Canterbury Regional Pest Management Strategy 2011-2015

Wilding conifer control operations

Everything is connected
An effective rabbit control boundary
This document has been prepared by the Canterbury Regional Council in accordance with the requirements of the Biosecurity Act 1993. It incorporates the results of the 5-year Review of the Canterbury Regional Pest Management Strategy 2005-2015.

The Canterbury Regional Council adopted the Canterbury Regional Pest Management Strategy 2011-2015 at its meeting on 23 June 2011 and is operational from 1 July 2011.

I hereby certify that this is a correct copy of the Strategy.

Dame Margaret Bazley
CHAIRPERSON
CANTERBURY REGIONAL COUNCIL
2011

Grubbing nassella tussock above the Rakaia Gorge

Photos throughout, courtesy of Auckland Regional Council, Department of Conservation, Landcare Research and NIWA
Foreword

I am pleased to present Environment Canterbury’s Regional Pest Management Strategy 2011-2015. It is a five-year road map for how the management of various plants and animals across the Canterbury region will be achieved. Its success depends on continuing positive relationships between land owners, the general community and Environment Canterbury.

This document is the result of a mandatory mid-term review of our Canterbury Regional Pest Management Strategy 2005-2015, made operative on 1 July 2005. The aim of the review was to update and amend the Strategy rather than to completely rebuild it because many of its provisions were considered to still be effective and relevant. That approach received broad support from sector and interest groups across the community.

A 5-year review is timely because new pest management issues can arise, for example, the discovery Chilean needle grass in the region. This only known incursion was detected at a North Canterbury site in November 2008. Despite best eradication efforts, it requires long-term management. Its inclusion in the Strategy at this mid-point review is therefore justified and was widely supported.

A number of minor changes were made to the strategy in accordance with provisions available under section 88A of the Biosecurity Act. Of note; changes have been made to better align post-1989 wilding conifer management with the recently enacted Emissions Trading Scheme. The species of wilding conifer able to be controlled under site-led biodiversity protection programmes has been expanded and pest classifications adjusted to be consistent with an agreed national system.

Many people have shown an interest in the Strategy and the associated review process and the quality of the final Strategy has been enhanced by public input. It has enabled Environment Canterbury to produce an updated Strategy that reflects the achievable expectations of the community.

Environment Canterbury has made a commitment to attend to a number of particular matters earlier than the next mandatory review in 2015. Specific investigations will commence in July 2011 into the:

(a) need, profile and roles of Pest Management Liaison Committees;
(b) approaches to be taken for the management of broom and gorse;
(c) options available for managing Bennett’s wallaby;
(d) options for managing nassella tussock;
(e) approaches to be taken for managing rabbits.

Once each of the above is completed, appropriate Strategy review processes will be undertaken.

The next step is to implement the Strategy through the annual works programme that will be outlined in the Operational Plan accompanying the Strategy. There will be further opportunities for the community to add value to the development of work programmes via the Annual Plan and Long Term Council community Plan processes.

Dame Margaret Bazley
CHAIRPERSON
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Part I  Introduction and Background

1  Introduction

1.1  Title

This document is known as the Canterbury Regional Pest Management Strategy (2005), and incorporates the Regional Pest Management Strategy-Biodiversity Pests (2002), for the Canterbury region. Throughout the document it will be referred to as the Strategy or RPMS.

1.2  Purpose

The purpose of the Strategy is to provide a framework for efficient and effective management or eradication of specified animals and plants in the Canterbury region. Once operative, the Strategy will empower Environment Canterbury to exercise the relevant advisory, service delivery, regulatory and funding provisions available under the Biosecurity Act 1993 (the Act) in accordance with the specific objectives identified in Part II of the Strategy.

1.3  Coverage

The Strategy has effect within the administrative boundaries of the Canterbury region as defined by the Local Government (Canterbury Region) Reorganisation Order 1989 and the Local Government Amendment Act 1992.

1.4  Duration

The Strategy will take effect on the date that it is made operative in accordance with section 79F of the Act and will remain in force for five years from that date. The Strategy may cease at an earlier date if Environment Canterbury declares by public notice that it has achieved its purpose or, following a review, the Strategy is revoked.

1.5  Review

Environment Canterbury may review the Strategy if it believes it is failing to achieve its purpose or if there is a significant change in circumstances. However, where the Strategy has been in force for five years or more and it is more than five years since a review of the Strategy, then Environment Canterbury must proceed to review the Strategy. Any review may result in the amendment or revocation of the Strategy, or no change to the Strategy, or an extension of its duration.

Environment Canterbury will review the Strategy where it needs to incorporate new pests as a result of its surveillance project or where there is a need for new localised rules as a result of a Community Initiative Programme.

1.6  Structure

The Strategy is in three parts:
Part I  Introduction and Background

Chapter 1  Provides an introduction to the Strategy, contains the structure, the purpose, the area covered by the Strategy, and its duration.

Chapter 2  Sets out the statutory basis of the Strategy, the required prerequisites for its proposal, describes consultation undertaken and the relationship with other legislation and strategies.

Part II  Pest Management Programmes

Chapter 3  Identifies the organisms included and their classification as pests or other organisms to be controlled. It describes the functions and responsibilities of Environment Canterbury as the management agency.

Chapter 4  Sets out the strategy outline, the parties affected, the responsibility for roads, crown responsibilities, a funding overview and a description of Community Initiative Programmes.

Chapter 5  Covers the total control programmes, describes the location and distribution of organisms, adverse effects, the objectives and the principal measures to be taken to achieve those objectives.

Chapter 6  Covers the progressive control programmes, describes the location and distribution of the organism, adverse effects, the objective and the principal measures to be taken to achieve the objective.

Chapter 7  Covers the containment control programmes, describes the location and distribution of organisms, adverse effects, the objectives and the principal measures to be taken to achieve those objectives.

Chapter 8  Covers the biodiversity protection programmes, describes the location and distribution of organisms, adverse effects, the objectives and the principal measures to be taken to achieve those objectives.

Chapter 9  Covers the restricted sale programme, describes the approach to be taken for banning plants from sale, propagation and distribution, the objectives and the principal measures to be taken to achieve those objectives.

Part III  Processes

Chapter 10  Provides for the funding of the Strategy, states the funding requirements of the Act, identifies beneficiaries and exacerbators, and allocates costs. Details of funding levels are specified.

Chapter 11  Sets out the powers of the Act that are incorporated into the Strategy.

Chapter 12  Describes the procedure that is followed in the event of land occupiers or other persons not complying with the rules of the Strategy, details policies for enforcement and consequential regulatory procedures.

Chapter 13  Sets out the requirements for monitoring the Strategy and for the performance of the Management Agency. Review procedures are specified.

Chapter 14  Describes the role of Pest Management Liaison Committees.

Chapter 15  Provides for co-ordination with other pest management strategies.

Chapter 16  Contains statements on compensation and disposal of receipts.
Appendices

Appendix 1  Glossary of terms.

Appendix 2  The National Pest Plant Accord list. A list of plants which have Unwanted Organism status in New Zealand, and are banned from sale, propagation and distribution.

Appendix 3  Map 1: Nassella tussock. Details the zone for which Rule 6.2.5(a)(i) applies.

Appendix 4  Map 2: Bennett’s wallaby containment area.

Appendix 5  Lagarosiphon schedule. Outlines the water bodies that will be protected from lagarosiphon infestation.

Appendix 6  Modified McLean and Guilford Scales. Describes the methods used to assess rabbit and wallaby population levels.

Appendix 7  Pest Rating Districts. Describes the boundaries of the rating districts referred to in the text.

Appendix 8  Maps for boneseed, egeria, wild thyme and Chilean needle grass. Depicts containment zones
2 Planning framework

2.1 Legislative background

The Biosecurity Act 1993 is the statute under which a regional council can address pest management issues in its region. It is an "...Act to restate and reform the law relating to the exclusion, eradication, and effective management of pests and unwanted organisms". Unlike previous pest management legislation, the Act is enabling rather than prescriptive. This means that there is no legal obligation for a regional council to take on the role of managing a pest or other organism to be controlled, unless it chooses to do so.

A number of amendments to the Act have occurred since 1993. Of particular importance is the Biosecurity Amendment Act 1997. This provides for, among other things, the inclusion of strategy rules and making it an offence against the Act should any person breach such rules. Decisions on submissions are also subject to reference to the Environment Court.

One of the primary purposes of the Act “…is to provide for the effective management or eradication of pests” (Section 54). Harmful organisms become pests by becoming the focus of a pest management strategy. However, certain requirements of the Act must be satisfied in the preparation of a pest management strategy. These include the relevant parts of:

(a) Part 5 – Sections 56 to 99 that specify the content of a strategy, the way in which it is to be prepared and funding aspects; and

(b) Part 6 – Sections 101 to 142 that specify administrative provisions.

The Act requires that for each organism, or class of organism, a proposed strategy shall state an objective and the principal measures for achieving that objective. It also requires a strategy to specify the extent to which any persons are likely to benefit from the Strategy, (BENEFICIARY) and the extent (if any) to which any persons by their activities or inaction contribute to the creation, continuance or exacerbation of the problems proposed to be resolved by a strategy, (EXACERBATOR). Regional councils must ensure that the funding mechanisms encompass the principles of equity and efficiency.

Under the Act, a regional council is the administering agency responsible for any regional pest management strategy in its region. Regional councils:

(a) may be responsible for proposing and preparing a regional pest management strategy;

(b) may be the pest management agency appointed to implement any strategy; and

(c) must evaluate any proposal from any other persons for a regional pest management strategy.

2.2 Prerequisites for proposal

The Biosecurity Act enables pest management strategies to be developed for the management of animals and plants that are considered harmful or where small-scale management of ‘unwanted organisms’ is not possible. The Act specifies the contents of a strategy and lists other matters that are to be considered in developing a strategy.

This Strategy has been prepared because Environment Canterbury is of the opinion that the organisms under consideration are capable of causing serious adverse and unintended effects in relation to the Canterbury region on one or more of the following:

(a) economic wellbeing; or

(b) the viability of threatened species or organisms, the survival and distribution of indigenous plants or animals, or the sustainability of natural and developed ecosystems, ecological processes, and biological diversity; or

(c) soil resources or water quality; or
(d) human health or enjoyment of the recreational value of the natural environment; or
(e) the relationship of Māori and their culture and traditions with their ancestral lands, waters, sites, wāhi tapu, and taonga.

Organisms are covered by the Strategy because they are capable of having significant effects on economic well-being, spill-over effects on neighbouring properties or are capable of having significant adverse effects on conservation or other values, that are not necessarily shared by land occupiers.

Environment Canterbury is of the opinion that:

(i) the benefits of having a regional pest management strategy, in relation to the organisms concerned, outweigh the costs, after taking account of the likely consequences of inaction or alternative courses of action; and

(ii) the net benefits of regional intervention exceed the net benefits of an individual's intervention.

Four reports have been commissioned to support the above opinion. They are:

- Funding Analysis Regional Pest Management Options, Harris Consulting February 2003; and

In addition, the following reports provide background information:

- Section 72 Report (U10/3), R Maw June 2010. This report is a compilation of the material used to guide Council’s opinion regarding the proposed inclusion of Chilean needle grass in the RPMS and the changes to the site-led biodiversity programmes. The information is the work of the authors who have produced the reports, papers or publications referenced.
- Section 72 Report (U01/63), Harris Consulting, March 2000. This report was prepared in support of the Regional Pest management Strategy – Biodiversity Pests (2002).
- Meeting the requirements of the Biosecurity Act 1993: economic evaluation of Regional Pest Management Strategy for Plant Pest, Brown Copeland and Co. Ltd., 1995 (two reports);
- Ecology of noxious weeds in relation to their dispersal, regeneration and threats to indigenous habitats in Canterbury, Otago and Southland, Landcare Research, 1995;
- Effects of rabbits and hares on organisms, ecosystems and soils in terms of the Biosecurity Act, Landcare Research, 1995;
- Effects of Bennett’s Wallaby on vegetation and soil values in South Canterbury, Landcare Research, 1995; and

### 2.3 Consultation

Environment Canterbury has consulted with a wide range of groups during 1999, 2000, 2002 and 2009 including:

(a) Pest Management Liaison Committees of Environment Canterbury;
(b) Federated Farmers;
(c) The Department of Conservation;
(d) Land Information New Zealand;
(e) Territorial local authorities in the Canterbury region;
(f) Royal Forest and Bird Protection Society of New Zealand;
(g) North and South Canterbury Deer Stalkers Association, and Mohair New Zealand;
(h) Research Organisations; and
(i) Ngāi Tahu of the Canterbury region.
(For the Canterbury region, the Ngāi Tahu Whanui encompasses Te Rūnanga o Ngāi Tahu - the iwi authority - and the ten Papatipu Rūnanga with manawhenua for the area.

The ten runanga are:
Te Rūnanga o Kaikōura;
Te Ngāi Tūāhuriri Rūnanga;
Te Taumutu Rūnanga;
Te Hapū o Ngāti Wheke;
Wairewa Rūnanga;
Te Rūnanga o Koukourarata;
Te Rūnanga o Ōnuku;
Te Rūnanga o Arowhenua;
Te Rūnanga o Waihao; and
Te Rūnanga o Moeraki.)

A discussion document, titled *Review of Regional Pest Management Strategy (1998)*, was made available for public comment over the consultation period (2002) and a further document titled *Canterbury Regional Pest Management Strategy 2005-2015 Discussion Paper 5-year Review* was made available in July 2009. Comments received from the key groups and the public were evaluated and have aided the development of the objectives and preferred measures to achieve the objectives contained in the Strategy.

