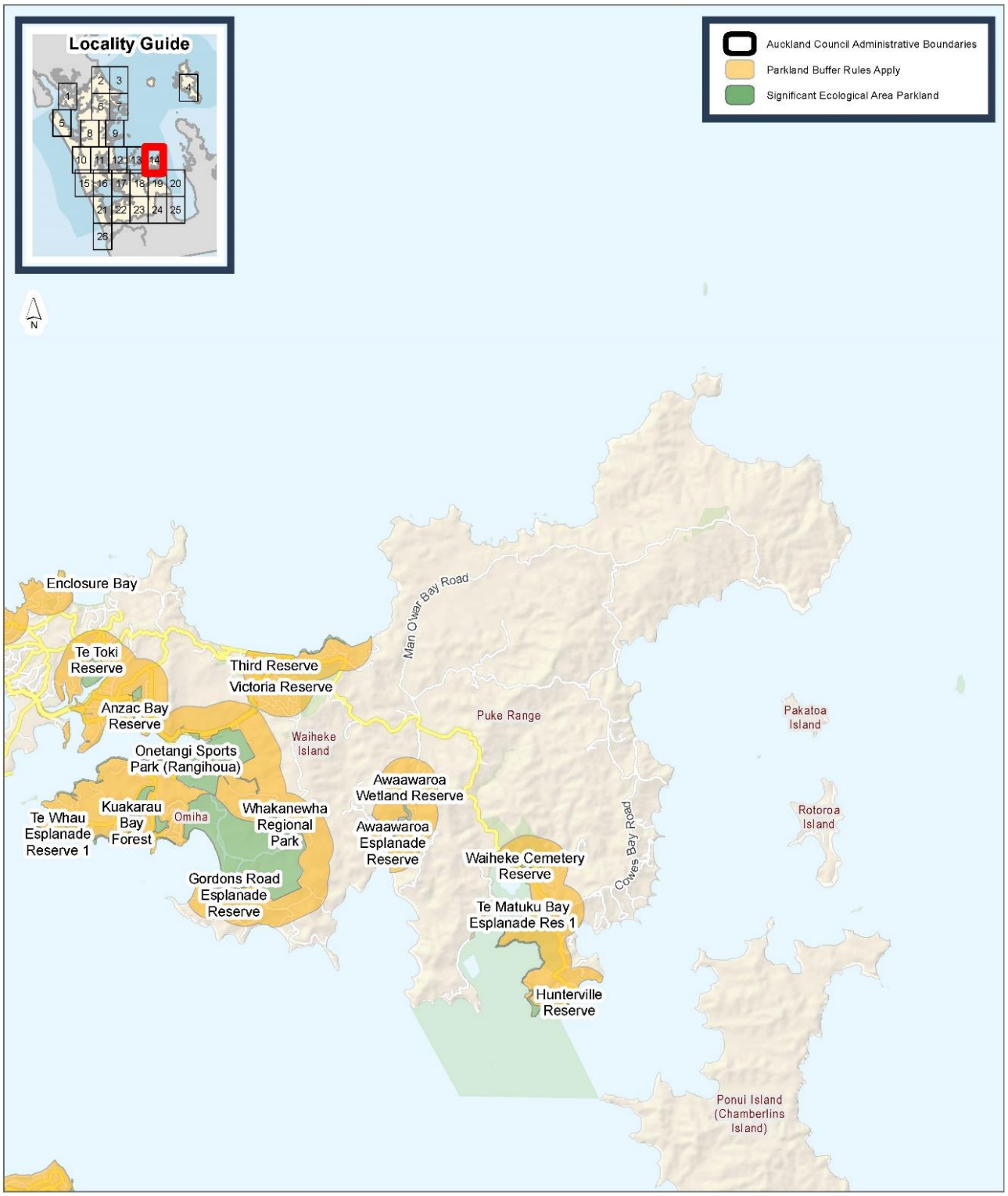
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 14**

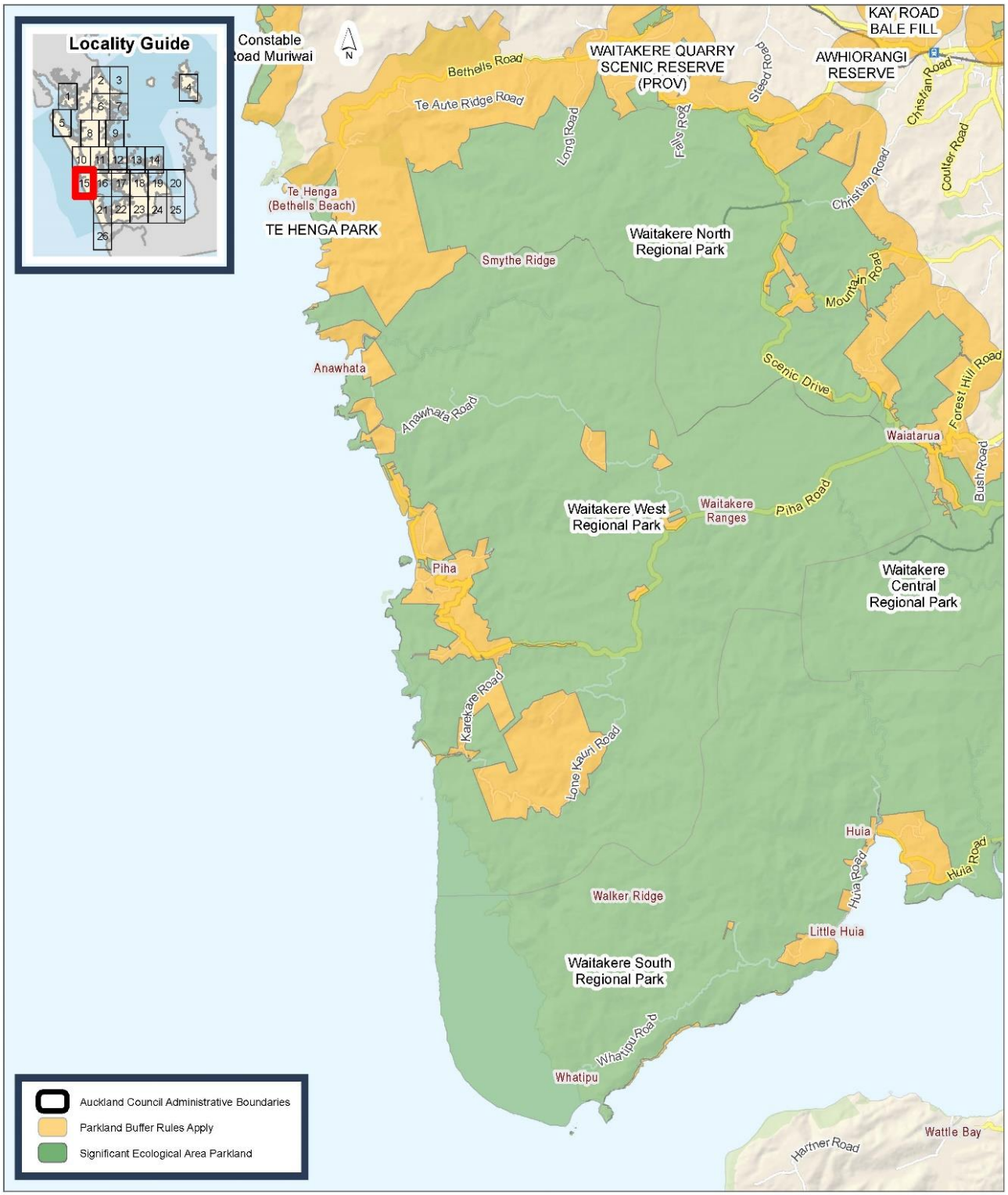
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 15**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/6/2020

Auckland Council

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 16**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/6/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 17**

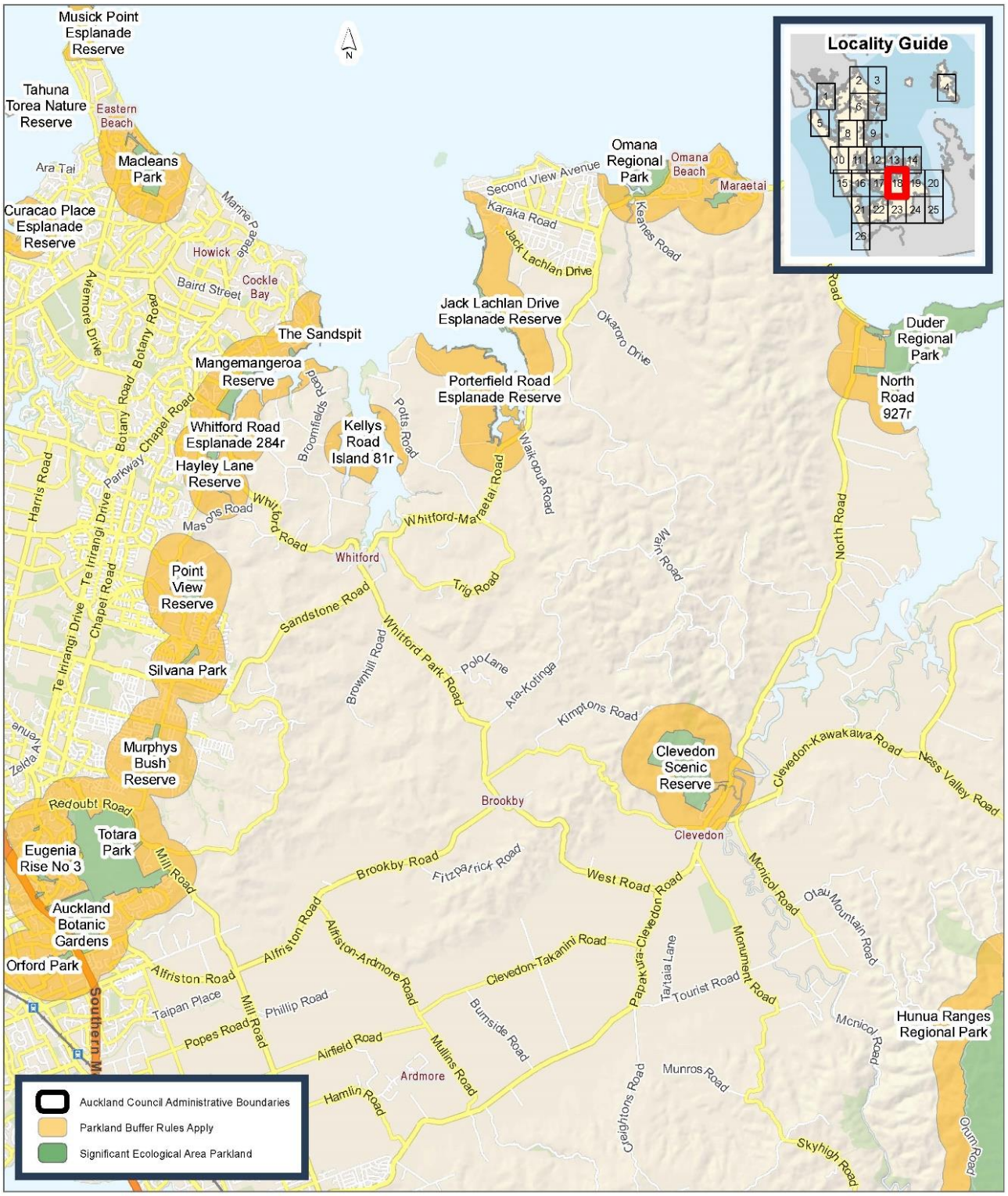
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/15/2020

