PEST MANAGEMENT PLAN

PLAN FOR THE MANAGEMENT OF WEEDS AND PEST ANIMALS

JUNE 2004
ISBN ((1-877232-22-X))

Photo Credits: Dave Hansford: Possum, Goat
Greater Wellington Regional Council: Darwin’s barberry

Further copies of this publication can be obtained from the Wellington City Council by telephoning (04) 499 4444 or by writing to PO Box 2199, Wellington.

© Wellington City Council 2004. Except as authorised by the Copyright Act 1994, the contents of this publication can be used freely with acknowledgement to Wellington City Council. The Wellington City Council asserts the right to be identified as the author of this work.
CONTENTS

PURPOSE OF THIS PLAN ..........................................................5

VISION STATEMENT ............................................................5

GUIDING PRINCIPLES ..........................................................6

RATIONALE ............................................................................6

1. INTRODUCTION ...................................................................7

   1.1 STRATEGIC FRAMEWORK ....................................................7
   1.2 TERMS - WHAT DO WE MEAN ..............................................8
   1.3 STATUS OF THIS PLAN .........................................................9
       1.3.1 PEST MANAGEMENT IN WELLINGTON .........................9
       1.3.2 WHY A PEST MANAGEMENT PLAN IS NEEDED .............10
       1.3.3 FUTURE REVIEW OF THIS PLAN ..............................13

2. WIDER FRAMEWORK .........................................................15

   2.1 THE NEW ZEALAND BIODIVERSITY STRATEGY .................15

3. FUTURE TRENDS ...............................................................17

4. ISSUES ..............................................................................19

   4.1 PREVENTING NEW PESTS ..................................................19
   4.2 MANAGING PESTS ............................................................19
       4.2.1 IDENTIFYING PRIORITIES ..........................................21
   4.3 LEGAL RESPONSIBILITIES - WHAT ARE THEY? ...............26
       4.3.1 GREATER WELLINGTON - REGIONAL PEST MANAGEMENT
             STRATEGY (RPMS) ..........................................................27
       4.3.2 PUBLIC HEALTH ..........................................................32
       4.3.3 WILD ANIMAL CONTROL ............................................33
   4.4 CONTROL METHODS - HOW TO CONTROL PESTS ..............34
   4.5 MONITORING ....................................................................37
   4.6 RESEARCH .......................................................................38
   4.7 COMMUNITY AWARENESS/EDUCATION ............................39
   4.8 IMPLEMENTATION ............................................................41

5. OBJECTIVES AND ACTIONS ...............................................43

   5.1 PREVENTING, ERADICATING OR CONTAINING PESTS ........43
   5.2 MANAGING PESTS ............................................................44
   5.3 STATUTORY OBLIGATIONS ................................................46
   5.4 METHODS OF CONTROLLING PESTS .................................49
   5.5 COMMUNITY EDUCATION AND PARTNERSHIPS ...............50
   5.6 MONITORING/RESEARCH ..................................................51
   5.7 IMPLEMENTATION ............................................................52
REFERENCE LIST........................................................................................................54
APPENDIX I:  GLOSSARY..........................................................................................54
APPENDIX II:  PRIORITY RANKING METHODOLOGY ............................................56
APPENDIX III:  LEGISLATION RELEVANT TO THE MANAGEMENT OF PESTS ........57
APPENDIX IV:  KEY NATIVE ECOSYSTEM PESTS (RPMS)......................................58
APPENDIX V:  REFERENCE LIST/RELATED READING .............................................60
APPENDIX VI: PEST MANAGEMENT IMPLEMENTATION PLAN.................................63
PURPOSE OF THIS PLAN

This plan provides a blueprint for the city to control weeds and pest animals.

The vision of the plan can be shared by everyone. The policies and actions in it will be applied by the Council in the management of its own land, and the Council will also encourage others to adopt them. This partnership is needed to reduce the threats to our natural heritage posed by weeds and pest animals, and help restore the nation’s biodiversity.

The plan creates a framework for weed and pest animal control from which detailed implementation plans can be prepared to deal with the full range of weeds and pest animals present at specific sites, or more rarely, for specific weeds or pest animals on a more widespread scale.

THE VISION

The city is free from the adverse impacts of weeds and pest animals, allowing the maintenance, protection and restoration of a full range of the natural ecosystems that support our indigenous biodiversity.

- The ecosystems that are the most ecologically valuable, or contain the greatest indigenous biodiversity, are identified and given priority in the management and control of weeds and pest animals.

- All weeds and pest animals that have significant adverse effects are controlled, starting with those that have the greatest potential to cause damage.

- The role of iwi as kaitiaki, or guardians, of indigenous biodiversity is recognised and valued, and local iwi are an integral part of programmes to control and manage weeds and pest animals.

- The community appreciates our indigenous biodiversity, and works in partnership with the Council to control and manage weeds and pest animals, and restore the city’s natural biodiversity.
GUIDING PRINCIPLES

i Controlling weeds and pest animals is essential to protecting indigenous species and natural ecosystems.

ii Preventing new weeds or pest animals from establishing is more effective than eradicating or controlling them.

iii Early integrated management of potential weeds and pest animals minimises future costs – economic, environmental and social.

iv A lack of detailed knowledge or understanding of a weed or pest animal’s full potential for damage is not a reason to do nothing.

v All weed and pest animal management activities must be environmentally and socially sustainable and financially prudent.

RATIONALE

The plan starts from the premise that prevention is better than cure. In the event that pests cannot be prevented from occurring, eradicating them while they are in small numbers or limited in distribution is the next best option. If pests cannot be totally eradicated, eradication in discrete areas may be appropriate, often combined with containing them in specific areas and preventing them from spreading further. Finally, where pests are established and widespread, the focus is on eradicating, containing or restricting them to minimise their adverse impacts on areas with the greatest biodiversity values.
1. INTRODUCTION

1.1 STRATEGIC FRAMEWORK

The need to control weeds and pest animals in order to protect and enhance the city’s natural environment is recognised consistently throughout the Council’s strategic and planning documents.

The Council’s strategic policy document, Strategic directions 2001, identifies as a key priority for the city “Enhancing Wellington’s harbour and natural environment” and recognises the significant role that open space has for the city and its inhabitants through the strategic outcomes:

Outcome 5.1 Biodiversity
The city hosts and protects a representative range of indigenous and non-indigenous plants and animals in their natural communities and habitats.

Outcome 5.2 Ecosystems
The City’s varied marine and land-based ecosystems are valued and, where appropriate, protected and restored.

Outcome 5.4 Landscape and natural heritage
Features of Wellington’s landscape and natural environment with special importance are recognised, and where appropriate, protected.

The Council’s open space strategy, Capital spaces – open space strategy for Wellington, Te Whanganui-a-Tara, also refers to the need for the control of weeds and pest animals in its guiding principles, of which the following are relevant to this policy:

- **Enhancing natural succession**
  Areas of open space around Wellington will eventually revert from pasture to gorse and scrub and then to secondary growth native forest without human intervention. The Council believes that in areas where forest restoration is an objective, human intervention will be required to approach the diversity of the original forests. The Council will seek to control plant and pest animals and to reintroduce later successional species such as rimu, miro, matai, rata, tawa, kohekohe and hinau.

- **Better networks and corridors**
  The Council will seek to create ecological corridors and recreational networks that maximise the value of open space, and promote the viability of natural areas and flexible use and accessibility of recreational areas.

- **Protecting threatened species**
  The re-introduction of threatened native plant, bird, lizard, invertebrate and fish species into Wellington requires the provision of adequate habitat and control of predators. The Council will support the re-introduction of native
species, and in particular, the creation of the Karori Wildlife Sanctuary and the establishment of a marine reserve on the South Coast.

**Wellington wet and wild: bush and streams restoration plan** expands on the broadly expressed goals of restoration of a representative range of ecosystems and habitats, to a wider vision of the extensive return of past vegetation and habitats across the city.

The plan identifies key priorities that include:

- protection of original remnant vegetation, especially sites identified as being at risk from plant and pest animals, and the impacts of wind and sunlight
- protection of at-risk secondary regeneration remnants isolated from wider pasture reversion, or supporting at-risk remnant forest and other vegetation
- protection of at-risk karaka groves
- a focus on the Kaiwharawhara catchment including integrated management of weeds and planting on roads, Council land and private land, and comprehensive management of key remnant and secondary vegetation sites
- developing a weed and pest animal management plan which looks at intensive management of pests affecting key areas of native vegetation
- whole stream management that recognises streams as complete ecosystems that have a role in wider processes, the value of lost streams and the importance of remnant upstream systems, and seeks to maintain and restore them.

The Council’s **Sustainable development strategy** recognises “Biodiversity - actively addressing threats to the maintenance and enhancement of indigenous biodiversity” as a priority action area to strengthen the alignment between the **Creative Wellington-innovation capital** strategy with the Sustainable Development strategy.

**Management plans** for significant areas identify priorities for weed and pest control.

- **Wellington town belt** – the belt of open space surrounding the inner city. A detailed vegetation implementation plan has been prepared which identifies weed and pest animal control needs and proposes a timetable and costings.
- **Outer green belt (cluster plan)** – creating a continuous green belt along the western ridges bounding the city.
- **South Coast** – Council land above mean low water springs between Point Dorset and Karori Stream.
- **Reserve cluster plans** - management plans for groups of reserves such as northern, eastern, incorporating reserves for which individual management plans exist.
- **Botanic Garden and Otari-Wilton’s Bush** - specific plans for these specialist reserves.

### 1.2 TERMS - WHAT DO WE MEAN

**Pests** - For clarity the following distinctions are made in the naming of pests.
Plants that are pests are referred to as weeds. Animals that are pests are referred to as pest animals. Weeds and pest animals together are referred to as pests.

**Pests** are defined using the Biosecurity Act 1993 definition as “organisms that are capable of causing at some time a serious adverse and unintended effect on people and/or the natural environment.”

Potentially, it could include disease-causing organisms. The rarity of such organisms and the likelihood that a more widespread response to a disease outbreak would be required mean that control programmes are more likely to be managed by other agencies, with whom the Council would co-operate.

**Open Space** is the term used to describe the city’s outdoor spaces such as reserves, the Wellington Town Belt, coastal reserves, outer green belt and other Council-owned lands that have ecological, recreational, landscape and natural heritage values. It includes unformed legal road to the extent consistent with traffic safety priorities.

Closely managed grassed or amenity areas such as parks, play areas and sports fields and civic gardens are not dealt with in this policy.

**Road Reserve.** Many roads in Wellington are legally much wider than the actual formed road. The unformed part of the legal road is often vegetated and this too must be managed to control pests.

**Biodiversity (biological diversity)** describes the variety of all biological life – plants, animals, fungi and micro-organisms – the genes they contain and the ecosystems on land or in water where they live.

See Appendix I for the glossary.

### 1.3 STATUS OF THIS PLAN

#### 1.3.1 PEST MANAGEMENT IN WELLINGTON

The Council is responsible for pest control on over 3,300 hectares of open space and over 1,200 kilometres of legal road throughout the city.

The Council has for many years controlled a range of pests on its land in accordance with its responsibilities under the National Pest Plant Accord, the Regional Pest Management Strategy (RPMS) and other statutory responsibilities.

Primary focus in recent years has been the control of those species identified under the RPMS as the responsibility of landowners, specifically old man’s beard, cathedral bells, wild ginger and more recently banana passionfruit.
Old man’s beard, in particular, has required significant resources as it is widespread across the city and requires particular attention to ensure it is successfully eliminated. Cathedral bells, wild ginger and banana passionfruit are much more localised in their occurrence.

Possums have also been controlled in partnership with Greater Wellington Regional Council, as part of the programme targeting key native ecosystems. Other pest species, particularly pest animals, have been controlled in response to increased numbers or specific needs. Goat control operations have occurred in response to significantly increased numbers in the southwest of the city, and both rabbits and rodents have been controlled in localised areas around the city.

Limited control of other weed species has been undertaken at some sites, often in response to community wishes.

**Amenity weeds**

Amenity weeds are those that occur in such areas as sports fields, play areas, streets or civic gardens and are not the subject of this policy except where they overlap with legal requirements for control.

### 1.3.2 WHY A PEST MANAGEMENT PLAN IS NEEDED

New Zealand’s flora and fauna have been evolving in isolation for the last 80 million years. This isolation includes an absence of all but two species of land mammals, both bats, and has resulted in a very high number of endemic species – species that are found only in New Zealand. All 60 species of reptiles, all four frogs and both species of bats, are endemic; 90% of insects and marine molluscs, 80% of vascular plants and 25% of all bird species are endemic. This level of endemism is of international significance.

The isolation has also resulted in bird and invertebrate species filling the roles that are filled by mammals elsewhere in the world, and coupled with diverse landscapes, has created highly distinctive ecosystems.

This biological diversity - or biodiversity - is New Zealand’s heritage. It is an integral part of our lives and our culture. If we do not look after it, it will be gone.

The major threats to New Zealand’s biodiversity are:

- **habitat loss**
  - physical destruction of ecosystems through fire, clearance, destruction, pollution, and degradation through partial destruction
- **habitat fragmentation**
  - dividing large ecosystems into disconnected smaller parts, isolating populations and opening them up to damaging edge effects
- **weeds**
  - smothering or out-competing native species or disrupting ecosystems
• pest animals browsing on indigenous plants, destroying habitat, predating wildlife, competing for resources.

Pests are one of the biggest threats to the survival of indigenous ecosystems and their remaining flora and fauna.

Weeds

The impacts of weeds have until recently been largely underestimated. Weeds are now considered as big a threat as pest animals. Because weed species are often weeds in many countries, they contribute to a decrease in global biodiversity, reducing the variation between regions.

Approximately 11 percent (2068 species) of all plants introduced to New Zealand have become established in the wild. There are estimated to be another 24,700 introduced plant species present in New Zealand - in gardens, collections and on farms - many of which could establish in the wild in the future.

About 75 percent of all plants that become weeds are escapes from garden cultivation, the other 25 percent being escapes from agriculture or accidental introductions.

Plants that become weeds usually have one or more of the following features:
• rapid growth – climbers such as old man’s beard
• quick maturation – boneseed flowers and produces seed within one year
• large quantities of seed produced – Darwin’s barberry produces thousands of seeds
• long periods of seed viability – some species are viable for more than 15 years
• effective seed dispersal mechanisms – wind and birds are very effective for wide dispersal on land
• wide environmental tolerance – some species will grow almost anywhere.

Weeds threaten our native plants in a range of ways. They can smother them, shade them out, form dense mats that prevent seedlings establishing, and out-compete them by taking up the same places in the environment. Other more long term effects include isolating plant populations from each other thus reducing genetic variability, or inter-breeding with indigenous species, for example ngaio and boobialla (Tasmanian ngaio).

Not all weeds are introduced species. Indigenous species can become weeds, some quite invasive. For example, karō (*Pittosporum crassifolium*), *P. ralphii*, and Pohutukawa (*Metrosideros excelsa*) have been introduced to the Wellington area and are becoming invasive in some locations such as the South Coast.

Weeds also threaten the survival of indigenous wildlife by altering habitat, reducing food supplies and breeding sites, and affecting the way indigenous and introduced animals behave.
Habitats most at risk from weeds have features in common – plant species are often low growing, the habitats are often small, narrow, disturbed, and close to towns.

Wetlands, coastal and duneland areas, alpine herb fields and tussock grasslands, unusual areas such as geothermal fields and salt lakes, and lowland forests are all seriously under threat.

Human activities such as drainage, burning, grazing, vegetation clearance and roading provide a ready habitat for weeds to invade, whence they can spread into surrounding areas.

**Pest animals**

New Zealand has a large number of introduced animal species. There are some 34 species of mammal, 14 of which are widespread. Some 40 species of bird, 20 freshwater fish, three frogs, one reptile, 31 marine invertebrates and over 2000 terrestrial invertebrates – insects, spiders, slugs, worms and snails - have also been introduced.

A significant number of mammals have become pests, including rats, possums, goats, pigs, deer, cats, dogs, mice, rabbits, hares, stoats, ferrets, weasels and hedgehogs.