### 2.4 Relationship with other legislation and strategies

#### 2.4.1 Resource Management Act 1991

Activities undertaken in implementing the Strategy that may have an adverse effect on the environment come under the Resource Management Act. Environment Canterbury’s Regional Policy Statement (RPS), Chapter 7 Policy 5, recognises the effects that pests can have on soil conservation and the spill-over effects of pests moving between properties. Chapter 8 of the RPS recognises the effects that pests can have on conservation values. The RPS specifies a range of methods for addressing these problems, including the preparation of regional pest management strategies under the Biosecurity Act to enable control to occur. The RPS also contains policies that help ensure that any adverse effects arising from control operations are managed appropriately.

For example, the application of diquat into water requires a resource consent to discharge contaminants, unless permitted by a rule in a regional plan. Consultation processes associated with consent applications and the obligations of Environment Canterbury as a consent authority, ensures that the concerns of Tangata Whenua and other parties is taken into account.

#### 2.4.2 Other strategies prepared under the Biosecurity Act 1993

A regional pest management strategy must not be inconsistent with:

(i) any national or regional pest management strategy (whether relating to the same region or any other region or regions) concerning the same organism; or

(ii) any regulation.
The provisions of Environment Canterbury’s Regional Pest Management Strategy – Biodiversity Pests (2002) are included and integrated within this Strategy.

The Animal Health Board administers a National Pest Management Strategy (NPMS) with the objective of controlling Bovine Tb in cattle and deer. The NPMS also specifies possums and other suspected carriers (e.g. ferrets) of Bovine Tb to be pest agents. Control work under the Strategy will not take the place of the NPMS programme.

2.4.3 Conservation Act 1987, Wild Animal Control Act 1977 and the Wildlife Act 1953

Activities undertaken in implementing this Strategy must comply with the provisions of other legislation. In particular the requirements of the:

(a) Wild Animal Control Act 1977 that declares feral deer, (including wapiti and moose), chamois, thar, Bennett’s wallaby, possum, feral pig and feral goat to be “wild animals”. The Act controls the hunting and release of wild animals as well as regulating deer farming and the operation of safari parks. It also gives local authorities the power to destroy wild animals under operational plans that have the consent of the Minister of Conservation. Control of wild animals under this regional pest management strategy requires this consent.

(b) Wildlife Act 1953 that controls and protects wildlife not subject to the Wild Animal Control Act 1977. It defines wildlife which are not protected (e.g. feral cattle, feral cats, feral dogs), are to be game (e.g. black swan, Canada goose), partially protected or are injurious. It authorises that certain unprotected wildlife may be kept and bred in captivity regardless of any declaration of them as pests under a pest management strategy e.g. ferret, stoat, weasel, polecat. It is necessary to obtain the approval of the Director-General of Conservation for plans to control injurious birds, including rooks.

Fish and Game Councils are constituted under the Conservation Act 1987, and under that Act manage freshwater sports fisheries. Under the Wildlife Act 1953 they are also responsible for control of species of wildlife declared to be game species.
Part II  Pest Management Programmes

3  Strategy Pests

Chapter 3 describes the organisms covered by the Strategy and their classification as pests or other organisms to be controlled. It describes the functions and responsibilities of Environment Canterbury as the management agency.

3.1 Organisms classified as pests

The animals and plants listed in Tables 3.1 to 3.4 are classified as pests and assigned a New Zealand-wide designation embraced by regional councils. An eradication pest is present in low density or distribution in the region for which the long term objective is eradication. A containment pest is widespread in suitable habitats for which the ongoing objective is to minimise the actual or potential externality impacts of the pest or to prevent their spread to new or neighbouring areas or properties. A restricted pest identifies organisms for which further spread can be reduced via pathway management, particularly human assisted spread. Table 3.5 lists other harmful organisms not classified as pests but sanctioned for management under the Strategy through site-led programmes in targeted or high-value environmental areas. There are also other organisms that are not formally included in the Strategy but are to be monitored through a Surveillance Project undertaken by Environment Canterbury (see section 3.3).

Table 3.1 Eradication Pests

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
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<td>Corvus frugilegus</td>
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<tr>
<td>Plant Pests</td>
<td></td>
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<tr>
<td>African feather grass.</td>
<td>Pennisetum macrourum</td>
</tr>
<tr>
<td>African love grass.</td>
<td>Baccharis halimifolia</td>
</tr>
<tr>
<td>Baccharis.</td>
<td></td>
</tr>
<tr>
<td>Bur daisy.</td>
<td>Calotis lappulacea</td>
</tr>
<tr>
<td>Coltsfoot.</td>
<td>Tussilago farfara</td>
</tr>
<tr>
<td>Entire marshwort.</td>
<td>Nymphoides geminata</td>
</tr>
<tr>
<td>Phragmites.</td>
<td>Phragmites australis</td>
</tr>
<tr>
<td>Saffron thistle.</td>
<td>Carthamus lanatus</td>
</tr>
<tr>
<td>White-edged nightshade.</td>
<td>Solanum marginatum</td>
</tr>
<tr>
<td>Wild thyme.</td>
<td>Thymus vulgaris</td>
</tr>
</tbody>
</table>
Table 3.2: Containment Animal Pests

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bennett’s wallaby.</td>
<td><em>Macropus rufogriseus</em> rufogriseus</td>
<td></td>
</tr>
<tr>
<td>Rabbit.</td>
<td><em>Oryctolagus cuniculus</em></td>
<td></td>
</tr>
<tr>
<td>Feral cats.</td>
<td><em>Felis catus</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>Feral goats</td>
<td><em>Capra hircus</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>Mustelids:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ferret;</td>
<td><em>Mustela furo</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>- stoat;</td>
<td><em>Mustela erminea</em></td>
<td></td>
</tr>
<tr>
<td>- weasel.</td>
<td><em>Mustela nivalis</em></td>
<td></td>
</tr>
<tr>
<td>Possum.</td>
<td><em>Trichosurus vulpecula</em></td>
<td>Community Initiative Programmes or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>German wasp.</td>
<td><em>Vespula germanica</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>European wasp.</td>
<td><em>Vespula vulgaris</em></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3 Containment Plant Pests

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broom:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- common;</td>
<td><em>Cytisus scoparius</em></td>
<td></td>
</tr>
<tr>
<td>- montpellier;</td>
<td><em>Teline monspessulana</em></td>
<td></td>
</tr>
<tr>
<td>- white.</td>
<td><em>Cytisus multiflorus</em></td>
<td></td>
</tr>
<tr>
<td>Chilean needle grass.</td>
<td><em>Nassella neesiana</em></td>
<td></td>
</tr>
<tr>
<td>Gorse.</td>
<td><em>Ulex europaeus</em></td>
<td></td>
</tr>
<tr>
<td>Nassella tussock.</td>
<td><em>Nassella trichotoma</em></td>
<td></td>
</tr>
<tr>
<td>Nodding thistle.</td>
<td><em>Carduus nutans</em></td>
<td></td>
</tr>
<tr>
<td>Ragwort.</td>
<td><em>Senecio jacobaea</em></td>
<td></td>
</tr>
<tr>
<td>Variegated thistle.</td>
<td><em>Silybum marianum</em></td>
<td></td>
</tr>
<tr>
<td>Banana passionfruit.</td>
<td><em>Passiflora tripartita var</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td></td>
<td>- moltissima</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>P. tripartita var</em> azuayansis</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>P. tarminiana</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>P. pinnatistipula</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Passiflora x rosea</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>P. caerulea</em></td>
<td></td>
</tr>
<tr>
<td>Bell heather.</td>
<td><em>Erica cinerea</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>Boneseed.</td>
<td><em>Chrysanthemoides monilfera</em></td>
<td>In targeted areas.</td>
</tr>
<tr>
<td>Darwin’s barberry.</td>
<td><em>Berberis darwinii</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>Egeria .</td>
<td><em>Egeria densa</em></td>
<td>In targeted areas.</td>
</tr>
<tr>
<td>Hieracium:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- mouse-ear hawkweed;</td>
<td><em>Hieracium pilosella</em></td>
<td>In targeted areas.</td>
</tr>
<tr>
<td>- king-devil hawkweed;</td>
<td><em>Hieracium praealtum</em></td>
<td></td>
</tr>
<tr>
<td>- tussock hawkweed;</td>
<td><em>Hieracium lepidulum</em></td>
<td></td>
</tr>
<tr>
<td>- field hawkweed.</td>
<td><em>Hieracium caespitosum</em></td>
<td></td>
</tr>
<tr>
<td>Lagarosiphon.</td>
<td><em>Lagarosiphon major</em></td>
<td>In targeted areas.</td>
</tr>
<tr>
<td>Old man’s beard</td>
<td><em>Clematis vitalba</em></td>
<td>In targeted areas.</td>
</tr>
<tr>
<td>Wilding Conifer:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- lodgepole pine;</td>
<td><em>Pinus contorta</em></td>
<td>High-value Environmental Areas only.</td>
</tr>
<tr>
<td>- post 1989 self-seeded.</td>
<td><em>All Coniferae species</em></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3.4: Restricted Pests

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian sedge.</td>
<td>Carex longebrachiata</td>
</tr>
<tr>
<td>Barberry.*</td>
<td>Berberis glauccarpa</td>
</tr>
<tr>
<td>Bathurst bur.*</td>
<td>Xanthium spinosum</td>
</tr>
<tr>
<td>Blackberry (wild aggregates).*</td>
<td>Rubus fruticosus agg.</td>
</tr>
<tr>
<td>Boxthorn.*</td>
<td>Lycium ferocissimum</td>
</tr>
<tr>
<td>Broomedge.</td>
<td>Andropogon virginicus</td>
</tr>
<tr>
<td>Buddleja.*</td>
<td>Buddleja davidii (excluding hybrids)</td>
</tr>
<tr>
<td>Burdock.*</td>
<td>Arctium minus</td>
</tr>
<tr>
<td>Cape honey flower.*</td>
<td>Melianthus major</td>
</tr>
<tr>
<td>Cape ivy.*</td>
<td>Senecio angulatus</td>
</tr>
<tr>
<td>German ivy.*</td>
<td>Senecio micanioides</td>
</tr>
<tr>
<td>Goats rue.*</td>
<td>Galega officinalis</td>
</tr>
<tr>
<td>Hawthorn.*</td>
<td>Crataegus monogyna</td>
</tr>
<tr>
<td>Hemlock.*</td>
<td>Conium maculatum</td>
</tr>
<tr>
<td>Himalayan honeysuckle.*</td>
<td>Leycesteria formosa</td>
</tr>
<tr>
<td>Mistflower.*</td>
<td>Ageratina riparia</td>
</tr>
<tr>
<td>Nardoo.*</td>
<td>Marsilea mutica</td>
</tr>
<tr>
<td>Noogoora bur.</td>
<td>Xanthium strumarium</td>
</tr>
<tr>
<td>Nutgrass (purple nutsedge).</td>
<td>Cyperus rotundus</td>
</tr>
<tr>
<td>Oxylobium.</td>
<td>Oxylobium lanceolatum</td>
</tr>
<tr>
<td>Palm grass.</td>
<td>Setaria palmifolia</td>
</tr>
<tr>
<td>Perrenial nettle.*</td>
<td>Urtica dioica</td>
</tr>
<tr>
<td>Plectranthus.*</td>
<td>Plectranthus ecklonii Plectranthus grandis</td>
</tr>
<tr>
<td>Plumeless thistle.*</td>
<td>Carduus acanthoides</td>
</tr>
<tr>
<td>Privet – Chinese.*</td>
<td>Ligustrum sinense</td>
</tr>
<tr>
<td>Sheep bur.*</td>
<td>Acaena agnipila</td>
</tr>
<tr>
<td>Spanish heath.*</td>
<td>Erica lusitanica (excluding double flowered cultivars)</td>
</tr>
<tr>
<td>Spartina.*</td>
<td>Spartina spp.</td>
</tr>
<tr>
<td>Spiny broom.</td>
<td>Calicotome spinosa</td>
</tr>
<tr>
<td>St Johns wort.*</td>
<td>Hypericum perforatum</td>
</tr>
<tr>
<td>Sweet briar.*</td>
<td>Rosa rubiginosa</td>
</tr>
<tr>
<td>Velvet groundsel.*</td>
<td>Senecio petasitis</td>
</tr>
<tr>
<td>Wild cotoneaster.*</td>
<td>Cotoneaster glaucophyllus, Cotoneaster franchetti</td>
</tr>
<tr>
<td>Wild elaeagnus.*</td>
<td>Elaeagnus x reflexa</td>
</tr>
<tr>
<td>Woolly nightshade.</td>
<td>Solanum mauritianum</td>
</tr>
</tbody>
</table>

* Known to be present in Canterbury as at 1 June 2003.

