AUCKLAND REGIONAL PEST MANAGEMENT STRATEGY 2002-2007

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Auckland Regional Council
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FOREWORD

The Auckland region occupies only 2% of the total land area of New Zealand, but it is home to 1000s of introduced plants, many introduced animals and an unknown number of introduced invertebrates. The majority of these species are beneficial or at least do not impact detrimentally on the environment. However, there are some which do harm the natural, human or economic environment.

With over 150 endangered animals and plants, including some of the world's rarest birds, significant forest, scrub and wetland areas, and offshore islands, the impact of pests is a major issue within the Auckland region. The Council has a strong commitment to preserving and enhancing the natural values of the Region in partnership with the people of the Auckland region.

The Auckland region is a major entry point to New Zealand. As such, the threat from potentially harmful new incursions is significant. The Council will co-operate with the biosecurity agencies charged with protecting our borders, and provide appropriate support when required.

This Auckland Regional Pest Management Strategy (RPMS) is the result of an eighteen-month review and consultation process. It provides the overarching framework for plant and animal pest management in the Auckland region, from September 2002 to September 2007.

Key changes to the Strategy include:

- The inclusion of more plant and animal pests;
- A new Community Initiatives Programme that has been added to empower communities in regard to pest issues, with the council providing advice, information and support;
- A new Research Organism category that has been added to allow considered decisions to be made on the inclusion of new pests;
- A broadening of the criteria for areas receiving Possum control work. This will allow Council to assist communities with Possum control and widen the scope of the current programme to target natural peninsula and other features to ensure that re-invasion is minimised;
- A strengthening of the support for communities undertaking mustelid and rodent control work as part of integrated pest management regimes.

We commend this Strategy to everyone in the Auckland region. It is another tool through which the Auckland Regional Council and the community can work together to minimise the impacts of pests.

We take this opportunity, on behalf of the Regional Council, to thank you for your continuing interest and support.

G.J. Bull.

Gwen Bull, JP
Chairperson

Bill Burrill.

Bill Burrill
Chair, Parks and Heritage Committee

AUCKLAND REGIONAL COUNCIL

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PART I

INTRODUCTION AND BACKGROUND

1.0 INTRODUCTION

1.1 Title

This document is known as the Auckland Regional Pest Management Strategy (the Strategy or RPMS) for the Auckland region.

1.2 Proposer

The proposer for this RPMS is the Auckland Regional Council (the Council or ARC).

1.3 Purpose

The purpose of the RPMS is to provide a strategic and statutory framework for efficient and effective management of plant and animal pests in the Auckland region.

1.3.1 Objectives

In carrying out its functions with respect to pest management, the ARC shall:

- Minimise actual and potential adverse and unintended effects associated with the targeted pests; and
- Maximise the effectiveness of individual pest management via a regionally co-ordinated approach; and
- Have particular regard to kaitiakitanga and shall recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.

1.4 Preparation Process

This Strategy was prepared following a process of public consultation. In June 2001 the ARC released the '*Auckland Regional Pest Management Strategies Discussion Document*' for public submission. It provided a review of the Council's pest management achievements over the course of the last RPMSs, and examined a number of key areas proposed to shape the future direction of pest management in the Auckland region. Submissions were called for on a wide range of strategy matters and twelve public workshops were held throughout the region.

The Council received 50 submissions on the discussion document. Sixty three species of plants, and 19 species of animals and insects were suggested in the submissions for consideration in formulating the Proposed RPMS. The Council used the information and the list of candidate pests gathered from the submissions as a basis for developing this Strategy.

A Proposed Auckland Regional Pest Management Strategy was formally notified under the Biosecurity Act 1993 for the purpose of receiving public comment/submissions on the Auckland region's pest issues. After the submissions closed on 29 May 2002, the Council sent each of the 121 submitters a summary of their submission, and staff recommendations. Submitters were invited to attend hearings on the 16 and 17 July 2002.

Following the hearings the Council's Pest Management Sub-committee deliberated. Decisions from the deliberations were signed off by the sub-committee on the 15 August 2002, and Council's Parks

and Heritage Committee on the 11 September 2002. Submitters were sent copies of the Council's decisions.

Submitters who disagreed with any decision on his or her submission, could appeal that decision to the Environment Court (refer Table 1). Following the 15 working day appeal period the Strategy was made operative by Council resolution and publicly notified on the 21 October 2002.

Table 1 Major steps in the Strategy Review Process

Action/Activity	Date
RPMS Discussion Document released for public comment	6 June 2001
⬇	
Submissions close on *Discussion Document*	30 September 2001
⬇	
Discussion Document submissions analysed	1 Oct 2001 - 31 Jan 2002
⬇	
Proposed RPMS notified for public submissions	10 April 2002
⬇	
Submissions close on the *Proposed RPMS*	29 May 2002
⬇	
Hearings held	16 - 17 July 2002
⬇	
Sub-committee approve *Final RPMS*	15 August 2002
⬇	
Parks & Heritage Sub-committee approve *Final RPMS* or got to appeal	11 September 2002
⬇	
RPMS operative and publicly notified	21 October 2002

1.5 Area of Strategy Effect

The Strategy has effect over the entire Auckland region as constituted by the Local Government Amendment Act 1992 (refer Figure 1). The region covers 16 140 km^2, although 70% of this is coastal and marine waters. It encompasses the cities of Waitakere, North Shore, Auckland, Manukau, and the districts of Rodney, Papakura and part of Franklin. It replaces the existing Auckland Regional Animal Pest Management Strategy, and Auckland Regional Plant Pest Management Strategy.

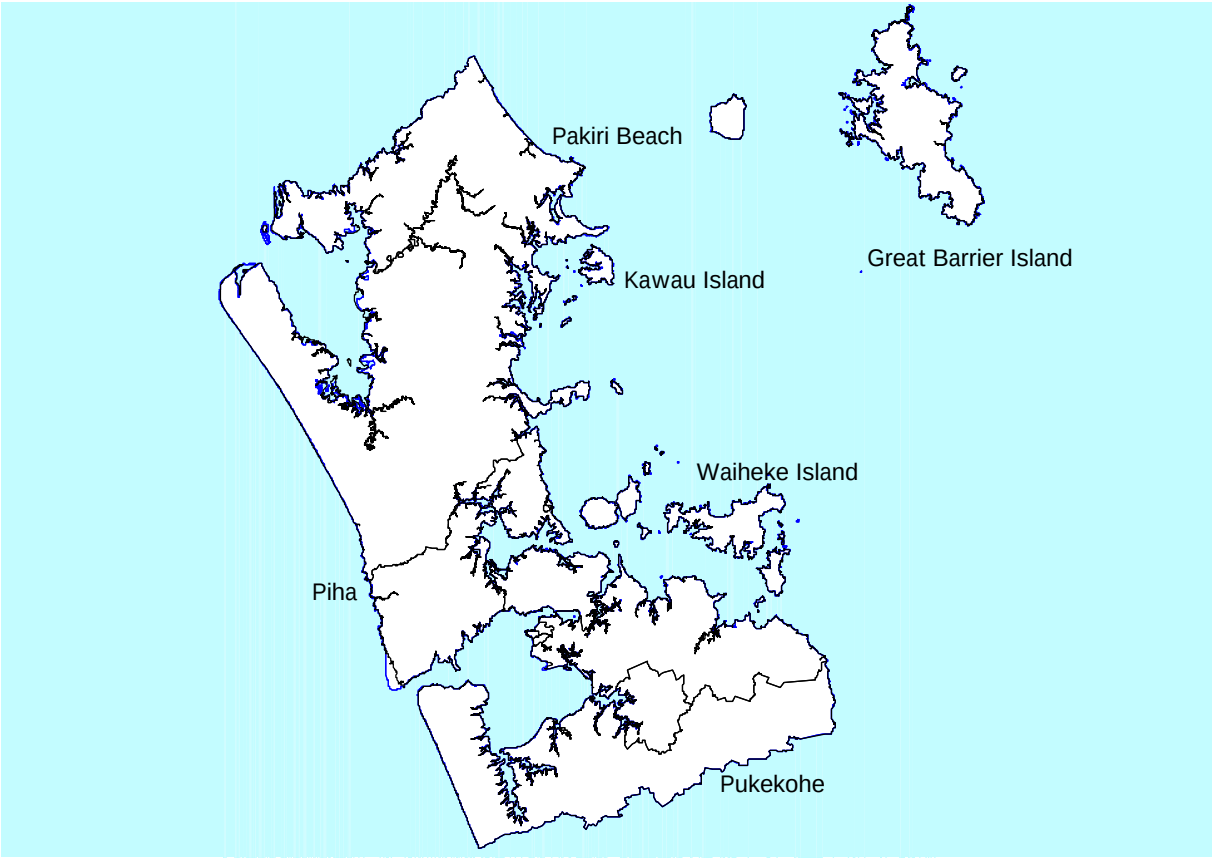

Figure 1 The Auckland Region

1.6 Document Structure

Part I: Introduction
Contains introductory and background information relating to the Biosecurity Act 1993 and the development of the RPMS. It includes a description of the Auckland region, effects of the RPMS, the statutory framework for development of RPMS, key principles of the strategy, management obligations and the responsibilities of affected parties.

Part II: Pest Management Programmes
Contains information specific to each of the pest plants and animals addressed in this RPMS. It includes a description of each pest and its impacts, along with the objectives, rules, and management methods to be employed. The Research Organism category and Community Initiatives Programmes are also described.

Part III: Administrative Systems and Processes
Contains information on strategy powers, funding, regulatory management, monitoring of strategy objectives and exemptions.

Part IV: Other Management Programmes and Initiatives
Contains information on the Council's policies on the provision of advice and education, commitment to biological control programmes, site-led control programmes, the Hauraki Gulf Controlled Area, cross boundary issues and a definition of terms.

2.0 STATUTORY FRAMEWORK

2.1 Legislative Background

Pursuant to the Biosecurity Act 1993, regional councils are:

a) The agencies responsible for processing and approving an RPMS. They must evaluate a proposal (section 72) and decide whether or not to notify the proposed RPMS (section 78), and process the proposal. Regional Councils can also write a Strategy if they wish (section 79(b)). Following the notification of a proposed RPMS the Regional Council can approve and make the final Strategy, subject to appeals by submitters to the Environment Court.

In addition to the above, regional councils can also:

a) Prepare a proposal for an RPMS (under section 71); and/or
b) Be a management agency appointed to implement an RPMS. The requirements of pest management agencies are set out in section 84, which include preparing operational plans.

Under the Biosecurity Act 1993, regional councils have no statutory obligation to undertake pest management actions. If they so wish, regional councils could confine themselves to processing and making an RPMS that has some other body as the management agency.

However, the ARC has, through its Regional Policy Statement (RPS), recognised pest management as a significant issue for the Auckland region and will prepare and implement an updated pest management strategy for plant and animal pests. Section 15.4.3 of the RPS states:

"The ARC will take a proactive role in developing strategies and will consult with the regional community, including constituent TLAs, on priorities."

2.2 Regional Pest Management Strategies

The principal means by which regional councils undertake pest management is via the preparation of a Regional Pest Management Strategy. As stated previously, a regional council may propose, approve and implement a Regional Pest Management Strategy. Section 72(1)(a), (b) and (ba) state that a regional council shall notify a proposal for a Regional Pest Management Strategy only if it is of the opinion that:

"(a) The benefits of having a regional pest management strategy in relation to each organism to which the strategy would apply outweigh the costs, after taking account of the likely consequences of inaction or alternative courses of action; and
(b) The net benefits of regional intervention exceed the net benefits of an individual's intervention; and
(ba) Where funding proposals for the strategy require persons to meet directly the costs of implementing the strategy:
(i) The benefits that will accrue to those persons as a group will outweigh the costs; or
(ii) Those persons contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the strategy; "

Section 72(a), (b) and (ba) require regional councils to assess whether public action is appropriate and necessary, whilst considering whether an RPMS is appropriate. Furthermore, section 72(c) of the Biosecurity Act 1993 directs that prior to proposing a Regional Pest Management Strategy, a regional council must demonstrate that:

"(c) Each organism in respect of which the strategy is under consideration is capable of causing at some time a serious adverse and unintended effect in relation to the region on one or more of the following:

i. economic wellbeing; or
ii. the viability of threatened species of organisms, the survival and distribution of indigenous plants or animals, or the sustainability of natural and developed ecosystems, ecological processes, and biological diversity; or
iii. soil resources or water quality; or
iv. human health or enjoyment of the recreational value of the natural environment; or
v. *the relationship of Maori and their culture and traditions with their ancestral lands, waters, sites, waahi tapu, and taonga."*

These evaluation elements of the Biosecurity Act 1993 ensure that the ARC must follow a well considered and rational process in deciding which pests to address in a pest management strategy. The process followed by the ARC is described in section 2.3.2 of this RPMS.

2.3 Prerequisites for a Proposal – Cost Benefit Analysis (CBA)

2.3.1 Background

The Biosecurity Managers Group (BMG) commissioned a report[1] from Simon Harris of Harris Consulting in Christchurch to develop a modelling process to assist Councils nation-wide to meet and satisfy, on reasonable grounds, the requirements of section 72(1) of the Act. The model uses cost benefit methodology to contrast the differences between various options and enable Councils to make informed choices. Further explanation of the inputs to the model are given below.

Scenarios
The Harris Cost Benefit Analysis (CBA) model calculates the benefits as the difference between two outcomes – where there is not a strategy and where there is. These different situations are called scenarios. For low incidence, high threat pests, two scenarios were used. For widespread (plant) pests, three scenarios were used – No RPMS (or "do nothing"), Total Control, or Containment. The purpose of a scenario is not to make a prediction of what would happen, rather, it provides a means to compare the outcome of one scenario with that resulting from an alternative scenario.

Assumptions
The calculation process within the model depends on a number of assumptions. A degree of uncertainty is inherent and must be accepted when assumptions are used.

All direct costs can be quantified. Estimates are made of such things as productive losses from reduced pasture growth and the time taken for a pest to fill its available habitat, for example. The calculations need many pieces of information and often these introduce uncertainty to the process, but it does not invalidate the analysis because all the assumptions are stated.

Discounting
CBA must consider costs and benefits over time, rather than for a single year. Economists use a technique called, discounted cash flow, to calculate future costs and benefits in present day terms. This value is known as the Net Present Value (NPV) of an investment. An NPV enables comparisons of relative costs within the model for all pests in the Strategy. Harris uses an 8% discount rate for all calculations within his model.

[1] Proving the need for a Regional Pest Management Strategy. Guidelines for undertaking an analysis under section 72 of the Biosecurity Act 1993. Harris Consulting, June 2000.

Method
A three part methodology was used to work through the requirements of section 72(1) of the Act:

- screening of candidate pests to determine adverse effects – section 72(1)(c) of the Act;
- determining for each pest species whether benefits exceed costs and whether regional intervention will achieve greater results than individual intervention – section 72(1)(a) and (b);
- identifying the exacerbators and beneficiaries in relation to each pest – section 72(1)(ba) and also required under section 77.

A full report documenting assumptions, screening of pests and CBA calculations and conclusions are contained in a separate document "*Cost Benefit Analysis and Assumptions, Animal and Plant Species Considered for Inclusion in the Proposed Auckland Regional Pest Management Strategy, a supporting document to satisfy section 72, Requirements of the Biosecurity Act 1993*". Auckland Regional Council, March 2002.

The CBA document is a supporting document to this Strategy and can be viewed at the Auckland Regional Council.

2.3.2 Section 72(1)(c) Tests

Section 72 (1)(c) stipulates that the Council must consider that a species is capable of causing serious harm in terms of:

- Economic impacts;
- Conservation values;
- Soil resources or water quality;
- Human health or enjoyment;
- Maori values.

In preparing the Strategy, Council first undertook a 'screening process' for a large number of potentially harmful species (nominated through a public discussion document and by staff) to determine what (if any) regional intervention would be appropriate. The above impacts are a threshold test. A process for screening pests nominated was developed by the Biosecurity Managers Group.

Using the model, Council considers that the pests named in the Strategy are capable of causing serious or unintended harmful effects in the Auckland region, with particular regard to the following:

- **adverse effects**: refers to the severity of a pest's external, uncompensated, actual or potential effects on the environment (includes agricultural production, biodiversity and amenity values) and Maori culture and tradition. The regional impacts of a pest generally have to be ranked moderate to warrant being declared a pest.
- **the biological characteristics of a pest**: refers to the ability of a pest to occupy a habitat. The pests of most concern are those able to establish, reproduce and spread in a range of habitats. Contributors to this success include: versatility, maturation, seeding ability, dispersal and establishment, cloning ability, ability to recover from adversities and competitive ability. The assessments of the characteristics are reliant on the availability of good quality information/data.
- **the distribution of a pest**: refers to whether the pest is limited, restricted or widespread in its distribution in potentially suitable habitats. Distribution will have a bearing on the type and level of regional intervention considered appropriate by the Council. Generally, the less widespread the plant the most cost effective it is to manage or eradicate.

Summary tables for each pest candidate were developed. From these tables, the Council was able to decide if the species under consideration should be classified as a minor, moderate or major pest, or some combination of these.

If the summary table produced primarily nil or low results, the pests was declared ‘minor’ and if predominantly moderate or major results were shown, the pest was declared ‘moderate’ or ‘major’ (e.g. any two ‘H’s meant automatic major pest status, two/three ‘M’s mean moderate/major status, etc). Figures 2 a and 2b provide examples of how this summary information was graphically shown.

Low incidence pest plant - African feather grass *Pennisetum macrourum*

Description and Biological Capability	
Form	• An erect perennial grass, commonly 1 to1.8m high. Leaves are light green and purplish along the edges and tips. Florets are numerous, 5 to 7mm long surrounded by feather-like serrated bristles to 1cm long. Very similar to Pampas grass.
Habitat	• Prefers damp situations in swamps and along streams. • Prefers temperate regions, sandy soil and annual rainfall above 600mm.
Regional Distribution	• Less than 100 sites within Auckland region. Most sites diminishing annually with control.
Biological Success	
Dispersal Method	• Most reproduction is by rhizomes which grow rapidly in spring and summer depending largely on available moisture. Seeds can disperse via water, gravel and animals.
Reproductive Ability	• Seed viability (germination rate) is high (99,000 seeds per m²) but seedling establishment is poor. Has extensive fibrous roots to a depth of 1m and stout rhizomes which can reproduce from small pieces.
Competitive Ability	• Can displace competing species due to spread of rhizomes. Forms dense clumps that exclude desirable vegetation.
Other Considerations	
Toxicity	• Nil
Resistance to Control	• Not readily controlled by herbicides. Cultivation can exacerbate problem. Re-establishment from seed causes problems also. • Regenerates easily from small fragments. Extremely drought resistant. Recovers from burning.
Current Status	• Auckland Regional Council carries out control work.

Impact Evaluation				
	Current Impact (Y/N)	Current Level Of Impact (Nil, L, M, H)	Potential Impact (Y/N)	Potential Level of Impact (Nil, L, M, H)
Endangered Species	Y	L	Y	M
Species Diversity	Y	L	Y	M
Soil Resources	N	Nil	N	Nil
Water Quality	N	Nil	N	Nil
Human Health	N	Nil	N	Nil
Maori Culture	Y	L	Y	M
Production	Y	L	Y	H
Recreation	Y	L	Y	L-M
International Trade	N	Nil	N	Nil

Assessment of Effects Status: Moderate to Major.

Action: Include as Total Control Pest Plant.

Figure 2a Example of Screening Process Summary for African feather grass.

Widespread Pest Plant - Woolly nightshade *Solanum mauritianum*

Description and Biological Capability	
Form	• A perennial shrub or small tree of up to 4m high. Leaves are grey green, ovate and densely covered with furry hairs. Produces violet flowers and a dull yellow berry.
Habitat	• Able to establish in a variety of climates and soil types – mainly open or disturbed areas. • Habitat limitations not well known in New Zealand.
Regional Distribution	• Occurs throughout the Auckland region. Widespread in urban and industrial areas, in gullies, along fence lines, and roads in rural areas.
Biological Success	
Dispersal Method	• Most seeds fall close to parent, with a small amount spread by birds.
Reproductive Ability	• Large numbers of seeds produced with 95% viability. Three year old plants recorded bearing 10,000 seeds.
Competitive Ability	• Can form monocultures in some situations. Effects on native bush are not well known but some native species are able to establish beneath it.
Other Considerations	
Toxicity	• Plant can cause skin irritation and respiratory problems in some people.
Resistance to Control	• Control by herbicides, cut and stump treatment, ring-barking, basal treatment and hand pulling.
Current Status	• Landowners/occupiers are required to carry out control work.

Impact Evaluation				
	Current Impact (Y/N)	Current Level Of Impact (Nil, L, M, H)	Potential Impact (Y/N)	Potential Level of Impact (Nil, L, M, H)
Endangered Species	Y	L	Y	M
Species Diversity	Y	M	Y	M
Soil Resources	N	Nil	N	Nil
Water Quality	N	Nil	N	Nil
Human Health	Y	L	Y	L
Maori Culture	N	Nil	N	Nil
Production	Y	L	Y	L
Recreation	N	L	Y	L
International Trade	N	Nil	N	Nil

Assessment of Effects Status: Moderate.

Action: Include as a Containment Pest Plant.

Figure 2b Example of Screening Process Summary for Woolly nightshade.

2.3.3 Section 72(1)(a) and (b) Tests

Based on the adverse effects of each pest (as outlined in section 2.3.2) and the Council's extensive knowledge of the majority of these pests, a hierarchy of pest categories (refer section 24.0 of this document for definitions) was developed for plants:

- Total Control Pest Plants: effects are major, incidence of the pest is low. Eradication realistic;
- Containment Pest Plants: are widespread within Region, eradication throughout Region not realistic, effects moderate/major;
- Surveillance Pest Plants: are too widespread to warrant direct control, but publicity regarding impacts is appropriate and limited control may be undertaken in site-led programmes. Effects generally moderate to major.

An assumption was made that only those pests nominated for inclusion in the first two categories could undergo the full cost benefit analysis. Surveying for pests or providing Pest*fact* sheets is a relatively low cost exercise and does not warrant a full cost benefit analysis.

Production Pests
Estimates of costs, including production losses, under various scenarios were calculated in NPV (net present value) terms. A single NPV was produced for each scenario and compared with the RPMS scenario. If the total damage to the region for the No RPMS scenario is greater than, for example, a containment scenario, then the NPV of containment is positive and the section 72(1)(a) test is met.

Environmental Pests
The damage done by environmental pests is difficult to quantify. Costs can be quantified and converted to NPV and then compared to the environmental values being protected. The values are not expressed in dollars or NPV terms but could be, for example, cost per hectare to protect values. When the Council decides to designate a pest it is saying the benefits outweigh the costs. This is sufficient to meet the requirements of section 72(1)(a) of the Act.

Regional Benefit
Section 72(1)(b) requires that the net benefit of regional intervention exceed the benefit of individual intervention. For production pests, a calculation can be made (cost of spillover) to demonstrate the amount of regional benefit. Provided the spillover is positive, there is regional benefit and private benefit and the test in section 72(1)(b) is met.

Environmental pests are a special case. All the benefit is generally regional benefit, so any pest that passes the test in section 72(1)(a) will also pass in section 72(1)(b).

2.3.4 Section 72(1)(ba) Tests

Beneficiaries and exacerbators were identified for each pest that passed the 72(1)(a) and (b) tests and which Council believed should be included within the RPMS.

2.3.5 Cost Benefit Analysis Summary

The following summarises the section 72(1) 'process of elimination' of plant and animal species nominated for inclusion in the RPMS following the procedures outlined above.

Potential Pest Plants Nominated

- 86 plants nominated
- 86 plants screened – 17 failed (nil or minor effects, had insufficient information on their potential impacts or were excluded for other reasons)
- Three categories were established based on effects:
  - Total Control Pest Plants
  - Containment Pest Plants
  - Surveillance Pest Plants
- Full cost benefit analysis was carried out on 39 plants only.
- In the Council's judgement, considering CBA outcomes, pests are classified as follows:
  - Total Control Pest Plants = 25
  - Containment Pest Plants = 13
  - Surveillance Pest Plants = 31 (plus 56 = 82)

The Surveillance Pest Plants category also includes an additional 56 species, many of which were surveillance plants in the existing Plant Pest Management Strategy, or on the old National Surveillance Plant Pest list. All are recognised pest plants.

Potential Animal Pests Nominated

- 22 animal species or groups of species nominated – Seven excluded before screening (as they are generally dealt with by other agencies).
- 15 animals screened – Two failed (nil or minor effects or too widespread or require more information on their impacts).
- Full CBA assessments/descriptions were done on the remaining 13 animals or groups of animal species.

The Auckland Regional Council considers that pests contained in this Strategy, in the various categories, require regional intervention because:

- They are capable of, or currently are, causing significant adverse effects on the environment or production values; some problems are too large and cross too many property boundaries for individuals to effectively deal with (e.g. Possums which occur throughout the region in numerous different habitats); and
- Potential pests have not yet established in the region but are present in a neighbouring region and proaction is required to prevent infestation into the Region; and
- There is a need for co-ordinated control efforts to successfully manage pests; and
- Some pests are best managed by experienced and qualified people; and
- Other pests are too widespread but by increasing publicity on their effects, greater control may be undertaken; and
- There is a need to prevent landowners/ occupiers imposing costs on other parties.

In the Council's opinion the net benefits of the Strategy outweigh the costs. Also, in the Council's opinion, there are clear net benefits to the regional community of having strategy rules and the Council undertaking control and providing assistance to landowners/occupiers. For the most part, landowners/occupiers are both exacerbators of pest problems and beneficiaries of pest control.

2.4 Relationships with other Statutes

Nothing in an RPMS can affect or detract from other legislation, regulations or rules of law relating to pest management. These include, but are not restricted to those Acts specified in section 7 of the Biosecurity Act 1993,

- Forests Act 1949;
- Wildlife Act 1953;
- Health Act 1956;
- Animals Protection Act 1960;
- Wild Animal Control Act 1977;
- Reserves Act 1977;
- Fisheries Act 1983;
- Conservation Act 1987;
- Trade in Endangered Species Act 1989;
- Resource Management Act 1991.

Several Acts which may impact upon the RPMS, particularly in the areas of funding, control methods, service delivery and monitoring, are identified below:

- Health and Safety in Employment Act 1992 (the prevention of harm to employees at work);
- Rating Powers Act 1988 (provides for pest management rates);
- Resource Management Act 1991 (sustainable management and discharge of contaminants);
- Hazardous Substances and New Organisms Act 1996.

2.5 Relationship with other Policy

Section 76(4) of the Biosecurity Act 1993 states that:

"... A proposal for a regional pest management strategy shall not be inconsistent with:

(a) Any national or regional pest management strategy (whether relating to the same region or any other region or regions) concerning the same organism; or
(b) Any regulation; or
(c) Any regional policy statement or regional plan prepared under the Resource Management Act 1991."

At present, there are operative Regional Pest Management Strategies in the neighbouring Northland and Waikato regions, and national strategies for Bovine Tb and American Foulbrood. At the national level, consultation between central and local government is needed to avoid inconsistencies and conflict. Cross boundary communication will assist in avoiding potential inconsistencies at the regional level (refer section 23 of this document).

2.5.1 The Regional Policy Statement and Regional Plans

The Auckland Regional Policy Statement (1999) has a chapter regarding pest management and the policies and methods stated have guided preparation of this RPMS.

The ARC has prepared, and is preparing, a number of regional plans which have influenced the development of this RPMS and may impact on its implementation. These include the Proposed Regional Plan; Coastal Plan; and the Proposed Regional Air, Land and Water Plan.

2.6 Effects of Strategy Implementation

Section 76(1)(j) and (k) of the Biosecurity Act 1993 requires that a proposal for an RPMS must specify what the effects of the RPMS's implementation are likely to be.

The ARC is satisfied that this requirement has been met and a brief discussion of the likely effects of the RPMS's implementation is found below, as well as in each part of the specific pest control programmes found in Part II of this RPMS.

2.6.1 On the relationship of Maori and their culture and traditions with their ancestral lands, waters, sites, waahi tapu, and taonga

The effects of implementing different pest control methods will depend on the particular sites and areas of the region to be controlled. In general, the beneficial effects are that the adverse effects of pests will be avoided, remedied, or mitigated. No species of indigenous flora will be the focus of control under this RPMS.

Potential adverse effects of implementing the RPMS include those of tikanga (e.g. safety for people who may breach tapu associated with areas), kaitiakitanga (e.g. effects of manipulating habitats), taonga (e.g., effects of chemicals on water, fish, shellfish and indigenous birds) and waahi tapu (e.g. effects of chemicals). In general, Tangata Whenua favour a combination of pest control methods to ensure that potential adverse effects on ancestral taonga are avoided.

2.6.2 On the Environment

This RPMS will provide for the maintenance and enhancement of natural environments such as indigenous ecosystems, water quality and soil resources. It will also provide for the human environment through the protection of human health and safety and maintenance of amenity and recreation values. The economic environment will be provided for through protection of the productive capacity of land.

The specific pest plant effects being avoided or mitigated are identified in Part II including sustainability of natural and developed ecosystems, ecological processes and biological diversity.

The discharge of contaminants into the environment in the implementation of this RPMS will be addressed though the consultative processes and monitoring procedures established under the Resource Management Act 1991 and relevant regional plans.

2.6.3 On the marketing overseas of New Zealand products, and on New Zealand's international obligations, assurances and reputation

This RPMS will generally not affect the marketing overseas of New Zealand products, New Zealand's international obligations, assurances and reputation. However, in some cases productivity of land will be enhanced through pest management. In the future, increasing concerns from international markets and consumers regarding the use of chemical and or biological control may have implications for the control methods used.

2.6.4 On the long-term management of any pest plant or unwanted organisms, the management of which may be affected by the strategys' implementation

The implementation of this RPMS will contribute to the long-term management of nominated pests by actively reducing densities and preventing the spread of pests to uninfested areas. The RPMS places an emphasis on achieving eradication, control and containment of pests.

3.0 PLANNING FRAMEWORK

3.1 Key Principles of the Strategy

The following key principles were formulated following an internal review of the existing Regional Pest Management Strategies. They are based on feedback from landowners/occupiers and key pest liaison groups, knowledge of current pest issues at both the regional and national level, potential harm that could be caused by a range of plant and animal species, and changes in public attitude to pest management. The principles will help guide pest management policy within the Auckland region.

1. The ARC will establish relationships within the community, e.g. with the general public, district and city councils, non-governmental organisations, retail and wholesale nurseries, to raise awareness and promote community leadership for pest issues. These relationships will be supported by surveillance programmes and their regulation where practical.

   Explanation: Promoting community awareness and ownership of pest issues is fundamental to achieving long-term goals for pest management. It is recognised that there may be times when regulation is required to ensure objectives are being met.

2. The ARC will carry out control of low incidence, high-threat pests with the aim of eradicating targeted species from the region where this is technically feasible and scientifically sound.

   Explanation: There are a number of pest species that are currently at low enough levels throughout the region that eradication is feasible. These plants must be controlled prior to them reaching levels where it will be extremely difficult and costly to manage them.

3. Primary responsibility for management of pests and other harmful plant and animal species rests with the region's landowners/occupiers. The ARC will provide advice and information to assist landowners/occupiers to carry out their own pest management.

   Explanation: Landowners/occupiers have ultimate responsibility for managing their own land. Clear messages need to be conveyed to the public on these responsibilities. It is important that landowners/occupiers see consistency of application of policy in relation to widespread pests.

4. The ARC will carry out pest control where there is regional benefit on land deemed to have High Conservation Value; technical expertise is required; or to mitigate significant adverse environmental impacts on resources or communities.

   Explanation: In some areas there will be a benefit to the region if the ARC carries out control. This is particularly true of plant and animal pests where specialised techniques and control methods are required, or important values are at risk.

5. Pest-free areas should be kept pest-free where this is possible. In particular, the islands of the Hauraki Gulf should be kept free of the animal and pest plants that are not currently present on them. The Council also recognises that islands and peninsulas offer unique opportunities for native habitat and species restoration and for pest eradication.

   Explanation: The best form of pest management is keeping pests out of pest-free areas, for example, through the Hauraki Gulf Controlled Area restrictions. This can be achieved through education of the public, surveillance programmes and a rapid response to invasions. The Department of Conservation administers large areas in the Hauraki Gulf, and integrated pest management programmes, including reducing the risk of Possums and mustelids reaching certain Hauraki Gulf islands and eradication of existing pests, must be developed with their support.

6. The General Rate will be used to fund the bulk of activities undertaken under the RPMS. User charges will be imposed on those persons who fail to meet the required standards in the RPMS.

   Explanation: The use of the General Rate to fund the RPMS is based on the principle that the regional community benefits from the implementation of the RPMS. Such benefits include biodiversity protection and increased agricultural production through fewer pests.

   Those persons who do not control pests that adversely affect their neighbours or the regional community should bear the costs of the work to meet the RPMS standards. This can be done through imposing charges on those persons and/or recovering costs of any enforcement action.

7. The ARC will work with government agencies, territorial local authorities, community groups and iwi in order to help manage pest problems of concern.

   Explanation: Pest management is not solely the responsibility of the ARC. A number of Crown agencies, local councils, community groups and iwi carry out pest management operations, and the ARC will assist such operations where appropriate.

8. Regulation will be used:
   (i) to enforce the rules of the RPMS; and
   (ii) to implement the National Pest Plant Accord; and
   (iii) to implement the Hauraki Gulf Controlled Area requirements.

   Explanation: Ever since legislation was first passed regarding pest management in New Zealand, regulation has failed to contribute significantly to the reduction of pest plants. Regulation will primarily be used to protect landowners/occupiers who are carrying out control and are adversely affected by their neighbours who are not (exacerbators). This includes responding to complaints. It will also be used to enforce restrictions on the sale and distribution of pests and restrictions on the movement of pests into and through the Hauraki Gulf.

9. ARC will continue to advocate to central government for the appropriate implementation of relevant legislation relating to pest management, and for greater integration of pest management functions.

   Explanation: ARC has relationships with other Central Government pest management agencies. It is important that all agencies with pest management responsibilities work together for the benefit of the environment.

10. The ARC will ensure that all animal control it or its contractors undertake is carried out efficiently, effectively and humanely, in accordance with the Animal Welfare Act 1999 and SPCA requirements.

    Explanation: The ARC recognises the need for feral animal control to achieve positive environmental outcomes, however, it wishes to promote the humane treatment and control of all feral animals.

3.2 Infestation Curve Model

The ARC has adopted the following 'infestation curve model' to guide decision making on pest management issues. It is a simple descriptive model that demonstrates basic pest population dynamics and helps to determine the appropriate Strategy objectives and management programmes for individual pests. Generally, the lower a pest is situated on the curve the more its distribution is restricted. Control of pests situated near the start of the curve will be more cost effective and control or even eradication is feasible. Benefits of controlling these low incidence pests accrue to most landowners/occupiers throughout the region as it is a preventative action. Those pests higher on the curve are more widespread and therefore are more difficult and costly to control, with the beneficiary of control more likely to be the immediate occupier. Attempts to eradicate widespread weeds are unlikely to be feasible, although there may be benefit in controlling these

pests in areas of high conservation value, or in particular parts of the region where they may be less common. A number of New Zealand's more serious pests are high on the infestation curve, for instance Possums and Gorse.

The infestation curve is a model and only used as a guide. Some pest species can be widespread (e.g. Possums) yet because of the attributes of the pest and the available control methodologies, large areas can be successfully controlled for a relatively low cost.

The infestation curve model has three phases divided into eight zones:

- First is the 'lag phase' which is the initial slow establishment phase – when a pest has just started to become established and is very limited in its distribution (curve is flat, zones 1-3);
- Second is the 'explosion phase' when a pest is still restricted in its range but densities and range are increasing rapidly (curve is steep, zones 4-6);
- Third is the 'established phase' when growth slows as the pest fills most of its available habitat (the curve levels off again, zones 7-8).

The diagram that follows outlines the model and illustrates where on the model some of the Auckland region's pests lie.

