

Proposed Regional Pest Management Strategy



2009 - 2014

ISBN 978-0-9582033-1-9



Guide for making a Submission

Gisborne District Council invites written submissions on this Proposed Regional Pest Management Strategy. Submissions can be posted, emailed or delivered to:

The District Conservator
Gisborne District Council
PO Box 747
GISBORNE 4010

Submissions can be emailed to: Service@gdc.govt.nz

Submissions must be received by 4.30 pm Wednesday 3 June 2009

Submissions should state:

- Your full name and address.
- The specific provisions of the Proposed Regional Pest Management Strategy to which your submission relates.
- The nature of the submission; whether you support or oppose the specific provisions, or whether you wish to have amendments made and giving reasons.
- The precise details of the decisions that you want Gisborne District Council to make.
- Whether or not you wish to be heard in support of your submission.
- Whether, if others make a similar submission, you would or would not be prepared to consider presenting a joint case with them at any hearing.
- Your submission must be signed and dated.

Following the receipt of written submissions, Gisborne District Council will:

- Publicly notify the availability of the summary of submissions received and where the summary can be inspected.
- Where appropriate, convene meetings with any person(s) who make a submission to resolve matters raised in those submissions.
- Hold hearings for submitters who wish to be heard by Council.
- Approve the Regional Pest Management Strategy or go to appeal. Any appeals are determined by the Environment Court.

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Glossary / Definitions

Beneficiary	Means the receiver of benefits accruing from the implementation of a pest management measure or the Strategy.
Control	Means to either: <ul style="list-style-type: none">• Limit or decrease the extent or density of an animal population by an approved method; or• Stop the growth and/or spread of a plant by an approved physical, mechanical, chemical, or biological method.
Destroy	Means to immediately, by an approved method, either: <ul style="list-style-type: none">• Kill an animal; or• Extinguish all growth of a plant.
Exacerbator	Means a person, who by their action or inaction, contributes to the creation, continuance or aggravation of a pest management problem.
Feral	Means: <ol style="list-style-type: none">1. Any animal other than a cat that is not being managed and under control by way of containment (e.g. by a fence, roosting structure, cage or tether); or4. Any cat that is not being actively cared for.
Gisborne District	Means Gisborne Region.
Kaimoana	Means food from the sea.
Monitoring	Means to observe, measure and record the population levels and trends of a particular pest population.
Pest	Means an organism specified as such in this Strategy, but in the case of animal pests, excludes dead animals.
Surveillance	Means to survey areas to establish the absence, presence or extent of pests.
Taonga	Means treasure.
Vector	Means any organism or thing which carries another organism into an area, or onto or into another host.
Waahi tapu	Means sacred site.

Part 1: Introduction

1.1 Title and Purpose

This document is known as the Proposed Gisborne District Regional Pest Management Strategy (“the Strategy” or “RPMS”). It has been prepared under the Biosecurity Act 1993.

The Biosecurity Act has two underlying principles; the prevention of harmful organisms from arriving in New Zealand and the management of those already here. Gisborne District Council recognises its responsibilities for pest management by having a strategy continuously in place. This is the third five year strategy.

A New Zealand Biodiversity Strategy released in 2003 is mainly focused at pre-border, border and post border activities to keep out new pests. It has little influence on the structure or content of a RPMS, but it does provide clear expectations for future pest management direction and emphasises the importance of a collective approach by agencies, industry and individuals.

The purpose of this Regional Pest Management Strategy is to provide for the efficient and effective assessment, management and/or eradication of pest plants and animals in the Gisborne District by:

- Minimising the risk of the introduction or dispersal of new pest species;
- Controlling the dispersal of any established pests;
- Controlling pest densities and/or range (including eradication);
- Minimising the adverse effects of pests and pest management on the environment;
- Facilitating the integration of regional pest management with adjoining regional strategies and national controls.

Pests are organisms such as plants and animals that are not indigenous to New Zealand but which have become established here and threaten our health, indigenous plants and animals, heritage, or economy.

Management of plant pests or animal pests is important both for environmental and production reasons. For example, exotic plants are naturalising at a national rate of 10 – 15 new species per year. Although the number of new animal species moving into the wild is much less, existing ones continue to cause damage to New Zealand ecosystems.

A summary of adverse effects of pests is provided in Section 1.6. Increasing public and international awareness of the need to protect our indigenous biodiversity raises the importance of a proactive approach to managing risks from both plant pests and animal pests, as well as assisting with the protection of the productivity of our land-based industries.

1.2 Area of Effect

This Strategy covers the entire Gisborne District including the coastal marine area (see Figure 1).



Map

1.3 Objectives of Strategy

Gisborne District Council expects to achieve the following outcomes through the implementation of this strategy:

Reduced density and extent of pests;

Effective controls on sale and spread of pests;

Increased public awareness of pests and the need for pest control;

Effective pest management co-ordination between Gisborne District Council and neighbouring regions and central government agencies.

1.4 Management Agency

This Strategy is proposed by Gisborne District Council and it is proposed it will also be the management agency implementing it.

1.5 Commencement and Duration

The Strategy will commence on the date it is affixed with the Council Seal in accordance with Section 79(F) of the Biosecurity Act.

The Strategy will remain in force for five years from this date, unless a review establishes that it should be extended, amended or revoked.

1.6 Adverse Effects of Pests

In general, pests are those exotic organisms that have or are likely to become established in the region and which adversely impact on cultural, environmental or economic matters. They may be terrestrial, freshwater or marine, and can include plants, algae, fungi, mammals, insects, fish, birds and crustaceans.

In notifying this regional pest management strategy, Gisborne District Council is of the opinion that each pest is capable of causing “serious adverse and unintended effect in relation to the region” (s.72(c) of the Biosecurity Act 1993: see Appendix 1). These effects have been considered under the following headings:

- Indigenous biodiversity
- Economic wellbeing
- Soil resources or water quality
- Human health or enjoyment of the natural environment
- The relationship of Maori and their culture and traditions with their lands, sites, waahi tapu and taonga.

Examples of particular circumstances and effects of such organisms follow. Some individual organisms have adverse effects under more than one heading.

(a) Indigenous biodiversity

An exotic organism can invade habitats and displace, interfere with or infect indigenous species or ecosystems. The result is disturbed and depleted ecosystems or possibly even local extinction of individual species. Examples include:

-
- Browsing animals such as goats, deer and possums eating indigenous plants resulting in depleted ecosystems which are then opened up to further damage, and possible extinction of some species;
 - Predators such as possums, mustelids, cats and rats depleting populations of indigenous birds and invertebrates, and destroying eggs;
 - Invasive plants such as wild ginger and old mans beard preventing regeneration of indigenous plants, or smothering and out-competing indigenous plants.

(b) Economic wellbeing

An organism can cause ill health of animals (other than humans), plantation forests or crops. The depressed production results in decreased incomes, and may affect international trade. Because of the economic nature of the effect, if immediately obvious, producers usually take control measures themselves without the need for regional intervention. Where international marketing is affected, central government agencies may take action.

Examples of economic pests in the Gisborne District include:

- Pest plants of pasture such as variegated thistle.
- Varroa bee mite.

(c) Soil resources or water quality

Direct effects of pests on soil and water are relatively few. Two examples are:

- Catfish's method of feeding by continuously disturbing sediments on the bottom of lakes means that as well as disturbing habitats, water quality is also diminished.
- An indirect effect on soil and water is resistance by some land occupiers to protection of riparian areas because they believe the protected areas may become reservoirs of pest plants or corridors for pest animal spread.

(d) Human health or enjoyment of the natural environment

In general, human health effects are dealt with by the Ministry of Health. Effects on the enjoyment of the natural environment include:

- Mosquitos or rats spreading disease.
- Wasps affecting outdoor recreational pursuits.
- Physical prevention of access by species such as blackberry or gorse.
- Interference of the enjoyment of water bodies by the presence of aquatic weeds preventing swimming, boating or fishing.
- Allergies accentuated by specific pollens or plant sap e.g. privet.

(e) The relationship of Maori and their culture and traditions with their lands, sites, waahi tapu and taonga

Pests that threaten the natural environment, including water, are also likely to interfere with these relationships. Examples are:

- Plants or animals that damage or displace traditional weaving and medicinal plants.

-
- Aquatic organisms that damage kaimoana.
 - Organisms that are predators of indigenous fish and eels.

1.7 Effects of implementing The Strategy

The intention of the Strategy is that its implementation will remove, prevent or mitigate the kinds of adverse effects noted above. Pests have been identified because they are known to adversely affect one or more of the above matters, and so it follows that controlling the pest is expected to benefit these matters.

There are, however, some aspects of pest management that may have real or perceived adverse effects, including:

- Some of the poisons used in control cause some public disquiet.
- The use of genetic modification (GM), which may spill into the development of genetically modified organisms for pest control. There are no GM organisms used at present but the current debate is likely to continue.
- Control of some pests may impact on economic uses that have been developed. For example, the use of possum fur and pelts in the clothing industry is seen as a contribution to suppressing possum numbers. If, however, possums are successfully controlled, then there is a potential danger that they may be 'farmed' in the wild to achieve populations which are more economic to harvest.
- There is a similar conflict with feral pigs. Commercial and recreational hunting is advanced as a means of controlling their numbers, but it also may lead to restocking or spreading of pigs to retain or develop this resource. Pigs brought in from outside the district could easily introduce bovine Tb.
- Controlling some pest species may lead to changes in predator/prey balances which can have adverse flow-on effects e.g. controlling mustelids may lead to increased populations of their prey such as rats, mice and rabbits.

1.8 Assessment of Pest Risk

There are several methods of estimating the risk posed by a particular organism. A common one is the Time/Infestation Curve model that demonstrates basic pest population dynamics. It is the method most used by regional councils to help determine appropriate strategies and management programmes for individual pests.