Auckland Council

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 18**

0 0.5 1 1.5
Kilometers

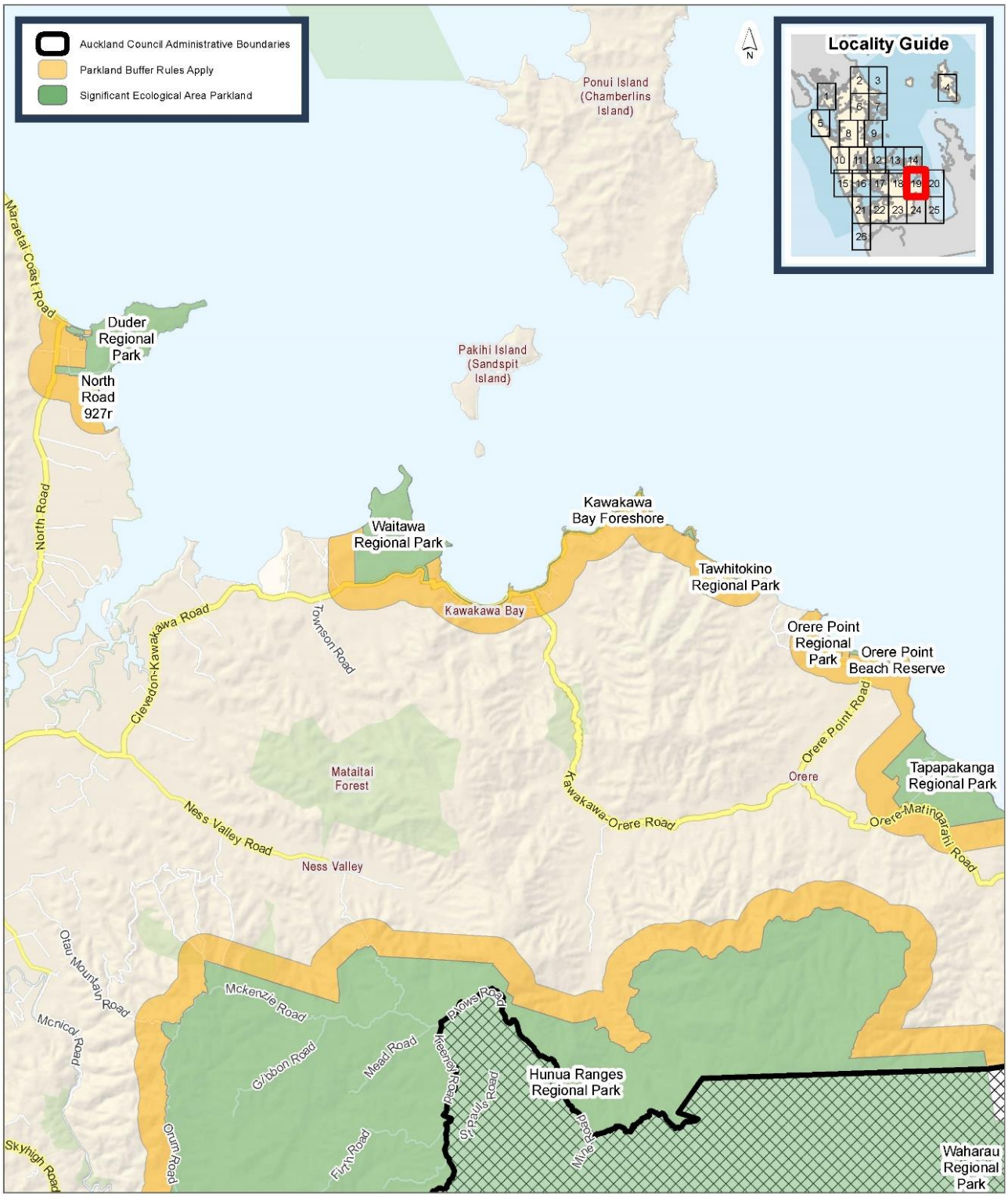
Scale @ A4
= 1:94,275

Date Printed:
1/7/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council

Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

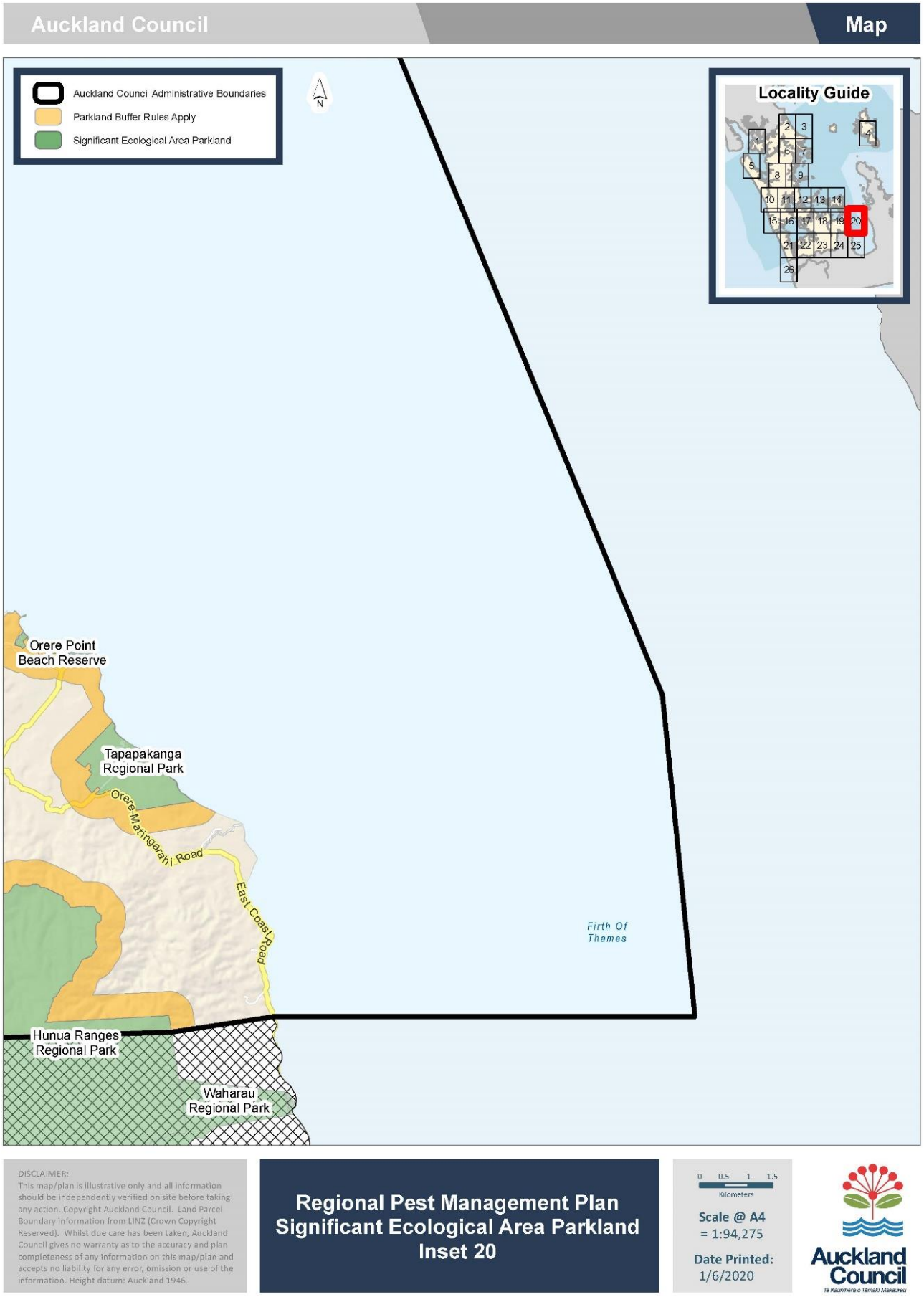
**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 19**

0 0.5 1 1.5
Kilometers

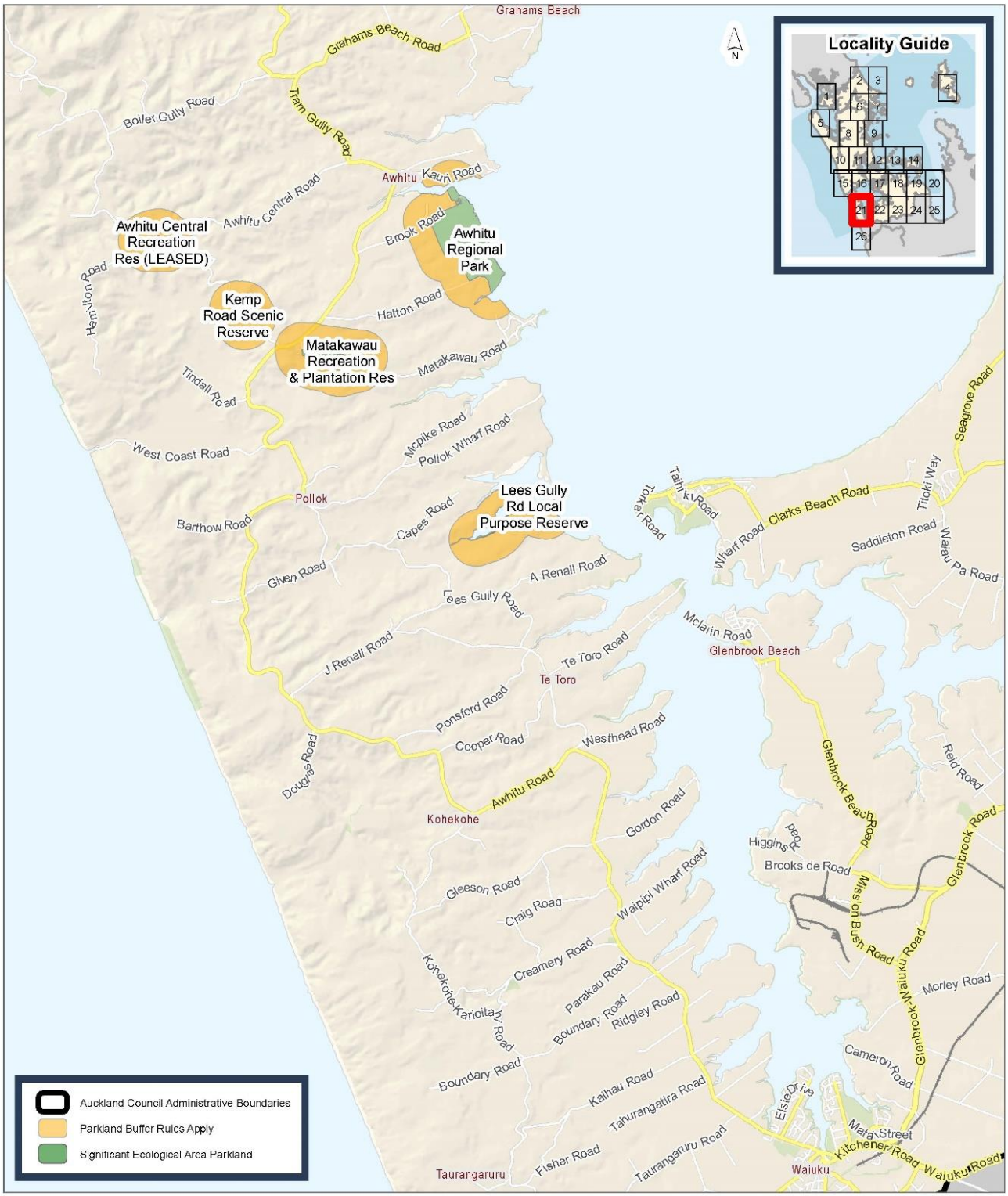
Scale @ A4
= 1:94,275

Date Printed:
1/7/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau


Auckland Council
Map
Auckland Council Administrative Boundaries
Parkland Buffer Rules Apply
Significant Ecological Area Parkland
N
Locality Guide
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
Orere Point
Beach Reserve
Tapapakanga
Regional Park
Orere-Matingarahi Road
East Coast Road
Firth Of
Thames
Hunua Ranges
Regional Park
Waharau
Regional Park
DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.
Regional Pest Management Plan
Significant Ecological Area Parkland
Inset 20
0 0.5 1 1.5
Kilometers
Scale @ A4
= 1:94,275
Date Printed:
1/6/2020
Auckland
Council

