

Auckland Regional Pest Management Plan

Mahere ā-Rohe Whakahaere Kaupapa
Koiora Orotā mō Tāmaki Makaurau

2020 - 2030



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EXTRACTS – ISLANDS SECTION

Cover photo

Ship rat eating a blackbird's egg.

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

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

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

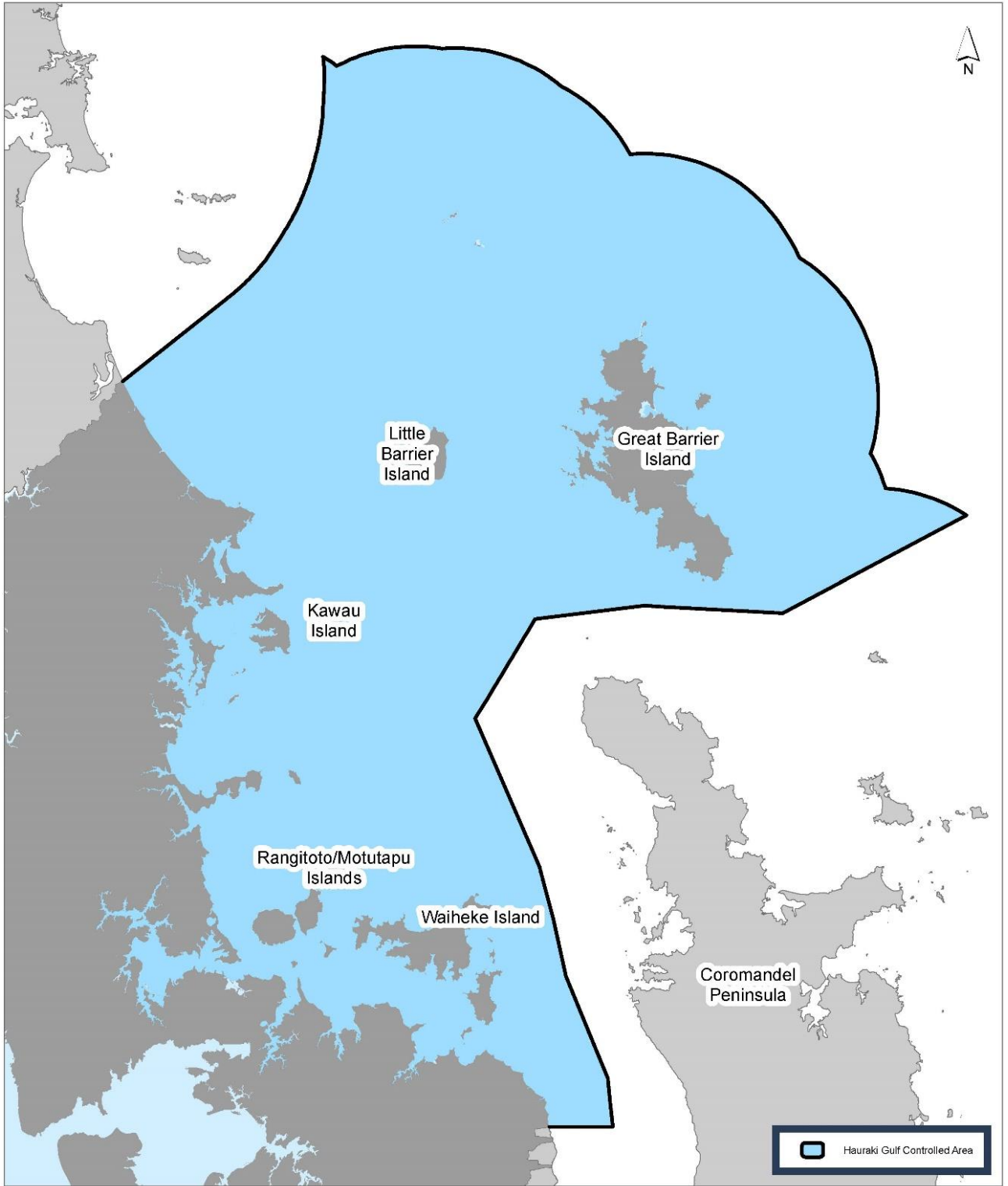
The Hauraki Gulf is home to one of the highest diversities of seabirds in the world. Islands have the advantage of being geographically defendable, making it easier than on the mainland to completely remove some pest species. The tiny Ruapuke / Maria Island (1 ha) in the Noises group was the site of 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 Tikapa 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 organisations and agencies such as Department of Conservation and Auckland Council.