Browsing or grazing animals consume large quantities of plant material, with indigenous flora being poorly adapted to browsing by herbivores. Apart from the sheer volume of vegetation eaten, the browsers have other effects. Some plants are more palatable and are therefore browsed more heavily, resulting in changes to the structure of the plant community. Young plants are often more palatable and so are eaten preferentially, preventing regeneration. Over-grazing can result in the opening up of the vegetative cover and compaction of soils, leading to slipping and erosion, creating prime sites for weed invasion. Weeds are often less palatable to browsing animals and can become dominant.

Possums are the biggest threat to both flora and fauna and are regarded as the number one pest animal. They consume vast quantities of vegetation, and being choosy eaters, feed on not only leaves but buds, flowers, and fruits, as well as ferns, bark and fungi. Selective browsing of individual trees often results in the death of the tree, particularly favoured species such as northern rata and kamahi. Possums also eat invertebrates, snails, mice, small birds, chicks and eggs.

Rats also pose a big threat in forested areas, competing with birds for food and eating eggs, chicks and adult birds, lizards, insects, other invertebrates and seedlings. Mice also compete with birds for seed, altering the composition of indigenous plant communities.

Mustelids (stoats, ferrets and weasels) are the most destructive of the predators. Introduced to control rabbits, they found easy food in the ground- and hole-nesting bird species including the yellowhead, parakeet and kaka. Stoats are the most difficult
of the three to control as they are bait-shy, trap-wary, the most fertile and occupy a
diverse range of habitats.

Feral cats have similar impacts to mustelids. They prey on rabbits, other mammals and
introduced birds as well as many indigenous ground-nesting bird species. Domestic
cats have also been shown to have a greater impact on bird and skink populations than
was first thought.

Introduced birds compete with indigenous species for resources, some of them quite
aggressively. Magpies and mynahs have acquired reputations as aggressive, attacking
other birds and preventing them from nesting. Mallard ducks compete and commonly
breed with indigenous grey ducks. Sulphur-crested cockatoos and eastern rosellas may
compete for habitat with indigenous birds such as kaka and kakariki.

Pest fish species threaten our indigenous flora and fauna in waterways, lakes and
wetlands. Koi carp for example, uproot aquatic plants, reduce water quality and prey
on native fish and insects.

Management of pests has historically separated species from their habitats and plants
from animals. A more integrated approach is being developed which recognises the
interconnectedness of plants, animals and their environment and looks more widely at
how pests are managed.

1.3.3 FUTURE REVIEW OF THIS PLAN

This is the first pest management policy for Wellington City. The large area to be
managed, the high number of pest species to be controlled, and the constant risk of
new pest species establishing mean that pest control operations will need to continue
indefinitely. To ensure that it remains a relevant document, it will need to be kept up
to date through regular review, in whole or in parts according to need.
2. WIDER FRAMEWORK

The city is part of a greater whole and needs to be seen in the context of the agencies that have responsibilities for the Wellington region and the country as a whole.

The Greater Wellington Regional Council is legally required to manage pests throughout the Wellington Region including Wellington City. The Wellington City Council is responsible as a landowner for pests on Council-owned land, and works very closely with Greater Wellington Regional Council to achieve complementary programmes and create synergies by working together.

The Department of Conservation (DOC) also has responsibilities which cover the Wellington City area, particularly in relation to the protection of indigenous plants and animals. DOC faces similar issues in managing the conservation estate and has experience and resources that can assist the Council in managing its open spaces.

Border control is the responsibility of the Ministry of Agriculture and Forestry who are resourced for such duties.

2.1 THE NEW ZEALAND BIODIVERSITY STRATEGY

In February 2000, DOC and the Ministry for the Environment published the New Zealand Biodiversity Strategy in response to the state of decline of New Zealand’s indigenous biodiversity. This decline was described in *The state of New Zealand’s environment* report as the “most pervasive environmental issue”.

The strategy takes up the challenge to reverse the decline of New Zealand’s indigenous biodiversity and identifies a number of issues relating to biodiversity on land. These are:

- protecting ecosystems and habitats
- habitat fragmentation
- weeds and pest animals
- threatened species
- information, awareness and priority setting.

The New Zealand biodiversity strategy identifies a strategy for New Zealand’s biodiversity, a vision, goals and principles for managing New Zealand’s biodiversity, action plans and strategic priorities, and implementation.

The four goals are:

- enhance and enable community and individual action, responsibility and benefits
- uphold Treaty of Waitangi principles of partnership
- halt the decline in New Zealand’s indigenous biodiversity
conserve genetic resources of introduced species.

The strategy identifies invasive weeds and pest animals as posing the single greatest threat to biodiversity on land, surpassing even habitat loss.

The New Zealand biodiversity strategy has as a key action to, “Develop and implement strategies and plans, including national and regional pest management strategies, to manage those plant and pest animals posing significant threats to indigenous biodiversity.”

Pests are just one aspect in the development of the Council’s response to the New Zealand biodiversity strategy. However, given the key role pests have in degrading the environment, and the significant impact control programmes have in halting decline and allowing recovery of indigenous species, pests are the subject of their own detailed policy.

Reflecting the Council’s commitment to implementing the New Zealand biodiversity strategy through its own policies and plans, the Pest management plan focuses on the wider biodiversity implications of pest control. This approach results in plants and animals being dealt with within the same policy, as a reflection of the complex inter-relationships that exist within the environment as a whole.
3. FUTURE TRENDS

What changes to the Wellington environment are likely to have an impact on the management of weeds and animal pests?

Climate

Latest research indicates that climate change is not a question of if our environment will become warmer, but by how much. We have to consider what the impacts will be, both positive and negative. Change is anticipated to be gradual, giving time to plan ahead.

While it is considered that the warming climate is unlikely to cause any rapid mass extinction, it will allow the impact of those factors that have already caused the decline in our natural heritage to become more pronounced.

Less rainfall and more drying winds are likely to have the greatest effect on environments that are already subject to droughts. Forests on warm lowland sites are more likely to be affected than forests on cooler sites. Fragmented forests and environments on the country’s east coast are more likely to be affected.

Habitat loss and fragmentation, and the spread of weeds and pest animals will become more significant. Seed sources will be lost and birds will be unable to survive through loss of food and increased predation. Weeds will have more opportunities to invade where indigenous species struggle and cannot compete. More extreme weather events will contribute to catastrophic vegetation loss in the form of slips and washouts. Denuded areas are prime sites for invasion by weeds.

Not all the impacts will be negative. Warmer temperatures may induce more frequent fruiting in some of our indigenous species, with follow-on effects for those species of wildlife that are dependent on that fruit or seed. But increased fruiting may also benefit pest animal species too. Rats may have an increased food supply, but stoat and cat numbers may also increase, putting additional pressure on indigenous wildlife.

Urban expansion

Urban expansion not only has the potential to destroy habitat and fragment what remains, but it introduces the greatest source of weeds and some pest animals into areas that have previously been only lightly affected.

Garden escapes and the dumping of garden waste in road reserve and open space areas are probably the biggest source of weeds. Roads and railways are also prime sources of infestation.

Domestic cats are brought in to previously low-cat or cat-free areas, with the potential for new feral populations to establish. The impact of cats, both feral and domestic, is
not widely understood, but recent studies indicate that domestic cats present a significantly underestimated threat to wildlife.

Rats and mice are associated with human habitation and the ready availability of food sources.

**Land use**

Land use can have a big positive or negative influence on pests. Land uses that disturb or alter the environment have the potential to open up new areas to invasion by weeds. Limiting the level and manner of disturbance and requiring such things as prompt rehabilitation or replanting can minimise weed invasion. Alternatively, programmes such as revegetation plantings can reduce the incidence of weeds on a long-term basis.

Erosion creates bare areas that are at risk of invasion by weed species. It also results in the loss of valuable topsoil, causing a changed nutrient environment.

**Fire**

Fire is an ever-present risk for flora and fauna that have developed largely in its absence. Recovery from fire is generally slow, the plants not commonly adapted to rapid recovery as plants in fire prone regions such as Australia.

The clearance of much of the land around the city has allowed weed species such as gorse to invade. Whilst providing an excellent nurse crop for young native plant species, gorse presents a high level of fire risk and fires have occurred at Sinclair Head, south of Makara beach and on the Wellington Town Belt above Government House. However, Wellington has been relatively free of major fires in recent years, allowing regeneration to make good progress and less fire-prone species to start to dominate.

Many new areas added to the open space asset in recent years are in the early stages of regeneration and will require protection from fire for many years. Prevention of fires in open space areas is of considerable importance, and is the most effective way to protect regenerating bush.
4. ISSUES

This section looks at the issues associated with preventing the establishment of new pests, managing those that are here, legal responsibilities, ways of controlling pests, monitoring, research and community partnerships and education.

4.1 PREVENTING NEW PESTS

Biosecurity

Prevention is the most effective form of control.

The introduction of a new species into the country is dealt with by other organisations, under the provisions of the Biosecurity Act and the Hazardous Substances and New Organisms Act (HSNO). The legislation provides for rigorous procedures to assess the impacts of new organisms and whether the organism should be introduced. It also provides for measures to endeavour to prevent the accidental arrival of new organisms into the country.

It is the accidental arrival of new organisms, particularly those that have the potential to become pests in New Zealand, that poses a significant threat to New Zealand’s biodiversity. Increased international trade and travel provide ready opportunities for unwanted organisms and potential pests to arrive.

Biosecurity is the responsibility of other government authorities. However, the presence of international shipping and an international airport create a level of risk for the city. The city can play its part in preventing the establishment of unwanted organisms through constant vigilance and reporting of any sightings of unusual or unidentified organisms.

Prevention

The prevention of new pest species arriving within the city from elsewhere is of prime importance. Changes in the climate and other environmental factors will influence the likelihood of new pest species arriving and establishing. The other prime factor in new pest establishment is the behaviour of people. Actions by individuals, whether intentional or accidental, can result in new pest species arriving.

Co-operation and awareness are the keys to preventing new species establishing: co-operation with other agencies with similar priorities such as adjacent territorial authorities, Greater Wellington Regional Council, Landcare, Department of Conservation, Ministry of Agriculture and Forestry, Ministry of Health and Ministry for the Environment, and raising awareness amongst the wider community of the risks and impacts, and what can be done to prevent new species establishing. This will build on relationships the Council already has with a wide range of community groups,
schools, clubs and organisations, as well as looking to raise awareness among the wider public. Legal action will remain an option.

**Eradication or containment**

The best time to eradicate or contain a pest species that is already present is in its early stages of infestation, when populations are small and localised. Control costs at this point are relatively low. The more widespread and established a pest, the more difficult and expensive it is to control.

Weed seed distribution patterns affect the level of threat. Weeds spread faster from numerous, widely spread infestations than from single, large infestations. Seedlings usually establish close to parent plants, so that removing outlying infestations reduces spread more rapidly. Control of outlying infestation generally takes priority over large, established infestations which can be controlled.

Weeds dispersed by wind or animals, particularly birds, are a much higher risk. The seedlings establish far from parent plants, creating large numbers of small infestations. Control of scattered individuals or small remote infestations, particularly of wind or bird-spread species, is therefore a priority over large established infestations.

There are indications that the pattern of Darwin’s barberry spread mirrors closely the increased regeneration and distribution of bush areas that provide habitat for birds. Where there is no bush, the land is generally free from Darwin’s barberry despite being quite close to large infestations.

This pattern of spread and correlation with regeneration will have significant implications for control programmes.

Aquatic pest organisms have their own particular patterns of spread and will need special attention.

Species-led programmes are particularly relevant in managing weeds and pest animals in the early stages of establishment when numbers are low and/or distribution is limited, when there is potential to minimise future control costs and environmental impacts, and minimise damage to biodiversity. It is a proactive approach to minimising future risk.

Species-led management must assess the potential impacts of a species, how fast and how well it establishes and spreads, and how practical it is to eradicate, contain or manage. Rapid response to a species is the optimum, but factors such as the size of the infestation, ease of control, effectiveness of control methods, involvement of others, and the need for supporting programmes will also have an influence.

Species-led programmes are generally larger than site-led programmes, and have been interpreted here to include programmes to contain a species and prevent it from establishing or re-establishing in non-infested non-priority areas.
Programmes are limited mainly to Council-owned land and therefore cannot deal with species-led programmes in their truest sense. Any species-led programmes will need to consider the impact of pests on private or non Council-owned land.

In Wellington, the greatest sources of new weeds in open space are garden escapes and dumping of garden waste. Nationally some 75 percent of land weeds and 50 percent of freshwater weeds originated in gardens or homes. Some will simply have climbed over a fence; others will have been spread by birds. People, animals and equipment can all carry seeds or small fragments from one area to another, unintentionally helping the weeds to spread.

Regrettably, many weeds establish because old plants, trimmings or cuttings, root fragments and seed heads have been dumped into open space instead of being composted on site or taken to the landfill for composting.

Community attitudes to weeds and the willingness to take preventative action early are a major factor in determining whether weeds become a significant problem. Some of this action may need to be tightly focused, such as educating garden centres not to stock plants which have the potential to become weeds, and may involve a range of agencies.

Other action will need to more broadly focus on the community in the form of education and awareness campaigns. These, too, may involve a range of agencies working together.

Animals with the potential to become pests may also be introduced through accidental escape from captivity or farms, or through the wilful release of animals for hunting purposes, or for economic reasons.

Consideration also needs to be given to the potential flow-on effects of increasing our biodiversity levels. Restoring indigenous vegetation and wildlife presents an opportunity for pest animals to invade areas that they previously did not occupy because of lack of habitat or food.

4.2 MANAGING PESTS

4.2.1 IDENTIFYING PRIORITIES

Rationale

The vision provides us with our two priorities.

- All weeds and pest animals that have significant adverse effects are controlled, starting with those that have the greatest capacity to cause damage.
The ecosystems that are most ecologically valuable and contain the greatest biodiversity are identified and given priority in the management and control of weeds and pest animals.

To protect areas of high biodiversity, four actions are needed:

(i) identify and prioritise the sites that are threatened by pests
(ii) identify and prioritise the pests
(iii) develop implementation programmes
(iv) implement the programmes.

Wellington City has over 3,300 hectares of open space including primary remnant lowland forest, advanced secondary regrowth, coastal faces, sand dunes, streams, and wetlands.

Some of that land contains ecosystems with high biodiversity values. Surrounding those sites is land which has lower biodiversity values. For example, there still remain small scattered remnants of the primary forest that once covered the Wellington region. These are often surrounded by advanced secondary regrowth, where the forest is recovering. Further out from these may be areas that have been more recently cleared and so the regeneration is much younger.

There are also sites that contain high numbers of threatened species, in an environment such as the South Coast that is highly sensitive to damage and under considerable threat because of human activity.

Organisations such as Greater Wellington and DOC are responsible for the protection of biodiversity values across the Wellington area as a whole. The Council’s focus is its open space and road reserve. Taking the protection of biodiversity values as the key driver, the focus of pest control is on specific sites and on protecting the values of those sites. The sites may be whole sites such as a reserve, several sites in close proximity and with similar values, or the sites might be part of a bigger site with areas of lesser biodiversity value that are lower in priority for management, such as primary remnant forest in a larger park.

The control programme for a site might include the site itself as well as buffer zones around the site, sites of other sources of infestation or re-infestation such as seed sources or colonies, or corridors for invasion. Some of these may be on land that is not Council-owned.

The pests to be controlled within a site are those that have the potential to adversely affect the biodiversity values of the site. These are generally widespread and known pest species, but can also include species that may be localised in distribution but have the potential to become significant in the future. A precautionary approach is used, as prevention is better than cure.

Consideration must also be given to the impact of pest control on the environment and the management required. Control of pests should not create opportunities for further
and possibly worse pests. For example, when clearing ground cover weeds, provision needs to be made to prevent reinvasion by replanting sites or ensuring that natural regeneration will occur faster than invasion of the site by weeds.

As every site is different, each site will require its own specific programme of work.

**Criteria for determining priorities**

The criteria to be used for determining both site and species priorities are based on those used by the Department of Conservation (Appendix II).