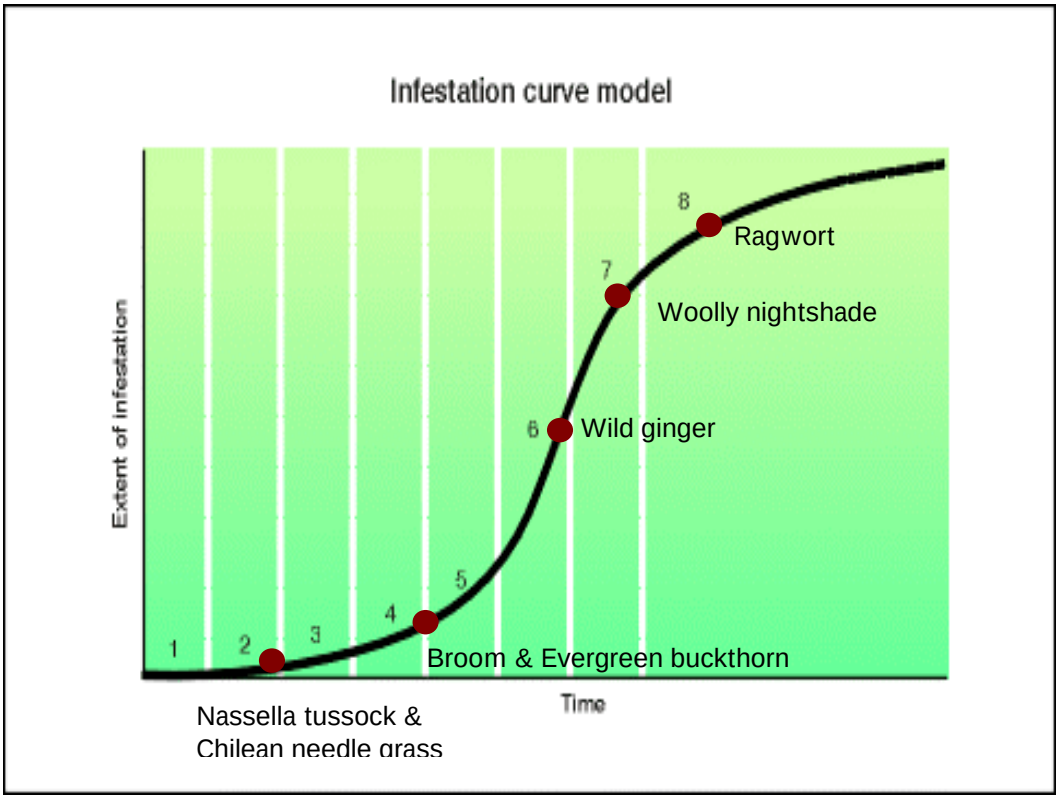

Figure 3 Infestation Curve Model for the Auckland region.

4.0 STRATEGY RESPONSIBILITIES AND OBLIGATIONS

The following parties have specific obligations and responsibilities under the RPMS:

4.1 Auckland Regional Council

For the purposes of this RPMS, the ARC will administer and overview the development and implementation of the RPMS in accordance with its powers under section 13 of the Biosecurity Act 1993.

With respect to the RPMS, the ARC is specifically responsible for:

a) Proposing, notifying and approving the Strategy: Pursuant to sections 72, 73, 78, 79 and 79F of the Biosecurity Act 1993;
b) Overviewing the implementation of the Strategy: Pursuant to sections 84 and 88 of the Biosecurity Act 1993.

4.1.1 Management Agency

The ARC is the management agency responsible for implementing this Strategy. This involves applying the tactics and measures which ensure the RPMS's objectives are being achieved. It also includes developing and administering systems that ensure funding, monitoring and review processes are consistent with the requirements of the Biosecurity Act 1993 and any other statutory provisions.

The ARC, in determining that it shall be the management agency, is satisfied that it meets the requirements of section 84(3) of the Biosecurity Act 1993 in that:

a) The Council is accountable to RPMS funders through the representation and annual reporting requirements established in the Local Government Act 1974; and
b) The Council is acceptable to funders and to those persons who may be subject to the management provisions of the RPMS; and
c) The Council has the management capacity, competency and expertise available to carry out the implementation of the RPMS through public education, field operations, monitoring, support of community initiatives, legal processing/litigation, ability to fund, and reporting on progress.

The manner in which the ARC will undertake its responsibilities is detailed in Part III, Administrative Systems and Processes.

4.1.2 Small Scale Control Measures

During the lifetime of the RPMS the ARC may be required to undertake a rapid response to a new pest problem (e.g. the invasion of a pest not previously present in the region or New Zealand). Small scale management programmes under section 100 of the Biosecurity Act 1993 can be used once these pests have been declared unwanted organisms where:

a) An unwanted organism present in the region could cause serious adverse and unintended effects unless early action to control it is taken; and
b) The organism can be eradicated or controlled effectively by small-scale measures within three years of commencing measures to control the organism, because:
    - Distribution of the organism is limited; and
    - Technical means to control the organism are available; and

c) The taking of all the measures (including the payment of any amount to a person for the purpose of compensating that person for a loss) is likely to cost less than an amount for the time being prescribed for the purposes of this section by the Governor-General by Order in Council; and

d) The taking of those measures is unlikely to result in a significant monetary loss to any person, other than a person who has contributed to the presence or spread of the organism by failing to comply with this Act or any pest management strategy.

4.2 Landowners/Occupiers

Landowners/occupiers of land infested with pests are generally the exacerbator of the pest problem and are also the beneficiaries of any control action. It follows that those occupying land should be required to undertake management and control of pests in most cases. In lease and rental situations the responsibility may be determined in the lease or rental agreements. There are other rules and regulations relating to the treatment and management of animal and plant pests, and all landowners/ occupiers should contact their local district or city council, and regional council, to ensure they comply with them, e.g. the Resource Management Act 1991; Air, Land and Water Plan; Weed Management plans and codes of practice. The main landowners/occupiers are identified as follows:

4.2.1 Private Land

Private landowners/occupiers, TLAs and the ARC are required to control pests on their land, in the manner and to the standards prescribed in Part II of the Strategy.

4.2.2 Crown Land

The Crown must, for a number of reasons, be treated differently from private individuals. Under section 87 of the Biosecurity Act 1993, the Crown can agree to be bound by the Strategy, and contribute to its funding. However, a pest management strategy cannot require the Crown to be bound.

Crown land accounts for c. 60 000ha or 11.8% of the region. Central government agencies occupying the Crown estate have been identified as being significant beneficiaries or exacerbators to pest management in the region (refer to section 15.0 of this document).

4.3 Roadside Verge Responsibilities

The Biosecurity Amendment Act 1997 made changes to section 6 on roadside verge responsibility. The amended section 6 gave an RPMS the option of making adjacent landowners/occupiers responsible for roadside verge control.[2]

The construction and maintenance of roads clearly exacerbate weed problems. Roads have long been recognised as acting as corridors for the spread of weeds. Weeds establishing themselves on roadside verges can quickly spread to adjoining properties and can also cause visibility problems. Through ownership of the pest control problem, the responsible agent is compelled to explore and initiate more imaginative and effective solutions.

The responsibility for roadside verge control for all formed roads lies with the owner of the land, i.e. the roading authority. For unformed roads the responsibility for control of pests under the RPMS is the land occupier who physically occupies the land.

[2] Pest control in rail corridors is also the responsibility of the land occupier. The Council will work with Tranzrail in regard to pest issues.

PART II

PEST

MANAGEMENT PROGRAMMES

5.0 PEST PLANT MANAGEMENT PROGRAMMES

5.1 Introduction

This section details the pest plant management programmes to be applied as part of the control of individual or groups of pest plants under the Total Control, Containment, Surveillance, and Community Initiatives designations. Other management options are also considered (e.g. biological control and site-led programmes).

Each management programme includes the following:

DESCRIPTION OF THE PROBLEM
- Physical description and history of the pest;
- Effect of the pest on the environment.

MANAGEMENT REGIME
- Pest plant designation;
- Need to intervene;
- Objectives;
- Means of achievement.

RULES

With respect to individual or groups of pest plants, the ARC has determined that different pests warrant different types and levels of regional intervention. The level of intervention adopted for one or a group of pest plants takes into account the most appropriate means for addressing the present and potential adverse impacts of the plant/s. It also recognises that the desired end results of pest management may take longer than the duration of the RPMS.

For the purpose of this RPMS and for ease of reference, the Council has adopted the following terminology for pest plants, which partly reflect the management objectives for each pest. These are outlined below.

Pests designated in any of the categories below can also be controlled under the Council's site-led pest initiatives (refer section 19.0 of this document).

5.2 Hierarchy of Plant Designations

Table 2 Summary of Categories

Category	Explanation
Total Control	ARC carries out all control work.
Containment (Removal)	Landowners/occupiers are required to carry out the control work on their property, throughout or in designated parts of the Auckland region.
Containment (Boundary Control)	Landowners/occupiers are required to carry out the control work on their property to a specified distance from any property boundary, throughout the rural parts of the Auckland region.
Surveillance	Pest plants banned from sale, propagation, distribution and display within the Auckland region.
National Pest Plant Accord (NPPA)	Pest plants banned from sale, propagation, distribution and display throughout New Zealand (refer Appendix 2).
Community Initiatives Programme	Community groups may nominate any pest plant in the Strategy on which to carry out control work on. The ARC will provide regulatory back-up for 27 of these.
Research Organism - Plants	Plants that the ARC will carry out research on over the life of the Strategy.

5.2.1 Total Control Pest Plants

Total Control Pest Plants are those pest plants that are of limited distribution or density within the Auckland region, or defined areas of the region, **for which the ARC shall assume responsibility for funding and implementing appropriate management programmes**. The aim is to eradicate these plants from the region or defined areas of the Region, over a period of time, which may exceed the life of this RPMS. The reasons for the ARC assuming responsibility for the control of these plants are that:

a) These plants require specialist expertise in identification and control; and/or
b) It is more cost-effective for the ARC to control the plant than to enforce occupier control.

Plants will be treated by a recognised method, at intervals that will ensure the infestations are controlled, reduced and eventually eradicated. Total Control Pest Plants are banned from sale, propagation and distribution and landowners/occupiers will be encouraged to notify the ARC of their presence. The ARC will also disseminate technical information on these plants.

5.2.2 Containment Pest Plants

Containment Pest Plants are those that are abundant in certain habitats or areas in the region, and **for which landowners/occupiers are required to treat whenever they appear on their land** – either to completely remove the pest plant or maintain clearance to an 'appropriate distance' (specified for each species) from a property boundary. The objective for complete removal is to minimise the impacts of these pest plants on the environment or people's health and/or activities by ensuring that sites (within the defined area of the Region or throughout the region) are treated adequately. For some of these species, eradication from parts of the region may be achievable in the long term. For boundary control, the objective is to reduce the impacts of any infestation on neighbouring properties. Boundary complaints may be made by genuinely affected parties (where their property is cleared or being cleared of the pest plant infestation), or action initiated by a Biosecurity staff member.

Plants need to be treated by a recognised method at intervals that will ensure the population is controlled and the number of plants reduced by preventing seeding. Further to this requirement, Containment Pest Plants are banned from sale, propagation and distribution. The ARC will also disseminate technical information on control methods and the ecology of these plants.

5.2.3 Surveillance Pest Plants

Surveillance Pest Plants have been identified as being of potential high risk to the Auckland region. People will be encouraged to protect the environment by removing them from their property. Community initiatives to control these pest plants will also be promoted and supported by Council. The Regional Council will also seek to **prevent their establishment or spread by prohibiting their sale, propagation and distribution**. This will be achieved by authorised persons regularly monitoring plant retail and wholesale outlets for these pest plants. The ARC will also disseminate technical information on control methods and the ecology of these plants, and fund research into biological control options. Research into their distribution and environmental impacts may also be carried out during the life of the Strategy. There is, however, no legal requirement for landowners/occupiers to control established infestations.

5.2.4 National Pest Plant Accord (NPPA) List (for the full NPPA list, refer to Appendix 2)

There is also a National Pest Plant Accord (NPPA) list and all plant species on it have the same status as Surveillance Pest Plants in the region. The NPPA came into effect on 1 October 2001, and is a co-operative agreement between regional councils and government departments with biosecurity responsibilities (e.g. Ministry of Agriculture and Forestry, Department of Conservation). Under the accord, all signatory regional councils will undertake surveillance to prevent the commercial propagation, sale and/or distribution of an agreed list of pest plants. The NPPA list is dynamic, with additions made periodically via consultation with a technical advisory group (to check for updates refer to the internet).

5.2.5 Community Initiative Programmes (Plants)

Community Initiative Programmes have been introduced to allow groups of landowners/occupiers to control nominated pest plants collaboratively. Most of the pest plants included in this category are widely distributed throughout the region and did not meet the cost benefit criteria required to implement a full-scale regulatory regime under the Strategy. However, most of these weeds have a high public profile and many submissions asked that some form of management be available (for a full list refer section 9.1 of this document). This new category has been introduced to provide this option.

In addition, any community group will be encouraged to control any pest plants that are widespread in the region. The Strategy objectives are to provide advice and information on control methods, and promote voluntary control led by community groups.

5.2.6 Research Organisms (Plants)

This category includes organisms for which research is needed in order to clearly determine their impacts on the environment, the most effective means of control, appropriate management regimes, and to allow for more consultation with all affected parties. Many of the organisms in this category are currently being sold and some form a valuable part of the retail plant industry. Placing of organisms in this category does not necessarily mean that they will be designated a pest in the future, but flags that there are concerns about their impacts. Research projects on them will be initiated over the life of the Strategy.

5.3 Summary of Individual Plant Designations

All pest plants identified in the Strategy, excluding those plants in the Research Organisms category, are banned from sale, propagation, and distribution in the Region. Those pest plants that are also included on the National Pest Plant Accord list are banned from sale nationally. Some of the Surveillance and NPPA Pest Plants are also in either the Total Control or Containment categories, meaning additional rules or requirements also apply to them. All species identified in the RPMS, and the designation of each, is listed below:

Table 3 Plant designations

Common Name	Scientific Name	Surveillance	Community Initiative	Containment	Total Control	Research
Acacia species	*Acacia* spp.					♦
African clubmoss	*Selaginella krausiana*	♦				
African feather grass	*Pennisetum macrourum*	♦			♦	
Agapanthus	*Agapanthus subsp. orientalis and cultivars*					♦
Alligator weed	*Alternanthera philoxeroides*	♦				
Aristea	*Aristea ecklonii*	♦				
Arrowhead	*Sagittaria montevidensis*	♦				
Arrowhead, Hawaii Arrowhead	*Sagittaria sagittifolia*	♦			♦	
Artillery plant	*Galeobdolon luteum*	♦				
Australian sedge	*Carex longebrachiata*	♦		♦		
Austrostipa spp.	*Austrostipa spp.*					♦
Baccharis	*Baccharis halimifolia*	♦				
Balloon vine (heartseed)	*Cardiospermum grandiflorum*	♦			♦	
Banana passionfruit	*Passiflora mollissima, P. mixta*	♦	♦			
Bangalow palm	*Archontophoenix cunninghamii*					♦
Barberry	*Berberis glaucocarpa*	♦				

Common Name	Scientific Name	Surveillance	Community Initiative	Containment	Total Control	Research
Bartlettina	*Bartlettina sordida*	♦	♦			
Bathurst bur	*Xanthium spinosum*	♦		♦		
Blackberry (wild aggregates)	*Rubus fruiticosus* agg.	♦				
Blue morning glory	*Ipomoea indica*	♦	♦			
Blue passion flower	*Passiflora caerulea*	♦				
Blue spur flower	*Plectranthus ecklonii* *Plectranthus grandis*	♦				
Boneseed	*Chrysanthemoides monilifera*	♦	♦			
Boxthorn	*Lycium ferocissimum*	♦				
Broom	*Cytisus scoparius*	♦			♦	
Broomsedge	*Andropogon virginicus*	♦				
Brush cherry	*Syzygium australe*					♦
Brush wattle	*Paraserianthes lophantha*	♦				
Buddleia	*Buddleja davidii*	♦				
Bur daisy	*Calotis lappulacea*	♦				
Burdock	*Arctium minus*	♦				
Bushy asparagus	*Asparagus densiflorus*	♦		♦		
Cape honey flower	*Melianthus major*	♦				
Cape ivy	*Senecio angulatus*	♦	♦			
Caulerpa	*Caulerpa taxifolia*	♦				
Cathedral bells	*Cobaea scandens*	♦			♦	
Chinese pennisteum	*Pennisetum alopecuroides*	♦				
Chilean needle grass	*Nasella neesiana*	♦			♦	
Climbing asparagus	*Asparagus scandens*	♦	♦			
Climbing gloxinia	*Lophospermum erubescens*					♦
Coast banksia	*Banksia integrifolia*					♦
Coltsfoot	*Tussilago farfara*	♦				
Cotoneaster	*Cotoneaster glaucophyllus, Cotoneaster franchetii*	♦				
Crack willow	*Salix fragilis*	♦				
Devil's tail (tearthumb)	*Persicaria perfoliatum*	♦			♦	
Eelgrass	*Vallisneria gigantea* - Lake Pupuke variety *Vallisneria spiralis*- Meola Creek variety	♦				
Egeria oxygen weed	*Egeria densa*	♦			♦	
Elaeagnus	*Elaeagnus x reflexa*	♦	♦			
Evergreen buckthorn	*Rhamnus alaternus*	♦		♦	♦	
Fine-stemmed needle grass	*Nasella tenuissima*	♦			♦	
Fringed water lily	*Nymphoides peltata*	♦			♦	
German ivy	*Senecio mikanioides*	♦	♦			
Giant reed grass	*Arundo donax*	♦	♦			
Goat's rue	*Galega officinalis*	♦				
Gorse	*Ulex* spp.	♦	♦	♦		
Green cestrum	*Cestrum parqui*	♦			♦	
Guava/Purple guava	*Psidium cattleianum*					♦
Gypsywort	*Lycopus europeaus*					♦
Hawthorn	*Crataegus monogyna*	♦				
Hemlock	*Conium maculatum*	♦				
Himalayan honeysuckle	*Leycesteria formosa*	♦	♦			
Hornwort	*Ceratophyllum demersum*	♦				
Houttuynia	*Houttuynia cordata*	♦			♦	
Hydrilla	*Hydrilla verticillata*	♦				
Ivy	*Hedera helix* ssp. *helix and cultivars*					♦

Common Name	Scientific Name	Surveillance	Community Initiative	Containment	Total Control	Research
Japanese honeysuckle	*Lonicera japonica*	♦	♦			
Japanese spindle tree	*Euonymus japonicus*	♦				
Jasmine	*Jasminum polyanthum*	♦	♦			
Lagarosiphon oxygen weed	*Lagarosiphon major*	♦				
Lantana	*Lantana camara* var. *aculeata*	♦			♦	
Lantana	*Lantana camara* varieties					♦
Lizard's tail	*Saururus cernuus*					♦
Manchurian wild rice	*Zizania latifolia*	♦			♦	
Marshwort	*Nymphoides geminata*	♦			♦	
Mexican daisy	*Erigeron karvinskianus*	♦				
Mignonette vine	*Anredera cordifolia*	♦	♦	♦		
Mile-a-minute	*Dipogon lignosus*	♦	♦			
Mistflower	*Ageratina riparia*	♦				
Monkey apple	*Acmena smithii*	♦	♦			
Montpellier broom	*Teline monspessullana*	♦				
Moreton Bay fig	*Ficus macrophylla*					♦
Moth plant	*Araujia sericifera*	♦	♦	♦		
Nardoo	*Marsilea mutica*	♦				
Nassella tussock	*Nasella trichotoma*	♦			♦	
Needle grass	*Austrostipa rudis*	♦			♦	
Nodding thistle	*Carduus nutans*	♦		♦		
Noogoora bur	*Xanthium occidentale*	♦				
Nutgrass (Purple nutsedge)	*Cyperus rotundus*	♦				
Old man's beard	*Clematis vitalba*	♦			♦	
Oxylobium	*Oxylobium lanceolatum*	♦				
Palm grass	*Setaria palmifolia*	♦	♦			
Pampas grass - common - purple	*Cortaderia selloana,* *C. jubata*	♦ ♦	♦ ♦			
Parrots feather	*Myriophyllum aquaticum*	♦				
Perennial nettle	*Urtica dioica*	♦				
Periwinkle	*Vinca major*	♦				
Phoenix palm	*Phoenix canariensis*					♦
Plectranthus	*Plectranthus ciliatus*	♦				
Plumeless thistle	*Carduus acanthoides*	♦				
Port Jackson fig	*Ficus rubiginosa*	♦				
Privet - tree - Chinese	*Ligustrum lucidum* *Ligustrum sinense*	♦ ♦	♦ ♦			
Purple loosestrife	*Lythrum salicaria*	♦			♦	
Queen of the night	*Cestrum nocturnum*					♦
Queensland poplar	*Homalanthus populifolius*					♦
Ragwort	*Senecio jacobaea*	♦	♦	♦		
Reed sweet grass	*Glyceria maxima*	♦				
Saffron thistle	*Carthamus lanatus*	♦				
Sagittaria	*Sagittaria graminea* ssp. *platyphilla*	♦			♦	
Scrambling lily	*Geitonoplesium cymosum*	♦			♦	
Senegal tea	*Gymnocoronis spilanthoides*	♦			♦	
Sheeps bur	*Acaena agnipila*	♦				
Skeleton weed	*Chondrilla juncea*	♦				
Small balloon vine	*Cardiospermum halicacabum*	♦			♦	
Smilax	*Asparagus asparagoides*	♦	♦	♦		
Spanish heath	*Erica lusitanica*	♦				
Spartina	*Spartina* spp.	♦		♦	♦	
Spiny broom	*Calicotome spinosa*	♦				
Stipa spp.	*Stipa* spp. (exclusing native species)	♦				

Common Name	Scientific Name	Surveillance	Community Initiative	Containment	Total Control	Research
St John's wort	*Hypericum perforatum*	♦				
Sweet briar	*Rosa rubiginosa*	♦				
Sweet pea shrub	*Polygala myrtifolia* (not including cv. "Grandiflora")	♦				
Tuber ladder fern	*Nephrolepis cordifolia*	♦	♦			
Tutsan	*Hypericum androsaemum*	♦				
Variegated thistle	*Silybum marianum*	♦		♦		
Velvet groundsel	*Senecio petasitis*	♦				
Wandering Jew	*Tradescantia fluminensis*	♦				
Water poppy	*Hydrocleys nymphoides*	♦			♦	
Water primrose	*Ludwigia peploides* ssp. *montevidensis*	♦				
White-edged nightshade	*Solanum marginatum*	♦			♦	
Wild ginger	*Hedychium gardnerianum, H. flavescens*	♦ ♦	♦ ♦	♦ ♦		
Woolly nightshade	*Solanum mauritianum*	♦	♦	♦		
Yellow flag	*Iris pseudacorus*	♦				
Yellow water lily	*Nuphar lutea*	♦				

6.0 Total Control Pest Plants

The table below contains the list of Total Control Pest Plants for the Auckland region, for which the ARC will undertake control of – either throughout the region or in defined areas of it. Descriptions of the plants, and the management actions relating to each, follows.

Common name	Scientific name	Section Number
THROUGHOUT THE REGION		
African feather grass	*Pennisetum macrourum*	6.1.1
Arrowhead	*Sagittaria montevidensis*	6.1.2
Balloon vine (Heartseed)/Small balloon vine	*Cardiospermum grandiflorum* *Cardiospermum halicacabum*	6.1.3
Cathedral bells	*Cobaea scandens*	6.1.4
Chilean needle grass	*Nasella neesiana*	6.1.5
Devil's tail (tearthumb)	*Persicaria perfoliatum*	6.1.6
Fine-stemmed needle grass	*Nassella tenuissima*	6.1.7
Fringed water lily	*Nymphoides peltata*	6.1.8
Green cestrum	*Cestrum parqui*	6.1.9
Houttuynia	*Houttuynia cordata*	6.1.10
Marshwort	*Nymphoides geminata*	6.1.11
Nassella tussock	*Nassella trichotoma*	6.1.12
Needle grass	*Austrostipa rudis*	6.1.13
Old man's beard	*Clematis vitalba*	6.1.14
Purple loosestrife	*Lythrum salicaria*	6.1.15
Sagittaria	*Sagittaria graminea* ssp. *platyphylla*	6.1.16
Scrambling lily	*Geitonoplesium cymosum*	6.1.17
Senegal tea	*Gymnocoronis spilanthoides*	6.1.18
Water poppy	*Hydrocleys nymphoides*	6.1.19
White-edged nightshade	*Solanum marginatum*	6.1.20
ONLY IN DEFINED AREAS		
Broom	*Cytisus scoparius*	6.2.1
Egeria	*Egeria densa*	6.2.2
Lantana	*Lantana camara* var. *aculeata*	6.2.3
Manchurian wild rice	*Zizania latifolia*	6.2.4
Spartina	*Spartina* spp.	6.2.5

6.1 Total Control Pest Plants (Throughout The Region)

The Objective and Rules for all of the Total Control Pest Plants (Throughout the Region) are set out below. To avoid repetition, the Objectives and Rules, which are the same for each Total Control Pest Plant (Throughout the Region) have only been stated once.

OBJECTIVES

a) For the following Total Control Pest Plants, the objective is to eradicate all currently known sites over the duration of this Strategy, i.e. five years:

Common name	Scientific name	Section Number
African feather grass	*Pennisetum macrourum*	6.1.1
Balloon vine (Heartseed)	*Cardiospermum grandiflorum*	6.1.3
Small balloon vine	*Cardiospermum halicacabum*	
Chilean needle grass	*Nasella neesiana*	6.1.5
Devil's tail (tearthumb)	*Persicaria perfoliatum*	6.1.6
Fringed water lily	*Nymphoides peltata*	6.1.8
Houttuynia	*Houttuynia cordata*	6.1.10
Marshwort	*Nymphoides geminata*	6.1.11
Nassella tussock	*Nassella trichotoma*	6.1.12
Purple loosestrife	*Lythrum salicaria*	6.1.15
Scrambling lily	*Geitonoplesium cymosum*	6.1.17
Water poppy	*Hydrocleys nymphoides*	6.1.19
White-edged nightshade	*Solanum marginatum*	6.1.20

b) For the following Total Control Pest Plants the objective is to eradicate all currently known sites over the next 10 years:

Common name	Scientific name	Section Number
Arrowhead	*Sagittaria montevidensis*	6.1.2
Cathedral bells	*Cobaea scandens*	6.1.4
Fine-stemmed needle grass	*Nassella tenuissima*	6.1.7
Green cestrum	*Cestrum parqui*	6.1.9
Needle grass	*Austrostipa rudis*	6.1.13
Old man's beard	*Clematis vitalba*	6.1.14
Sagittaria	*Sagittaria graminea* ssp. *platyphylla*	6.1.16
Senegal tea	*Gymnocoronis spilanthoides*	6.1.18

MEANS OF ACHIEVEMENT

Control	Enter any property where the above-mentioned Total Control Pest Plants (6.1.1 – 6.1.20) are present and carry out control work on these species.
Enforcement	Enforce restrictions on the sale, propagation and distribution of above-mentioned Total Control Pest Plants (6.1.1 – 6.1.20).
Education & Advice	Provide information and advice on identification and control.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine presence of new infestations and status of existing and historical sites.

RULE Total Control Pest Plants (6.1.1 – 6.1.20)

No person shall:

a) Cause or permit the above mentioned Total Control Pest Plants (6.1.1 – 6.1.20) to be in a place where they are offered for sale or exhibited; or

b) Sell or offer for sale the above mentioned Total Control Pest Plants (6.1.1 – 6.1.20); or

c) Propagate, breed, or multiply the above mentioned Total Control Pest Plants (6.1.1 – 6.1.20) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of the above mentioned Total Control Pest Plants (6.1.1 – 6.1.20).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to this rule, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to control and remove these Total Control Pest Plants.

6.1.1 African feather grass *Pennisetum macrourum*

DESCRIPTION OF THE PROBLEM

African feather grass is a robust perennial grass with stout rhizomes. It forms large clumps to 2m tall. The leaves are tough and feel rough when you run your fingers down them. The plant has a distinctive, narrow, cylindrical flower spike that is yellow to purplish and can be up to 300mm long. The shape of the spike readily distinguishes it from the similar looking Pampas grass. African feather grass flowers from November to April.

African feather grass is generally unpalatable to stock and is a threat to pasture production if left uncontrolled as it can completely suppress other low growing plants. Its dense clumps restrict the movement of animals, people and machinery, and it can impair drainage and visibility along roads. It invades poor pasture areas, roadsides and reserves. The plant is an aggressive invader of suitable habitats and can threaten native plant species in shrub and grasslands, wetlands and sand-dune areas.

Pest plant designation

African feather grass (*Pennisetum macrourum*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

African feather grass has very restricted distribution in the Auckland region. However, it has the ability to spread to new habitats, threatening a range of areas which have environmental, productive and recreational values. The plant is difficult to identify and, at the current low levels of infestation, the public may not fully recognise the threat it poses to the environment. A regionally co-ordinated control approach is necessary.

6.1.2 Arrowhead *Sagittaria montevidensis*

DESCRIPTION OF THE PROBLEM

Arrowhead is an emergent perennial aquatic herb that grows from short fleshy rhizomes (creeping roots) to a height of 1m. Its erect stems are normally round, 7cm to 75cm high, with two to 12 whorls of flowers at the apex. There are two kinds of leaves: emergent leaves that are broadly arrow-shaped and up to 25cm long and 20cm wide, and submerged leaves which are usually linear but sometimes slightly arrow-shaped.

The white flowers, which have a purple patch in the centre, are about 2.5cm in diameter and are borne in whorls of three. Mature plants can flower from October through to April. Seeds mature in autumn and occasionally some dieback of plants can occur in early winter. Arrowhead normally grows in static or slow moving freshwater such as drains, streams and pond margins, up to a depth of 50cm.

Arrowhead forms extensive infestations in shallow waterways, seriously restricting water flow and increasing sedimentation, thus aggravating flooding. It also has the ability to displace all other desirable or native flora in waterways and wetland areas, seriously impacting on the ecology of such ecosystems.

Pest plant designation

Arrowhead (*Sagittaria montevidensis*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Arrowhead is a very invasive plant and could become a much more widespread pest in the Auckland region, and seriously affect the integrity of most natural waterways. The plant is difficult to identify and, at the current low levels of infestation, the public may not recognise the threat it poses to the environment. A regionally co-ordinated approach is therefore deemed necessary.

6.1.3 Balloon vine (heartseed) *Cardiospermum grandiflorum*
Small balloon vine *Cardiospermum halicacabum*

DESCRIPTION OF THE PROBLEM

Both Balloon vine and Small balloon vine are vigorous climbers, growing to 10m and 3m in length respectively. They both have trifoliate leaves and leaflets that are coarsely toothed and lobed. Small balloon vine produces minute greenish-white flowers in clusters during summer, with a tendril at the base of each cluster. Balloon vine's flowers are larger, are white, and produced through most of the year. Both produce fruit that are inflated like a three-sided papery balloon. The fruit dry and open to reveal black seeds, each of which is marked with a white heart shape. These papery capsules are their primary means of dispersal, either floating on water or being blown by the wind.

Both species are originally from tropical North and Central America, and are now major invasive species in many of the Pacific Islands.

Pest plant designation

Balloon vine (*Cardiospermum grandiflorum)*) and Small balloon vine (*Cardiospermum halicacabum*) are declared as Total Control Pest Plants throughout the Auckland region.

Need to intervene

The distribution and impacts of Balloon vine (*Cardiospermum grandiflorum*) and Small balloon vine (*Cardiospermum halicacabum*) in the Auckland region are currently very low. However, considering the biological characteristics of these plants and their ability to grow in a range of habitats, they could establish themselves in, and degrade areas of, high conservation value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.1.4 Cathedral bells *Cobaea scandens*

DESCRIPTION OF THE PROBLEM

Cathedral bells is a vigorous perennial vine which can climb to forest canopy height. It has light-green hairless leaves with prominent purplish veins. The stems are branched, woody at the base and purplish when young. The plant will root from nodes on the stems where they touch the ground. It produces large, round, purple or green lantern-like flowers, from December through to May. These flowers normally produce a large oval fruit (6cm to10cm long) during summer, which contains winged seeds. The seeds are transported short distances by wind or longer distances in water, soil or gravel. Fragments of the vines are also spread by water and more commonly in dumped garden rubbish.

Cathedral bells can form dense mono-specific mats, which can suppress the growth of native seedlings and also damage or kill larger plants because of its blanket effect. It is very fast growing, spreads quickly and can seriously modify the structure of undisturbed and disturbed forest. Cathedral bells can grow in a range of soils and climatic conditions. Its potential habitats in the Auckland region include scrub, forest remnants, hedgerows, roadsides, riverbanks, gardens, shelterbelts and disturbed native bush.

Pest plant designation

Cathedral bells (*Cobaea scandens*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

The impacts of Cathedral bells in the Auckland region are currently very low. However, considering the biological characteristics of the plant, its speed of spread and ability to grow in a range of habitats, it could establish itself in, and degrade areas of, high conservation value within Auckland. A regionally co-ordinated approach is therefore deemed necessary.

6.1.5 Chilean needle grass *Nassella neesiana*

DESCRIPTION OF THE PROBLEM

Chilean needle grass is an erect, tufted, perennial tussock-forming grass, which is harsh to the touch. In the absence of grazing, it can reach 1m tall and is somewhat like tall fescue (*Festuca arundinacea*) in appearance. When grazed, it forms dense clumps by producing many shoots from its base. It produces distinctive sharp seeds in large, open, drooping flower-heads and also hidden seeds at the nodes inside the leaf sheaths. The flower-heads have a distinctive purple tinge and as the seeds ripen, in late November and December, they become more silver. The seeds are more than 90% viable, survive for several years in the soil and germinate in autumn and spring. Seeds are spread through being transported by stock, in hay, on clothing, by machinery or in water.

Chilean needle grass grows in dry, low fertile open habitats but does not normally establish itself in fertile and productive pastures where competition from other plants is too great. It is unpalatable to stock and can form dense stands in pasture, reducing productivity drastically. The sharp seeds damage pelts, blind livestock and become a serious wool contaminant. They can move through the animal's skin into the body muscles, causing abscesses and the downgrading of carcasses. This grass can also crowd out native grass species in dry coastal areas.

Pest plant designation

Chilean needle grass (*Nassella neesiana*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Chilean needle grass is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in a number of Auckland soil types, prolific seeding habit and invasive nature, make it a threat to agricultural production in the Region. The plant is difficult to identify and at the current low levels of

infestation the public may not be aware of the threat it poses to the region. A regionally co-ordinated approach is therefore deemed necessary.

6.1.6 Devil's tail (Tearthumb) *Persicaria perfoliatum*

DESCRIPTION OF THE PROBLEM

Devil's tail (Tearthumb) is a rapidly growing annual vine, which can potentially grow 15cm/day. It has long highly-branched stems which climb over shrubs and small trees (to c. 7m), aided by the numerous curved, sharp barbs underneath the leaf blades and stalks. The leaves are light green, and 2-7cm wide with a characteristic triangular shape. At the base of the leaf stalk there is a prominent leaf-like circle of tissue surrounding the stem. It has inconspicuous flowers that are borne in clusters on side branches. These form metallic-blue berry-like fruit about 5mm in diameter, in mid-autumn to winter.

The plant was only recently discovered growing in one urban site within the Auckland region, and is currently believed to have a very limited distribution. The dense leafy growth and potentially rapid rate of expansion of this plant, make it a threat to a wide range of native habitats.

Pest plant designation

Devil's tail (*Persicaria perfoliatum*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

The impacts of Devil's tail in the Auckland region are currently very low. However, considering the biological characteristics of the plant, and ability to grow in a range of habitats, it could establish itself in, and degrade areas of, high conservation value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.1.7 Fine-stemmed needle grass *Nassella tenuissima*

DESCRIPTION OF THE PROBLEM

Fine-stemmed needle grass is a perennial, drought-resistant tussock grass with fine wiry leaves. It grows to a height of 70cm and has dense fibrous roots. The flower-heads are open branched panicles which are erect when young but weep over the tussock when mature. It normally flowers and seeds between October and December, with each plant producing up to 120,000 seeds annually. The only method of spread is by seed. The seed head breaks off near the base of the plant and may become airborne, spreading several kilometres away from the parent plant. The seeds, aided by the roughened seed coat and the tuft of hairs at the base, also cling to wool, bags and clothing. Seeds are also spread by machinery, in hay, water, mud and in the droppings of animals.