This model is shown in Figure 2 below and indicates three phases and eight zones:

- Lag – initial establishment (zones 1 – 3)
- Explosion – rapid increase (zones 4 - 6)
- Established – spread slows as available habitats fill (7 - 8)

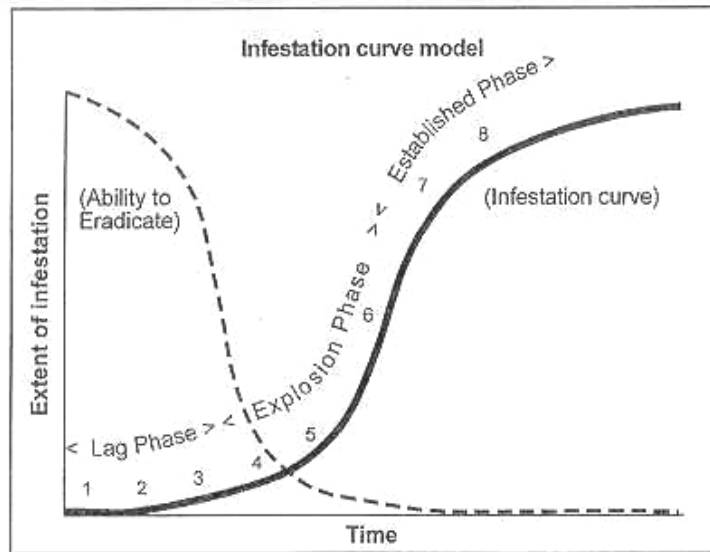


Figure 2: Time/Infestation Curve Model

The lower a pest is on the curve the more likely it is to be controlled or eradicated cost-effectively. Pests on the higher end of the curve include many of the common economic and some environmental pests (e.g. Californian thistle, possums, blackberry). Large scale eradication of these pests is difficult and expensive, with a high risk of failure. An exception is where biological control methods have proven successful.

Table 1 describes the infestation zones shown in Figure 2 as they relate to the Gisborne District.

Table 1: Infestation Curve Model Zones in the Gisborne District.

Infestation Curve Model Zones		
Zone	Phase	Description
1	Lag	Not yet known in the district but present in neighbouring or nearby region.
2		1 – 5 sites known, but effects unknown or limited.
3		A number of sites (5-200 for pest plants) and effects quantified.
4	Explosion	Numerous sites (200+for pest plants), although still a small proportion of possible sites.
5		Noticeable expansion of range and/or density of infestation.
6		Widespread and continuing expansion of range and/or density.
7	Established	Common throughout most of expected habitat in the district.
8		Present in nearly every expected habitat.

1.9 Core and Satellite Infestations

When pest plants or animals establish within a region, they generally form an initial (core) population or infestation from which smaller surrounding (satellite) populations develop, as shown in Figure 3.

Pest management strategies generally emphasise the value of controlling the smaller satellite populations and limiting further advancement from these, before controlling the core infestation.

In the Gisborne District this basic theory of pest management could apply to controlling satellite populations of feral goats, woolly nightshade or banana passionfruit before controlling their core populations or infestations, because they are common but not widespread throughout the district.

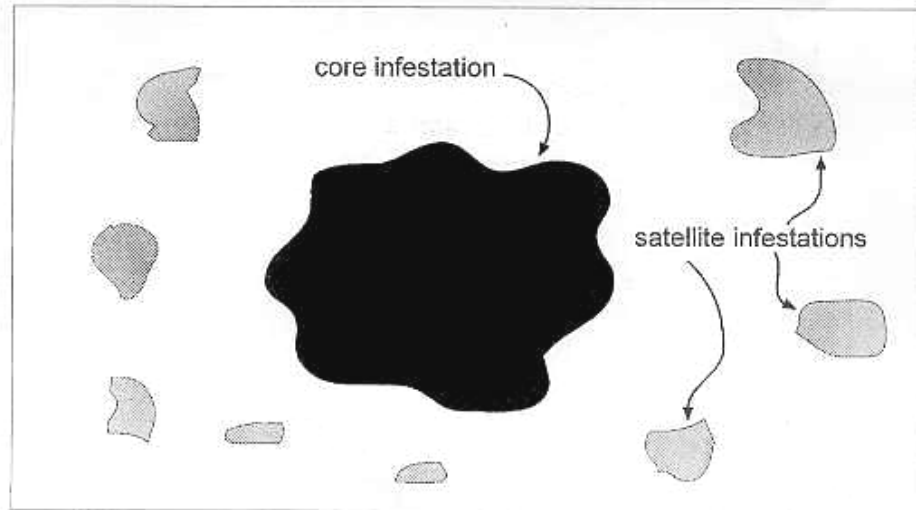


Figure 3: Core and Satellite Infestations

Part 2: Approach

2.1 Introduction

Part 2 covers the overall approach to pest management, and includes:

- Nine management principles;
- A summary of management options;
- A discussion of the differences between site-led and species-led management;
- A summary of responsibilities for pest management and the parties with which Gisborne District Council must co-ordinate management; and
- A discussion of incursions and marine pests as subjects of growing importance.

2.2 Management Principles

The following principles are proposed to underpin pest management in the Gisborne District for the life of the new Strategy. The order does not imply differences in priority, although it represents a hierarchy from broad to more detailed.

- (i) There will be one Regional Pest Management Strategy dealing with all pests to reinforce the importance of integrated pest management.**

Explanation: Both animal pests and plant pests have adverse effects and protection of important values in the Gisborne District requires integrated management of all relevant pests rather than a less efficient piecemeal approach.

- (ii) A significant focus of the Regional Pest Management Strategy will be vector control to maintain the districts Tb free status.**

*Explanation: The bacterium *Mycobacterium bovis* can infect humans and a wide range of domestic and farmed animals. Adverse customer reaction and the use of bovine Tb presence as a trade barrier are real risks. Currently the Gisborne District has a competitive advantage by virtue of being Tb free. Eradicating the disease once present is proving very difficult in other regions. 90% of new infections and persistent infections are attributable to vector sources; the return from vector control is substantially greater than disease control for this reason.*

- (iii) A significant focus of the Regional Pest Management Strategy will be on managing pests for environmental protection and enhancement.**

Explanation: The regional and national importance of biodiversity, natural character and riparian values of indigenous vegetation have been addressed in Councils' RMA plans but these values are constantly under threat from plant and animal pests such as Old Mans Beard and the possum.

Selected willows and poplar species have been a very significant component of regional soil conservation efforts for more than 40 years but establish poorly and perform less effectively in the presence of high possum numbers. On steep, erosion prone areas indigenous vegetation provides enduring mitigation from soil erosion but also requires management of browsing pests to maintain soil conservation effects.

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- (iv) A significant focus of the Regional Pest Management Strategy will be on managing economic pests where they have a spill over effect onto neighbouring properties.**

Explanation: Managing economic pests where the exacerbator and beneficiary is the same land occupier is the responsibility of that land occupier. The Regional Pest Management Strategy should only deal with situations where exacerbators are neighbours of other land occupiers.

- (v) Gisborne District Council will carry out direct control of the possum as the foremost, highly mobile animal pest of regional significance.**

Explanation: Possums are mobile animal pests which threaten the region's Tb Free status, indigenous flora and fauna and soil conservation plantings. Tb infected possums are spreading Northwards in Hawkes Bay and Hawkes Bay Regional Council is increasing vector control efforts in recognition of the risk posed to the Bay of Plenty and Gisborne regions. The Animal Health Board carries out no routine possum control work in the Gisborne region. Co-ordinated regional control is required.

- (vi) Gisborne District Council will carry out direct control of low incidence, high threat pests, and those that require specialised identification or control.**

Explanation: It is more effective for Council to directly control pests that are scattered but have a high likelihood of rapid spread because of the speed needed to keep the region free of them. Some pests are difficult to identify, and some require specialised knowledge, equipment or chemicals to control.

- (vii) Gisborne District Council will provide assistance to land occupiers to facilitate their control of pests, and will provide education and information to land occupiers and the regional community on the effects of pests and their control.**

Explanation: Depending on circumstances, such as the type of pest and its adverse effects, there may be regional benefits in its control over and above those that are gained by the landowner concerned. Information and education are important to enable the community including land occupiers to be informed about each person's responsibilities, and what each can do to manage pests effectively.

- (viii) Gisborne District Council will continue to build operational relationships with national agencies with pest management responsibilities, and with other regional councils, to advance realistic pest management in the Gisborne District.**

Explanation: Pest management in the Gisborne District takes place in a context of activities undertaken by other regional councils and national agencies such as Biosecurity New Zealand and Department of Conservation. Effective relationships with these agencies are necessary to avoid duplication and to increase effectiveness.

- (IX) Gisborne District Council will strive to encourage people to undertake their pest management responsibilities, but will, where necessary, take enforcement action, or undertake the work itself and recover associated costs.**

Explanation: In the first instance, explanation of individuals responsibilities and encouragement to carry them out is effective. However, to remain fair to those who do carry out their responsibilities it may be necessary to enforce the rules of the Strategy.

2.3 Management Options

There are several options for pest management. All have advantages and disadvantages depending on where each pest lies on the infestation curve, the nature of the pest, who the exacerbators are, and who or what benefits from control. The options are outlined in Table 2.

Table 2: Options for Pest Management

Management Option	Explanation
Direct Control	<ul style="list-style-type: none">• Gisborne District Council carries out control by the use of properly trained and qualified staff.• Appropriate for managing possum numbers due to regional benefits and co-ordination required, eradicating low incidence, high threat pests and other pests where incidental to this work.
Community initiatives	<ul style="list-style-type: none">• Support given to interested community groups.• Support may include advice and information on pesticides and bait stations.• Appropriate for widespread pests.
Education and Advice	<ul style="list-style-type: none">• Information provided freely to land occupiers to assist them to control their own pests.• Support may include loan of specialised traps.• Implemented through Fact Sheets, displays at shows, media articles, field days and one-to-one instructions from staff.• Suitable for all pests.
Biological Control	<ul style="list-style-type: none">• Use of introduced insects and pathogens to control pests.• Research costs are high and partners are needed to fund research.• Appropriate for widespread pests.• Includes managed distribution of agents already in the Gisborne district.
Regulation	<ul style="list-style-type: none">• The imposition of rules for the management of pests.• Used to protect land occupiers from those who do not carry out control and to halt sales and distribution of pests.• User charges imposed on persons failing to comply.• Appropriate for widespread pests.
Surveillance	<ul style="list-style-type: none">• To ensure early detection of low incidence high threat pests and facilitate eradication measures.