The following programmes protect the high ecological values and strategically defendable geography of Te Tikapa 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



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Hauraki Gulf Controlled Area



Scale @ A4
= 1:681,993

Date Printed:
1/10/2020



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 deer¹ (*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.

¹ 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.

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 Te Tikapa 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 Tikapa 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. All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status. All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

7.1.2.2 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 unowned² cat to or among islands within the Hauraki Gulf Controlled Area (as defined in Map 2)

² 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

- 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)	<p>Undertake incursion responses on cat-free islands, in partnership with the Department of Conservation where appropriate.</p> <p>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:</p> <ul style="list-style-type: none"> a. the site contains a resident or breeding or roosting population of any threatened native bird, reptile or amphibian species; and b. the site is within a rural area; and c. where that site is: <ul style="list-style-type: none"> i. public land; or ii. private land with consent of the private land occupier. <p>Map 3 indicatively shows the extent of sites meeting these threatened species criteria based on current knowledge as at January 2019.</p>
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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 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.

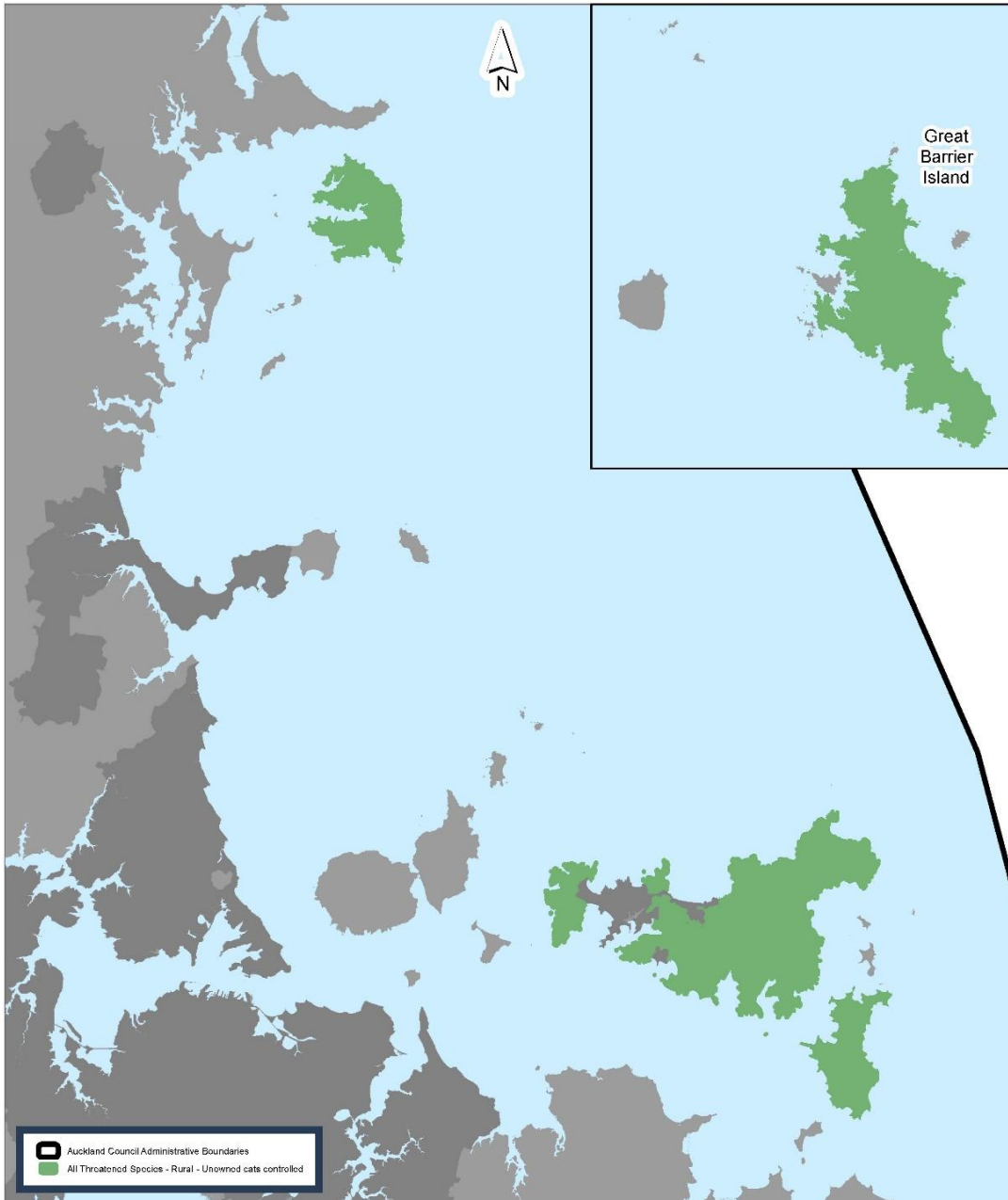
	<p>Sites shown in Map 4 are intensively managed and of particular value to threatened species programmes. At these sites, Council may control any cat as a pest in accordance with the Biosecurity Act 1993, to prevent recovery programmes being undermined.</p>
Monitoring and surveillance	<p>Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of 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.</p>
Enforcement	<p>Enforce conditions of transport within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators, and that all cats being moved within the Hauraki Gulf are microchipped and remain at all times a distance of at least 200m from any cat-free island.</p>
Education and advice	<p>Provide information and advice on responsible pet ownership (particularly de-sexing, 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.</p> <p>Provide information on impacts and management of cats, and how to reduce risk of accidental introduction of cats to offshore pest-free islands.</p> <p>Notify communities near intended cat management at least 4 weeks prior to control of unowned cats.</p> <p>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.</p>
Requirement to act	<p>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.</p> <p>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.</p>