Fine-stemmed needle grass is an extremely vigorous, invasive plant, which crowds out desirable pasture species, reducing stock carrying capacity. It forms indigestible balls in the stomach of stock and, if forced to graze it, they may lose weight and die, as the plant has a high fibre content and a low nutritive value. It can also crowd out native grasses in coastal or open areas.

Pest plant designation

Fine-stemmed needle grass (*Nassella tenuissima*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Fine-stemmed needle grass is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in various soil types, prolific seeding habit and invasive nature make it a threat to agricultural production in the Region. The plant is difficult to identify and, at its current low levels, the public may not be aware of the threat it poses to pastoral farming in the Region.

6.1.8 Fringed water lily *Nymphoides peltata*

DESCRIPTION OF THE PROBLEM

Fringed water lily is a bottom-rooting perennial which has long, branched running stems (stolons) that extend up to 1m or more and lie just beneath the water surface. New plants can form from each node on the stems. Each plant consists of several leaves arising on very slender stalks from the basal nodes. The floating leaves are almost circular (sometimes oval), have shallowly-scalloped margins and are mid-green in colour, occasionally with reddish-brown flecks. Golden flowers are borne above the water surface on long stalks from October to April. The flowers are fringed on the outer margins, and eventually form a flattened beaked capsule containing numerous seeds.

This plant spreads vegetatively as well as by seed. Localised spread occurs by the running stems, which are able to extend up to several metres at a time. This plant also has the ability to grow roots from detached leaves. The seed has hairs which help it float and aid attachment to wildlife such as waterfowl. Therefore, seed is readily dispersed by water currents and birds, such as ducks and swans, forming new infestations which can overcome other water lilies and native aquatic species. This plant can grow in a wide range of habitats, from flowing water to swamps up to 2.5m deep, and can also grow on damp mud.

Fringed water lily can become an unmanageable aquatic nuisance in suitable waterways. It can impede drainage, block access and be a nuisance to recreational activities, as well as displace desirable native species. It can also degrade water quality by its smothering effect.

Pest plant designation

Fringed water lily (*Nymphoides peltata*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Fringed water lily is an invasive aquatic plant of limited distribution, which could become a more widespread pest in the Auckland region. Because the plant needs specialists to identify and control it, a regionally co-ordinated approach is deemed necessary.

6.1.9 Green cestrum *Cestrum parqui*

DESCRIPTION OF THE PROBLEM

Green cestrum is an erect perennial shrub reaching 1m to 3m tall, which reproduces from seeds as well as budding from creeping roots. The woody stems have ridges at the base and are mottled at the top. The offensive smelling lance-shaped leaves are alternate, wavy and hairless. The greenish-yellow flowers are tubular and occur from November to May. These produce shiny, purplish-black oval fruit in clusters that contain one or two seeds.

The plant is usually found in high rainfall areas in gullies, forest margins and in the open on alluvial flats. Green cestrum is usually spread by deliberate plantings in gardens, and also by birds and water. Pieces of cut root, dragged by cultivation equipment, also help to establish new plants in clean areas.

In gardens, it grows vigorously when neglected. It is extremely toxic to animals including cattle, sheep, horses, pigs and poultry. Where plants are accessible to grazing animals, they are readily browsed which has caused numerous deaths. The plant is also toxic to humans and causes oral or dermal poisoning. Dense infestations of this plant can also exclude virtually all other vegetation in a number of habitats, including native ecosystems.

Pest plant designation

Green cestrum (*Cestrum parqui*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Green cestrum is not currently a serious pest in the Auckland region because of its restricted distribution. However, its ability to spread to new habitats, by birds or fragments, makes it a threat to a wide range of areas with environmental, productive and recreational values. The plant is somewhat difficult to identify. At its current low level of distribution, the public may not recognise the threat it poses to pastoral farming, human health and natural ecosystems. A regionally co-ordinated approach is therefore necessary.

6.1.10 Houttuynia *Houttuynia cordata*

DESCRIPTION OF THE PROBLEM

Houttuynia is a perennial, herbaceous deciduous ground cover that has slender rhizomes from which arise numerous thin erect stems. These bear alternate, unlobed, sometimes angular, five-veined, heart-shaped leaves up to 7.5cm across. The leaves display an array of colour combinations i.e., yellow, green, bronze and scarlet red (the last most pronounced in sunny locations). The plant can be anywhere from 15cm to 60cm in height, depending upon the situation it is growing in. It produces small white flowers during summer in short erect spikes. Of particular concern is the fact that the plant can form seeds parthenogentically (from an unfertilised egg cell).

The plant not only spreads by these seeds but also through plant fragments being moved intentionally or on cultivation equipment and in garden refuse. These fragments can sprout roots and form new infestations. Localised spread also occurs through vegetative 'creeping' both by the aerial parts of the plant and its extensive rhizomes.

This native of eastern Asia is a hardy plant in sheltered positions, growing best in shallow water or moist loamy soils (such conditions as are common in native New Zealand bush). Its growth is moderated by drier, but not totally dry, soil in full sun.

Houttuynia's aggressive and invasive spreading habit allows it to form, within a relatively short space of time, dense colonies which can smother large areas of wetland marshes or forest floor, the effect of this being the prevention of any native plant regeneration or growth. Its vigorous growth soon crowds out smaller plants thus leading to a long-term modification of forest and wetland ecosystems.

Pest plant designation

Houttuynia (*Houttuynia cordata*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Houttuynia, being a very invasive plant, could become a widespread pest in the Auckland region and seriously affect the integrity of many wetlands and native forest areas. Since the plant has yet to naturalise properly, and on first appearance looks like an attractive garden plant, the public may not recognise the threat it poses to the environment. A concentrated regionally co-ordinated approach is therefore deemed necessary.

6.1.11 Marshwort *Nymphoides geminata*

DESCRIPTION OF THE PROBLEM

Marshwort is a robust bottom-rooted perennial, which has long, branched running stems that extend for several metres and lie just beneath the water surface. The leaves are broadly ovate to rounded and smaller than the leaves of other water-lilies. It is most clearly distinguished from other floating aquatic plants by its bright yellow five-lobed flowers, which are borne above the water surface on long stalks arising in pairs from short leafless side stems. The flowers have distinctive fringed wings around the top of the margins of the petals and are present from November through to April. Seeds have not been observed in New Zealand.

Marshwort can spread rapidly from one area to another by fragmentation. The plant has the unusual ability to grow roots from detached leaves, which can themselves, form new infestations. Detached stems and leaves are spread by water currents, by boats and sometimes in fishing nets.

The plant is primarily found in slow-flowing freshwater, up to 2m in depth. It can grow in a wide range of temperatures and survive in damp mud and swamps. It can impede drainage, block waterways, degrade water quality, be a nuisance to recreational activities, and is a threat to wetlands because it displaces native plant species.

Pest plant designation

Marshwort (*Nymphoides geminata*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Marshwort, being an invasive aquatic plant of limited distribution, has the potential to become a more widespread pest in the Auckland region. Because the plant is still occasionally sold, and needs specialists to identify and control it, a regionally co-ordinated approach is deemed necessary.

6.1.12 Nassella tussock *Nassella trichotoma*

DESCRIPTION OF THE PROBLEM

Nassella tussock is a perennial, drought-resistant tussock grass with fine wiry leaves. It grows to a height of 70cm and has dense, fibrous roots. From October to December, Nassella clumps assume a purple tinge as numerous purple flower-heads are produced. These flower-heads are open-branched panicles, which are erect when young, but weep over the tussock when mature. Each Nassella plant produces up to 120,000 seeds annually. The only method of spread is by seed. The seed head breaks off and may become airborne, generally falling close to the parent plant. The seeds, aided by the roughened seed coat and the tuft of hairs at the base, also cling to wool, bags and clothing. Seeds are also spread by machinery, in hay, water, mud or in the droppings of animals.

Nassella tussock is an extremely vigorous, invasive plant, which crowds out desirable pasture species, reducing stock carrying capacity by up to 90%. Nassella forms indigestible balls in the stomach of stock and, if forced to graze it. they may lose weight and die as the plant has a high fibre content and a low nutritive value. It can also crowd out native grasses in coastal or open areas.

Pest plant designation

Nassella tussock (*Nassella trichotoma*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Nassella tussock is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in various soil types, prolific seeding habit and invasive nature make it a threat to agricultural production in the Region. The plant is difficult to identify and, at its current low levels, the public may not be aware of the threat it poses to pastoral farming in the Region.

6.1.13 Needle grass *Austrostipa rudis*

DESCRIPTION OF THE PROBLEM

Needle grass is a tall, erect, wiry, open perennial tussock-forming grass that grows up to 1m tall. Its leaves are flat, 8cm to 20cm long, green on the upper surface and grey-green on the underside. It produces distinctive sharp seeds in large open flower-heads, which have a slight purple tinge. Needle grass can flower in its first year and produce large amounts of seed. Spread occurs through seeds being transported by stock, in hay, on clothing, by machinery and also in water.

It grows in dry low fertility pasture, open woodlands and coastal areas. It does not normally establish in fertile pastures where competition from other species is too great, but forms dense stands in poor or dry pastures, reducing productivity. It is unpalatable to stock and the sharp seeds may damage pelts and contaminate wool. Needle grass could also be a roadside visibility hazard and can crowd out native plant species in dry coastal areas.

Pest plant designation

Needle grass (*Austrostipa rudis*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Needle grass is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in a number of Auckland soil types, prolific seeding habit and invasive nature make it a threat to agricultural production in the Region. The plant is difficult to identify and, at this low level of infestation, the public may not be aware of the threat it poses to pastoral farming in the Region.

6.1.14 Old man's beard *Clematis vitalba*

DESCRIPTION OF THE PROBLEM

Old man's beard is a deciduous perennial, woody climbing vine. Its long stems entwine themselves around any available support on which they can climb to the light. The vines are distinctive, with mature vines having stringy, pale brown bark with longitudinal furrows. The leaves have five leaflets and are pale to dark green. The flowers are small greenish-white in colour and appear between December and February. The seed heads appear after flowering and can be seen through autumn and winter (March-September). They are pom-pom shaped, fluffy and cream coloured, hence the name Old man's beard. It is spread mainly by seeds transported by wind, water and in soil or gravel. Fragments of the vines are also spread by water and in dumped garden rubbish; these can take root and form new infestations.

Old man's beard prefers well-drained and stony alluvial soils. Its potential habitats are scrub, wasteland, forest remnants, hedgerows, roadsides, riverbanks, gardens, shelterbelts and mature native forest. It is generally recognised as the most widespread and damaging introduced climber in New Zealand. The plant's biological characteristics are such that it will outgrow and eventually destroy supporting plant life. It is particularly damaging in secondary growth or modified indigenous forests, both of which are commonplace in the Auckland region. One plant is capable of blanketing and killing an area of native forest covering 180 square metres. Not only can it kill existing plants but it also prevents native seedlings from establishing themselves.

Pest plant designation

Old man's beard (*Clematis vitalba*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

The impacts of Old man's beard in the Auckland region are currently very low. However, considering the biological characteristics of the plant, its speed of spread and ability to grow in a range of habitats, it could establish itself in, and degrade areas of, high conservation value within the region. Further to this, the plant is

difficult for the public to readily identify and they may not fully recognise the threat it poses to the environment. A regionally co-ordinated approach is therefore deemed necessary.

6.1.15 Purple loosestrife *Lythrum salicaria*

DESCRIPTION OF THE PROBLEM

Purple loosestrife is an erect, perennial herb that grows from 1m to 3 m tall. The square stems range from smooth to hairy, with 30/50 stems per plant. The lance-shaped leaves are stalkless and heart-shaped at the base, and grow either opposite or in whorls from the stems. Purple loosestrife produces numerous magenta-coloured flower spikes during summer. It produces vast quantities of seed, sometimes up to 2/3 million per mature plant. Plants are also able to spread vegetatively via underground stems and stem fragments.

Purple loosestrife is a highly aggressive invader of natural or disturbed wetlands where it can form dense monoculture stands. Originally from Europe and Asia, it is recognised as a major pest plant in North America where it has taken over millions of hectares of wetland. It can establish in wetlands, drains, ditches and riparian areas, impeding waterflow, preventing access for waterfowl and recreational users, outcompeting native wetland vegetation, and decreasing the overall species diversity.

Pest plant designation

Purple loosestrife (*Lythrum salicaria*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Purple loosestrife is a very invasive plant and could become a much more widespread pest in the Auckland region, and seriously affect the integrity of most natural and modified waterways and wetlands. The plant currently has a limited distribution, therefore the public may not recognise the threat it poses to the environment. A regionally co-ordinated approach is therefore deemed necessary.

6.1.16 Sagittaria *Sagittaria graminea ssp. platyphylla*

DESCRIPTION OF THE PROBLEM

Sagittaria is an emergent perennial aquatic plant up to 80cm in height. It has fleshy rhizomes that are usually submerged below the water surface, while leaves are held above the surface by rigid stems. There are two kinds of leaves: emergent leaves that are linear to ovate, tapering abruptly to a point with stems that are triangular in cross-section and winged towards the base; and submerged leaves that are strap-shaped. The white or sometimes pink flowers are found in clusters of three-flowered whorls at the end of the flower stem. Flowers, which are present from November to March, are always below leaf height and produce clusters of seed-producing fruitlets.

The plant spreads locally by its creeping root system, and to other areas via seed carried in water, by machinery, wildlife and humans. New infestations can also form via rhizome fragments transported by ditch cleaning machinery and spoil.

Sagittaria grows in static or slow-moving fresh water such as drains, streams and pond margins, up to a depth of 45cm. It forms extensive infestations in shallow waterways, seriously restricting water flow and increasing sedimentation, thus aggravating flooding. It also has the ability to displace all other desirable or native flora in waterways and wetland areas, seriously impacting on the ecology of such ecosystems.

Pest plant designation

Sagittaria (*Sagittaria graminea* ssp. *platyphylla*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Sagittaria is a very invasive plant and could become a much more widespread pest in the Auckland region, and seriously affect the integrity of most natural waterways. The plant is difficult to identify and, at the

current low levels of infestation, the public may not recognise the threat it poses to the environment. A regionally co-ordinated approach is therefore deemed necessary.

6.1.17 Scrambling lily *Geitonoplesium cymosum*

DESCRIPTION OF THE PROBLEM

Scrambling lily is a vigorous climber with wiry green stems that wind around the supporting host plants, growing up to 12m. Its stems are self-supporting and can raise themselves up to reach low branches. Stems growing in full shade are bare, with dense foliage produced once the plant reaches full or dappled sunlight. Stems grow from underground rhizomes. The leaves are 5cm to 8cm long and 1cm wide. They are usually dull-green and stiff, with a raised central vein. The flowers are white to purplish-green with bright yellow anthers and form in small clusters at the end of branchlets, from spring to mid summer. Spherical green fruit about the size of a pea are produced, which turn black when ripe. Each fruit may contain up to seven black, shiny hard seeds approximately 1mm to 2mm long.

The seeds of Scrambling lily are, most likely, spread by birds. It also appears to grow from suckering and fragments of rhizomes. Scrambling lily appears to grow well in full shade or bright sunlight. It is susceptible to frosts but could thrive in the warmer climates of Auckland and Northland.

Scrambling lily is native to many countries of the Pacific Rim. It is found in Australia, Melanesia and on many of the Pacific Islands through to Fiji. Closely related to the asparagus species, it is cultivated in many places for the edible parts of the plant, and the wiry stems have a number of uses.

Pest plant designation

Scrambling lily (*Geitonoplesium cymosum*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

The distribution and impacts of Scrambling lily in the Auckland region are currently very low. However, considering the biological characteristics of the plant and its ability to grow in a range of habitats, it could establish itself in, and degrade areas of, high conservation value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.1.18 Senegal tea *Gymnocoronis spilanthoides*

DESCRIPTION OF THE PROBLEM

Senegal tea is a perennial semi-aquatic herb, growing to 1.5m when flowering. Young stems are often angled with several ridges running down their length but they become more or less rounded as they mature. Stems branch and root at the nodes, and form mats that are buoyant in water. The dark green opposite leaves are hairless and shiny, ovate to lanceolate with usually serrated, wavy margins. Flowers are produced in ball-like heads during summer and autumn. Viable seed is produced within the flower-heads, and distributed when these heads fragment.

Senegal tea can spread by vegetative fragmentation with new plants being produced from stem nodes, or by seed. Stem fragments may be spread by water movement, deliberate planting or by drainage machinery. Dispersal of seed is by water movement, or in mud stuck to animals or machinery.

Senegal tea is found in warm temperate regions, although it appears to be tolerant of frost in New Zealand conditions. Plants are dormant in winter, producing shoots in spring from protected buds in the nodes and crown. It is restricted to wet marshy soils and still or flowing water, where it can grow as a floating mat extending from the margins of the waterbody. These mats can quickly cover waterbodies, excluding other life-forms as well as impeding water flow, navigation and recreational activities. Problems with flooding due to impedance by this plant have already occurred in New Zealand. This plant has the ability to displace native flora in waterways and wetland areas, seriously affecting the ecology of such ecosystems.

Pest plant designation

Senegal tea (*Gymnocoronis spilanthoides*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Senegal tea, being a very invasive plant, could become a more widespread pest in the Auckland region and seriously affect the integrity of most natural waterways. The plant is difficult to identify and, at the current low levels of infestation, the public may not recognise the threat it poses to the environment. A regionally co-ordinated approach is therefore deemed necessary.

6.1.19 Water poppy *Hydrocleys nymphoides*

DESCRIPTION OF THE PROBLEM

Water poppy is a perennial aquatic with floating and emergent flowers and leaves. It roots at the nodes which occur along the long creeping stems up to 60cm apart. Each plant consists of a cluster of five to seven ovate, mid to dark green, shiny leaves arising from a base node. Water poppy flowers are pale yellow and have three petals that are distinctively poppy-shaped. Flowering occurs from November to April. No seed has been observed from New Zealand populations.

This plant only spreads by vegetative means in New Zealand. Dispersal can occur when a portion of stem supporting a node is broken off, or when small plantlets break off, and are moved by water currents, machinery, boats or people. Plantlets or stem fragments soon take root at new sites, forming new infestations.

Water poppy is primarily a plant of still or slow flowing water up to 2m deep. Although a sub-tropical plant, it does well in both warm and cool temperate climates. The plant is extremely invasive and can cover large areas of freshwater quickly. It has the ability to block human, stock and wildlife access to water, be a nuisance to recreational activities, degrade water quality and displace native species.

Pest plant designation

Water poppy (*Hydrocleys nymphoides*) is declared a Total Control Pest Plant throughout the Auckland region.

Need to intervene

Water poppy, being an invasive aquatic plant of limited distribution, could become a more widespread pest in the Auckland region. Because the plant is still occasionally sold, and needs specialists to identify and control it, a regionally co-ordinated approach is deemed necessary.

6.1.20 White-edged nightshade *Solanum marginatum*

DESCRIPTION OF THE PROBLEM

White-edged nightshade is a much-branched perennial shrub or small tree, which grows to 5m. The stems are armed with yellow prickles, and the young branches have a hairy white-felted appearance. The leaves are broadly ovate, indented and prickly on both sides. The lower surface is always white-felted and the upper surface is green with white edges and prominent white veins. The white to pale mauve flowers produce round fruit borne on stout, woody, prickly stalks, with each containing many light-brown seeds. The fruit is not particularly attractive to birds or other animals but this method of dispersal cannot be discounted. Spread occurs mainly through movement of the fruit in water flowing over the soil surface, or when soil contaminated with seeds is moved by various means.

White-edged nightshade is mainly found in scrub, on poorer pastoral land, wasteland or forest margins that are in warm, sunny situations in higher rainfall areas. It has the ability to form dense scrub communities that are impenetrable to humans and stock. It is a threat to pasture production on marginal land and therefore a threat to livestock production. It has the ability to displace native species in bush margins, sand-dunes and coastal areas. The plant can inhibit human access in recreational areas and the fruit is toxic if eaten. As it favours maritime habitats, it could become a problem in coastal areas, particularly on the islands of the Hauraki Gulf.

Pest plant designation

White-edged nightshade (*Solanum marginatum*) is declared a Total Control Pest throughout the Auckland region.

Need to intervene

The ability of White-edged nightshade to become much more widespread throughout the Auckland region means a regional pest management strategy is required. As infestations have decreased in number over the past 20 years (due to sustained control attempts), it is advisable to continue eradication of this plant.

6.2 Total Control Pest Plants (Defined Areas)

6.2.1 Broom *Cytisus scoparius*

DESCRIPTION OF THE PROBLEM

Broom is an erect perennial shrub, most commonly growing to 2m in height. Erect, woody, greenish-brown stems grow from a stout taproot. The numerous branchlets are prominently ridged and support the shortly-stalked green leaves, which occur singly or in clusters at the nodes. Each leaf consists of three softly-hairy, ovate leaflets. The bright yellow, pea-like flowers occur singly or in pairs at the leaf axils, mostly at the ends of the branches. These flowers develop into brownish-black flattened seed pods. The plant is spread solely by seeds, which are ejected noisily from the pods in summer. Seeds can be spread further by water action, on machines and animals, in agricultural produce, gravel and mud.

Broom normally grows in areas of high rainfall, on acid soils but never on chalks. It tolerates a wide range of soil conditions. It is a very invasive weed of waste areas, forestry and lightly grazed pasture. It rapidly forms large infestations, which reduce stock carrying capacity on farms and smother new tree plantings in forestry. It is unpalatable to stock and can also provide a harbour for animal pests such as Rabbits and Possums. Broom can also affect native ecosystems by replacing desirable vegetation. It is a visibility hazard on roadsides.

MANAGAMENT REGIME

Pest plant designation

Broom (*Cytisus scoparius*) is declared a:

a) Total Control Pest Plant throughout the rural areas of the Auckland region as defined in Appendix 3; and a

b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

The invasive nature of Broom and its ability to affect production and regionally important ecosystems makes it a threat to the Auckland region. Farmland, plantation forestry, and natural ecosystems need to be kept free of the plant to avoid its adverse impacts. A regional approach to control is necessary.

OBJECTIVE

a) For Broom, the objective is to eradicate all currently know sites in rural parts of the Auckland region, as defined in Appendix 3, over the next 10 years.

MEANS OF ACHIEVEMENT

Control	Enter any rural property where Broom is present and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation and distribution of Broom. This does not apply to the cultivated forms (e.g. *Cytisus scoparius* "*andreanus*").
Education & Advice	Provide information and advice.
Monitoring	Undertake inspections, monitoring and surveillance.

RULE 6.2.1.1

No person shall:

a) Cause or permit Broom (*Cytisus scoparius*) to be in a place where it is offered for sale or is exhibited; or

b) Sell or offer Broom (*Cytisus scoparius*) for sale; or

c) Propagate, breed, or multiply Broom (*Cytisus scoparius*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Broom (*Cytisus scoparius*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to this rule, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect rural properties to remove these plants and carry out control.

6.2.2 Egeria *Egeria densa*

DESCRIPTION OF THE PROBLEM

Egeria or oxygen weed is a submerged, much-branched, perennial freshwater aquatic herb with whorled leaves growing on brittle stems up to 6m long. The dark green leaves grow from nodes on the stems and are very densely arranged. Small white flowers are often conspicuous on the water surface during summer but no seed is produced in New Zealand. The plant is usually firmly rooted in the substrata of waterbodies but is occasionally found as a free-floating mat.

The plant spreads solely by vegetative fragments, transported by water flow, and accidental or human introduction via boats, trailers and in fishing nets. It thrives in the turbid and enriched waters of mild to warm freshwater ponds, lakes, reservoirs and slowly flowing streams of warm-temperate regions, to depths of 7m. Maximum growth occurs during early summer and autumn.

Egeria is reasonably widespread in waterbodies around the Auckland region, although there are a number of areas, which are not yet infested by the plant. Extremely dense growths of Egeria seriously retards water flow, interfering with irrigation projects and urban water supplies. They also restrict water traffic and interfere with recreational activities such as boating, swimming and fishing. With regard to freshwater ecosystems, the plant disrupts predator-prey relationships, increases sedimentation rates and causes fluctuations in chemical and physical parameters of a waterbody. It also replaces communities of submerged native plants. Surface reaching beds of Egeria reduce the aesthetic appeal of waterbodies. The plant can also be a drowning risk to humans because of entanglement.

MANAGEMENT REGIME

Pest plant designation

Egeria (*Egeria densa*) is declared a:

a) Total Control Pest Plant on Great Barrier Island; and a
b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

Egeria's relatively widespread distribution and ability to further spread and colonise new habitats make it an ongoing threat to the Region. It is necessary to provide information to educate the public on the plant's potential effects and the methods of preventing its spread. It is also necessary to eradicate the one infestation on Great Barrier Island.

OBJECTIVES

a) To eradicate Egeria from Great Barrier Island over the next five years; and
b) To prevent the spread of Egeria to freshwater bodies in the region currently free from it over the next five years.

MEANS OF ACHIEVEMENT

Control	Enter any property on Great Barrier Island where Egeria is present and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation and distribution of Egeria throughout the Region.
Education & Advice	Provide information and advice on identification and control.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of waterbodies currently free of Egeria.

RULE 6.2.2.1

No person shall:

a) Cause or permit Egeria (*Egeria densa*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Egeria (*Egeria densa*) for sale; or
c) Propagate, breed, or multiply Egeria (*Egeria densa*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Egeria (*Egeria densa*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to this rule, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

6.2.3 Lantana *Lantana camara* var. *aculeata*

DESCRIPTION OF THE PROBLEM

Lantana is an aromatic perennial shrub, which grows up to 3m. It has much-branched, woody brittle stems, which are sprawling or scrambling in nature. On the stems are sharp, recurved prickles, which grow on the angles of young stems. The stems grow from a robust, brown woody root stock, which has numerous shallow lateral roots that sucker if damaged or broken. The opposite, yellow-green to dark green leaves are rough, strongly veined, serrated on the edges and odorous when crushed. Its flowers are produced in clusters that are generally yellow and pink but can also be red or orange. Greenish clusters of fruits are produced during summer which ripen to a glossy purple-black colour.

Lantana increases the size and density of existing colonies by suckering and seedling growth within and along the edges of thickets. Longer distance spread is achieved by birds. This plant has also been spread by intentional plantings by humans.

This plant tends to like warm moist climates and is often found on richer soils in lowlands, mountain slopes and valleys at altitudes below 1800m. Its potential habitats include coastal scrubland, islands, cliffs, foreshores, consolidated dunes, forest margins, gumland, wasteland, exotic plantations and gardens. Lantana is well documented as a pest throughout the Pacific.

Lantana has a number of undesirable attributes. It forms dense impenetrable thickets, over a relatively short period of time, suppressing lower vegetation types and having a serious effect on regenerating native bush. It is thorny and can obstruct stock and humans in many situations including poor pastures and recreational areas. It is poisonous to stock and humans and is a major weed of crops overseas.

MANAGEMENT REGIME

Pest plant designation

Lantana (*Lantana camara* var. *aculeata*) is declared a:

a) Total Control Pest Plant in the rural areas of the Auckland region, as defined in Appendix 3; and a
b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

Lantana could become much more widespread throughout the region so a regional management strategy is needed. The plant was still available for sale in some areas in 1995 and public perception of it as a pest is low. Evidence from other countries shows that Lantana can become a significant pest plant, imposing high economic and environmental costs on communities. Research is required into the other forms present in the region (refer section 10.0 of this document), the extent of infestations, vectors of spread and control methods.

OBJECTIVE

a) To eradicate known sites of Lantana from rural areas of the Auckland region, as defined in Appendix 3, over the next five years.

MEANS OF ACHIEVEMENT

Control	Enter any rural property where Lantana is present as defined in Appendix 3 and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation and distribution of Lantana.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance in key areas of the region, e.g. peri-urban sites.

RULE 6.2.3.1

No person shall:

a) Cause or permit Lantana (*Lantana camara* var. *aculeata*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Lantana (*Lantana camara* var. *aculeata*) for sale; or
c) Propagate, breed, or multiply Lantana (*Lantana camara* var. *aculeata*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Lantana (*Lantana camara* var. *aculeata*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to this rule, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

6.2.4 Manchurian wild rice *Zizania latifolia*

DESCRIPTION OF THE PROBLEM

Manchurian wild rice is a very tall (to 3m high), perennial, aquatic grass, which has far spreading rhizomes. This plant looks similar to the native raupo (*Typha orientalis*) but grows somewhat taller. Leaves of Manchurian wild rice are usually erect but may bend at the top without twisting, whereas leaves of raupo twist but do not bend. The large, light green, linear-shaped leaves are coarse with prominent lines. They taper to a sharp point at the tip. The flower-heads are 40cm to 60cm long, narrowly pyramidal, have long branches and are purplish or chestnut brown in colour, when mature. The plant is an irregular seeder with large amounts of seed produced in some seasons.

Seed dispersal is via birds and water. Spread can also occur via rhizome fragments dispersed in water or by machinery and other human activities, and by large floating mats that can take root to form new infestations. The plant can grow in both fresh and saline water on the margins of water courses and ponds, as well as in swamps and adjacent pasture. Manchurian wild rice blocks drains and access to water, impedes water flow and increases the chance of flooding. It can invade neighbouring pasture, causing good land to become waterlogged and form swampy areas. The rhizomes of the plant can also penetrate into and through stopbanks, opening them up and eventually destroying them. It can damage lakes and streamside plant communities by overtopping and suppressing other marginal species.

MANAGEMENT REGIME

Pest plant designation

Manchurian wild rice (*Zizania latifolia*) is declared a:

a) Total Control Pest Plant in all areas of the Auckland region outside the Lake Kereta Manchurian Wild Rice Area, as defined in Appendix 4 of this RPMS; and a

b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

Manchurian wild rice is a very invasive plant, which could seriously affect the use of farmland, and freshwater and estuarine ecosystems. Once established, it is difficult to eradicate. Chemicals are the most effective means. This plant could become a serious problem in important drainage systems, indigenous ecosystems and for a range of economic and environmental values. Ongoing action is needed to restrict its spread from the Lake Kereta area, the only known major area of infestation. A regionally co-ordinated approach is therefore needed to prevent its spread and establishment in unaffected areas of the Region.

OBJECTIVES

a) To restrict the spread of Manchurian Wild Rice from the Lake Kereta Manchurian Wild Rice Area over the next five years; and
b) Eradicate all sites of Manchurian wild rice in the Auckland region that are outside this area over the next 10 years.

MEANS OF ACHIEVEMENT

Control	Enter any property, outside the Lake Kereta Manchurian Wild Rice Area, where Manchurian wild rice is present and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation and distribution of Manchurian Wild Rice.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULE 6.2.4.1

No person shall:

a) Cause or permit Manchurian wild rice (*Zizania latifolia*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Manchurian wild rice (*Zizania latifolia*) for sale; or
c) Propagate, breed, or multiply Manchurian wild rice (*Zizania latifolia*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Manchurian wild rice (*Zizania latifolia*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to this rule, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

6.2.5 Spartina *Spartina alterniflora, Spartina anglica, Spartina xtownsendii*

DESCRIPTION OF THE PROBLEM

Spartina is a robust, erect, rhizomatous grass up to 1m tall, with a massive root system. The alternating leaves are wide and ribbed, with a short fringe of fine dense hairs on the ligule. Its rhizomes are short and fleshy. Spartina flowers are produced in a head of short flattened spikelets. The common name, Spartina, refers to the three naturalised species in New Zealand, only one of which produces seed (*Spartina angelica*). All species propagate readily by rhizomes or plant fragments.

Spartina alterniflora is native to North America, while *S. angelica* and *S.* x*townsendii* are originally from England. Spartina has become a weed in several countries, including western USA, the Mediterranean, Ireland, Australia, and New Zealand. In New Zealand it occupies shallow saline habitats largely unfilled by native species. It is capable of taking over large areas of the coastal marine area, resulting in a loss of natural habitat (for wading birds and spawning fish), recreational fisheries and seafood sources. Excessive growth can also cause navigational problems.

MANAGEMENT REGIME

Pest plant designation

Spartina (*Spartina alterniflora*, *Spartina angelica*, *Spartina* x*townsendii*) is declared a:

a) Total Control Pest Plant in the Waitemata and Manukau Harbours, and streams and estuaries of the east coast of the Auckland region; a
b) Containment Pest Plant in the Kaipara Harbour; and a
c) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

Spartina is an invasive plant, which can seriously affect estuarine ecosystems. Once established, it is difficult to eradicate. Chemicals are the most effective means. This plant could become a serious problem in indigenous ecosystems and for a range of economic and environmental values. Ongoing action is needed to restrict its spread from the current areas of infestation (e.g. Kaipara Harbour and Manukau Harbours). A regionally co-ordinated approach is therefore needed to prevent its spread and establishment in unaffected areas of the Region.

OBJECTIVES

a) To eradicate Spartina from all harbours and coastlines, other than the Kaipara Harbour, over the next 10 years; and
b) To restrict the further spread of Spartina by humans over the next five years.

MEANS OF ACHIEVEMENT

Control	Enter any property where Spartina is present in the Manukau and Waitemata Harbours, and streams and estuaries of the east coast and carry out control work on it.
Enforcement	Enforce restrictions on the sale, propagation and distribution of Spartina.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULE 6.2.5.1

No person shall:

a) Cause or permit Spartina (*Spartina alterniflora, Spartina angelica, Spartina xtownsendii*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Spartina (*Spartina alterniflora, Spartina angelica, Spartina xtownsendii*) for sale; or
c) Propagate, breed, or multiply Spartina (*Spartina alterniflora, Spartina angelica, Spartina xtownsendii*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Spartina (*Spartina alterniflora, Spartina angelica, Spartina xtownsendii*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to this rule, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.0 CONTAINMENT PEST PLANTS

Common name	Scientific name	Section Number
REMOVAL		
Bathurst bur	*Xanthium spinosum*	7.1.1
Bushy asparagus	*Asparagus densiflorus*	7.1.2
Evergreen buckthorn	*Rhamnus alaternus*	7.1.3
Mignonette vine	*Anredera cordifolia*	7.1.4
Moth plant	*Araujia sericifera*	7.1.5
Nodding thistle	*Carduus nutans*	7.1.6
Smilax	*Asparagus asparagoides*	7.1.7
Variegated thistle	*Silybum marianum*	7.1.8
Wild ginger	*Hedychium gardnerianum* and *H. flavescens*	7.1.9
Woolly nightshade	*Solanum mauritianum*	7.1.10
BOUNDARY CONTROL		
Australian sedge	*Carex longebrachiata*	7.2.1
Gorse	*Ulex europaeus*	7.2.2
Ragwort	*Senecio jacobaea*	7.2.3

7.1 CONTAINMENT PEST PLANTS (REMOVAL)

7.1.1 Bathurst Bur *Xanthium spinosum*

DESCRIPTION OF THE PROBLEM

Bathurst bur is an erect, much-branched annual herb up to 1m tall, which grows from a branched tap root. It has well-branched upright stems, which are armed with triple spines grouped in opposite pairs. The leaves are three pronged, narrow and pointed with a white midrib above and are a whitish colour on the underside. The flowers of the plant are inconspicuous, however, the fruits are distinctive, being bur-like with slender yellow hooked spines. Two seeds are present in each bur. One seed from each bur will usually germinate the following year whilst the other remains dormant for two to three (occasionally up to 15) years before it germinates. The plant, is therefore, well equipped to reinfest areas long after existing plants have been controlled. The germination period is from November to April.

This plant is well adapted for dispersal as the hooked spines on the burs cling firmly to the wool or fur of animals, to their tails and manes and to packs, bags, clothing and any fibrous material. The burs also contaminate seeds of summer crops such as maize and sorghum, as well as bird and poultry seed. Burs also float on water and are moved rapidly along watercourses. Movement of topsoil is another means of spread in the Auckland region.