2.4 Site-led and Species-led Management

The Biosecurity Act's approach to identifying pests is species-by-species. This involves naming organisms as pests over all or part of the region and putting in place methods or rules to manage them. This method is termed 'species-led' and is appropriate for pests which impose a disease risk at high population numbers, or which have localised or restricted distributions.

Site-led management is where the emphasis is on the control of all pests that threaten values in a particular area. The sites may be specific places such as areas of bush, or may be wider habitats such as coastal dunes or wetlands.

The advantages and disadvantages of the two approaches are summarised in Table 3.

Table 3: The Differences between Site-led and Species-led Management

Site-led	Species-led
Aims to protect values of specific areas.	Focuses on eradicating or controlling individual pest species over a wide area.
Facilities integrated pest management by including all or a wide range of pests.	Tends to lead to controls on individual pest species which may result in increases in other pests (e.g. by removing predation).
Ideal for areas of significant indigenous biodiversity that have been protected from grazing stock.	Best suited to individual pest species that are a threat to particular values, and to pests that are not particularly widespread.

The sites subject to site-led management may range from a discrete area that has been retired within a larger property to a larger area such as an entire ecosystem. Site-led pest management will primarily be in support of natural heritage (biodiversity) policies in Gisborne District RMA plans.

2.5 Responsibilities

A number of agencies and individuals have responsibilities for pest management. These are generally set out by the Biosecurity Act 1993. The following parties, in addition to Gisborne District Council, have been identified as of relevance to the Gisborne District:

- Landowners/occupiers
- Crown (DOC, MAF – Biosecurity NZ, LINZ, Ministry of Fisheries)
- Rail and road controlling authorities
- Quarry operators.

(a) Regional Council

Gisborne District Council is the management agency responsible for implementing a Regional Pest Management Strategy. This includes identifying pests, and developing and applying the measures to ensure the Strategy's objectives are achieved. It also includes developing and administering systems that ensure funding, monitoring and review processes are consistent with the requirements of the Biosecurity Act 1993 and other statutes.

Gisborne District Council, in making this proposal, is satisfied that it meets the requirements of s.84(3) of the Biosecurity Act 1993 in that:

- It is accountable to the Strategy funders through the representation and annual reporting requirements established under the Local Government Act 2002;
- It is acceptable to funders and those who may be subject to the Strategy provisions; and
- It has the capacity, competency and expertise to carry out the implementation through public education, field operations, monitoring, support of landowner and community initiatives, funding and reporting.

(b) Landowners/Occupiers

Pest management is an individual's responsibility in the first instance, because generally the occupier is the exacerbator and in turn benefits from control of the pest. There is no differentiation of responsibilities based on differing forms of private land ownership.

(c) Crown

For a number of reasons the Crown must be treated differently from private individuals. A strategy cannot require the Crown to be bound, but under s.87 of the Biosecurity Act 1993 the Crown can agree to be bound and contribute to funding. The Crown does not pay rates, but may agree that it is an exacerbator, or beneficiary (less likely) and contribute towards the strategy. Unlike ratepayers the Crown is only bound to what it agrees to be bound to. The parameters for negotiations are set by the Crown and this has a significant effect on outcomes.

The Department of Conservation is by far the largest Crown agency in the region. Other than road and rail lines small areas of land are held by other Crown agencies such as LINZ, and Ministry for the Environment but these are negligible in comparison.

(d) Rail and Road Controlling Authorities

The construction and maintenance of roads and rail lines exacerbate pest plant problems by creating bare surfaces that provide establishment sites, and by the introduction of seeds in machinery and road and rail metal. In addition, both rail and roads are recognised as corridors for the spread of pest plants.

The Biosecurity Act 1993 allows the option of making either roading authorities or neighbouring landowners responsible for road verge pest control.

It is proposed that the responsibility for roadside verge pest control for all formed roads available for vehicular use be the responsibility of the adjacent land occupier to the centre of the road except where previously absent plant pests appear following road maintenance activity in which case the roading authority shall assume responsibility for these pests. Responsibility for pest control on unformed roads will lie with the land occupier who physically occupies the land

The New Zealand Transport Agency and Ontrack are Crown Agencies responsible for State Highways and rail infrastructure respectively. Memoranda of Understanding will be sought with both that shall state pest species and pest management regimes.

(e) Quarry Operators

Quarries, including river sites where gravel is extracted, are particularly important exacerbation sites for certain pest plants. This is because there are often significant areas of land that are disturbed for periods of time which provide ideal germination sites for opportunistic plants and there is a high risk of seeds being transported rapidly over long distances in quarry products. Gisborne District Council will maintain 'Codes of Practice' with quarry operators to facilitate effective pest management.

(f) Public

All persons have responsibilities to exercise care to not spread pests or unwanted organisms, and to abide by the rules in this Strategy. By knowingly growing pest plants in gardens, by dumping garden rubbish or pets along roadsides or in reserves, or by releasing pest animals for hunting, individuals become exacerbators and thus adversely affect economic, cultural and environmental values.

In addition, where pest management greatly benefits the wider public or environment, such as for Tb vector control or indigenous biodiversity, then it is appropriate that the regional community assists the owners of such areas.

2.6 Co-Ordination

For many pests there is a growing realisation of the need for collaborative relationships between national agencies and regional councils to produce effective and efficient pest management in New Zealand. For example:

- Regional Pest Management Strategies include some agricultural and forest pests, and increasingly they include pests of indigenous biodiversity, which may also be dealt with nationally.
- The National Pest Plant Accord is a memorandum of understanding between Ministry of Agriculture and Forestry (MAF) and regional councils. A number of plants have been declared unwanted organisms and are prohibited from sale, propagation and distribution.
- There is a developing relationship between Gisborne District Council and Department of Conservation with regard to surveillance and pest control activities where biodiversity is at stake. Continued co-ordination is required.

Under the Biosecurity Act 1993 a number of national agencies take the lead for biosecurity on the national scale. National agencies of particular relevance in the Gisborne region are:

- *Ministry of Agriculture and Forestry (MAF) – Biosecurity New Zealand (BNZ)*

BNZ is the division of MAF charged with leadership of the New Zealand biosecurity system. It is responsible for biosecurity border control, and in identifying and managing agricultural and forest pests at a national scale. It has developed the National Pest Plant Accord which lists plants that are pests over the whole country. See Appendix 4 for the list of pest plants.

The BNZ is also currently responsible for the management of four notifiable organisms (formerly known as Class A Noxious Weeds). These are Johnson grass, Cape tulip and the aquatic plants water hyacinth and salvinia. MAF is presently reviewing current management practices to identify whether there are more effective and efficient arrangements and whether or not eradication is achievable.

- *Department of Conservation (DOC)*

The Department takes a national role in protection of indigenous biodiversity, both as an administrator of Crown land, and in an advocacy role. As well as administering the Conservation Act, it administers the Wild Animal Control Act and the Wildlife Act, both of which influence pest management.

- *Ministry of Fisheries*

The Ministry sees itself as the point of first call for species identification when members of the public report suspicious organisms. However, the Ministry also sees regional councils as being important partners because they already have responsibilities in the coastal marine area.

An overview of marine invaders is provided in Appendix 5.

- *Animal Health Board (AHB)*

The AHB has the responsibility for controlling bovine tuberculosis through a national strategy. Gisborne district is Bovine “Tb Free” therefore the AHB funds no routine vector control work locally. If however bovine Tb is detected amongst farmed animals and feral animals are implicated, the AHB may seek funding support from Gisborne District Council for vector control.

Gisborne District Council has established a number of policies that give direction and support to pest management.

Gisborne District Council shares boundaries with Hawkes Bay Regional Council and Environment Bay of Plenty. It is in the interests of efficient and effective pest management to have regard to RPMS's of these Councils.

The Regional Policy Statement contains four policies specific to pest management. The Part Operative Combined Regional Land and District Plan contains a general policy on grazing animals also considered to be pests. This is further developed into permitted activity standards. The Gisborne District Council Regional Coastal Environment Plan has policies and rules pertaining to the introduction of plant pests and other exotic plants into the marine environment.

These are set out in Appendix 2. This strategy includes consideration of these policies.

2.7 Incursions

The focus of this Pest Management Strategy is on management of pests that already exist in the Gisborne District. It is also important that there is a clear strategy for dealing with incursions of organisms that are not yet present in the region but are known to pose a pest risk.

There are three types of incursions into any region, each of which requires a different response:

- From overseas
- From a neighbouring region
- From elsewhere in New Zealand.

(i) From overseas

These incursions directly into the region are mostly via a carrier from overseas. The point of entry is most likely Eastland Port, and the responsible agency is MAF – Biosecurity New Zealand as part of the national border control network. An example of such an incursion could have been the “Gisborne cockroach”.

The response in the first instance is likely to be taken by BNZ. Once a population of the organism becomes established then Gisborne District Council may become involved.

Now and then an organism becomes established by natural introduction. These self-introductions are where the organism enters New Zealand by natural means, often by being blown from Australia. Not all self-introductions become established, for they might be outside their survival range, especially if they are tropical, or there might be a single individual that cannot breed. While self-introductions from the tropics are usually unable to survive, climate warming may alter that in the future.

(ii) From a neighbouring region

In this case the organism moves into the region from across its boundary by natural spread although this can be accelerated by human assistance e.g. transport. It is most likely that the organism is already established and known in a neighbouring region, whether or not that region has already declared it a pest. Examples of such incursions are the southern Argentine Ant and Willow Sawfly.