### 3.2 Other organisms to be controlled

Section 76(1)(b) of the Biosecurity Act 1993 provides for the specification of any other organisms intended to be controlled. While there are many organisms that can harm biodiversity values, a number pose a significantly greater risk and warrant explicit listing in the Strategy. Such organisms are not accorded pest status and control of them will only be undertaken in conjunction with co-operating land occupiers. In addition, the site-led biodiversity protection programmes may incorporate control of any plant listed in the Unwanted Organisms Register administered by MAF, or any Eradication, Containment or Restricted Pest listed in section 3.1.
### Table 3.5: Other organisms to be controlled in targeted or high-value environmental areas as part of the site-led Biodiversity Protection Programmes.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentine ant.</td>
<td><em>Linepithema humile</em></td>
</tr>
<tr>
<td>European hedgehog.</td>
<td><em>Erinaceus europaeus</em></td>
</tr>
<tr>
<td>Feral deer:</td>
<td></td>
</tr>
<tr>
<td>- red deer (including hybrids);</td>
<td><em>Cervus elaphus</em></td>
</tr>
<tr>
<td>- fallow deer.</td>
<td><em>Dama dama</em></td>
</tr>
<tr>
<td>Feral pigs.</td>
<td><em>Sus scrofa</em></td>
</tr>
<tr>
<td>Magpie.</td>
<td><em>Gymnorhina tibicen</em></td>
</tr>
<tr>
<td>Rats:</td>
<td></td>
</tr>
<tr>
<td>- Norway;</td>
<td><em>Rattus norvegicus</em></td>
</tr>
<tr>
<td>- ship.</td>
<td><em>Rattus rattus</em></td>
</tr>
<tr>
<td>Ash.</td>
<td><em>Fraxinus excelsior</em></td>
</tr>
<tr>
<td>Barberry.</td>
<td><em>Berberis glaucocarpa</em></td>
</tr>
<tr>
<td>Boxthorn.</td>
<td><em>Lycium ferocissimum</em></td>
</tr>
<tr>
<td>Carex.</td>
<td><em>Carex pendula</em></td>
</tr>
<tr>
<td>Common polypody.</td>
<td><em>Polypodium vulgare</em></td>
</tr>
<tr>
<td>Holly.</td>
<td><em>Ilex aquifolium</em></td>
</tr>
<tr>
<td>Punan grass.</td>
<td><em>Achnatherum caudatum</em></td>
</tr>
<tr>
<td>Red-flowering currant.</td>
<td><em>Ribes sanguineum</em></td>
</tr>
<tr>
<td>Russell lupin.</td>
<td><em>Lupinus polyphyllus</em></td>
</tr>
<tr>
<td>Sycamore.</td>
<td><em>Acer pseudoplatanus</em></td>
</tr>
<tr>
<td>Vipers bugloss.</td>
<td><em>Echium vulgare</em></td>
</tr>
</tbody>
</table>

The pests and other organisms will be managed under one of five different programmes; total control, progressive control, containment control, biodiversity protection or restricted sale. Full descriptions of the respective programmes are found in Chapters 5-9.

Total control is the treatment of a particular pest by recognised methods at intervals necessary to destroy them and prevent their reappearance. Progressive control is the treatment of a particular pest by recognised methods at intervals necessary to ensure systematic progress towards eradication. Containment control aims to restrict the distribution or density of particular (often widespread) pests to a specified area or density threshold with the aim to minimise their impacts.

The biodiversity protection programmes incorporate organisms whose principal threat is to biodiversity values in the Canterbury region. It is a site-led approach and deals with all pests and any other organisms that pose a significant biodiversity threat to a particular targeted or high-value environmental area. Provision is made for targeted control to be undertaken in areas that may not necessarily meet the high-value criteria set out in 8.2.1 but for some other meritorious reason warrant action. For example, an area of low level of infestation close to but not adjacent to a high-value area.

Restricted sale pests are managed under a programme whereby land occupiers and other persons are banned from selling, propagating, or distributing them. Such treatment is similar to the way that those species designated by the Government as “unwanted organisms” are managed.

### 3.3 Assessing organisms not included in the Strategy

Table 3.6 lists the organisms considered for inclusion in the Strategy, and assessed by how well they met the criteria required by the Biosecurity Act. A number of these pest organisms are not currently known within Canterbury, but have the potential to arrive, and some are present, but the information known about them is incomplete.
Section 13 of the Biosecurity Act 1993 gives power to regional councils to gather information, keep records and undertake research so that they may act effectively under the Act. Environment Canterbury has established a **Surveillance Project** to provide information about organisms and their distribution. This project is part of **Environment Canterbury Long Term Council Community Plan 2009-2019** provisions and is subject to annual scrutiny by the community. Each year a number of specified organisms will be targeted and the information gathered reported on.

Some organisms that have pest attributes are the responsibility of other agencies. For example, Fish and Game councils are responsible for the management of Canada goose as a game animal. The Department of Conservation is responsible for freshwater pest fish such as rudd and carp. Environment Canterbury will advocate for action to be taken to control such organisms whenever they impose a significant threat within Canterbury.

### Table 3.6: Organisms considered for inclusion

<table>
<thead>
<tr>
<th>Organism</th>
<th>Comments</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian clam.</td>
<td>Declared an unwanted organism.</td>
<td>Report sightings to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment Canterbury.</td>
</tr>
<tr>
<td>Canada geese.</td>
<td>Presently managed as a game bird by Fish and Game Council.</td>
<td>Regional Surveillance.</td>
</tr>
<tr>
<td>Compulsory de-sexing of</td>
<td>The benefits to biodiversity protection are outweighed by the cost to</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>domestic cats.</td>
<td>individuals.</td>
<td></td>
</tr>
<tr>
<td>Chinese mitten crab.</td>
<td>Declared an unwanted organism.</td>
<td>Report sightings to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment Canterbury.</td>
</tr>
<tr>
<td>European shore crab.</td>
<td>Declared an unwanted organism.</td>
<td>Report sightings to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment Canterbury.</td>
</tr>
<tr>
<td>Hares.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Mediterranean fan crab.</td>
<td>Declared an unwanted organism.</td>
<td>Report sightings to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment Canterbury.</td>
</tr>
<tr>
<td>Mice.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Northern pacific seastar.</td>
<td>Declared an unwanted organism.</td>
<td>Report sightings to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment Canterbury.</td>
</tr>
<tr>
<td><strong>Plants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beggars’ ticks.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Regional Surveillance.</td>
</tr>
<tr>
<td>Californian thistle.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Capeweed.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in PRPMS.</td>
</tr>
<tr>
<td>Elderberry.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Green seaweed.</td>
<td>Other public bodies should consider action if necessary.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Horehound.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Ivy.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
</tbody>
</table>

13
Table 3.6 cont.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Comments</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mat grass.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Onion weed.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Pigs ear.</td>
<td>Control methods unknown.</td>
<td>Regional Surveillance.</td>
</tr>
<tr>
<td>Umbrella sedge.</td>
<td>Individual action is effective in preventing serious adverse effects.</td>
<td>Decline inclusion in RPMS.</td>
</tr>
<tr>
<td>Undaria.</td>
<td>Declared an unwanted organism.</td>
<td>Await action by Ministry of Fisheries.</td>
</tr>
</tbody>
</table>

3.4 The Management Agency

Environment Canterbury is responsible for implementing the Strategy. It is considered that Environment Canterbury meets the requirements of Section 84(3) of the Act in that:

(a) it is accountable to the Strategy funders, including Crown agencies, through the requirements of the Local Government Act 2002;

(b) the acceptability of Environment Canterbury as the management agency has been supported by the funders and those person(s) subject to management provisions of the Strategy through the implementation of the previous Regional Pest Management Strategies; and

(c) Environment Canterbury has the capacity, competency and expertise to carry out the implementation of the Strategy.

Environment Canterbury will, in consultation with Pest Management Liaison Committee chairpersons:

(i) within 3 months of the Strategy being made and becoming operative, prepare an operational plan for Strategy implementation; and

(ii) review the operational plan annually, and, if it thinks fit, amend it; and

(iii) prepare a report on the operational plan and its implementation not later than five months after the end of each financial year; and

(iv) make copies of the operational plan and report on its implementation available to the public.

The principal measures by which Environment Canterbury will implement the Strategy are identified in relation to individual animal and plant pests and other organisms to be controlled in chapters 5, 6, 7, 8 and 9. The detailed manner in which Environment Canterbury will undertake its management responsibilities is set out in Part III (Processes) of the Strategy.
4 Strategy Overview

4.1 Strategy outline

Chapter 1 outlines the structure of the Strategy and describes the contents of each chapter. Section 76 of the Act specifies the required content of a proposed regional pest management strategy and Section 80A of the Act specifies the required content of an operative regional pest management strategy.

This Strategy seeks to maintain, or increase the extent of land presently clear of certain plant pests and to reduce the threats of damage from certain animal pests. It will generally impose obligations upon occupiers of land that will internalise the cost of animal and plant pest control within production or management responsibilities associated with land ownership. Pest levels will be assessed to ensure landowners are adhering to Strategy obligations and pest populations monitored to ascertain progress towards meeting the objectives of the Strategy. It will also specify a funding regime based upon the identification of those who benefit from pest management or those who contribute to the creation of pest problems or a combination of both.

The Strategy also seeks to protect biodiversity values in targeted areas by reducing or eliminating the threats imposed by certain organisms. It does not impose obligations upon landowners to control those organisms, with the exception of old man’s beard, although Environment Canterbury will encourage people to do so and provide technical and other support for control programmes.

Community Initiative Programmes are promoted to foster local enterprise. The Strategy will encourage the development of partnerships with landowners, including individuals, territorial local authorities and the Crown.

Chapters 5 to 9 of this Strategy describe the problems caused by particular animal and plant pests and the objectives of the Regional Council in dealing with them. The measures employed by Environment Canterbury are specified.

4.2 Affected parties and the necessity to act

Under the Strategy, landowners will be responsible for carrying out the specified control of plants and animals declared as pests. However, in some particular instances, Environment Canterbury will carry out or facilitate pest control where there is a wider community benefit for doing so or on a user pays basis.

4.2.1 Roads

At the time the RPMS (1998) was proposed, the Biosecurity Act 1993 prescribed that land occupiers adjoining roads where responsible for carrying out Strategy requirements as if their property extended to the middle line of the road. Subsequently, an amendment to the Act now provides a choice and a regional pest management strategy is able to specify the party responsible for pest management on roadsides.

The options include:

(a) the road controlling authority (territorial authorities and, where there is agreement, Transit New Zealand);

(b) the adjacent land occupier;

(c) no obligation on any party (the Strategy remains silent); or

(d) a combination of any of the above.

There are matters that are peculiar to road reserves containing formed roads. As parcels of land, their primary purpose is to facilitate vehicle movement. However, the carriageway does not usually
extend across the whole of the road reserve. There are also power, telecommunication and drainage facilities that utilise the road reserve. Road reserves are seen to provide a shop window in terms of the general appearance of an area.

The management of pests, and plant pests in particular, does not always equate to the needs of road management. The level of the control of a plant to prevent it from spreading may not be the same as that required for traffic safety or landscape purposes. The activities of roading authorities and other utility operators may be contributing to the establishment or spread of plants. On the other hand, if a roading authority is carrying out pest control it is reasonable that protection is provided to it from pests spilling over from adjoining properties. Equally, adjoining land occupiers may not see that it is their responsibility to deal with pest problems arising from roading and other utility operations.

The most effective and efficient control of pests occurs when the land occupier takes responsibility for undertaking the work on their property. This principle may not necessarily apply to the owners of road reserves. The historic situations surrounding pest control within road reserves have some road controlling authorities responsible for specified pest control on road reserves in the Canterbury region, and in other parts of the region the adjacent land occupier is responsible. Some road controlling authorities have indicated a willingness to take on the responsibility while others prefer existing arrangements to remain that acknowledges the different farming practices as well as general maintenance responsibilities.

Over the period of the Strategy, Environment Canterbury will continue to liaise with road controlling authorities over the effectiveness of the policy. The following schedule sets out the arrangement for the responsibility of controlling plant pests on road reserves containing formed roads maintained by the road controlling authorities.

For the purpose of this Strategy, where adjoining property owner responsibility is signified in Table 4.1, land to which the strategy applies includes all or any of the portions of road bounded by—

(a) The boundary of that land abutting that road; and
(b) Lines extended from the end of that portion of boundary to the middle line of the road; and
(d) The middle line of the road connecting those extended lines.

<table>
<thead>
<tr>
<th>Territorial Authority Area</th>
<th>Adjoining Land Occupier Responsibility</th>
<th>Road Controlling Authority Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurunui District Council</td>
<td>No responsibility</td>
<td>From 1 July 2004</td>
</tr>
<tr>
<td>Christchurch City Council</td>
<td>No responsibility</td>
<td>Full responsibility</td>
</tr>
<tr>
<td>- City wards</td>
<td>No responsibility</td>
<td>From 1 July 2004</td>
</tr>
<tr>
<td>- Banks Peninsula wards</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>Waitaki District Council</td>
<td>No responsibility</td>
<td>From 1 July 2004</td>
</tr>
<tr>
<td>Timaru District Council</td>
<td>Until 30 June 2007</td>
<td>From 1 July 2007</td>
</tr>
<tr>
<td>Waimakaniri District Council</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>Kaikoura District Council</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>Mackenzie District Council</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>Selwyn District Council</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>Waimate District Council</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>Ashburton District Council</td>
<td>Full responsibility</td>
<td>No responsibility</td>
</tr>
<tr>
<td>State Highways</td>
<td>No responsibility</td>
<td>From 1 July 2005</td>
</tr>
</tbody>
</table>

Note: The above Table refers to road reserves containing formed roads maintained by the road controlling authorities. Road reserves containing unformed roads are the responsibility of the adjoining land occupier.
4.2.2 Crown Land

A number of agencies are significant occupiers of Crown land in the Canterbury region: New Zealand Transport Agency, Department of Conservation, Land Information New Zealand, Defence Force New Zealand, and New Zealand Railways Corporation.

Under Section 87 of the Act, the Strategy can only impose obligations and costs on the Crown by agreement. The Strategy is prepared on the basis that it applies to the Crown by agreement and that this will be confirmed by Order in Council. Environment Canterbury will negotiate with Crown agencies to secure agreement to be bound by the Strategy and contribute to the costs of implementing the Strategy. However, until that agreement with Crown agencies can be finalised it would not be appropriate to budget for a Crown contribution in lieu of rates.