All commercial transport operators within the Te Tikapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.

All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.

Auckland Council

Map



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Threatened Species Areas Where Unowned Cats May be Controlled on Council Land or Private Land with Land Occupier Consent as at 2019 Hauraki Gulf Controlled Area

0 1.5 3 4.5
kilometers

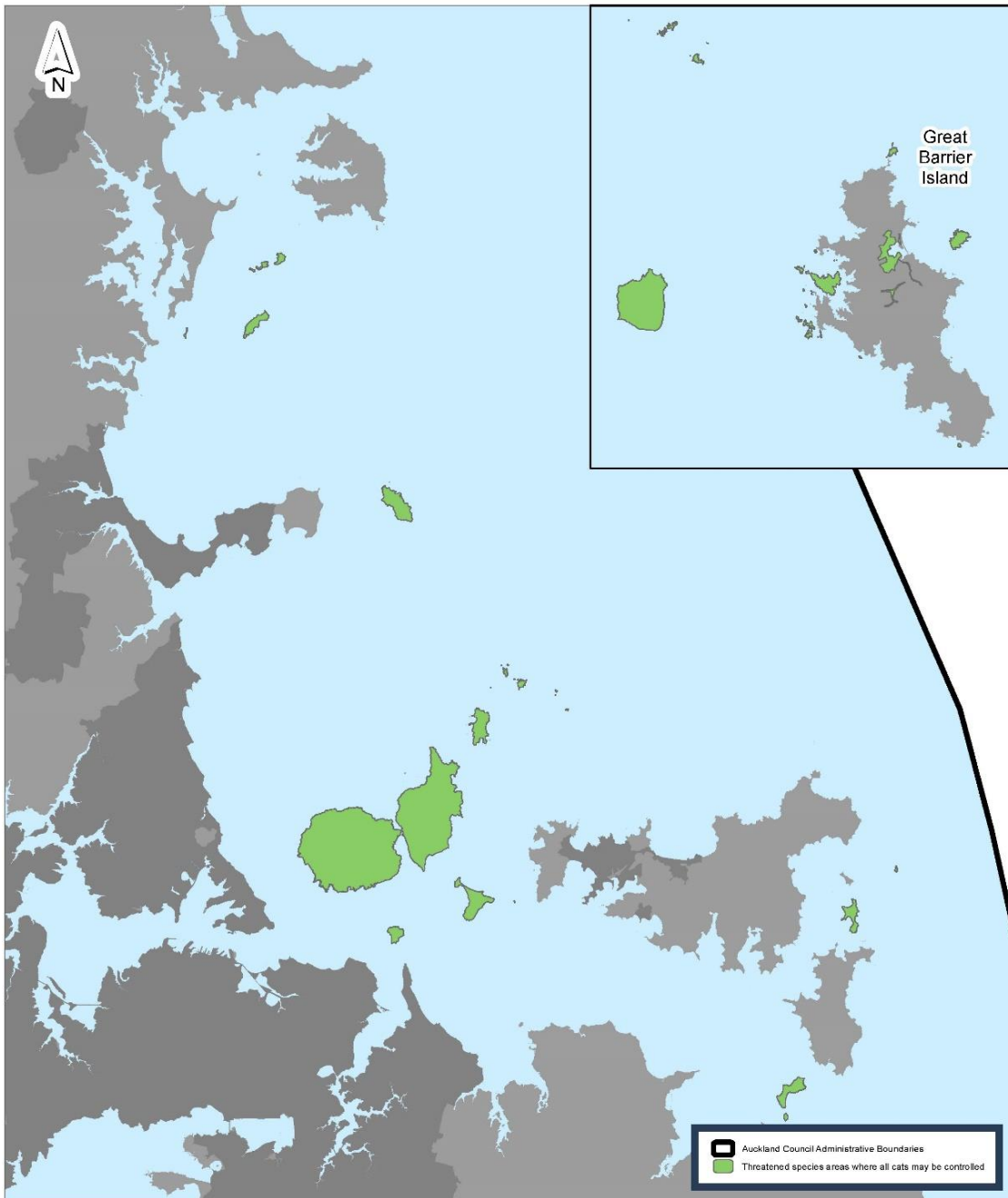
Scale @ A4
= 1:300,000

Date Printed:
1/20/2020



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 consent³.

³ 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>



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Intensively Managed Threatened Species Areas in Hauraki Gulf Controlled Areas

0 1.5 3 4.5
 Kilometers
 Scale @ A4
 = 1:300,000
 Date Printed:
 1/15/2020



Map 4 Intensively managed sites for threatened species protection. Any cat may be controlled at these sites⁴.

⁴ 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	<p>All persons intending to move a building to or among Te Tikapa 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.</p> <p>All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.4 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 pigs⁵ (*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.

⁵ 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)	<p>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.</p> <p>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.</p>
Monitoring and surveillance	<p>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.</p>
Education and advice	<p>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.</p>
Enforcement	<p>Enforce conditions of movement within the Hauraki Gulf Controlled Area.</p>
Requirement to act	<p>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.</p>

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	<p>All persons intending to move a building to or among Te Tikapa 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.</p> <p>All commercial transport operators within the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

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

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

Ferrets, stoats and 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)	<p>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).</p> <p>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.</p>
Monitoring and surveillance	<p>Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly mustelid-free islands, to determine the presence of new incursions and status of existing or historical sites.</p>