Other factors reflecting the biodiversity value of sites include:

- **Representativeness**
  - coastal forest, scrub, herbfield
  - beach and dune systems
  - lowland wetlands
  - mature and regenerating lowland forest
  - lowland riverine systems
  - coastal and inland cliffs and talus
  - alluvial forests

- **Rarity**
  - distribution of threatened species
  - uniqueness and vulnerability of naturally uncommon ecosystems

- **Naturalness**
  - species diversity and abundance
  - structural diversity
  - functioning of natural processes

- **Distinctiveness**
  - ecosystem type
  - ecosystem rarity

- **Size and shape**
  - fragmentation
  - shape
  - size

- **Connectivity/linkages**
  - gene pools
  - travel lanes/corridors
  - food sources
  - breeding and resting habitats

- **Sustainability**
predation of wildlife
browsing by introduced mammals
exotic plant invasion
destruction of seed
isolation of breeding populations
effects on natural processes including regeneration

Appendix II sets out the methodology for ranking sites. It scores each site on its botanical and wildlife values, creates a biodiversity score, identifies the significant weeds and pest animals that threaten the biodiversity values, and determines the overall urgency for control of both weeds and pest animals.

Each site can then be prioritised according to:

- ranking score
- prevention or early control of new invasions by pest species
- inter-relationships between pest animals and weeds – pest animal priorities may result in several priority sites being controlled in advance of weed control programmes
- community diversity – protecting a range of community types
- impact of non-pest threats – a site where only pests are a threat is of higher priority than a site where biodiversity values are being affected by other threats

and ensuring that each site programme is completed to ensure protection, before moving to a new site.

Other influences on priorities

While biodiversity is the key driver, there are other factors that need to be considered in determining final priorities and allocation of resources.

Community involvement in open space areas is an integral and valuable part of the managing of the land. However, the establishment of community groups does not always reflect the priority of the area in terms of ecological values and biodiversity. The Council is committed to supporting such groups and their projects. It works with groups to integrate them within the overall management of open space areas, and ensures that the projects are sustainable. This may result in resources being applied to open space in recognition of the community interest ahead of biodiversity values.

Biodiversity includes species that may not be indigenous to Wellington or to New Zealand. There may be cultural or historic associations that make it desirable for species and their habitats to be protected. The decision to allocate resources may differ in priority from those set out below. For example, the karaka groves around the Miramar Peninsula and South Coast have associations for local iwi, but karaka is not naturally occurring in the Wellington region, and may be regarded as a weed in some situations such as Otari-Wilton’s Bush.
Non-native species can also provide valuable sources of food and roosting sites - eucalyptus species provide valuable nectar for tuis around the city.

**Implementation**

Each site will require its own specific programme to control the pests identified through the ranking process. Each site will be different and each programme will reflect those differences.

Programmes will need to reflect the control techniques required for each identified pest. Weed species may be able to be controlled at the same time. However, selected species or specimens may need the attention of specialist operators - large trees will need the attentions of arborists.

Other factors such as weather, financial and labour resources will affect how and when programmes are carried out.

**Buffer zones**

Buffer zones are used to extend the level of protection given to priority sites, and prevent or slow re-infestation. Such zones can be immediately adjacent to a priority site that is part of a larger site such as a park, they can be the open space or road reserve between several sites being managed together, or they can be road reserve which is managed to control weed species that are significant to the priority site.

Additional weed and animal species may be included for control where they may not yet be present in the priority site, but have the potential to become significant pests. The size of the buffer zones is dependent on such factors as pest species present, their means of spread, prevailing weather and wind direction, and routes of invasion.

The use of buffer zones for pest animal species has not been explored fully to date, as the impacts of private land ownership and the mobility of pest animals makes it a more difficult tool to use effectively. For many pest animal species, the co-operation of the community is required. The management of domestic cats close to high-priority areas is a prime target for buffer zone use through education, de-sexing and curfews.

**Private land**

Because weeds and pest animals are unaware of land titles and ownership, they occur across private and public land.

Where the Council is intensively managing pests on land with significant biodiversity values, it is essential to consider how the reinvasion of these sites from adjoining non-Council land can best be managed.

Education of private land owners is useful but often of limited success and is generally a long-term project. Intensive pest management often requires a short-term or rapid response which has a higher chance of success.
There are circumstances where control of pests on neighbouring land would help prevent re-infestation of Council land and reduce the need for additional pest control. Many of the pests it is important to control are not those that are covered by statutory landowner responsibility and so cannot be required to be controlled. Education and advocacy are necessary here.

In such circumstances it could be beneficial both from technical efficiency and financial perspectives for the Council to undertake control of specific pests on private land.

Landowner/occupier consent would have to be obtained to access the land. Indications are that landowners are likely to react positively to the Council controlling pests on their land at no direct cost to the landowner. Landowners/occupiers would be told why the pest control was necessary and what benefits there would be.

4.3 LEGAL RESPONSIBILITIES – WHAT ARE THEY?

The following sections address only the legal requirements to control the pests identified. Additional control may be required to protect specific sites, and this will be identified in the individual site pest management plans.

National

There are a number of legislative provisions that affect pest control by the Council. The main provisions are outlined below.

Biosecurity Act 1993 provides for “… the exclusion, eradication and effective management of pests and unwanted organisms.”

Freshwater Fisheries Regulations 1983, section 65 provides for the identification of noxious fish species.

Hazardous Substances and New Organisms Act 1996 (HSNO Act) provides for the management, or prevention, of the harmful effects of hazardous substances “in order to protect the environment and the health and safety of people and communities.”

Of primary importance are:

- the safe-guarding of the life-supporting capacity of air, water, soil and ecosystems
- the maintenance and enhancement of the capacity of people and communities to provide for their own economic, social and cultural well-being and for the reasonably foreseeable needs of future generations.
Resource Management Act 1991

has as its purpose the sustainable management of natural resources in a manner that “enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while

- sustaining the potential of natural and physical resources …
- safeguarding the life-supporting capacity of air, water, soil and ecosystems; and
- avoiding, remedying or mitigating any adverse effects of activities on the environment.”

The Act is given effect through the preparation and application of Regional Policy Statements, Regional Plans and District Plans.

Reserves Act 1977 provides for the management and administration of reserves and in particular, “Ensuring as far as possible, the survival of all indigenous species of flora and fauna, both rare and commonplace, in their natural communities and habitats, and the preservation of representative samples of all classes of natural ecosystems and landscape which in the aggregate originally gave New Zealand its own recognisable character…”

Wild Animal Control Act 1963 provides for the control of harmful species of introduced wild animals.

Other relevant legislation is listed in Appendix III.

4.3.1 GREATER WELLINGTON REGIONAL PEST MANAGEMENT STRATEGY (RPMS)

Under the Biosecurity Act, regional councils may prepare a Regional Pest Management Strategy to address the control of pests in their region. The strategy is reviewed every five years.

Under the operative Greater Wellington RPMS, Wellington City Council is responsible for the following on council land:

- total control (eradication) of
  - wild ginger (*Hedychium gardnerianum, H. flavescens*)
  - cathedral bells (*Cobaea scandens*)
  - banana passionfruit (*Passiflora mollissima, P. mixta*)

control of
• old man’s beard (*Clematis vitalba*) within 10 metres of the boundary where there has been a complaint by an adjoining land owner, whose land is clear or being cleared of old man’s beard

• gorse (*Ulex europaeus*) within 10 metres of the boundary where there has been a complaint by an adjoining land owner, whose land is clear or being cleared of gorse

• ragwort (*Senecio jacobaea*) within 50 metres of the boundary where there has been a complaint by an adjoining land owner, whose land is clear or being cleared of ragwort

• variegated thistle (*Silybum marianum*) within 20 metres of their boundary where there has been a complaint by an adjoining land owner, whose land is clear or being cleared of variegated thistle.

and provides for the control of

• possums (*Trichosurus vulpecula*) as part of the Key Native Ecosystem Management programme

• rooks (*Corvus frugilegus*) as a containment pest

• feral rabbits (*Oryctolagus cuniculus cuniculus*) as a suppression pest

• magpies (*Gymnorhina tibicen*) as a site-led pest.

The Greater Wellington Key Native Ecosystem (KNE) programme is designed to protect and enhance native flora and fauna at selected sites throughout the region. Areas are selected to represent a range of indigenous biodiversity in the region and are prioritised primarily on ecological criteria. Management focus is on the site rather than individual species.

The objective of the programme is to achieve a measurable improvement in the ecological health and diversity of Key Native Ecosystems using a range of suitable indicators. This will be achieved through a range of means including

- reviewing the way priorities are set based on ecological processes
- managing KNEs on a holistic basis
- adding new areas
- implementing integrated pest management plans for all KNEs
- ensuring legal protection
- undertaking pest control directly
- re-establishing locally extinct native species
- monitoring site recovery
- involving community groups
- seeking funding from territorial local authorities where KNEs are on their land
- using and supporting biological control agents
- managing external pressures
- promoting organisms that assist in pest control
- providing education and advice to the public.
The RPMS provides rules to enable the programme to be carried out, including prohibiting interference with materials or equipment, prohibiting the dumping of plant waste material, prohibiting stock from being allowed into an area, and prohibiting the lighting of fires.

Beyond the species individually identified within the RPMS are additional species for inclusion in the KNE programme (see Appendix IV).

**Old man’s beard**

The previous RPMS had a specific programme for the Wellington City area which required the total control of old man’s beard.

The Council has invested a lot of time and resources in controlling old man’s beard in the past. While Greater Wellington Regional Council have moved from total control to 10 metre boundary control on complaint, for Wellington City Council to adopt a programme of boundary control only jeopardises the gains that have been made so far.

Old man’s beard is able to revert to its previous levels of infestation quickly if control does not continue. Significant gains have been made in both open space and on road reserve in controlling old man’s beard. Therefore, it seems prudent to continue control operations on open space and road reserve to capitalise on those gains.

Old man’s beard is unlikely ever to be eradicated within the Wellington area as seed is thought to be viable for more than 15 years. By continuing to control old man’s beard through destroying plants prior to seeding, the infestation will be reduced to levels that allow it to be managed as part of general weed control programmes.

**Gorse**

Gorse has been actively managed city-wide. Management has focused on boundary control following complaint by adjoining owners, either because of fire risk or because of weed spread.

Within the last two years a pro-active approach to the management of gorse has been adopted. A boundary is cleared of gorse for two successive seasons. Adjoining owners are supplied with low-fire-risk plants from the Council nursery to plant and maintain in the cleared area to prevent regrowth of gorse. While this approach has been adopted only in the last two years, it is proving popular with residents and is an effective method of preventing regrowth and reducing fire risk.

It is anticipated that the programme will pay for itself. Because gorse will continue to reinvade from surrounding areas, boundary control of gorse may be never-ending unless alternative vegetation is introduced. Rather than using grass along boundaries, which would require maintenance and still present a fire risk in late summer, it is considered better to invest in revegetating the site with native vegetation. This limits ongoing maintenance costs and provides for a better environment for the neighbour and the community generally.
There is the added advantage for many residents that revegetation will prevent access along boundaries by intruders. Some residents have found that once their boundaries have been cleared of gorse, they have been burgled for the first time, as the cleared area provides burglars with a discreet exit route.

Gorse is now widely recognised as valuable for its ability to act as a nurse crop, enhancing the survival of native species, and restricting the ability of weed species to establish. Therefore, gorse will not generally be regarded as a weed, and will be eradicated only as part of a specific programme.

**Possums**

Possums are probably the worst pest animal present in New Zealand. They destroy or damage native forest, eat the flowers and seeds that provide food for native birds, as well as preying on native animals, particularly eggs and young birds. Possums also damage crops, commercial forestry and gardens, and spread bovine tuberculosis to deer and cattle.

Wellington City Council works in partnership with the Greater Wellington Regional Council possum programme. The programme identifies areas throughout the city that will be targeted each year, based on Greater Wellington’s Key Native Ecosystem Management programme. The Council contributes half the cost of the work undertaken on Council land in the programme.

The possum programme involves monitoring an area before control operations to assess animal numbers. An intensive eradication programme using poison appropriate to the location is undertaken over a year. Possum numbers are monitored following completion of the programme to establish its success. Bait stations are maintained for a further period of three years to maintain the population at low numbers, although this period may be increased.

The RPMS notes that Greater Wellington intends to expand and intensify control programmes in the future. Such an expansion would provide the Council with an opportunity to identify any additional areas that should be targeted for possum control.

Miramar peninsula has been a particular target since 2003/2004, with the intention that the entire peninsula will become possum-free. The possibility exists for large parts of the city to become possum-free.

**Rooks**

Rooks are primarily located in the Wairarapa and are not currently known within Wellington city. The RPMS requires landowners to notify Greater Wellington of any rookeries on their land.
Rabbits

Rabbits were introduced to New Zealand in the 1840s to establish a meat and fur industry, but later became a serious agricultural pest. They affect agricultural production, and threaten biodiversity values by eating native plants, contributing to unpalatable weed species becoming established and to erosion through grazing and burrowing. They also help to maintain populations of pests such as ferrets and feral cats.

Rabbits prefer drier grassland areas and are found in greatest numbers on the drier coastal areas of Miramar. They also favour dune systems where they threaten rare plant species such as pingao (Desmoschoenus spiralis) and shrubby tororaro (Muehlenbeckia astonii).

Numbers are thought to have decreased since the introduction of RHD (Rabbit Haemorrhagic Disease), although the full impact of the disease on rabbit populations over a long period is still not fully known, particularly in urban areas.

Greater Wellington will undertake control of rabbits on riverbanks, esplanades and similar public commons. Wellington City Council as landowner is responsible for maintaining rabbit numbers at or below level 5 of the Modified McLean Scale as specified in the RPMS. Level 5 of the Modified McLean scale is, “Sign very frequent with faecal heaps less than 5m apart in pockets. Rabbits spreading.”

Rabbit control is sometimes undertaken to protect revegetation plantings or city amenities such as sports fields.

Magpies

The operative RPMS provides for Greater Wellington to undertake control of magpies following a complaint. Greater Wellington will provide advice, education and assistance to landowners wanting to undertake magpie control.

Greater Wellington has been participating in research to assess the impacts of magpies on native bird species. Indications from recent research are that magpies affect the visibility of birds such as tui and kereru, but the native species are otherwise unaffected.

Key native ecosystem management

The KNE programme is paralleled closely by this pest management policy but being regionally focused is less specific than the Wellington City programme.

Under the RPMS, Greater Wellington will undertake control of pests identified in the management plan for each KNE and a financial partnership will be sought where the KNE is on Council land.
Areas that are identified as regionally significant KNEs will also be significant within the local Wellington City area. It is therefore important that the management responsibilities of Greater Wellington and Wellington City Council are co-ordinated to avoid duplication or conflicting activities. Management plans for KNE areas should be prepared in consultation with Greater Wellington, and close liaison maintained in operations.

**Climbing Asparagus/Snakefeather**

Climbing Asparagus/Snakefeather (*Asparagus scandens*) was included in the Council weed control programme in the expectation that it, too, would require total control in the new RPMS. However, it was not included in the plan finally adopted.

The inclusion of Climbing Asparagus/Snakefeather in the Total Control species programme will need to be reviewed to determine if its distribution is sufficiently localised to justify its being controlled, or whether it should be dealt with as part of the priority site programme.

**4.3.2 PUBLIC HEALTH**

**Rats and mice**

Rat and mouse control are the responsibility of the landowner. Rodent control operations may be required for public health reasons rather than in accordance with the priorities set for the protection of biodiversity values. Council Environmental Health Officers may require the control of rats where they are a nuisance, and the taking of all necessary steps to get rid of them.

Rats and mice often move closer to houses in cooler weather or into areas in response to readily available sources of food. Open space areas often provide prime residential territory for rats and mice. However, often they become a problem to people only when they are attracted by such things as alternative accommodation, and good sources of food. Accommodation can include old newspapers, boxes, rags, and other materials in basements, piles of bricks, timber, rubble, garden waste, or non-rodent proof compost bins. Rats usually stay within 40 metres of their nests.

The dumping of garden waste or household rubbish into open space and road reserve areas encourages rodents. Similarly, the feeding of birds in gardens and in open space such as beaches or parks also encourages rodents. Much of the city’s coast provides good habitat for rodents, in particular rats, and well-meaning acts of feeding birds with leftover food often provide a bonanza for rats. Rats take far more of the food left for birds than most people realise.