The New Zealand Transport Agency (NZTA) takes a pro-active stance in respect of its involvement in plant pest management. NZTA’s approach is to undertake pest control of direct benefit to the road user and the State Highway network, such as for road safety purposes and aesthetics and to mitigate the adverse effects of road infrastructure maintenance and improvements.

In terms of its policy (State Highway Control Manual, Version 3.3 (01/02/2002), pp 1.6.6.1-1.6.6.2), NZTA undertakes to control plant pests within its road reserve boundaries in the following situations:

(a) rest areas;
(b) motorway reserves;
(c) weigh pit and stockpile sites;
(d) other isolated areas of road reserve mainly for road safety reasons;
(e) State highway reserves adjacent to land that is free of plant pests; and
(f) State highway reserves adjacent to land where the landowner is undertaking plant pest management.

In such situations, upon advice from the management agency that plant pests are to be controlled – the NZTA will undertake plant pest control on the State Highway reserve. The detailed scope of work in each of these situations should be agreed between the NZTA regional offices and regional pest management officers. The NZTA does not accept responsibility for plant pest control where:

- the adjacent land is not clear of plant pests and the landowner is not undertaking pest control; and
- access to the subject site is via that property.

Note: The State Highway reserve to be controlled is defined as the road reserve bounded by existing fences or road reserve boundaries, whichever is closest to the highway centreline.

Occupiers of land generally benefit from controlling animals and plants that adversely affect productivity. However, there are also situations where wider community benefits accrue from control of certain organisms through avoiding a wide range of adverse effects. Persons, by their action or inaction, may also contribute to the creation, continuance or exacerbation of animal and plant problems affecting neighbouring land occupiers.
4.3 Funding overview

The rating base for the Strategy is a combination of:

(a) the capital value of rateable properties in the Canterbury region;
(b) the land value of rural rateable properties; and
(c) land area for the service delivery associated with rabbit control.

This rating base reflects the benefits derived by the community as a whole and landowners who are directly affected by this Strategy in proportion to the benefits received. Capital value rating has traditionally been shown to be an efficient and effective way of funding community-based projects. Rural land value generally reflects the land assets at risk from pests.

In addition to the funding derived from the rating base, a focus on encouraging the building of partnerships will be used to add value to the control objectives of the Strategy and to increase the overall investment in addressing biodiversity threats in targeted areas of the Canterbury region. Opportunities exist for co-operation between Environment Canterbury and Crown land-owning entities, territorial local authorities and individual private landowners. Additional funding sources will be pursued wherever appropriate.

4.4 Community Initiative Programmes

4.4.1 Background

Groups of landowners and the wider community often have the enthusiasm and local knowledge to undertake pest control to a higher standard than that prescribed in the Strategy. There may also be situations where there are benefits to the wider community from enhanced control. Environment Canterbury actively supports and encourages locally initiated activities to improve land and water management through its ‘Resource Care’ groups. Fostering a similar approach to pest control brings similar benefits and provides a link to integrate biodiversity pest management.

Community Initiative Programmes will facilitate the establishment of community groups and assist in formulating their action plans. Information and advice to undertake control programmes will be provided where required. Environment Canterbury may also consider financial support to ‘seed’ such initiatives.

Programmes will be considered for any one or a combination of broom, gorse, nodding thistle, variegated thistle and ragwort. Programmes will also be considered for plants and animals included in the Biodiversity Pest Programme including possums, old man’s beard, Darwin’s barberry, and banana passionfruit. Groups may also include other plants and animals where there is agreement to do so, however, the plants and animals would not be subject to Strategy provisions, (rules).

4.4.2 Procedures:

Environment Canterbury will facilitate the Community Initiative Programmes in the following way:

(a) A group of landowners or community representatives will approach Environment Canterbury outlining the nominated pest/pests and the proposed area of the region, (including whole catchments if necessary), to which the programme will apply.

(b) Environment Canterbury will evaluate the proposal taking into account a range of factors including:

(i) the attributes of the pest/s (e.g. dispersal, control options, chances of re-infestation, potential impacts);

(ii) the distribution of the pest/s in the proposed area, and in the area immediately adjacent to it;
(iii) the commitment of landowners to control programmes currently being undertaken;
(iv) how the programme integrates with other initiatives (e.g. control programmes in high-value environmental areas);
(v) the degree to which the applicants represent the parties likely to be included in the programme; and
(vi) the views of the local Pest Management Liaison Committee.

(c) Environment Canterbury will either accept the programme in principle (with or without amendments) or reject the programme.

(d) If a programme is accepted, the landowners and/or community representatives will form a Steering Committee to oversee the establishment of a Community Group.

(e) Environment Canterbury will assist the Steering Committee in surveying landowners in the proposed programme area. Prior to the survey being conducted, Environment Canterbury will, following advice from the Steering Committee for each particular programme, determine by resolution the weighting of individual landowner votes. For the programme to continue, at least 75 percent of the weighted responses from landowners within the programme area must support the initiative.

(f) The Steering Committee and Environment Canterbury will formulate an Action Plan and circulate it to all affected parties in the programme area for comment. The Action Plan will:
(i) define the programme area;
(ii) determine the individual landowner responsibilities;
(iii) detail the way parties will be bound by the programme;
(iv) determine a programme of work;
(v) indicate the source of funding, if any; and
(vi) indicate when a review of the programme will be undertaken.

(g) Environment Canterbury will adopt the Community Initiative Programme, (through initiating a proposal to change the strategy if new rules are necessary).
5 Total Control Programmes

5.1 Introduction

This section describes the management programme for the specified pests. Each programme includes a description of the pest and the likely adverse effects they cause. An objective is stated and the principal measures to be undertaken to achieve the objective are outlined.

For the purpose of this Strategy, total control pest programmes apply to the following:

- **Rooks** (Corvus frugilegus)
- **African feather grass** (Pennisetum macrourum)
- **African love grass** (Eragrostis curvula)
- **Baccharis** (Baccharis halimifolia)
- **Bur daisy** (Calotis lappulacea)
- **Coltsfoot** (Tussilago farfara)
- **Entire marshwort** (Nymphoides geminata)
- **Saffron thistle** (Carthamus lanatus)
- **White-edged nightshade** (Solanum marginatum)

Total control is the treatment of a particular pest by recognised methods at intervals necessary to eradicate them and prevent their reappearance. However, eradication in the long term will depend on the extent of the seed bank for plants or the extent to which rooks are controlled outside of the Canterbury region. The presence of an existing seed bank means that seedlings plants will continue to emerge until the seed bank is exhausted. Destroying the plants prior to seeding ensures no further addition to the seed bank. Similarly, consistent destruction of rooks will eradicate the population. Apart from advocating their eradication, the level of control for rooks outside Canterbury is beyond Environment Canterbury’s control.

5.2 Rooks

5.2.1 Description

Historically, rooks ranged the Canterbury Plains between the Waimakariri River and the Rangitata River. In 1994, there were 1642 birds, with the largest population occurring on Banks Peninsula. Since then, small populations have been found in Kaikoura and Waikari. Table 5.1 shows the trend in the number of rooks since 1998.

Table 5.1: Estimated number of rooks in Canterbury 1998-2002

<table>
<thead>
<tr>
<th>Rooks by Pest District</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banks Peninsula</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ashburton</td>
<td>14</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Selwyn</td>
<td>16</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Waikari</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Rook Numbers</strong></td>
<td><strong>37</strong></td>
<td><strong>24</strong></td>
<td><strong>18</strong></td>
<td><strong>19</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>
5.2.2 Adverse effects

The rook is a highly gregarious bird species, foraging daily from either rookeries or communal winter roosts. During breeding (August-January), all birds live in rookeries, often the same sites as used in the previous breeding seasons. The males who forage for the family group make numerous individual forays, averaging less than 1 kilometre, to communal feeding grounds. At other times of the year, birds spend each night in communal roosts. Feeding forays at such times range up to 20 kilometres.

Rooks show a strong preference for foraging in fields of cereals at all stages of the crop, in recently cultivated land, and in stands of walnut trees. Feeding ranges are influenced by the occurrence of highly preferred foods, with extensive flights being made to walnut trees and to recently tilled fields. The effect of large flocks of rooks is to severely damage or destroy newly emerging crops or pasture.

Successful control has been achieved through a co-ordinated approach involving the use of restricted poisons such as 3-chloro-p-toluidine hydrochloride (DRC 1339) as well as favourable weather conditions, and limited food sources. These conditions may not occur every year, hence effective control cannot be guaranteed every year. Unsuccessful control can lead to rooks becoming wary and much more difficult to control. Rookeries can fragment and new rookeries establish.

5.2.3 Objective

Over the duration of the Strategy, destroy all rooks within the Canterbury region.

5.2.4 Principal measures to achieve the objective

The following principal measures will be undertaken:

(a) Environment Canterbury will monitor rookeries in the Canterbury region to determine rook numbers and the degree of success of any rook control operations;

(b) Environment Canterbury will carry out rook control operations to eradicate rooks using appropriate physical or chemical means; and

(c) Environment Canterbury will administer rules to help prevent rooks from dispersing from known rookeries.

5.2.5 Strategy Rule for Rooks

Other than under the instructions or supervision of an authorised person, land occupiers and other persons shall not at any time:

(a) poison, capture or trap any rook; or

(b) discharge any firearm at any rook; or

(c) discharge any firearm at or within 500 metres of any tree known to contain a rookery; or

(d) damage, disturb or interfere in any other way with a rookery.

These rules shall not apply to the activities of an authorised person in exercising or performing a function power or duty under this Strategy.

A breach of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of these rules is to prevent humans hindering the control of rooks. The birds are easily dispersed and require a settled environment for successful control operations.
5.3 African feather grass

5.3.1 Description
African feather grass is a large, erect, rhizomatous, clump-forming perennial grass. This plant is limited to less than 100 properties throughout the region and is less frequent south of the Rangitata River. It occurs across approximately 2350 hectares of land.

5.3.2 Adverse effects
The seed is distributed by stock, wind and water. African feather grass prefers a moist location but will tolerate drier sites. The plant is very persistent and will form dense stands that will exclude all other plants and it is very persistent.

5.3.3 Objective
Over the duration of the strategy, destroy all African feather grass plants prior to viable seed set within the Canterbury region.

5.3.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Environment Canterbury will regularly inspect land known to contain African feather grass and carry out control operations to destroy African feather grass in an efficient and cost-effective manner, by using appropriate physical or chemical control.
(b) Environment Canterbury will provide advice and education to the community to increase awareness of African feather grass. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
   (iii) producing and distributing pamphlets and using media opportunities to convey relevant information.
(c) Landowners will be encouraged to report to Environment Canterbury the presence of African feather grass on their land.
(d) Environment Canterbury will administer a rule to prevent African feather grass being knowingly spread.

5.3.5 Strategy Rule for African feather grass
Land occupiers and other persons shall not sell, propagate or distribute any African feather grass plant or part thereof.
A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation
The purpose of this rule is to prevent areas presently clear of African feather grass becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
5.4 African love grass

5.4.1 Description
African love grass is limited to three active sites throughout the region affecting approximately 94 hectares.

5.4.2 Adverse effects
This plant is a fast-growing, clump-forming perennial grass with a high potential to invade arable and pastoral land. It is not particularly palatable to stock. African love grass is a prolific seeder and is well adapted to dryland areas.

5.4.3 Objective
Over the duration of the strategy, destroy all African love grass plants prior to viable seed set within the Canterbury region.

5.4.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Environment Canterbury will regularly inspect land known to contain African love grass and carry out control operations to eradicate African love grass in an efficient and cost-effective manner by using appropriate physical or chemical control.
(b) Environment Canterbury will provide advice and education to the community to increase awareness of African love grass. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
   (iii) producing and distributing pamphlets and using media opportunities to convey relevant information.
(c) Landowners will be encouraged to report to Environment Canterbury the presence of African love grass on their land.
(d) Environment Canterbury will administer a rule to prevent African love grass being knowingly spread.

5.4.5 Strategy Rule for African love grass
Land occupiers and other persons shall not sell, propagate or distribute any African love grass plant or part thereof.
A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12

Explanation
The purpose of this rule is to prevent areas presently clear of African love grass becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
5.5 Baccharis

5.5.1 Description
Baccharis is a small-leaved, multiple-branched, dense and hardy shrub growing up to four metres tall. It occurs on 16 active sites scattered across 139 hectares of the Port Hills.

5.5.2 Adverse effects
This plant readily establishes on open, dry hillsides and rocky crevices from wind-dispersed seed. Baccharis has the capability of displacing other plants and forming very dense barriers to stock.

5.5.3 Objective
*Over the duration of the strategy, destroy all baccharis plants prior to viable seed set within the Canterbury region.*

5.5.4 Principal measures to achieve the objective
The following principal measures will be undertaken:

(a) Environment Canterbury will regularly inspect land known to contain baccharis and carry out control operations to destroy baccharis in an efficient and cost-effective manner by using appropriate physical or chemical control.

(b) Environment Canterbury will provide advice and education to the community to increase awareness of baccharis. Methods may include:
(i) responding to public enquiries;
(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
(iii) producing and distributing pamphlets and using media opportunities to convey relevant information.

(c) Landowners will be encouraged to report to Environment Canterbury the presence of baccharis on their land.

(d) Environment Canterbury will administer a rule to prevent baccharis being knowingly spread.