The response to such an incursion if a national Crown agency response is not underway, is likely to be by way of s.100 (the preferred option) of the Biosecurity Act or by a review of the Regional Pest Management Strategy if the organism is judged to be a potential pest in the Gisborne District.

It is proposed that regular contact be maintained between pest management staff of neighbouring regions to:

- Ensure an effective exchange of information to enable as much lead time as possible on potential pest incursions;
- Provide a forum for discussions of any concerns;
- Facilitate co-operation in responses between neighbouring regions.

(iii) From elsewhere in New Zealand

In this case the organism is introduced into the region by a human carrier, either intentionally or unintentionally. Examples are fragments of plants on agricultural implements or boat trailers, or fish or animals being deliberately but surreptitiously introduced. In any case the origin is not necessarily from the neighbouring region. A likely example of such an incursion is *Undaria*.

The response if a national BNZ response is not underway, will be a combination of publicity to minimise introductions, and control (eradication) of occurrences where they are discovered. Mandates for these actions will require the potential pests to be named in the Regional Pest Management Strategy.

It is proposed to:

- Use signage;
- Use trade and organisations' publications and the general media to publicise concerns;
- Distribute brochures through organisations.

2.8 Marine Pests

Marine pests are an increasing concern to BNZ. Department of Conservation also have an interest, particularly on account of Te Tapuwae O Rongokako Marine Reserve. Gisborne District Council will continue to work with these agencies.

Appendix 5 provides a brief technical overview of marine pests in New Zealand and notes that once a marine pest is present it is extremely expensive and technically difficult to control or remove it. Thus the primary focus is on minimising the risk of their incursion by targeting their incursion routes.

There are three routes by which marine organisms can arrive in an area: in ballast water, in marine aquaria, and by hull fouling. Hull fouling is the most likely route with respect to Eastland Port.

- *Hull Fouling*

(i) Commercial Vessels

These are the large ships that are constantly on the move around the world and typically remain in port for up to three days. Their constant movement minimises the ability of marine organisms to attach themselves to hulls, and commercial requirements for speed and minimising power use means that their hulls are generally kept clean. Hulls of these commercial vessels are considered to present a generally low level of risk. However, sea chests in such vessels do present a particular risk as they can harbour organisms such as crabs.

Enforcing hull cleanliness standards is a national border control matter and is the responsibility of BNZ. However, any hull cleaning within Eastland Port or anchorages such as Hicks Bay will require a resource consent under the RMA 1991. The present boat lift and cleaning facility at Eastland Port operates under a resource consent with particular conditions governing discharge of contaminants.

(ii) International Residential Vessels

These are private vessels used for living or recreation, and typically can spend long periods moored in one place. This lends them to hull fouling, and as speed is often not of concern to their owners, hulls are generally not kept very clean. These vessels are of high risk of introducing undesirable organisms.

Enforcing hull cleanliness standards is a national border control matter and is the responsibility of BNZ at the first port of call. However, any hull cleaning within Eastland Port or anchorages will require a resource consent under the RMA 1991. Hull cleaning on hard stands needs to be done in facilities that have adequate effluent controls, and is also a resource consent issue.

(iii) Local Residential Vessels

Like international residential vessels, these often have poor levels of hull cleanliness. The risk posed by these vessels is that of spreading a marine pest from one part of New Zealand to another. Controlling such introductions is thus not a national border control matter. Hull cleaning on hard stands needs to be done in facilities that have adequate effluent controls, and is also a resource consent issue.

(iv) Overseas Fishing Vessels

These usually have equipment such as nets and long lines that may be infested, and the boats spend long periods at sea. Enforcing cleanliness standards is a national border control matter and is the responsibility of the Ministry of Fisheries at the first port of call. However, any hull cleaning will also require a resource consent under the RMA 1991.

Part 3: Implementation

3.1 Introduction

Part 3 identifies and describes the pest management categories and defines the:

- Objective;
- Pests included within each category;
- Responsibilities for funding and management of each of the parties involved in the management, including land occupiers;
- Rules, obligations and offences.

Tables 4 and 5 below summarise the plants and animals named as pests in this Strategy within each of the pest management categories. Specific detail for each category follows in sections 3.2 to 3.3. Descriptions of pests are in a Cost Benefit document which supports this strategy.

Table 4: Summary of Plant Pests Proposed to be included in the new Strategy

Total Control	Containment	Limited Control	Regional Surveillance
African feather grass	Australian sedge 1,2	Blue morning glory	
Australian sedge 3 – 7	Barberry	Japanese honey suckle	Chinese mugwort
Banana passion fruit	Bathurst bur	Mignonette/Madeira vine	Horse Nettle
Boneseed	Blackberry	Moth Plant	
Boxthorn 5	Boxthorn 1-4, 6, 7	Periwinkle	
Burdock	Buddleia	Smilax	
Californian stinkweed			
Climbing spindleberry	Common pampas 1 – 6	Tree and Chinese Privet	
Gorse 5			
Nodding thistle	Gorse 1 – 4, 6, 7		
Red cestrum	Hawthorn 1 – 6		
Spiny emex	Holly leaved senecio 3, 4, 6, 7		
	Montpellier broom		
Variegated thistle 8	Old man's beard 1, 3 – 7		
White edged nightshade	Purple pampas 1 – 6		
Woolly nightshade	Ragwort		
	Spartina		
	Star thistle		
	Sweet briar		
	Thorn apple		
	Undaria		
	Variegated thistle - all Ward areas except 8		
	Wild broom		
	Wild ginger 1 – 6		

1. Matakaoa
2. Waiapu
3. Uawa
4. Cook
5. Waikohu
6. Patutahi/Taruheru
7. Gisborne City
8. Part Matakaoa Ward being north of the karakatuwhero River and Tapatu Stream to the Kokomuka W55 Trig, and all of the Oweka Stream, Whangaparoa River, Waikura River and Raukokore River Catchments in the Gisborne Region.

(see following map)

MAP

Table 5: Summary of Animal Pests Proposed to be included in the new Strategy

Eradication	Total Control	Limited Control	Regional Surveillance
Rook	Feral Goat	Argentine Ant	Catfish
	Feral Pig	Feral Cat	Chinchilla
	Possum	Feral Cattle	Koi Carp
	Rabbit	Feral Deer	Perch
	Mosquito Fish	Feral Goose	Wallaby spp
		Feral Pigeon	Rudd
		Ferret	
		Hare	
		Magpie	
		Stoat	
		Wasps	
		Weasel	
		Willow Sawfly	

3.2 Plant Pest Categories

This section provides the detailed management for each plant pest category.

3.2.1 Total Control Plant Pests

Description	Plant pests of restricted abundance or range, but with a high potential spread and seriousness of effects.		
Objectives	Long term: Eradication. Short term: No increase in distribution, reduction in density.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, monitoring, removal of isolated plants, education programme	Destruction of plants wherever and whenever they occur	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, monitoring, education programme, and removal of isolated plants. Enforce rules, statutory obligations	Bound by rules and statutory obligations	Destruction of plants as negotiated on a case by case basis
Total Control Plant Pests *	African feather grass Australian sedge (3-7) Banana passionfruit Boneseed Boxthorn (5)	Burdock Californian Stinkweed Climbing Spindleberry Gorse (5) Nodding Thistle	Red cestrum Spp. Spiny emex Variegated Thistle (8) Woolly nightshade White edged nightshade
Statutory Obligations	<ol style="list-style-type: none"> No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Eradication plant pest. (S52 Biosecurity Act 1993). No person shall sell, offer for sale, display or propagate any Total Control plant pest in contravention of S53 Biosecurity Act 1993. 		
Rules	<ol style="list-style-type: none"> Any land occupier with Total Control plant pests on his/her land shall destroy all such plants before they produce hard seed. Any land occupier who suspects he/she has a new infestation of any Total Control plant pest on his/her land shall report the infestation to Gisborne District Council immediately. 		
Offences	<p>A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993.</p> <p>A breach of any rule creates an offence under S154, Biosecurity Act 1993.</p>		

* Apply to all Gisborne Region unless otherwise stated.

1. Matakaoa	4. Cook	7. Gisborne City
2. Waiapu	5. Waikohu	8. Part Matakaoa Ward being North of the Karakatuwhero River and Tapatu Stream to the Kokomuku W55 Trig, and all of the Oweka Stream, Whangaparoa River, Waikura River and Raukokere River Catchments in the Gisborne Region.
3. Uawa	6. Patutahi/Taruheru	

3.2.2 Containment Plant Pests

Description	Plant pests abundant in suitable habitats in particular areas or across the district unlikely to be eradicated but able to be contained.		
Objectives	Prevention of infestation of neighbouring uninfested properties. Reduction in density and/or distribution in the long term.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, monitoring, education programme, selected destruction of spartina	Destruction of plants along specified boundaries or to prevent seeding	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, monitoring, education programme. Enforce rules, statutory obligations, Selected destruction of Spartina. Work with Department of Conservation to manage Wild Ginger and consider future possibility of eradication from rural areas.	Bound by rules and statutory obligations	Destruction of plants as negotiated on a case by case basis
Containment Plant Pests *	Australian sedge (1,2) Barberry Bathurst bur Blackberry Boxthorn (1 – 4, 6, 7) Buddleia Common pampas (1 – 6)	Gorse (1- 4, 6, 7) Hawthorn (1 – 6) Holly leaved senecio (3, 4, 6, 7) Montpellier broom Old mans beard (1, 3 – 7) Purple pampas (1 – 6) Ragwort	Spartina Star thistle Sweet briar Thorn apple Undaria Variegated thistle (All Ward areas except 8) Wild broom Wild ginger (1 – 6)
Statutory Obligations	<ol style="list-style-type: none"> No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Containment plant pest. (S52 Biosecurity Act 1993). No person shall sell, offer for sale, display or propagate any Containment plant pest in contravention of S53 Biosecurity Act 1993. 		
Rules	<ol style="list-style-type: none"> Any land occupier with Old mans beard, Star thistle or Australian sedge on his/her land shall destroy all such plants before they produce hard seed. Any land occupier with Purple or Common pampas on his/her land shall destroy all such plants within 1 kilometre of property boundaries adjacent to exotic forest plantations existing at the time of strategy adoption. Any land occupier shall before the production of hard seed destroy all plants of Montpellier broom, Blackberry, Wild broom, Hawthorn, Sweet briar, Thorn apple, Gorse and Boxthorn on his/her land within 10m of the property boundary if there are no such plants within 10m of the boundary on adjoining land, or if the adjoining land is being cleared of such plants within 10m of the boundary. Any land occupier shall before the production of hard seed destroy all plants of Barberry, Bathurst bur, Buddleia, Holly leaved senecio, Ragwort, Variegated thistle and Wild ginger on his/her land within 20m of the property boundary if there are no such plants within 20m of the boundary on adjoining land, or if the adjoining land is being cleared of such plants within 20m of the boundary. 		
Offences	A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993. A breach of any rule creates an offence under S154, Biosecurity Act 1993.		