Bathurst bur is normally found on disturbed, often bare ground of high fertility in moderately warm situations in temperate areas. It is especially noticeable around stockyards, gates and races. Bathurst bur is a serious weed as its burs can contaminate wool. Removal of the burs adds an unnecessary cost to the final woollen product. The burs also irritate the skin of shearers and break the combs of shearing machines. The plant's spines damage the feet of sheep and other animals forced to walk through heavy infestations. Bathurst bur competes strongly with many summer crops and its spines are a nuisance to pickers of hand harvested crops. It also acts as a host for some fungal diseases of horticultural plants. Seedlings are poisonous to cattle,

Goats, poultry, sheep and particularly horses and pigs. However, stock poisoning by Bathurst bur is not a major problem in the Auckland region. Contact with the plant causes dermatitis in some people.

MANAGEMENT REGIME

Pest plant designation

Bathurst bur (*Xanthium spinosum*) is declared both a Containment Pest Plant and a Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

The ability of Bathurst bur to spread and seriously affect primary production, in pastoral farming and horticultural areas, makes it a threat to the Region. Regional intervention will provide a consistent and co-ordinated approach to its control and eventual eradication.

OBJECTIVE

a) To prevent the spread of and where practicable reduce infestations of Bathurst bur over the next five years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Bathurst bur infestations pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Bathurst bur.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.1.1

Landowners/occupiers in the Auckland region must successfully destroy, to prevent seeding, all adult and juvenile plants of Bathurst bur (*Xanthium spinosum*) on land they occupy.

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.1.2

No person shall:

a) Cause or permit Bathurst bur (*Xanthium spinosum*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Bathurst bur (*Xanthium spinosum*) for sale; or
c) Propagate, breed, or multiply Bathurst bur (*Xanthium spinosum*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Bathurst bur (*Xanthium spinosum*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.2 Bushy asparagus *Asparagus densiflorus*

DESCRIPTION OF THE PROBLEM

Bushy asparagus is a much-branched, spiny, persistent perennial herb with a thick mat of tuberous roots. The roots have It has hairless, greenish-brown, erect or spreading stems, which are 30cm to 60cm long, but with numerous branchlets up to 10cm long and develop spines 5mm to 10mm long. The leaves are thin and green with distinct midribs, to 2.5cm long. Small white flowers are produced from October to March and these produce red, seed bearing berries, which are 5mm to 8mm in diameter.

Bushy asparagus is spread in two main ways; vegetatively either through intentional planting or via rhizomes and tubers dumped by home gardeners at tips, on roadsides or on waste ground, or via bird-dispersal of its seed. The plant has been widely sold by the horticultural industry, primarily as a house plant and no doubt there are many garden plantings.

This plant prefers warm temperate climates, growing within a temperature range approximately 10^0C to 20^0C and rainfall from 500mm to 1,500mm annually. It prefers sandy or poorly structured low fertility soils and being a shade-loving plant grows best under a closed or dappled canopy of trees where the understorey is open. Habitats it could potentially invade include sand-dunes, coastal scrublands, disturbed or low forest, wasteland, roadsides and forest margins.

In subtropical coastal forest on Lord Howe Island bushy asparagus has shown the ability to prevent all natural regeneration. In well-established colonies the mass of aerial stems and foliage, as well as the vast number of underground tubers, completely suppress other species. While it does not normally establish in areas with a dense covering of other low-growing plants it quickly invades any disturbed site, thus preventing the regeneration of any local native species. Its spiny nature can also seriously impede access by humans through coastal or recreational areas.

MANAGEMENT REGIME

Pest plant designation

Bushy asparagus (*Asparagus densiflorus*) is declared both a Containment Pest Plant and a Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

The possibility of Bushy asparagus spreading and becoming a serious threat to disturbed or low forest and coastal ecosystems means a regional strategy is warranted. Outside of cultivation bushy asparagus has a limited distribution in most parts of the region.

OBJECTIVES

a) To prevent the spread of and where practicable reduce infestations of Bushy asparagus over the next five years; and
b) To restrict the further spread of Bushy asparagus by humans over the next five years.

MEANS OF ACHIEVEMENTS

Enforcement	Enforce occupier responsibility to control naturalised infestations of Bushy asparagus pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Bushy asparagus
Education & Advice	Provide information and advice.

Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.2.1

Landowners/occupiers in the Auckland region must successfully destroy, to prevent seeding, all adult and juvenile plants of Busy asparagus (*Asparagus densiflorus*) on land they occupy.

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.2.2

No person shall:

a) Cause or permit Bushy asparagus (*Asparagus densiflorus*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Bushy asparagus (*Asparagus densiflorus*) for sale; or
c) Propagate, breed, or multiply Bushy asparagus (*Asparagus densiflorus*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Bushy asparagus (*Asparagus densiflorus*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.3 Evergreen Buckthorn *Rhamnus alaternus*

DESCRIPTION OF THE PROBLEM

Evergreen buckthorn or rhamnus is an evergreen tree, which grows up to 10 m in height. Its stout stems have dark brown, thick furrowed bark when old but on younger plants it is pale (often purplish) and thin. It has glossy green, leathery oval shaped leaves that often have serrated or toothed edges and prominent veins. The flowers are inconspicuous, pale green, fragrant and are usually borne on small bracts adjacent to leaf stalks from May to November. A glossy red berry is produced, which turns black when ripe, containing pale white seeds. The seeds are dispersed by birds and Possums (possibly also other animals) eating the fruit. However, many seeds are also shed close to the parent plant. Humans have also cultivated and spread the plant in the past.

Evergreen buckthorn prefers growing in areas with a Mediterranean type climate (e.g. summer drought and intermittent rain in winter) and does particularly well in coastal areas and on bare rock (e.g. cliffs, lava). It can also grow on the margins of streams, forest margins, disturbed forests and undisturbed alluvial forests. Evergreen buckthorn occurs mostly on the islands of the inner Hauraki Gulf in the Auckland region, and also in coastal locations on the mainland (e.g. cliffs along Tamaki Drive and on the North Shore).

The main problem caused by Evergreen buckthorn is its ability to form dense colonies, smothering young native plants as well as preventing native seedling establishment. It can completely dominate coastal cliff habitats, altering the form and structure of the ecosystem and killing off coastal pohutukawa (*Metrosideros excelsa*). It can also alter the structure of other native (forest) ecosystems due to its ability to achieve 80/100% cover in a relatively short period of time.

MANAGEMENT REGIME

Pest plant designation

Evergreen buckthorn (*Rhamnus alaternus*) is declared a:

a) Containment Pest Plant on the inner Hauraki Gulf Islands (Waiheke, Rangitoto, Motutapu, Motuihe, Browns, Noises, Crusoe, and Rakino Islands) in the Auckland region; and a
b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

Evergreen buckthorn, although well established in the inner Hauraki Gulf, has the potential to spread even further throughout the Auckland region. It is likely to become an extremely widespread and serious pest of native ecosystems. The plant is similar in appearance to a number of native species and, because of this, the public may not recognise the threat it poses to the environment. Regional intervention is therefore deemed necessary to contain the plant to major infestation areas and prevent its long-term establishment in unaffected areas of the Region.

OBJECTIVES

a) Over the next five years ensure control of all known infestations on Waiheke, Rangitoto, Motutapu, Motuihe, Browns, Noises, Crusoe, and Rakino Islands; and
b) To restrict the further spread of Evergreen buckthorn by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Control	Enter any property on the inner gulf islands (Waiheke, Rangitoto, Motutapu, Motuihe, Browns, Noises, Crusoe, and Rakino Islands) where Evergreen buckthorn is present and carry out control work.
Enforcement	Enforce restrictions on the sale, propagation and distribution of Evergreen buckthorn.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.3.1

Landowners/occupiers of Hauraki Gulf Islands (Waiheke, Rangitoto, Motutapu, Motuihe, Browns, Noises, Crusoe, and Rakino Islands) must successfully destroy all adult and juvenile plants of Evergreen buckthorn (*Rhamnus alaternus*) on land they occupy.

(This will not preclude the Council carrying out site-led control programmes on this pest plant, i.e. the Waiheke Island project.)

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.3.2

No person shall:

a) Cause or permit Evergreen buckthorn (*Rhamnus alaternus*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Evergreen buckthorn (*Rhamnus alaternus*) for sale; or
c) Propagate, breed, or multiply Evergreen buckthorn (*Rhamnus alaternus*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Evergreen buckthorn (*Rhamnus alaternus*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.4 Mignonette vine *Anredera cordifolia*

DESCRIPTION OF THE PROBLEM

Mignonette vine is a vigorous perennial creeper that grows from a fleshy rhizome. It has bright green, alternate, fleshy heart-shaped leaves, which grow from reddish brown stems. Tubers are produced on the aerial stems and from the rhizomes. The small, fragrant cream flowers are arranged in slender spikes, which droop from the leaf axils. It flowers from January to April but does not produce any seed.

The plant reproduces through the shedding and spread of the warty-like stem tubers that break off easily to form new plants. Spread usually occurs via the dumping of garden refuse or relocation of topsoil containing tubers. Water can also disperse tubers.

Mignonette vine prefers fertile soils in warm moist climates, and needs high light to establish itself, quickly climbing into the canopy. Its preferred habitats include waste places, forest margins, disturbed or low forest, urban gardens, rocky places and coastal areas. Mignonette vine has the ability to compete with and replace native plants in disturbed or low forest, forest margins and coastal areas. It can block native plant succession and regeneration in some situations, and can topple and kill small trees due to the weight of the growth. It is also a problem in urban reserves and gardens where it can become the dominant species.

Mignonette vine is widespread throughout urban areas of the Auckland region, but has not yet invaded many areas of high conservation value outside these areas.

MANAGEMENT REGIME

Pest plant designation

Mignonette vine (*Anredera cordifolia*) is declared a:

a) Containment Pest Plant in the Waitakere and Hunua Ranges Weed Control Zones, as defined in Appendices 5 and 6, and on Great Barrier Island; and a
b) Surveillance Pest plant throughout the entire Auckland region; and a
c) Community Initiative Pest Plant throughout the entire Auckland region (refer Section 9.0 of this document).

Need to intervene

The plant's rapid spread throughout the urban areas of the region and its potential to colonise new habitats in natural areas make it a threat to the Region. A regionally co-ordinated approach is deemed necessary to minimise the plant's effect on native ecosystems, especially those that are not yet affected by the plant (e.g. the Waitakere and Hunua Ranges and Great Barrier Island). It is also considered necessary to educate the public on all aspects of the plant's effects, especially in urban areas where it is already a widespread problem.

OBJECTIVES

a) To prevent the spread of and, where practicable, reduce infestations of Mignonette vine over the next five years, within the Waitakere and Hunua Ranges Weed Control Zones, as defined in Appendices 5 and 6, and Great Barrier Island; and
b) To restrict the further spread of Mignonette vine by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Mignonette vine infestations pursuant to the rules in this section.

	Enforce restrictions on the sale, propagation and distribution of Mignonette vine.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.4.1

Landowners/occupiers in the Waitakere and Hunua Ranges Weed Control Zones and on Great Barrier Island must successfully destroy all adult and juvenile plants of Mignonette vine (*Anredera cordifolia*) on land they occupy. This shall include the destruction of all tubers.

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.4.2

No person shall:

a) Cause or permit Mignonette vine (*Anredera cordifolia*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Mignonette vine (*Anredera cordifolia*) for sale; or
c) Propagate, breed, or multiply Mignonette vine (*Anredera cordifolia*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Mignonette vine (*Anredera cordifolia*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.5 Moth plant *Araujia sericifera*

DESCRIPTION OF THE PROBLEM

Moth plant is a slender, evergreen climbing vine growing to 6m high over hosts. It has narrow green stems and pointed-oblong (Arrowhead-like) opposite leaves, which are dark green on their upper sides and greyish-green on the undersides. Clusters of small creamy-coloured tubular flowers are formed between December and May and these eventually produce large choko-like seedpods. Each seedpod can contain 250-1000 parachute-like seeds. If bruised or detached the stems, pods and leaves exude a sticky milk-like sap. Spread is by wind-borne seeds, which are freed from the pods as they dry out and split during autumn and winter. Seeds can blow up to 100m in the wind but can also be spread on animals and clothing.

Moth plant prefers loose, fertile soils, in warmer climates in areas of moderate to high rainfall, and establishes most freely in semi-shade growing up into the full light on the canopy of shrubs, hedges and small trees. It grows in a range of habitats including forest margins, disturbed forest, hedges, wasteland and urban gardens. It can become a dominant species in urban situations, and compete with and replace native plant species in disturbed or low forest, scrub-forest margins and in coastal areas. The plant is also poisonous with the sap having an irritant effect on those who come into contact with it.

MANAGEMENT REGIME

Pest plant designation

Moth plant (*Araujia sericifera*) is declared a:

a) Containment Pest Plant in the Waitakere and Hunua Ranges Weed Control Zones, as defined in Appendices 5 and 6 and on Great Barrier Island; and a

b) Surveillance Pest Plant throughout the entire Auckland region; and a
c) Community Initiative Pest Plant throughout the entire Auckland region (refer Section 9.0 of this document).

Need to intervene

The plant's rapid spread throughout the urban areas of the Region, and potential to colonise new habitats in natural areas, make it a threat to the Region. A regionally co-ordinated approach is deemed necessary to minimise the plant's effect on native ecosystems, especially those that are not yet affected by the plant (e.g. the Waitakere and Hunua Ranges and Great Barrier Island). It is also considered necessary to educate the public on all aspects of the plant's effects, especially in urban areas where it is already a widespread problem.

OBJECTIVES

a) To prevent the spread of and, where practicable, reduce infestations of Moth plant over the next five years, from the Waitakere and Hunua Ranges Weed Control Zones, as defined in Appendices 5 and 6, and Great Barrier Island; and
b) To restrict the further spread of Moth plant by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Moth plant infestations within the Waitakere and Hunua Ranges Weed Control Zones (defined in Appendix 5 and 6) and on Great Barrier Island pursuant to the rules prescribed in this section. Enforce restrictions on the sale, propagation and distribution of Moth plant.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.5.1

Landowners/occupiers in the Waitakere and Hunua Ranges Weed Control Zones and on Great Barrier Island must successfully destroy, to prevent seeding, all adult and juvenile plants of Moth plant (*Araujia sericifera*) on land they occupy.

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.5.2

No person shall:

a) Cause or permit Moth plant (*Araujia sericifera*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Moth plant (*Araujia sericifera*) for sale; or
c) Propagate, breed, or multiply Moth plant (*Araujia sericifera*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Moth plant (*Araujia sericifera*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.6 Nodding Thistle *Carduus nutans*

DESCRIPTION OF THE PROBLEM

Nodding thistle is an erect biennial (sometimes annual) thistle growing to 1.5m high. It has a stout, branched, fleshy tap root up to 40cm deep. In the rosette stage, Nodding thistle can be confused with the more common Scotch or winged thistles. The rosette leaves of Nodding thistle are usually long, narrow and deeply cut into many narrow lobes with spiny edges. The upper surface often has a metallic sheen and whitish marginal zone. Flowering stems are erect, tall (up to 1.5m), often branched in the upper half and bear spiny wings to just below the flower-head. Flowering Nodding thistle is easily recognised by its large purple flower-heads that droop or nod when mature. A single plant can produce up to 100 flower-heads, with each flower producing about 200 seeds, of which two-thirds are viable. Apart from localised wind dispersal, seed can also be spread in mud, water, by machinery, in fodder and agricultural seed.

Nodding thistle prefers light, free draining soils with low to medium rainfall. It inhabits pastures, roadsides, wasteland, lucerne crops and hill country grasslands. Nodding thistle is a serious threat to agricultural production because it grows in dense patches, achieving almost total ground cover. It is not readily grazed because of its spiny foliage, leading to a serious reduction in stock carrying capacity. Its presence also discourages animals from grazing neighbouring pasture plants and, at maturity, the spiny heads contribute to vegetable fault in wool. Dense patches can also harbour pest animals, particularly Rabbits.

MANAGEMENT REGIME

Pest plant designation

Nodding thistle (*Carduus nutans*) is declared a:

a) Containment Pest Plant throughout the rural areas of the Auckland region as defined in Appendix 3; and a
b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

The ability of Nodding thistle to spread to new sites and seriously affect pastoral production means it poses a threat to Auckland's rural economy. Intervention is seen as necessary to ensure the plant is kept under control and does not spread to other clear land. Landowners/occupiers recognise that total control is necessary and achievable while the plant is at its current low levels of infestation.

OBJECTIVES

a) The objective is to eradicate all currently know sites of Nodding thistle in rural parts of the Auckland region, as defined in Appendix 3, over the next five years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Nodding thistle infestations in rural areas pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Nodding thistle.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.6.1

Land owners/occupiers in the rural areas of the Auckland region must successfully destroy, to prevent seeding, all adult and juvenile plants of Nodding thistle (*Carduus nutans*) on land they occupy.

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.6.2

No person shall:

a) Cause or permit Nodding thistle (*Carduus nutans*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Nodding thistle (*Carduus nutans*) for sale; or
c) Propagate, breed, or multiply Nodding thistle (*Carduus nutans*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Nodding thistle (*Carduus nutans*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.7 Smilax *Asparagus asparagoides*

DESCRIPTION OF THE PROBLEM

Smilax is an erect or climbing, somewhat woody, perennial creeping herb, which reaches up to 3m in height. It has slender, twining stems that change direction at each node. Its leaves are smallish, glossy green, alternate and broadly ovate with a sharp point towards the ends. Small greenish-white flowers are produced during July and August, which then turn into small, sticky, red berries that contain small seeds. The whole plant grows from a short thick rhizome which gives rise to tuberous roots.

Seeds are dispersed via birds, and in mud adhering to animals, clothing and machinery. Birds can distribute them long distances from the source. This plant often spreads through the dumping of tubers and rhizomes in garden refuse. Smilax prefers fertile, well drained soils of light texture and often grows in disturbed or low forest, forest margins, waste places, roadsides and urban parks.

Smilax can compete with, and replaces, other vegetation by forming pure colonies. Its ability to form a canopy over plants 2m to 3m high, even in heavy shade, makes it a serious threat to native plant communities.

MANAGEMENT REGIME

Pest plant designation

Smilax (*Asparagus asparagoides*) is declared a:

a) Containment Pest Plant in the Waitakere Ranges Weed Control Zone, defined in Appendix 5, and on Great Barrier Island; and a
b) Surveillance Pest plant throughout the entire Auckland region; and a
c) Community Initiative Pest Plant throughout the entire Auckland region (refer section 9.0 of this document).

Need to intervene

The plant's relatively wide distribution and ability to further spread and colonise new habitats make it an ongoing threat to the Region. A regionally co-ordinated approach is needed to minimise the plant's effect on native forest areas, especially the Waitakere Ranges, where little of this plant grows. It is considered necessary to provide information to educate the public on all aspects of the plant's potential effects and the

methods of preventing its spread. It is considered necessary and feasible to eradicate the small number of sites in the Waitakere Ranges.

OBJECTIVES

a) To prevent the spread of and, where practicable, reduce infestations of Smilax over the next five years, from the Waitakere Ranges Weed Control Zone, as defined in Appendix 5, and Great Barrier Island; and
b) To restrict the further spread of Smilax by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Smilax infestations within the Waitakere Ranges Weed Control Zone (defined in Appendix 5) and on Great Barrier Island pursuant to the rules prescribed in this section. Enforce restrictions on the sale, propagation and distribution of Smilax
Education & Advice	Provide information and advice.
Monitoring	Undertake inspections, monitoring and surveillance.
Biological Control	Investigate the possibility of implementing a biological control programme

RULES

RULE 7.1.7.1

Landowners/occupiers in the Waitakere Ranges Weed Control Zone and on Great Barrier Island must successfully destroy, to prevent seeding, all adult and juvenile plants of Smilax (*Asparagus asparagoides*) on land they occupy.

(This will not preclude any site-led removal programmes for Smilax.)

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.7.2

No person shall:

a) Cause or permit Smilax (*Asparagus asparagoides*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Smilax (*Asparagus asparagoides*) for sale; or
c) Propagate, breed, or multiply Smilax (*Asparagus asparagoides*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Smilax (*Asparagus asparagoides*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.8 Variegated thistle *Silybum marianum*

DESCRIPTION OF THE PROBLEM

Variegated thistle is an erect biennial thistle growing up to 2.5m high, and 2m wide. Growing from a stout taproot, the easily distinguished rosette leaves are somewhat shiny and variegated in appearance due to prominent white veins and blotches. The deeply divided spiny leaves can grow to 60cm in length. Flowering stems are stout, hollow and much-branched from the base. They produce large purple flowers, from

November to January, that are surrounded by many sharp spines, each containing 50 to 200 black or brown seeds. Each seed has a large group of down hairs (each about 2cm long) at one end. Flowering occurs from November to January.

Seed is the only means of spread. However, the distance that the heavy parachute seeds can travel in wind is unknown, although most dispersal is probably within 10m of the plant. Seed can be spread in hay, by water, in mud, agricultural produce and grain as well as on machinery or animals.

Variegated thistle grows best on areas of high fertility such as alluvial flats, sheep camps, stock yards and other areas of high soil nitrogen levels. It is a large and very competitive thistle which, when well established, eliminates most other plants by shading and competition for moisture and nutrients. It invades large areas of pasture and is generally unpalatable to stock, resulting in a drastic reduction in stock carrying capacity. It can also suppress crop yields, is toxic to cattle and contaminates wool. Dense clumps of Variegated thistle can also harbour Rabbits which, in return, disturb the soil and provide suitable conditions for the weed to establish.

MANAGEMENT REGIME

Pest plant designation

Variegated thistle (*Silybum marianum*) is declared a:

a) Containment Pest Plant throughout the rural areas of the Auckland region as defined in Appendix 3; and a
b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

The ability of Variegated thistle to spread to new sites and seriously affect pastoral production means it poses a threat to rural areas of the Auckland region. Regional intervention is deemed necessary to ensure the plant does not spread to clear land. Also many landowners/occupiers confuse this plant with the more common winged thistle and may not realise the potential threat it poses to farming.

OBJECTIVE

a) The objective is to prevent the spread of and, where practicable reduce, infestations of Variegated thistle in rural parts of the Auckland region, as defined in Appendix 3, over the next 10 years; and
b) To restrict the further spread of Variegated thistle by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Variegated thistle infestations in the rural areas of the Auckland region, as defined in Appendix 3, pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Variegated thistle.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.8.1

Landowners/occupiers in the rural areas of the Auckland region must successfully destroy, to prevent seeding, all adult and juvenile plants of Variegated thistle (*Silybum marianum*) on land they occupy.

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.8.2

No person shall:

a) Cause or permit Variegated thistle (*Silybum marianum*) to be in a place where it is offered for sale or is exhibited; or

b) Sell or offer Variegated thistle (*Silybum marianum*) for sale; or
c) Propagate, breed, or multiply Variegated thistle (*Silybum marianum*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Variegated thistle (*Silybum marianum*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.9 Wild ginger *Hedychium gardnerianum, H. flavescens*

DESCRIPTION OF THE PROBLEM

There are two species of Wild ginger - Kahili ginger (*H. gardnerianum*) and Yellow ginger (*H. flavescens*). Both are herbaceous perennial plants that grow from large branching rhizomes, which produce vertical stems annually. Beds of living rhizomes can form a dense layer up to 1m thick. Adult stems reach a maximum height of 2m and produce large wax covered, ovate alternate leaves. Yellow ginger leaves tend to be a little narrower than Kahili ginger's. Individual Kahili ginger flowers are lemon yellow with conspicuous red stamens, and are displayed in large composite flower-heads from February to April. Red seeds are produced by Kahili ginger during the autumn and winter months, with over 100 seeds per flower-head being produced under full-light conditions. Yellow ginger flowers are cream to light yellow in colour and appear in the late autumn/early winter period. The flowers are displayed in smaller composite flower-heads than those of Kahili ginger, but do not produce seed.

Both Wild gingers spread outwards along the ground by way of rhizomes, with new stems sprouting annually. New plants may develop from rhizome fragments which have become detached from the parent plant. The major source of this spread is by people illegally dumping ginger rhizomes on roadsides or in bush. Kahili ginger is also spread by birds eating and dispersing the seeds away from the original infestations.

Wild ginger species prefer to grow in open, light-filled environments, which are warm and moist, but will readily grow in semi and full shade beneath the forest canopy. Both species of Wild ginger have the ability to form dense colonies in native forests, smothering young native plants as well as preventing native seedling establishment. This leads to the alteration of both the function and structure of native forest and, in some instances, results in the total death of the forest.

MANAGEMENT REGIME

Pest plant designation

Wild Ginger (*Hedychium gardnerianum, H. flavescens*) is declared a:

a) Containment Pest Plant in the Waitakere and Hunua Ranges Weed Control Zones of the region as defined in Appendices 5 and 6, and on Great Barrier Island; and a
b) Surveillance Pest plant throughout the entire Auckland region; and a
c) Community Initiative Pest Plant throughout the entire Auckland region (refer section 9.0 of this document).

Need to intervene

Wild ginger needs to be controlled, particularly it's spread into forest areas currently unaffected. The ongoing loss of native forest and associated habitats will have significant ecological, cultural, recreational and economic consequences. Public awareness of the plant's threat to native forests needs to be raised and control measures promoted. A regionally co-ordinated approach is therefore deemed necessary.

OBJECTIVES

a) To prevent the spread of and, where practicable, reduce infestations of Wild ginger over the next five years, from the Waitakere and Hunua Ranges Weed Control Zones, as defined in Appendices 5 and 6, and Great Barrier Island; and
b) To restrict the further spread of Wild ginger by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Wild ginger infestations by; a) Enforcing removal of Wild ginger in the Waitakere and Hunua Ranges Weed Control Zones, as defined in Appendices 5 and 6, and on Great Barrier Island; b) Enforcing control in Community Initiative Programmes where the Community Initiatives criteria have been met (refer section 9.0 of this document); c) Enforce restrictions on the sale, propagation and distribution of Wild ginger.
Community Initiative	Support communities that wish to initiate control within their part of the region. See section 9.0.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.
Biological Control	Investigate the possibility of implementing biological control for Wild ginger.

RULES

RULE 7.1.9.1

Landowners/occupiers within the Waitakere and Hunua Ranges Weed Control Zones and on Great Barrier Island must successfully destroy, all adult and juvenile plants of Wild ginger (*Hedychium gardnerianum, H. flavescens*), to prevent seeding and reinfestation, on land they occupy.

(This does not preclude any site-led control programmes for Wild ginger.)

A breach of this rule will create an offence under section 154 (r) of the Act.

RULE 7.1.9.2

No person shall:

a) Cause or permit Wild ginger (*Hedychium gardnerianum, H. flavescens*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Wild ginger (*Hedychium gardnerianum, H. flavescens*) for sale; or
c) Propagate, breed, or multiply Wild ginger (*Hedychium gardnerianum, H. flavescens*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Wild ginger (*Hedychium gardnerianum, H. flavescens*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.1.10 Woolly nightshade *Solanum mauritianum*

DESCRIPTION OF THE PROBLEM

Woolly nightshade is a shrub or small tree up to 8m in height with a trunk commonly up to 20cm in diameter. The leaves are greyish-green and densely hairy. It has purple flowers which produce berries that are yellow when ripe, each containing many seeds. Although most of the fruit falls to the ground beneath the parent plant, some berries are eaten by birds. Birds have spread seed into almost every vacant piece of urban land in Auckland, as well as in hedgerows, farmland, gullies and bush margins. Seed is the only means of dispersal of this plant.

Woolly nightshade is an undesirable plant due to its invasive nature. It may invade pastoral land, native forest margins and urban areas. It is suspected of poisoning livestock and is toxic to humans, particularly children, if they eat the berries. When clearing or knocking the plant, dust is created which will irritate the skin, eyes, the nose and throat. It can form pure colonies in certain situations.

MANAGEMENT REGIME

Pest plant designation

Woolly nightshade (*Solanum mauritianum*) is declared a;

a) Containment Pest Plant as defined in the rules below; and a
b) Surveillance Pest Plant throughout the entire Auckland region; and a
c) Community Initiative Pest Plant throughout the entire Auckland region (refer section 9.0 of this document).

Need to intervene

Council receives numerous complaints/enquiries about this plant each year, highlighting the public's desire to control it. Many enquiries are about the plant's reputed effects on human health, its effect on native regeneration, as well as its potential impacts in gully and waste areas.

OBJECTIVES

a) To prevent the spread of and, where practicable, reduce infestations, of Woolly nightshade in the Waitakere Ranges Weed Control Zone over the next five years; and
b) To minimise the immediate adverse effects of Woolly nightshade on properties with neighbouring infestations in the Auckland region; and
c) To restrict the further spread of Woolly nightshade by humans over the next 10 years.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control Woolly nightshade infestations by; a) Enforcing removal of Woolly nightshade in the Waitakere Weed Control Zone, as defined in Appendix 5; b) Enforcing a 20 metre boundary clearance from a shared boundary throughout the Auckland region upon receipt of complaint; c) Enforcing control in Community Initiative Programmes where the Community Initiatives criteria have been met, see section 9.0; d) Enforce restrictions on the sale, propagation and distribution of Woolly nightshade.
Community Initiatives	Support communities that wish to initiate control within their part of the region. See section 9.0.

Education & Advice	Provide information and advice and facilitate community initiatives.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.1.10.1

Landowners/occupiers must successfully destroy, to prevent seeding, all adult and juvenile plants of Woolly nightshade (*Solanum mauritianum*).

A breach of this rule will create an offence under section 154 (r) of the Act. Complaints may be made by genuinely affected parties (where their property is cleared or being cleared of the pest plant infestation), or initiated by a biosecurity officer. Complaints regarding boundary controls will also be accepted from landowners/occupiers in adjacent regions.

RULE 7.1.10.2

No person shall:

a) Cause or permit Woolly nightshade (*Solanum mauritianum*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Woolly nightshade (*Solanum mauritianum*) for sale; or
c) Propagate, breed, or multiply Woolly nightshade (*Solanum mauritianum*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Woolly nightshade (*Solanum mauritianum*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.2 Containment Pest Plants (Boundary Control)

7.2.1 Australian sedge *Carex longebrachiata*

DESCRIPTION OF THE PROBLEM

Australian sedge is a densely tufted, deep-rooted perennial tussock up to 1m tall. The leaves are Y-shaped in cross-section and inclined to cut if fingers are pulled through the leaves. The flowering stems are triangular in cross-section and sharply angled. Flowers are grouped in catkin-like spikes which hang at the end of long, thin nodding stalks. The seed is a small, smooth triangular nut, enclosed within a long beaked covering. The plant normally flowers and seeds from October to February. Australian sedge is distinguished from other species of *Carex* in New Zealand by its tillering and distinctive flower/seed head.

Australian sedge is a prolific seeder but the longevity of viable seed is relatively short (three to five years). The seed is relatively heavy with most falling within 30cm from the parent plant. Thus it does not spread rapidly over farm boundaries, and transitions between clean and infested land are often abrupt. It establishes and spreads most rapidly on exposed areas where pastures do not thrive because of low soil fertility, drought, overgrazing, insect damage and other causes. Australian sedge is mostly found in poorer pastures, grassy waste places, shrub and forest margins. It can form dense infestations in pastoral areas that lack a vigorous cover of grass and clover. This plant is generally unpalatable to stock, and drastically reduces carrying capacity and livestock production. Once established, effective control can be difficult and expensive,

especially in hill country pastures and in wood-lots. It can also exclude native species in open grassland areas, and in modified areas of native forest and shrubland.

MANAGEMENT REGIME

Pest plant designation

Australian sedge (*Carex longebrachiata*) is declared a:

a) Containment Pest Plant in rural areas of the Auckland region as defined in Appendix 3; and a
b) Surveillance Pest Plant throughout the entire Auckland region.

Need to intervene

Although the spread of Australian sedge between properties is slow and very localised, there is still potential for this plant to impact further on unaffected pastoral land within rural areas of the Auckland region. Once established, the plant is difficult to eradicate and can have a serious impact on production. To ensure that agricultural land which is clear of Australian sedge remains so, a regionally co-ordinated control programme is deemed necessary.

OBJECTIVE

a) To minimise the immediate adverse effects of Australian sedge on rural properties with neighbouring infestations in the Auckland region.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control infestations of Australian sedge pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Australian sedge.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

RULES

RULE 7.2.1.1

Landowners/occupiers in the rural areas of the Auckland region, shall successfully destroy:

a) All adult and juvenile forms of Australian sedge (*Carex longebrachiata*) located 20 metres or less from the boundary of the land they are responsible for. This shall apply where property boundaries are adjacent to neighbouring properties which are free of, or being cleared of, Australian sedge (*Carex longebrachiata*).

A breach of this rule will create an offence under section 154 (r) of the Act. Boundary complaints may be made by genuinely affected parties (where their property is cleared or being cleared of the pest plant infestation), or initiated by a biosecurity officer. Complaints regarding boundary controls will also be accepted from landowners/occupiers in adjacent regions.

RULE 7.2.1.2

No person shall:

a) Cause or permit Australian sedge (*Carex longebrachiata*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Australian sedge (*Carex longebrachiata*) for sale; or
c) Propagate, breed, or multiply Australian sedge (*Carex longebrachiata*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Australian sedge (*Carex longebrachiata*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.2.2 Gorse *Ulex spp.*

DESCRIPTION OF THE PROBLEM

Gorse is an erect, much-branched, perennial shrub commonly 3.5m high and 3m in diameter. Its stems and branchlets are green to brown in colour, woody when mature and are armed with numerous spines up to 5cm long. Bright yellow pea-like flowers (produced between July to October) eventually form dark oval pods which contain greenish-brown seeds. Seeds are the only method of spread, however, they are relatively large and heavy and do not blow in the wind. The seedpods burst and eject the seeds for a distance of up to 8m. Seeds can also be spread further by water action, birds, and in gravel and soil.

Gorse is a highly adaptable plant that can live in a wide range of conditions. However, it grows best on low fertility soils with 500mm to 1500 mm of rainfall per annum. It is found in many habitats including grasslands, scrubland, forest margins, hill country, coastal habitats, wasteland and roadsides. In some situations, mature Gorse can provide shelter for regenerating native species. However, Gorse rapidly forms dense impenetrable infestations, which can severely reduce stock carrying capacity on farms and compete vigorously with young trees. It can also harbour animal pests (Rabbits and Possums), and dense patches are a fire hazard in summer.

MANAGEMENT REGIME

Pest plant designation

Gorse (*Ulex* spp.) is declared a:

a) Containment Pest Plant in the rural areas of the Auckland region defined in Appendix 3 of this RPMS; and a
b) Surveillance Pest Plant throughout the entire Auckland region; and a
c) Community Initiative Pest Plant throughout the entire Auckland region (refer section 9.0 of this document).

Need to intervene

Although much of Auckland's wealth is generated within the city areas, primary production from rural areas is an important part of the Region's economy. This part of the economy is largely based on pastoral farming, horticulture and forestry. The continuing spread of Gorse into farmland affects the Region's rural economy. Regional intervention is considered necessary to ensure that agricultural land that is clear, or being cleared, of Gorse is not infested from neighbouring land. A regional overview of biological control programmes is also seen as important.

OBJECTIVE

a) To minimise the immediate adverse effects of Gorse on rural properties with neighbouring infestations in the Auckland region.

MEANS OF ACHIEVEMENT

Enforcement	Enforce rural landowner/occupier responsibility to control Gorse infestations pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Gorse.

Community Initiatives	Support communities that wish to initiate control within their part of the region. See section 9.0.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance.
Biological Control	Promote biological control of Gorse.

RULES

RULE 7.2.2.1

Landowners/occupiers in the rural areas of the Auckland region as defined in Appendix 3, where Gorse (*Ulex* spp.) is declared a Containment Pest Plant, shall successfully destroy:

a) All Gorse (*Ulex* spp.) located 20m or less from the boundary of land that they are responsible for. This shall apply where property boundaries are adjacent to neighbouring properties, which are free of, or being cleared of, Gorse.

A breach of this rule will create an offence under section 154 (r) of the Act. Boundary complaints may be made by genuinely affected parties (where their property is cleared or being cleared of the pest plant infestation), or initiated by a Biosecurity staff member. Complaints regarding boundary controls will also be accepted from landowners/occupiers in adjacent regions.