5.5.5 Strategy Rule for baccharis
Land occupiers and other persons shall not sell, propagate or distribute any baccharis plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

**Explanation**
The purpose of this rule is to prevent areas presently clear of baccharis becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
5.6 Bur daisy

5.6.1 Description

Bur daisy is a herb native to Australia. It is found on 33 active sites scattered across 235 hectares largely in Mid and North Canterbury. The plant is a spiny multiple branched perennial growing up to 40 centimetres tall. Its presence is not apparent until well established.

5.6.2 Adverse effects

Bur daisy seeds are contained within small, extremely hard burs that can contaminate wool. Stock grazing is restricted due to its spiny growth. The spread characteristics of bur daisy are similar to nassella tussock.

5.6.3 Objective

Over the duration of the strategy, destroy all bur daisy plants prior to viable seed set within the Canterbury region.

5.6.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will regularly inspect land known to contain bur daisy and carry out control operations to destroy bur daisy in an efficient and cost-effective manner by using appropriate physical or chemical control.

(b) Environment Canterbury will provide advice and education to the community to increase awareness of bur daisy. Methods may include:

(i) responding to public enquiries;
(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
(iii) producing and distributing pamphlets and using media opportunities to convey relevant information.

(c) Landowners will be encouraged to report to Environment Canterbury the presence of bur daisy on their land.

(d) Environment Canterbury will administer a rule to prevent bur daisy being knowingly spread.

5.6.5 Strategy Rule for bur daisy

Land occupiers and other persons shall not sell, propagate or distribute any bur daisy plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of this rule is to prevent areas presently clear of bur daisy becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
5.7 Coltsfoot

5.7.1 Description
Coltsfoot is an invasive, mat-forming herb with large leathery leaves, stout roots and deep creeping rhizomes. It is present on 40 sites scattered across 633 hectares in the Arthur’s Pass area of Canterbury.

5.7.2 Adverse effects
This plant can grow in heavy soils, stream margins and damp loose gravel areas. There is a potential for fragments to enter and clog stock/irrigation races and for the plant to invade irrigated pasture.

5.7.3 Objective
Over the duration of the strategy, destroy all coltsfoot plants prior to viable seed set within the Canterbury region.

5.7.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Environment Canterbury will regularly inspect land known to contain coltsfoot and carry out control operations to destroy coltsfoot in an efficient and cost-effective manner by using appropriate physical or chemical control.
(b) Environment Canterbury will provide advice and education to the community to increase awareness of coltsfoot. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
   (iii) producing and distributing pamphlets and using media opportunities to convey relevant information.
(c) Landowners will be encouraged to report to Environment Canterbury the presence of coltsfoot on their land.
(d) Environment Canterbury will administer a rule to prevent coltsfoot being knowingly spread.

5.7.5 Strategy Rule for coltsfoot
Land occupiers and other persons shall not sell, propagate or distribute any coltsfoot plant or part thereof.
A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation
The purpose of this rule is to prevent water bodies and their margins presently clear of coltsfoot becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of water bodies.
5.8 Entire marshwort

5.8.1 Description
Entire marshwort is a perennial aquatic plant with roots in the bed of the water body and leaves that float on the surface. It is now limited to three active sites in Mid Canterbury.

5.8.2 Adverse effects
This plant spreads rapidly by stolons and by plant fragmentation. Entire marshwort is also able to invade land in an adapted growth form. It has the potential to choke waterways, deoxygenating the water and killing aquatic life and preventing recreational use.

5.8.3 Objective
Over the duration of the strategy, destroy all entire marshwort plants within the Canterbury region.

5.8.4 Principal measures to achieve the objective
The following principal measures will be undertaken.

(a) Environment Canterbury will regularly inspect land known to contain entire marshwort and carry out control operations to destroy entire marshwort in an efficient and cost-effective manner by using appropriate physical or chemical control.

(b) Environment Canterbury will provide advice and education to the community to increase awareness of entire marshwort. Methods may include:
(i) responding to public enquiries;
(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
(iii) producing and distributing pamphlets and using media opportunities to convey relevant information.

(c) Landowners will be encouraged to report to Environment Canterbury the presence of entire marshwort on their land.

(d) Environment Canterbury will administer a rule to prevent entire marshwort being knowingly spread.

5.8.5 Strategy Rule for entire marshwort
Land occupiers and other persons shall not sell, propagate or distribute any entire marshwort plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation
The purpose of this rule is to prevent water bodies presently clear of entire marshwort becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of water bodies.
5.9 Saffron thistle

5.9.1 Description
Saffron thistle is a multiple-branched annual or biennial plant with rigid, erect stems. It bears small yellow flowers. The plant is limited to five active sites scattered across approximately 378 hectares of land mainly north of the Rakaia River.

5.9.2 Adverse effects
The spines on saffron thistle are prominent and harsh. It invades depleted pasture and is seldom eaten by stock.

5.9.3 Objective
Over the duration of the strategy, destroy all saffron thistle plants prior to viable seed set within the Canterbury region.

5.9.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Environment Canterbury will regularly inspect land known to contain saffron thistle and carry out control operations to destroy saffron thistle in an efficient and cost-effective manner by using appropriate physical or chemical control.
(b) Environment Canterbury will provide advice and education to the community to increase awareness of saffron thistle. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
   (iv) producing and distributing pamphlets and using media opportunities to convey relevant information.
(c) Landowners will be encouraged to report to Environment Canterbury the presence of saffron thistle on their land.
(d) Environment Canterbury will administer a rule to prevent saffron thistle being knowingly spread.

5.9.5 Strategy Rule for saffron thistle
Land occupiers and other persons shall not sell, propagate or distribute any saffron thistle plant or part thereof.
A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation
The purpose of this rule is to prevent areas presently clear of saffron thistle becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
5.10 White-edged nightshade

5.10.1 Description

White-edged nightshade is a shrub plant originating from Africa. The plant is a slow-growing perennial with 1.5 centimetre long prickles. It has a woody stem and grows up to 2.5 metres tall. It is confined to 6 active sites scattered across 250 hectares on Banks Peninsula.

5.10.2 Adverse effects

White-edged nightshade is well adapted to dry conditions and will form dense thickets that are impenetrable to stock.

5.10.3 Objective

Over the duration of the strategy, destroy all white-edged nightshade plants prior to viable seed set within the Canterbury region.

5.10.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will regularly inspect land known to contain white-edged nightshade and carry out control operations to destroy white-edged nightshade in an efficient and cost-effective manner by using appropriate physical or chemical control.

(b) Environment Canterbury will provide advice and education to the community to increase awareness of white-edged nightshade. Methods may include:

(i) responding to public enquiries;
(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
(iii) producing and distributing pamphlets and using media opportunities to convey relevant information.

(c) Landowners will be encouraged to report to Environment Canterbury the presence of white-edged nightshade on their land.

(d) Environment Canterbury will administer a rule to prevent white-edged nightshade being knowingly spread.

5.10.5 Strategy Rule for white-edged nightshade

Land occupiers and other persons shall not sell, propagate or distribute any white-edged nightshade plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of this rule is to prevent areas presently clear of white-edged nightshade becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
6 Progressive Control Programmes

6.1 Introduction

This section describes the management programme for the specified pests. Each pest programme includes: a description of the pest, its likely adverse effects, the objective and the principal measures to be taken to achieve the objective.

For the purpose of this Strategy, a progressive control programme applies to:

- **Nassella tussock** (*Nassella trichotoma*)
- **Chilean needle grass** (*Nassella neesiana*)

Progressive control is the treatment of a particular pest by recognised methods at intervals necessary to ensure systematic progress towards eradication. While eradication is not possible during the duration of this Strategy, continued reductions in the source of plants that contribute to re-seeding will occur resulting in a progressive trend towards eradication.

6.2 Nassella tussock

6.2.1 Description

Nassella tussock is a tufted perennial plant with fine leaves, erect when young but slightly drooping when older. The leaves feel rough when rubbed downwards. It is found throughout the region. The Hurunui district remains the most seriously infested area (commonly referred to as the nucleus area), followed by Banks Peninsula and the Rakaia catchment. Infestation levels decrease to the south of the region. The plant is scattered across approximately 265,000 hectares of land.

6.2.2 Adverse effects

The plant is very similar to native tussocks in appearance making identification more difficult. Mature plants are up to 0.5 metres high and 1 metre across. Each mature plant can produce up to 100,000 seeds per year. The seed straw is readily carried by strong wind and can travel many kilometres. It is also distributed by water, stock, machinery, or on the bark of milled trees. Seed is thought to survive in the soil for 25 or more years but there is no scientific evidence in support of this.

This plant is fast-growing and can rapidly dominate grasslands, eventually smothering them. It is unpalatable to stock. Nassella tussock will grow almost anywhere, but is commonly found on sunny slopes, dry spurs and knobs of tussock grasslands and in stony riverbeds.

6.2.3 Objective

*Over the duration of the Strategy, progressively reduce the population of nassella tussock within the Canterbury region.*

6.2.4 Principal measures to achieve the objective

The following principal measures will be undertaken:
(a) Landowners will carry out an annual control programme to prevent nassella tussock from seeding.

(b) Environment Canterbury will inspect land to determine the presence and density of nassella tussock. The frequency of inspection will depend on the population dynamics of the plants, the proneness of the land to infestations and the effectiveness of landowner control programmes. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.

(c) Environment Canterbury will provide advice and education to the community to increase awareness of nassella tussock. Methods may include:

(i) responding to public enquiries;

(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;

(iii) producing and distributing pamphlets and using media opportunities to convey relevant information; and

(iv) advising landowners on technical matters in association with inspections, ensuring new landowners are informed about nassella tussock and their responsibilities, preparing programmes to assist them to address their pest problem and encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will monitor land with nassella tussock to determine whether the objective is being met.

(e) Environment Canterbury will support continuing research into the ecology of nassella tussock and the development and application of new control tools including biological control. This may also include co-ordinating the release of biological control agents.

(f) Environment Canterbury will administer rules where it is necessary to achieve the objective.

6.2.5 Strategy rules for nassella tussock

(a) Land occupiers shall, on all the land they occupy, complete a control programme to prevent nassella tussock plants from seeding by:

(i) 31 October every year within the area delineated on Map 1 contained in Appendix 3; or

(ii) 30 September each year in all other parts of the Canterbury region.

(b) Land occupiers and other persons shall not sell, propagate or distribute any nassella tussock plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

An exemption to any of the above rules may be sought by any person in accordance with the procedures set out in Chapter 12 of the Strategy.

Explanation

The purpose of rule 6.2.5(a) is to prevent nassella plants spreading to neighbouring properties. Without a prescribed date for completing control work, some landowners would not complete control operations prior to seed set. The two dates set out for completing the control programmes enables compliance inspections to be appropriately targeted.

The purpose of rule 6.2.5(b) is to prevent areas nassella tussock infesting land through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
6.3 Chilean needle grass

6.3.1 Description

Chilean needle grass was first recorded in New Zealand in the 1930’s and currently there are two extensive infestation areas in the country - in Hawkes Bay and in Marlborough. However, a further infestation was discovered on a property in North Canterbury in November 2008. This infestation is considered to have originated from Marlborough.

Chilean needle grass is a tufted perennial plant growing to one metre in the absence of grazing. Its leaves are bright green and harsh to the touch. Identification in grazed pasture is difficult prior to flower emergence in October.

The flowers have a purple tinge and ripen into hard, sharp seeds with long twisting tails. These aid the seed in the penetration of the animal’s skin and the soil. It also produces viable seeds in its mid and basal stem regions (cleistogenes).

6.3.2 Adverse effects

Plants will grow into dense stands and exclude other indigenous and exotic grassland species. It reduces the livestock carrying capacity of pastures due to the production of masses of unpalatable flower stalks. The sharp penetrating seeds injure livestock and result in the downgrading of wool, skins and hides. The seed can move through an animal’s skin into body muscles, causing abscesses and the downgrading of carcasses. Lambs are particularly vulnerable to seeds penetrating their eyes causing blindness.

The point of the seed is extremely sharp and hairy so catches onto passing animals, vehicles, and humans. As a result it can be transported considerable distances to new sites.

6.3.3 Objective

Over the duration of the Strategy:

(i) progressively reduce the population of Chilean needle grass within the containment area (Appendix 8, Map 6); and
(ii) prevent the establishment of Chilean needle grass outside of the containment area.

6.3.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will inspect land to determine the presence and density of Chilean needle grass.

(b) Environment Canterbury will carry out control programmes in partnership with landowners to prevent Chilean needle grass from seeding.

(c) Environment Canterbury will provide advice and education to the community to increase awareness of Chilean needle grass. Methods may include:

(i) responding to public enquiries;

(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;
(iii) producing and distributing pamphlets and using media opportunities to convey relevant information; and
(iv) advising landowners on technical matters in association with inspections, ensuring new landowners are informed about Chilean needle grass and their responsibilities, preparing programmes to assist them to address their pest problem and encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will monitor land with Chilean needle grass to determine whether the objective is being met.

(e) Environment Canterbury will support continuing research into the ecology of Chilean needle grass and the development and application of new control tools including biological control. This may also include coordinating the release of biological control agents.

(f) Environment Canterbury will administer rules where it is necessary to achieve the objective.

6.3.5 Strategy rules for Chilean needle grass

Land occupiers and other persons shall not sell, propagate or distribute any Chilean needle grass plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

In accordance with section 80D(5) of the Biosecurity Act 1993, exemption to rule 6.3.5 may only be granted for the purpose of scientific research.