* Apply to all Gisborne Region unless otherwise stated.

1. Matakaoa	4. Cook	7. Gisborne City
2. Waiaapu	5. Waikohu	
3. Uawa	6. Patutahi/Taruheru	

3.2.3 Limited Control Plant Pests

Description	Plant pests abundant in suitable habitats but only cause adverse effects in specific areas.		
Objectives	Reduction in adverse effects through improved awareness and management.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, monitoring, education programme.	Destruction of plants as required	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, monitoring, education programme. Enforce statutory obligations.	Bound by statutory obligations	Destruction of plants as negotiated on a case by case basis
Limited Control Plant Pests	Blue morning glory Japanese honeysuckle Mignonette/Madeira vine	Moth plant Periwinkle Smilax	Tree and Chinese privet
Statutory Obligations	<ol style="list-style-type: none"> No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Limited Control plant pest. (S52 Biosecurity Act 1993). No person shall sell, offer for sale, display or propagate any Limited Control plant pest in contravention of S53 Biosecurity Act 1993. 		
Offences	A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993.		

3.2.4 Regional Surveillance Plant Pests

Description	Plant pests currently not known to be in the Gisborne region but with potential to cause severe adverse effects if introduced.		
Objectives	Prevent establishment in the Gisborne region.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, education programme	-	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, education programme. Enforce statutory obligations	Bound by statutory obligations	Destruction of plants as negotiated on a case by case basis
Regional Surveillance Plant Pests	Chinese mugwort Horse Nettle		
Statutory Obligations	<ol style="list-style-type: none"> 1. No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Regional Surveillance plant pest. (S52 Biosecurity Act 1993). 2. No person shall sell, offer for sale, display or propagate any Regional Surveillance plant pest in contravention of S53 Biosecurity Act 1993. 		
Offences	A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993.		

3.3 Animal Pest Categories

This section provides the detailed management for each animal pest category.

3.3.1 Eradication Animal Pest

Description	Animal pest of restricted abundance and range but with a high potential spread and seriousness of effects.		
Objectives	Eradication		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance; monitoring, control, education programme	-	-
Responsibilities	Undertake surveillance, monitoring, education programme. Undertake destruction using specialised techniques. Enforce rules and statutory obligations.	Bound by rules and statutory obligations	-
Eradication Animal Pests	Rook		
Statutory Obligations	<ol style="list-style-type: none"> 1. No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Eradication animal pest. (S52 Biosecurity Act 1993). 2. No person shall offer for sale, display or propagate any Eradication animal pest in contravention of S53 Biosecurity Act 1993. 3. No person shall attempt to control any Eradication animal pest without prior permission from an authorised person. For the purpose of this strategy control means shooting or any other disturbance that cause wariness or dispersal. 		
Rules	<ol style="list-style-type: none"> 1. Any land occupier who suspects he/she has newly sighted any Eradication animal pest on his/her land shall report the sighting to Gisborne District Council immediately. 2. No person shall move or interfere with any article or substance left in place by an authorised person pursuant to this strategy for the purpose of controlling or eradicating an eradication animal pest. 		
Offences	<p>A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993. A breach of any rule creates an offence under S154, Biosecurity Act 1993.</p>		

3.3.2 Total Control Animal Pests

Description	Abundant (although sometimes scattered) throughout the region, not considered possible to eradicate but with serious adverse effects if not contained.		
Objectives	Reduction in density and range on a targeted, planned basis.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, monitoring, education programme, possum control, specific feral goat, feral pig, and mosquito fish control	Destruction of Animals as required by rule.	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, monitoring, education. Direct control of possums, direct control of feral goat, feral pig and mosquito fish only in high threat site specific areas, ancillary control only in other circumstances. Enforce rules and statutory obligations.	Bound by rules and statutory obligations	Destruction of animals as negotiated on a case by case basis
Total Control Animal Pests	Feral goat Feral pig Mosquito Fish	Possum Rabbit	
Statutory Obligations	<ol style="list-style-type: none"> 1. No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Total control animal pest. (S52 Biosecurity Act 1993). 2. No person shall sell, offer for sale, display or propagate any Total Control Animal pest in contravention of S53 Biosecurity Act 1993. 		
Rules	<ol style="list-style-type: none"> 1. Every land occupier shall maintain rabbit numbers at or below Level 3 of the McLean/Gibb Scale over any part of their land. * 		
Offences	<p>A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993.</p> <p>A breach of any rule creates an offence under S154, Biosecurity Act 1993.</p>		

* *For the McLean/Gibb Scale – see Appendix 6*

3.3.3 Limited Control Animal Pests

Description	Abundant in suitable habitats but only cause adverse effects in specific areas, or low density populations which are costly to control.		
Objectives	Reduction in population density in specific areas.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, monitoring education programme.	Destruction of animals as required	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, monitoring, education programme. Make available at cost specialised baits and traps. Direct control ancillary to possum control or in limited areas where causing a public nuisance. Enforce statutory obligations	Bound by statutory obligations	Destruction of animals as negotiated on a case by case basis
Limited Control Animal Pests	Argentine ant Feral cat Feral cattle Feral deer Feral goose	Feral pigeon Feret Hare Magpie Stoat	Wasps Willow sawfly Weasel
Statutory Obligations	<ol style="list-style-type: none"> No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Limited Control animal pest. (S52 Biosecurity Act 1993). No person shall sell, offer for sale, display or propagate any live Limited Control animal pest in contravention of S53 Biosecurity Act 1993. 		
Offences	A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993.		

3.3.4 Regional Surveillance Animal Pests

Description	Animal pests currently not known to be in the Gisborne Region but with potential to cause severe adverse effects if introduced.		
Objectives	Prevent establishment in the Gisborne region.		
Management	Gisborne District Council	Land Occupiers	Crown
Funding	Surveillance, education programme.	Destruction of animals as required	Vote: Biosecurity funding of specific projects
Responsibilities	Undertake surveillance, education programme	Bound by statutory obligations	Destruction of animals as negotiated on a case by case basis
Regional Surveillance Animal Pests	Catfish Koi Carp Perch	Chinchilla Wallaby spp. Rudd	
Statutory Obligations	<ol style="list-style-type: none"> 1. No person shall knowingly communicate, cause to be communicated, release or cause to be released, or otherwise spread any Regional Surveillance animal pest. (S52 Biosecurity Act 1993). 2. No person shall sell, offer for sale, display or propagate any live Regional Surveillance animal pest in contravention of S53 Biosecurity Act 1993. 		
Offences	A breach of a statutory obligation creates an offence under Sections 52 and 53 Biosecurity Act 1993.		

Part 4: Strategy Administration

4.1 Introduction

Part 4 covers the administration of the Strategy, including:

- Powers
- Enforcement
- Exemptions
- Costs and Funding
- Monitoring and Review

4.2 Regulatory Management

4.2.1 Powers Conferred for Strategy Implementation

To achieve the purpose of the strategy and to give effect to its objectives and means of achievement, Gisborne District Council will use the statutory powers from Part VI of the Biosecurity Act 1993 as identified in Table 6 which follows. The Principal Officer (Chief Executive) of Gisborne District Council will appoint Authorised Persons for the purpose of exercising functions, powers and duties under the Biosecurity Act 1993. Powers of the management agency (Gisborne District Council), Principal Officer and Authorised Persons are identified in Table 6.

When carrying out their duties, Authorised Person shall be limited to using those powers specified in their Instruments of Appointment. These powers are based on those powers specified in Table 6 and reflect the officer's management role, experience, technical competence and relevant qualifications.

Table 6 Powers to be conferred for implementation of this strategy

Section Reference in Biosecurity Act	Administrative Power	Level of Delegation
131 135 136	Declaration of Controlled Area Options for Cost Recovery Failure to Pay	Gisborne District Council
80D 103 104 105	Power to exempt land occupiers from strategy rules The appointment of authorised and accredited persons Authorised persons to comply with instructions Delegation to authorised persons	Chief Executive
128 129 154	Power to act on default Recovery of costs resulting from application of S128 Filing of prosecutions	Environment & Planning Manager, District Conservator
43 106 109 111	Duty to provide information Power to request assistance Power of inspection Entry in respect of offences	Environment & Planning Manager, District Conservator, Pest & Plants Controller
112 113 114	Duties on exercising power of entry Power to record information General powers of pest management or eradication	

Section Reference in Biosecurity Act	Administrative Power	Level of Delegation
115	Use of dogs and devices	Animal Pest Officer
118	Power to seize evidence	Plant Pest Officer
119	Power to seize abandoned goods; including pests	
120	Power to intercept baggage etc.	
121	Power to examine organisms	
121a	Power to apply articles or substances to places	
122	Power to give directions	
130	Declaration of restricted place	

4.3 Enforcement

Gisborne District Council will generally adopt an advisory type approach to pest management in the Region as it considers this approach promotes a congenial operating environment which achieves the best results. Many occupiers pro-actively seek advice regarding suitable pest control options.