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 21**

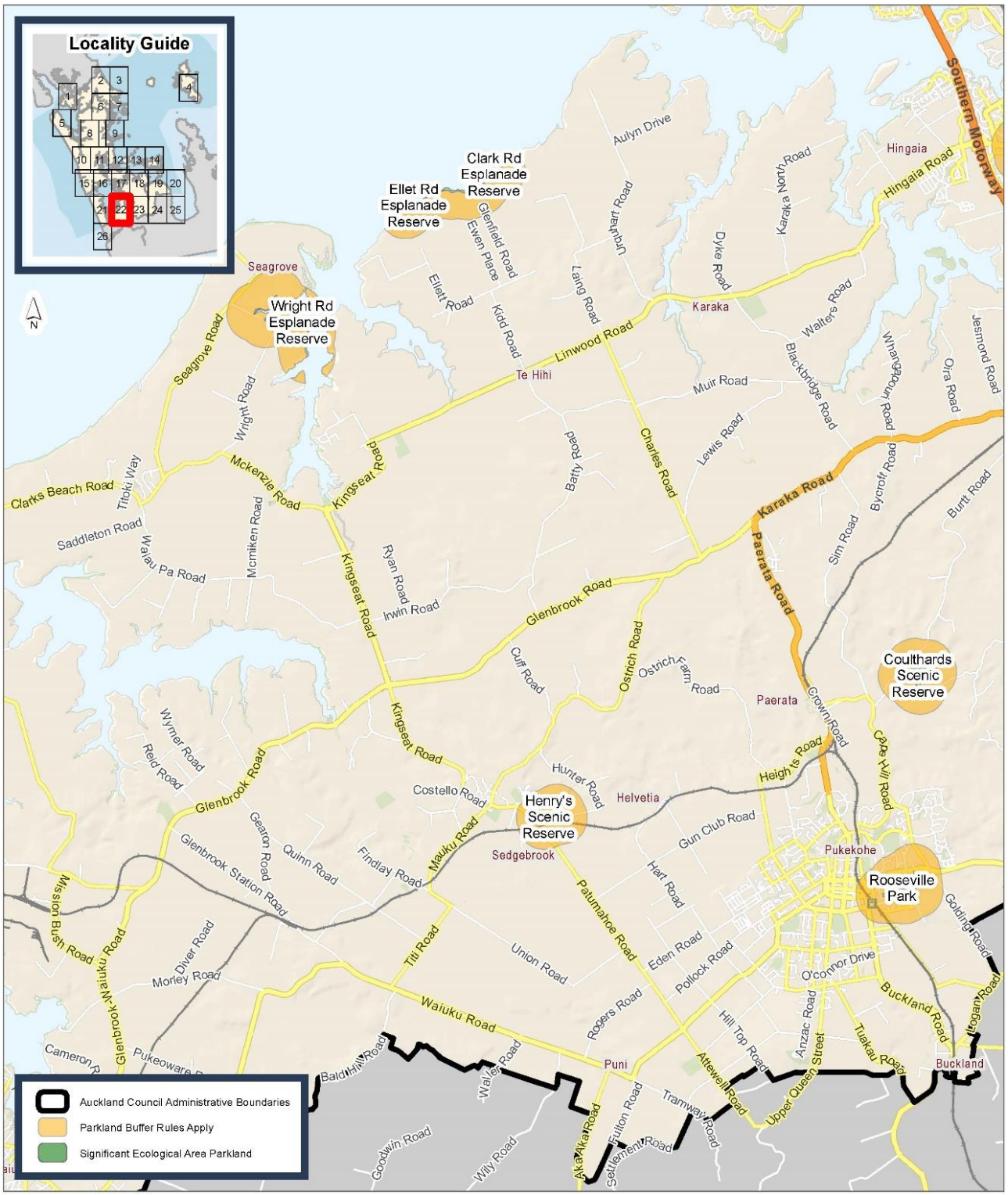
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 22**

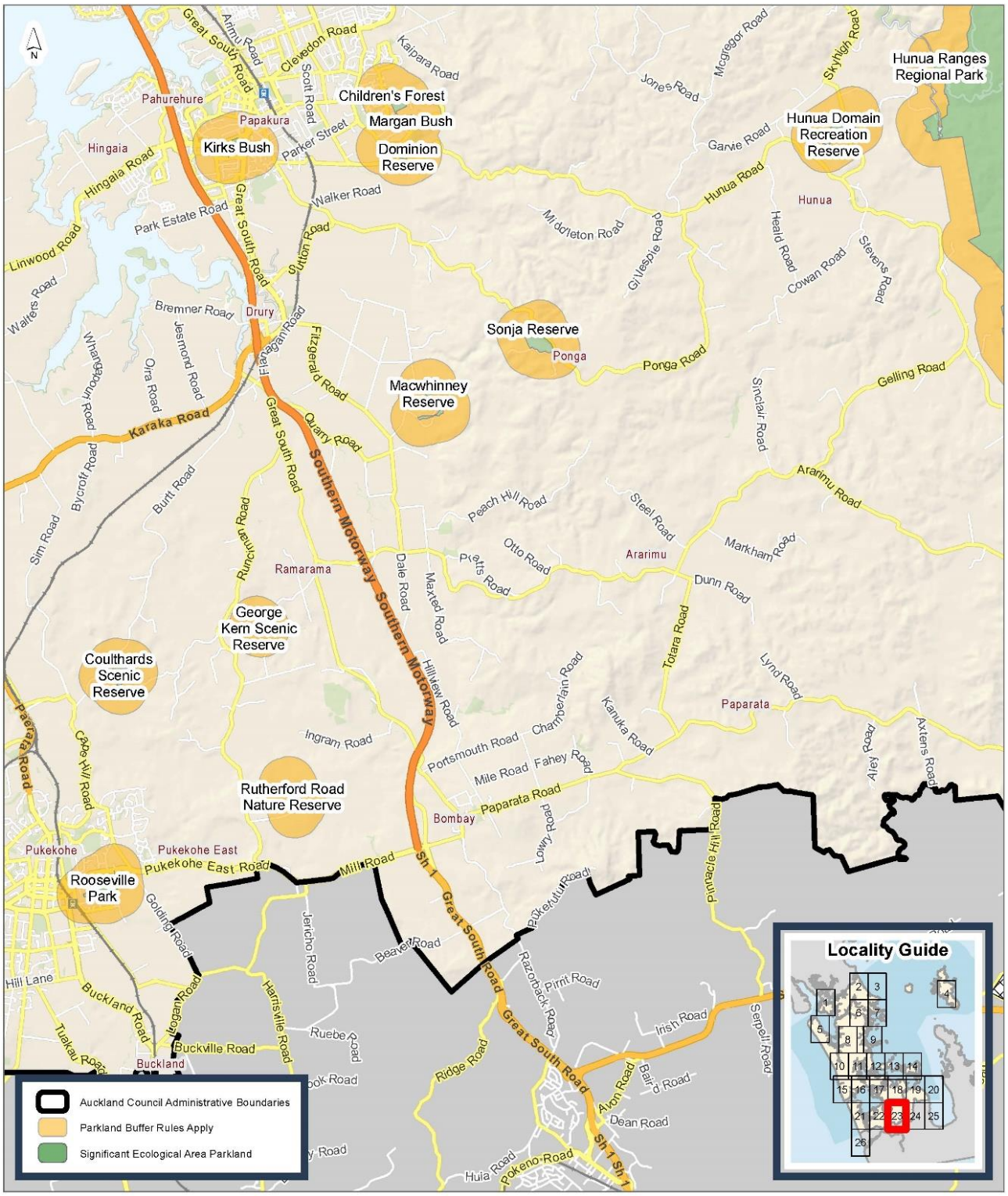
0 0.5 1 1.5 Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 23**

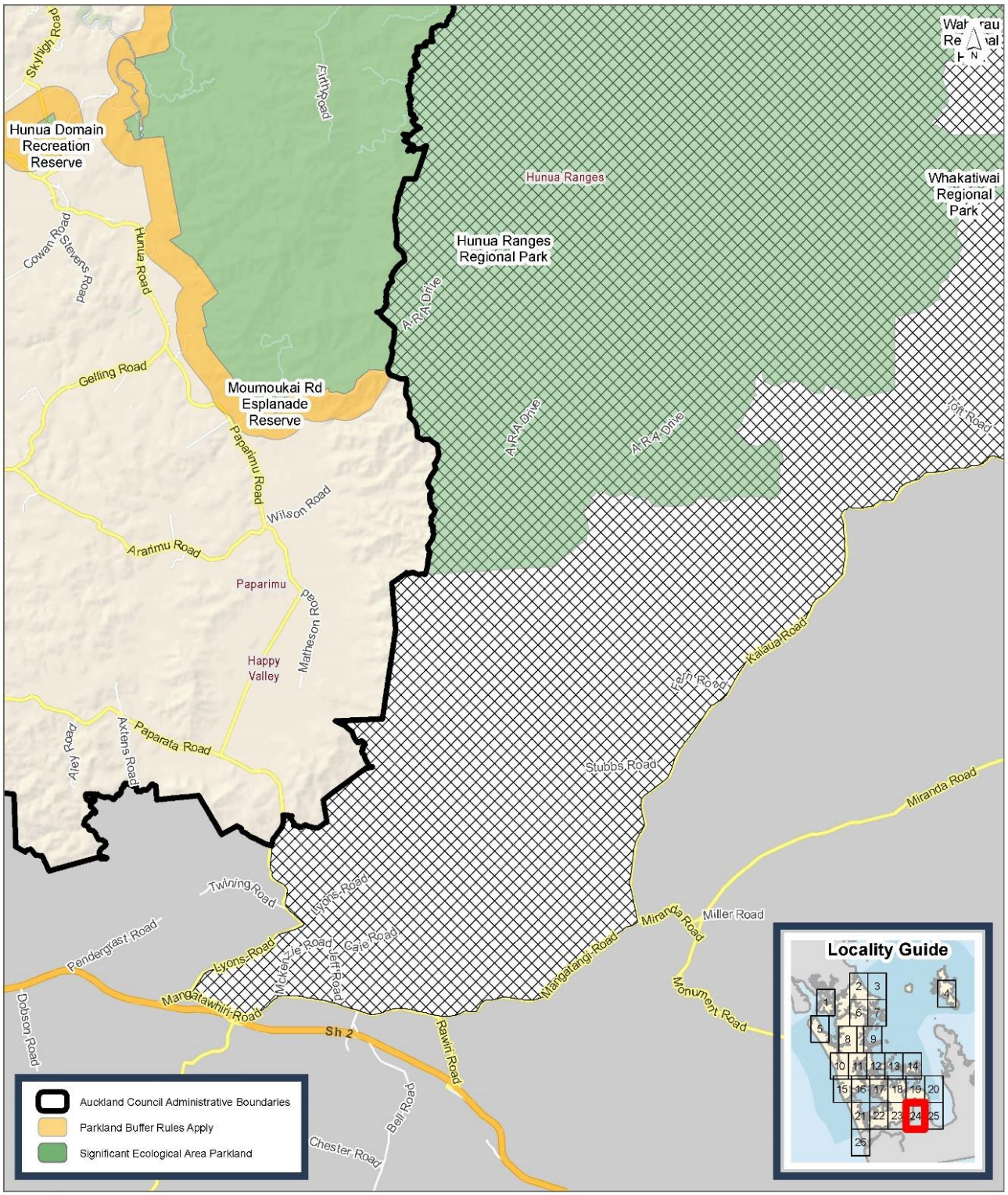
0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/16/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 24**