Explanation

The purpose of rule 6.3.5 is to prevent areas of Chilean needle grass infesting land through human-assisted activities. Examples of such activities include transporting seed outside of the containment area, selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution of the plants.
7 Containment Control Programmes

7.1 Introduction

This section describes the management programme for the specified pests. Each pest programme includes a description of the pest and the likely adverse effects they cause. An objective is stated and the principal measures to be taken to achieve the objective are outlined.

For the purpose of this Strategy, a containment control programme applies to:

- Bennett's wallaby (Macropus rufogriseus rufogriseus)
- Possum (Trichosurus vulpecula)
- Rabbit (Oryctolagus cuniculus)
- Broom (Cytisus scoparius, C. multiflorus, Teline monspessulana)
- Gorse (Ulex europaeus)
- Nodding thistle (Carduus nutans)
- Ragwort (Senecio jacobaea)
- Variegated thistle (Silybum marianum)

Containment control is the treatment of a particular pest by recognised methods and at intervals necessary to ensure that the spread of infestation will be contained or the population levels remain under a specified threshold. Containment will include clearing plant infestations from property boundaries, destruction of scattered plant infestations, the maintenance of rabbits at or below level 3 (Modified McLean Scale), the maintenance of possums at or below 10 per cent Residual Trap Catch (RTC) in community agreed areas or the use of biological control agents as detailed for the individual pests specified in the following sections.

The pests included in this containment programme are generally of a widespread nature. However, there are exceptions to this overall situation and the opportunity exists for local areas to achieve more than just containment. To accommodate local initiatives, this Strategy provides for the establishment of Community Initiative Programmes.

7.2 Bennett's wallaby

7.2.1 Description

Bennett's wallaby occupy a variety of habitats in the hill country of South Canterbury, from forested gullies, matagouri scrub and exotic forests, to tall tussock grasslands. At present, wallabies usually occur at low and moderate densities with some localised areas of high densities.

Wallabies occupy approximately 300,000 hectares of land in South Canterbury, centred in the Hunter Hills, but including the Two Thumb Range, the Kirkleston and the Grampian mountains. Populations also occur in Kakahu Forest near Geraldine and Pioneer Park south-east of Fairlie. There have been occasional sightings of isolated wallabies outside South Canterbury, for example on Banks Peninsula and at Mt Oxford. Such sightings suggest that the illegal release of wallabies may be occurring.
7.2.2 Adverse effects

At high densities (Level 4 and greater on the Guilford Scale - Appendix 6), wallabies can have significant adverse environmental effects. These include the prevention of regeneration of native bush, depletion of forest under-storey and possible impacts on water quality. Wallabies also damage tall tussock grasslands, including the inter-tussock vegetation that can become depleted with a consequent increase in bare ground and increased risk of soil erosion.

Economic effects include damage to pasture with anecdotal evidence of complete clearance of cover in places. There is evidence of wallabies grazing on green feed crops particularly where these border suitable cover. Wallabies also damage exotic forests, particularly at the establishment stage, with damage being more serious in areas bordering native bush or scrub areas.

The primary form of wallaby control for inaccessible areas is by the aerial application of 1080 poison incorporated in cereal-based pellets. For smaller operations, 1080 poison gel is applied to the leaves of broadleaf species, but this method is only suitable in native bush locations and is labour intensive.

Some people believe that the use of 1080 poison is undesirable for health and environmental reasons. Consequently, there is a continuing need to investigate, develop and implement new control tools, especially biological agents, so that the reliance on poisons is lessened or eliminated.

Shooting from a helicopter, particularly following heavy snow, can also be an effective method but is limited to more open tall tussock areas. Recreational shooting may be useful in localised areas.

7.2.3 Objectives

Over the duration of the Strategy:

(i) Ensure wallaby densities do not exceed Level 3 on the Guilford Scale on land within the Wallaby Containment Area (Appendix 4, Map 2); and

(ii) Prevent the establishment of wallaby populations outside of the Wallaby Containment Area.

7.2.4 Principal measures to achieve the objectives

The following principal measures will be undertaken.

(a) Within six months Environment Canterbury will investigate and report on the establishment of an advisory committee to provide advice on the management of wallabies, the level of control and inspection activities within the Wallaby Containment Area.

(b) Where wallabies are adversely affecting high-value environmental areas, Environment Canterbury will undertake strategic control operations to reduce the level of wallaby abundance. Appropriate physical, biological or chemical measures will be utilised in an efficient and cost-effective manner. The use of commercial and recreational hunters will be encouraged in appropriate circumstances prior to any necessary control operations being undertaken by Environment Canterbury.

(c) Environment Canterbury will inspect wallaby infested land in the Wallaby Containment Area using the Guilford Scale to determine relative wallaby densities.

(d) Environment Canterbury may inspect land in response to reports of the presence of wallabies outside the Wallaby Containment Area. The activity will also include the removal of wallabies.

(e) Environment Canterbury may investigate, and if necessary establish a rating district to achieve and keep wallabies at or below Level 3 on the Guilford Scale.

(f) Environment Canterbury will undertake and investigate methods and ways to reduce the Wallaby Containment Area.

(g) Environment Canterbury will monitor wallabies to determine whether the objectives are being met.
(h) Environment Canterbury will support continued research into the development of new and existing control tools, including biological control. This may include co-ordinating the release of biological control agents.

(i) Environment Canterbury will provide advice and education to landowners to encourage them to effectively and efficiently control wallabies. Methods may include:

(i) responding to public enquiries;

(ii) discussions with runanga, participating in discussion groups and landcare groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and

(iii) producing and distributing pamphlets and using media opportunities to convey relevant information.

(j) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.2.5 Strategy Rules for Bennett’s wallaby

(a) Within the Wallaby Containment Area shown on Map 2, land occupiers shall keep wallaby densities at or below Level 3 on the Guilford Scale on the land that they occupy.

(b) Land occupiers shall notify Environment Canterbury in writing of the presence of wallabies on the land that they occupy where that land is outside the Wallaby Containment Area shown in Map 2. The notification shall be made to Environment Canterbury within 10 working days of the land occupier becoming aware of, or being advised of, the presence of wallabies on the land that they occupy.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control and to assist in the early detection of wallabies outside of the Wallaby Containment Area.
7.3 Possums

Possums are also subject to management under a National Pest Management Strategy for Bovine Tb and are controlled by way of feral vector control programmes. The RPMS compliments the National Strategy by providing for possum control in high-value environmental areas and community self-help programmes.

7.3.1 Location and distribution

Possums are present throughout the region with numbers depending on the availability of suitable habitat. Throughout the mixed cropping areas of the plains and downlands and in most beech forests, their numbers are generally very low and scattered (less than one per hectare). In dry scrublands in South Canterbury and in inland native and exotic forests in North Canterbury their numbers are generally light to medium (one to two per hectare). In forested areas of Banks Peninsula and coastal North Canterbury their numbers are generally medium to high (two to six per hectare).

Possums begin breeding at one to two years of age, and populations are capable of increasing at a rate of 22-30 percent per year, indicating that a population at 20 percent of its carrying capacity is capable of recovering to its full carrying capacity within ten years. Juvenile possums disperse an average of six kilometres from their home range into suitable adjacent habitat, but can move up to 30 kilometres per year.

7.3.2 Adverse effects

Possums are one of the most serious threats to biodiversity values. Possums are primarily herbivores, and feed on a variety of leaves, flower buds, fruit, ferns, and fungi. They feed also on invertebrates and opportunistically on the eggs and nestlings of birds. As a result a very large range of both indigenous and introduced flora and fauna are affected.

Despite this wide range, possums are strongly selective browsers and the majority of the diet in any one location consists of only a few species. The species most common in a habitat are not necessarily those most frequently eaten. Therefore, extensive defoliation of favoured plant species and progressive change in forest composition to less favoured species occurs.

Possum damage is not however uniform across habitats. Possum damage appears to be variable within and between plant populations, communities and ecosystems, and is influenced by a range of biotic and abiotic (living and non-living) factors. These factors may predispose plant communities to possum damage, trigger damage episodes, or accelerate the rate of vegetation change. Within forest communities, possum browsing is frequently concentrated on a few trees that may be defoliated or killed, while neighbouring trees may be unaffected. At a regional scale plant species such as mistletoe or fuchsia can coexist with long-established possum populations, while other populations of the same species can be threatened with extinction. Possums can also impact on native animals both by predation of insect species, snails, and birds, although within Canterbury insects are most likely to be at risk.
Possums cause economic effects by damaging exotic forests, eating pasture, and through the spread of bovine Tb. Clover and pasture grasses were a major component of possum diet in a study of possum feeding on Banks Peninsula, apart from summer dry periods. However, the possum browsing on pasture is likely to be a minor problem apart from pasture/bush margins, and is likely to be accommodated within the normal biological response rates of those systems. It may be more significant in areas such as parts of Banks Peninsula where the bush/pasture interface is a major feature. The damage to exotic forests also tends to be limited.

Bovine Tb is the major economic impact associated with possums. There is evidence to support the link between possums and Tb in farmed animals. Recent studies show that cattle and deer may lick and nuzzle Tb infected possums in the terminal stages of the disease as the possums wander around open ground in daylight. Sheep do not appear to exhibit this level of curiosity, and to date have remained relatively free of the disease.

7.3.3 Objective

*Over the duration of the Strategy, contain possums below 10 per cent Residual Trap Catch within Community Initiative Programme areas.*

7.3.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will facilitate Community Initiative Programmes.

(b) Where funded, Environment Canterbury will carry out control programmes to achieve the objective.

(c) Environment Canterbury will monitor land to determine whether the objective is being met.
7.4 Rabbits

7.4.1 Description

Rabbits occur in many parts of the Canterbury region. Their preferred habitat is grassland below an altitude of about 1000 metres, with free draining soils, sunny aspect, and less than 1000 millimetres annual rainfall. Their distribution and population density is reflected by a propensity of land to harbour populations of rabbits and the potential rate of population increase.

Much of Canterbury lies in the low and negligible proneness classes with rabbits being present at low densities. In these areas, night-count levels are commonly below 10 rabbits per kilometre and rabbit densities are at 3 or below on the Modified McLean Scale. Higher numbers of rabbits are more likely to be found on high and extremely rabbit-prone land, especially in the absence of control. Figure 7.1 shows the approximate location of the different classes of rabbit-prone land.

Land use can also influence the occurrence of rabbits. For example, the change from tall tussock to short tussock or improved pastures has created an environment more suited to rabbits. Forestry, on the other hand, creates unsuitable habitat for rabbits once canopy closure is achieved, although forest margins and firebreaks can be problem areas.

The introduction of Rabbit Haemorrhagic Disease (RHD) has had a dramatic effect on rabbit populations, particularly in the highly prone areas of the Waitaki and Mackenzie. In these two areas, rabbit levels are being maintained at very low levels, typically less than two rabbits per night-count kilometre. In most instances, the virus is capable of maintaining rabbit levels below Level 3 provided immunity levels do not develop.

7.4.2 Adverse effects

In areas of high and extremely rabbit-prone land, population increase is not curbed by natural mechanisms and can quickly build to high levels. These areas occur largely in the Upper Waitaki Valley, Mackenzie Basin and the inland Kaikoura area. Moderately rabbit-prone land is an intermediate case, although in some situations rabbits can increase to high numbers. These lands occur mainly in the free-draining hill soil areas of North Canterbury and the foothills.

Rabbits can cause a number of adverse effects particularly in the more rabbit-prone lands. At high numbers the control costs can be prohibitively expensive. Their impact reduces available grazing for domestic stock and subsequently decreases the financial returns to landowners and their ability to fund control. High rabbit numbers also assist in maintaining high predator numbers. This can lead to significant costs being incurred in situations where predators carry bovine tuberculosis.

On highly rabbit-prone land, and to a lesser extent on moderately prone land, rabbits, often in conjunction with other grazing animals, cause a number of environmental effects, including:

(i) the depletion of many plant communities and species diversity;
(ii) an increase in areas of bare ground as well as physical disturbance of the soil, both of which increase the risk of erosion;
(iii) a reduction in soil organic matter through overgrazing, which, in turn, results in deterioration in the physical and nutrient properties of the soil;
(iv) adverse effects on indigenous and other fauna, when rabbit predators target alternative prey.
Figure 7.1: Rabbit Proneness Map
Controlling high numbers of rabbits with poison can also lead to environmental effects. Prior to the arrival of RHD in 1997, the most effective tool for large-scale rabbit control was sodium monofluoroacetate (1080 poison), although other poisons such as 2-pivaloylindane-1, 3-indandione (pindone) were used. However, when the technical standards for the use of poisons are compromised, for example when it is used too frequently, rabbits can become reluctant to eat the poison (toxin aversion), or cautious about eating new things in their environment (neophobia). This results in the need for other more labour-intensive and costly techniques such as fumigation and shooting.

Some people believe that the use of 1080 poison is undesirable for health and environmental reasons. Consequently, there is a continuing need to investigate, develop and implement new control tools, especially biological agents, so that the reliance on poisons is lessened or eliminated.

7.4.3 Objective

Over the duration of the Strategy, achieve rabbit densities not exceeding Level 3 on the Modified McLean Scale within the Canterbury region.

7.4.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling rabbits on the land they occupy apart from the rating pool area of the Banks Peninsula Pest District.

(b) Environment Canterbury will selectively inspect extreme, high and moderately rabbit-prone and rabbit infested land including riverbed and adjoining land, using the Modified McLean Scale to determine rabbit densities. The Pest Management Liaison Committees will make recommendations to Environment Canterbury on the amount of inspections to be carried out in a particular pest district in any one year.