To ensure that pest management is implemented on a region-wide basis, properties are inspected in a systematic way by plant pest officers and animal pest officers. Individual officers will have responsibility for defined geographical areas but will team up for significant operations as required. Known pest sites and habitat will be preferentially targeted for inspection. Following inspection, land occupiers may be advised of which pests are required to be controlled, suitable control methods will be discussed and recommended, and a control completion timeframe either negotiated or imposed. There may be extensions given, if for genuine reasons, the timeframe cannot be met.

For pest animals, animal pest officers can carry out direct control or give advice and negotiate a timeframe for land occupiers to do so.

If pest management has not been satisfactorily undertaken by the land occupier, Gisborne District Council may issue a "Notice of Direction" which specifies that the work must be completed within a set timeframe.

Should the occupier fail to follow the Notice of Direction the Biosecurity Act 1993 provides the options of either prosecution or to act on default. Gisborne District Council prefers to act on default under s.128, and may place a lien on the property if the costs are not paid.

4.4 Exemptions

Gisborne District Council may, upon the written request of a land occupier, exempt any person from any requirement in any strategy rule. Before granting an exemption under s.80D of the Biosecurity Act 1993, Gisborne District Council must be satisfied that:

- the requirement has been substantially complied with and that further compliance is unnecessary; or
- the action taken or provision made is as effective or more effective than actual compliance with the requirement; or
- the prescribed requirements are clearly unreasonable or inappropriate in the particular case; or
- events have occurred that make the prescribed requirements unnecessary or inappropriate in the particular case; or
- the pest under consideration in the particular circumstances has a beneficial effect which outweighs any adverse effects.

In all cases Gisborne District Council must be satisfied that granting the exemption will not significantly prejudice the attainment of the Strategy objectives.

Procedure: On receipt of any request, Gisborne District Council will advise that person within 15 working days of its decision whether or not to grant an exemption and any conditions that may be attached. Conditions may be set for the purpose of ensuring measures are taken to minimise any adverse effects of the pest, or so any beneficial effects of the pest are safeguarded. A public register of exemptions will be maintained as required by s.80D(4) of the Biosecurity Act 1993.

4.5 Costs and Funding

The Biosecurity Act 1993 requires a pest management strategy to provide information on the allocation of costs of the strategy. It may be funded by direct charges against land occupiers and/or by rates. To the extent that the strategy provides that it is to be funded wholly or partially from rates, s.97 of the Biosecurity Act 1993 allows the funding to be by general rate made under s.13 of the Local Government (Rating) Act 2002 or under s.16 as a targeted rate, or partly from both. In making this decision, Gisborne District Council must have regard to:

- The extent to which the funding relates to the interests of land occupiers;
- The extent to which the benefits will accrue to land occupiers;
- The collective benefits to land occupiers in relation to their collective costs from rates; and
- The extent to which the characteristics and uses of the rated land contribute to the presence or prevalence of the pests.

The funding rationale for this strategy is summarised in Table 7. The activities listed are strategy costs – those incurred by Gisborne District Council in implementing this strategy. There will also be costs incurred by land occupiers and the Crown, principally direct control of pests, as shown for each pest category in Sections 3.2 and 3.3.

Table 7 Funding Rationale – Identification of Beneficiaries and Exacerbators

Activity	Major Beneficiaries	Major Exacerbators
Direct Control - Rook	<ul style="list-style-type: none"> • Cropping farmers • Horticulturalists • Associated processing industries • Regional Community 	<ul style="list-style-type: none"> • People who disturb rookeries • People who fail to report sightings
Direct Control - Possums	<ul style="list-style-type: none"> • Crown land occupiers • Rural land occupiers • Regional community 	<ul style="list-style-type: none"> • Crown land occupiers • Rural land occupiers • Urban dwellers
Monitoring and Surveillance	<ul style="list-style-type: none"> • Crown land occupiers • Rural land occupiers • Regional community 	<ul style="list-style-type: none"> • Crown land occupiers • Rural land occupiers
Biological Control	<ul style="list-style-type: none"> • Pastoral farmers • Horticulturalists • Urban dwellers • Regional community 	<ul style="list-style-type: none"> • Pesticide/weedicide users
Education	<ul style="list-style-type: none"> • Regional community 	
Enforcement	<ul style="list-style-type: none"> • Crown land occupiers • Rural land occupiers • Regional community 	<ul style="list-style-type: none"> • Rural land occupiers

The major component activities will be Direct Control – Possum (essentially on account of bovine Tb and biodiversity effects) and Monitoring and Surveillance.

An analysis of costs and benefits for each strategy pest pursuant to S72 Biosecurity Act 1993 is contained in a Cost Benefit Analysis document which supports this strategy. Also included are descriptions of each pest other than those only in the strategy by virtue of being National Accord Pest Plants.

The distinction between beneficiaries and exacerbators is in practice rather arbitrary as for the significant strategy activities they tend to be one and the same. It is considered appropriate to place greater emphasis on beneficiaries as many pest populations have become established over long periods of time. Those who caused the problem in the first place may no longer be present.

Of particular significance in the Gisborne region is the ability of the residents and Gisborne District Council to fund an extensive pest management programme. The Council budget for 2008/09 is \$513,518 for animal pest management and \$314,938 for plant pest management. The modest nature of this programme is of relevance when considering the mode of funding and the apportionment of costs. The cost of complex and detailed analysis simply outweighs the benefits.

One per cent of strategy costs are deemed to be private and will be recovered through user charges and Crown contributions to administration. Ninety nine per cent are considered public and will be funded from a differential rate on land area across all rateable land in the Gisborne region. Differential rating areas are shown on the following map and are more particularly described as:

INNER ZONE

Differential Rating Area 1:

Area contained within the former Gisborne City Council Boundaries excluding rural farm land.

Differential Rating Area 1A:

All rural land within previous Gisborne City Council boundaries and the Rural residential area following the City and Cook County's Scheme Change No 3. Also the area of Wainui/Okitu and Makaraka.

Differential Rating Area 2:

Area comprising the Poverty Bay flats including immediate fringe hill country properties. Also including Makorori and Tatapouri defined areas.

OUTER ZONE

Differential Rating Area 3:

That area which is within reasonable and currently exercised commuting distance to Gisborne as amended in 1993. Also includes the rural towns of Te Karaka and Whatatutu.

Differential Rating Area 4:

Outlying hill country from Gisborne as far North as Mangatuna and including the rural towns of Motu, Matawai and Tolaga Bay.

Differential Rating Area 5

The balance of Gisborne district, including the rural towns of Hicks Bay, Te Araroa, Tikitiki, Ruatoria, Te Puia Springs and Tokomaru Bay.

MAP
DRA BOUNDARIES

The rate apportionment amongst the differential rating areas is shown in Table 8.

Table 8 Land Area Rates Apportionment (%)

Inner Zone			Outer Zone		
DRA1	DRA1A	DRA2	DRA3	DRA4	DRA5
5	5	5	25	25	35

Pests are very largely land based and major beneficiaries are the rural land occupiers. There are increased costs of pest management in more remote areas and where landholdings are small. Urban areas are not without plant and animal pest issues. Examples are Privet, Woolly Nightshade, Argentine Ants, Possums and Feral Pigeons. The apportionment reflects this whilst also taking into account the interdependence of rural and urban communities when considering major pest management issues e.g. bovine Tb. It is considered to be a fair and reasonable allocation of strategy costs.

4.6 Strategy Monitoring and Review

Section 76 of the Biosecurity Act 1993 requires that this Strategy set out the means of measuring the extent to which the objectives of the Strategy are being achieved.

4.6.1 Monitoring Progress

Gisborne District Council will monitor progress on implementing this Strategy using measures that include:

- Using the pest database to record infestations and track trends;
- Recording complaints and inquiries;
- Undertaking inspections to determine levels of compliance;
- Regular communications with adjoining regional councils.

4.6.2 Animal Pest Monitoring

Spotlight night-count

Direct counting of animals using a spotlight while travelling through a predetermined and pegged route. This method is used to assess control effectiveness, to give long term population trends, and allow broad comparison of pest densities between areas. Where possum numbers exceed 3 per km, Gisborne District Council will implement control work.

Three consecutive night-counts will be undertaken at least once annually over specified count routes.

Night shooting tallies themselves off established routes will be used to indicate population trends during each year and between years.

Rabbit populations will be monitored using the night-count technique as well as the McLean and Gibb scale of rabbit infestation.

Residual Trap Catch (RTC)

This monitoring technique is currently the most accurate method for monitoring both initial and maintenance operations. RTC monitoring provides for consistency of method between regional councils and Department of Conservation and is a requirement for Animal Health Board operations.

This method requires that traps be set along pre-determined lines over three consecutive nights before (Pre) and after (Post) control operations. The ratio of these Pre and Post indices provides an estimate of the % survival after the initial operation.

Residual trap-catch monitoring will be used to benchmark possum populations pre and post control operations for indicative sites, notably Protection Management Areas. Control work will be implemented to bring populations down to the 5% RTC level.

There is a need to consider the cost of animal pest monitoring against the value of the information collected. Monitoring uses resources that may otherwise be better spent on pest control. The level of information and certainty required must relate to the significance of the problem and the budget available under this RPMS.

4.6.3 Plant Pest Monitoring

Council will regularly check properties for the presence or non-presence of “Eradication” plant pests. Land occupiers will be expected to regularly inspect and control all active plant growth before the production of hard seed.

Council will monitor “Containment” plant pests and where a boundary complaint has been received, investigate and ensure that the appropriate control work is undertaken by the land occupier to the standards of the strategy.

Council will monitor pests in significant biodiversity areas and advise on plant pests and appropriate control measures.