RULE 7.2.2.2

No person shall:

a) Cause or permit Gorse (*Ulex* spp.) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Gorse (*Ulex* spp.) for sale; or
c) Propagate, breed, or multiply Gorse (*Ulex* spp.) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Gorse (*Ulex* spp.).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

7.2.3 Ragwort *Senecio jacobaea*

DESCRIPTION OF THE PROBLEM

Ragwort is an erect biennial or perennial herb that grows to between 45cm and 60cm tall. Ragwort plants have a crown at the soil surface, which produces numerous fibrous roots. One or many reddish/purple stems rise from the crown and branch out near the top. Bright yellow flowers grouped together in clusters of 12 to 15, form large heads at the end of each branch. The leaves are deeply divided and wrinkled, dark green on top with a paler green, downy lining. Downy parachute-like seeds are produced during the second year of the plant's life. These seeds are the main method of Ragwort spread. They are carried by wind, water, animals, vehicles, clothing and via hay or chaff. It is estimated that a well-developed multi-stemmed Ragwort plant produces about 250,000 seeds each year, of which 80% may be viable. Plants can also be dispersed when roots and pieces of crown are cut by cultivation equipment.

Ragwort prefers light soils and high rainfall areas and inhabits pasture, waste places, riverbeds, open forests and swamps. It is an aggressive plant, which can quickly invade pastoral land and soon become the dominant cover. It not only reduces the productivity of the land but is also toxic to livestock, particularly cattle and horses. Sheep are more resistant to its poisons, although deaths of animals continually grazed on dense infestations can occur.

MANAGEMENT REGIME

Pest plant designation

Ragwort (*Senecio jacobaea*) is declared a:

a) Containment Pest Plant in the rural areas of the region as defined in Appendix 3 of this RPMS, and a
b) Community Initiative Pest Plant throughout the entire Auckland region (refer section 9.0 of this document).

Need to intervene

Ragwort is one of the main pest plants in the farming areas of the Auckland region. It infests the majority of available habitat. The plant is easily spread and rules are needed to limit its impact on clean areas. It is important that land which is clear, or being cleared, of Ragwort is not reinfested, particularly from neighbouring properties. Regional intervention is deemed appropriate.

OBJECTIVE

a) To minimise the immediate adverse effects of Ragwort on rural properties with neighbouring infestations in the Auckland region.

MEANS OF ACHIEVEMENT

Enforcement	Enforce rural landowner/occupier responsibility to control Ragwort infestations pursuant to the rules in this section. Enforce restrictions on the sale, propagation and distribution of Ragwort.
Community Initiatives	Support communities that wish to initiate control within their part of the region. See section 9.0.
Education & Advice	Provide information and advice.
Monitoring	Undertake inspections, monitoring and surveillance.
Biological Control	Promote biological control of Ragwort

RULES

RULE 7.2.3.1

Landowners/occupiers in the rural areas of the Auckland region as defined in Appendix 3, must successfully destroy, to prevent flowering and seeding, all adult and juvenile plants of Ragwort (*Senecio jacobaea*) located:

a) 50m or less from the boundary of land they occupy; and
b) 50m or less from the edge of any river, stream or watercourse; and
c) 20m or less from the outer boundary of native forest and/or forestry plantings.

A breach of this rule will create an offence under section 154 (r) of the Act. Boundary complaints may be made by genuinely affected parties (where their property is cleared or being cleared of the pest plant infestation), or initiated by a biosecurity officer. Complaints regarding boundary controls will also be accepted from landowners/occupiers in adjacent regions.

RULE 7.2.3.2

No person shall:

a) Cause or permit Ragwort (*Senecio jacobaea*) to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer Ragwort (*Senecio jacobaea*) for sale; or
c) Propagate, breed, or multiply Ragwort (*Senecio jacobaea*) or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of Ragwort (*Senecio jacobaea*).

A breach of this rule will create an offence under section 154 (r) of the Act.

In addition to these rules, powers under the Biosecurity Act 1993 allow biosecurity officers to inspect properties to remove these plants and carry out control.

8.0 SURVEILLANCE PEST PLANTS

Table 4 Surveillance Pest Plants and the Habitats they Potentially Impact on.

Common name	Scientific name	Habitats								
		Native Forest	Shrubland/ scrub	Inland Wetlands	Coastal Wetlands	Lakes & Rivers	Terrestrial Coastal Sites	Plantation Forestry	Production	Urban/Open Space
African clubmoss	*Selaginella krausiana*	✓							✓	✓
Alligator weed	*Alternanthera philoxeroides*			✓	✓	✓			✓	
Aristea	*Aristea ecklonii*		✓							✓
Artillery plant	*Galeobdolon luteum*	✓								✓
Baccharis	*Baccharis halimifolia*		✓						✓	✓
Banana passionfruit	*Passiflora mollissima, P. mixta*	✓	✓							✓
Barberry	*Berberis glaucocarpa*		✓							
Bartlettina	*Bartlettina sordida*	✓								
Blackberry (wild aggregates)	*Rubus fruticosus* agg.		✓					✓	✓	✓
Blue morning glory	*Ipomea indica*	✓	✓	✓			✓	✓	✓	✓
Blue passion flower	*Passiflora caerulea*	✓	✓							✓
Blue spur flower	*Plectranthus ecklonii* *Plectranthus grandis*	✓	✓							✓
Boneseed	*Chrysanthemoides monilifera*						✓			✓
Boxthorn	*Lycium ferocissimum*		✓							
Broomsedge	*Andropogon virginicus*		✓						✓	✓
Brush wattle	*Paraseriathes lophantha*		✓				✓			✓
Buddleia	*Buddleja davidii*		✓					✓		
Bur daisy	*Calotis lappulacea*								✓	
Burdock	*Arctium minus*								✓	
Cape honey flower	*Melianthus major*		✓							✓
Cape ivy	*Senecio angulatus*	✓	✓				✓			✓
Caulerpa	*Caulerpa taxifolia*				✓					
Chinese pennisetum	*Pennisetum alopecuroides*		✓						✓	
Climbing asparagus	*Asparagus scandens*	✓	✓							✓
Coltsfoot	*Tussilago farfara*								✓	
Cotoneaster	*Cotoneaster glaucophyllus, Cotoneaster franchetii*		✓							
Crack willow	*Salix fragilis*			✓		✓				
Eel grass	*Vallisneria gigantea* - Lake Pupuke variety									
	Vallisneria spiralis- Meola Creek variety				✓					
Elaeagnus	*Elaeagnus* x *reflexa*	✓	✓							✓
German ivy	*Senecio mikanioides*	✓	✓							
Giant reed grass	*Arundo donax*			✓		✓				✓
Goat's rue	*Galega officinalis*			✓		✓				✓
Hawthorn	*Crataegus monogyna*		✓						✓	
Hemlock	*Conium maculatum*								✓	✓
Himalayan honeysuckle	*Leycesteria formosa*		✓					✓		
Hornwort	*Ceratophyllum demersum*			✓		✓				
Hydrilla	*Hydrilla verticillata*			✓		✓				
Japanese honeysuckle	*Lonicera japonica*	✓	✓				✓			✓
Japanese spindle tree	*Euonymus japonicus*		✓				✓			✓
Jasmine	*Jasminum polyanthum*	✓	✓							✓
Lagarosiphon oxygen weed	*Lagarosiphon major*			✓						
Mexican daisy	*Erigeron karvinskianus*	✓	✓							✓
Mile-a-minute	*Dipogon lignosus*	✓	✓							✓

Common name	Scientific name	Habitats								
		Native Forest	Shrubland/ scrub	Inland Wetlands	Coastal Wetlands	Lakes & Rivers	Terrestrial Coastal Sites	Plantation Forestry	Production	Urban/Open Space
Mistflower	*Ageratina riparia*	✓	✓			✓				
Monkey apple	*Acmena smithii*	✓	✓							✓
Montpellier broom	*Teline monspessullana*		✓					✓		✓
Nardoo	*Marsilea mutica*			✓						
Noogoora bur	*Xanthium occidentale*								✓	
Nutgrass (purple nutsedge)	*Cyperus rotundus*		✓						✓	✓
Oxylobium	*Oxylobium lanceolatum*		✓				✓			
Palm grass	*Setaria palmifolia*		✓							✓
Pampas grass	*Cortaderia jubata, C. selloana*		✓				✓	✓	✓	✓
Parrots feather	*Myriophyllum aquaticum*			✓						
Perennial nettle	*Urtica dioica*								✓	✓
Periwinkle	*Vinca major*	✓	✓				✓			✓
Plectranthus	*Plectranthus ciliatus*	✓	✓							✓
Plumeless thistle	*Carduus acanthoides*								✓	
Port Jackson fig	*Ficus rubiginosa*	✓								✓
Privet – Tree, Chinese	*Ligustrum lucidum* *L. sinense*	✓	✓							✓
Reed sweet grass	*Glyceria maxima*			✓	✓	✓				
Saffron thistle	*Carthamus lanatus*								✓	
Sheeps bur	*Acaena agnipila*								✓	
Skeleton weed	*Chondrilla juncea*								✓	
Spanish heath	*Erica lusitanica*		✓						✓	
Spiny broom	*Calicatome spinosa*		✓				✓	✓	✓	
Stipa spp.	*Stipa* spp.		✓						✓	✓
St John's wort	*Hypericum perforatum*								✓	
Sweet briar	*Rosa rubiginosa*		✓					✓		
Sweet pea shrub	*Polygala myrtifolia* (exclu. cv. 'Grandiflora')						✓			✓
Tuber ladder fern	*Nephrolepis cordifolia*	✓	✓				✓			✓
Tutsan	*Hypericum androsaemum*								✓	✓
Velvet groundsel	*Senecio petasitis*	✓	✓							✓
Wandering Jew	*Tradescantia fluminensis*	✓	✓							✓
Water primrose	*Ludwigia peploides* ssp. *Montevidensis*			✓						
Yellow flag	*Iris pseudacorus*			✓						
Yellow water lily	*Nuphar lutea*			✓						

There is also a National Pest Plant Accord (NPPA) list and all plant species on it have the same status as Surveillance Pest Plants in the region (for the full NPPA list, refer to Appendix 2). The NPPA came into effect on 1 October 2001, and is a co-operative agreement between regional councils and government departments with biosecurity responsibilities (e.g. Ministry of Agriculture and Forestry, Department of Conservation). Under the accord, all signatory regional councils will undertake surveillance to prevent the commercial propagation, sale and/or distribution of an agreed list of pest plants. The NPPA list is dynamic, with additions made periodically via consultation with a technical advisory group (to check for updates refer to www.maf.govt.nz on the internet).

OBJECTIVES

a) To slow the further spread of Surveillance Pest Plants and NPPA Pest Plants in the region by preventing their sale, propagation and distribution throughout the Auckland region.

MEANS OF ACHIEVEMENT

Education & Advice	Provide information and advice and promote Community Initiatives Programmes.
Monitoring	Undertake inspections, monitoring and surveillance.
Site-led Programmes	Initiate or support site-led control in special areas of the region

RULE 8.1

No person shall:

a) Cause or permit any Surveillance or NPPA listed pest plant to be in a place where it is offered for sale or is exhibited; or
b) Sell or offer for sale any Surveillance or NPPA listed pest plant; or
c) Propagate, breed, or multiply any Surveillance or NPPA listed pest plant or otherwise act in such a manner as is likely to encourage or cause the propagation, breeding or multiplication of any Surveillance or NPPA listed pest plant.

A breach of this rule will create an offence under section 154 (r) of the Act.

9.0 COMMUNITY INITIATIVES PROGRAMMES (Plants)

Communities with particular pest plant problems often have the enthusiasm and local knowledge to undertake control to provide benefits to the community. Active community participation in pest plant problems is supported and strongly encouraged by the Council. This approach is consistent with other areas of council, where the establishment of 'Care' groups is encouraged and supported. Community groups will be encouraged through the provision of information and advice, to undertake control programmes for pest plants. These may be weed-led, targeting a particular pest plant, or site-led, targeting a suite of pest plants at a particular site. In some cases follow-up planting of desirable plants should be part of the programme, to lessen the chance of pest plants reinvading. The Council will consider financial support to 'seed' such initiatives through the Environmental Initiatives Fund programme. Any plant identified as a pest in this Strategy, including those on the NPPA list, may be considered under the Community Initiatives Programme, but only the plants listed in section 9.1 below will be the subject of any enforcement.

When proposed Community Initiatives Programme areas include roadside weed control, agreement from roading authorities will need to be negotiated by all community groups, facilitated by the ARC. In situations where Community Initiatives Programmes are established, and roadside control is required, the roading authority will be allowed time to phase in management of the selected pest species.

PROCESS

The six steps that need to be followed in order to undertake a Community Initiative Programmes:

1. Landowners/occupiers join or establish a Community Group.
2. Community Group approaches the ARC outlining the nominated pest plant and the proposed area of the Region to which the programme will apply.
3. The Auckland Regional Council evaluates the proposal taking into account a range of factors including:
   - The attributes of the pest attributes (e.g. dispersal, control options, chances of reinfestation, potential impacts);
   - The distribution of the pest distribution in the proposed area, and in the area immediately surrounding it;
   - How the programme integrates with other initiatives, i.e. proximity to other areas being controlled or proximity to Council or other site-led programmes;
   - The willingness of community to accept responsibility for the problem.
4. The ARC approves Community Group proposal with/without amendments, and recommendations on follow-up management (e.g. restoration planting).
5. ARC and Community Group establish a Scooping Plan – defining control area, removal criteria, publicity required and the dissemination of information.
   - The first major step is publicity to gauge the level of community support in the proposed area. For the programme to proceed support must be gained from residents who own >75% of the land area and 50% of all occupants within the area; or

     support from 75% of occupants of the land area.
   - If the required support criteria cannot be met the group will have six months to canvas further support for the proposal. The ARC will assist by providing publicity material, information and provision of landowner/occupier contacts.
   - To achieve the required support necessary to ensure ARC intervention members of the Group must be implementing control programmes and encouraging others in the control area to do the same.
6. If encouragement, assistance and advice from the Group has not motivated the remaining individuals to carry out control within the programme area, the ARC will provide regulatory intervention to ensure that land occupiers are meeting their obligations.*

* Regulatory measures relate to the pest plants included in section 9.1 below (Refer to sections 16 and 17 in this document in regard to monitoring).

OBJECTIVE

a) To empower and assist communities to undertake pest plant control, in defined programme areas, throughout the Auckland region.

MEANS OF ACHIEVEMENT

Enforcement	Enforce occupier responsibility to control infestations of pests in the Community Initiatives Category by; a) Enforcing control in Community Initiative Programmes where the Community Initiatives criteria have been met, see section 9.0 and RULE 9.1 below; b) Enforce restrictions on the sale, propagation and distribution of pests in the Community Initiatives Category.
Education & Advice	Provide information and advice, and promote Community Initiatives Programmes.
Monitoring	Undertake inspections in programme areas where Community Initiative Programmes are being carried out.

RULE 9.1

In addition to any other rules in this Strategy, which effect the pest plants included in section 9.2 below, landowners/occupiers must:

a) Successfully destroy all adult and juvenile plants of the pest plants listed in sections 9.2.1 to 9.2.24, on the land they occupy.

A breach of this rule will create an offence under section 154 (r) of the Act.

9.2 Community Initiatives Pest Plants

Control of Tree and Chinese privet and Monkey apple will not be enforced if these plants are being used as a hedge, providing that the hedge is being regularly trimmed to prevent flowering and seeding (refer 9.1.18 below).

Common name	Scientific name	Section Number
Banana passionfruit	*Passiflora mollisima, P. mixta*	9.2.1
Bartlettina	*Bartlettina sordida*	9.2.2
Blue morning glory	*Ipomea indica*	9.2.3
Cape ivy	*Senecio angulatus*	9.2.4
Climbing asparagus	*Asparagus scandens*	9.2.5
Elaeagnus	*Elaeagnus* x*reflexa*	9.2.6
German ivy	*Senecio mikanoides*	9.2.7
Giant reed grass	*Arundo donax*	9.2.8
Gorse	*Ulex europaeus*	9.2.9
Himalayan honeysuckle	*Leycesteria formosa*	9.2.10
Japanese honeysuckle	*Lonicera japonica*	9.2.11
Jasmine	*Jasminum polyanthum*	9.2.12
Mignonette vine	*Anredera cordifolia*	9.2.13
Mile a minute	*Dipogon lignosus*	9.2.14
Monkey apple	*Acmena smithii*	9.2.15
Moth plant	*Araujia sericifera*	9.2.16
Palm grass	*Setaria palmifolia*	9.2.17
Pampas grass – Common Purple	*Cortaderia selloana* *Cortaderia jubata*	9.2.18
Privet – Chinese Tree	*Ligustrum sinense* *Ligustrum lucidum*	9.2.19
Ragwort	*Senecio jacobaea*	9.2.20
Smilax	*Asparagus asparagoides*	9.2.21
Tuber ladder fern	*Nephrolepis cordifolia*	9.2.22
Wild ginger - Kahili - Yellow	*Hedychium gardnerianum* *Hedychium flavescens*	9.2.23
Woolly nightshade	*Solanum mauritianum*	9.2.24

9.2.1 Banana passionfruit *Passiflora mollisima*, *P. mixta*

Banana passionfruit are vigorous climbing vines, native to tropical South America. Both species were introduced to New Zealand as edible and ornamental plants. They have dark green three-lobed, tooth-edged leaves that are covered in downy hair. Pink tubular hanging flowers are produced during summer and autumn that develop into thin-skinned yellow fruits. These have an orange pulp and numerous black bird-dispersed seeds. The vines rapidly establish in disturbed areas, forest margins, wind breaks, plantations, roadsides and waste areas.

9.1.2 Bartlettina *Bartlettina sordida*

Bartlettina is an evergreen shrub, which grows to about 2m tall. It has large, broad oval leaves that are covered in short reddish hairs. The leaves are dark green above with reddish veins, and often purple on the underside. Bartlettina produces bunches of fragrant, pink/purple-red flowers on the ends of branchlets from November to January. It is a garden escape, native to Mexico that spreads readily by wind-borne seeds, layering of stems, or from fragments in dumped garden rubbish. Tolerant of shade and wet conditions, Bartlettina is an invader of forest margins, riparian areas, and disturbed sites, forming dense clumps that restrict natural regeneration.

9.1.3 Blue morning glory *Ipomea indica*

Blue morning glory is a twining creeper, widespread throughout the tropical Pacific. It was introduced to New Zealand originally as an ornamental and is now present throughout the Auckland region. It grows rapidly in a range of habitats including open areas, forest margins, roadsides, and on hedges, smothering and suppressing most plants. It is readily identifiable with its heart-shaped, three-lobed leaves, and year-round large tubular purple flowers. Plants do not usually produce seed, spreading vegetatively instead in situ, or from stem fragments in dumped garden rubbish.

9.1.4 Cape ivy *Senecio angulatus*

Cape ivy is a scrambling yellow flowered herb, with thick fleshy bright green ivy-shaped leaves. Its flowers are daisy-like and produced in clusters. It forms dense tangled shrubs up to 2m tall, and scrambles over host vegetation, in waste areas, scrub, and forest margins, most often near the coast.

9.1.5 Climbing asparagus *Asparagus scandens*

Climbing asparagus is a vigorous scrambling plant. It is capable of killing host plants, either by ring barking them or completely smothering them. It often completely carpets the ground of native forest or shrubland, preventing regeneration and seedling growth. It can also establish as an epiphyte high up in trees. Originally from South America, it was introduced to New Zealand as an ornamental plant. The leaves are small and delicate, and attached to hooked vines. Climbing asparagus flowers from September to December, producing small white flowers that develop into orange-red berries.

9.1.6 Elaeagnus *Elaeagnus* x*reflexa*

Elaeagnus is a dense, spiny vigorous scrambling shrub that has often been grown in New Zealand as a hedge and windbreak. Its stems are brown and scaly, with numerous spines. It has oval leaves that are green above and scaly brown on the underside. Small white flowers are produced in clusters from March to May, that develop into reddish-orange drupe-like fruit. Most often infestations have spread from old house sites and hedges, rapidly covering large areas of vegetation.

9.1.7 German ivy *Senecio mikanoides*

German ivy is a perennial climber, originally from South Africa. It has thin ivy-shaped leaves that are up to 10cm long, and smooth green stems up to 3m in length. Small ear-like projections at the base of the leaf stalks help to distinguish it from Cape ivy (*Senecio angulatus*; 9.1.4 above). Clusters of yellow daisy-like flowers are produced from May to October, that develop into wind-borne achenes. German ivy forms dense infestations in open and disturbed sites, forest margins, and scrub particularly in coastal areas.

9.1.8 Giant reed grass *Arundo donax*

Giant reed grass, originally from Eurasia, forms large robust perennial clumps up to 5m tall. It was originally planted as an ornamental garden plant. It has very wide leaves, and thick bamboo-like stems. Flowers are borne in feathery plume-like terminal panicles. Naturalised infestations are often present in rail and roadside areas, and along riparian margins.

9.1.9 Gorse *Ulex europaeus*

Gorse, a native of Central and Western Europe, has been naturalised in New Zealand since the mid-1800s. Originally introduced by early European settlers for use as a hedge plant, it is now regarded as New Zealand's most widespread weed. It is an erect, much branched shrub that commonly grows to 2m. It produces bright yellow pea-type flowers, that develop into small pods (1cm to 2cm long). These normally contain 2 to 6 seeds that are dispersed when the pod dries out and bursts. Gorse is able to rapidly form impenetrable infestations in disturbed or open areas, which can reduce stock carrying capacity on farms and compete with young trees in forestry operations. It can also harbour pests and dense patches can be a fire hazard in summer (refer also to section 7.2.2 of this document).

9.1.10 Himalayan honeysuckle *Leycesteria formosa*

Himalayan honeysuckle, originally from temperate Himalayan regions, is a many-stemmed perennial shrub that reaches up to 2m in height. Its flowers, produced from December to May, are white and funnel-shaped, and surrounded by larger reddish-purple bracts. It has opposite, broad, pointed heart-shaped leaves, and straight stems that are thick, hairless and hollow. It is more common in the wetter western parts of the Auckland region. It can form dense thickets in forest margin, roadside, scrubs and open disturbed habitats.

9.1.11 Japanese honeysuckle *Lonicera japonica*

Japanese honeysuckle, native to Eastern Asia, was introduced to New Zealand as an ornamental hedging plant. It is now widely naturalised throughout the Auckland region. It is a vigorous smothering climber, capable of growing up to 15m a year. It has hairy stems that are purplish when young, and oval leaves that are lighter green on the underside. Fragrant white or cream flowers are produced from September to May which develop into black berries. Japanese honeysuckle invades forest margins and disturbed sites, blanketing small trees and shrubs.

9.1.12 Jasmine *Jasminum polyanthum*

Jasmine, a native of southern and western China, has been widely planted in gardens throughout the Auckland region. It is an evergreen climber with vigorous stems that twine up through any supporting vegetation, often totally covering host plants. It can also form an impenetrable ground cover mat that smothers any low growing plants. Its small leaves have a reddish tinge when young, turning dark green when mature. Jasmine produces a mass of highly scented white flowers almost all year round, that are pink when in bud. With bird-dispersed

seed and rapid vegetative growth, it is able to spread quickly from garden sites. Dumping of stem fragments has also aided its spread.

9.1.13 Mignonette vine *Anredera cordifolia*

Mignonette vine, a fast growing perennial creeper, is a native of South America, originally brought to New Zealand as an ornamental species. Recorded as naturalised since the 1940s, it is now widespread in the urban areas of the Auckland region. It has bright green heart-shaped fleshy leaves, and reddish brown stems. Plants establish from underground wart-like tubers, and these tubers are also produced by the aerial stems. Mignonette vine produces masses of cream flowers on droopy spikes from January to April, but no seed is set. Its main means of spread, therefore, is via the stem tubers, which are dumped in garden rubbish, moved by topsoil or by water. It quickly establishes itself in disturbed areas, forest margins, low forest, hedges, and coastal areas reducing or halting native regeneration and modifying the structure of the ecosystem.

9.1.14 Mile a minute *Dipogon lignosus*

Mile a minute is a vigorous scrambling climber, native to South Africa. It has trifoliate leaves with heart-shaped leaflets. Its pea-type flowers are variable in colour, ranging from white to lavender to reddish-purple. It can smother low-growing and canopy species, and established itself readily along forest margins, tracks or roadsides, and in low growing regenerating native vegetation.

9.1.15 Monkey apple *Acmena smithii*

Monkey apple is a long-lived tree, reaching 6m to 18 m in height. It has been commonly planted as a shelter and hedge tree in the warmer parts of New Zealand. The oval leaves are glossy and in opposite pairs, releasing an aromatic fragrance when crushed. Whitish flowers are produced from October to January, followed by berry-like fruit that are white or pink-mauve. Its fruit are bird dispersed, and it has naturalised widely in the Auckland region. It can establish and grow readily in forest, damp shrublands, disturbed areas and roadsides. It persists in tall native vegetation, altering the composition of the forest in the long-term.

9.1.16 Moth plant *Araujia sericifera*

Moth plant, a native of Argentina and Brazil, was brought to New Zealand as an ornamental species in the 1880s. Since that time it has naturalised and spread almost throughout the Auckland region. It is an evergreen climbing vine that extends to 6m up hosts. It produces opposite leaves that are dark green above and greyish-green below. When the stems or leaves are broken they exude a milky sap that has an irritating effect on skin. Sun leaves are thick and waxy with wavy margins. Small creamy-coloured clusters of tubular flowers are present between December and May. These develop into distinctive large choko-like fruit that contain between 250/1000 wind-borne seeds. It establishes readily in hedges, disturbed or low forest, forest margins, on roadsides and in coastal areas, where it can smother and replace native and desirable plant species.

9.1.17 Palm grass *Setaria palmifolia*

Palm grass, a native of India, was introduced to New Zealand as an ornamental plant. It forms dense, upright, arching clumps, in open disturbed areas, urban gardens, roadsides and shrubland. Its pleated leaves are deep green and resemble young palm fronds.

9.1.18 Pampas grass – Common pampas *Cortaderia selloana*, Purple pampas *C. jubata*

Both species of Pampas grass are native to South America. *Cortaderia jubata* grows to 3m tall and has dark green leaves with wide serrations. It has plume-like flowers between December and February that are purple when new, fading to a dull brown. *Cortaderia selloana* is taller, growing to 5m, and produces flowering plumes between February and May that can be cream, pink or mauve. Both produce large quantities of seed (up to 100,000 seeds/flower-head). Pampas grass is a serious threat to certain natural ecosystems (e.g. sand dunes, stream banks, wetlands, and coastal cliffs) where it can completely replace native vegetation. Pampas grass can also become a fire hazard, and harbour pests like Rats, Mice and Possums.

9.1.19 Privet – Tree privet *Ligustrum lucidum*, Chinese privet *Ligustrum sinense*

Both Tree (large-leaved) and Chinese privet (small-leaved) are native to China. They were originally introduced as ornamental plants and have been widely grown as hedges. Both became naturalised in the 1950s and are now widespread throughout the Auckland region. Tree privet is an evergreen tree that grows to about 10m. It flowers from January to March, producing clusters of strong-smelling cream flowers. Chinese privet, also evergreen, is smaller reaching c. 5m in height. Its produces masses of tiny strong-smelling white flowers from September to December. Both species invade forest margins, riparian areas, hedges of other species and roadsides. They often displace native species in regenerating communities, and may eventually dominate areas of forest, particularly in the case of Tree privet.

9.1.20 Ragwort *Senecio jacobaea*

Ragwort is a biennial or perennial herb that is native to Europe. Present and naturalised in New Zealand since the mid 1800s to the late-1800s, it has been regarded as noxious since 1900. It is a serious pasture weed that is now common throughout New Zealand, and is particularly a weed of cattle pastures where rainfall exceeds 800mm. It produces yellow flowers in terminal inflorescences, from November to April. A number of biological control agents have been released to aid in its control. (Refer also to section 7.2.3 of this document.)

9.1.21 Smilax *Asparagus asparagoides*

Smilax is a scrambling or twining perennial vine that extends up to 3m over host shrubs or hedges. Its dense growth can smother any host plants. The bright green 'leaves' are actually small flattened cladodes. The small greenish-white flowers are produced from July to August, followed by small round berries. Its bird-dispersed seeds readily establish themselves in a wide range of habitats including hedges, coastal and roadside banks, and disturbed areas.

9.1.22 Tuber ladder fern *Nephrolepis cordifolia*

Tuber ladder fern is an introduced tropical fern species that has been commonly cultivated throughout the Auckland region and is now widely naturalised. It has distinctive upright yellow-green fronds, and short rhizomes that produce fleshy tubers. It is hardy and drought tolerant and able to establish and grow and establish itself in a range of sites including on banks, amongst rocks, and along tracks and roadsides.

9.1.23 Wild ginger – Kahili ginger *Hedychium gardnerianum*, Yellow ginger *Hedychium flavescens*

There are two species of Wild ginger - Kahili ginger (*H. gardnerianum*) and Yellow ginger (*H. flavescens*). Both are herbaceous perennial plants that grow from large branching rhizomes. Beds of living rhizomes can form a dense layer up to 1m thick. Adult stems reach a maximum height of 2m and produce large wax covered ovate alternate leaves. Yellow ginger leaves tend to be a little narrower than Kahili ginger's. Individual Kahili ginger flowers are lemon yellow with conspicuous red stamens and are displayed in large composite flower-heads

from February to April. Red seeds are produced by Kahili ginger during the autumn and winter months, with over 100 seeds per flower-head being produced under full-light conditions. Yellow ginger flowers are cream to light yellow in colour and appear in the late autumn/early winter period. The flowers are displayed in smaller composite flower-heads than those of Kahili ginger, but do not produce seed.

A major source of Wild ginger spread is by people illegally dumping ginger rhizomes on roadsides or in the forest. Kahili ginger is also spread by birds eating and dispersing the seeds away from the original infestations. Wild ginger infestations are tall and dense, out-competing native understorey plants and preventing regeneration of almost all native species. (Refer also to section 7.1.9 of this document.)

9.1.24 Woolly Nightshade *Solanum mauritianum*

Woolly nightshade is a shrub or small tree up to 8m. Its leaves are greyish-green and densely hairy. It has purple flowers which produce berries that are yellow when ripe, each containing many seeds. Although most of the fruit falls to the ground beneath the parent plant some berries are eaten by birds. Birds have spread seed into almost every vacant piece of urban land in Auckland, as well as in hedgerows, farmland, gullies and bush margins. Seed is the only means of dispersal of this plant.

Woolly nightshade may invade pastoral land, native forest margins and urban areas. It is suspected of poisoning livestock and is toxic to humans. Dust created when the stems or leaves are knocked may irritate the skin, eyes, the nose and throat. (Refer also to section 7.1.10 of this document.)

10.0 RESEARCH ORGANISMS (Plants)

Common name	Scientific name	Section Number
Acacia species	*Acacia* spp.	10.1
Agapanthus	*Agapanthus praecox* subsp. *orientalis* and cultivars	10.2
Austrostipa species	*Austrostipa* spp. (excluding native species)	10.3
Bangalow palm	*Archontophoenix cunninghamii*	10.4
Brush cherry	*Syzygium australe*	10.5
Climbing gloxinia	*Lophospermum erubescens*	10.6
Coast banksia	*Banksia integrifolia*	10.7
Guava/Purple guava	*Psidium cattleianum*	10.8
Gypsywort	*Lycopus europeaus*	10.9
Ivy	*Hedera helix* subspp. and cultivars	10.10
Lantana	*Lantana camara* cv. other than var. *aculeata*	10.11
Lizard's tail	*Saururus cernuus*	10.12
Moreton Bay fig	*Ficus macrophylla*	10.13
Phoenix palm	*Phoenix canariensis*	10.14
Queen of the night	*Cestrum nocturnum*	10.15
Queensland poplar	*Homalanthus populifolius*	10.16

The plants in this category have all been identified as having potentially significant impacts on the natural or production environments of the Auckland region. However, further research and consultation is required before they are designated a pest in any Strategy. Once research has been carried out on some of the Research Organisms named here, and their impacts and effective control methods are better understood, a minor amendment to the Strategy may be made to designate them as pests and ban them from sale.

10.1 *Acacia* spp.

There are a number of Acacia species that have become naturalised in the Auckland region (e.g. Cootamundra wattle (*Acacia baileyana*), silver wattle (*A. dealbata*), green wattle (*A. decurrens*), cedar wattle (*A. elata*), Sydney golden wattle (*A. longifolia*), Tasmanian blackwood (*A. melanoxylon*), black wattle (*A. mearnsii*), Kangaroo acacia (*A. paradoxa*), and prickly Moses (*A. verticillata*)). Native to Australia, most were originally brought to New Zealand as ornamental trees, or for hedge/shelter or firewood. Most establish in open areas, along roadside banks and riparian or forest margins, or amongst scrub. Research is required to assess the impacts of these species in natural areas (e.g. gumland scrub, and their naturalised distribution in the region).

10.2 Agapanthus *Agapanthus praecox subsp. orientalis* and *cultivars*

Agapanthus has been widely planted as a garden and amenity plant within the Auckland region. It now appears to be naturalising freely, via wind- and water-dispersed seeds and the dumping of root and stem material in garden rubbish. It is able to form dense mats, and is becoming a weed problem on roadsides, bluffs, and in coastal sites.

Research is required to determine the impacts of the naturalised populations on native ecosystems, and on the most effective means of control. There is also a need to ascertain whether all cultivars produce viable seed and naturalise as freely. Site-led and community control of this plant will be encouraged during the life of the Strategy. Following research over the next two years, a minor amendment may be made to the Strategy making *Agapanthus praecox* subsp. *orientalis* a pest in the Strategy and banning it from sale.

10.3 Austrostipa spp. *Austrostipa spp.* (excluding native species)

There are c. 61 species of *Austrostipa* grasses native to Australia, and one native to both Australia and New Zealand. Research will concentrate on determining their potential weed status and possible impacts within the Auckland region. Following research over the next two years, a minor amendment may be made to the Strategy making some *Austrostipa* spp. pests in the Strategy and banning them from sale.

10.4 Bangalow palm *Archontophoenix cunninghamii*

Bangalow palm, a native of eastern Australia, was originally brought to New Zealand in the late 1800s. It has been widely used as a garden plant. It belongs to the same subtribe (Archontophoenicinae) as the native nikau palm (*Rhopalostylis sapida*). Bangalow palm is a rainforest species inhabiting gullies, stream banks and swampy areas in its natural range – similar habitats to nikau in New Zealand forests. It is self-fertile, sets large amounts of seed with a high germination rate, establishes and grows readily in the shade of a closed native forest canopy. All of these characteristics make Bangalow palm a potentially aggressive weed. Research is required to determine its impacts, the feasibility of control, and the best practical containment options.

10.5 Brush cherry *Syzygium australe*

Brush cherry, a native of Australia, is a large shrub or small tree that grows to about 10m in height. It produces masses of white flowers between January and July that develop into crimson to purple glossy fruit. The fleshy fruit are bird-distributed, and seedlings establish readily. Research is required to determine its impacts, the feasibility of control, and the best practical containment options.

10.6 Climbing gloxinia *Lophospermum erubescens*

Climbing gloxinia is a perennial climbing herb with hairy stems and twining petioles. It is a native of Eastern Mexico, originally brought to New Zealand as a garden plant. Climbing gloxinia produces large deep-pink flowers from January to March. It has been recorded growing wild on Rangitoto and Great Barrier Islands in the Hauraki Gulf. Research is required to determine its impacts, the feasibility of control, and the best practical containment options.

10.7 Coast banksia *Banksia integrifolia*

Coast banksia is native to the eastern coast and ranges of Australia. It is a medium-sized tree that grows to about 15m tall. It produces lime yellow flower spikes, up to 15cm long, during autumn and winter. The leaves are grey-green above and white below, and new growth is covered in short silvery hairs. It has been planted as a garden and street tree in the Auckland region, as it is hardy and tolerates coastal conditions. Research is required to determine its impacts, the feasibility of control, and the best practical containment options.