(c) Environment Canterbury will monitor rabbit numbers at district and regional levels to determine whether the objective is being met.

(d) Environment Canterbury will carry out rabbit control in situations where:
   (i) funding is arranged via a landowner rating pool system; or
   (ii) where costs are recovered on a user pays basis.

(e) Environment Canterbury will provide advice and education to occupiers of land to encourage them to efficiently and effectively control rabbits. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, rural residential groups, participating in discussion groups, attending field days, Agricultural and Pastoral Association shows and other appropriate public events; and
   (iii) producing and distributing pamphlets and using media opportunities to convey relevant information, particularly up to date information on RHD to help maximise its effectiveness.

(f) Where requested, Environment Canterbury will consider changing the system of funding service delivery for rabbits.

(g) Environment Canterbury will measure the levels of RHD immunity in rabbit populations.

(h) Environment Canterbury will monitor the use of 1080 poison by requiring notification to Environment Canterbury of its use to control rabbits.

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1 The Council may engage contractors to do the work on its behalf.

2 The Council may engage contractors to do the work on its behalf.
(i) Environment Canterbury will identify and ensure the reduction of areas of land with toxin averse and neophobic rabbit populations.

(j) Environment Canterbury will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents where they have been legally approved for use in New Zealand.

(k) Environment Canterbury will support research into the development and application of existing and new control tools including biological control. For example, supporting investigations into the effectiveness of RHD and the efficacy of 1080.

(l) Environment Canterbury will administer rules where it is necessary to achieve the objective.

The Banks Peninsula Pest District is able to continue operating collective responsibility for control because of the ability to integrate other animal pest control work with rabbit control. For that reason, an alternative approach to landowner responsibility is accommodated for this Pest District.

### 7.4.5 Strategy Rules for rabbits

(a) Land occupiers shall keep rabbit densities on the land that they occupy at or below Level 3 on the Modified McLean Scale.

(b) No person shall discharge a firearm at or on a property for which a shooting prohibition has been set and publicly notified for the property.

(c) Land occupiers shall not use or allow the use of aerially-applied sodium monofluoroacetate (1080 poison) on the land that they occupy where aerially-applied sodium monofluoroacetate (1080 poison) has been used on that land within the previous three years.

(d) Land occupiers shall keep, and make available to Environment Canterbury upon request, records in writing of the use of ground-applied sodium monofluoroacetate (1080 poison) for rabbit control on the land that they occupy, recording:

   (i) the location of the land on which 1080 poison was applied;

   (ii) the date 1080 poison was applied;

   (iii) the quantity of 1080 poison that was used; and

   (iv) the type of bait that was used.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

**Explanation**

The purpose of these rules is to provide a defined level at which landowners must carry out rabbit control, to prevent human interference with designated shooting programmes and to ensure that 1080 poison is used in a manner that does not lead to poison aversion in rabbit populations.
7.5 Broom

7.5.1 Description

Common broom, *Cytisus scoparius*, is a branched perennial shrub up to 2.5 metres tall with bright yellow flowers. Montpellier broom, *Teline monspessulana*, and white broom, *Cytisus multiflorus*, while somewhat smaller in stature are, except for slightly smaller yellow flowers or red flecked white flowers respectively, very difficult to distinguish from common broom. They are therefore treated as one in association with common broom.

Broom is a widespread plant scattered across land throughout the region. Density varies from light to heavy depending upon the intensity of grazing management. It is most prevalent on lightly grazed and ungrazed areas.

7.5.2 Adverse effects

Broom seedlings are unable to compete with productive pasture. Where insufficient grazing pressure is exerted, the plants can establish dense stands that can shade out most other species and destroy pasture. The plants will spread from infested land onto clear land. Seed dispersal is mostly within ten metres of the parent plant unless assisted by other agents such as stock or water. Seed may survive in the soil for more than 50 years.

7.5.3 Objective

*Over the duration of the Strategy, prevent broom from infesting land presently free from broom.*

7.5.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling broom on the land they occupy.

(b) Environment Canterbury will regularly inspect land at risk to broom infestation to determine the presence and density of broom. The frequency of inspection will depend on the population dynamics of the plants and the proneness of the land to infestations. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.

(c) Environment Canterbury will provide advice and education to the community to increase the awareness of broom, its infestation pathways and its control measures. Methods may include:

(i) responding to public enquiries;

(ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;

(iii) providing information on control measures and alternatives to herbicides;

(iv) producing and distributing pamphlets and using media opportunities to convey relevant information;

(v) advising landowners on technical matters in association with inspections;

(vi) mechanisms to formalise staged management programmes and development of stage controlled programmes in association with inspections; and

(vii) encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.

(d) Environment Canterbury will facilitate Community Initiative Programmes.
(e) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(f) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(g) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(h) Environment Canterbury will monitor land with broom to determine whether the objective is being met.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.5.5 Strategy Rules for broom

(a) Land occupiers shall eliminate broom infestations that cover up to 50 square metres in area and are greater than five metres from other broom infestations exceeding 50 square metres in area on the land that they occupy.

For the purpose of this rule, eliminate means the permanent preclusion of the broom plant’s ability to set viable seed.

(b) Land occupiers shall eliminate broom infestations on the land that they occupy within 10 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, broom infestations within 10 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the broom plant’s ability to set viable seed.

(c) Land occupiers and other persons shall not sell, propagate or distribute any broom plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Land occupiers are exempted from the provisions of these rules for the following:

(i) the requirement to eliminate broom when present as a hedge within a property; and

(ii) the requirement to eliminate broom when present as a hedge on a boundary provided that the top and sides of the hedge are trimmed each year after flowering but before seed set to minimise seeding.

Land occupiers may apply for an exemption from any of the above rules in accordance with the procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of broom infestations and to prevent land becoming infested by broom through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

Exemptions from the rules may be obtained where the landowner can agree with Environment Canterbury on a binding programme of broom control for a property that is consistent with the objective, and is carried out within a fixed time frame. Such a programme could include initially dealing with larger broom infestations ahead of smaller non-complying broom infestations.
7.6 Gorse

7.6.1 Description
This plant is a sharply spinous, woody, deeply rooted, leguminous perennial shrub able to grow almost anywhere. Gorse grows up to four metres tall with thick stems. It is a widespread plant scattered across land throughout the region. Density varies from light to heavy depending upon the intensity of grazing management. It is most prevalent on lightly grazed and ungrazed areas.

7.6.2 Adverse effects
Gorse forms dense thickets that prevent stock from grazing infested areas. Seeds can be ejected up to 5 metres from pods. Seed may be spread by water, birds, road-making, gravel extractions, animals and machinery. The plant may seed twice a year. Seed may survive in the soil for more than 50 years.

7.6.3 Objective
Over the duration of the Strategy, prevent gorse from infesting land presently free from gorse.

7.6.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Land occupiers are responsible for controlling gorse on the land they occupy.
(b) Environment Canterbury will regularly inspect land at risk to gorse infestation to determine the presence and density of gorse. The frequency of inspection will depend on the population dynamics of the plants and the proneness of the land to infestations. The activity may also include the removal of isolated plants where it is cost-effective to do so during inspection.
(c) Environment Canterbury will provide advice and education to the community to increase the awareness of gorse, its infestation pathways and its control measures. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;
   (iii) providing information on control measures and alternatives to herbicides;
   (iv) producing and distributing pamphlets and using media opportunities to convey relevant information;
   (v) advising landowners on technical matters in association with inspections;
   (vi) mechanisms to formalise staged management programmes and development of stage controlled programmes in association with inspections;
   (vii) encouraging group activities that will be of assistance in meeting the desired outcomes of this Strategy.
(d) Environment Canterbury will facilitate Community Initiative Programmes.
(e) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(f) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(g) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(h) Environment Canterbury will monitor land with gorse to determine whether the objective is being met.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.6.5 Strategy Rules for gorse

(a) Land occupiers shall eliminate gorse infestations that cover up to 50 square metres in area and are greater than five metres from other gorse infestations exceeding 50 square metres in area on the land that they occupy.

For the purpose of this rule eliminate means the permanent preclusion of the gorse plant’s ability to set viable seed.

(b) Land occupiers shall eliminate gorse infestations on the land that they occupy within 10 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, gorse infestations within 10 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the gorse plant’s ability to set viable seed.

(c) Land occupiers and other persons shall not sell, propagate or distribute any gorse plant or part thereof.

A breach of any of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Land occupiers are exempted from the provisions of this rule for the following:

(i) the requirement to eliminate gorse when present as a hedge within a property; and

(ii) the requirement to eliminate gorse when present as a hedge on a boundary provided that the top and sides of the hedge are trimmed each year after flowering but before seed set to minimise seeding.

Land occupiers may apply for an exemption from any of the above rules in accordance with the procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of gorse infestations and to prevent land becoming infested by gorse through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

Exemptions from the rules may be obtained where the landowner can agree with Environment Canterbury on a binding programme of gorse control for a property that is consistent with the objective, and is carried out within a fixed time frame. Such a programme could include initially dealing with larger gorse infestations ahead of smaller non-complying gorse infestations.
7.7 Nodding thistle

7.7.1 Description
Nodding thistle is an aggressive, spiny leafed, largely biennial plant. It is spread widely throughout the region. Densities vary from light to heavy. Their presence is also influenced by climatic events with numbers increasing rapidly following dry conditions that open up pastures.

7.7.2 Adverse effects
This plant can form dense stands of up to 150,000 plants per hectare. It obstructs livestock movement and prevents access to neighbouring pasture plants. Mature nodding thistles can produce 10,000 seeds per plant with 60-80% germination viability. Seed may survive in the soil for long periods.

7.7.3 Objective
Over the duration of the Strategy, contain the spread of nodding thistle to prevent it from infesting adjacent land presently clear of nodding thistle.

7.7.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Land occupiers are responsible for controlling nodding thistle on the land they occupy.
(b) Environment Canterbury will facilitate Community Initiative Programmes.
(c) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools, including biological control agents.
(d) Environment Canterbury will support continuing research into the development and application of new control tools, including biological control.
(e) Environment Canterbury will monitor land to determine whether the objective is being met.
(f) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.7.5 Strategy Rules for nodding thistle
(a) Land occupiers shall eliminate nodding thistle infestations:
   (i) on the land that they occupy within 40 metres of any irrigation race or stockwater race; and
   (ii) on the land that they occupy within 40 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, nodding thistle within 40 metres of the boundary between the properties.

   For the purpose of this rule eliminate means the permanent preclusion of the nodding thistle plant's ability to set viable seed.

(b) Land occupiers and other persons shall not sell, propagate or distribute any nodding thistle plant or part thereof.
A breach of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of rule 7.7.5(a) is to provide a defined level at which landowners must carry out control of nodding thistle infestations. Rule 7.7.5(b) is provided to prevent land becoming infested by nodding thistle through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

7.8 Ragwort

7.8.1 Description

This plant is a robust, branched, bi-annual or perennial plant reaching up to 1.5 metres. It has numerous bright yellow flowers, slightly furry leaves, stems that are purplish in colour and has an unpleasant smell when crushed. Ragwort is widespread throughout the region, although it mainly occurs where rainfall exceeds 800 millimetres per year. Densities vary from light to heavy infestations. The alluvial plains have traditionally had low incidences of ragwort. However, an increase in dairying could increase this infestation. Total area infested is approximately 60,000 hectares.

7.8.2 Adverse effects

Ragwort competes well with pasture and reduces production. It contains alkaloids toxic to dairy stock. The plant is capable of producing 50,000-150,000 seeds of which 70% may be viable.

7.8.3 Objective

Over the duration of the Strategy, contain the spread of ragwort to prevent it from infesting adjacent land presently clear of ragwort.

7.8.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling ragwort on the land they occupy.
(b) Environment Canterbury will facilitate Community Initiative Programmes.
(c) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools, including biological control agents.
(d) Environment Canterbury will support continuing research into the development and application of new control tools, including biological control.
(e) Environment Canterbury will monitor land to determine whether the objective is being met.
(f) Environment Canterbury will administer rules where it is necessary to achieve the objective.
7.8.5 **Strategy Rules for ragwort**

(a) Land occupiers shall eliminate ragwort infestations:

(i) on the land that they occupy within 40 metres of any irrigation race or stockwater race; and

(ii) on the land that they occupy within 40 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, ragwort within 40 metres of the boundary between the properties.

For the purpose of this rule eliminate means the permanent preclusion of the ragwort plant’s ability to set viable seed.

(b) Land occupiers and other persons shall not sell, propagate or distribute any ragwort plant or part thereof.

A breach of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

**Explanation**

The purpose of rule 7.8.5(a) is to provide a defined level at which landowners must carry out control of ragwort infestations. Rule 7.8.5(b) is provided to prevent land becoming infested by ragwort through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.

7.9 **Variegated thistle**

7.9.1 **Description**

Variegated thistle is an aggressive, spiny-leafed, largely biennial plant. It is spread widely throughout the region. Densities vary from light to heavy. Their presence is also influenced by climatic events with numbers increasing rapidly following dry conditions that open up pastures.

7.9.2 **Adverse effects**

This plant can form dense stands of up to 150,000 plants per hectare. It obstructs livestock movement and prevents access to neighbouring pasture plants. Mature nodding thistles can produce 10,000 seeds per plant with 60-80% germination viability. Seed may survive in the soil for long periods.
7.9.3 Objective

Over the duration of the Strategy, contain the spread of variegated thistle to prevent it from infesting adjacent land presently clear of variegated thistle.