Properties are classified according to the plant pest infestation level and density identified during routine visits. Those properties with a Level 1 plant pest ranking, with between 1 – 5 plants per hectare, are classified as “Class A” properties. At the other end of the scale those properties with Level 4 plant pest density of 50+ plants per hectare are classified as “Class D” properties.

4.6.4 Operational Plans

Under s.86 of the Biosecurity Act 1993, Gisborne District Council as the management agency must prepare an operational plan which must be reviewed annually, and make an annual report on its implementation. These reports will include additional monitoring detail and results.

4.6.5 Review

A review of this Strategy will be carried out in the following circumstances:

If Gisborne District Council has reason to believe that:

- The Strategy is failing to achieve its purposes; or
- Relevant circumstances have changed to a significant extent since the Strategy commenced; or
- The Strategy is due to expire in less than 12 months.

Appendices

Appendix 1	.....	Extracts from Biosecurity Act 1993
Appendix 2	.....	Regional Policies
Appendix 3	.....	Scientific Names of Pests
Appendix 4	.....	National Accord Pest Plants
Appendix 5	.....	Marine Invaders in New Zealand: An Overview
Appendix 6	.....	McLean and Gibb Scale

Appendix 1

Extracts from Biosecurity Act 1993

The following excerpts are provided for information only. For definitive texts consult the Act directly.

These excerpts include:

- Requirements when reviewing a Strategy (s.72)
- Contents of a proposed RPMS (s.76 (selected parts))

Section 72

1. *A regional council may notify, in accordance with section 78 of this Act, a proposal for a regional pest management strategy only if it is of the opinion that-*
 - a) *The benefits of having a regional pest management strategy in relation to each organism to which the strategy would apply outweigh the costs, after taking account of the likely consequences of inaction or alternative courses of action; and*
 - b) *The net benefits of regional intervention exceed the net benefits of an individual's intervention; and*
 - ba) *Where funding proposals for the strategy require persons to meet directly the costs on implementing the strategy-*
 - (i) *The benefits that will accrue to those persons as a group will outweigh the costs; or*
 - (ii) *Those persons contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the strategy; and*
 - c) *The organism in respect of which each strategy is under consideration is capable of causing at some time a serious adverse and unintended effect in relation to the region on one or more of the following:*
 - (i) *Economic wellbeing; or*
 - (ii) *The viability of threatened species of organisms, the survival and distribution of indigenous plants or animals, or the sustainability of natural and developed ecosystems, ecological processes, and biological diversity; or*
 - (iii) *Soil resources or water quality; or*
 - (iv) *Human health or enjoyment of the recreational value of the natural environment; or*
 - (v) *The relationship of Maori and their culture and traditions with their ancestral lands, waters, sites, waahi tapu, and taonga.*

Section 76

This details the required contents of a proposed Regional Pest Management Strategy, including the proposer and the organisms named as pests. Also included are the effects of implementing the strategy and the costs as follows:

- (i) A proposal for a regional pest management strategy must specify the following matters:
- (j) *The actual or potential effects, beneficial or detrimental, that the implementation of the strategy might (in the proposer's opinion) have on the relationship of Maori and*

their culture and traditions with their ancestral lands, waters, sites, waahi tapu, and taonga

- (k) The actual or potential effects, beneficial or detrimental, that the implementation of the strategy might (in the proposer's opinion) have on
 - (i) The environment; and*
 - (ii) The marketing overseas of New Zealand's products:**
- (l) An analysis of the benefits and costs of the strategy (including the reasons why the strategy is more appropriate than relying on the voluntary actions of persons) in relation to each organism to which the strategy would apply:*

Appendix 2

Regional Policies

The Gisborne District Council Regional Policy Statement considers the detrimental effects of pests on integrated resource management under Section 2.2. In order to meet an objective of avoiding or mitigating these effects, there are four specific policies:

- 2.2.2 (1) *To identify and co-ordinate responsibility for pest control between agencies and individuals on Crown, lease and freehold land.*
- (2) *To work with agencies in neighbouring regions to ensure compatible policies and to maximise the effectiveness of control programmes.*
- (3) *To ensure that soil conservation measures within regional/district plans confer responsibility for control of pests contributing to erosion.*
- (4) *To assess priorities for pest control and ensure that adequate resources are available for the effective implementation of Council's pest control programmes.*

The Gisborne District Council Proposed Combined Regional Land and District Plan contains a general policy of significance to the adverse effects of grazing animals (including pests):

- 21.4 (1) *When preparing plans or considering applications for plan changes, resource consents or designations in all rural zones regard shall be given to the following general policy as well as any specific policy relating to the zone:*
- *Effect on significant indigenous vegetation and significant habitats of indigenous fauna with particular reference to Chapter 4 – Natural Heritage.*
 - *Effect on biodiversity, water quality, land stability and erosion with reference to Chapter 4, Natural Heritage and Chapter 6, Land Disturbance.*

This has been further developed into a resource consent requirement for the farming or keeping of goats or deer when certain permitted activity standards are exceeded. These standards are:

21.93.1.1 *Farming*

Provided that:

- (a) *Farming shall exclude the following:*
- (i) *Intensive farming;*
 - (ii) *Boarding of animals;*
 - (iii) *The housing or keeping of animals or birds in any building or enclosure which allows them to be within 17m of any boundary of the site in other than a non-intensive grazing or free ranging situation.*
 - (iv) *In the Rural G and Rural R zones, the farming of more than three goats which are*
 - *Not formally identified in accordance with the Animal Identification Act, including the tattooing of goats with recognisable owner identification,*

- *Not contained within an area fenced in accord with the Second Schedule to the Fencing Act 1978 for the purpose of retaining any goats upon the owner's property*
 - *The keeping of thar*
- (v) *The farming or keeping of deer species other than red (Cervus elephus scoticus), waptiti/elk (Cervus canadensis nelsoni, Curvus elephus nelsonia) and fallow (Dama dama, Dama dama mesopotamica) and hybrids of these breeds;*
- (vi) *The farming or keeping of any deer not identified in accordance with the Animal identification Act 1993.*
- (vii) *The farming or keeping of any deer other than in accordance with the fencing standards set out in Appendix 29*

The Gisborne District Council Regional Coastal Environment Plan for the Gisborne Region contains a guiding policy of relevance to pest management:

2.3.4B *The Council and Consent Authorities will give priority to avoiding the adverse effects of activities on areas of significant indigenous vegetation and significant habitats of indigenous fauna and in particular adverse effects such as the removal or poisoning of vegetation or the introduction of pest or adventive species.*

This is followed by a specific policy:

3.7.4D *To promote the management of exotic or introduced plant species in accordance with the Gisborne Region Noxious Plant Programme.*

These policies are further developed into rules for each of the three management areas which make general discharges discretionary, the introduction of known plant pests prohibited and the introduction of other exotic plants discretionary.

Appendix 3

Scientific Names of Pests

The following are the scientific names of the pests that are included in this Strategy. These names will form part of definitions of the pest.

Common and scientific names for pests in this strategy			
Animal Pests		Plant Pests	
Argentine Ant	Linepithema humile		
Cat (Feral)	Felis catus	African feathergrass	Pennisetum macrourum
Brown Bullhead Catfish	Ameiurus nebulosus	Australian sedge	Carex longibrachiata
Chinchilla	Lanigera	Banana passionfruit	Passiflora mollissima, P.mixta
Feral Deer	Cervus spp	Barberry	Berberis glaucocarpa
Feral Goose	Anser anser	Bathurst bur	Xanthium spinosum
Feral Pigeon	Columba livia	Blackberry	Rubus fruticosus agg
Ferret	Mustela furo	Blue morning glory	Ipomoea indica
Goat (Feral)	Capra hircus	Bone-seed	Chrysanthemoides monilifera
Hare	Lepus eurapoeus occidentalis	Boxthorn	Lycium ferocissimum
Koi Carp	Cyprinus carpio	Broom	Cytisus scoparius
Perch	Perca fluviatilis	Buddleia	Buddleja davidii
Poosum	Trichosurus Vulpecula	Burdock	Arctium minus
Rabbit	Oryctolagus cuniculus	Californian stinkweed	Navarretia squarrosa
Rook	Corvus frugilegus	Chinese mugwort	Artemisia vertotiorum
Stoat	Mustela erminea	Chinese privet	Ligustrum sinense
Wallaby	Macropus spp	Climbing spindleberry	Celastrus orbiculatus
Wasps	Vespula germanica V. vulgaris	Common pampas	Cortaderia sellona
Weasel	Mustela nivalis vulgaris	Gorse	Ulex spp
Willow Sawfly	Nematus oligospilus	Hawthorn	Crataegus monogyna
Feral Cattle	Bos Taurus	Holly leaved senecio	Senecio glastifolius
Feral Pig	Sus scrofa	Horse Nettle	Solanum carolinense
Magpie	Gymnorhina hypoleuca	Japanese honey suckle	Lonicera japonica
Mosquito fish	Gambusia affinis	Madeira vine, mignonette vine	Anredera cordifolia
		Montpellier broom	Teline monspessulana
		Mothplant	Araujia sericifera
		Nodding thistle	Carduus nutans
		Old man's beard	Clematis vitalba
		Periwinkle	Vinca major
		Purple pampas	Cortaderia jubata
		Ragwort	Senecio jacobaea
		Red cestrum	Cestrum elegans
		Smilax	Asparagus asparagoides
		Spartina	
		Spiny emex	Emex australis
		Star thistle	Centaurea calcitrapa
		Sweet briar	Rosa rubiginosa
		Thorn apple	Datura stramonium
		Tree privet	Ligustrum lucidum
		Undaria	Undaria pinnatifida
		Variiegated thistle	Silybum marianum
		White edged nightshade	Solanum marginatum
		Wild ginger	Hedychium gardnerianum Hedychium flavescens
		Woolly nightshade	Solanum mauritianum

Appendix 4

National Accord Pest Plants

The following are the names of the Pest Plants included in the National Pest Plant Accord.