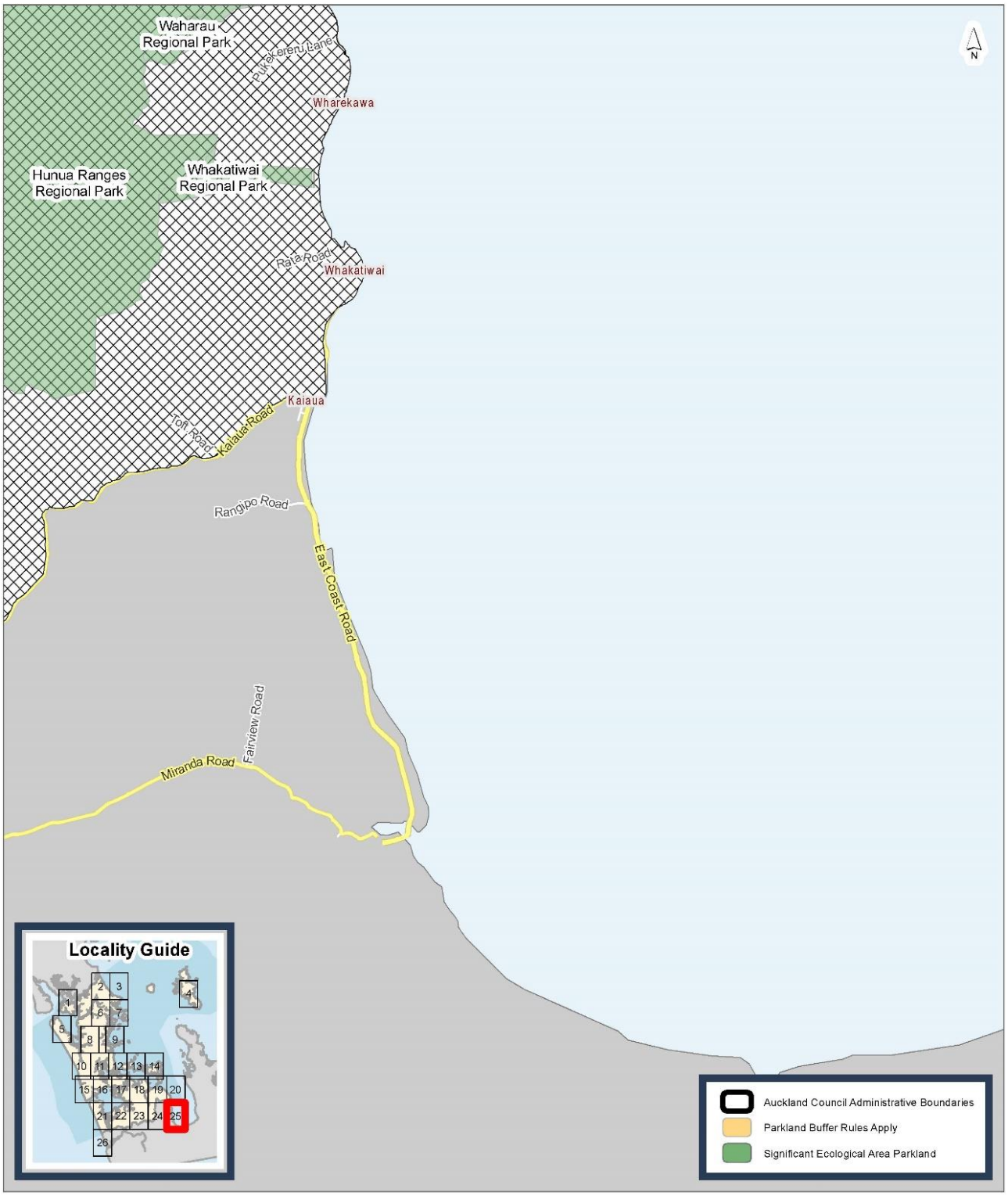
0 0.5 1 1.5 Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/16/2020

Auckland Council

Auckland Council | Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 25**

0 0.5 1 1.5
Kilometers

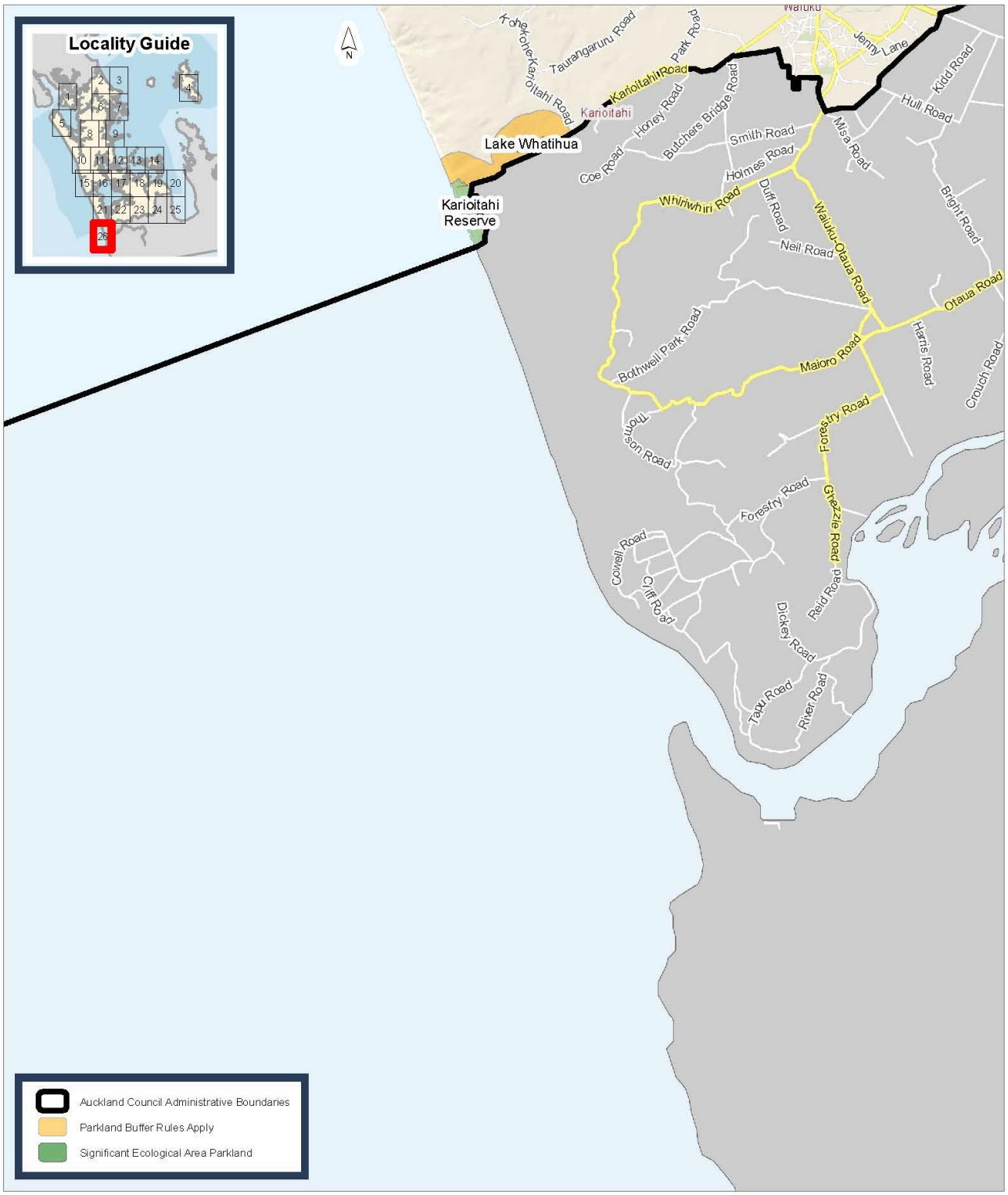
Scale @ A4
= 1:94,275

Date Printed:
1/8/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Auckland Council

Map




DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action. Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

**Regional Pest Management Plan**
**Significant Ecological Area Parkland**
**Inset 26**

0 0.5 1 1.5
Kilometers

Scale @ A4
= 1:94,275

Date Printed:
1/6/2020

Auckland Council
Te Kaunihera o Tāmaki Makaurau

## Parks included in Significant Ecological Areas on parkland site-led programme

29 Heretaunga Avenue
Albacore Reserve
Albany Heights Reserve
Albany Heights west Reserve
Alberon Reserve
Albert Crescent Wharf Road Walkway
Aldersgate Reserve
Alice Eaves Scenic Reserve
Almorah Road Rock Forest
Ambury Regional Park
Anderson Road Matakana
Anns Creek Reserve
Anzac Bay Reserve
Aronia Way no. 2 Reserve
Ātiu Regional Park
Attwood Reserve
Auckland Botanic Gardens
Auckland Domain Premier
Awaawaroa Esplanade Reserve
Awaawaroa Wetland Reserve
Awaruku Reserve
Awhiorangi Reserve
Āwhitu Central Recreation res (leased)
Āwhitu Regional Park
Ayr Reserve
Banyan Drive Reserve
Bayfield Park
Beaufort Reserve
Belfast Reserve
Belle Terrace Foreshore Reserve
Birds Beach Recreation Reserve
Birdwood Park
Birkenhead War Memorial Park
Bishop Park
Blockhouse Bay Beach Reserve
Border Road Esplanade
Brick Bay Drive
Brick Bay Drive - Pūriri Place Reserve
Browns Island (Motukorea)
Burnside Escarpment
Burundi Ave Foreshore
Butterworth Block
Bycroft Reserve
Captain Springs Reserve
Captain’s Bush
Cartmel Reserve
Centennial Park - Campbells Bay
Chapman Strand
Charles Prevost Drive Reserve
Chatswood Reserve
Chelsea Estate Heritage Park
Children's Forest
Chisbury Terrace Reserve
Chorley Reserve
Church Bay Esplanade Reserve
Churchill Park
City View Reserve
Clark Road Esplanade Reserve
Clevedon Scenic Reserve
Cliff Road
Clifton Road Esplanade 339r
Coletta Esplanade
Colin Dale Park
Colwill Esplanade
Constable Road Muriwai
Coulthards Scenic Reserve
Cox's Bay Reserve
Craigavon Park
Cranwell Esplanade
Cranwell Park
Crows Park
Crum Park
Curacao Place Esplanade Reserve
Dacre Historic & Esplanade Reserve