**4.3.3 WILD ANIMAL CONTROL**

Deer and goats, not suitably identified and farmed behind fences, and pigs not being herded or domestic or not behind fences, are deemed to be wild animals under the
Wild Animal Control Act 1977. It is unlawful to release any wild animal without the Minister of Conservation’s approval, and it is unlawful to hunt wild animals without the express approval of the land owner. A fine of up to $50,000 may be imposed for releasing wild animals.

Goat farming is a controlled activity under section 15.2.2 of the District Plan, as a means of ensuring goats do not escape and to provide for a method of owner identification.

**Goats**

Goats are extremely adaptable animals with broad dietary preferences. Their ability to stand on their hind legs and reach up into trees gives them the potential to destroy the understorey of native forests. Their grazing habits often lead to erosion and can seriously limit the biodiversity of forests through destruction of habitat, prevention of regeneration and altering the species balance to favour unpalatable species.

Goats are most prevalent in the south-western and northern areas of the city where animals tend to move in and out of open space land from adjoining rural land, as boundary fencing is often not goat-proof, is in poor repair or non-existent. Small populations of goats have been observed elsewhere around the city, their mobility making them difficult to pinpoint.

While goat numbers can be controlled through the use of hunters assisted by specially trained dogs, it is expensive and often not as effective because of the animals’ ability to move off Council owned land onto private land and then return. For control programmes to be most effective, the co-operation of adjoining landowners is needed.

Landowners need to be reminded of their obligations under the Act and the District Plan to suitably identify their animals and to have goat-proof fencing, if they wish to retain them. This would allow those landowners in an area who wish to eradicate goats from their land to do so.

For the Council, goats in open space areas present a considerable threat to the biodiversity values, either directly through grazing and destruction, or through their proximity to and ability to access areas important for biodiversity values.

**Deer**

Deer prefer broad-leaved hardwood tree species, typically sub-canopy species and some ferns. The continued presence of deer will result in the replacement of preferred species with a smaller number of less palatable species. Dieback can occur, and where possums are also present die-back can be more immediate and severe as possums kill trees and deer prevent their regeneration.
Deer are a known carrier of bovine tuberculosis and present an animal health risk to adjoining farms.

Fallow deer have been sighted on open space land to the south west of the city. Indications are that they have been unlawfully introduced, possibly by recreational hunters keen to establish a game hunting resource close to the city.

There have been anecdotal reports of other species of deer in the same south-western area of the city.

In assessing control programme priorities, consideration will be given to the principle that early eradication of small populations is desirable, as this is the most effective time in terms of resources and likelihood of success to undertake control operations.

**Pigs**

Feral pigs are pests primarily because of the damage they cause to forest habitats in searching for food. Their omnivorous dietary preferences make them consumers of plant matter, seeds, fruits and insects, small animals, eggs, dead animals and much else that may be edible. Their habit of rooting for tubers or rhizomes destroys surrounding vegetation and opens up sites for weeds to invade.

Pig sign has been reported recently in open space to the south-west of the city. It is not clear whether these are survivors of previous populations, have entered the area from adjacent farm land, or have been introduced by recreational hunters.

### 4.4 CONTROL METHODS - HOW TO CONTROL PESTS

- A variety of control methods are available including biological, physical and chemical, or control through changed management practices.

**Biological control**

Biological control is the use of parasites, predators and pathogens to permanently lower the incidence of a target species. Predominantly, biological control is used against weeds and involves the use of insects or fungi. Complete eradication is not the intention or the control agent will die out, rather the target species is reduced to a permanently low level.

Weed species that have had a biological agent introduced and established include:

<table>
<thead>
<tr>
<th>Alligator weed</th>
<th>Broom</th>
<th>Californian thistle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gorse</td>
<td>Hawkweeds</td>
<td>Heather</td>
</tr>
<tr>
<td>Mexican devil</td>
<td>Mist flower</td>
<td>Nodding thistle</td>
</tr>
<tr>
<td>Old man’s beard</td>
<td>Piripiri (agent not established)</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>Ragwort</td>
<td>Scotch thistle</td>
<td></td>
</tr>
<tr>
<td>St John’s wort</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Others being investigated include:

- Boneseed
- Nassella tussock
- Woolly nightshade
- Privet
- Lagarosiphon
- Barberry
- Banana passionfruit
- Climbing asparagus
- Moth plant
- Variegated thistle
- Buddleia
- Blackberry
- Chilean needle grass
- Wild ginger
- Pampas grass
- Wilding pines
- Blue morning glory

Several major pest animals in New Zealand are the result of failed attempts to use predators to control other pest animals, such as the introduction of stoats, ferrets and weasels to control rabbits, and the introduction of carp to control water weeds. More recently, the RHD virus was introduced unlawfully and widely used as a biocide against rabbits. Observations to date suggest that the disease is more effective if left to move naturally in the population and supported by other control methods. Used as a biocide it appears to be variable in its effectiveness and liable to create a resistant population.

There are risks associated with biological control. Determining and introducing a bio-control agent is a very costly and time-consuming exercise, with no guarantee of success. Reducing one species may have little ecological benefit if another species fills the vacated ecological niche, particularly if the new species is a worse pest. Despite testing before release, there is still the risk that the bio-control agent will have adverse effects on indigenous species.

The benefits of successful biological control can be high. The need for conventional, often chemical, control can be substantially reduced, sometimes to nil. Successes are permanent and highly cost effective, as well as being highly specific.

Biological control is often best as part of integrated pest-management programmes.

The city is already the recipient of bio-control agents introduced nationally, such as ragwort flea beetle and cinnabar moth. There have been various releases of biological agents for the control of old man’s beard in Wellington City.

**Physical barriers**

For goats, pigs, deer and livestock such as sheep and cattle, stock-proof fencing is one of the most effective means of excluding these animals. It can, however, be expensive to erect and maintain. In particular, deer- and goat-proof fencing is expensive, particularly where fences are long.
The Fencing Act requires both owners to contribute a half share to a boundary fence of the type specified in the Act.

Where exclusion of stock is required, the principle of fencing stock into their owner’s property will generally be applied, rather than fencing to exclude stock. Owners of livestock are responsible for ensuring their stock does not stray. The Council recognises its obligations as landowner to ensure that stock cannot stray from Council-owned land that is being grazed.

**Trapping**

Trapping is an effective method of control for some animal pest species. Any trap systems used will meet the recognised standards for humaneness and meet animal welfare standards.

**Drainage**

Aquatic pests occur in both standing and flowing water, from streams and rivers, to lakes and wetlands. Control methods are often specific and require specialist attention. Options can include drainage of an area to either kill or allow efficient removal of a pest.

**Herbicide and pesticide control**

While other methods of control are preferred (e.g. physical), herbicides and pesticides may be the most effective, least environmentally damaging and/or most humane method of controlling a given pest.

Reduction in the use of sprays is achieved by the use of topical applications such as gel or paste.

Council has a range of policies, guidelines and procedures for chemical use. These include:

- No-Spray Register – a list of properties where the occupier does not want sprays used on adjacent road reserve and weed control is undertaken by the occupiers themselves
- Certification of Council staff and contractors - those working with agrichemicals must be appropriately certified
- Approved list of agrichemicals – Council-approved list of agrichemicals that can be used around the city.

### 4.5 MONITORING


The cost of monitoring means that the choice of what is monitored and how needs to be carefully considered.

**Monitoring outcomes**

Monitoring has tended to focus on measuring aspects of operational performance, such as numbers of possums killed. What such figures do not tell us is how well the wider strategic outcomes of the city such as “enhancing the range of native habitats for plants and animals”, are being achieved. For example, a possum eradication programme may remove all possums, but if it allows rats to increase substantially the overall improvement in the environment may be far less than expected.

With the shift to outcome-based strategies, new ways have had to be developed to measure effectiveness.

The Ministry for the Environment (MfE) has been developing criteria for its Environmental Performance Indicator (EPI) programme, which measures the health of our environment.

The Council has developed indicators to measure the strategic outcomes set within the Natural Environment Key Achievement Area of the city’s Strategic Plan:

5.1 **Biodiversity**

the city environment hosts and protects a representative range of indigenous and non-indigenous plants and animals in their natural communities and habitats

5.2 **Ecosystems**

the city’s varied marine and land-based ecosystems are valued and where appropriate, protected and restored.

Baseline monitoring has been started for the following indicators:

- the distribution and relative abundance of native forest bird species
- the structure and composition of forest and coastal plant communities
- the extent of vegetation cover classes in natural areas managed by Wellington City Council
- the condition of forest vegetation sensitive to possum browse.

An additional indicator is to be established to monitor the relative abundance and distribution of weeds in open space areas.

The continued monitoring programme for these indicators includes:

- **The distribution and relative abundance of native forest bird species**
  Counts carried out twice a year in spring and autumn at the same time of year and day and in the same weather conditions as previously experienced

- **The structure and composition of forest and coastal plant communities**
  Re-measurement of seedling and sapling layers within plots every three to five years with a complete survey every 10 years. Additional plots to be established in some vegetation classes under-represented
• The extent of vegetation cover classes in natural areas managed by Wellington City Council
  Already being monitored by Greater Wellington Regional Council in some reserves. Future monitoring on an annual basis is being co-ordinated with Greater Wellington
• The condition of forest vegetation sensitive to possum browse
  Mapping of vegetation will be repeated every 10 years
• The relative abundance and distribution of weeds in reserves (proposed)
  Yet to be determined.

Monitoring performance

Part of monitoring is checking on performance.

Regular audits need to be done to check that stated performance targets of control programmes and operational policies are met, to ensure sound financial management and use of resources.

Site or pest-specific monitoring

Many other agencies and organisations, particularly those with national or regional responsibilities, do long-term monitoring of major weeds and pest animals. For example, Greater Wellington Regional Council monitors possum numbers as part of the possum-control programme, and also monitors other pest animals such as rats and mustelids in the Wellington City area.

While there may be occasions where there is a clear need and benefit associated with site or pest-specific monitoring, this needs to be considered in terms of the guiding principles. In particular, the need for early prevention, eradication, containment or control of pests, or lack of knowledge are not sufficient reasons to fail to act.

4.6 RESEARCH

There are still vast gaps in understanding the biological processes associated with weeds and pest animals, their ecology, control methods, interrelationships and impacts. Agencies such as Greater Wellington Regional Council, DOC and Landcare have responsibilities for research in fields that are relevant to the management of pests on the Council’s open space.

There are three strands of research into pest management:
• literature search
• practical trials and experience
• innovative research.

Literature
With pest control research being given increasing priority by institutions and large landowners, there is a constant flow of new information becoming available. Some of the information is directly relevant to Wellington City and some of indirect relevance, looking at principles and theory. Sources include both New Zealand and overseas material. Keeping up to date on research will assist in ensuring pest-control planning and implementation are in accordance with the latest information available.

**Practical trials and experience**

Because of the size and nature of the land resource under its control, the Council has a valuable resource which can be made available for study by others or can be used by its own staff for research and investigation.

As hands-on manager of open space, the Council has the potential to do research into pests that are particularly significant locally, particularly weed control. For example, the Council could undertake research into Darwin’s barberry control and management, because of the large area of Council land infested with it.

Because the mix of environment and pests is specific to Wellington, there is constant learning by the Council’s staff and contractors, leading to continual improvement of management strategies and control techniques. Encouragement of an open learning style leads to sharing of useful information in the field.

The Council’s field staff and contractors are the people who are in the field. With appropriate support and training they are the frontline in the early identification of new pest species and the subtle changes that come about early in changes in pest levels.

**Innovative research**

Innovative and specific research tends to be expensive and generally beyond the Council’s resources. The Council can most effectively work with research organisations to identify areas of study that have direct and practical application to open space pest management.

### 4.7 COMMUNITY AWARENESS/EDUCATION

People are the key ingredient in change. Individually and collectively, their decisions and actions are critical in conserving and enhancing our biodiversity.

The whole community must become involved in the control of pests. Management of pests on Council open space land cannot be undertaken in isolation. Pests do not respect boundaries and often invade from outside open space areas. An example of this is the very high proportion of weeds in open space that are garden escapes.
While there are parts of the community that are well informed about the risks pests pose to our biodiversity, there are still large sections of the community who are either unaware or who simply don’t care.

Any programme of pest control on open space must be supported by a longer-term strategy of community education and raising of awareness.

Community awareness programmes need to be designed to ensure that they reach their target audiences. Joint programmes with other agencies and organisations can offer economies of scale and avoid the duplication of resources.

**Community partnerships**

**Iwi**

The Council recognises the importance of the mana whenua relationship and has formal memoranda of understanding with Wellington Tenths Trust and Ngati Toa Rangatira.

Under the memoranda of understanding each party recognises the authority of the other to exercise their responsibilities – kawanatanga (governance) by the Wellington City Council and rangatiratanga (customary authority) and kaitiakitanga (guardianship) by tangata whenua.

Actions taken under this plan will reflect these principles and are intended to provide opportunities for discussion and to develop partnerships. At the time of writing the memoranda of understanding are under review.

**“Wai 262” claim.**

This claim to the Waitangi Tribunal, lodged in 1991, includes ownership and use of indigenous flora and fauna, their genetic resources, related knowledge and intellectual property rights, and their management and conservation. Although the Waitangi Tribunal granted the claim urgency, the hearing of the claim and its determination has yet to be completed.

**Community groups**

Council works in partnership with a wide variety of community groups which have interests in open space around the city. These range from local residents, “Friends” groups and the Karori Wildlife Sanctuary Trust, to long term environmental programmes in schools.

Community groups are encouraged to take an active interest in local open space areas. Groups do however need to have a high level of ongoing commitment from members to ensure that the groups will be able to complete projects that they initiate, even though individuals may come and go.
While there are limitations in respect of the work such groups can do as a result of health and safety issues, the members are of great assistance. Familiarity with and frequency in visiting sites mean that up-to-date information can be passed back to the Council’s operational staff. This becomes increasingly important in the control of pests where early identification of infestations greatly assists control.

As many of the members of such groups are local residents, their awareness of pest control issues is communicated to the owners of surrounding properties, and assists in the prevention of gardens plants escaping and with other pest control on private land.

In addition to the more formal groups, there are an increasing number of organisations whose members are willing to participate in open space-related projects around the city on an occasional basis. This includes community service days for businesses, community work skills programmes, schools and social organisations. Such groups are often involved in the revegetation planting programme.

**Other agencies**

Partnerships with other land-management agencies such as Greater Wellington Regional Council, other territorial local authorities, and DOC allow information sharing and the opportunity to work jointly in areas of common interest.

There is also a need to develop greater relationships with agencies such as Transit New Zealand and Tranz Rail whose land holdings throughout the city are substantial. Their land holdings provide a substantial reservoir and corridor for pests.

Such agencies should be encouraged to adopt similar programmes for pest control to those in place for the surrounding environment, as part of their commitment to good corporate citizenship and environmental reporting.

### 4.8 IMPLEMENTATION

**Implementation plan**

The adoption of this pest management plan is the first of the two stages needed to make the new focus for the control of pests a reality. The second stage is the implementation plan which develops operational practices to prevent the arrival of new pests, eradicate or prevent newly arrived or existing pests from spreading, and which identifies and prioritises the ecologically important sites throughout the city.

The implementation plan is appended to this document (see Appendix VI).

The implementation plan clarifies the costs associated with control programmes and sites, and identifies areas where funding adjustments, including increases, may be required. Options for differing levels of service will be proposed and their funding impacts examined. The balance between control levels, available financial resources...
and public expectations will also be examined. The implementation plan allows the community to know when specific sites are likely to be addressed, so that their expectations can be managed effectively.

Each priority site identified in the implementation plan will have an individual pest management plan which will include the species or ecosystems present that make the site valuable, identify the pests that need to be controlled and develop a programme to undertake the control.

In determining the control operations to be undertaken, the need to further manage the site will be taken into consideration. Clearance of large areas of weeds will require that the cleared land be managed to prevent re-infestation.

Species such as Darwin’s barberry that need to be prevented from spreading further are identified and will have specific operational programmes developed.