10.8 Guava/Purple guava *Psidium cattleianum*

Guava is a large shrub or small tree that reaches up to 6m in height. Originally from Southern Brazil, it was brought to New Zealand as a fruit tree. It is an aggressive weed in other parts of the Pacific including Raoul and Norfolk Islands, and has already naturalised in parts of the Auckland region. Research is required to determine its impacts, the feasibility of control, and the best practical containment options.

10.9 Gypsywort *Lycopus europeaus*

Gypsywort is a perennial herb in the mint family (Lamiaceae), that grows to about 1m tall. It produces white flowers with purple spots on the lower lip and throat, from November to April. It has naturalised on riverbanks and in adjacent wet pasture in the Waikato region. Research is required to determine its impacts, the feasibility of control, and the best practical containment options.

10.10 Ivy *Hedera helix* subspp. and cultivars

Ivy is a climbing perennial that can produce stems up to 30m long. Native to temperate Europe and Asia, it was introduced to New Zealand as an ornamental plant and has been very widely planted throughout the region. It climbs via a multitude of short roots that hold the vine onto its host plant or structure. Ivy also produces non-climbing fertile branches. On these, umbrella-like clusters of flowers are produced each of which develops into black bird-dispersed berries. It invades open areas, riparian and forest margins, cliffs, and urban gardens, and is very long-lived. Ivy smothers host plants and can completely carpet the forest floor, preventing regeneration and altering the forest composition. Seedlings have also been noted in the crowns of tall trees far into the forest, indicating that it can establish as an epiphyte and invade undisturbed forest areas. Research is required to determine the feasibility of control and the best practical containment options for Ivy. Clarification is also required in regard to the invasibility of the various cultivars and sub-species of ivy present in New Zealand. Site-led and community control of this plant will be encouraged during the life of the Strategy. Following research over the next two years, a minor amendment may be made to the Strategy making *Hedera helix* and all cultivars pests in the Strategy and banning them from sale.

10.11 Lantana *Lantana camara cv.* and forms other than var. *aculeata*

Lantana is considered a serious weed in Australia, the Caribbean, Africa, and other Pacific islands. Of the different forms of Lantana, 29 are naturalised in eastern Australia, with 11 considered weeds. Research is needed to determine the weed potential of other Lantana cultivars and forms in New Zealand.

10.12 Lizard's tail *Saururus cernuus*

Lizard's tail is a marginal aquatic plant, originally from south-eastern North America. It has been used as an aquarium and water garden plant in a number of countries. Information from other countries, where it has naturalised, suggests that it may be invasive, however, more information is required to quantify the potential impacts of this plant in the Auckland region.

10.13 Moreton Bay fig *Ficus macrophylla*

Moreton Bay fig, a native of Moreton Bay in Australia, starts life as an epiphyte, ultimately strangling the host tree. Trees can also establish on the ground or in cracks in rocks. They have been planted in northern parts of New Zealand as specimen trees, some of which are now huge. The pollinating wasp arrived in New Zealand during the 1990s, and fruit and viable seeds are now being produced. Naturalised seedlings have been recorded, some of which have been epiphytic in native trees in intact native forest.

Many large Moreton Bay fig trees have significant cultural values. Research is required to determine their invasiveness and potential impacts in natural areas within the region.

10.14 Phoenix palm *Phoenix canariensis*

Phoenix palms have been widely planted as specimen trees in New Zealand and they have been recorded naturalising for at least the last 25 years. Seedlings and young palms have been frequently noted in gardens, open areas, and along the margins of natural areas. They produce large amounts of seed which are bird-dispersed.

Given their widespread nature, cultural significance and commercial value, these plants may never be declared pests but research is required to quantify their likely impacts in natural areas and investigate possible strategies to minimise these impacts. Site-led control of this plant will occur during the life of the Strategy, in areas of significant environmental values. Following research over the next two years, a minor amendment may be made to the Strategy regarding measures to minimise environmental impacts of this plant.

10.15 Queen of the night *Cestrum nocturnum*

Queen of the night is a shrub that generally reaches 1.5m to 2.5m in height. Originally from the West Indies and Central America, it was introduced to New Zealand as an ornamental species and has been widely planted. It produces pale green to greenish-white flowers from November to March that develop into small, elliptic, white, glossy fruit. Like all of the Cestrum species, all parts of Queen of the night are poisonous, both when fresh and when dry. Research is required to determine its distribution and possible impacts in the region.

10.16 Queensland poplar *Homalanthus populifolius*

Queensland poplar has been frequently cultivated in New Zealand and is now naturalised in northern regions and in Pukerua Bay, Wellington (Webb et al. 1988). Recent observations suggest it is becoming more commonly naturalised in the Auckland region and research is required to determine the potential threat it poses to the natural environment.

11.0 ANIMAL PEST MANAGEMENT PROGRAMMES

11.1 Introduction

The animal species named as pests in this RPMS are:

Common name		Scientific name	Section Number
Brushtail possum		*Trichosurus vulpecula*	11.2
Feral goat		*Capra hircus*	11.3
Wallabies:	Dama wallaby	*Macropus eugenii*	11.4
	Parma wallaby	*Macropus parma*	
	Brushtailed rock wallaby	*Petrogale penicillata penicillata*	
	Swamp wallaby	*Wallabia bicolor*	
Feral deer:	Feral red Deer	*Cervus elaphus scoticus*	11.5
	Feral fallow Deer	*Dama dama*	
	Feral sika Deer	*Cervus nippon*	
	Feral wapiti	*Cervus elaphus nelsoni*	
Mustelids:	Ferret	*Mustela furo*	11.6
	Stoat	*Mustela erminea*	
	Weasel	*Mustela nivalis vulgaris*	
Rabbit		*Oryctolagus cuniculus*	11.7
Magpie		*Gymnorhina* spp.	11.8
Myna		*Acridotheres tristis*	11.9
Wasps:	German wasp	*Vespula germanica*	11.10
	Common wasp	*Vespula vulgaris*	
	Asian paper wasps	*Polistes chinensis*	
	Australian paper wasps	*Polistes tasmaniesis humilis*	
Feral cats		*Felis catus*	11.11
Rats:	Ship rat	*Rattus rattus*	11.12
	Norway rat	*Rattus norvegicus*	
	Kiore[3]	*Rattus exulans*	
Hedgehog		*Erinaceus europaeus occidentalis*	11.13

This section of the Strategy details the Animal Pest Management Programmes to be applied as part of the control of individual or groups of animal pests within the Auckland region.

Each management programme includes:

DESCRIPTION OF THE PROBLEM

- Physical description and history of the pest;
- Effect of the pest on the environment.

MANAGEMENT REGIME

- Animal pest designation;
- Need to intervene;
- Objectives;

[3] Representatives of Ngati Wai have stated that they regard Kiore as a taonga. The ARC recommends consultation with Ngati Wai before any Rat control is undertaken that may impact on Kiore. Kiore are present on several outer off-shore islands in the Hauraki Gulf.

- Means of achievement.

RULES

Animal pest control in the Auckland region will be undertaken in a prioritised manner with the majority of funding targeted at preventing ecological damage by Possums and Feral goats. Support will be given to the Department of Conservation Wild Deer Control Programme and pests such as mustelids and Rats will be controlled at specific mainland island sites. Where communities are undertaking animal pest control, support will be given to assist them to achieve their goals. Advice and information on all animal pests in the Strategy will be provided to individuals and groups who request it.

Priorities for animal control have, in part, been determined by assessing the vulnerability of "indicator" species preferred by introduced browsing mammals (e.g. Possums, Feral goats and Feral deer). The Council has focused resources on vulnerable areas of high conservation value, and buffer areas surrounding them, to slow pest re-invasion (e.g. Waitakere and Hunua Ranges, Conical Peak, Mt Auckland, etc).

A ranking system has been used to objectively assess the areas where animal control is going to provide the greatest results for the resources available. It sets priorities for the region based on existing ecological data, and vegetation monitoring data collected over the period of the previous Strategy (Auckland Regional Animal Pest Management Strategy 1997-2002). Assessment of control priorities are carried out annually, based on available resources, cost of control, and the results of animal population assessments.

Areas of High Conservation Value (HCV's) are a subset of identified significant sites. The ranking of these significant sites was based on Protected Natural Area (PNA) survey data, Sites of Special Wildlife Interest (SSWI's), on rapid forest surveys of canopy trees, and on foliar browse indices.

The HCV areas and buffers around them, which include all the larger areas, i.e. greater than 200ha, of forest remaining in the region, will continue to form the core of the Animal Management Programmes during the life of the Strategy. Peninsula areas with conservation values, and inland buffer areas, will also be targeted (e.g. Tawharanui, Shakespear, Mahurangi, Okahukura, South Kaipara, Awhitu, etc). In all other parts of the region, support will be given for community driven pest management programmes.

The animal pests described below can also be controlled under the Council's site-led pest initiatives (refer section 19.0 of this document).

In regard to the release of any feral (wild) animals in the Auckland region, the conveyance and liberation of the feral animals listed below is prohibited under section 11 of the Wild Animal Control Act 1977.

- Deer (including wapiti and moose)
- Chamois
- Thar
- Wallaby (all species)
- Possum
- Goat
- Pig

11.1.1 Additional introduced organisms

There are a number of additional introduced organisms present in the region that are not described specifically in the Strategy. These include newly arrived insects like the Argentine ant (*Linepithema humile*), Painted apple moth (*Teia anartoides*), and Southern saltmarsh mosquito (*Aedes camptorhynchus*), and amphibians like the Banjo frog (*Limnodynastes dumerilii*). Many of these new incursions are handled by the Ministry of Agriculture and Forestry, with support from other agencies. A number of introduced freshwater fish species are also present in the Auckland region, including koi carp (*Cyprinus carpio*), gambusia (*Gambusia affinis*), rudd

(*Scardinius erthropthalmus*), tench (*Tinca tinca*), and perch (*Perca fluviatilis*). The Council is able to provide information and advice on these species.

The following table lists some of the additional introduced organisms in the Auckland region and the key management agency or contact points for them.

Table 5 Additional Introduced Organisms in the Auckland Region

(UO) = Declared as Unwanted Organism in New Zealand
(NO) = Notifiable Organism in New Zealand

Common name	Scientific Name	Management agency/contact point*
AMPHIBIANS		
Eastern banjo frog (UO)	*Limnodynastes dumerilii*	Ministry of Agriculture & Forestry, Auckland Regional Council, Department of Conservation
INSECTS		
Argentine ant (UO)	*Linepithema humile*	Ministry of Agriculture & Forestry, Department of Conservation
Crazy ants (UO)	*Paratrechina longicornis*	Ministry of Agriculture & Forestry
Painted apple Moth (UO) (NO)	*Teia anartoides*	Ministry of Agriculture & Forestry
Red imported fire ant (UO)	*Solenopsis invicta*	Ministry of Agriculture & Forestry
Southern salt marsh mosquito (UO)	*Ochlerotatus camptorhynchus*	Ministry of Health
Verroa bee mite (UO)	*Varroa destructor*	Ministry of Agriculture & Forestry, National Beekeepers' Assoc. of NZ
Yellow crazy ant (UO)	*Anoplolepis gracilipes*	Ministry of Agriculture & Forestry
FRESHWATER FISH		
Gambusia (UO)	*Gambusia affinis*	Department of Conservation
Koi carp (UO)	*Cyprinus carpio*	Department of Conservation
Perch	*Perca fluviatilis*	Fish & Game New Zealand
Rudd	*Scardinius erthropthalmus*	Department of Conservation, Fish & Game New Zealand
Tench	*Tinca tinca*	Fish & Game New Zealand
BIRDS		
Rainbow lorikeets (UO)	*Trichoglossus haematodus*	Department of Conservation
Rook (UO)	*Corvus frugilegus*	Auckland Regional Council

*CONTACT DETAILS:	PHONE	WEB SITE
Auckland Regional Council	Enviroline 09 366 2070 or 0800 80 60 40	www.arc.govt.nz
Department of Conservation	09 307 9279	www.doc.govt.nz
Fish & Game New Zealand	04 499 4767	www.fishandgame.org.nz
Ministry of Agriculture & Forestry	Exotic Disease & Pest Hotline 0800 809 966	www.maf.govt.nz/biosecurity/
Ministry of Health	04 496 2000	www.moh.govt.nz
National Beekeepers' Assoc. of NZ	04 473 7269	www.nba..org.nz

11.2 Brushtail possum *Trichosurus vulpecula*

DESCRIPTION OF THE PROBLEM

The impacts of Possums on our native flora and fauna are now well documented. Not only do Possums affect indigenous fauna by competing with them for limited food resources, they also directly predate upon native birds and invertebrates, because they are not strictly herbivorous. Video footage has recorded Possums raiding the nests of native birds like kereru, kokako and kaka, and taking eggs and young chicks. Possums are also the main vector for Bovine Tb. Through their wide range of impacts, Possums are one of the most damaging pest species in New Zealand.

It should be noted that this RPMS is separate from the National Bovine Tuberculosis Pest Management Strategy. The ARC has entered into an Agency Contract with the Animal Health Board (Inc) to control vectors under the National Bovine Tuberculosis Pest Management Strategy.

MANAGEMENT REGIME

Animal pest designation

The Brushtail Possum (*Trichosurus vulpecula*) is declared a pest in the Auckland region.

Need to intervene

The ARC considers that regional intervention and co-ordination is necessary to limit the environmental and economic damage caused by Possums. The ARC will encourage landowners/occupiers to take responsibility for controlling Possums and advise them on appropriate techniques. ARC Possum control operations will primarily target areas of significant environmental and conservation value (e.g. large tracts of native forest, coastal forest, peninsulas, and large buffer areas around them). The principal reason for such targeting is the potential regional benefit. Community groups and individuals will be given advice and assistance with Possum control operations throughout the region, with priority placed on those within the targeted areas.

OBJECTIVES

a) To manage Possum population levels in areas of significant environmental/high conservation value to minimise impacts on these values;
b) To assist community groups and individual landowners/occupiers in areas of significant environmental and conservation value, with Possum control through the provision of material, labour and advice;
c) To progressively reduce and control Possum infestation levels in the region through an integrated control programme.

MEANS OF ACHIEVEMENT

Service	The ARC will carry out Possum control operations in areas of high conservation value, and surrounding buffer areas, and begin a programme of control on key peninsulas in conjunction with community input. The ARC will actively assist people that have areas of significant environmental and conservation value, and surrounding buffer areas, to undertake ongoing Possum control measures which compliment work undertaken by ARC.
Community Assistance	The ARC will actively assist community groups throughout the region that are controlling Possums to ensure an integrated approach.
Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.
Research	The ARC will encourage continuing research into Possum control methods.
Monitoring	ARC shall undertake inspections, monitoring and surveillance.

RULE 11.2.1

No person shall:

a) Cause or permit Brushtail possums (*Trichosurus vulpecula*) to be in a place where they are offered for sale, or exhibited (without a permit); or
b) Sell or offer Brushtail possums (*Trichosurus vulpecula*) for sale; or
c) Breed, or multiply Brushtail possums (*Trichosurus vulpecula*) or otherwise act in such a manner as is likely to encourage or cause the breeding or multiplication of Brushtail possums (*Trichosurus vulpecula*).

A breach of this rule will create an offence under section 154 (r) of the Act.

Hauraki Gulf Controlled Area restrictions also apply to Possums (refer section 19.2 of this document)

11.3 Feral goat *Capra hircus*

DESCRIPTION OF THE PROBLEM

Feral goats vary in size and colour. The adult male stands almost 70cm high at the shoulder and can grow to 1.5m long. They weigh between 50kg to 70kg with stout strong legs for climbing. Female adults look similar to the male but are considerably smaller. Both sexes are normally white, black, brown or a combination of these colours and have horns.

Feral goats were first liberated in New Zealand by Captain Cook in the 1770s. Throughout the 19th century, Goats were continually liberated as they proved to be convenient stock animals. As land was cleared, Goats were brought in to control weeds and provide fibre for commercial industries. Goats have, at times, been highly sought after but their current value is low. Control campaigns have been waged since the 1930's when Goats were eventually recognised as a major pest.

Feral goats are now widespread throughout the region. Populations are generally higher in exotic and indigenous forest areas as well as in areas of poor pasture and scrub land. They prefer rocky substrate where, being so agile, they can exploit places which Deer and sheep cannot reach. Feral goats (along with Possums and Feral deer) are the most destructive animals found in forests. Being opportunist browsers, Goats destroy the understorey of vegetation (up to 2m above ground) and, when combined with Possum damage in the upper canopy, severe deterioration of native forest occurs. Feral goats also damage vegetation planted on land retired for soil conservation purposes and in newly planted or young trees in exotic forests. They are born survivors with the ability to exist in areas that other animals would abandon.

The Department of Conservation also has responsibility for Feral goat management under the Wild Animal Control Act 1977.

MANAGEMENT REGIME

Animal pest designation

Feral goats (*Capra hircus*) are declared pests in the Auckland region wherever they are not:

a) held behind effective fences or otherwise constrained; and
b) identified in accordance with an identification system registered under section 3 of the Animal Identification Act 1993 or, if no such system is, for the time being, in force, in accordance with any provisions having effect by virtue of section 11 of that Act.

Need to intervene

Despite the fluctuating value of Goats as a farming resource, the Feral goat pest potential is undiminished. Goats are notoriously hard to fence in and on hill country farms and lifestyle blocks bordering forests, Goats

will be a constant source of reinfestation. Because of the serious impacts Goats can have on natural areas, control of Feral goats in areas of significant ecological and conservation value is necessary.

OBJECTIVES

a) To manage Feral goat population levels in areas of high conservation value to minimise impacts on environmental values; and
b) To assist community groups with Feral goat control through the provision of material, labour and advice.

MEANS OF ACHIEVEMENT

Service	In areas of high conservation value where priority for Feral goat control exceeds or equals the priority for other animal pest control and in a buffer area beyond the high conservation area, ARC will carry out Feral goat control operations.
Integrated Programme	ARC will work with DoC to ensure Feral goats are eradicated from Great Barrier Island and that Feral goat numbers are kept to low levels in the Hunua Ranges.
Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.
Research	ARC will investigate using Judas Goats for control purposes within the Hunua Ranges.
Monitoring	Judgement of excessive Feral goat damage is assessed by Council staff. Performance assessments for contractors are based on Feral goat population in randomly sampled blocks.

RULE 11.3.1

No person shall:

a) Farm or keep Feral goats on Great Barrier Island.

Dairy Goat breeds (e.g. Alpine, British Alpine, Nubian, Nubian/Anglo, Saanen, Sable, Toggenburg) are exempt from this rule, as long as they are contained or tethered, and clearly identified in accordance with section 3 of the Animal Identification Act 1993.

Council will use cost recovery powers under the Biosecurity Act 1993 where breaches of this rule occur, providing ownership of the Goat(s) can be determined.

A breach of this rule will create an offence under section 154 (r) of the Act.

Hauraki Gulf Controlled Area restrictions also apply to Feral goats (refer section 19.2 of this document).

11.4 Wallabies:

Dama wallaby *Macropus eugenii*
Parma wallaby *Macropus parma*
Brushtailed rock wallaby *Petrogale penicillata penicillata*
Swamp wallaby *Wallabia bicolor*

DESCRIPTION OF THE PROBLEM

There are four species of Wallaby in the Auckland region and all four are found on Kawau Island. There are no other known Wallabies in the Auckland region although occasional sightings have been reported.

Dama wallaby

The Dama wallaby stands about 0.5m tall and weighs between 5kg to 7kg. Body colour is grey-brown with red shoulders and is more pronounced in males than females. The ears are long and pointed and the long tapering tail is uniformly grey. The first Dama wallabies to reach New Zealand were released on Kawau Island about 1870.

Parma wallaby

Parma wallabies were also released on Kawau Island about 1870. The Parma wallaby is the smallest member of the *Macropus* genus with body weights not exceeding 5kg. Body colour is light brown with a light grey throat and chest and a white stripe on the cheek. The ears are short and rounded.

Brushtailed rock wallaby

This is the only Rock wallaby in New Zealand. It has a bushy tail and a brownish-red coloured rump. The body is dull to dark brown above, brownish-red on the belly and has a whitish patch on the forehead. It is slightly larger than a Dama wallaby with a body weight recorded up to 6kg.

Swamp wallaby

This is the largest Wallaby on Kawau Island. It has a dark grey back, yellow buff belly, a light yellow cheek stripe and orange markings around the base of the ears. The preferred habitat is in the thick kanuka scrub on the northern part of Kawau Island.

MANAGEMENT REGIME

Animal pest designation

The Dama *(Macropus eugenii),* Parma *(Macropus parma),* Brushtailed rock *(Petrogale penicillata penicillata)* and Swamp *(Wallabia bicolor)* wallabies are all declared pests in the Auckland region.

Need to intervene

There is a low public awareness of the problems currently posed by Wallaby, and their potential impact in the future, should eradication not be carried out. Although Wallabies prefer pasture and are selective in the species they feed upon when they have a choice, experience on Kawau Island has found that most native species are palatable when food is limited, and they will destroy almost all emerging native seedlings. Wallabies in New Zealand, therefore, have the potential to prevent regeneration, and significantly reduce the diversity, of natural areas, and cause serious economic damage to pastoral, horticultural and forestry activities.

OBJECTIVES

a) To confine Wallabies to Kawau Island; and
b) To promote community awareness of the impacts of Wallabies on native ecosystems; and

c) Within the next 5 years ensure the eradication of Wallabies from the region.

MEANS OF ACHIEVEMENT

Service	ARC will follow up all sightings of Wallabies (except on Kawau Island) and carry out such control work as is necessary to eradicate them from the area. The Pohutukawa Trust is an organisation set up on Kawau Island with the objectives: a) To rehabilitate the native flora and fauna of Kawau Island; and b) To promote the conservation of indigenous species in New Zealand. ARC will work co-operatively with the Pohutukawa Trust (Kawau Island) and with the Department of Conservation as they relate to Wallaby control with the objective of eradicating Wallabies over a 5 year period from Kawau Island. The level of ARC support will reflect the level of landowner/occupier support for the eradication and demonstrable community efforts.
Education & Advice	The ARC will provide and make freely available, information on Wallabies as set out in section 19.0 of this RPMS.
Research	ARC will collect scientific data on the interaction of Wallabies and other animal species, and on the ecology of the island following Wallaby removal.
Monitoring	ARC will monitor Wallaby sightings in areas outside of Kawau, Rangitoto and Motutapu Islands, with the objective of eradicating any wallabies reported.

RULE 11.4.1

No person shall:

a) Cause or permit Dama wallaby (*Macropus eugenii*), Parma wallaby (*Macropus parma*), Brushtailed rock wallaby (*Petrogale penicillata penicillata*) or Swamp wallaby (*Wallabia bicolor*) to be in a place where they are offered for sale or exhibited; or

b) Sell or offer Dama wallaby (*Macropus eugenii*), Parma wallaby (*Macropus parma*), Brushtailed rock wallaby (*Petrogale penicillata penicillata*) or Swamp wallaby(*Wallabia bicolor*) for sale; or

c) Breed, or multiply Dama wallaby (*Macropus eugenii*), Parma wallaby (*Macropus parma*), Brushtailed rock wallaby (*Petrogale penicillata penicillata*) or Swamp wallaby (*Wallabia bicolor*) or otherwise act in such a manner as is likely to encourage or cause the breeding or multiplication of Dama wallaby (*Macropus eugenii*), Parma wallaby (*Macropus parma*), Brushtailed rock wallaby (*Petrogale penicillata penicillata*) or Swamp wallaby (*Wallabia bicolor*).

A breach of this rule will create an offence under section 154 (r) of the Act.

Hauraki Gulf Controlled Area restrictions also apply to Wallabies (refer section 19.2 of this document).

11.5 Feral deer:

Red Deer *Cervus elaphus scoticus*
Fallow Deer *Dama dama*
Sika Deer *Cervus nippon*
Wapiti *Cervus elaphus nelsoni*

DESCRIPTION OF THE PROBLEM

There are four species of Feral deer present in the Auckland region. All species are in small numbers.

Red Deer

The adult male Red Deer (stag) stands about 116cm at the shoulder, the female is smaller at about 100cm, and is of lighter build. A mature stag weighs about 130kg. Colour changes from a glossy reddish brown in summer to a drab grey-brown in winter. Both male and female have a straw-coloured rump patch and the underside of the belly is creamy. Red Deer are known to be present in the Rodney District, a few in the Franklin District and in Manukau City.

Fallow Deer

The Fallow Deer is much smaller than the Red Deer, and seldom gets bigger than 90cm at the shoulder. Colour variation in animals of both sexes is wide, between white and almost black. Summer skins are light-brown or fawn with large white spots over the back and uppersides and haunches. Most underparts are white or cream. Fallow Deer are present in the Rodney District, on Awhitu Peninsula and in other parts of the Franklin District and in the Clevedon Ward of Manukau City. They have been on the Awhitu and South Kaipara Peninsulas for over 100 years and have been viewed by many as a valuable resource.

Sika Deer

The Sika Deer is smaller and lighter in build than Red Deer, although it is difficult to distinguish between the two species. The summer coat of the Sika is a deep, rich red-brown covered with white spots. This goes brown-grey and the spots almost disappear over winter. The head of the Sika is shorter than the Red Deer and has neater features. The ears are shorter and bat-like. Sika Deer are present in the Rodney District.

Wapiti

The Wapiti is much larger than the Red Deer and can weigh about 400kg. In summer the head and neck of the male Wapiti is a dark chocolate colour, the back and sides are lighter brownish-grey except for a creamy patch between the hind legs. The overall colour changes to a lighter bleached colour over winter. The females are less strikingly coloured and are a more uniform fawny-grey. The calves are spotted at birth. The male Wapiti has antlers noted for their size (up to 1.5m in length). Wapiti are present in the Rodney District.

Deer are defined as "wild animals" under the Wild Animals Control Act 1977, which is administered by the Department of Conservation, who have a number of responsibilities under that Act. Farming of Deer and other wild animals is controlled by DoC under section 12A of the Wild Animals Control (WAC) Act 1977. There are three Exclusion Zones set up under the WAC Act 1977 in the Auckland region where the farming of Deer is prohibited: (1) Waitakere Ranges; (2) Hunua Ranges; (3) All outlying Islands, except Kaikoura Island. DoC is also responsible for ensuring that Deer fences are adequate to contain Deer and they can act to destroy Deer on private land where they may cause a threat to the natural environment.

MANAGEMENT REGIME

Animal pest designation

Red Deer *(Cervus elaphus scoticus),* Fallow Deer *(Dama dama),* Sika Deer *(Cervus nippon)* and Wapiti *(Cervus elaphus nelsoni)* are all declared pests in the Auckland region wherever they are not held behind effective fences or otherwise constrained.

Need to intervene

While Feral deer are considered a recreational resource by Deer hunters there is low public awareness of the potential impacts Feral deer have on the high conservation value forest areas in the region. Feral deer destroy the understorey of native vegetation, and by eating seedlings prevent regeneration. Normal farm fencing does not contain Feral deer and they can roam at will once they have escaped deer-proof fences.

OBJECTIVES

a) Minimise the adverse effects of Feral deer in areas of high conservation value areas; and
b) Promote community awareness of the impacts of Feral deer on native species and habitats; and
c) Assist DoC with a Feral deer removal programme under the Wild Animal Control Act 1977.

MEANS OF ACHIEVEMENT

Service	The ARC will carry out Feral deer control operations in areas of high conservation value, and in a 1km buffer zone around the areas of high conservation value, where priority for Feral deer

	control exceeds the priority for control of other pests.
Integrated Programme	The ARC will assist the Department of Conservation in the implementation of a Wild Deer Control Programme for the Auckland region.
Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.
Monitoring	Feral deer numbers and impacts will be monitored through reports of Deer sightings, ground sign, and vegetation assessments.

RULES

There are no rules for Feral deer as they are provided for under the Wild Animal Control Act 1977, which is administered by DoC (refer section 11.1 of this document). Hauraki Gulf Controlled Area restrictions also apply to Deer (refer section 19.2 of this document).

11.6 Mustelids:

Ferret *Mustela furo*
Stoat *Mustela erminea*
Weasel *Mustela nivalis vulgaris*

DESCRIPTION OF THE PROBLEM

The Ferret, Stoat and Weasel belong to a group of animals known as Mustelids. All have the characteristic long body, short legs and sharp pointed faces. They are considered together in this RPMS as their effects on the environment are largely the same.

The Ferret is the largest of the three species, growing to 0.5m long. The colours of all three animals can vary but are usually dark brown and blackish all over, with creamy underparts.

Ferrets, Stoats and Weasels were introduced to New Zealand in the mid-1880s to control Rabbits. Whilst they failed to substantially control the problem they took the role of principal predator of rodents, Rabbits and birds over the whole country.

Ferrets and Stoats are more numerous than Weasels, which are quite scarce. From a study of the biology of Stoats in national parks in the 1970s, an analysis of gut samples indicated 43% bird material, 41% insects, and the balance from Mice, Rats, Possums (carrion), Rabbits and lizards. The Stoat is unique in New Zealand as the only introduced carnivorous mammal that has adapted to all parts of the environment in a feral state.

The impacts of these animals can be devastating to native bird life and other fauna. Recorded effects of the pests show that some native bird species, geckos, frogs and large native insects (e.g. weta) are particularly susceptible to Mustelid attack.

As pest control activities are undertaken for Possums, for example, it may also be appropriate to attempt control of Mustelids to enhance the environment for particular bird species. The control of Mustelids in specific areas under site-led programmes is an objective for ARC.

MANAGEMENT REGIME

Animal pest designation

Mustelids (Ferrets *(Mustela furo)*, Stoats *(Mustela erminea)* and Weasels (*Mustela nivalis vulgaris*)) are declared pests in the Auckland region.

Need to intervene

Mustelids are known to attack native birds and a range of other fauna and have been included in this Strategy to allow for their control under site-led programmes.

OBJECTIVE

a) Minimise the adverse effects of Mustelids on the environment through the provision of information, and control Mustelids where there are links with other site-led pest control operations.

MEANS OF ACHIEVEMENT

Service	ARC will provide a user pays service where Mustelids are a problem for landowners/ occupiers due to predation on poultry or livestock. ARC will carry out Mustelids control in areas of high conservation value, as a component of integrated site-led pest management programmes.
Community Assistance	The ARC will actively assist community groups throughout the region that are actively controlling Mustelids to lessen impacts on native fauna.
Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.

RULES

Hauraki Gulf Controlled Area restrictions also apply to Mustelids (refer section 19.2 of this document).

NOTE:

Currently, the Wildlife (Farming of Unprotected Wildlife) Regulations 1985 take precedence over the Biosecurity Act 1993 in regard to Mustelids. The regulations cover the farming, breeding and sale of mustelids. Licences for these activities must be granted by the Department of Conservation. Mustelids are also unwanted organisms under the Biosecurity Act 1993. However, the Biosecurity Amendment Bill 2001 currently before Parliament, will allow the Biosecurity Act 1993 to take precedence over the Wildlife Regulations 1985 for organisms determined to be unwanted organisms, i.e. Mustelids. Following enactment of the Bill it will be illegal to farm and sell Mustelids without an exemption from a Central Government Chief Technical Officer. People who currently have Ferrets as pets will be allowed to keep them until the Ferrets die naturally.

11.7 Rabbit *Oryctolagus cuniculus cuniculus*

DESCRIPTION OF THE PROBLEM

Rabbit densities in the Auckland region range from less than one per hectare to five per hectare. The average Rabbit density across the whole region has been estimated at three per hectare. Rabbits can tolerate a wide range of climatic conditions, however, high rainfall can greatly reduce the ability of Rabbit populations to thrive and such seasonal variations in Rabbit populations make the long-term management of Rabbits difficult to plan for.

The release of Rabbit calicivirus disease (RCD) in 1997 has had a significant effect on Rabbit management in New Zealand and the spread of RCD throughout the Auckland region has reduced the need for any regional intervention in the control of Rabbits.

MANAGEMENT REGIME

Animal pest designation

The Rabbit (*Oryctolagus cuniculus cuniculus*) is declared a pest in the Auckland region. The following domestic varieties, when in proper confinement, are excluded from the RPMS: New Zealand White, Angora, Flemish Giant, Rex, Chinchilla, Californian, Netherland Dwarf, Dutch, Tan, Silver fox.

Need to intervene

A cost benefit analysis of the cost of Rabbit control and the damage caused by Rabbits has shown that Rabbits are an economic problem only on some land types. Generally, the people to benefit most from Rabbit

control are those who are directly affected and therefore they should be the ones to pay for the cost of Rabbit control.

OBJECTIVES

Minimise the adverse effects of Rabbits by:

a) Supplying advice and information on Rabbit control to landowners/occupiers; and
b) Provide a referral service to landowners/occupiers who wish to pay for Rabbit control; and
c) Where specific values are compromised by Rabbit infestations, enter into partnerships with communities to control them.

MEANS OF ACHIEVEMENT

Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS. The ARC will provide a referral service for Rabbit control at the landowners/occupiers cost.
Community Assistance	The ARC will enter into partnerships with community groups in areas where Rabbit infestations are compromising ecological values.

RULES

Hauraki Gulf Controlled Area restrictions apply to Rabbits (refer section 19.2 of this document).

11.8 Magpie *Gymnorhina spp.*

DESCRIPTION OF THE PROBLEM

Two species of Magpies were introduced to New Zealand from Australia in the 1860s to control insect pests and they soon proved aggressive colonists. Both species are between 36cm to 44cm in length and are black and white in colour. Magpies are widespread throughout the region and both species have interbred. They prefer grassland farming areas associated with tall shelterbelts of pines and gums but also live on forest edges, gardens and in urban areas.

Magpies are extremely territorial birds and will show aggression to anything that may pose a threat to their territory. They can be a considerable nuisance during the breeding season, swooping on and occasionally attacking humans, especially children in the locality of schools. Magpies are also thought to affect native birds by excluding them from breeding territories and by predating native bird chicks and eggs to feed to their own young. There is anecdotal but little scientific evidence disputing or supporting this view.

MANAGEMENT REGIME

Animal pest designation

Magpie (*Gymnorhina* spp.) are declared pests in the Auckland region.

Need to intervene

Magpies are territorial and show aggressive behaviour toward humans, especially children, during the nesting season. They have also been implicated in restricting native bird movement between forest patches and competing with and displacing native species for food and nesting sites. Magpies are difficult to control because they are intelligent, mobile and widely spread throughout the region.

OBJECTIVE

To minimise the adverse effects of Magpie infestations by promoting community awareness and making people aware of the control methods available.

MEANS OF ACHIEVEMENT

Education & Advice	The ARC will provide and make available information on control and avoidance of Magpies as set out in section 19.0 of this RPMS.
Research	Scientific data on Magpie impacts and distribution will be collated.
Community Assistance	The ARC will provide traps on a hire basis for Magpie control.

RULE 11.8.1

No person shall:

a) Cause or permit Magpies (*Gymnorhina* spp.) to be in a place where they are offered for sale or exhibited; or
b) Sell or offer Magpies (*Gymnorhina* spp.) for sale; or
c) Breed, or multiply Magpies (*Gymnorhina* spp.) or otherwise act in such a manner as is likely to encourage or cause the breeding or multiplication of Magpies (*Gymnorhina* spp.).

A breach of this rule will create an offence under section 154 (r) of the Act.

11.9 Myna *Acridotheres tristis*

DESCRIPTION OF THE PROBLEM

Mynas, originally from India, were introduced to New Zealand from Australian naturalised birds in the 1870s. Liberations were widespread on both the North and South Islands but they failed to establish on the South Island. Mynas are now found north of a line form Wanganui to Waiapukarau (Tindall 1996).

Adult Myna are approximately 24 cm in length, and are brown with black feathers on the forehead and crown. Underwing and lower abdomen feathers are white. Their legs, bill and a bare patch of skin near their eye are all yellow. Mynas are widespread throughout the Auckland region. They roost communally throughout the year with the largest flocks seen in winter. They feed mainly from the ground, often at roadsides. Their preferred habitats include parks, gardens, orchards, farmland, and forest margins.

Myna have a varied diet which includes invertebrates, fruit and scraps found at rubbish tips and on roads. They also eat eggs, chicks and lizards. One study has shown that some native bird species (e.g. fantails, grey warblers and tui) increase in abundance following Myna control (Tindall 1996).