All pest plants listed have been declared unwanted organisms under the Biosecurity Act 1993. This prevents their sale, propagation or distribution within New Zealand. Gisborne District Council will undertake surveillance, monitoring and if necessary enforcement as appropriate.

(The National Surveillance Plant Pest list in the present strategy formed the basis for this updated accord).

Scientific Name	Common Name
<i>Acmena Smithii</i>	monkey apple
<i>Alternanthera philoxeroides</i>	alligator weed, pigweed
<i>Anredera cordifolia</i>	madeira vine; mignonette vine
<i>Araujia sericifera</i>	moth plant, cruel plant, white bladder flower
<i>Asparagus asparagoides</i>	smilax; bridal creeper
<i>Asparagus scandens</i>	climbing asparagus
<i>Berberis darwinii</i>	Darwins barberry
<i>Barlettina sordida</i>	barlettina
<i>Bryonia cretica</i>	white bryony
<i>Caesalpinia decapetala</i>	mysore thorn
<i>Calluna vulgaris</i>	heather
<i>Cardiospermum grandiflorum</i>	balloon vine
<i>Cardiospermum halicacatum</i>	small balloon vine
<i>Caulerpa taxifolia</i>	caulerpa taxifolia
<i>Celastrus orbiculatus</i>	climbing spindleberry; Oriental bittersweet
<i>Ceratophyllum demersum</i>	hornwort, coontail
<i>Cestrum parqui</i>	green cestrum
<i>Chrysanthemoides monilifera</i>	bone seed
<i>Clematis vitalba</i>	old man's beard
<i>Cobaea scandens</i>	cathedral bells
<i>Cortaderia jubata</i>	purple pampas
<i>Cortaderia selloana</i>	pampas
<i>Dipogon lignosus</i>	mile-a-minute
<i>Egeria densa</i>	egeria, oxygen weed, Brazilian elodea
<i>Ehrharta villosa</i>	pyp grass
<i>Eichhornia crassipes</i>	water hyacinth
<i>Equisetum</i> (all species)	horsetail
<i>Eragrostis curvula</i>	African love grass
<i>Erigeron karvinskianus</i>	Mexican daisy
<i>Gunnera tinctoria</i>	Chilean rhubarb
<i>Gymnocoronis spilanthoides</i>	Senegal tea, temple plant, costata
<i>Hedychium flavescens</i>	yellow ginger
<i>Hedychium gardnerianum</i>	Kahili ginger
<i>Homeria collina</i>	Cape tulip
<i>Houttuynia cordata</i>	chameleon plant
<i>Hydrilla verticillata</i>	hydrilla
<i>Hydrocleys nymphoides</i>	water poppy
<i>Ipomoea indica</i>	blue morning glory
<i>Iris pseudacorus</i>	yellow flag iris
<i>Lagarosiphon major</i>	lagarosiphon, oxygen weed
<i>Lantana camara</i>	lantana

Scientific Name	Common Name
<i>Iris pseudacorus</i>	yellow flag iris
<i>Lagarosiphon major</i>	lagarosiphon, oxygen weed
<i>Lantana camara</i>	lantana
<i>Ligustrum lucidum</i>	tree privet
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Ludwigia peploides</i>	primrose willow, floating primrose Montevidensis willow, water primrose subsp
<i>Ludwigia peruviana</i>	water primrose
<i>Lythrum salicaria</i>	purple loosestrife
<i>Menyanthes trifoliata</i>	bogbean
<i>Myrica faya</i>	fire tree, candle berry myrtle
<i>Myriophyllum aquaticum</i>	parrot's feather, thread of life, Brazilian watermilfoil
<i>Nassella</i> (all species)	nassella
<i>Myriophyllum spicatum</i>	eurasion watermilfoil
<i>Najas guadalupensis</i>	southern naiad
<i>Najas marina</i>	sawtooth
<i>Nuphar lutea</i>	yellow waterlily, spatterdock, cow lily, brandybottle
<i>Nymphoides geminata</i>	marshwort, entire marshwort
<i>Nymphoides peltata</i>	fringed waterlily
<i>Osmunda regalis</i>	royal fern
<i>Passiflora mixta</i>	northern banana passionfruit
<i>Passiflora mollissima</i>	banana passionfruit
<i>Pennisetum</i> (all species)	pennisetum
<i>Phragmites australis</i>	phragmites
<i>Pinus contorta</i>	lodgepole pine, contorta pine
<i>Pistia stratiotes</i>	water lettuce
<i>Plectranthus ciliatus</i>	plectranthus, blue spur flower
<i>Polygonum perfoliatum</i>	devils tail tearthumb
<i>Potamogeton perfoliatus</i>	clasped pondweed
<i>Rhamnus alaternus</i>	rhamnus, evergreen buckthorn
<i>Sagittaria montevidensis</i>	arrowhead, sagittaria, Californian arrowhead
<i>Sagittaria platyphylla</i>	sagittaria, delta arrowhead
<i>Sagittaria sagittifolia</i>	arrowhead; Hawaiian arrowhead
<i>Salix cinerea</i>	grey willow, pussy willow, grey sallow
<i>Salvinia molesta</i>	salvinia, Kariba weed
<i>Schinus terebinthifolius</i>	Christmas berry, Brazilian pepper tree
<i>Selaginella kraussiana</i>	African club moss, selaginella
<i>Solanum carolinense</i>	horse nettle
<i>Solanum marginatum</i>	white-edged nightshade
<i>Solanum mauritanum</i>	woolly nightshade, tobacco weed, wild tobacco tree
<i>Sorghum holepense</i>	johnson grass
<i>Spacyanium erectum</i>	bur reed
<i>Stratiotes aloides</i>	watersoldier
<i>Tradescantia fluminensis</i>	wandering Jew
<i>Trapa natans</i>	water chesnut
<i>Tropaeolum speciosum</i>	Chilean flame creeper
<i>Tussilago farfara</i>	coltsfoot
<i>Typha latifolia</i>	great reedmace, cumpbung, common cattail
<i>Typha domingensis</i>	southern cat tail
<i>Utricularia gibba</i>	bladderwort, humped bladderwort
<i>Zizania latifolia</i>	Manchurian wild rice, Manchurian rice grass

Appendix 5

Marine Invaders in New Zealand: An Overview

Dr Michael Taylor, Biosecurity Research Manager, Cawthron Institute

5.1 The Marine Bio Invasion Problem

Many of the world's coastal ecosystems are now populated by a wide range of non-indigenous marine species (NIMS) including fouling and planktonic organisms, and predators such as starfish and crabs. The vast majority of these introductions have occurred since the 16th century, via the maritime trade, and pathways include hull fouling (e.g. on ships, barges and yachts), ballast water, sea chests, fishing nets, anchors and chain lockers. Once introduced to a new country, local spread can occur via natural means such as currents, wind-drift and birds, human activities such as local boat traffic, hull de-fouling, aquaculture and port operations.

The spread of NIMS to new areas can have major impacts on environmental and social values, human health, commercial, recreational and customary fisheries, aquaculture and the shipping industry. Nevertheless, even though there have been a very high number of introductions to new locations around the world, examples of obvious and harmful impacts are far less common. Of the 160 NIMS known to have been introduced to New Zealand, only a small number of these cause major concern; e.g. the Japanese seaweed *Undaria pinnatifida* and the sea squirt *Ciona intestinalis*. Some, such as *Undaria* and the Pacific oyster *Crassostrea gigas*, cause negative impacts, but can also be beneficial. Less certain, however, is our knowledge of the origins of many of our marine species (e.g. various toxic phytoplankton) and little is known of the indirect and long term effects of the permanent changes to our natural marine ecosystems that may be caused by NIMS.

5.2 Management

Priorities for managing marine invaders should be set using a sound risk management process, so as to maximise the benefits for the costs incurred. This process requires a thorough understanding of what is at stake in the marine environment, in terms of both quantifiable (e.g. seafood industries) and non-quantifiable (e.g. ecological biodiversity) assets, a systematic understanding of the

source and size of the risks, as well as consultation on what constitutes an acceptable level of protection and the investment necessary to provide it.

Fortunately, New Zealand remains free of some of the worlds most renowned marine pests e.g. the European green crab *Carcinus maenas* and the green seaweed *Caulerpa taxifolia*. Added to these known threats are the NIMS already present in New Zealand, and the long list of those that are not, that have the potential to do major damage here even if they have no invasion history. For example, since being introduced to Waitemata Harbour in 2000, the Asian swimming crab *Charybdis japonica* is increasing in numbers and has the potential to become much more widespread. It now threatens our native species including shellfish beds, but the species is not considered to be a problem elsewhere.

Hence, cost-effective management of pathways to and from New Zealand (e.g. international standards for ballast water discharges) presents a great opportunity to avoid future impacts on our marine environment from marine pests, including potentially massive control costs, and will ensure that we meet our international obligations to this global problem.

Appendix 6

McLean and Gibb Scale of Rabbit Infestation

McLean		Gibb
No rabbits or sign seen	1	Very few droppings, sometimes grouped, easily overlooked
No rabbits seen, some sign noticeable	2	Very infrequent heaps little if any scatter
Odd rabbit seen, sign and some buck heaps showing up	3	Infrequent heaps, very light and patchy scatter
Pockets of rabbits, sign and fresh burrows very noticeable	4	Frequent heaps, light and patchy scatter
Infestation spreading out from heavy pockets	5	Heaps occasionally within 5 paces of each other, dense scatter
Infestation over whole area and increasing	6	Heaps often within 5 paces of each other, dense scatter
Infestation heavy, rabbits moving in droves, pasture damage, warrens	7	Usually 2 or 3 heaps within 5 paces of each other, dense scatter
Infestation at high level throughout, severe pasture and vegetation damage	8	Usually 3 or more heaps within 5 paces of each other, dense scatter overall
Infestation almost at peak	9	Some heaps almost merging, scatter very dense
Maximum level, rabbits must spread out over wide area or starve	10	Some heaps merging, very dense scatter overall