Buffer zones are identified reflecting the needs of the site and the pests to be managed. For example, an urban buffer zone may extend to the top of the nearest ridge-top or catchment. In rural or urban fringe open space, buffer zones may extend much further to cater for a wide ranging mobile pest such as goats.

Private land may be included within the buffer zone where it would be beneficial to the priority site for the Council to undertake pest control, or for landowners to work with the Council to achieve maximum effectiveness.

**Impacts of implementation**

The change in the focus of pest control from specific species to priority sites may have some flow-on effects that will require time and education for the community to accept.

By directing existing resources into priority areas, non-priority areas will receive less attention. This could result in a perception of increased weeds in low priority sites that are currently actively managed. Some of the likely priority areas are less visible to the public, and the removal of pest species may not be immediately obvious.

Consequently, it will be important to educate the public about why some sites appear to have less attention, and to highlight the work being done in priority sites.
5. **OBJECTIVES AND ACTIONS**

5.1 **PREVENTING, ERADICATING OR CONTAINING PESTS**

**OBJECTIVES**

1. Prevent, eradicate or contain new pest species as early as possible.

2. Eradicate or control pests even though the full details of their impacts may not be known.

3. Eradicate pests, potential pests or isolated populations of pests while populations are small and localised, following the principles used to establish work priorities.

**ACTIONS**

**Biosecurity**

- Maintain a high level of vigilance and reporting by council officers of any unidentified or unusual organisms.
- Provide assistance to biosecurity officers as required, in the event of any biosecurity breach.

**Explanation**

Council officers’ work puts them in less frequented areas of open space where new organisms might establish undetected. As the city has a port and an international airport, the possibility of new organisms arriving undetected exists.

**Preventing Infestations by Pests New to the City**

- Develop programmes to raise the awareness of community groups, landowning agencies and the wider population of the threats posed by new organisms, and what actions can be taken to reduce these threats, as part of wider education programmes.
- Work with other agencies to develop joint programmes to raise community awareness of the threat posed by new organisms.

**Explanation**

Preventing pests established elsewhere in the country from arriving in the city is the most effective form of management. Human activities are a significant cause of infestations in new areas. Education of the public to raise awareness of the risks and to promote sound practices will help reduce the likelihood of new organisms arriving.

Because of the distances new pests can travel, particularly along roads and rail corridors, the co-operation of the controlling agencies will be sought. Joint programmes with other agencies with similar responsibilities and interests will also be pursued.
Early Identification, Eradication and Containment

- Identify emerging pest problems through regular forums of Council staff, other agencies, weed and pest animal control contractors and members of the community to pass on observations.
- Discuss personal observations of species that may be becoming a problem, set timetables for control action and identify the need for any research or monitoring.
- Eradicate if possible or otherwise contain new pests.
- Eradicate if possible or otherwise contain new pest species while the infestation is small and/or isolated.
- Eradicate if possible or otherwise contain established pest species to prevent spread into new areas.

Explanation

Early identification of new pests requires the assistance of a range of people throughout the community, particularly as the city has a large area of open space to manage, much of it expansive and some remote. Gathering a range of people together allows a wider picture to be established, and assists in clarifying the true significance of new pests.

There is often little information available about new pests, particularly on their impact on a new environment. Rather than waiting to find out the extent of the impacts, these pests should be controlled pro-actively.

Taking action when a population is small gives a greater likelihood of successfully eradicating the pest and is most effective financially. Using natural or man made barriers such as roads can allow larger populations of pests to be eradicated over a greater area. Eradicating outlying populations is also an efficient method of preventing the spread of pests.

Preventing established pests from spreading into new areas can also be an effective form of control, for example, preventing Darwin’s barberry from spreading into new areas of the city.

5.2 MANAGING PESTS

OBJECTIVES

1. Develop a methodology to determine which areas and which pests are priorities for control programmes

2. Give highest priority to the prevention, control and management of pests that pose greatest threats to areas of greatest biodiversity values.
ACTIONS

Identifying Priority Sites

- Prepare a methodology that allows sites to be ranked on the basis of the values they contain, the level of threat present from weeds and pest animals and the need for urgency in the control of weeds and/or pest animals.
- Assess sites and list them in order of priority.
- Prepare pest management programmes for each site and implement as resources allow each site to be dealt with.
- Review the site priority list each year.

Explanation
Sites with high biodiversity values are those with the most to lose through the adverse impacts of weeds and pest animals. A system of assessing sites has been devised in Appendix II. Once priority sites have been identified using this methodology, individual pest management plans can be prepared to address the specific needs of each site and implementation can be started.

The list of sites will need to be reviewed each year to reflect progress with pest control and to allow for any changed circumstances that may arise.

Buffer Zones

- Create buffer zones around priority sites to protect the control work that has been done.

Explanation
A buffer zone is an area clear of the pests that may spread back into the priority area and re-infest it. The size of the buffer is dependent on the characteristics of the pests and factors such as topography, climate, dispersal by birds, and prevailing wind.

Private Land

- Undertake pest control on private land where this is of significant benefit to priority sites on Council open space.
- Establish a set of procedures to ensure that pest control on private land is warranted.

Explanation
Occasionally, it may be beneficial to remove pests on private land adjacent to or in the buffer zone around a priority site, such as a seed source. Because the benefit is primarily to the priority site, this work would be done at no cost to the private landowner. Landowner consent to the work would be required.
5.3 STATUTORY OBLIGATIONS

The following sections deal only with the legal requirements to control the pests identified. Additional control may be required to protect specific sites, and this will be identified in the individual site pest management plans.

OBJECTIVES
1. Meet all statutory requirements relating to weed and pest animal management on Council owned or controlled land using Council staff or contractors as needed.

ACTION

**Cathedral bells, banana passionfruit, wild ginger**
- Eradicate all known plants on open space and road reserve.
- Maintain a programme of checking known sites to eradicate any new plants.

Explanation
Control operations will search for these weeds so that plants are destroyed before flowering, and will revisit sites to remove any seedlings that may establish later.

**Ragwort and variegated thistle**
- Control these species on request.

Explanation
These species are primarily agricultural weeds, and will be dealt with as required.

**Old man’s beard**
- Control old man’s beard on all the Council’s open space and road reserve land so that no plants are allowed to seed.
- Report to Greater Wellington Regional Council all occurrences of old man’s beard within 10 metres beyond the boundary of any open space or road reserve.
- Review, annually progress in controlling old man’s beard to determine if the level of control is sustainable.

Explanation
Old man’s beard has been the subject of considerable control work in the past. Although old man’s beard is now on boundary control under the RPMS, the Council will continue controlling old man’s beard on all its land to reduce its occurrence to a level that does not pose a significant threat to the environment.

**Gorse**
- Control gorse along boundaries on request.
- Provide plants for adjoining owners to plant and maintain, where boundary control of gorse has been done.

Explanation
Replanting boundaries cleared of gorse will reduce the need for future clearance and reduce fire risk.
Possums
- Continue working in partnership with Greater Wellington Regional Council to control possums on Council land.
- Identify additional areas that would benefit from possum control, either in conjunction with Greater Wellington Regional Council or as part of a Wellington City Council programme.
- Create possum free zones within the city.

Explanation
Possums are probably the most serious pest animal present in New Zealand and are controlled by Greater Wellington Regional Council as part of the Key Native Ecosystem programme. The success of the current programme means that expansion of the programme can be considered, with the intention of establishing widespread possum-free zones in the city.

Rooks
- Notify Greater Wellington of any rookeries be discovered on Council land.

Explanation
Periodically solitary rookeries of less than 10 rooks have been located and destroyed in the Ohariu district.

Rabbits
- Control of rabbits to maintain populations below that specified in the RPMS.

Explanation
Rabbit populations are generally localised and can be controlled by early intervention.

Magpies
- Report all occurrences of aggressive magpies to Greater Wellington for control.

Explanation
Research indicates that magpies are not a direct threat to birds. A close watch will be kept on research results to assess whether changes are needed to the management of magpies.

Key Native Ecosystems
- Liaise with Greater Wellington in the preparation of management plans and pest management plans for KNEs, exploring the possibility of joint plans where appropriate.
- Use the list of species identified for Key Native Ecosystem Management as a guide to species that may need control in areas identified as priorities for pest control.

Explanation
Parallels between the KNE programme and the directions of this plan provide opportunities to work closely with Greater Wellington Regional Council. The species
listed for inclusion in the KNE programme are those most likely to be significant in areas identified through this plan as priorities for pest control.

**Climbing Asparagus/Snakefeather**
- *Review the effectiveness of the Climbing Asparagus/Snakefeather control to date and determine if specific control continues to be appropriate.*

**Explanation**
Climbing Asparagus/Snakefeather may be more widespread than first thought, making it no longer appropriate to control it as part of an early eradication programme.

**Public Health**
- *Undertake rodent control operations in accordance with any request from Council Environmental Health officers.*
- *Deal with other factors which may be contributing to rodent numbers.*

**Explanation**
Rodent control will be done on request. Because rodents are often a symptom of a wider problem, the root cause of high rodent numbers or rodent visibility such as household rubbish dumping or garden waste, will be determined and either dealt with directly or passed to the appropriate agency for action.

**Goats**
- *Investigate, promote and if necessary initiate group landowner goat eradication and control programmes for areas of significant biodiversity values, in particular the south-western area of the city.*
- *Remind adjacent landowners of their obligations regarding goats under the Wild Animal Control Act 1977 and under section 15.2.2 of the District Plan and take enforcement action if appropriate.*
- *Take legal action against any person/s found to have deliberately released goats onto open space land.*

**Explanation**
Goats are a serious threat in some parts of the city. Controlling them is made more difficult by their ability to move from property to property. Those landowners who wish to keep goats and farm them, need to be reminded of their obligations to identify the animals and prevent the animals from escaping from their property. This is preferable to individual landowners who wish to keep their land goat-free having to fence their properties to keep out goats.

Those landowners and agencies that wish to eradicate goats from their properties can then combine forces to gain maximum effectiveness from control operations.

**Deer**
- *Investigate, promote and if necessary initiate group landowner deer eradication and control programmes for areas of significant biodiversity values, in particular the south-western area of the city.*
• Remind adjacent landowners of their obligations regarding deer under the Wild Animal Control Act 1977, and pursue enforcement action if appropriate.
• Pursue legal action against any person/s found to have deliberately released deer onto open space land.

Explanation
Those landowners and agencies that wish to eradicate deer from their properties can combine forces to gain maximum effectiveness from eradication and control operations.

The deliberate release of deer into open space presents a threat to biodiversity values found there. The damage that deer can cause and the costs associated with eradicating them mean that preventing their release is a priority.

Pigs
• Investigate, promote and if necessary initiate group landowner pig eradication and control programmes for areas of significant biodiversity values, in particular the south-western area of the city.
• Remind adjacent landowners of their obligations regarding pigs under the Wild Animal Control Act 1977 and pursue enforcement action if appropriate.
• Pursue legal action against any person/s found to have deliberately released pigs onto open space land.

Explanation
Those landowners and agencies that wish to eradicate pigs from their properties can combine forces to gain maximum effectiveness from eradication and control operations.

The deliberate release of pigs into open space presents a threat to biodiversity values found there. The damage that pigs can cause and the costs associated with eradicating them mean that preventing their release is a priority.

5.4 METHODS OF CONTROLLING PESTS

OBJECTIVES
1. Manage all pest control in a manner which avoids or minimises adverse effects on the environment, health, safety, public safety and cultural values.

ACTIONS
• Minimise the use of chemicals used to control pests consistent with Council policies and the need for effective and humane treatment of pests.
• Regularly review the No Spray Register to ensure that it is up to date.
• Ensure all personnel undertaking pest control programmes receive appropriate training and are suitably qualified.
• Co-operate with and assist agencies responsible for the introduction of biological controls for pests.
• Require adjoining landowners to keep all boundary fence stock-proof, where stock may be located on adjacent land.

Explanation
The range of options available for the control of pests continues to change and expand. New techniques are being developed as research and development solves pest problems. It is important for the most appropriate solution to be chosen, having regard to the policies of the Council for the protection of the environment, health and safety, and cultural values.

Biological control offers considerable benefits, but is expensive to develop. As a likely beneficiary, the Council will assist where possible the agencies involved.

Livestock should be prevented from accessing open space unless specifically required as a management tool. Stock-proof fences are the most effective and efficient means of doing this. The Council as adjoining owner may be required to contribute a half share of fencing costs.

5.5 COMMUNITY EDUCATION AND PARTNERSHIPS

OBJECTIVES
1. Develop community awareness and education programmes.
2. Develop community partnership programmes to assist in the management of weeds and pest animals.
3. Recognise the cultural values associated with open space throughout the city and the need to manage weeds and pest animals to protect and enhance these values.

Education and Awareness

ACTIONS
• Develop community awareness programmes to:
  o explain the change in focus of pest control for the city
  o highlight the threats to biodiversity that pests present
  o show how people’s actions contribute to the pest problems
  o encourage community support for pest control programmes
  o promote practical actions that the community can take to help prevent or control pests
  o show where the city’s priorities for biodiversity protection include working with other agencies, organisations and groups and utilising the resources that they have available.
The change in focus will result in changes to some of the areas that are currently being managed to control pests. The community needs to know why the programme has changed and what the changes will look like.

The support of the community is a key ingredient in the success of pest control programmes. It is important that the whole community understand the need for pest control programmes and where possible, assist in the process.

**Community Partnerships**

**Iwi**

**ACTIONS**

- Liaise with iwi in the preparation of individual pest management plans.

**Explanation**

Liaison with iwi in the preparation of individual site pest management plans will provide for a working partnership in the management of pests, and ensure that sites that have significance to local iwi are managed appropriately.

**Community Groups**

**ACTIONS**

- Work with community groups to protect the biodiversity values within the city.
- Consult community groups with known interests in a site or pest, in the preparation of individual pest management plans.

**Explanation**

Recognition of the need to protect biodiversity values and a desire to assist the regeneration process and beautify local open space have resulted in an increasing number of community groups becoming involved in protection and restoration of open space. Pest control is an essential part of that process and the Council provides assistance to groups, while encouraging them to take responsibility for the range of actions needed to undertake such projects.

### 5.6 MONITORING / RESEARCH

**OBJECTIVES**

1. Establish and maintain monitoring programmes to measure changes in biodiversity of priority areas.
2. Establish monitoring programmes to determine the effectiveness of weed and pest animal management programmes being used.

**ACTIONS**

- Maintain the biodiversity monitoring programme using the four indicators identified.
• Develop a programme to monitor the abundance and distribution of weeds in open space as a matter of priority.
• Regularly audit all pest control operations to ensure that the work is performed to the required standard and in accordance with all relevant policies and requirements.
• Undertake literature searches on a regular basis to ensure that the latest information is available to managers and programme operators.
• Identify specific research that can usefully be done and will have a practical application to the management of pests on Council open space.
• Assist other agencies with research and share research results.

Explanation
Monitoring is focused on measuring how well biodiversity and ecosystem strategic outcomes are achieved, of which pest control is an integral part. Audits provide a measure of how well the operators are performing to ensure standards are maintained and financial performance criteria met.

Much research of relevance to pest control on open space is being done by other agencies. The results need to be readily available so that staff and those managing pests are aware of the latest findings and can apply them to best effect.

Specific pests of particular interest to the Council, such as Darwin’s barberry, can be targeted by other agencies on the Council’s behalf or by the Council itself.

5.7 IMPLEMENTATION

OBJECTIVES
1. Following the adoption of the Pest Management Plan, initiate work on the implementation plan (see Appendix VI) to:
   - prevent new pests arriving
   - eradicate or contain pests or limited populations
   - prevent the spread of pests into new areas
   - identify and prioritise ecologically important sites.
2. Submit the completed implementation plan to committee for approval.

ACTIONS
Implementation Plan
• Consult with community groups and those with known interest and/or expertise in specific sites and/or pests
• Identify operational programmes to
  o prevent new pests establishing
  o identify pests that should be prevented from spreading
  o prioritise sites.
• Prepare individual pest management plans for each priority site that
  • address all significant weeds and pest animals present
• identify how eradication, containment or control will be carried out
• identify any revegetation or other work required following weed or pest animal control operations.