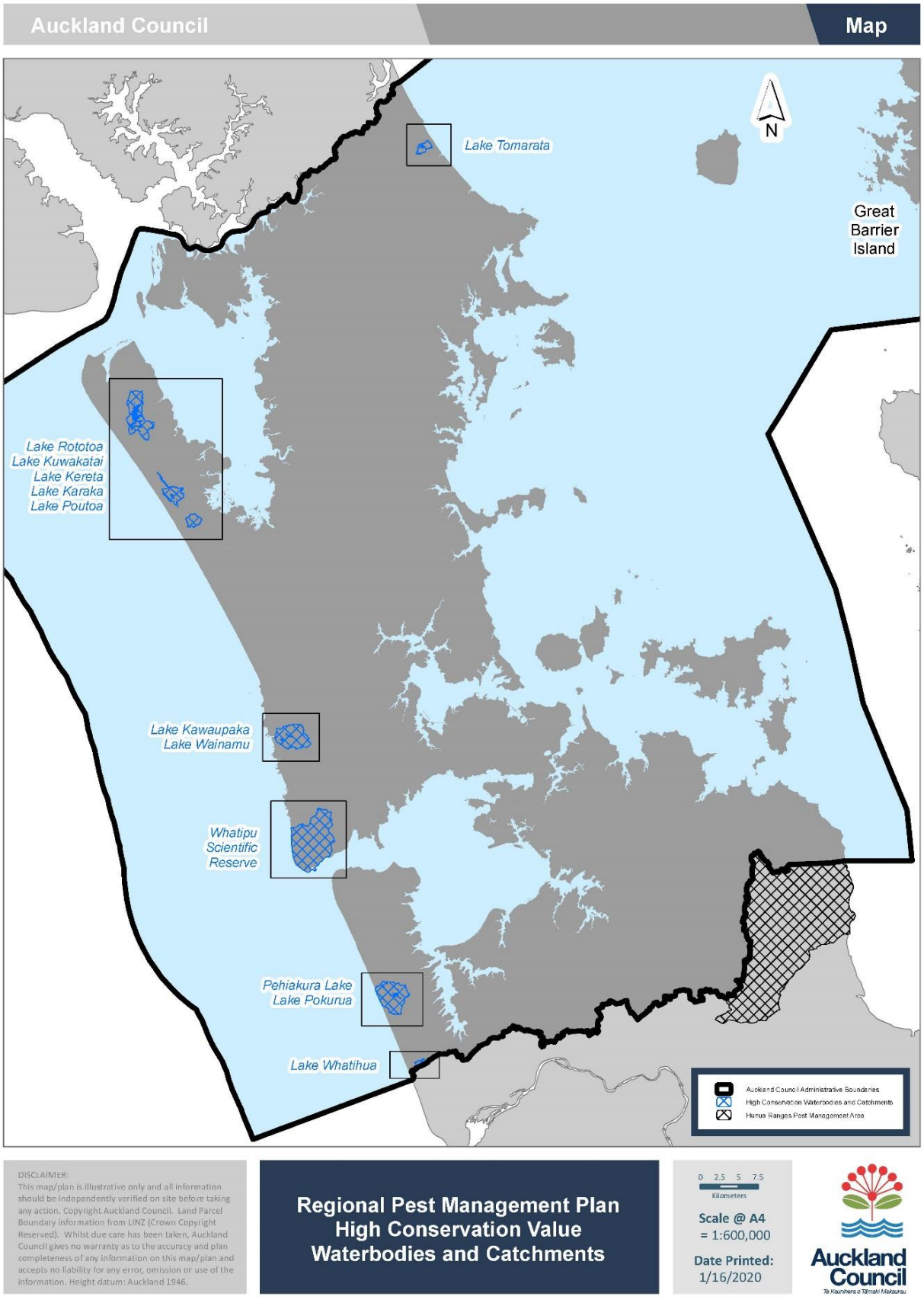
David Nathan Park
Dawnhaven Esplanade
Daytona Strand
Delamore Walkway
Dingle Dell Reserve
Dominion Reserve
Don Buck Corner
Duder Regional Park
Eastern Beach caravan Park
Ellet Road Esplanade Reserve
Enclosure Bay
Eric Armishaw Reserve
Eskdale Reserve
Eugenia Rise no 2
Eugenia Rise no 3
Everglade Drive no 3
Everglade Drive no 5
Fairlands Reserve Esplanade
Falls Park
Fernhill Escarpment
Flanshaw Esplanade Reserve
Fred Andersen Reserve
George Kern Scenic Reserve
George Pannill Reserve
Gills Reserve
Gittos Domain
Glen Atkinson Reserve a
Glen Brook Reserve
Glenfern Regional Park
Glenmary Place Reserve
Gloria Park
Gordons Road Esplanade Reserve
Grannys Bay Reserve
Gulf Harbour to Matakatia Esplanade
Halsey Esplanade Reserve
Hamlins Hill Regional Park
Harbourview - Orangihina
Harbutt Reserve
Hart Domain
Hayley Lane Reserve
Helena Park
Henderson Creek Esplanade
Henderson Park - Henderson
Henderson Valley Green
Hendry Reserve
Henry's Scenic Reserve
Heron Park
Hibiscus Reserve
Hillcrest Grove Reserve
Hillsborough Reserve 1
Hillsdale Reserve
Himalaya Reserve
Hinemoa Park
Hochstetter Pond (The Grotto Wetland)
Homewood Reserve
Hukanui Reserve
Hunterville Reserve
Hunua Domain Recreation Reserve
Hunua Ranges Regional Park
Jack Colvin Park
Jack Lachlan Drive Esplanade Reserve
Jaggers Bush
Kaipātiki Esplanade Reserve
Kānuka Reserve (Albany)
Karioitahi Reserve
Kaukapakapa Plantation Reserve
Kauri Glen Reserve
Kauri Park
Kauri Park extn
Kauri Point Centennial Park
Kauri Point Domain
Kawakawa Bay Foreshore
Kawakawa Coast Road Esplanade 193r
Kay Road Bale Fill
Kellys Road Island 81r
Kemp Road Scenic Reserve
Kepa Bush Reserve
Kererū Reserve

Kingswood Reserve
Kirks Bush
Kirks Bush - Butterworth House
Kitewao Street Esplanade Reserve
Kohuora Park
Kowhai Park
Kowhai Reserve
Kuakarau Bay Forest
Laingholm Drive Esplanade
Laingholm Scenic Reserve
Lake Tomarata Reserve
Lake Whatihua
Laurie Gibbons Memorial Park
Le Roy’s Bush Reserve
Leigh Scenic Reserve
Lees Gully Road Local Purpose Reserve
Lemington Reserve
Little Muddy Creek
Little Shoal Bay Reserve - Northcote Point
Long Bay Regional Park
Lowtherhurst Reserve
Lucas Creek Scenic Reserve
Lucas Esplanade Reserve
Lynfield Cove Reserve
Macleans Park
MacPherson Reserve
MacWhinney Reserve
Mahurangi Regional Park
Mahurangi River Sandspit Road
Mangemangeroa Reserve
Manuka Reserve
Manukau Domain
Maraetai Library Reserve
Margan Bush
Martins Bay Holiday Park
Martins Bay Recreation Reserve
Martyn Wilson Fields & Sonia Reserve
Matakatia Scenic reserve
Matakawau Recreation & Plantation Reserve
McElroy Reserve
McLeods Farm
Millbrook Road Reserve
Moire Park
Moumoukai Road Esplanade Reserve
Muriel Fisher Reserve
Muriwai Regional Park
Murphy’s Bush Reserve
Musick Point Esplanade Reserve
Newey’s Corner
Newmarket Park
Newton Reserve
Ngapipi Cliff Reserve
North Road 927r
Norwood Estate Park
Oakley Creek Walkway
Odin Place Reserve
Okiwi Park
Omaha Beach Reserve
Omaha South Quarry Reserve
Ōmana Regional Park
Omiha Beach Reserve
Onepoto Domain
Onetangi Cemetery
Onetangi Sports Park (Rangihoua)
Onewa Domain
Opanuku Marginal Strip Reserve
Opanuku Reserve
Opanuku Stream Reserve
Ōrakei Basin
Orere Point Beach Reserve
Orere Point Regional Park
Orford Park
Ōtuataua Stonefields Reserve
Owhanake Matiatia Walkway
Owhanake Reserve

Pakiri Regional Park land
Palomino Esplanade
Paremoremo Scenic Reserve
Paremuka Esplanade
Paritai Reserve
Park Point Walkway
Parrs Park
Parry Kauri Park
Pascoe Quarry Reserve
Penfold Park
Phyllis Reserve
Pigeonwood Reserve
Piha Domain
Platts Mills Reserve
Plumer Domain
Pōhutukawa Avenue Esplanade Reserve
Point England Reserve
Point View Reserve
Porterfield Road Esplanade Reserve
Pourewa Creek
Puhinui Reserve
Pūkaki Crater Reserve (leased)
Puketutu Island, Mangere Bridge
Railside Esplanade Reserve
Rayner Road / Sylvan Glade Reserve
Realm Esplanade
Redfern Nature Reserve
Ridgewood Reserve
River Park Reserve
Roberta Reserve
Rooseville Park
Rutherford Road Nature Reserve
Sandspit Road - Brick Bay Drive
Sandys Parade
Scandrett Regional Park
Serenity Reserve
Shakespear Regional Park
Shays Reserve
Sherrybrooke Esplanade
Sherwood Park
Shoal Bay Reserve
Shona Esplanade Reserve
Silvana Park
Singer Park
Slipper Lake Reserve
Smith’s Bush Scenic Reserve
Sonja Reserve
Soldiers Bay Reserve
Southern Park
Spinnaker Strand
Springbank Esplanade
Squirells Reserve
St Johns Bush
Standish Reserve
Sunhill Scenic Reserve
Sunline Esplanade
Sunline Park
Swanson Scenic Reserve
Sylvan Park
Sylvania Crescent Esplanade Reserve
Tahuna Torea Nature Reserve
Taitapu Park
Tāpapakanga Regional Park
Taumatarea Esplanade
Taunton Terrace
Tawa Esplanade
Tawaipareira Reserve
Tāwharanui Regional Park
Tawhitokino Regional Park
Te Ārai Point Regional Park
Te Henga Park
Te Matuku Bay Esplanade res 1
Te Matuku Stockyard Reserve
Te Muri Regional Park
Te Rangi Hiroa/Birdwood Winery
Te Rau Pūriri Regional Park
Te Toki Reserve

Te Uri Karaka te Waera Reserve
Te Wharau Reserve
Te Whau Esplanade Reserve 1
Thatcher Street Reserve
The Avenue Esplanade Reserve
The sandspit
Third Reserve
Thomas Grace Scenic Reserve
Three Streams Reserve
Torbay Heights
Tōtara Park
Trading Esplanade
Trusts Esplanade Reserve
Tuff Crater
Tui Glen Esplanade
Tui Glen Reserve
Urlich Esplanade Reserve
Verran Gully Reserve
Victoria Reserve
Vintage Reserve
Vitasovich Esplanade
Waharau Regional Park
Waiatarua Reserve
Waiheke Cemetery Reserve
Waiheke Island Reserve
Waikōwhai Park
Waikumete Cemetery
Waimanu Bay Reserve
Wai-o-taiki Nature Reserve
Wairaki Stream Reserve
Waitākere Central Regional Park
Waitākere North Regional Park
Waitākere Quarry Scenic Reserve (prov)
Waitākere South Regional Park
Waitākere West Regional Park
Waitaramoa Reserve
Waitawa Regional Park
Waiti Bay Reserve
Walpole Avenue Reserve
Warkworth Showgrounds
Wattle Bay
Wenderholm Regional Park
Wesley Bay Glade
Western Springs lakeside
Westmere Lemington Esplanade
Whakanewha Regional Park
Whakatīwai Regional Park
Whangapoua Stream Reserve
Whangateau Harbour Esplanade Reserve
Whangateau Recreation Reserve Islands
Wharua Reserve
White Bluff Reserve
Whitford Road Esplanade 284r
Wickstead Strand
Wirihana Park
Witheford Scenic Reserve
Withiel Thomas
Woodside Reserve
Wright Road Esplanade Reserve