MANAGEMENT REGIME

Animal pest designation

Myna (*Acridotheres tristis*) are declared pests in the Auckland region.

Need to intervene

Mynas are territorial birds but show aggression only to other birds within their territory. They are also known to evict other birds from their nests and eat eggs, chicks, invertebrates and lizards.

OBJECTIVE

To minimise the adverse effects of Myna infestations by promoting community awareness of their impacts and the control methods available.

MEANS OF ACHIEVEMENT

Education & Advice	The ARC will provide and make available information on control and avoidance of Myna as set out in section 19.0 of this RPMS.

Community Assistance	The ARC will provide traps on a hire basis for Myna control.

RULE 11.9.1

No person shall:

a) Cause or permit Mynas (*Acridotheres tristis*) to be in a place where they are offered for sale or exhibited; or
b) Sell or offer Mynas (*Acridotheres tristis*) for sale; or
c) Breed, or multiply Mynas (*Acridotheres tristis*) or otherwise act in such a manner as is likely to encourage or cause the breeding or multiplication of Mynas (*Acridotheres tristis*).

A breach of this rule will create an offence under section 154 (r) of the Act.

11.10 Wasps:

German Wasp *Vespula germanica*
Common Wasp *Vespula vulgaris*
Asian Paper Wasp *Polistes chinensis*
Australian Paper Wasp *Polistes hummulis*

DESCRIPTION OF THE PROBLEM

These four Wasp species, accidentally introduced into New Zealand, can all inflict painful toxic stings on people (and animals). Wasps will usually attack and sting if their nests are disturbed or when they are provoked (Notman & Beggs 1993).

The German wasp arrived in New Zealand in the 1940s and spread throughout the country within 10 years. The Common wasp established itself in the 1970s and has quickly become widespread. Both are similar in appearance and life history. The Asian and Australian paper wasps are also found in the Auckland region. They are relative newcomers but appear to be establishing quickly.

In a survey by Landcare Research (Jacqueline Beggs Wasp Seminar 1995), 89% of respondents rated Wasps as a pest. Also a preliminary survey in 1991 to 1993 of 50 family physicians from 18 medical centres indicated that Wasps were a significant problem in the Auckland region. Extrapolation of the figures suggested that at least 850 individuals would have sought medical attention for wasp stings annually. This is probably a substantial under-estimation of the total problems caused by these insects.

Wasps compete for sugar resources with nectar-feeding birds and insects. Wasps are major predators of invertebrates and they may compete for the invertebrate prey with insectivorous birds and other predacious invertebrates (Thomas et al. 1990).

MANAGEMENT REGIME

Animal pest designation

The German wasp *(Vespula germanica)*, Common wasp *(Vespula vulgaris)*, Asian paper wasp (*Polistes chinensis*), and Australian paper wasp (*Polistes hummulis*) are all declared pests in the Auckland region.

Need to intervene

Wasps can create recreational and health problems which tend to be cyclical.

OBJECTIVES

a) To supply advice and information on currently available techniques for wasp control; and
b) To facilitate the development of improved methods of wasp control, which can be used by the public of the Auckland region.

MEANS OF ACHIEVEMENT

Service	The ARC will not carry out any large-scale wasp control operations. However, to help

	alleviate the wasp problem in the Auckland region, it will provide a referral service for wasp removal at the landowner's cost.
Education & Advice	The ARC will supply information on the existing wasp control techniques to the public as set out in section 19.0 of this RPMS.
Research	The ARC will support research by field testing and monitoring or other activities associated with finding suitable control methods including biological control.

RULES

There are no rules for Wasps in this RPMS.

11.11 Feral cats *Felis catus*

DESCRIPTION OF THE PROBLEM

Cats have been in New Zealand since the arrival of the earliest European explorers in the late 1700s. Ships of that time were infested with Rats, and Cats were kept on board to control them. They were not recorded as feral here until the mid-1800s (King 1990). Feral cats are now widely distributed throughout the three main islands of New Zealand, and on a number of offshore islands. They live in a range of habitats in New Zealand including pasture, scrub, exotic plantations, and native forest (King 1990).

Feral cats eat a range of animals including introduced Rabbits, Rats, and mustelids, and native birds, lizards and invertebrates. Their impacts on native ecosystems are complex, as their removal of Rabbits and Rats can have beneficial effects, while predation of native birds and insects is deleterious. Their negative impacts have been well documented on offshore islands where there are records of native species disappearing from islands after the arrival of Cats (e.g. saddlebacks from Little Barrier, Cuvier and Stephens Island), and marked native species recovery after Cats have been eradicated (King 1990).

Feral cats are defined as Cats that have none of their needs provided by humans, and their population size fluctuates largely independently of humans. Feral cats generally do not live around centres of human habitation. The Feral cat population is self-sustaining and requires no input from the domestic cat population.

In High Conservation Value areas within the Auckland region, where other pest species are controlled to low levels (e.g. Feral goats and Stoats in the kokako area of the Hunua ranges), Feral cats may also be targeted through site-led programmes.

MANAGEMENT REGIME

Animal pest designation

Feral cats (*Felis catus)* are declared pests in the Auckland region.

Need to intervene

Feral cats are known to have significant impacts on native bird species in particular, and also native lizards and invertebrates. They may be the subject of site-led control in High Conservation Value areas in the region.

OBJECTIVE

To reduce the negative impacts of Feral cats in selected High Conservation Value areas, where other pest numbers have already been significantly reduced.

MEANS OF ACHIEVEMENT

Service	The ARC will carry out Feral cat control in areas of high conservation value, as a component of integrated site-led pest management programmes.
Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.
Research	The Council will support research on Feral cat impacts in high conservation value areas.

RULES

There are no rules for Feral cats in this RPMS.

11.12 Rats:

Ship rats *Rattus rattus*
Norway rats *Rattus norvegicus*
Kiore *Rattus exulans*

DESCRIPTION OF THE PROBLEM

Norway rats are the largest Rat in New Zealand. They have a stout body, heavy tail and relatively small ears. The adult coat is coarse, shaggy and greyish-brown on the flanks, grading to darker brown along the back. The belly and throat are pale grey. They were the first of the European rodents to be introduced to New Zealand, via early ships in the late 1700s (King 1990). Ship rats have probably been in New Zealand since the early 1800s. They are smaller with a sleek slender body. Their tail is dark grey and longer than the body and head in adults. There are three colour forms; the 'rattus' morph which has a black back and slate grey belly; the 'alexandrinus' morph which has a grey-brown back and slate-grey belly; and the 'furgivorous' morph which has a grey-brown back and pure to lemony-white belly. The three morphs interbreed freely.

Kiore is the smallest of the three Rat species in New Zealand, but are similar in appearance to Ship rats. Its fur is brown above, darker along the spine and intermingled grey and white on the belly. They were the first Rat to arrive in New Zealand, bought by the first Polynesian settlers, and were once an important food source.

Norway rats swim readily and are able to reach off-shore islands unaided. Most wild populations are associated with wetland habitats (e.g. estuaries, lakes, river, and streams). Native animals and invertebrates that inhabit these areas are vulnerable to predation by Norway rats (e.g. ground nesting shore birds, weta, lizards). They also live around urban and rural areas (e.g. wharves, sewers, industrial sites, barns).

Ship rats are the most widespread rat in New Zealand, found throughout the three main islands, and on some offshore islands, in almost every suitable habitat. In natural areas they are most abundant in lowland podocarp-broadleaved forest, and almost absent in pure beech forest. Kiore can also live in a wide range of habitats, including grassland, bracken fernland, scrub, secondary and primary forest. They are widely distributed throughout the Pacific Islands, but kiore disappeared from all parts of the mainland except the lower South Island by the late 1800s. Kiore are now primarily found on off-shore islands. Both Kiore and Ship rats are good climbers and in native forest can scale and live up in trees.

All three species of rats are mainly nocturnal. They have a varied diet which can include large quantities of native seeds (e.g. of nikau, hinau, miro, matai, karaka, supplejack, kohia) either from the ground or straight from the tree (in the case of Ship rats and Kiore). Kiore also eat the flowers, stems, and leaves of some plants. This has significant connotations for species diversity and regeneration in natural areas. Rats also eat native bird eggs, nestlings, invertebrates, native snails, frogs, and lizards.

Since their arrival in New Zealand, Kiore, Ship and Norway rats have all had a significant impact on the native flora and fauna. They are implicated in the decline of many native species including the bellbird, robin, stitchbird, saddleback, native thrush and red and yellow parakeets, flightless weevil, and giant wetas. The

potential impacts of Ship and Norway rats on the remaining kokako, tomtit, bellbird and kereru populations are now well documented.

KIORE

Representatives of Ngati Wai have stated that they regard Kiore as a taonga. The ARC recommend consultation with Ngati Wai before any Rat control is undertaken that may impact on Kiore. Kiore are present on several outer off-shore islands in the Hauraki Gulf.

MANAGEMENT REGIME

Animal pest designation

Ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*) and Kiore (*Rattus exulans*) are declared pests in the Auckland region.

Need to intervene

Ship, Norway, and Kiore rats are known to have significant impacts on our native flora and fauna, in particular native bird species, native lizards and invertebrates. They may be the subject of site-led control in high conservation value areas of the Region. Several islands in the Hauraki Gulf, i.e. Great Barrier Island and Kawau Island, are currently free of Norway rats and Tiritiri Matangi, Motuora, Motuihe and Browns island are free of rats and mice.

OBJECTIVE

a) To reduce the negative impacts of Rats in selected areas, where other pest numbers have already been significantly reduced.

MEANS OF ACHIEVEMENT

Service	The ARC will carry out Rat control in areas of high conservation value, as a component of integrated site-led pest management programmes. Council will support eradication of Rats from islands in private ownership where there are ecological values at risk and there is a high chance of success of the control measures, providing support and commitment is gained from all parties, including the community, Iwi, and DoC.
Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.
Research	The Council will support research on the impacts of Rats in high conservation value areas, and the relationship between Feral cats and Rats in natural areas.

RULE 11.12.1

No person shall:

a) Transfer any Rat to any island within the Hauraki Gulf.

A breach of this rule will create an offence under section 154 (r) of the Act.

11.13 Hedgehog *Erinaceus europaeus occidentalis*

DESCRIPTION OF THE PROBLEM

Hedgehogs are grey-brown nocturnal insectivores, with a pointed face and powerful forefeet. Their back and sides are completely covered with spines. They role into a prickly ball when disturbed, or for several weeks during hibernation. The spines are creamy white, darkening to grey-brown at the base, with a broad dark band just below the sharp tip. They range in size from 400g to 700g.

They were originally brought to New Zealand from Britain in the late 1800s, first as reminders of home for European settlers, and then as natural predators of garden pests like slugs and snails. All early liberations were made in the South Island (c. 1870 to 1909). By 1975, with further liberations and natural spread, they

had reached most parts of the North Island. They are now more numerous in lowland and northern parts of the North Island, and lowland and eastern parts of the South Island.

Hedgehogs are mainly insectivores, but will eat a number of things including plant material (e.g. fruit, grass roots, and leaves). They prey on mice, birds, lizards, frogs and the chicks and eggs of ground nesting birds. They live in a range of habitats in New Zealand including pasture, sand dunes, riparian areas, urban and suburban areas. Dry nesting sites, sufficient food and cooler temperatures are the main limiting factors to their distribution.

MANAGEMENT REGIME

Need to intervene

Hedgehogs are a potentially serious threat to native invertebrates (e.g. snails, wetas, slugs, moths), skinks, geckos, and ground nesting birds in some parts of the region. They may also compete with kiwi for food and nesting sites. Therefore, site-led management of them, as part of an integrated pest management control programme, may be appropriate. Preventing them from establishing on off-shore islands where they are currently absent is also recognised as a priority.

OBJECTIVE

To reduce the impacts of Hedgehogs in natural areas with significant ecological/conservation values, and the chance of Hedgehogs establishing on offshore islands where they are currently absent.

MEANS OF ACHIEVEMENT

Education & Advice	The ARC will provide information, education and advice as set out in section 19.0 of this RPMS.
Research	The Council will support research on the impacts of Hedgehogs in high conservation value areas.

RULE 11.13.1

No person shall:

a) Transfer any Hedgehog to any islands within the Hauraki Gulf.

A breach of this rule will create an offence under section 154 (r) of the Act.

12.0 COMMUNITY INITIATIVES PROGRAMMES (Animals)

Communities with particular animal pest problems often have the enthusiasm and local knowledge to undertake control to provide benefits to the community. Active community participation in animal pest problems is supported and strongly encouraged by the Council. This approach is consistent with other areas of Council, where the establishment of 'Care' groups is promoted. Community Groups will be encouraged, through the provision of information and advice, to undertake control programmes for animal pests. These may be species led, targeting a particular animal pest, or site-led, targeting a suite of animal pests at a particular site. The Council will consider financial support to 'seed' such initiatives through the Environmental Initiatives Fund programme. Any animal pest identified as a pest in this Strategy, may be considered under the Community Initiatives Programme.

When proposed Community Initiatives Programme areas include roadsides, agreement from roading authorities will need to be negotiated by all Community Groups, facilitated by the ARC. In situations where Community Initiatives Programmes are established, and any roadside control is required, the roading authority will be allowed time to phase in management of the selected pest species.

PROCESS

The six steps that concerned members of the public should take in order to undertake a Community Initiative Programmes:

1. Landowners/occupiers join or establish a Community Group.

2. Community Group approaches the ARC outlining the nominated animal pest and the proposed area of the region to which the programme will apply.
3. Council evaluates the proposal taking into account a range of factors including:
   - The attributes of the pest (e.g. dispersal, control options, chances of reinfestation, potential impacts);
   - The distribution of the pest in the proposed area, and the area surrounding it;
   - How the programme integrates with other initiatives, i.e. proximity to other areas being controlled or proximity to Council or other site-led programme;
   - The willingness of the community to accept responsibility for the problem.
4. ARC approves Community Group proposal with/without amendments, and recommendations on follow-up management (e.g. restoration planting).
5. ARC and Community Group establish a Scoping Plan – defining control area, removal criteria, publicity required and the dissemination of information.
   - The first major step is publicity to gauge the level of community support in the proposed area. For the programme to proceed support must be gained from the occupiers of >75% of the land area and 50% of all occupants within the area; or,
     - support from 75% of the occupants from the control area is required for the programme to progress.
   - If the required support criteria cannot be met the group will have six months to canvas further support for the proposal. The ARC will assist by providing publicity material, information and provision of landowner/occupier contacts.
6. To achieve the required support necessary to ensure ARC intervention, members of the group must be implementing control programmes and encouraging others in the control area to do the same. The ARC may provide limited funding to initiate control work.

13.0 RESEARCH ORGANISMS (Animals)

Common name	Scientific name	Section Number
Eastern rosella	*Platycercus eximius*	13.1
Spur-winged plover	*Vanellus miles*	13.2
Sulphur-crested cockatoo	*Cacatua galerita*	13.3
Rainbow skink	*Lampropholis delicata*	13.4
Feral pig	*Sus scrofa*	13.5

The animals in this category have all been identified as having significant potential impacts on the natural or production environments of the Auckland region. However, further research and consultation is required before they are designated a pest in any Strategy.

13.1 Eastern rosella *Platycercus eximius*

A distinctive long-tailed parrot, the Eastern rosella is native to south-eastern Australia, from southern Queensland to Tasmania. It is a very colourful bird; its head, upper breast and undertail are crimson, cheeks white, lower breast yellow, and back rumps, flanks and belly are a yellow-ish green. It also has light to dark blue on the outer parts of its wings.

Introduced to New Zealand as a cage bird, Eastern rosella escaped and became established in the wild in the South Island in the early to mid 1900s. Separate populations became established in Auckland in the 1920s, and

in the Wellington area in the 1960s. They are now present throughout the Auckland region (Heather & Robertson 1996). Research is required to determine their impacts on native ecosystems and native fauna.

13.2 Spur-winged plover *Vanellus miles*

Spur-winged plovers are conspicuous birds that make their presence know through loud calls. They have a black crown and shoulder feathers, brown back and white underparts. They have a distinctive yellow facial patch, wattles and bill. They were first noted in New Zealand in the late 1800s, and have now spread through most of the country. Regarded as self-introduced natives, they prefer arable and pastoral habitats, wetland and estuarine margins. Anecdotal evidence suggests that Spur-winged plovers may be having an impact on native ground nesting birds, and research is required to determine whether this is the case and what management might be required.

13.3 Sulphur-crested cockatoo *Cacatua galerita*

Sulphur-crested cockatoos occur in several known sites within the Auckland region. They have naturalised following their escape or release from captivity. Research is required to determine the impacts of the naturalised populations on native ecosystems, and on the most effective means of control. Sulphur-crested cockatoos may also be controlled as part of integrated site-led pest management programmes during the life of the Strategy.

13.4 Rainbow skink (syn. Dark flecked garden Sunskink) *Lampropholis delicata*

Rainbow skinks are originally from eastern Australia, with a natural range that extends from Queensland to Tasmania. They were probably accidentally introduced to New Zealand in the 1960s. They now appear to be naturalised in Auckland, the Waikato, Coromandel, and the Bay of Plenty. Research is required to determine their potential impacts on the environment.

13.5 Feral pig *Sus scrofa*

Feral pigs were among the first feral animals to become well established in New Zealand, with populations around most Maori and European settlements by 1840. Currently, in the Auckland region, they occur in larger areas of native forest and in exotic plantations (e.g. Hunua ranges). They are opportunistic feeders often eating the fruits, seeds, roots, stems or leaf-bases of native plants, native insects, snails, earthworms, frogs lizards, and ground nesting birds and their eggs. Research is required to determine the extent of their impacts on natural ecosystems in the region and options for management. Feral pigs may also be controlled as part of integrated site-led pest management programmes during the life of the Strategy.

PART III

ADMINISTRATION SYSTEMS

AND PROCESSES

14.0 STRATEGY POWERS

To achieve the purpose of the Strategy and to give effect to its objectives and means of achievement, the ARC will use the statutory powers presented in Table 6. Many of these powers will be exercised by authorised persons on behalf of the ARC. The Chief Executive of the ARC will appoint authorised persons and may delegate to any authorised persons powers, subject to sections 103 and 105 of the Biosecurity Act 1993.

Authorised persons shall be limited to using the powers specified in their instrument of appointment. Authorised persons will have the power to request information from landowners/occupiers under section 43 of the Biosecurity Act 1993.

Table 6 Powers Under the Act

Powers	Reference in the Biosecurity Act 1993	Level of Delegation
The appointment of authorised and accredited persons Delegation to authorised persons	Section 103(3) and (7) Section 105	Chief Executive of the Auckland Regional Council
Undertake small-scale management of unwanted organisms Power to act on default Liens Declare a controlled area Options for cost recovery Failure to pay Offences	Section 100 Section 128 Section 129 Section 131 Section 135 Section 136 Section 154	Management Agency (ARC)
Duty to provide information Power to require assistance Power of inspection Power to record information General powers Use of dogs and devices Power to seize evidence Power to seize abandoned goods Power to intercept baggage, etc. Power to examine organisms Other powers in respect to risk goods	Section 43 Section 106 Sections 109, 110, 112 Section 113 Section 114 Section 115 Section 118 Section 119 Section 120 Section 121 Section 122	Authorised person

15.0 FUNDING OF THE STRATEGY

The main funding principle from the Biosecurity Act 1993 is that those who benefit from control, or those who exacerbate a pest problem, should be required to pay. Generally, where pests are of low incidence, regional benefits accrue following control as the pests have been prevented from occupying all of their potential habitat. The immediate beneficiary of control of most widespread pests is the individual who undertakes control. Therefore regional intervention cannot be justified under the Biosecurity Act 1993 for most widespread pests, unless control costs are low and important regional or national values are at risk (e.g. Possum control in conservation areas).

For the majority of species contained within the Proposed Strategy the cost benefit analysis has shown that there is a positive regional benefit by ensuring the control of those pests.

Funding of the Strategy is determined through three Acts:

a) Biosecurity Act 1993 – sections 77 and 97 – based on cost/benefit and exacerbator/beneficiary principles;

b) Local Government Amendment Act (no. 3) 1996 – which sets out a process for apportionment of costs and developing funding mechanisms to test equity and reasonableness; and

c) Rating Powers Act 1988 – stipulates which types of rates can be used by regional councils and details the principles to be followed for each.

Landowners/occupiers (urban and rural ratepayers and the Crown) are both beneficiaries and exacerbators, to varying degrees. Other specific groups may also be able to be identified for some pest problems. Consequently, landowners/occupiers (including the Crown) will, in the main, fund the direct cost of pest management on their property. The exceptions to landowners/occupiers being directly responsible for the control of pests will be pest plants classified as 'Total Control', and where their land is subject to Council or Animal Health Board funded animal pest control (e.g. in areas of High Conservation Value and buffers around them).

15.1 Strategy costs

The costs of administering and implementing the Strategy are incurred through the following activities:

- Monitoring and surveillance – collection and analysis of information about pests and their effects in the region;
- Information and advice – to raise awareness of pest identification, control and effects, and encourage individual and community initiatives;
- Direct control;
- Community initiatives – advice and assistance to facilitate self-help schemes;
- Regulatory – enforcement of Strategy rules;
- Research – into biological control, research organism's impacts, etc;
- Monitoring of Strategy performance;
- Policy development and review.

These activities are designed to provide benefits to the public of the region as a whole or will be available to any person in the region on an as-needed basis.

Section 76 (1) (m) require that the benefits and costs of the Strategy have been analysed and must show why having a strategy is more appropriate than relying on the voluntary actions of others to manage each pest candidate. These requirements have been addressed in a cost benefit analysis study prepared using a model developed by Simon Harris of Harris Consultants, Resource Economists. This report is available as a supporting document for the Strategy.

Section 76 (1) (m) requires that the anticipated costs of implementing the Strategy are identified. It must show how the costs are to be funded and provide information specified in section 77. This includes showing, in relation to each pest candidate, who will benefit from the Strategy, i.e. beneficiaries, and who will contribute to the need for a Strategy, i.e. exacerbators. It must show how and why the proposed Strategy costs will be allocated between beneficiaries and exacerbators and must note any unusual administrative problems or costs relating to funding.

The beneficiaries and exacerbators include:

Beneficiaries
- Private individuals;
- Landowners/occupiers;
- Sectoral public (e.g. industries, interest groups, communities);
- Public.

Exacebators
- Owners of pests/pest habitat (e.g. landowners/ occupiers, pet owners, breeders);
- Vectors – i.e. those who move pests from place to place.

These are identified in relation to the main classes of pest candidates in Table 7.

Table 7 Beneficiaries and Exacerbators of Pests in the Auckland Region

Pest Category	Pests	Beneficiaries – sectors	Exacerbators - sectors
Pest Plants			
Total Control	African feather grass, Arrowhead, Balloon vine, Broom, Cathedral bells, Chilean needle grass, Devil's tail, Egeria, Fine-stemmed needle grass, Fringed waterlily, Green cestrum, Houttuynia, Lantana, Manchurian wild rice, Marshwort, Nassella tussock, Needle grass, Old man's beard, Purple loosestrife, Sagittaria, Scrambling lily, Senegal tea, Spartina, Water poppy, White-edged nightshade	Regional community	All landowners/occupiers
Containment	Australian sedge, Bathhurst bur, Bushy asparagus, Evergreen buckthorn, Gorse, Mignonette vine, Moth plant, Nodding thistle, Ragwort, Smilax, Variegated thistle, Wild ginger, Woolly nightshade	Regional community	All landowners/occupiers
Surveillance	Refer section 8.0 Table 4	Regional community	All landowners/occupiers (rural and urban)
Animal Pests			
	Brushtail possum	Regional community, farming, horticulture, forestry	Many rural landowners/ occupiers
	Feral goat	Farming, regional community	Rural landowners/occupiers
	Wallabies – Dama, Parma, Brushtailed rock, and Swamp	Regional community	Landowners/occupiers – Kawau Island
	Feral deer – Red, Fallow, Sika, Wapiti	Farming, regional community	Landowners/occupiers
	Mustelids – Ferret, Stoat, Weasel	Regional community	Landowners/occupiers
	Rabbit	Pastoral farming, forestry, horticulture, regional community	Rural landowners/occupiers

	Magpie	Regional community	Rural landowners/occupiers
	Wasps – German, Common, Asian paper, and Australian paper	Regional community	All landowners/occupiers
	Feral cat	Regional community – through discrete site-led programmes	All landowners/occupiers
	Rats – Ship, Norway, Kiore	Regional community – through discrete site-led programmes	All landowners/occupiers
	Hedgehog	Regional community	All landowners/occupiers
	Myna	Regional community	All landowners/occupiers

15.2 Funding Sources

The Auckland Regional Council has determined that achieving the purpose and objectives of this strategy benefits landowners/occupiers collectively and is 'public good' (that is, the regional community generally benefits from the implementation of the Strategy). The Strategy involves a number of activities like distributing information and advice, increasing knowledge of pests effects, research into pest control methods, biological control etc. A large number of people can use these services at little or no extra cost and the beneficiaries are very difficult to identify and charge as users. The dominant, public good aspects of the Strategy benefits, favour use of a uniform rate to charge for these services.

The Strategy will be funded through the use of general rate levied on every separate rateable property in the Auckland region pursuant to section 33 of the Rating Powers Act 1988. It is considered that a uniform rate based on equalised land value is the most appropriate method of charging ratepayers for services provided by the Proposed Regional Pest Management Strategy.

The rating years in which the rate is to be made are:

2002/2003 1 July 2002 to 30 June 2003
2003/2004 1 July 2003 to 30 June 2004
2004/2005 1 July 2004 to 30 June 2005
2005/2006 1 July 2005 to 30 June 2006
2006/2007 1 July 2006 to 30 June 2007

In addition to the above, the Auckland Regional Council will, as appropriate, recover direct costs from beneficiaries and/or exacerbators for a particular function or service pursuant to section 135 of the Biosecurity Act 1993.

Crown land accounts for c. 60 000ha or 11.8% of the region. Central government agencies occupying the Crown estate have been identified as being significant beneficiaries or exacerbators to pest management in the region. They are identified as follows:

Department of Conservation
The Department can be an exacerbator when various pests on its estate are a source of infestation for adjacent landowners/occupiers. Similarly it can be a beneficiary in that some pests which occur on neighbouring property pose a significant threat to the conservation values of the DoC estate. In the Auckland region DoC administers 35,739 hectares of Crown land.

Pursuant to section 87(2) of the Biosecurity Act 1993, agreement will be sought with the Department of Conservation to be bound to the Auckland RPMS for the term of the Strategy. An Order in Council is currently being negotiated.

Land Information New Zealand
Land Information New Zealand (LINZ) administers 23,596.6 hectares of land in the region, of which 110.6ha is non-rateable. Much of this land is likely to contain pests, therefore the department is both an exacerbator and a beneficiary of this Strategy. It is proposed that Land Information New Zealand makes an annual contribution to the Strategy to cover activities related to the non-rateable land.

New Zealand Railways Corporation
NZRC is the owner of rail corridors and adjacent reserves.. There is approximately 180km of railway line in the Auckland region accounting for 540ha of non-rateable land. It is proposed that Tranz Rail Ltd, on behalf of NZRC, makes an annual contribution to the Strategy.

Transit New Zealand
Transit New Zealand is the occupier of land on which the state highways and motorways lie, plus the verge or road reserve extending to adjacent property boundaries. It is proposed that Transit New Zealand makes an annual contribution to the Strategy.

15.3 Cost Recovery

Section 135 provides regional councils with options to recover the costs of administering the Act and performing the functions, powers, duties under a pest management strategy. The mechanisms include user charges and cost recovery in the event of non-compliance with a legal direction (refer section 16.0 of this document).

15.4 Other funding provisions

Additional funding may be required to manage potential pests not included in the Strategy (under section 13 Biosecurity Act 1993) where there is a clear public need for information and assistance. This can be provided from the General Rate based on equalised land value through the Annual Plan process.

15.5 Compensation

In terms of section 76(1)(n) of the Biosecurity Act 1993, no compensation shall be payable by the Auckland Regional Council with regard to losses incurred by landowners/occupiers as a direct result of this Strategy's implementation, including the removal of pests as required under Strategy rules.

16.0 REGULATORY PROCEDURES

In the event that an occupier fails to meet the obligations and standards prescribed in Part II of this Strategy, an authorised person of the Council may:

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

In circumstances of continued non-compliance, the authorised person will report to the Council who may, in turn, use the enforcement provisions of the Act.

16.1 Failure to comply

Where a Notice of Direction has been given to an occupier under section 122 of the Act and when the occupier has not complied with the requirements of the Direction within the time specified, the Council may enter onto the land specific in the Direction, and carry out or cause to be carried out, the works or measures specified in the Direction or such other works or measures (including prosecution action) as is reasonably necessary or appropriate for the purpose of giving effect to the requirements of the direction.

16.2 Offences

Any person who, without reasonable excuse, fails to comply with a reasonable Direction given to that person, or a reasonable requirement made of that person in accordance with and for the purposes of the Biosecurity Act 1993, and this Strategy by an authorised person or the assistant of an authorised person, commits as offence against section 154 of the Act. The Council will, in appropriate cases, bring prosecutions against persons who do not act on the Directions or requirements issued by the authorised person who will give effect to the Strategy.

16.3 Recovery of costs incurred

Under section 128(3) of the Biosecurity Act 1993 the Auckland Regional Council can recover the costs and expenses reasonably incurred by it carrying out such works or taking action (such as the enforcement process, follow up and works) as a debt due from the occupier to whom the Direction was given.

16.4 Extension or variation of direction

Where, on the representation of an occupier issued with a direction under section 122 of the Act, an authorised person is satisfied that:

a) steps have been taken to comply with the direction; and/or
b) the occupier has been prevented by reasonable cause from completing the necessary work;

the authorised person may extend the time specified for a further period, or vary the requirements of the Direction as appropriate.

16.5 Cancellation of directions

Where an authorised person is satisfied that:

a) works and measures have been undertaken to meet the occupier's obligations; or
b) for some other reason it is no longer appropriate to enforce the direction;

the authorised person may cancel that Direction.

17.0 MONITORING THE ACHIEVEMENT OF STRATEGY OBJECTIVES

The Auckland Regional Council shall monitor the extent to which the objectives set out in Part II of the Strategy are being achieved by:

a) Annually surveying, mapping and recording site status for all Total Control pests, and producing graphs and tables to show changes in site status and pest distribution;
b) Recording the number of public complaints pertaining to individual pest plants and animal and instances of non-compliance with Strategy rules;
c) Recording the number of public enquiries in relation to individual pest plants and animals, in regard to requests for information;
d) Annually monitoring all Possum and Goat control operations to determine performance results; and
e) Undertaking periodic monitoring of native forest areas to ascertain forest condition; and,
f) Annually surveying a proportion of the region (60 000ha to 100 000 ha) to locate infestations of low incidence pests and check key incursion points; and
g) Recording the number of groups/individuals who participate in Community Initiatives Programmes and the total area of land under community control, and monitor the effectiveness of the control work carried out.

The Council will report on the achievements of the Strategy objectives in the Council's Annual Plan Report and in an Operational Plan Report produced annually for the Strategy.

17.1 Strategy Review

Once this Proposed Strategy is made operative, it will have effect for the period of five years. Upon the expiry of five years from the operative date, a full review will take place. The Council may also initiate a review within the five year period if the Council considers the strategy is failing to meet its objectives, or circumstances have changed significantly, or at the expiry of the strategy. This review may result in the replacement of the Strategy or its extension in its existing or amended form.

18.0 EXEMPTION PROVISIONS

The Council may, upon a written request of a land occupier, exempt any person from any requirement in any Strategy rule included in Part II of this Strategy.

Before granting an exemption under section 80 (d) of the Act, the Council shall be satisfied that:

- The rule has been substantially complied with and further compliance is unnecessary;
- The action taken or provision made in respect of the matter to which the requirement relates is as effective or more effective than the actual compliance with the rule;
- The prescribed rule is clearly unreasonable in the particular case; or
- Events have occurred that make the prescribed rule unnecessary or inappropriate in the particular case; and
- The granting of the exemption will not significantly prejudice the attainment of the objectives of the Strategy.

When granting an exemption, the ARC may place certain conditions on it. Applications for exemptions should be directed to the Manager, Biosecurity Unit.

PART IV

OTHER MANAGEMENT PROGRAMMES

AND INTIATIVES

19.0 SITE-LED PROGRAMMES

During the implementation of this Strategy, the ARC will also consider site-led management approaches for any of the plant or animal species declared a pest in the Strategy. In some areas, species not mentioned in the Strategy may also be controlled as part of a site-led programme. The areas where a site-led approach may be taken will vary, but could include high conservation value sites and the buffer areas around them, "mainland island" areas, regional parks, and Hauraki Gulf Islands. Funding for site-led pest control will be appropriated through the Annual Plan process.

OBJECTIVE

- The objective of site-led management approaches is to provide co-ordinated animal and/or plant pest control in a defined area where specific values are at risk.

This objective links with the Community Initiatives Programme (refer section 9.0 of this document) and the Council's Environmental Initiatives Fund.

19.1 Hauraki Gulf Islands

The Hauraki Gulf has biological diversity that makes it distinctive within New Zealand and this is recognised in the large area of land administered by the Department of Conservation, and the recent establishment of the Hauraki Gulf Marine Park. A number of islands in the Gulf are nationally important wildlife sanctuaries such as Tiritiri Matangi and Hauturu, and the Department of Conservation continues to protect and restore other islands such as Rangitoto, Motutapu and Motuora.

Many of the islands do not have the same pest problems as those on the mainland, for example Great Barrier Island has very little Woolly nightshade or Wild ginger, and Waiheke Island has no Possums. Each island offers unique opportunities in terms of pest management. It is impossible to capture all of these opportunities within this Strategy.

A number of plant and animal pest control programmes have or are being carried out on islands in the Hauraki Gulf by the Council, other agencies, or in joint projects. These include:

- A Feral goat eradication programme in conjunction with DoC on Great Barrier Island;
- Evergreen buckthorn control (e.g. on Waiheke Island, Rangitoto, Motutapu, the Noises);
- DoC species-led weed control work on Little Barrier Island (e.g. for Pampas grass, Mexican devilweed),
- ARC, DoC, and ACC site-led pest plant control work on Great Barrier Island.

Pest management on Hauraki Gulf Islands, particularly Great Barrier Island, will be the subject of site-led control programmes developed in conjunction with community groups, the Department of Conservation and Auckland City Council.

19.2 Hauraki Gulf Controlled Area

As indicated in 19.1 above, many of the Hauraki Gulf islands are currently free of animal pests which could cause serious damage should they be transported and allowed to establish on pest free islands (refer Table 8). Recognising this, the Auckland Regional Council, during 1998/99, declared the Hauraki Gulf and all it's islands, a "Controlled Area" under the Biosecurity Act 1993. This means that it is an offence to take any animal pest, such as Possums and Ferrets, into the Hauraki Gulf or onto any of the islands of the gulf (refer Table 9). The "Controlled Area" also requires any person wanting to move a house into, through or from one island to another in the Gulf, have it inspected to ensure that no animal pests are being transported.

The aim of the "Controlled Area" is twofold. Firstly, it raises awareness of the threats posed to the islands of the Hauraki Gulf by animal pests. Secondly the implementation of a "Controlled Area" should greatly reduce the accidental introductions of pests that may be harboured in re-locatable buildings, in particular Possums, to Possum-free islands. The islands that are especially vulnerable to this threat are Waiheke, Little Barrier and Great Barrier.

Environment Waikato has consistent policy in their RPMS in regard to the Hauraki Gulf Controlled Area, banning the movement of known pests (as defined in their Strategy) into or from one place to another within the Hauraki Gulf Marine Park, except with the permission of an authorised person.