- Identify options and service levels and the additional resources required to implement each option.
- Identify public expectations for service levels.
- Submit the completed implementation plan to the committee for approval.

Explanation
The Draft Pest Management Plan was the first stage in developing pest management for the city. The second stage was preparing the implementation plan for approval, detailing how the Draft Pest Management Plan will be put into effect. These have been collated into the final Pest Management Plan.

The implementation plan considers options for the level of control to be achieved and the speed with which weed and pest animals can be controlled. Increased service levels will increase demands for financial resources or create a corresponding decrease in service levels. Public expectations about the level of weed and pest control that will be achieved need to be determined and managed.
APPENDICES

APPENDIX I  GLOSSARY

**Biodiversity**: the variety of all biological life – plants, animals, fungi, and micro-organisms – the genes they contain and the ecosystems on land or in water where they live.

**Biosecurity**: the protection of people and natural resources, including biodiversity, from unwanted organisms capable of causing harm.

**Environmental Performance Indicators (EPI) Programme**: a Ministry for the Environment-led programme to develop and use indicators to measure and report on environmental condition.

**Ecosystem**: an interacting system of living and non-living parts such as sunlight, air, water, minerals and nutrients.

**Feral species**: a domesticated species that has become wild.

**Habitat**: the place or type of area in which an organism naturally occurs.

**Indigenous species**: a plant or animal species which occurs naturally in New Zealand.

**Introduced species**: a plant or animal that has been brought to New Zealand by humans, either accidentally or by design.

**Invasive species**: a weed or pest animal that can adversely affect indigenous species and ecosystems by altering genetic variation within species, or affecting the survival of species, or the quality or sustainability of natural communities. In New Zealand, invasive weeds and pest animals are almost always species that have been introduced to the country.

**Invertebrate**: an animal without a backbone or spinal column.

**Iwi**: Maori tribal grouping.

**Monitoring**: the act of measuring change in the state, number or presence of characteristics of something.

**Open space**: the city’s outdoor spaces, such as reserves, the Wellington Town Belt, coastal reserves, outer green belt and other Council-owned lands that have ecological, recreational, landscape and natural heritage values.

**Pests**: organisms that are capable of causing, at some time, a serious adverse and unintended effect on people and/or the environment.
**Restoration:** the active intervention and management of degraded biotic communities, landforms and landscapes in order to restore biological character, ecological and physical processes and their cultural and visual qualities.

**Species:** a group of organisms capable of inter-breeding freely with each other but not with another species.
APPENDIX II  PRIORITY RANKING METHODOLOGY

The Department of Conservation’s *Strategic Plan for Managing Invasive Weeds* (S.J.Owen 1998) will be adapted to fit the needs of Wellington City.

The plan provides detailed methodologies for prioritising site-led and wed-led programmes. An assessment of the wildlife values of a site is included in the site-led programme.

The plan also includes criteria for evaluating the feasibility of eradication and containment, criteria to determine the feasibility of a weed-led programme, a method of ranking weed-led and site-led programmes.

Site-led programmes include:
- the programmes’ total ranking score, based on botanical or wildlife values and the urgency of control.
- the need to prevent or stop invasions at an early stage
- ensuring programmes are complementary
- the need to integrate control, and consider other threats
- ensuring management of the programme adequately protects the values of the sites before starting new programmes

Species led programmes include:
- evaluating the feasibility of a species-led programme (according to defined criteria which may be adapted for Wellington City)
- assessing a species’ weediness or pestiferousness
- assessing the practicalities of control

Consideration will also be given to existing work that has already identified priority sites and priority species. For example, the Wet and Wild: Bush and Streams Restoration Plan identifies city-wide priorities for bush and stream protection. Much of this work is based on the survey by Park G. 1999; *An Inventory of the Surviving Traces of the Primary Forest of Wellington City*. Also to be considered are studies relating to the coastal, and other distinctive environments.
APPENDIX III  LEGISLATION RELEVANT TO THE MANAGEMENT OF WEEDS AND PEST ANIMALS

Biosecurity Act 1993
Conservation Act 1987
Reserves Act 1977
Local Government Act 2003
Resource Management Act 1991
Hazardous Substances and New Organisms Act 1996
Health and Safety in Employment Act 1992
Pesticides Act 1979
Health Act 1956
Animal Welfare Act 1999
Trade in Endangered Species Act 1989
Wild Animal Control Act 1977
Wildlife Act 1953
Native Plants Protection Act 1934
Rating Powers Act 1988
Privacy Act 1993
Agricultural Compounds and Veterinary Medicines Act 1997
APPENDIX IV  KEY NATIVE ECOSYSTEM PESTS – REGIONAL PEST MANAGEMENT STRATEGY

<table>
<thead>
<tr>
<th>Pest Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentine ant</td>
<td><em>Linepithema humile</em></td>
</tr>
<tr>
<td>Brown bullhead catfish</td>
<td><em>Ameiursis nebulosis</em></td>
</tr>
<tr>
<td>European hedgehog</td>
<td><em>Erinaceus europaeus occidentalis</em></td>
</tr>
<tr>
<td>Feral cat</td>
<td><em>Felis catus</em></td>
</tr>
<tr>
<td>Feral goat</td>
<td><em>Capra hircus</em></td>
</tr>
<tr>
<td>Feral pig</td>
<td><em>Sus scrofa</em></td>
</tr>
<tr>
<td>Ferret</td>
<td><em>Mustela furo</em></td>
</tr>
<tr>
<td>Goldfish</td>
<td><em>Carassius auratus</em></td>
</tr>
<tr>
<td>Hare</td>
<td><em>Lepus europaeus occidentalis</em></td>
</tr>
<tr>
<td>House mouse</td>
<td><em>Mus musculus</em></td>
</tr>
<tr>
<td>Koi carp</td>
<td><em>Cyprinus carpio</em></td>
</tr>
<tr>
<td>Mosquito fish</td>
<td><em>Gambusia affinis</em></td>
</tr>
<tr>
<td>Norway rat</td>
<td><em>Rattus norvegicus</em></td>
</tr>
<tr>
<td>Possum</td>
<td><em>Trichosurus vulpecula</em></td>
</tr>
<tr>
<td>Rudd</td>
<td><em>Scardinius erythropthalmus</em></td>
</tr>
<tr>
<td>Ship rat</td>
<td><em>Rattus rattus</em></td>
</tr>
<tr>
<td>Stoat</td>
<td><em>Mustela erminea</em></td>
</tr>
<tr>
<td>Sulphur crested cockatoo</td>
<td><em>Cacatua galerita</em></td>
</tr>
<tr>
<td>Tench</td>
<td><em>Tinca tinca</em></td>
</tr>
<tr>
<td>Wasp</td>
<td><em>Vulpecula germanica; Vulpecula vulgaris</em></td>
</tr>
<tr>
<td>Weasel</td>
<td><em>Mustela nivalis</em></td>
</tr>
<tr>
<td>African club moss</td>
<td><em>Selaginella kraussiana</em></td>
</tr>
<tr>
<td>Artillery plant</td>
<td><em>Galeobdolon luteum</em></td>
</tr>
<tr>
<td>Barberry</td>
<td><em>Berberis glaucocarpa</em></td>
</tr>
<tr>
<td>Blackberry</td>
<td><em>Rubus fruticosus</em></td>
</tr>
<tr>
<td>Blue morning glory</td>
<td><em>Ipomoea indica</em></td>
</tr>
<tr>
<td>Boxthorn</td>
<td><em>Lycium ferocissimum</em></td>
</tr>
<tr>
<td>Broom</td>
<td><em>Cytisus scoparius</em></td>
</tr>
<tr>
<td>Brush wattle</td>
<td><em>Paraseranthes lophantha</em></td>
</tr>
<tr>
<td>Buddleia</td>
<td><em>Buddleja davidii</em></td>
</tr>
<tr>
<td>Cape honey flower</td>
<td><em>Melianthus major</em></td>
</tr>
<tr>
<td>Cape ivy</td>
<td><em>Senecio angulatus</em></td>
</tr>
<tr>
<td>Chilean flame creeper</td>
<td><em>Tropaceolom speciosum</em></td>
</tr>
<tr>
<td>Chinese and tree privet</td>
<td><em>Ligustrum sinense; L. lucidum</em></td>
</tr>
<tr>
<td>Climbing dock</td>
<td><em>Rumex sagittatus</em></td>
</tr>
<tr>
<td>Great bindweed</td>
<td><em>Calyxtegia silatica</em></td>
</tr>
<tr>
<td>Cotoneaster</td>
<td><em>Cotoneaster frachetti, C. horizontalis</em></td>
</tr>
<tr>
<td>Darwin's barberry</td>
<td><em>Berberis darwinii</em></td>
</tr>
<tr>
<td>Egeria</td>
<td><em>Egeria densa</em></td>
</tr>
<tr>
<td>Elaeagnus</td>
<td><em>Elaeagnus x reflexa</em></td>
</tr>
<tr>
<td>German ivy</td>
<td><em>Senecio mikanoides</em></td>
</tr>
<tr>
<td>Gunnera</td>
<td><em>Gunnera tinctoria</em></td>
</tr>
<tr>
<td>Hawthorn</td>
<td><em>Crataegus monogyna</em></td>
</tr>
<tr>
<td>Plant Name</td>
<td>Scientific Name</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Himalayan honeysuckle</td>
<td>(Leycesteria formosa)</td>
</tr>
<tr>
<td>Japanese honeysuckle</td>
<td>(Lonicera japonica)</td>
</tr>
<tr>
<td>Lagarosiphon</td>
<td>(Lagarosiphon major)</td>
</tr>
<tr>
<td>Marram grass</td>
<td>(Ammophila arenaria)</td>
</tr>
<tr>
<td>Mexican daisy</td>
<td>(Erigeron karvinskianus)</td>
</tr>
<tr>
<td>Mile-a-minute</td>
<td>(Dipogon lignosus)</td>
</tr>
<tr>
<td>Pampas grass</td>
<td>(Cortaderia jubata, C. selloana)</td>
</tr>
<tr>
<td>Parrot’s feather</td>
<td>(Myriophyllum aquaticum)</td>
</tr>
<tr>
<td>Periwinkle</td>
<td>(Vinca major)</td>
</tr>
<tr>
<td>Plectranthus</td>
<td>(Plectranthus ciliatus)</td>
</tr>
<tr>
<td>Purple ragwort</td>
<td>(Senecio glastifolius)</td>
</tr>
<tr>
<td>Spanish heath</td>
<td>(Erica lusitanica)</td>
</tr>
<tr>
<td>Stinking iris</td>
<td>(Iris foetidissima)</td>
</tr>
<tr>
<td>Sycamore</td>
<td>(Acer pseudoplatanus)</td>
</tr>
<tr>
<td>Velvet groundsel</td>
<td>(Senecio petasitis)</td>
</tr>
<tr>
<td>Wandering jew</td>
<td>(Tradescantia fluminensis)</td>
</tr>
<tr>
<td>Wild onion</td>
<td>(Allium triquetrum)</td>
</tr>
<tr>
<td>Wilding conifers</td>
<td>(Larix decidua; var)</td>
</tr>
<tr>
<td>Wilding pines</td>
<td>(Pinus spp.)</td>
</tr>
</tbody>
</table>
APPENDIX V   REFERENCE LIST/RELATED READING


Greater Wellington Regional Council 2003: Rodent Monitoring in the Key Native Ecosystems.


Park, G. 1999: An Inventory of the Surviving Traces of the Primary Forest of Wellington City. Wellington City Council, Wellington.
Wellington City Council, 1995: Land-use Management Guidelines to Heal the Wellington South Coast.


Wellington City Council, September 2002: South Coast Management Plan – to protect and enhance the coastal character of Wellington’s South Coast.

IMPLEMENTING THE PLAN FOR THE MANAGEMENT OF WEEDS AND PEST ANIMALS

June 2005
CONTENTS

1. TEN YEAR WORK PRORAMME ................................................................. 3

   1.1 PEST ANIMALS
       Goats, Deer, Pigs .................................................................................. 3
       Rabbits/Hares ....................................................................................... 7
       Rodents ................................................................................................. 8
       Mustelids .............................................................................................. 8
       Feral Cats ............................................................................................ 9
       Possums ............................................................................................. 11

   1.2 WEEDS
       Suppression pests .................................................................................. 13
       Old Man’s Beard .................................................................................. 14
       Snakefeather / Climbing Asparagus ..................................................... 16
       Emerging weeds .................................................................................. 17
       Gorse ................................................................................................... 18
       Ragwort / Variegated Thistle ............................................................... 19
       Darwin’s Barberry ............................................................................... 20
       KNE (Priority) Sites ........................................................................... 22
       Revegetation ....................................................................................... 26
       Amenity weed control ........................................................................ 27

   1.3 EDUCATION AND COMMUNITY AWARENESS .............................. 30

   1.4 MONITORING .................................................................................... 31

2. RANKING FOR PEST CONTROL IN KNE (PRIORITY) SITES ............ 33

   2.1 Ranking methodology ......................................................................... 33
   2.2 Rankings for weed and pest animal control - February 2005 ......... 39
1. TEN YEAR WORK PROGRAMME

1.1 PEST ANIMALS
GOATS, DEER, PIGS

<table>
<thead>
<tr>
<th>Goals</th>
<th>Long term</th>
<th>Medium term</th>
<th>Short term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wellington Peninsula south of the Motorway pest goat, deer, pig-free; north of motorway, WCC land pest goat/deer / pig free.</td>
<td>Land owners adjacent to WCC land participate in goat /deer / pig control operations to create effective buffer zone, or have goat proof fencing and all goats tagged.</td>
<td>Pest goats eradicated on WCC land / controlled to levels equivalent to current Possum RTC levels.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Te Kopahau /Carey's Gully / Owhiro Quarry / South Coast</td>
<td>Clearance of animals from entire Te Kopahau block. Clear Te Kopahau, Carey's Gully, and Wellington Natural Heritage Trust's Long Gully bush block. Helicopter shooting, with ground based follow up may be an option.</td>
<td>Ground based follow up of previous season's control programme. All animals eradicated. Note indications of animals re-invading from adjacent land.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land. Programme to continue until effective buffer zone is established and maintained.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land. Programme to continue until effective buffer zone is established and maintained.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land.</td>
<td>Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land.</td>
</tr>
<tr>
<td>Location</td>
<td>Pest Management Actions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Makara Peak / Wright's Hill / Long Gully Bush</strong></td>
<td>Helicopter shooting of goats and deer, followed up by ground based shooting to include pigs. Follow-up control and eradication of any animals that were missed or re-invaded from adjoining land. Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land. Programme to continue until effective buffer zone is established and maintained. Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land. Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land. Annual inspection and eradication of any animals that were missed or re-invaded from adjoining land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kilmister / Chartwell / Outer Green Belt</strong></td>
<td>Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Horokiwi / Grenada Nth/ Seton Nossiter</strong></td>
<td>Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion. Inspection and eradication of any goats, deer or pigs on an annual basis until an effective buffer zone excludes re-invasion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ngauranga</strong></td>
<td>Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc. Include in ongoing control operations for Horokiwi etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffer Zones</td>
<td>Control of goats, deer and pigs on land adjoining land cleared previously. Buffers to be of sufficient dimensions as to reduce the likelihood of re-invasion to low levels. Commence discussions with adjoining owners as buffers will most likely be on private land and will generally require similar levels of control input from the landowner.</td>
<td>May also include education or enforcement of Wild Animals Control Act.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner and multi-agency programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner and multi-agency programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner and multi-agency programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner and multi-agency programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner and multi-agency programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner and multi-agency programmes.</td>
<td></td>
</tr>
</tbody>
</table>
Monitor survey areas to be controlled to estimate animal numbers. Establish monitor points to track subsequent vegetation, bird and fauna changes. Continue monitoring of completed sites, including buffer zones. Monitor annual inspection results to determine effectiveness of control operations.
RABBITS / HARES

Goals

<table>
<thead>
<tr>
<th>Long term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control rabbits/hares in buffer zones around priority sites</td>
<td>Control rabbits/hares in priority sites</td>
<td>Control rabbits/hares to meet RPMS requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Miramar Eastern Walkway. Follow up control programme at Ian Galloway.</td>
<td>Follow-up control at Ian Galloway and Eastern W/w. Control of rabbits/hares at revegetation sites.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
<td>Follow-up previously controlled sites. Control areas of reveg. Other sites as identified.</td>
</tr>
</tbody>
</table>
### RODENTS

<table>
<thead>
<tr>
<th>Goals</th>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control rodents in buffer zones established around priority sites</td>
<td>Eradicate rodents in priority sites</td>
<td>Control rodents for public health</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Health</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
<td>Rat control as required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site specific rodent control for biodiversity protection</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
<th>Sites as identified by monitoring (see mustelids)</th>
</tr>
</thead>
</table>

### MUSTELIDS

<table>
<thead>
<tr>
<th>Goal</th>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Establish buffer zones around priority areas where mustelids are controlled</td>
<td>Control mustelids in areas identified as requiring control</td>
<td>Establish a mustelid free buffer zone around the Karori Wildlife Sanctuary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Karori Wildlife Sanctuary environs</td>
<td>Continued control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Priority Sites | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring | Control of mustelids in areas identified by monitoring |
# FERAL CATS

## Goals

**Long Term**
- Eradicate feral cats and limit recruitment to feral populations.
- Develop controlled cat or cat-free buffer zones around specific priority areas.