Education and advice	<p>Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of mustelids to offshore islands.</p>
Enforcement	<p>Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.</p>
Requirement to act	<p>All persons intending to move a building to or among Te Tikapa 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.</p> <p>All commercial transport operators within the Te Tikapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.8 Plague skink (*Lampropholis delicata*)

Also known as : rainbow skinks

Plague skinks are small brown lizards with an iridescent rainbow sheen to their scales visible under bright light. The skinks are generalist predators of a wide variety of invertebrates and are prevalent in suburban gardens, parks, disturbed sites, urban areas, open rocky land, farmland and scrub. They have higher reproductive rates and reach maturation faster than native skinks, reaching densities of 300-400 per 100m². Such high population densities can result in plague skinks out-competing native reptiles, particularly native 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	<p>All persons intending to move a building to or among Te Tikapa 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.</p> <p>All commercial transport operators within the Te Tikapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

7.1.2.9 Possum (*Trichosurus vulpecula*)

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



Nga Manu Images

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

Intermediate outcome: “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	<p>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.</p> <p>All commercial transport operators within Te Tīkapa Moana / the Hauraki Gulf to obtain and maintain Pest Free Warrant status.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

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

Rabbits and hares are small terrestrial herbivorous mammals. Rabbits are about the size of a small domestic cat, often grey-brown in colour. Hares are larger than rabbits and have black tipped ears. They will heavily browse native seedlings and low-growing native plants in open habitats, such as sand dunes and grasslands, suppressing threatened species and altering vegetation composition. As prey species, they indirectly contribute to increased predation pressure on native species by supporting populations of introduced predators, including 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 rabbits⁶ (*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

⁶ 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

working days prior to movement, to arrange inspection and approval by Auckland Council.