Table 8 Animal Pests absent from some of the Hauraki Gulf Islands

• = Absent ✓ = Present ? = unknown

Island	Animal Pests Present/Absent													
	Possums	Pigs	Deer	Goats	Rabbits	Hedgehogs	Mice	Ship rats	Norway rats	Kiore	Stoats	Ferrets	Weasels	Cats
Burgess (Mokohinau Group)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Great Barrier	•	✓	•	✓	✓	•	✓	✓	•	✓	•	•	•	✓
Kawau	✓	•	•	•	•	•	?	✓	?	?	✓	?	?	✓
Little Barrier	•	•	•	•	•	•	•	•	•	✓	•	•	•	•
Motuihe	•	•	•	•	✓	•	•	•	•	•	•	•	•	✓
Motukorea (Browns Island)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Motuora	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Motutapu	•	•	•	•	✓	✓	✓	✓	✓	•	✓	•	•	✓
Rangitoto	•	•	•	•	✓	?	✓	✓	✓	•	✓	•	•	✓
Tiritiri Matangi	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Waiheke	•	✓	•	✓	✓	✓	✓	✓	✓	•	✓	✓	•	✓

Table 9 Pests banned from the Hauraki Gulf Controlled Area

Common name	Scientific name
Possum	*Trichosurus vulpecula*
Mustelids:	
Ferret	*Mustela furo*
Stoat	*Mustela erminea*
Weasel	*Mustela nivalis vulgaris*
Feral goat	*Capra hircus*
Feral red Deer	*Cervus elaphus scoticus*
Feral fallow Deer	*Dama dama*
Feral sika Deer	*Cervus nippon*
Feral wapiti	*Cervus elaphus nelsonii*
Dama wallaby	*Macropus eugenii*
Parma wallaby	*Macropus parma*
Swamp wallaby	*Wallabia bicolor*
Brushtailed rock wallaby	*Petrogale penicillata penicillata*
Rabbit	*Oryctolagus cuniculus*

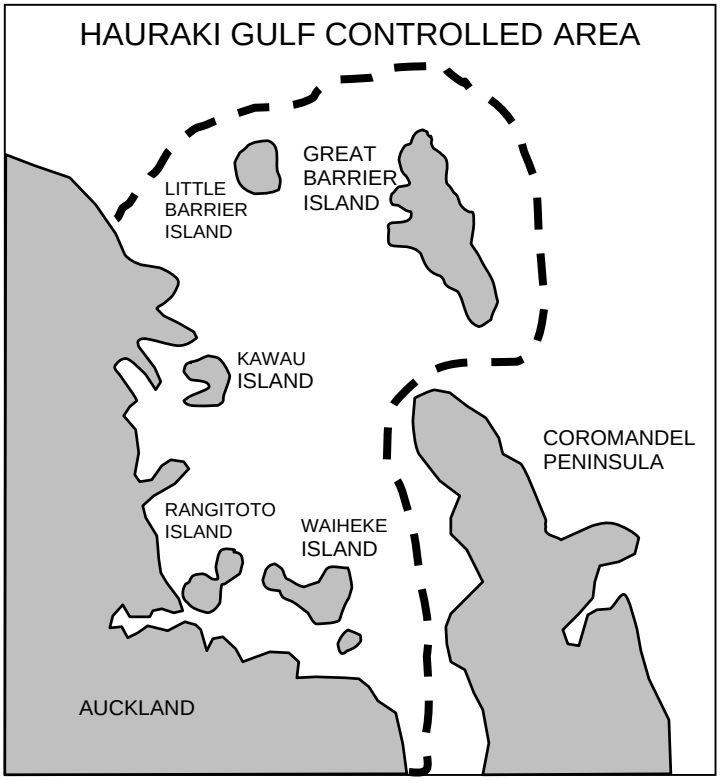

Figure 4 Extent of the Hauraki Gulf Controlled Area

20.0 PROVISIONS OF ADVICE AND EDUCATION

The Auckland Regional Council will provide technical advice and information relating to all pests in the Strategy, to landowners/occupiers and the wider community in order to:

- Promote greater public awareness of the potential or actual adverse effects associated with plant and animal pests;
- Promote greater public awareness of an individual's responsibilities for pest control under the Strategy;
- Promote effective plant and animal pest control or the adoption of management techniques that will avoid, minimise, or remedy the adverse effects associated with plant and animal pests in the Region.

The Auckland Regional Council shall use the following procedures in relation to its advisory and educational programmes:

- Respond to public requests for information or enquires in relation to the identification of plant and animal pests;
- Disseminate advice to landowners/occupiers when undertaking property inspections and other plant or animal pest management activities;
- Prepare and distribute pamphlets and other educational material in relation to plant and animal pest management;
- Undertake or support public awareness campaigns (e.g. Waitakere War on Weeds);
- Undertake, on request, presentations to interested groups;
- As appropriate, organise timely and relevant media and publicity programmes to highlight particular plant and animal pest management issues; and
- Use displays at shows, field and industry days.

21.0 BIOLOGICAL CONTROL PROGRAMMES

The Council will promote biological control of pests, where appropriate, throughout the region. For pests that are well established, biological control, in conjunction with other control methods, provides the most effective options for long-term control. As a control method, biological control has high initial research and establishment costs but can be the most cost-effective option in the long-term.

The benefits of biological control accrue more widely than to just the individual land occupier. Consequently the Council believes that there is substantial regional benefit in their investing in appropriate biological control programmes. The Council will, for the duration of the Strategy, provide financial and logistical support to research agencies for the supply of biological control agents, management of release sites, collection of data and training of field staff. Research into biological control agents and methods is funded collectively by regional councils who co-operate and co-ordinate nationally.

Over the life of this Strategy, research into potential biological control agents for widespread pests with significant environmental impacts will be supported.

Biological control agents that have previously been released and that have established in the region include:

Table 10 Biological Control Agents Established in the Auckland Region

Target Plants	Agents	
	Common name	Scientific name
Alligator weed	Alligator weed beetle	*Agasicles hygophila*
Alligator weed	Alligator weed moth	*Arcola malloi*
Californian thistle	Californian thistle leaf beetle	*Lema cyanella*
Gorse	Gorse colonial hard shoot moth	*Pempelia genistella*
Gorse	Gorse pod moth	*Cyadia succedana*
Gorse	Gorse seed weevil	*Exapion ulicis*
Gorse	Gorse soft shoot moth	*Agonopterix ulicetella*
Gorse	Gorse spider mites	*Tetranychus lintearius*
Gorse	Gorse thrips	*Sericothrips staphylinus*
Hemlock	Hemlock moth	*Agonopterix ulicetella*
Mexican devilweed	Mexican devilweed gall fly	*Procecidochares utilis*
Mistflower	Mistflower fungus	*Entyloma ageratinae*
Mistflower	Mistflower gall fly	*Procecidochares alani*
Nodding thistle	Gall fly	*Urophora solstitalis*
Nodding thistle/Plumeless thistle	Receptacle weevil	*Rhinocyllus conicus*
Nodding thistle/Winged thistle & other thistle spp.	Crown weevil	*Trichosirocalus horridus*
Old man's beard	Old man's beard leaf miner	*Phytomyza vitalba*
Ragwort	Cinnabar moth	*Tyria jacobaeae*
Ragwort	Ragwort flea beetle	*Longitarsus jacobaeae*
Scotch thistle	Scotch thistle gall fly	*Urophora stylata*

22.0 PEST DISPERSAL THROUGH CONTAMINATED MACHINERY, EQUIPMENT OR MATERIAL

Weed infestations have often followed the pattern of human settlement of the landscape. Roads and railway corridors are important weed habitats, and are often the first places that weeds will invade and establish in. Weed seed or propagules (e.g. stem fragments, rhizomes, etc.) often reach these areas via roading material (e.g. soil, gravel) or equipment during construction or maintenance. Weed seeds are also transported to other parts of the landscape in the same ways.

To reduce the spread of weedy species along transport links it is proposed that a Code of Practice be developed in conjunction with machinery or quarry operators who can, potentially, spread pest plants on equipment (e.g. earthmoving, agricultural or drainage machinery, or via aggregate, soil, or timber). Such a Code of Practice would include information on how to identify and control pest plants, and measures that should be taken to avoid transporting them to uninfested areas. These Codes of Practice would be developed in conjunction with, and distributed to, targeted industry sectors.

23.0 CROSS-BOUNDARY ISSUES

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

Cross-boundary issues may arise in relation to plant and animal pests because their distribution is rarely constrained by administration boundaries. The Auckland Regional Council will use the following procedures to minimise the effects of cross-boundary issues:

a) Pursuant to section 76(4) of the Act, not be inconsistent with any national or regional pest management strategy concerning the same pest, any regulation, or any Regional Policy Statement, or regional plan prepared under the Resource Management Act 1991;
b) Liase, as appropriate, with the Ministry of Agriculture and Forestry (MAF) over pest management issues which are best dealt with, or co-ordinated at a national level. In particular, the Council will participate in a national initiative for regional councils to enforce a section 52 and 53 ban on the sale, propagation and distribution of pest plants declared ‘unwanted organisms’ through a National Pest Plant Accord (refer to section 5.2.3 and Appendix 2 of this Strategy);
c) Liase, as appropriate, with Environment Waikato and Northland Regional Council on cross-boundary issues pertaining to pest management;
d) Liase with the Ministry for the Environment and Department of Conservation over national biodiversity issues as they relate to the Council’s role in the management of High Conservation Value sites;
e) Liase, as appropriate, with other regional councils on matters of pest management which are relevant to more than one region;
f) Advocate and encourage other authorities and operators (e.g. roading authorities, spray contractors, quarry operators) to adopt policies, practices or measures which will avoid, mitigate, or remedy adverse effects associated with plant and animal pests;
g) Make submissions in respect of documents prepared by other authorities.

24.0 DEFINITION OF TERMS

In this document, unless the context otherwise requires, the words or terms listed have the following definitions:

All terms marked with a + are as defined in the Biosecurity Act 1993 (as of July 2002)
All terms marked with a * are as defined in the Resource Management Act 1991 (as of July 2002).
All terms marked with a # are as defined in the Hazardous Substances and New Organisms Act 1996 (as of July 2002)

Note that these definitions are correct as of July 2002, but may change through amendments to the Acts listed above.

Access strip*	A strip of land created by the registration of an easement, in accordance with section 237B of the Resource Management Act 1991, for the purpose of allowing public access to or along any river, or lake, or the coast, or to any esplanade reserve, esplanade strip, other reserve, or land owned by the local authority or the Crown (but excluding all land held for a public work except land held, administered or managed under the Conservation Act 1987 and the Acts named in the First Schedule to that Act).
Act	The Biosecurity Act 1993.
Amenity values*	Those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.
Animal	Any mammal, insect, bird, including invertebrates and any living organism except a plant or a human being.
Animal pest	An animal which has been declared a pest in this RPMS.
Appropriate	As determined to be appropriate by the Auckland Regional Council or their officers acting under delegated authority.
Approved+	Approved by the Director General.
Authorised person+	A person for the time being appointed an authorised person under section 103 of the Biosecurity Act 1993.
Biodiversity	The variability among living organisms from all habitats, including terrestrial, marine and other aquatic ecosystems and the ecological systems of which they are part: this includes diversity within species, between species and of ecosystems.
Beneficiary	The receiver of benefits accruing from the implementation of a pest management measure or the Strategy.
Biological control	The application to a pest of a natural enemy which will prey upon or adversely affect the pest with the intention of reducing the level of infestation of the pest.
Chief executive+	The head of a Department, and includes a chief executive appointed under the State Sector Act 1988.
Chief technical officer+	A person appointed a chief technical officer under section 101 of the Biosecurity Act 1993.
Containment Pest Plants	Refers to pest plants that landowners/occupiers are required to treat throughout or in defined areas of the region, or in boundary situations, as in sections 5.2.2 and 7.0 of the Strategy. Plants are to be treated by a recognised method, at intervals that ensure the pest plant is completely controlled or controlled for an "appropriate" distance from a property boundary.
Control	Refer to treatment.
Controlled Area+	An area for the time being declared under subsection (2) of section 131 of the Biosecurity Act 1993 to be an area that is controlled for the purposes of that section.

Costs and benefits+	Costs and benefits of any kind, whether monetary or non-monetary.
Defined area	An area as shown on maps appended to this Strategy which illustrate where a pest designation is operative.
Department+	Has the same meaning as in the State Sector Act 1988.
Destroy	Kill or dispose of in a manner which will not allow the pest to reinfest an area.
Director-General+	The chief executive of the Ministry.
District council	A district council constituted under Part 1A of the Local Government Act 1974.
Distribute	Means to propagate, offer for sale or sell, transport, or in any way spread a pest plant.
Easement	Right of way or a similar right over another person's ground or property.
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment, interacting as a functional unit.
Effect*	Unless the context otherwise requires, the term 'effect' includes: a) Any positive or adverse effect; and b) Any temporary or permanent effect; and c) Any past, present or future effect; and d) Any cumulative effect which arises over time or in combination with other effects regardless of the scale, intensity, duration or frequency of the effect; and also includes e) Any potential effects of high probability; and f) Any potential effect of low probability which has a high potential impact.
Environment+	Includes a) Ecosystems and their constituent parts, including people and communities; and b) All natural and physical resources; and c) Amenity values; and d) The aesthetic, cultural, economic, and social conditions that affect or are affected by any matter referred to in paragraphs (a) to (c) of this definition.
Eradicate	In relation to an organism, means to completely remove it from New Zealand, the region or a defined area of the region.
Exacerbator	The person, who by their activities or inaction, contribute to the creation, continuance, or aggravation of a pest management problem.
Exotic plant	Introduced plants which are not native to New Zealand.
Farm land	Land used, or intended to be used, solely or principally for agricultural or horticultural or pastoral purposes or the keeping of bees or poultry or other livestock; and "farming" and "farming purposes" have corresponding meanings.
Feral animal	Any animal not held behind effective fences or otherwise constrained or identified in accordance with the Animal Identification Act 1993. (Excluding Feral cats – see below.)
Feral cat	Cats that have none of their needs provided by humans and whose population size fluctuates largely independently of humans. Feral cats generally do not live around centres of human habitation. The Feral cat population is self-sustaining and requires no input from the domestic cat population.
Forestry planting	An area principally comprised of exotic tree plantings.
Hapu	Sub-tribe, usually a number of whanau with a common ancestor.
Health	In relation to human health, a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity.

High conservation value area (HCV)	An area containing valuable botanical or wildlife resources which has been assessed and added to the list of areas that will be subject to prioritised pest control by the Regional Council.
Integrated management	Regionally co-ordinated responses through different sectors (e.g. biodiversity issues and cross-boundary issues).
Intrinsic values*	In relation to ecosystems, means those aspects of ecosystems and their constituent parts which have value in their own right, including: a) Their biological and genetic diversity; and b) The essential characteristics that determine an ecosystem's integrity, form, functioning and resilience.
Iwi	Maori tribe, usually a number of hapu with a common ancestor.
Iwi authority	The authority which represents an iwi and which is recognised by that iwi as having authority to do so.
Kaitiaki	The Tangata Whenua guardian who exercises the ancestral responsibilities of kaitiakitanga.
Kaitiakitanga*	The exercise of guardianship; and, in relation to a resource, includes the ethic of stewardship based on the nature of the resource itself.
Landowner	Means as for occupier below.
Local authority*+	A regional council or territorial authority.
Manaakitanga	Expression of hospitality towards people.
Mana	Prestige, power, authority.
Mana whenua	Customary authority exercised by an iwi or hapu in an identified area.
Maori land	Means Maori customary land and Maori freehold land as defined by section 4 of the Maori Land Act 1993.
Management agency+	The department, authority, or body corporate specified in a Pest Management Strategy as the agency given the task of implementing the Strategy.
Minister+	Means Minister of the Crown; and: (a) In relation to a national Pest Management Strategy, means the Minister who recommended the making of the order under section 68 (of the Biosecurity Act 1993) making the Strategy ; and (b) In relation to a proposal for a national Pest Management Strategy that has been notified, means the Minister who notified the proposal.
Naturalise	Introduced plants that form self-sustaining populations outside of cultivation, either through the production of viable seed or by vegetative reproduction.
Occupier+	(a) In relation to any place physically occupied by any person, means that person; and (b) In relation to any other place, means the owner of the place; and (c) In relation to any place, includes any agent, employee, or other person acting or apparently acting in the general management or control of the place.
Operational plan	Plan prepared by the management agency under section 85 of the Biosecurity Act 1993. Sets out how objectives in the Strategy will be achieved in any given financial year.

Organism+	(a) Does not include a human being or a genetic structure derived from a human being; (b) Includes a micro-organism; (c) Subject to paragraph (a) of this definition, includes a genetic structure that is capable of replicating itself (whether that structure comprises all or only part of an entity, and whether it comprises all or only part of the total genetic structure of an entity); (d) Includes an entity (other than a human being) declared by the Governor-General by Order in Council to be an organism for the purposes of the Biosecurity Act 1993; (e) Includes a reproductive cell or developmental stage of an organism; (f) Includes any particle that is a prion.
Person+	Includes the Crown, a corporation sole, and a body of persons (whether corporate or unincorporated).
Pest Plant	A plant which has been declared a pest in the RPMS.
Pest+	An organism specified as a pest in a Pest Management Strategy.
Pest agent+	In relation to any pest, means any organism capable of: (a) Helping the pest replicate, spread, or survive; or (b) Interfering with the management of the pest.
Pest Management Strategy (and Strategy) +	A Strategy, approved under Part V of the Biosecurity Act 1993, for the management or eradication of a particular pest or pests.
Place+	Any building, conveyance, craft, land or structure, and the bed and waters of the sea and any canal, lake, pond, river or stream.
Plant	Any grass, tree, shrub, herb, flower, nursery stock, culture, vegetable, or other vegetation, and also includes the fruit, seed, spore, portion or product of any plant. Includes all aquatic plants.
Principal officer+	The principal administrative officer of a regional council; and: (a) In relation to a regional council, means the principal officer of that council, and (b) In relation to a region, means the principal officer of the region's regional council; and includes an acting principal officer.
Public good	Any thing or action which benefits the whole community, whether they have a direct interest in the reason for the thing or action or not.
Public notice	(a) A notice published in a newspaper circulating generally in the district to which the subject-matter of the notice relates; or (b) Where there is no newspaper circulating generally in any district, a notice published on placards affixed to public places in the district to which the subject-matter of the notice relates: and "published" and "publicly notified" have corresponding meanings. A public notice setting forth the object, purport, or general effect of a document shall in any case be sufficient notice of that document.
Quarry	Any past or present land used for commercial mining, taking or extraction of minerals in their natural state, including roading metal, sand, coal, and other aggregate material. In terms of this Strategy 'the quarry' is deemed to be the entire property,
Research organism	An organism which has yet to be investigated or had research carried out on it to determine if it will be declared a pest under the Biosecurity Act 1993.
Region*	In relation to a regional council, the region of the regional council as determined in accordance with the Local Government Act 1974.
Regional council	Has the same meaning as in the Local Government Act 1974.

Regional plan*	An operative plan (including a regional coastal plan) approved by a regional council or the Minister of Conservation under the First Schedule to the Resource Management Act and includes all operative changes to such a plan (whether arising from a review or otherwise).
Regional Policy* Statement	An operative Regional Policy Statement approved by a regional council under the First Schedule of the Resource Management Act and includes all operative changes to such a policy statement (whether arising from a review or otherwise).
Responsible Minister+	The Minister who, under the authority of any warrant or with the authority of the Prime Minister, is for the time being responsible for the administration of the Biosecurity Act 1993.
Restricted place+	Any place that an inspector or an authorised person has declared to be a restricted place under section 130 of the Biosecurity Act 1993.
Road+	Includes all bridges, culverts, and fords forming part of any road.
Rule+	Means a rule included in a Pest Management Strategy in accordance with section 69(b) or section 80(b) of the Biosecurity Act 1993.
Rural land	Includes any land not deemed to be urban under the definition of 'urban land'.
Runanga	Tribal representative and administrative body.
Sell	Includes barter; and also includes offering, exposing, or attempting to sell, or having in possession for sale, or sending or delivery for sale, causing or allowing to be sold, offered, or exposed for sale, and also includes any disposal whether for valuable consideration or not; and "sale" has a corresponding meaning.
Surveillance Pest Plants	Refers to pest plants for which there is no requirement prescribing control of field infestations, but which have been determined to be pests because they represent an actual or potential problem to regions generally. The objective is to arrest the further spread of these plants by humans throughout the Auckland region. This is achieved by banning their sale, propagation and distribution
Total Control Pest Plants	Refers to pest plants which the Auckland Regional Council will assume responsibility to treat by a recognised method at intervals that will ensure the infestations are controlled, reduced in size and eventually eradicated.
Tangata Whenua*	In relation to a particular area, means the iwi, or hapu, that holds mana whenua over that area.
Taonga	Something highly prized or treasured, tangible or intangible, that contributes to Maori wellbeing. The term equates roughly to the concept of a resource, but incorporates a range of social, economic and cultural associations. Included, for example, are te reo (the Maori language) waahi tapu, waterways, fishing grounds, mountains and place names.
Tapu	Sacred, restricted.
Tikanga Maori	Maori customary values and practices.
Tino rangatiratanga	Chieftainship, chiefly authority, full authority.
Unwanted organism+	Any organism that a chief technical officer believes is capable or potentially capable of causing unwanted harm to any natural and physical resources or human health.
Urban	Includes the built up areas of cities, towns and rural settlements within the Auckland region as defined in the Strategy.
Water*	a) Means water in all its physical forms, whether flowing or not and whether over or under ground; b) Includes fresh water, coastal water and geothermal water; c) Does not include water in any form while in any pipe, tank or cistern.
Waahi tapu	A place sacred to Maori in the traditional, spiritual, religious, ritual or mythological sense.

Wetland*	Includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.
Whanau	An extended Maori family.
Zone	A specified area within the region as defined in the maps in the Appendices of this Strategy.

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APPENDIX ONE

Full list of plants named in the Strategy, sorted by scientific name.

Scientific Name	Common Name	Surveillance	Community Initiative	Containment	Total Control	Research
Acacia spp.	Acacia species					♦
Acaena agnipila	Sheeps bur	♦				
Acmena smithii	Monkey apple	♦	♦			
Agapanthus subsp. *orientalis* and cultivars	Agapanthus					♦
Ageratina riparia	Mistflower	♦				
Alternanthera philoxeroides	Alligator weed	♦				
Andropogon virginicus	Broomsedge	♦				
Anredera cordifolia	Mignonette vine	♦	♦	♦		
Araujia sericifera	Moth plant	♦	♦	♦		
Archontophoenix cunninghamii	Bangalow palm					♦
Arctium minus	Burdock	♦				
Aristea ecklonii	Aristea	♦				
Arundo donax	Giant reed grass	♦	♦			
Asparagus asparagoides	Smilax	♦	♦	♦		
Asparagus densiflorus	Bushy asparagus	♦		♦		
Asparagus scandens	Climbing asparagus	♦	♦			
Austrostipa rudis	Needle grass	♦			♦	
Austrostipa spp.	*Austrostipa* spp.					♦
Baccharis halimifolia	Baccharis	♦				
Banksia integrifolia	Coast banksia					♦
Bartlettina sordida	Bartlettina	♦	♦			
Berberis glaucocarpa	Barberry	♦				
Buddleja davidii	Buddleia	♦				
Calicotome spinosa	Spiny broom	♦				
Calotis lappulacea	Bur daisy	♦				
Cardiospermum grandiflorum	Balloon vine (heartseed)	♦			♦	
Cardiospermum halicacabum	Small balloon vine	♦			♦	
Carduus acanthoides	Plumeless thistle	♦				
Carduus nutans	Nodding thistle	♦		♦		
Carex longebrachiata	Australian sedge	♦		♦		
Carthamus lanatus	Saffron thistle	♦				
Caulerpa taxifolia	Caulerpa	♦				
Ceratophyllum demersum	Hornwort	♦				
Cestrum nocturnum	Queen of the night					♦
Cestrum parqui	Green cestrum	♦			♦	
Chondrilla juncea	Skeleton weed	♦				
Chrysanthemoides monilifera	Boneseed	♦	♦			
Clematis vitalba	Old man's beard	♦			♦	
Cobaea scandens	Cathedral bells	♦			♦	
Conium maculatum	Hemlock	♦				
Cortaderia selloana, *C. jubata*	Pampas grass – common – purple	♦	♦			
Cotoneaster glaucophyllus, *Cotoneaster franchetii*	Cotoneaster	♦				
Crataegus monogyna	Hawthorn	♦				
Cyperus rotundus	Nutgrass (Purple nutsedge)	♦				
Cytisus scoparius	Wild broom	♦			♦	
Dipogon lignosus	Mile-a-minute	♦	♦			
Egeria densa	Egeria oxygen weed	♦			♦	
Elaeagnus x *reflexa*	Elaeagnus	♦	♦			

Scientific Name	Common Name	Surveillance	Community Initiative	Containment	Total Control	Research
Erica lusitanica	Spanish heath	♦				
Erigeron karvinskianus	Mexican daisy	♦				
Euonymus japonicus	Japanese spindle tree	♦				
Ficus macrophylla	Moreton Bay fig					♦
Ficus rubiginosa	Port Jackson fig	♦				
Galega officinalis	Goat's rue	♦				
Galeobdolon luteum	Artillery plant	♦				
Geitonoplesium cymosum	Scrambling lily	♦			♦	
Glyceria maxima	Reed sweet grass	♦				
Gymnocoronis spilanthoides	Senegal tea	♦			♦	
Hedera helix sp. *helix* and cultivars	Ivy					♦
Hedychium gardnerianum, H. flavescens	Kahili ginger Yellow ginger	♦	♦	♦		
Homalanthus populifolius	Queensland poplar					♦
Houttuynia cordata	Houttuynia	♦			♦	
Hydrilla verticillata	Hydrilla	♦				
Hydrocleys nymphoides	Water poppy	♦			♦	
Hypericum androsaemum	Tutsan	♦				
Hypericum perforatum	St John's wort	♦				
Ipomoea indica	Blue morning glory	♦	♦			
Iris pseudacorus	Yellow flag	♦				
Jasminum polyanthum	Jasmine	♦	♦			
Lagarosiphon major	Lagarosiphon oxygen weed	♦				
Lantana camara var. *aculeata*	Lantana	♦		♦	♦	
Lantana camara varieties	Lantana					♦
Leycesteria formosa	Himalayan honeysuckle	♦	♦			
Ligustrum lucidum *Ligustrum sinense*	Privet – tree – Chinese	♦	♦			
Lonicera japonica	Japanese honeysuckle	♦	♦			
Lophospermum erubescens	Climbing gloxinia					♦
Ludwigia peploides ssp. *montevidensis*	Water primrose	♦				
Lycium ferocissimum	Boxthorn	♦				
Lycopus europeaus	Gypsywort					♦
Lythrum salicaria	Purple loosestrife	♦			♦	
Marsilea mutica	Nardoo	♦				
Melianthus major	Cape honey flower	♦				
Myriophyllum aquaticum	Parrots feather	♦				
Nasella neesiana	Chilean needle grass	♦			♦	
Nasella tenuissima	Fine-stemmed needle grass	♦			♦	
Nasella trichotoma	Nassella tussock	♦			♦	
Nephrolepis cordifolia	Tuber ladder fern	♦	♦			
Nuphar lutea	Yellow water lily	♦				
Nymphoides geminata	Marshwort	♦			♦	
Nymphoides peltata	Fringed water lily	♦			♦	
Oxylobium lanceolatum	Oxylobium	♦				
Paraserianthes lophantha	Brush wattle	♦				
Passiflora caerulea	Blue passion flower	♦				
Passiflora mollissima, P. mixta	Banana passionfruit	♦	♦			
Pennisetum alopecuroides	Chinese pennisteum	♦				
Pennisetum macrourum	African feather grass	♦			♦	
Persicaria perfoliatum	Devil's tail (tearthumb)	♦			♦	
Phoenix canariensis	Phoenix palm					♦
Plectranthus ciliatus	Plectranthus	♦				

Scientific Name	Common Name	Surveillance	Community Initiative	Containment	Total Control	Research
Plectranthus ecklonii *Plectranthus grandis*	Blue spur flower	♦				
Polygala myrtifolia (not including cv. "Grandiflora")	Sweet pea shrub	♦				
Psidium cattleianum	Guava/Purple guava					♦
Rhamnus alaternus	Evergreen buckthorn	♦		♦	♦	
Rosa rubiginosa	Sweet briar	♦				
Rubus fruiticosus agg.	Blackberry (wild aggregates)	♦				
Sagittaria graminea ssp. *platyphilla*	Sagittaria	♦			♦	
Sagittaria montevidensis	Arrowhead	♦			♦	
Sagittaria sagittifolia	Arrowhead, Hawaii Arrowhead	♦				
Salix fragilis	Crack willow	♦				
Saururus cernuus	Lizard's tail					♦
Selaginella krausiana	African clubmoss	♦				
Senecio angulatus	Cape ivy	♦	♦			
Senecio jacobaea	Ragwort	♦	♦	♦		
Senecio mikanioides	German ivy	♦	♦			
Senecio petasitis	Velvet groundsel	♦				
Setaria palmifolia	Palm grass	♦	♦			
Silybum marianum	Variegated thistle	♦		♦		
Solanum marginatum	White-edged nightshade	♦			♦	
Solanum mauritianum	Woolly nightshade	♦	♦	♦		
Spartina spp.	Spartina	♦		♦	♦	
Stipa spp.	(excluding native spp.)	♦				
Syzygium australe	Brush cherry					♦
Teline monspessullana	Montpellier broom	♦				
Tradescantia fluminensis	Wandering Jew	♦				
Tussilago farfara	Coltsfoot	♦				
Ulex spp.	Gorse	♦	♦	♦		
Urtica dioica	Perennial nettle	♦				
Vallisneria gigantea – Lake Pupuke variety *Vallisneria spiralis* – Meola Creek variety	Eelgrass	♦				
Vinca major	Periwinkle	♦				
Xanthium occidentale	Noogoora bur	♦				
Xanthium spinosum	Bathurst bur	♦		♦		
Zizania latifolia	Manchurian wild rice	♦			♦	

APPENDIX TWO

National Pest Plant Accord List

The list that follows is the First Schedule of the National Pest Plant Accord, with all the pest plants included in it as of 1 October 2001. All plants on the list are designated as Unwanted Organisms, and are banned from sale, propagation and distribution throughout New Zealand. Additional plant species may be added periodically, after review by the Technical Working Group. To check for further additions visit the Ministry of Agriculture and Forestry web site (www.maf.govt.nz).

FIRST SCHEDULE
The Accord List

Common Name/s	Scientific Name
African feather grass	*Pennisetum macrourum*
African fountain grass	*Pennisetum setaceum*
African love grass	*Eragrostis curvula*
Alligator weed	*Alternanthera philoxeroides*
Arrowhead	*Sagittaria montevidensis*
Arrowhead; Hawaii Arrowhead	*Sagittaria sagittifolia*
Balloon vine	*Cardiospermum grandiflorum*
Banana passionfruit	*Passiflora mollissima*
Bartlettina	*Bartlettina sordida*
Bladderwort	*Utricularia gibba*
Blue morning glory	*Ipomoea indica*
Bog bean	*Menyanthes trifoliata*
Bone seed	*Chrysanthemoides monilifera* spp. *monilifera*
Bur reed	*Sparganium erectum*
Cape tulip	*Homeria collina*
Cathedral bells	*Cobaea scandens*
Caulerpa taxifolia	*Caulerpa taxifolia*
Chameleon plant	*Houttuynia cordata*
Chilean flame creeper	*Tropaeolum speciosum*
Chilean rhubarb	*Gunnera tinctoria*
Chinese pennisetum	*Pennisetum alopecuroides*
Christmas berry	*Schinus terebinthifolius*
Clasped pondweed	*Potamogeton perfoliatus*
Climbing asparagus; ferny asparagus	*Asparagus scandens*
Climbing spindleberry; oriental bittersweet	*Celastrus orbiculatus* Thunb.
Coltsfoot	*Tussilago farfara*
Darwin's barberry	*Berberis darwinii*
Devil's tail tearthumb	*Persicaria perfoliatum*
Eelgrass	*Vallisneria gigantea*
Egeria; oxygen weed	*Egeria densa*
Elephant grass; Napier grass	*Pennisetum purpureum*
Entire marshwort	*Nymphoides geminata*
Eurasian watermilfoil	*Myriophyllum spicatum*
Evergreen buckthorn	*Rhamnus alaternus*
Fire tree, Candle-berry myrtle	*Myrica faya*

Common Name/s	Scientific Name
Fringed waterlily	*Nymphoides peltata*
Great reedmace	*Typha latifolia*
Green cestrum	*Cestrum parqui*
Grey willow	*Salix cinerea*
Heather	*Calluna vulgaris*
Hornwort	*Ceratophyllum demersum*
Horse nettle	*Solanum carolinense*
Horsetail	*Equisetum arvense*
Hydrilla	*Hydrillla verticillata*
Japanese honeysuckle	*Lonicera japonica*
Johnson grass	*Sorghum halepense*
Kahili ginger	*Hedychium gardnerianum*
Lantana	*Lantana camara* var. *aculeata*
Lodgepole pine	*Pinus contorta*
Madeira vine; Mignonette vine	*Anredera cordifolia*
Manchurian wild rice	*Zizania latifolia*
Mexican daisy	*Erigeron karvinskianus*
Mexican feather grass; Fine-stemmed needle grass	*Nassella tenuissima*
Mile-a-minute	*Dipogon lignosus*
Monkey apple	*Acmena smithii*
Moth plant	*Araujia sericifera*
Mysore thorn	*Caesalpinia decapetala*
Northern banana passionfruit; Banana passionfruit	*Passiflora mixta*
Old man's beard	*Clematis vitalba*
Oxygen weed	*Lagarosiphon major*
Pampas	*Cortaderia selloana*
Parrot's feather	*Myriophyllum aquaticum*
Phragmites	*Phragmites australis*
Plectranthus	*Plectranthus ciliatus*
Primrose willow	*Ludwigia peploides*
Purple loosestrife	*Lythrum salicaria*
Purple pampas	*Cortaderia jubata*
Pyp grass	*Ehrharta villosa*
Rough horsetail	*Equisetum hyemale*
Royal fern	*Osmunda regalis*
Sagittaria; Delta Arrowhead	*Sagittaria platyphylla*
Salvinia, kariba weed	*Salvinia molesta*
Sawtooth	*Najas marina*
Selaginella	*Selaginella kraussiana*
Senegal tea	*Gymnocoronis spilanthoides*
Small balloon vine	*Cardiospermum halicacabum*
Smilax; Bridal veil creeper	*Asparagus asparagoides*
Southern cattail	*Typha domingensis*
Southern naiad	*Najas guadalupensis*
Tree privet	*Ligustrum lucidum*
Wandering Jew; Tradescantia	*Tradescantia fluminensis*
Water chestnut	*Trapa natans*
Water hyacinth	*Eichhornia crassipes*

Common Name/s	Scientific Name
Water lettuce	*Pistia stratiotes*
Water poppy	*Hydrocleys nymphoides*
Water primrose	*Ludwigia peruviana*
Water soldier	*Stratiotes aloides*
White bryony	*Bryonia dioica*
White-edged nightshade	*Solanum marginatum*
Yellow flag iris	*Iris pseudacorus*
Yellow ginger	*Hedychium flavescens*
Yellow waterlily	*Nuphar lutea*

APPENDIX THREE

Definition of rural areas

For the purposes of this Strategy 'rural areas' includes all parts of the region outside of the metropolitan urban limits, as shown on the accompanying map. For the purposes of the Strategy, Great Barrier Island is also considered rural. The following smaller towns are also considered to be outside the 'rural area' of the region:

Algies Bay
Beachlands
Clevedon
Drury
Helensville
Huapai
Kumeu
Leigh
Maraetai
Omaha
Pukekohe
Snells Beach
Waiheke Island (Oneroa, Ostend, Onetangi)
Waimauku
Waiuku
Warkworth
Wellsford

APPENDIX FOUR

Lake Kereta Manchurian Wild Rice Area – Map

APPENDIX FIVE

Waitakere Ranges Weed Control Zone – Map

APPENDIX SIX

Hunua Ranges Weed Control Zone – Map

APPENDIX SEVEN

Glossary of Acronyms used in the Strategy

ARC	Auckland Regional Council
BMG	Biosecurity Managers Group
CBA	Cost Benefit Analysis
NPPA	National Pest Plant Accord
RMA	Resource Management Act 1991
RPMS	Regional Pest Management Strategy
TLA	Territorial Local Authority (e.g. District and City Councils)
WAC	Wild Animal Control Act 1977