**Medium Term**
- Eradicate localised feral cat populations.

**Short Term**
- Establish the locations and extent of feral cat populations.

## Priority Sites / WCC Land

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control on priority sites / feral colonies on WCC land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Monitoring

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring of feral cat numbers at priority sites.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of feral cat numbers at priority sites.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitoring of priority sites. Post-control to monitor effectiveness of methods, and subsequent fauna changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Pest Management Implementation Plan 2005*
## Monitoring

### Goals

<table>
<thead>
<tr>
<th>Goal</th>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monitor changes in biodiversity attributable to pest control work</td>
<td>Monitor control programmes to ensure control is carried out effectively</td>
<td>Monitor sites to determine extent of pest populations</td>
</tr>
</tbody>
</table>

### Mustelids, Rodents, Hedgehogs

| Year/Year | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
|------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 2005/06    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2006/07    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2007/08    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2008/09    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2009/10    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2010/11    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2011/12    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2012/13    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2013/14    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |
| 2014/15    | Monitoring of priority sites to determine mustelid, rodent and hedgehog numbers, and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers. |

### Cats

<table>
<thead>
<tr>
<th>Year/Year</th>
<th>Monitoring of priority sites to determine feral cat numbers and the need for control.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2006/07</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2007/08</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2008/09</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2009/10</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2010/11</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2011/12</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2012/13</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2013/14</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
<tr>
<td>2014/15</td>
<td>Monitoring of priority sites to determine feral cat numbers and control needs. Monitoring post-control, to determine efficiency of control, need for further control and impacts of reduced pest numbers.</td>
</tr>
</tbody>
</table>
POSSUMS

Goals

<table>
<thead>
<tr>
<th>Long term:</th>
<th>Medium term:</th>
<th>Short Term:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possum free city east of outer green belt, working towards a possum-free Wellington city.</td>
<td>Possums controlled in all city area</td>
<td>Possums controlled in all priority areas, covenants and open space</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Te Kopahau /Sthn Landfill, Horokiwi, Grenada Nth, Woodburn Drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small isolated reserves not controlled previously / covenanted areas</td>
<td>Initial control - southern half of city, including covenanted areas.</td>
<td>Initial control - northern half of the city including covenanted areas.</td>
<td>Covenanted areas.</td>
<td>Covenanted areas.</td>
<td>Covenanted areas.</td>
<td>Covenanted areas.</td>
<td>Covenanted areas.</td>
<td>Covenanted areas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previously Controlled Sites</td>
<td>Continuing control following initial knockdown</td>
<td>Continuing control following initial knockdown</td>
<td>Continuing control following initial knockdown</td>
<td>Continuing control following initial knockdown</td>
<td>Continuing control following initial knockdown</td>
<td>Continuing control following initial knockdown</td>
<td>Continuing control following initial knockdown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffer Zones</td>
<td>Control of possums on land adjoining land cleared previously. Buffers to be of sufficient dimensions as to reduce the likelihood of re-invasion to low levels. Buffers will most likely be on private land and will generally require similar levels of control input from the landowner.</td>
<td>May also include education.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner programmes.</td>
<td>Once buffer zones are established, resources may be used in support of wide scale landowner programmes.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.2 WEEDS

#### Suppression Pests

<table>
<thead>
<tr>
<th>Goals</th>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goals</strong></td>
<td>Prevent flowering/seed set of all plants across the city</td>
<td>Eradicate all known plants on open space, covenants or buffer zone properties each year</td>
<td>Prevent flowering/seed set of all plants on WCC, covenant or buffer zone properties</td>
</tr>
<tr>
<td><strong>Cathedral Bells, Wild Ginger, Banana Passionfruit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2005/06</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2006/07</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2007/08</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2008/09</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2009/10</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2010/11</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2011/12</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2012/13</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2013/14</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2014/15</strong></td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated: cathedral bells - 3 monthly wild ginger, banana passionfruit – annually.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Monitoring

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006/07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007/08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008/09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012/13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## OLD MAN'S BEARD

### Goals

| Long Term | Prevent flowering/seed set of all plants across the city |
| Medium Term | Eradicate all known plants on open space, covenants or buffer zone properties each year |
| Short Term | Prevent flowering/seed set of all plants on WCC, covenant or buffer zone properties |

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All open space and road reserve</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
<td>Treat to eradicate all new occurrences. Inspect sites previously treated, re-treat if necessary, and search and destroy any seedlings in the vicinity.</td>
</tr>
</tbody>
</table>
### Buffer zones

Identify OMB buffer zones for priority sites. OMB buffer zones may differ from buffer zones for other weeds.

### Monitoring

<table>
<thead>
<tr>
<th></th>
<th>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
<tr>
<td></td>
<td>Monitor site numbers and location. Audit control for effectiveness of operational techniques.</td>
</tr>
</tbody>
</table>

---

**Pest Management Implementation Plan 2005**

---
### SNAKEFEATHER/CLIMBING ASPARAGUS

#### Goals

<table>
<thead>
<tr>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eradicate all plants on WCC land, covenanted areas and buffer zones</td>
<td>Determine the effectiveness of the programme and assess whether it should continue</td>
<td>Eradicate all plants in KNE sites</td>
</tr>
</tbody>
</table>

#### 2005/06

<table>
<thead>
<tr>
<th>All open space and road reserve</th>
<th>Eradicate all occurrences.</th>
<th>Eradicate all occurrences.</th>
<th>Eradicate all occurrences.</th>
<th>Eradicate all occurrences.</th>
<th>Eradicate all occurrences.</th>
<th>Eradicate all occurrences.</th>
<th>Eradicate all occurrences.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006/07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007/08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008/09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012/13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Buffer zones

<table>
<thead>
<tr>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
<th>Identify buffer zones and control plants on land within buffers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006/07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007/08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008/09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012/13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Monitoring

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006/07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007/08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008/09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012/13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**EMERGING WEEDS**

<table>
<thead>
<tr>
<th>Goals</th>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No new weeds become established in the city</td>
<td>Potential weeds are eradicated before they have become established</td>
<td>Potential weeds are identified before they have become established</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Citywide</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
<td>Identify emerging weeds and eradicate all occurrences.</td>
</tr>
<tr>
<td>Goals</td>
<td>Long Term</td>
<td>Medium Term</td>
<td>Short Term</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prevent gorse fires to allow regeneration to shade out gorse</td>
<td>Fire resistant buffers between properties and gorse on open space</td>
<td>Meet RPMS requirements for boundary control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/06</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td>Boundary control on request. Adjacent landowners provided with fire-resistant species to plant and maintain in cleared area.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RAGWORT AND VARIEGATED THISTLE

Goals

<table>
<thead>
<tr>
<th></th>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eradicate all known plants on open space, covenants or buffer zone properties each year</td>
<td>Prevent flowering / seed set of all plants on WCC, covenant or buffer zone properties</td>
<td>Meet RPMS requirements for boundary control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>City-wide</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
<td>Control on request</td>
</tr>
</tbody>
</table>
# DARWIN'S BARBERRY

**Goals**
- **Long Term:** Continue to reduce the areas of Darwin's barberry throughout the city
- **Medium Term:** Control Darwin's barberry in areas where it can be readily prevented from regrowing
- **Short Term:** Prevent Darwin's barberry from establishing in clear areas

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
<td>Remove all plants on road reserve city-wide.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
<td>Locate and remove all plants outside the &quot;D.B. line&quot; on WCC land.</td>
</tr>
<tr>
<td><strong>Spot clean</strong></td>
<td>Remove plants in areas where canopy closure will follow quickly, with no need for reveg. planting. Sites based on priority ranking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education programme</strong></td>
<td>Public education programme to eradicate DB from private gardens.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Priority Sites</strong></td>
<td>DB included in weed control programmes for priority sites.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Darwin’s Barberry line: a line around the outskirts of the city beyond which Darwin’s Barberry will not be allowed to spread. Over time the line will be moved closer to the city as control is achieved.*
KNE (PRIORITY SITE) PROGRAMME

**Goals**

**Long Term**
Weeds and pest animals eradicated or controlled city wide to a level where they no longer detrimentally affect biodiversity values of all KNE's

**Medium Term**
Weeds and pest animals eradicated or controlled in ranked KNE's

**Short Term**
Weed and pest animal control plans are prepared and implementation is started in the KNE's containing threatened species

NB: Indicative programme only. Variation in size of sites will affect number of sites worked per year.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Waipapa Catchment</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td></td>
<td>7 weeks x 4 crew</td>
<td>4 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
</tr>
<tr>
<td>Tapu Te Ranga Island</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td></td>
<td>7 weeks x 4 crew</td>
<td>4 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
</tr>
<tr>
<td>Makara Beach Foreshore</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td></td>
<td>7 weeks x 4 crew</td>
<td>4 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
</tr>
<tr>
<td>Huetetaka Islet (Moa Point)</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
</tr>
<tr>
<td></td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
</tr>
<tr>
<td></td>
<td>7 weeks x 4 crew</td>
<td>4 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
</tr>
<tr>
<td>Owhiro Quarry - Karori Stream coastal strip</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
<td>Prepare pest</td>
</tr>
<tr>
<td></td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
<td>management plan</td>
</tr>
<tr>
<td></td>
<td>7 weeks x 4 crew</td>
<td>4 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>2 weeks x 4 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
<td>1 week x 2 crew</td>
</tr>
<tr>
<td>Location</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Red Rocks</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Huntleigh Park</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Johnston Hill</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Otari – Wilton’s Bush</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Tyers Stream Reserve</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Tyers Stream Reserve / Homebush Park</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Trelissick Park</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
<td>Implement Plan</td>
</tr>
<tr>
<td>Sinclair Head Seal Haul out</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
</tr>
<tr>
<td>Owhiro Beach A &amp; B</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
</tr>
<tr>
<td>The Sirens Beach</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
</tr>
<tr>
<td>Island Bay Beach</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
</tr>
<tr>
<td>Houghton Bay Beach A &amp; B</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
</tr>
<tr>
<td>Princess Bay / Te Raekaihau</td>
<td>Prepare pest management plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
<td>Implement plan</td>
</tr>
</tbody>
</table>

**Pest Management Implementation Plan 2005**
<table>
<thead>
<tr>
<th>Location</th>
<th>Prepare pest management plan</th>
<th>Implement plan 7 weeks x 4 crew</th>
<th>Implement Plan 4 weeks x 4 crew</th>
<th>Implement Plan 2 weeks x 4 crew</th>
<th>Implement Plan 2 weeks x 4 crew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyall Bay Beach 8A &amp; B, 9A &amp; B, Seawall Beach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tarakena Bay Beach</td>
<td>Prepare pest management plan</td>
<td>Implement plan 7 weeks x 4 crew</td>
<td>Implement Plan 4 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
</tr>
<tr>
<td>Breaker Bay and Point Dorset Beach</td>
<td>Prepare pest management plan</td>
<td>Implement plan 7 weeks x 4 crew</td>
<td>Implement Plan 4 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
</tr>
<tr>
<td>Worser Bay Beach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point Gordon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Churchill Drive Reserve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karori Wildlife Sanctuary surrounds / Birdwood Res</td>
<td>Prepare pest management plan</td>
<td>Implement plan 7 weeks x 4 crew</td>
<td>Implement Plan 4 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
</tr>
<tr>
<td>Makerura St / Orleans St</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ngaio Gorge Reserve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redwood Bush / Larsen Cres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khandallah Pk and Johnsonville Park</td>
<td>Prepare pest management plan</td>
<td>Implement plan 7 weeks x 4 crew</td>
<td>Implement Plan 4 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
</tr>
<tr>
<td>Horokiwi Reserves / Waihinahina Park / Gilberds Bush</td>
<td>Prepare pest management plan</td>
<td>Implement plan 7 weeks x 4 crew</td>
<td>Implement Plan 4 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
<td>Implement Plan 2 weeks x 4 crew</td>
</tr>
<tr>
<td>Kaiwharawhara Park</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Monitoring**

- Mapping of weed abundance and distribution prior to control. Audit of control effectiveness - physical and financial. Post-control monitoring and mapping.
## REVEGETATION

### Goals

**Long Term**
- Revegetation canopy closure within five years

**Medium Term**
- Weeds regularly controlled on revegetation site

**Short Term**
- Revegetation carried out at the next planting season, with mulch and slow release fertiliser as appropriate

### Site by Site

|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
## AMENITY WEED CONTROL

**Goals**

- **Long Term**: Manage all open space in such a manner that amenity weeds are not an issue.
- **Medium Term**: Control amenity weeds to ensure a quality city open space experience.
- **Short Term**: Control amenity weeds along major scenic routes, city gateways and high public use areas.