# Āpitihanga 3 Ngā tino roto / Appendix 3 High Conservation Value Waterbodies



# Āpitihanga 4 Kuputohu o ngā koiora orotā / Appendix 4 Index of pest organisms

## A


*Acacia longifolia* - sydney golden wattle 327
*Acacia mearnsii* - black wattle 327
*Acacia paradoxa* - kangaroo acacia 168, 327
*Acacia verticillata* - prickly-leaved wattle 327
*Acaena agnipila* - sheep's bur 327
*Acridotheres tristis* - myna 281
*Actinidia* species (wild varieties only) - wild kiwifruit 320
African club moss - *Selaginella kraussiana* 327
African feather grass - *Cenchrus macrourus* syn. *Pennisetum macrourum* 313
African pig's ear - *Cotyledon orbiculata* 327
agapanthus - *Agapanthus praecox* 186, 327
*Agapanthus praecox* - agapanthus 186, 327
*Agave americana* - century plant 327
*Ageratina adenophora* - Mexican devil 327
*Ageratina riparia* - mist flower 327
*Ailanthus altissima* - tree of heaven 160, 327
*Akebia quinata* - chocolate vine 327
*Akebia trifoliata* - *Akebia trifoliata* 313
alder - *Alnus glutinosa* 327
*Alisma plantago-aquatica* - water plantain 160
alligator weed - *Alternanthera philoxeroides* 155, 215, 327
*Alnus glutinosa* - alder 327
*Alocasia macrorrhiza* syn. *A. brisbanensis* - elephant's ear 327
*Aloe maculata* - soap aloe 327
*Alternanthera philoxeroides* - alligator weed 155, 215, 327
*Ameiurus nebulosus* syn. *Ictalurus nebulosus* - brown bullhead catfish 135, 228, 254
*Ammophila arenaria* - marram grass 327
*Amphibolurus barbatus* syn. *Pogona barbata* - bearded dragon 131, 250
*Andropogon virginicus* - broomsedge 313
*Anredera cordifolia* - Madeira vine 168, 215, 327
*Aponogeton distachyos* - Cape pond weed 160
*Araujia sericifera* syn. *Araujia hortorum* - moth plant 128, 160, 204, 327
*Archontophoenix cunninghamiana* - bangalow palm 215, 327
*Arctium minus* - burdock 327
Argentine ant - *Linepithema humile* 96, 248
aristea - *Aristea ecklonii* 215, 327
*Aristea ecklonii* - aristea 215, 327
artillery plant - *Lamium galeobdolon* syn. *Galeobdolon luteum* syn. *Lamiastrum galeobdolon* 327
*Arum italicum* - Italian arum 327
arum lily - *Zantedeschia aethiopica* 327
*Arundo donax* - giant reed 160, 215, 327
Asian paddle crab - *Charybdis japonica* 393
Asiatic/Japanese knotweed - *Reynoutria japonica* syn. *Fallopia japonica*, *R. sachalinensis* syn. *F. sachalinensis* and hybrids 322
*Asparagus asparagoides* - smilax 168, 327
*Asparagus drepanophyllus* and *A. umbellatus* - asparagus species 313
*Asparagus plumosus* - ferny asparagus 327
*Asparagus scandens* - climbing asparagus 160, 191, 327
asparagus species - *Asparagus drepanophyllus* and *A. umbellatus* 313
*Asparagus. aethiopicus* syn. *A.sparagus densiflorus* - bushy asparagus 160, 189, 327
Australian droplet tunicate - *Eudistoma elongatum* 395
Australian sedge - *Carex longebrachiata* 327
*Austrostipa rudis* - needle grass 322
*Axis* spp. including any hybrid - feral deer 94, 236


## B


baccharis - *Baccharis halimifolia* 327
*Baccharis halimifolia* - baccharis 327
balloon vine - *Cardiospermum grandiflorum* 313
bamboo species - *Phyllostachys aurea*, *Phyllostachys nigra*, *Pleioblastus auricomus*, *Pleioblastus hindsii*, *Pseudosasa japonica*, *Chimonobambusa quadrangularis* 327
banana passionfruit - *Passiflora tripartita* var. *mollissima*, *P. mixta* and *P. tarminiana* 327

bangalow palm - *Archontophoenix cunninghamiana* 215, 327
*Banksia integrifolia* - coast banksia 193, 327
barberry - *Berberis glaucocarpa* 327
bartlettina - *Bartlettina sordida* 327
*Bartlettina sordida* - bartlettina 327
Bathurst bur - *Xanthium spinosum* 327
bearded dragon - *Amphibolurus barbatus* syn. *Pogona barbata* 131, 250
*Berberis darwinii* - Darwin's barberry 327
*Berberis glaucocarpa* - barberry 327
berry heath - *Erica baccans* 327
black wattle - *Acacia mearnsii* 327
blackberry (wild aggregates) - *Rubus fruticosus* agg. 327
bladderwort species - *Utricularia arenaria*, *U. gibba*, *U. livida* and *U. sandersonii* 327
blue morning glory - *Ipomoea indica* 215, 327
blue passion flower - *Passiflora caerulea* 327
blue spur flower - *Plectranthus ecklonii* and *P. grandis* 327
blue-tongued skink - *Tiliqua scincoides* and *T. nigrolutea* 133, 252
Bolivian fuchsia - *Fuchsia boliviana* 327
bomarea - *Bomarea caldasii* and *B. multiflora* 327
*Bomarea caldasii* and *B. multiflora* - bomarea 327
boneseed - *Chrysanthemoides monilifera* 160, 215, 327
boxthorn - *Lycium ferocissimum* 127, 160, 215, 327
*Branta canadensis* - Canadian geese 136, 256
Brazilian pepper tree - *Schinus terebinthifolius* 327
Brazilian rattlebox - *Sesbania punicea* 155, 327
broomsedge - *Andropogon virginicus* 313
brown bullhead catfish - *Ameiurus nebulosus* syn. *Ictalurus nebulosus* 135, 228, 254
brush wattle - *Paraserianthes lophantha* 327
buddleia - *Buddleja davidii* 327
*Buddleja davidi*i - buddleia 327
bur daisy - *Calotis lappulacea* 327
burdock - *Arctium minus* 327
bushy asparagus - *Asparagus. aethiopicus* syn. *A.sparagus densiflorus* 160, 189, 327
buttercup bush - *Senna septemtrionalis* 327

# C

*Cacatua galerita* - sulphur-crested cockatoo 153, 246
*Cacatua roseicapilla* - galah 140, 265
*Calicotome spinosa* - spiny broom 327
Californian bulrush - *Schoenoplectus californicus* 327
Californian thistle - *Cirsium arvense* 327
*Callistachys lanceolata* - oxylobium 327
*Calluna vulgaris* (excl. double flowered cultivars) - heather 327
*Calotis lappulacea* - bur daisy 327
Canadian geese - *Branta canadensis* 136, 256
Canary Island ivy - *Hedera helix* subsp. *canariensis* 327
Cape honey flower - *Melianthus major* 327
Cape ivy - *Senecio angulatus* 327
Cape pond weed - *Aponogeton distachyos* 160
Cape sundew - *Drosera capensis* 327
*Capra hircus* - feral goat 238
*Carassius auratus* – goldfish 142, 269
*Cardiospermum grandiflorum* - balloon vine 313
*Cardiospermum halicacabum* - small balloon vine 313
*Carduus acanthoides* - plumeless thistle 327
*Carduus nutans* - nodding thistle 327
carex - *Carex divulsa* 327
*Carex divisa* - divided sedge 327
*Carex divulsa* - carex 327
*Carex longebrachiata* - Australian sedge 327
*Carex scoparia* - Carex scoparia 160, 327
*Carpobrotus edulis* and hybrids - iceplant 327
*Carthamus lanatus* - saffron thistle 327
castor oil plant - *Ricinus communis* 327
cat (unowned) - *Felis catus* 98, 303
cat's claw creeper - *Macfadyena unguis-cati* 327
cathedral bells - *Cobaea scandens* 322
*Celastrus orbiculatus* - climbing spindle berry 322
*Cenchrus macrourus* syn. *Pennisetum macrourum* - African feather grass 313
*Cenchrus* spp. (except kikuyu grass and pearl barley) - *Cenchrus* spp. syn. *Pennisetum* spp. (excl. *C. clandestinus* and *C. americanus*) 327
*Cenchrus* spp. syn. Pennisetum spp. (excl. C. clandestinus and C. americanus) - Cenchrus spp. (except kikuyu grass and pearl barley) 327
*Centranthus ruber* - red valerian 327
century plant - *Agave americana* 327

*Ceratophyllum demersum* - hornwort 155, 226, 327
*Cervus* spp. including any hybrid - feral deer 94, 236
*Cestrum nocturnum* - queen of the night 327
*Cestrum parqui* - green cestrum 313
*Charybdis japonica* – Asian paddle crab 393
*Chelodina longicollis* - snake-neck turtle 151, 297
Chilean flame creeper - *Tropaeolum speciosum* 327
Chilean glory creeper - *Eccremocarpus scaber* 327
Chilean needle grass - *Nassella neesiana* 313
Chilean rhubarb - *Gunnera tinctoria* 327
*Chimonobambusa quadrangularis* - bamboo species 327
Chinese fan palm - *Trachycarpus fortunei* 215, 327
Chinese holly grape - *Mahonia lomariifolia* 327
chocolate vine - *Akebia quinata* 327
*Chondrilla juncea* - skeleton weed 327
*Chrysanthemoides monilifera* - boneseed 160, 215, 327
*Cirsium arvense* - Californian thistle 327
*Clavelina lepadiformis* - Lightbulb ascidian 401
Clavelina oblonga – *Clavelina oblonga* 397
Clematis flammula - *Clematis flammula* 155, 327
*Clematis vitalba* - old man's beard 322
climbing asparagus - *Asparagus scandens* 160, 191, 327
climbing dock - *Rumex sagittatus* 327
climbing gloxinia - *Lophospermum erubescens* 160, 327
climbing spindle berry - *Celastrus orbiculatus* 322
coast banksia - *Banksia integrifolia* 193, 327
*Cobaea scandens* - cathedral bells 322
coltsfoot - *Tussilago farfara* 327
*Conium maculatum* - hemlock 327
*Cortaderia jubata* and *C. selloana* - pampas grass 215, 327
*Corvus frugilegus* - rook 232
cotoneaster - *Cotoneaster glaucophyllus* and *C. franchetii* 327
*Cotoneaster glaucophyllus* and *C. franchetii* - cotoneaster 327
*Cotoneaster simonsii* - khasia berry 327
*Cotyledon orbiculata* - African pig's ear 327
crack willow - *Salix fragilis* 327
*Crassula multicava* - pitted crassula 327
*Crataegus monogyna* - hawthorn 327
creeping fig - *Ficus pumila* 327
*Crocosmia* x *crocosmiiflora* - montbretia 327
*Cyathea cooperi* - rough tree fern 327
*Cyperus rotundus* - nutgrass 327
*Cyprinus carpio* - koi carp 144, 273
*Cytisus scoparius* (excl. cultivated varieties) - wild broom 322

# D

dally pine - *Psoralea pinnata* 327
*Dama* spp. including any hybrid - feral deer 94, 236
Darwin's barberry - *Berberis darwinii* 327
Darwin's ant - *Doleromyrma darwiniana* 103, 257
devil's fig - *Solanum torvum* 313
devil's tail - *Persicaria perfoliata* syn. *Polygonum perfoliatum* 327
*Dipogon lignosus* - mile-a-minute 168, 327
divided sedge - *Carex divisa* 327
*Doleromyrma darwiniana* - Darwin's ant 103, 257
drooping prickly pear - *Opuntia monacantha* and other spp. 327
*Drosera capensis* - Cape sundew 327
*Dryopteris filix-mas* - male fern 327
dusky coral pea - *Kennedia rubicunda* 327
Dutch elm disease - *Ophiostoma novo-ulmi* 308

# E

eastern rosella - *Platycercus eximius* 137, 259
eastern water dragon - *Physignathus lesueurii lesueurii* 138, 261
*Eccremocarpus scaber* - Chilean glory creeper 327
eel grass - *Vallisneria australis* 155, 327
egeria - *Egeria densa* 160, 226, 327
*Egeria densa* - egeria 160, 226, 327
elaeagnus - *Elaeagnus* x *reflexa* 327
*Elaeagnus* x *reflexa* - elaeagnus 327
*Elaphurus* spp. including any hybrid - feral deer 94, 236
elephant's ear - *Alocasia macrorrhiza* syn. *A. brisbanensis* 327
elodea - *Elodea canadensis* 155, 327
*Elodea canadensis* - elodea 155, 327
English ivy - *Hedera helix* subsp. *helix* 327
*Eomecon chionantha* - snow poppy 327
*Equisetum* spp. - horsetail 327