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

7.1.2.11 Rats: ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), kiore⁷ (*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

⁷ Council acknowledges that kiore are culturally significant for mana whenua and the need for operational engagement with mana whenua where relevant.

working days prior to movement, to arrange inspection and approval by Auckland Council.

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)	<p>Undertake incursion responses on rat-free islands, in partnership with the Department of Conservation where appropriate (see also sections 7.3 and 7.4 for Kawau and Waiheke eradications).</p> <p>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.</p>
Monitoring and surveillance	<p>Undertake inspections of buildings and other risk goods to prevent movement of the pest animal. Undertake monitoring and surveillance of key risk areas, particularly rat-free islands, to determine the presence of new incursions and status of existing or historical sites.</p>
Education and advice	<p>Provide information and advice on identification, impacts and control of the pest animal, and how to reduce risk of accidental introduction of rats to offshore islands.</p>
Enforcement	<p>Enforce conditions of movement within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.</p>
Requirement to act	<p>All persons intending to move a building to or among Te Tikapa 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.</p> <p>All persons in possession of risk goods to comply with inspections and hygiene measures when directed by Auckland Council.</p>

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

At the time of writing⁸, 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 **Error! Reference source not found.**) 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.

⁸ 1 February 2019

- 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 landfill⁹.
- 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.