### City Gateways / High use routes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>City Gateways / High use routes</strong></td>
<td>- City Gateway: City and coastal route, motorway excl Transit land.</td>
<td>- SH2 – Hutt Rd to city boundary.</td>
<td>- J’ville – Onslow-Wilton – City</td>
<td>- City to Bot Garden, KWS, Otari.</td>
<td>Karori to Makara</td>
<td>Maintenance of all previously worked areas.</td>
<td>Maintenance of all previously worked areas.</td>
<td>Maintenance of all previously worked areas.</td>
<td>Maintenance of all previously worked areas.</td>
<td>Maintenance of all previously worked areas.</td>
</tr>
<tr>
<td><strong>Town Belt</strong></td>
<td>- Mt Vic.Lookout surrounds, road access from city – all routes.</td>
<td>- Palliser Rd and lookout to east/west line from Majoribanks St</td>
<td>- Hataitai Park and surrounds.</td>
<td>- Central Park</td>
<td>- Oriental Pde to Palliser Rd</td>
<td>Majoribanks St line to Mt Vic Tunnel</td>
<td>- Macalister Park</td>
<td>- Crawford Rd to Manchester St</td>
<td>- Manchester St to Houghton Bay Rd</td>
<td>- Martin Luckie Park</td>
</tr>
<tr>
<td></td>
<td>- Kelburn Park</td>
<td>- Central Park</td>
<td>- Nairn St Park</td>
<td>- Prince of Wales Park</td>
<td>- Brooklyn</td>
<td>- Tinakori Hill</td>
<td>- Tanera Park</td>
<td>- Crawford Rd to Manchester St</td>
<td>- Quebec St, Tawatara Ridge to Murchison St</td>
<td>- Houghton Bay Rd to Cave Rd</td>
</tr>
</tbody>
</table>

### Pest Management Implementation Plan 2005

89
| Southern Walkway | - Oriental Bay to Mt Vic tunnel  
  Northern w/w to Tinakori Hill | - Mt Vic tunnel to Crawford Rd  
  - Crawford Rd to Houghton Bay Rd | - Houghton Bay Rd to Shorland Park  
  - Crawford Rd to Houghton Bay Rd  
  - Mt Vic tunnel to Crawford Rd  
  - Crawford Rd to Houghton Bay Rd | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas |
| City to Sea Walkway | Bolton St Cemetery to Aro St  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Hutchison Rd to Morton St  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Morton St to Murchison St  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas |
| Northern Walkway | Truscott Avenue to Mt Kaukau to Woodmancote Rd and Simla Cres  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas |
| Eastern Walkway | Pass of Branda, Breaker Bay Rd to Ataturk Memorial to Bot. Garden, Bolton St Cemetery, cross-city routes, motorway routes  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas |
| Coastal Walk / route | Coast road – Owhiro Bay entrance to Red Rocks  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas | Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas  
  Maintenance of all previously worked areas |
| Reserves | High use / high profile sports grounds  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | High use / high profile parks and reserves  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Medium use / profile sports grounds  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Medium use / profile sports grounds  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Low use / low profile sports grounds  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Low use / low profile parks and reserves  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Low use / low profile parks and reserves  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. |
| Access Ways | Central City access routes including City to Bot. Garden, Bolton St Cemetery, cross-city routes, motorway routes  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | City to Town Belt (Mt Vic and Tinakori Hill)  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Northern suburbs accessways  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Eastern suburbs accessways  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Western suburbs accessways  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. |
| Maintenance | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. | Maintenance of all previously worked areas  
  - Simla Cres to Ottawa Rd  
  - Hanover St through Wadestown to Tinakori Hill to St Mary St. |
| Rapid Response | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. | Specific sites in need of speedy attention, throughout the city. |
## 1.3 EDUCATION AND COMMUNITY AWARENESS

### EDUCATION AND COMMUNITY AWARENESS

#### Goals

<table>
<thead>
<tr>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>The whole community actively assists in eradicating weeds and pest animals.</td>
<td>The whole community actively assists in preventing the spread of weeds and pest animals</td>
<td>Dumping of garden waste on open space / road reserve ceases</td>
</tr>
</tbody>
</table>

### Community education

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
<td>Joint initiatives with other agencies / community groups.</td>
</tr>
</tbody>
</table>

### Anti-garden waste dumping programme

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
<td>Anti dumping signage at known dumping sites.</td>
</tr>
</tbody>
</table>

### Anti-garden waste dumping programme

|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|

### Pest awareness

|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|

### Community Action

|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
### 1.4 MONITORING

**MONITORING**

**Goals**

<table>
<thead>
<tr>
<th>Long Term</th>
<th>Medium Term</th>
<th>Short Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the composition of threatened species and ecosystems are identified through monitoring</td>
<td>Monitoring accurately reflects changes in weed distribution and occurrence</td>
<td>Weed monitoring is undertaken across the city</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected sites across the city.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected sites across the city.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. RANKING KNE (PRIORITY) SITES

2.1 RANKING METHODOLOGY

Steps

1. Identify the management area - is it:
   - ecologically connected
   - a manageable size relative to the type of pest problem.

2. Score the management area for its botanical and wildlife values using six point scoring system.

3. Identify biodiversity value score (higher of botanical or wildlife values).

4. Identify the suite of significant pests that threaten the important natural values of that management area.

5. Determine the overall urgency of controlling the pests (in the management unit or in buffers or from nearby sources of reinfestation) that affect or have the potential to affect the values of the management area.
   (Use criteria for assessing the urgency of control. Where specific information is not available, weediness scores will help to indicate overall urgency for weeds – and estimate for pest animals.)

Total Ranking Score = Biodiversity score x Urgency of control score.

Selecting species and prioritising the order of control within a site-led programme

Species within a site-led programme will be selected and prioritised for control using the following criteria:

1. the species potential to establish, spread and affect the values of management area (weediness). This can be determined using the DOC database (Owen 1977), modified by evaluating local conditions as necessary.
2. the practicality of controlling species;
3. the potential for a pest species to create or exacerbate other pest problems (for example, by consolidating mobile sand, marram grass improves conditions for woody species such as gorse and lupins to invade).
Six point scoring system for ranking management areas
(Based on DOC Strategic Plan for Managing Invasive Weeds, S J Owen.).
The site fits one or more qualifiers to gain the ranking.

Botanical values
6: Nationally important
   a) contains a nationally threatened vegetation type, or plant species, which is endemic to the ecological district
   b) the best representative site in the country of a nationally uncommon vegetation type.

5: Exceptional
   a) contains good examples of nationally uncommon vegetation types, successional sequences or mosaics
   b) contains vegetation types of great conservation value – for example, vegetation is largely unmodified by introduced plants, browsing animals or other human influences
   c) Sites where a vegetation type of more than one plant or animal species, reaches a geographic limit
   d) Contains threatened plants (in the endangered or vulnerable category) which are not endemic to the ecological district
   e) Contains a vegetation type which is endemic to the ecological district
   f) Contains communities which are (to a significant degree) representative of the natural character of the ecological district.

4: Very High
   a) the last, or one of very few remaining examples, of a vegetation type once more widespread in the ecological district - the example must retain most of its natural character
   b) contains regionally uncommon vegetation types in good condition and forming part of a larger tract of native vegetation - for example, subalpine and alpine areas surrounded by a large tract of forest.
   c) an example of the vegetation of an ecological district that forms a continuous ecological or altitudinal sequence across a district, and that is not better represented elsewhere in the ecological district
   d) the last or one of the few remaining examples of a secondary succession that has developed following disturbance to the vegetation in pre-European or early European times
   e) good quality examples, or the only example, of a secondary succession that has developed following a large disturbance such as mass ground movement, storm damage or fire
   f) nationally uncommon ecosystems or vegetation types which have been degraded by, for example, fragmentation, weeds, burning, browsing animals
   g) large (over 300ha) example of secondary vegetation where there is relatively little (less than five percent) of an ecological district remaining in native vegetation.
3: High  
   a) good quality, moderately large (300 – 1000ha) example of native vegetation typical of an ecological district where there are other better quality or larger (over 1,000ha) examples present  
   b) the last, or one of the few remaining examples of a vegetation type within an ecological district which, although in modified condition, still retains the main elements of composition and structure  
   c) an example of the native vegetation of an ecological district that now forms part of a culturally interrupted ecological and/or altitudinal sequence  
   d) areas where individual species or vegetation types reach the limits of their geographical distribution  
   e) regionally uncommon vegetation types, either intact or relatively unmodified, but completely or largely surrounded by a highly modified landscape, for example small urban reserves  
   f) contains a rare species or two or more threatened species in “local” category  
   g) nationally uncommon ecosystems or vegetation types, with a conspicuous element of exotic plant species that will eventually be replaced by native plant species  
   h) early successional vegetation not presently representative of the natural cover of the ecological district but with the potential to develop, and where there are very few or very small remaining examples of natural vegetation in the ecological district.

2: Moderate  
   a) substantially modified native vegetation types that retain their main elements of composition and structure (for example selectively logged, lightly burnt, grazed, weeds present) but are better represented at other sites in the ecological district  
   b) small examples of native vegetation types where there are larger or better examples elsewhere in the ecological district.

1: Potential  
   a) mosaic(s) of native and exotic vegetation where the former are small and of no particular interest  
   b) small areas of exotic vegetation surrounded by large areas of native vegetation  
   c) early successional vegetation where there are better examples in the ecological district  
   d) contains native vegetation but is essentially recently human made.

Wildlife Value Scoring  
(Based on DOC Weed Strategy from Elliot and Ogle (1985) )

6: Contains animal species endemic to, or best represented in this ecological district.
5: Exceptional
a) an endangered, rare or restricted endemic species that breeds in the management area
b) the management area is essential to endangered, rare or restricted species for purposes other than breeding
c) the management area is vital to internationally uncommon species (breeding and/or migratory)
d) the management area is vital to internally migratory species with very limited distribution or abundance
e) largely unmodified ecosystems or examples of original habitat not represented elsewhere; of large size and containing viable populations of all or most animal species typical of such ecosystems.

4: Very High
a) site containing a native animal species which has declined significantly as a result of human influence
b) one of a few, or the only breeding area, for a non-endemic native species of limited abundance
c) habitat of an uncommon, discontinuously distributed species not adequately represented in a particular ecological district
d) example of a largely unmodified site which is not represented to the same extent elsewhere in the ecological district and is used by most native animal species which are typical of that habitat
e) supports a species of an endemic family which is of limited abundance nationally although adequately represented in one ecological district but whose habitat is at risk.

3: High
a) supports a species which is still widely distributed but whose habitat has been reduced
b) contains large numbers of breeding or moulting birds or where breeding or moulting areas are of inter-regional significance
c) large and fairly unmodified site which is represented elsewhere in the ecological district and contains all or most native animal species typical of that habitat for that ecological district
d) contains a widespread native animal species which is noteworthy at this site for its abundance or behaviour.

2: Moderate
Not heavily modified and supports good numbers of native animal species typical of the habitat in the ecological district.

1: Potential
Small, heavily modified site that could be more valuable to native animals if left to regenerate, or managed and developed for their benefit.
**Criteria for assessing urgency of control**

Where specific information is not available as to the exact impacts or rate of change being caused by a weed species, the “weediness” scores of individual species will help to give an indication of the overall urgency (the higher the average weediness scores, the greater the overall impact will probably be on a site).

**Score 3.5**
The plant community or some plant or animal species within it is known, or is very likely to be, at risk of national extinction because of the impacts of invasive weeds or pest animals.

**Score 3.0**
The plant community or some plant or animal species within it is known, or is very likely to be, at risk of local extinction because of the impacts of invasive weeds or pest animals.

**Score 2.5**
The important conservation values that give the management area its biodiversity score are at risk of major damage in the near future, but the management area is so far unaffected or little affected by invasive weeds or pest animals (such as an un-degraded high value tussockland at risk of invasion by Pinus contorta).

**Score 2.0**
Significant changes to the important conservation values that give the management area its biodiversity score are known or are very likely to have already occurred due to the invasive weed and pest animal species present, with further damage to these values expected.

**Score 1.5**
The current suite of invasive weeds and pest animals in the management area are unlikely to affect the important conservation values that give the management area its biodiversity score, but are likely to affect, or be affecting, other important values within the unit.

**Score 1.0**
The important conservation values that give the management unit its biodiversity score are likely to remain intact with the current suite of invasive weed or pest animal species in the area.
2.2 Rankings For Weed and Pest Animal Control in KNE Sites—February 2005

Rankings may change as new information on threatened species, communities or threat levels becomes available.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Suburb</th>
<th>Threatened Species or Habitats</th>
<th>1 Botanical value</th>
<th>2 Wildlife value</th>
<th>3 Biodiversity Value (Higher of 1 or 2)</th>
<th>4 Urgency of control</th>
<th>5 Total Ranking Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waipapa Catchment Shrubland</td>
<td>Owhiro</td>
<td>Clematis afoiliata Blechnum blechnoides Cheilanthes distans Crassula kirkii Einadia allanii Hymenophyllum minimum Rubus squarrosus Scandia geniculata Hoheria aff. sextylosa “Taranua” Speargrass weevil?</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Tapu Te Ranga Island</td>
<td>Island Bay</td>
<td>Desmoschoenus spiralis Melicytus aff. obovatus Suaeda novaezeelandiae Crassula moschata Melicytus crassifolius skinks little blue penguins variable oyster catchers reef heron</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Makara Beach Foreshore &amp; Reserves</td>
<td>Makara</td>
<td>Austrofestuca littoralis Desmoschoenus spiralis Crassula matalikona</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Huetetaka Islet (Moa Point)</td>
<td>Moa Point</td>
<td>Crassula kirkii Crassula moschata</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Owhiro Quarry to Karori Stream Coastal</td>
<td></td>
<td>Austrofestuca littoralis Acaena pallida Desmoschoenus spiralis Scandia geniculata Lyerobius huttoni Coprosma acerosa ?text</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Site Name</td>
<td>Suburb</td>
<td>Threatened Species or Habitats</td>
<td>1 Botanical value</td>
<td>2 Wildlife value</td>
<td>3 Biodiversity Value (Higher of 1 or 2)</td>
<td>4 Urgency of control</td>
<td>5 Total Ranking Score (3 x 4)</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------</td>
<td>--------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>----------------------------------------</td>
<td>----------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Red Rocks</td>
<td>Owhiro</td>
<td>Blacheum blechnoides NZ fur seal</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Huntleigh Pk</td>
<td>Croton Downs</td>
<td>Streblus banksii</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Johnston Hill Scenic Reserve</td>
<td>Karori</td>
<td>Streblus banksii</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Otari–Wilton’s Bush</td>
<td>Wilton</td>
<td>Pittosporum cornifolium Streblus banksii</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Tyers Stream Res./Homebush Pk</td>
<td>Khandallah</td>
<td>Streblus banksii</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Trelissick Park</td>
<td>Ngaio</td>
<td>Adiantum fulvidum</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Sinclair Head Seal Haul Out</td>
<td>Owhiro</td>
<td>NZ fur seal</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Owhiro Beach A</td>
<td>Owhiro</td>
<td>Desmoschoenus spiralis Spinifex sericeus</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Owhiro Beach B</td>
<td>Owhiro</td>
<td>Desmoschoenus spiralis Spinifex sericeus</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>The Sirens Beach</td>
<td>Owhiro</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Island Bay Beach</td>
<td>Island Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Houghton Bay Beach A</td>
<td>Houghton Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Houghton Bay Beach B</td>
<td>Houghton Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Princess Bay and Te Raekaihau</td>
<td>Houghton Bay</td>
<td>Desmoschoenus spiralis Spinifex sericeus</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Site Name</td>
<td>Suburb</td>
<td>Threatened Species or Habitats</td>
<td>1 Botanical value</td>
<td>2 Wildlife value</td>
<td>3 Biodiversity Value (Higher of 1 or 2)</td>
<td>4 Urgency of control</td>
<td>5 Total Ranking Score (3 x 4)</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>---------------------------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>----------------------------------------</td>
<td>----------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Lyall Bay Beach 8A</td>
<td>Lyall Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Lyall Bay Beach 8B</td>
<td>Lyall Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Lyall Bay Beach 9A</td>
<td>Lyall Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Lyall Bay Beach 9B</td>
<td>Lyall Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Lyall Bay Seawall Beach</td>
<td>Lyall Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Tarakena Bay Beach</td>
<td>Breaker Bay</td>
<td>Desmoschoenus spiralis</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Breaker Bay and Point Dorset Beach</td>
<td>Breaker Bay</td>
<td>Crassula ruamhanga Lepidium oleraceum</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Worser Bay Beach</td>
<td>Seatoun</td>
<td>Desmoschoenus spiralis Spinifex cericeus</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Point Gordon</td>
<td>Seatoun Bays</td>
<td>Atriplex buchanii</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Churchill Dr Reserve</td>
<td>Crofton Downs</td>
<td>Streblus banksii</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Karori Wildlife Sanctuary</td>
<td>Karori</td>
<td>Pittosporum cornifolium</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Botanical Garden of Wellington</td>
<td>Kelburn</td>
<td>Adiantum viridescens</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Makererua St / Orleans St Reserve</td>
<td>Ngaio</td>
<td>Streblus banksii</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Ngaio Gorge Reserve</td>
<td>Ngaio</td>
<td>Streblus banksii</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Redwood Bush</td>
<td>Tawa</td>
<td></td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Site Name</td>
<td>Suburb</td>
<td>Threatened Species or Habitats</td>
<td>1 Botanical value</td>
<td>2 Wildlife value</td>
<td>3 Biodiversity Value (Higher of 1 or 2)</td>
<td>4 Urgency of control</td>
<td>5 Total Ranking Score (3 x 4)</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------------</td>
<td>--------------------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>-----------------------------------------</td>
<td>----------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Khandallah Pk and Johnsonville Pk</td>
<td>Khandallah - Ohariu</td>
<td></td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Horokiwi Reserves</td>
<td>Horokiwi</td>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Tip Site-ex Horokiwi Landfill</td>
<td>Horokiwi</td>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Kaiwharawhara Park</td>
<td>Kaiwharawhara</td>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Takapu Road Reserve</td>
<td>Takapu Valley</td>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Baroda St Reserve</td>
<td>Khandallah</td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Gilberd’s Bush Reserve</td>
<td>Horokiwi</td>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Larsen Cres Reserve</td>
<td>Tawa</td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>