*Erica baccans* - berry heath 327
*Erica lusitanica* - Spanish heath 327
*Erigeron karvinskianus* - Mexican daisy 327
*Erinaceus europaeus* - hedgehog 107, 270
*Eriobotrya japonica* - loquat 327
*Eudistoma elongatum* - Australian droplet tunicate 395
*Euonymus japonicus* - Japanese spindle tree 327

# F

false tamarisk - *Myricaria germanica* 327
fatsia - *Fatsia japonica* 327
*Fatsia japonica* - fatsia 327
*Felis catus* - cat (unowned) 98, 303
feral deer - *Cervus*, *Axis*, *Dama*, *Odocoileus*, *Elaphurus* spp. including any hybrid 94, 236
feral goat - *Capra hircus* 238
feral pig - *Sus scrofa* 105, 175, 181, 263
ferny asparagus - *Asparagus plumosus* 327
ferret - *Mustela furo* 111, 171, 175, 182, 278
*Ficus macrophylla* - Morton Bay fig 327
*Ficus microcarpa* - strangling fig 327
*Ficus pumila* - creeping fig 327
*Ficus rubiginosa* - Port Jackson fig 327
firethorn - *Pyracantha angustifolia* 327
Formosa lily - *Lilium formosanum* 195, 327
*Fuchsia boliviana* - Bolivian fuchsia 327
furcraea - *Furcraea* spp. 327
*Furcraea* spp. - furcraea 327

# G

galah - *Cacatua roseicapilla* 140, 265
*Galega officinalis* - goat's rue 327
gambusia - *Gambusia affinis* 141, 267
*Gambusia affinis* - gambusia 141, 267
*Geitonoplesium cymosum* - scrambling lily 313
*Genista monspessulana* syn. *Teline monspessulana* - Montpellier broom 327
German ivy - *Senecio mikanioides* syn. *Delairea odorata* 327
giant hogweed - *Heracleum mantegazzianum* 312
giant reed - *Arundo donax* 160, 215, 327
giant rhubarb - *Gunnera manicata* 327
*Glyceria maxima* - reed sweet grass 160, 327
goat's rue - *Galega officinalis* 327
goldfish - *Carassius auratus* 142, 269
gorse - *Ulex* spp. 327
great reedmace - *Typha latifolia* 313
green cestrum - *Cestrum parqui* 313
grey willow - *Salix cinerea* 160, 327
guava - *Psidium cattleianum* 327
Guinea grass - *Megathyrsus maximus* syn. *Panicum maximum* 327
*Gunnera manicata* - giant rhubarb 327
*Gunnera tinctoria* - Chilean rhubarb 327
*Gymnocoronis spilanthoides* - Senegal tea 322
*Gymnorhina* sp. - magpie 275
gypsywort - *Lycopus europaeus* 327

# H

hakea - *Hakea* spp. 327
*Hakea* spp. - hakea 327
hare - *Lepus europaeus* 117, 286
hawkweed - *Pilosella* spp. syn. *Hieracium* spp. 327
hawthorn - *Crataegus monogyna* 327
heather - *Calluna vulgaris* (excl. double flowered cultivars) 327
*Hedera helix* subsp. *canariensis* - Canary Island ivy 327
*Hedera helix* subsp. *helix* - English ivy 327
hedgehog - *Erinaceus europaeus* 107, 270
*Hedychium gardnerianum* and *H. flavescens* - wild ginger 160, 211, 327
hemlock - *Conium maculatum* 327
*Heracleum mantegazzianum* - giant hogweed 312
Himalayan honeysuckle - *Leycesteria formosa* 327
holly-leaved senecio - *Senecio glastifolius* 327
*Homalanthus populifolius* - Queensland poplar 160, 325
hornwort - *Ceratophyllum demersum* 155, 226, 327
horsetail - *Equisetum* spp. 327
houttuynia - *Houttuynia cordata* 322
*Houttuynia cordata* - houttuynia 322
*Hydrocleys nymphoides* - water poppy 313
Hydrocotyle umbellata - *Hydrocotyle umbellata* 160, 327
*Hypericum androsaemum* - tutsan 327

# I


iceplant - *Carpobrotus edulis* and hybrids 327
Indian ring-necked parakeet - *Psittacula krameri* 143, 271
*Ipomoea indica* - blue morning glory 215, 327
*Iris pseudacorus* - yellow flag iris 327
Italian arum - *Arum italicum* 327
Italian jasmine - *Jasminum humile* 327


# J


*Jacobaea vulgaris* (syn.*Senecio jacobaea*) - ragwort 327
Japanese cherry - *Prunus serrulata* 327
Japanese honeysuckle - *Lonicera japonica* 215, 327
Japanese mantis shrimp - *Oratosquilla oratoria* 399
Japanese spindle tree - *Euonymus japonicus* 327
Japanese walnut - *Juglans ailantifolia* 327
jasmine - *Jasminum polyanthum* 202, 327
*Jasminum humile* - Italian jasmine 327
*Jasminum polyanthum* - jasmine 202, 327
*Juglans ailantifolia* - Japanese walnut 327
*Juncus acutus* - sharp rush 155, 215, 327


# K


kangaroo acacia - *Acacia paradoxa* 168, 327
kauri dieback disease - *Phytophthora agathidicida* 121, 222, 310
*Kennedia rubicunda* - dusky coral pea 327
khasia berry - *Cotoneaster simonsii* 327
koi carp - *Cyprinus carpio* 144, 273
kudzu vine - *Pueraria montana* syn. *P. lobata* 327


# L


*Lagarosiphon major* - lagarosiphon, oxygen weed 155, 327
lagarosiphon, oxygen weed - *Lagarosiphon major* 155, 327
*Lagunaria patersonii* - Norfolk Island hibiscus 215, 327
*Lamium galeobdolon* syn. *Galeobdolon luteum* syn. *Lamiastrum galeobdolon* - artillery plant 327
*Lampropholis delicata* - plague skink 113, 284
lantana - *Lantana camara* 318
*Lantana camara* - lantana 318
*Lepus europaeus* - hare 117, 286
*Leycesteria formosa* - Himalayan honeysuckle 327
Lightbulb ascidian - *Clavelina lepadiformis* 401
*Ligustrum lucidum* - privet, tree 160, 215, 327
*Ligustrum sinense* - privet, Chinese 215, 327
*Lilium formosanum* - Formosa lily 195, 327
*Linepithema humile* - Argentine ant 96, 248
lizard's tail - *Saururus cernuus* 327
lodgepole pine - *Pinus contorta* 327
*Lonicera japonica* - Japanese honeysuckle 215, 327
*Lophospermum erubescens* - climbing gloxinia 160, 327
loquat - *Eriobotrya japonica* 327
*Ludwigia peploides* subsp. *montevidensis* - water primrose 327
*Lupinus arboreus* - tree lupin 327
*Lycium ferocissimum* - boxthorn 127, 160, 215, 327
*Lycopus europaeus* - gypsywort 327


# M


*Macfadyena unguis-cati* - cat's claw creeper 327
*Macropus* spp. - wallaby 171, 234
Madeira vine - *Anredera cordifolia* 168, 215, 327
magpie - *Gymnorhina* sp. 275
*Mahonia lomariifolia* - Chinese holly grape 327
male fern - *Dryopteris filix-mas* 327
marram grass - *Ammophila arenaria* 327
marshwort - *Nymphoides montana* 313
*Marsilea mutica* - nardoo 327
Mediterranean fanworm - *Sabella spallanzanii* 403
*Megathyrsus maximus* syn. *Panicum maximum* - Guinea grass 327
*Melaleuca quinquenervia* - paperbark poplar 327
*Melianthus major* - Cape honey flower 327
Mexican daisy - *Erigeron karvinskianus* 327
Mexican devil - *Ageratina adenophora* 327
Mexican feather grass - *Nassella tenuissima* 313
Mexican water lily - *Nymphaea mexicana* 327
Mickey Mouse plant - *Ochna serrulata* 155, 327

mile-a-minute - *Dipogon lignosus* 168, 327
mist flower - *Ageratina riparia* 327
monk parakeet - *Myiopsitta monachus* 145, 276
monkey apple - *Syzygium smithii* syn. *Acmena smithii* 215, 327
montbretia - *Crocosmia* x *crocosmiiflora* 327
Montpellier broom - *Genista monspessulana* syn. *Teline monspessulana* 327
Morton Bay fig - *Ficus macrophylla* 327
moth plant - *Araujia sericifera* syn. *Araujia hortorum* 128, 160, 204, 327
mouse - *Mus musculus* 109, 277
*Mus musculus* - mouse 109, 277
*Mustela erminea* - stoat 111, 171, 175, 182, 278
*Mustela furo* - ferret 111, 171, 175, 182, 278
*Mustela nivalis* - weasel 111, 171, 175, 182, 278
mustelids (ferret, stoat, weasel) - *Mustela* furo, *M. erminea* and *M.nivalis* 111, 171, 175, 182, 278
*Myiopsitta monachus* - monk parakeet 145, 276
myna - *Acridotheres tristis* 281
*Myoporum insulare* and hybrids - Tasmanian ngaio 215, 327
*Myricaria germanica* - false tamarisk 327
*Myriophyllum aquaticum* - parrot's feather 155, 327


# N


nardoo - *Marsilea mutica* 327
*Nassella neesiana* - Chilean needle grass 313
*Nassella tenuissima* - Mexican feather grass 313
*Nassella trichotoma* - nassella tussock 313
nassella tussock - *Nassella trichotoma* 313
needle grass - *Austrostipa rudis* 322
*Nephrolepis cordifolia* - tuber ladder fern 327
nodding thistle - *Carduus nutans* 327
Noogoora bur – *Xanthium strumarium* syn. *occidentale* 322
Norfolk Island hibiscus - *Lagunaria patersonii* 215, 327
*Nuphar lutea* - yellow water lily 327
nutgrass - *Cyperus rotundus* 327
*Nymphaea mexicana* - Mexican water lily 327
*Nymphoides montana* - marshwort 313


# O


*Ochna serrulata* - Mickey Mouse plant 155, 327
*Odocoileus* spp. including any hybrid - feral deer 94, 236
old man's beard - *Clematis vitalba* 322
*Ophiostoma novo-ulmi* - Dutch elm disease 308
*Opuntia monacantha* and other spp. - drooping prickly pear 327
*Oratosquilla oratoria* – Japanese Mantis Shrimp 399
*Oryctolagus cuniculus* - rabbit 117, 286
*Osmunda regalis* - royal fern 168, 215, 327
oxylobium - *Callistachys lanceolata* 327


# P


palm grass - *Setaria palmifolia* 327
pampas grass - *Cortaderia jubata* and *C. selloana* 215, 327
paper wasp - *Polistes chinensis*, *P.humilis* 301
paperbark poplar - *Melaleuca quinquenervia* 327
*Paraserianthes lophantha* - brush wattle 327
parrot's feather - *Myriophyllum aquaticum* 155, 327
*Paspalum vaginatum* - salt water paspalum 215, 327
*Passiflora caerulea* - blue passion flower 327
*Passiflora ligularis* - yellow passionfruit 327
*Passiflora tripartita* var. *mollissima*, *P. mixta* and *P. tarminiana* - banana passionfruit 327
*Perca fluviatilis* - perch 146, 228, 282
perch - *Perca fluviatilis* 146, 228, 282
perennial nettle - *Urtica dioica* 327
*Persicaria microcephala* - red dragon 327
*Persicaria perfoliata* syn. *Polygonum perfoliatum* - devil's tail 327
*Petrogale* spp. - wallaby 171, 234
*Phoenix canariensis* - phoenix palm 215, 327
phoenix palm - *Phoenix canariensis* 215, 327
Phragmites karka - *Phragmites karka* 313
*Phyllostachys* aurea, *P. nigra* - bamboo species 327
*Physignathus lesueurii lesueurii* - eastern water dragon 138, 261
*Phytophthora agathidicida* - kauri dieback disease 121, 222, 310