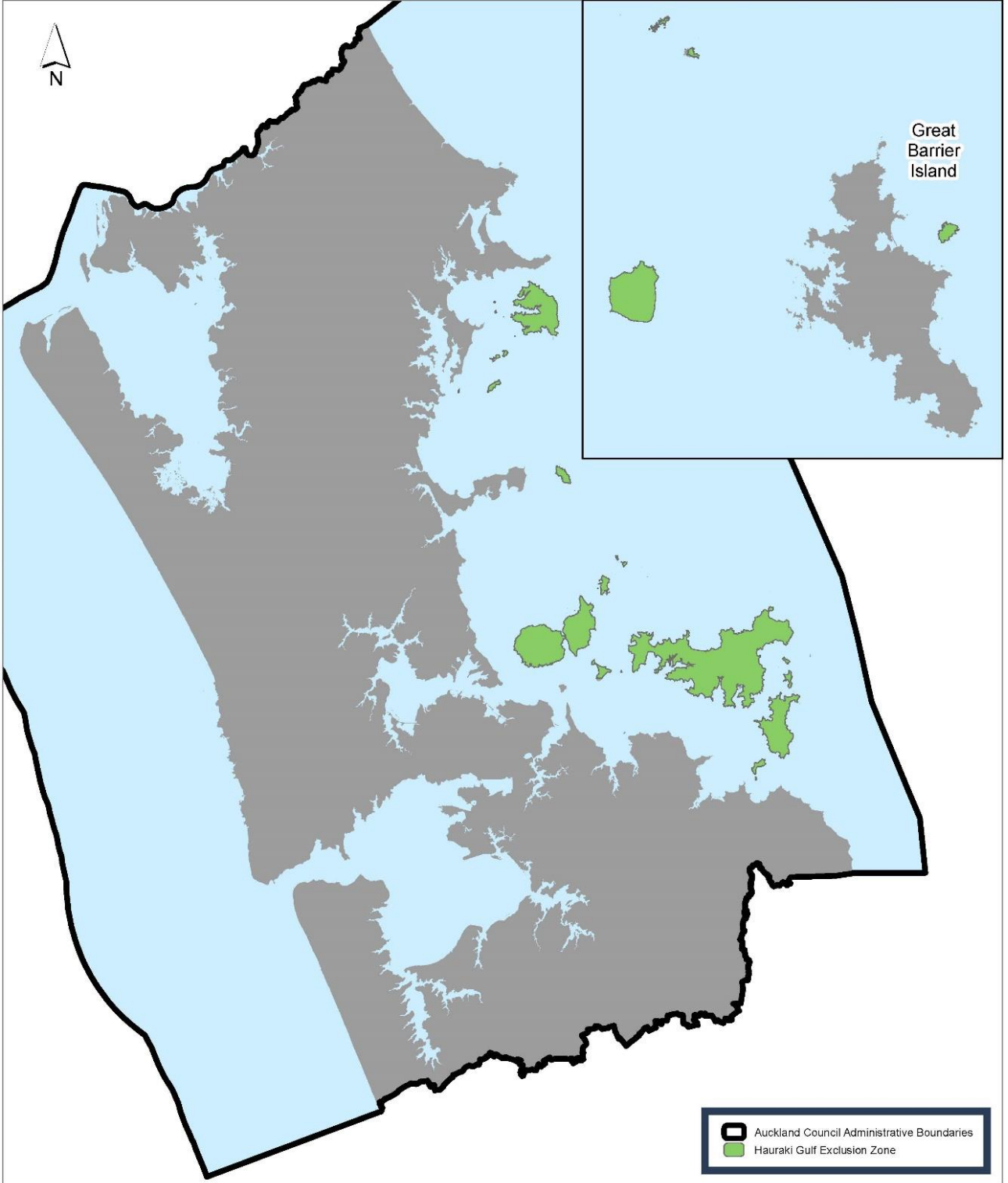
⁹ *Approved at time of writing:*

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).*
3. *Waste Management's Redvale Landfill, Landfill Access 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)	<p>Provide and maintain phytosanitary stations at key entry and exit points to Te Tīkapa Moana / the Hauraki Gulf islands.</p> <p>Enter any property within the specified geographic area of the programme and carry out management of this species.</p> <p>Manage known vectors, including feral pigs.</p>
Monitoring and surveillance	<p>Undertake inspections, monitoring and surveillance, to determine the presence of new incursions and status of existing or historical sites. Specifically, improve understanding of disease absence (or presence) in non-symptomatic areas.</p> <p>Collaborate with other agencies in design of data collection and storage to ensure effective, integrated monitoring and surveillance across kauri lands.</p>
Enforcement	<p>Enforce restrictions on the movement of the pest and kauri plant material.</p> <p>Enforce requirements for phytosanitary stations at entry and exit points to Te Tīkapa Moana / the Hauraki Gulf.</p> <p>Enforce conditions of transport within the Hauraki Gulf Controlled Area, including Pest Free Warrant accreditation for all commercial transport operators.</p>
Education and advice	<p>Provide information and advice on identification and impacts of kauri dieback, and how to avoid spreading the pest.</p>
Requirement to act	<p>All persons to take practicable steps to avoid transport and distribution of kauri dieback e.g. ensure all footwear and other equipment are free of soil, especially when exiting areas known to be infected with kauri dieback disease or entering any island.</p> <p>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.</p> <p>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.</p>
Research and development	<p>Contribute to multi-agency facilitation of research, including mātauranga Māori, and development in detection and control tools, understanding pathways of spread, and ecological impacts of kauri dieback disease on kauri and its ecosystem.</p>



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Kauri Dieback

Hauraki Gulf Exclusion Zone

0 2.5 5 7.5
Kilometers
Scale @ A4
= 1:600,000
Date Printed:
1/16/2020



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. 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. 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. 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 defensible 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 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, uprooting 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 goldfish¹⁰ (*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.

¹⁰ 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.



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

Intermediate outcome: “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*)

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



Rohan Wells, NIWA

Lagarosiphon/ oxygen weed (*Lagarosiphon major*)

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



Rohan Wells, NIWA

Mickey Mouse plant (*Ochna serrulata*)

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



Parrot's feather (*Myriophyllum aquaticum*)

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



Rhamnus (*Rhamnus alaternus*)

Also known as: evergreen buckthorn

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



Sharp rush (*Juncus acutus*)

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



Sweet pittosporum (*Pittosporum undulatum*)

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



7.2.3 Te murunga o te 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 willow

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.



7.3 Moutere o Kawau / Kawau island

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

Possum (*Trichosurus vulpecula*)

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



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

Feral pigs¹¹ (*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

¹¹ 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.

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Stoat, Department of Conservation