*Pilosella* spp. syn. *Hieracium* spp. - hawkweed 327
*Pinus contorta* - lodgepole pine 327
pitted crassula - *Crassula multicava* 327
*Pittosporum undulatum* - sweet pittosporum 155, 327
plague skink - *Lampropholis delicata* 113, 284
*Platycercus eximius* - eastern rosella 137, 259
plectranthus - *Plectranthus ciliatus* 327
*Plectranthus ciliatus* - plectranthus 327
*Plectranthus ecklonii* and *P. grandis* - blue spur flower 327
*Pleioblastus auricomus*, *P. hindsii* - bamboo species 327
plumeless thistle - *Carduus acanthoides* 327
*Polistes chinensis*, *P.humilis* - paper wasp 301
*Polygala myrtifolia* (excl. cv. 'Grandiflora') - sweet pea shrub 327
Port Jackson fig - *Ficus rubiginosa* 327
possum - *Trichosurus vulpecula* 115, 171, 244
prickly-leaved wattle - *Acacia verticillata* 327
privet, Chinese - *Ligustrum sinense* 215, 327
privet, tree - *Ligustrum lucidum* 160, 215, 327
*Prunus campanulata* - Taiwan cherry 327
*Prunus serotina* - rum cherry 327
*Prunus serrulata* - Japanese cherry 327
*Pseudosasa japonica* - bamboo species 327
*Psidium cattleianum* - guava 327
*Psidium guajava* - yellow guava 327
*Psittacula krameri* - Indian ring-necked parakeet 143, 271
*Psoralea pinnata* - dally pine 327
*Pueraria montana* syn. *P. lobata* - kudzu vine 327
purple groundsel - *Senecio elegans* 168
*Pyracantha angustifolia* - firethorn 327
Pyura sea squirts - *Pyura praepetualis* and *P. doppelgangera* 405
*Pyura praepetualis* and *P. doppelgangera* - Pyura sea squirts 405

# Q

queen of the night - *Cestrum nocturnum* 327
Queensland poplar - *Homalanthus populifolius* 160, 327
Queensland umbrella tree - *Schefflera actinophylla* 327

# R

rabbit - *Oryctolagus cuniculus* 117, 286
ragwort - *Jacobaea vulgaris* (syn.*Senecio jacobaea*) 327
rainbow lorikeet - *Trichoglossus haematodus* and all hybrids 147, 288
rat - *Rattus rattus*, *Rattus norvegicus*, *Rattus exulans* 119, 171, 175, 183, 289
*Rattus exulans* - kiore 119, 175, 183, 289
*Rattus norvegicus* - Norway rat 119, 171, 175, 183, 289
*Rattus rattus* - ship rat 119, 171, 175, 183, 289
*Rattus rattus*, *R. norvegicus*, *R. exulans* - rat 119, 171, 175, 183, 289
red dragon - *Persicaria microcephala* 327
red valerian - *Centranthus ruber* 327
red-eared slider - *Trachemys scripta elegans*, *T. scripta scripta*, *T. scripta troostii* 148, 291
reed sweet grass - *Glyceria maxima* 160, 327
*Reynoutria japonica* syn. *Fallopia japonica*, *R. sachalinensis* syn. *F. sachalinensis* and hybrids - Asiatic/Japanese knotweed 322
rhamnus - *Rhamnus alaternus* 125, 155, 209, 327
*Rhamnus alaternus* - rhamnus 125, 155, 209, 327
rhaphiolepis / Sexton's bride - *Rhaphiolepis umbellata* 160, 327
*Rhaphiolepis umbellata* - rhaphiolepis / Sexton's bride 160, 327
rhus tree - *Toxicodendron succedaneum* syn. *Rhus succedanea* 327
*Ricinus communis* - castor oil plant 327
*Roldana petasitis* (syn. *Senecio petasitis*) - velvet groundsel 327
rook - *Corvus frugilegus* 232
*Rosa rubiginosa* - sweet briar 327
rough tree fern - *Cyathea cooperi* 327
royal fern - *Osmunda regalis* 168, 215, 327
*Rubus fruticosus* agg. - blackberry (wild aggregates) 327
rudd - *Scardinius erythrophthalmus* 150, 228, 294
rum cherry - *Prunus serotina* 327
*Rumex sagittatus* - climbing dock 327

# S


*Sabella spallanzanii* - Mediterranean fanworm 403
saffron thistle - *Carthamus lanatus* 327
Sagittaria spp. (except S. teres) - *Sagittaria* spp. 322
*Salix cinerea* - grey willow 160, 327
*Salix fragilis* - crack willow 327
salt water paspalum - *Paspalum vaginatum* 215, 327
*Saururus cernuus* - lizard's tail 327
*Scardinius erythrophthalmus* - rudd 150, 228, 294
*Schefflera actinophylla* - Queensland umbrella tree 327
*Schinus terebinthifolius* - Brazilian pepper tree 327
*Schoenoplectus californicus* - Californian bulrush 327
scrambling lily - *Geitonoplesium cymosum* 313
*Selaginella kraussiana* - African club moss 327
*Selaginella martensii*, *S. moellendorffii*, *S. uncinata* - Selaginella spp. 327
Selaginella spp. - *Selaginella martensii*, *S. moellendorffii*, *S. uncinata* 327
*Senecio angulatus* - Cape ivy 327
*Senecio elegans* - purple groundsel 168
*Senecio glastifolius* - holly-leaved senecio 327
*Senecio mikanioides* syn. *Delairea odorata* - German ivy 327
Senegal tea - *Gymnocoronis spilanthoides* 322
*Senna septemtrionalis* - buttercup bush 327
*Sesbania punicea* - Brazilian rattlebox 155, 327
*Setaria palmifolia* - palm grass 327
*Setaria pumila* - yellow bristle grass 327
sharp rush - *Juncus acutus* 155, 215, 327
sheep's bur - *Acaena agnipila* 327
shingleback lizard - *Tiliqua rugosa* 296
*Silybum marianum* - variegated thistle 327
skeleton weed - *Chondrilla juncea* 327
small balloon vine - *Cardiospermum halicacabum* 313
smilax - *Asparagus asparagoides* 168, 327
snake-neck turtle - *Chelodina longicollis* 151, 297
snow poppy - *Eomecon chionantha* 327
soap aloe - *Aloe maculata* 327
*Solanum marginatum* - white-edged nightshade 313
*Solanum mauritianum* - woolly nightshade 160, 213, 327
*Solanum torvum* - devil's fig 313
Spanish broom - *Spartium junceum* 160, 327
Spanish heath - *Erica lusitanica* 327
spartina - *Spartina alterniflora*, *S. anglica* and *S.* x *townsendii* 322, 327
*Spartina alterniflora*, *S. anglica* and *S.* x *townsendii* - spartina 322, 327
*Spartium junceum* - Spanish broom 160, 327
spiny broom - *Calicotome spinosa* 327
stoat - *Mustela erminea* 111, 171, 175, 182, 278
strangling fig - *Ficus microcarpa* 327
*Styela clava* - Styela sea squirt 407
Styela sea squirt - *Styela clava* 407
sulphur-crested cockatoo - *Cacatua galerita* 153, 246
*Sus scrofa* - feral pig 105, 175, 181, 263
sweet briar - *Rosa rubiginosa* 327
sweet pea shrub - *Polygala myrtifolia* (excl. cv. 'Grandiflora') 327
sweet pittosporum - *Pittosporum undulatum* 155, 327
sydney golden wattle - *Acacia longifolia* 327
*Syzygium smithii* syn. *Acmena smithii* - monkey apple 215, 327


# T


Taiwan cherry - *Prunus campanulata* 327
Tasmanian ngaio - *Myoporum insulare* and hybrids 215, 327
tench - *Tinca tinca* 154, 228, 299
*Tiliqua rugosa* - shingleback lizard 296
*Tiliqua scincoides* and *Tiliqua nigrolutea* - blue-tongued skink 133, 252
*Tinca tinca* - tench 154, 228, 299
*Toxicodendron succedaneum* syn. *Rhus succedanea* - rhus tree 327
*Trachemys scripta elegans*, *T. scripta scripta*, *T. scripta troostii* - red-eared slider 148, 291
*Trachycarpus fortunei* - Chinese fan palm 215, 327
tradescantia - *Tradescantia fluminensis* 327
*Tradescantia fluminensis* - tradescantia 327
tree lupin - *Lupinus arboreus* 327
tree of heaven - *Ailanthus altissima* 160, 327
*Trichoglossus haematodus* and all hybrids - rainbow lorikeet 147, 288

*Trichosurus vulpecula* - possum 115, 171, 244
*Tropaeolum speciosum* - Chilean flame creeper 327
tuber ladder fern - *Nephrolepis cordifolia* 327
*Tussilago farfara* - coltsfoot 327
tutsan - *Hypericum androsaemum* 327
*Typha latifolia* - great reedmace 313

# U

*Ulex* spp. - gorse 327
Undaria - *Undaria pinnatifida* 409
*Undaria pinnatifida* - Undaria 409
*Urtica dioica* - perennial nettle 327
*Utricularia arenaria*, *U. gibba*, *U. livida* and *U. sandersonii* - bladderwort species 327

# V

*Vallisneria australis* - eel grass 155, 327
variegated thistle - *Silybum marianum* 327
velvet groundsel - *Roldana petasitis* (syn. *Senecio petasitis*) 327
*Vespula germanica*, *V. vulgaris* - Vespula wasp 301
*Vespula germanica*, *V. vulgaris*, *Polistes chinensis* and *P.humilis* - wasp: Vespula and paper 301
Vespula wasp - *Vespula germanica*, *V. vulgaris* 301

# W

*Wallabia* spp. - wallaby 171, 234
wallaby - *Macropus*, *Petrogale* and *Wallabia* spp. 171, 234
wasp: Vespula and paper - *Vespula germanica*, *V. vulgaris*, *Polistes chinensis* and *P.humilis* 301
water plantain - *Alisma plantago-aquatica* 160
water poppy - *Hydrocleys nymphoides* 313
water primrose - *Ludwigia peploides* subsp. *montevidensis* 327
weasel - *Mustela nivalis* 111, 171, 175, 182, 278
white-edged nightshade - *Solanum marginatum* 313
wild broom - *Cytisus scoparius* (excl. cultivated varieties) 322,
wild ginger - *Hedychium gardnerianum* and *H. flavescens* 160, 211, 327
wild kiwifruit - *Actinidia* species (wild varieties only) 322
woolly nightshade - *Solanum mauritianum* 160, 213, 327

# X

*Xanthium strumarium* syn. *occidentale* - Noogoora bur 322
*Xanthium spinosum* - Bathurst bur 327

# Y

yellow bristle grass - *Setaria pumila* 327
yellow flag iris - *Iris pseudacorus* 327
yellow guava - *Psidium guajava* 327
yellow passionfruit - *Passiflora ligularis* 327
yellow water lily - *Nuphar lutea* 327

# Z

*Zantedeschia aethiopica* - arum lily 327

© 2020 Auckland Council

November 2020

Auckland Council Environmental Services

Auckland Council (2020) Mahere ā-Rohe Whakahaere Kaupapa Koiora Orotā mō Tāmaki Makaurau Auckland Regional Pest Management Plan 2020 - 2030

Find out more: phone 09 301 0101 or visit aucklandcouncil.govt.nz/

ISBN:
978-1-99-002248-7 (Print)
978-1-99-002249-4 (PDF)

Auckland Council disclaims any liability whatsoever in connection with any action taken in reliance of this document for any error, deficiency, flaw or omission contained in it.

Auckland Council
Te Kaunihera o Tāmaki Makaurau