7.9.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Land occupiers are responsible for controlling variegated thistle on the land they occupy.
(b) Environment Canterbury will facilitate Community Initiative Programmes.
(c) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools, including biological control agents.
(d) Environment Canterbury will support continuing research into the development and application of new control tools, including biological control.
(e) Environment Canterbury will monitor land to determine whether the objective is being met.
(f) Environment Canterbury will administer rules where it is necessary to achieve the objective.

7.9.5 Strategy Rules for variegated thistle

(a) Land occupiers shall eliminate variegated thistle infestations:
   (i) on the land that they occupy within 40 metres of any irrigation race or stockwater race; and
   (ii) on the land that they occupy within 40 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, variegated thistle within 40 metres of the boundary between the properties.

   For the purpose of this rule eliminate means the permanent preclusion of the variegated thistle plant’s ability to set viable seed.
(b) Land occupiers and other persons shall not sell, propagate or distribute any variegated thistle plant or part thereof.

A breach of these rules creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of rule 7.9.5(a) is to provide a defined level at which landowners must carry out control of variegated thistle infestations. Rule 7.9.5(b) is provided to prevent land becoming infested by variegated thistle through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
8 Biodiversity Protection Programmes

8.1 Introduction

The site-led biodiversity protection programmes incorporate pests and other organisms to be controlled where the principal threat is to biodiversity values in the Canterbury region. While there is a wide range of organisms that may affect biodiversity values, some pose a significantly greater risk and justify inclusion as a pest in a regional pest management strategy. This programme incorporates the pests and other organisms to be controlled from the Regional Pest Management Strategy - Biodiversity Pests (2002).

The need to consider integrated pest control (multiple species pest management) at high value environmental sites arises from the dynamic nature of interactions between species, their different impacts on different site values at different population densities, their different rates of recovery following control, and the need to optimise control solutions. Minimum desirable animal densities may depend on the exact nature of site values to be protected (such as flora versus birds). Also, several studies have found that a reduction in possum or stoat numbers results in increased rat numbers. A reduction in rat or mice numbers can result in increased predation by stoats on indigenous birds. A suite of animals may influence forest floor regeneration, mice, rats, feral pigs and deer, and with time this may affect forest succession trajectories, with consequences for both indigenous flora and fauna. Thus effective pest management involves identifying the values to be protected as the first step, the threats (abiotic and biotic) to those values are then identified, and the required management action (that is, how to manage the threats) is then decided.

These considerations may also apply to pest plants, where removal of one undesirable species (for example, old mans beard) may result in invasion by other species (present in low densities until release) such as German ivy, and so a multi-species approach to site management should be considered.

Again, because all harmful organisms to be considered for control or integration may not qualify as ‘pests’ for management under the Biosecurity Act, Environment Canterbury will manage these other harmful organisms pursuant to its mandate under the Local Government Act 2002. The combination of the requirement to secure the agreement of occupiers of affected sites and the financial constraints set out in the LGA will ensure a disciplined fiscal and technical approach is taken to the level of activity under this programme.

This section describes the management programme for the specified pests, along with any other appropriate pest listed in the RPMS and any unwanted organism. Each programme includes a description of the pest and the likely adverse effects they cause. An objective is stated and the principal measures to be taken to achieve the objective are outlined.

For the purpose of this Strategy, site-led biodiversity protection programmes apply to the following:

- Any organism listed as a pest in Tables 3.1, 3.2, 3.3 or 3.4 of the Strategy;
- Any other organism to be controlled listed in Table 3.5 of the Strategy; and
- Any unwanted organism as declared by Ministry of Agriculture and Forestry (see www.biosecurity.govt.nz/pest and diseases/registers/unwanted organisms register
8.2 Programme areas

The programme seeks to protect biodiversity values in targeted areas by reducing or eliminating the threats imposed by certain plants and animals. It does not impose obligations upon owners and occupiers of land to control these plants and animals in all instances, although Environment Canterbury will generally encourage people to do so and provide technical and other support for control programmes. However, there are rules that prohibit the sale, propagation or distribution of the plant pests and for the control of small infestations of old man’s beard outside targeted areas, or for post-1989 wilding conifers in some instances.

The development of partnerships with landowners, including individuals, territorial local authorities and the Crown is encouraged. The building of partnerships will be used to add value to the control objectives of the Strategy and increase the overall investment in addressing biodiversity threats in targeted areas of the Canterbury region.

8.2.1 A framework for determining the areas to be managed

Environment Canterbury will prioritise the action for managing pests to be controlled in high-value environmental areas. Prioritisation will be based on the principles of evaluating potential areas for their ecological values, evaluating partnership opportunities and evaluating utility factors. A matrix assessment and the annual financial envelope adopted by Environment Canterbury will determine the areas to be controlled.

The types of factors which could define high-value environmental areas are as follows.

1. Ecological Factors

   (a) Representativeness:

       The extent to which an area represents a habitat type or ecosystem that has decreased in area. The area may contain or represent landscapes, species, communities or habitats that are or were unique or characteristic of the Canterbury region.

   (b) Rarity/distinctiveness:

       A measure of the presence of rare species or of a distinctive species feature. The area may contain species, communities or habitats that are predominantly endemic to Canterbury or threatened or unusual within Canterbury.

   (c) Ecological context:

       A measure of the role an area plays in the health of the wider ecosystem.

2. Partnership Opportunities

Partnership opportunities exist with individual land occupiers, territorial local authorities or the Crown (noting that Environment Canterbury will not undertake control on Crown land unless there is significant spill over benefits to adjoining landowners). Examples include:

   (a) The partnership with individual land occupiers may be demonstrated by a decision by them to fence off and manage the land with conservation type objectives and Environment Canterbury funding pest control. Land occupiers may also demonstrate partnership by agreeing to assist with control of low-level incidences of pests and other organisms to be controlled;

   (b) The partnership with territorial local authorities may be demonstrated by the provision of technical expertise by Environment Canterbury, territorial local authority funding for control on their land and Environment Canterbury funding for control on adjoining privately owned land; and
(c) The Crown funding pest control on its estate and Environment Canterbury funding control on adjoining private land may demonstrate the partnership with the Crown.

3. Utility Factors

These can be described as the potential to demonstrate the benefits of controlling pest threats to biodiversity values and include:

(a) accessibility for public use;
(b) educational opportunities; or
(c) cultural opportunities.

Figure 8.1 illustrates the relationship of the high-value environmental area identification process to the strategy and operational plan.

Decisions on the high-value environmental areas (HVEA) subject to the pest control activities funded or carried out by Environment Canterbury will be made in consultation with landowners and occupiers. The selection of such areas and intervention in these areas would not occur if the landowner or the land occupier opposed such actions. Ideally the control operations should be undertaken in partnership with the landowners or occupiers. The involvement of Local Pest Management Liaison Committees will also be desirable both in the selection of areas and ongoing pest control work.

Typically, the high-value environmental areas will be those where there will be an ongoing commitment on behalf of the landowner and the land occupier to maintaining indigenous biodiversity. For example this could include land subject to QEII covenants. It should not be assumed that the designation of a Significant Natural Area in a district plan or any other special biodiversity designation will automatically mean that the land will be classified as HVEA for the purposes of this Strategy. However, such a designation may be a relevant factor in it being considered for this purpose.

The opportunity exists for local areas to achieve more than can be achieved by Environment Canterbury in targeted areas or high-value environmental areas. Some areas may not meet the criteria for selection but there may be a local desire to undertake control of these pests in a particular area. To accommodate local initiatives, this Strategy provides for the establishment of Community Initiative Programmes to deal with Biodiversity pests.
Figure 8.1: Relationship of the high-value environmental area identification process to the Strategy and Operational Plan
8.3 Animal pests and other animals to be controlled

Mustelids and feral cats

8.3.1 Description
Ferrets are common throughout Canterbury in pasture, scrublands and braided riverbeds. Their distribution generally matches that of rabbits in pasture and semi-improved grassland. Their population responds to changes in the rabbit density, and can range from 2.8 to 8.4 per square kilometre in tussock grassland. Stoats and weasels are slightly smaller than ferrets, and are widely distributed but more common in forested areas. Their numbers are lower in pasture and tussock grasslands, but can range between 2.2 and 70 per square kilometre in beech forest, and their population dynamics are linked to fluctuations in their primary prey – birds and small mammals in forested areas. Both stoat and ferret populations have the potential to increase rapidly and reinvade areas following control or changes in their prey density.

Ferrets rely heavily on rabbits as their primary prey species, but they also feed on a variety of indigenous wildlife as secondary prey. Large-scale changes in rabbit numbers, such as following control operations, can cause substantial changes in ferret diets. Stoats are specialised predators of small mammals and birds, although they do predate on rabbits in riverbeds and tussock grassland. In forested areas their numbers fluctuate in response to beech seeding years.

Weasels are found occasionally in Canterbury. Because of their patchy distribution and scarcity, their impacts on biodiversity, soil and water quality and indigenous species are largely unknown compared with either ferrets or stoats. However where they are present it is considered they do pose a threat to indigenous wildlife. They are not discussed further in this Strategy.

Feral cats, largely resulting from human settlement activities, behave in a similar manner to mustelids.

8.3.2 Adverse effects
Ferrets and stoats are capable of having a serious impact on native fauna through direct predation. Ferrets and stoats have been known to prey on brown kiwi, weka, white-flippered penguin and pigeons in the forest/scrub/pasture mosaic. Ferret predation is the main cause of death for black stilts. Other vulnerable riverbed species include the wrybill, black fronted tern and caspian terns. Ferrets also pose a threat to several species of skinks and geckos as well as the native invertebrates such as giant wetas and grasshoppers.

Stoats are considered a serious conservation pest because they threaten the long-term viability of several species of birds through predation, and in Canterbury populations of yellowhead appear particularly vulnerable.

It is now well documented that ferrets can carry bovine tuberculosis and general agreement amongst the scientific community that they play a role in its transmission to cattle and deer. They are considered a major vector of bovine Tb in Canterbury.

Anecdotal evidence supports feral cats causing similar affects to those of mustelids.
Feral goats

8.3.3 Description
Currently there are small feral populations scattered throughout the Canterbury Region. Goats are social animals, they disperse slowly, and do not voluntarily cross large rivers. This results in patchy distribution and allows land managers to consider local eradication. They do however have high birth rates, when in good condition, and goat populations colonising new areas or recovering from control may roughly double every two years. The major cause of mortality is hunting, although feral pigs may prey on kids.

Goats are browsing generalists and feed on woody species in forests.

8.3.4 Adverse effects
Feral goats impact on indigenous ecosystems through their concentrated browsing and trampling. Even in low numbers their impacts on forest and scrublands can be serious – they destabilise forest ecosystems, and defoliate and eat the stems of palatable under-storey species, bark saplings, and prevent regeneration of seedlings. Unpalatable shrubs increase, and on some islands forest ecosystems have been converted to grassland. In Canterbury, plant species most likely to be eaten include mahoe, broadleaf, supplejack, pate, small leafed coprosma species, Asplenium bulbiferum, blackberry, and gorse. Vegetation has been seriously depleted on many of the sites occupied by goats on Banks Peninsula, on the foothills of the Seaward Kaikouras, and in South Canterbury Department of Conservation reserves. Goats may also affect native vertebrate and invertebrate populations by competition for food and by modifying forest habitats.

Feral goats have few economic impacts, although they may occasionally compete with sheep for feed, and they have a wide range of parasites and diseases in common with sheep. Their range is limited however, and they are controlled relatively easily, so it is not considered that they have any significant economic impact.
**Feral deer**

8.3.5 Description

Red deer are present throughout the Region apart from Banks Peninsula. Fallow deer are confined to moderate numbers in isolated scrub-filled gullies on private land in South Canterbury and a number of small herds are present in other parts of Canterbury.

Deer occur in tussock grassland, forest, scrub and riparian areas. Their density is believed to be about 2 – 5 per square kilometre in most of the South Island forest areas, and near zero in tussock grassland and open areas where they are susceptible to hunting. Their capacity to increase appears to be slightly under 30 percent per year, although hunting pressure means that these rates of increase are rarely seen. Red deer are controlled only by hunting pressure and have no other predators. Rates of dispersal are high for young males, but older males and females remain closer to their home range.

Red deer are selective feeders, with about 80 percent of their feed obtained by browsing and the remainder through grazing. They have strong food preferences, and favour *Pseudopanax* species (lancewoods), *Coprosma* species, pate, broadleaf, and the fern *Asplenium bulbiferum*. In most forests these are now severely depleted and deer favour less palatable species. They even eat relatively unpalatable beech podocarps and woody shrubs when more palatable shrub hardwoods have been eliminated. Deer have considerably altered many forests, and the preferred browsing species are now rare. Fallow deer are thought to have severe impacts in beech forests, although the impacts are not as well studied because fallow deer are less common.

8.3.6 Adverse effects

Deer affect the sustainability of the native forest ecosystems by modifying its structure and composition. Local reductions of 50-60 percent in stem frequency and 30 percent in woody species have been recorded, and they eliminate the under-storey, prevent or delay regeneration, and alter botanical biodiversity toward unpalatable species. Many vulnerable species will only regenerate in the near absence of feral deer, and their browsing is presumed to lead to the loss of species diversity.

Feral deer populations are sustained in depleted forests by leaves falling from the canopy above, and their populations may remain at levels that are able to continue driving declining patterns of forest diversity.

Red deer may compete with native bird life, and the decline of kokako in the North Island has been attributed in part to the degraded habitat caused by deer and possums. Their effect on South Island bird populations is uncertain, but it is possible that they are similarly affecting native pigeon populations.

Grazing pasture forms only a small part of feral deer feeding. As their numbers are low and confined to less productive pasture types, their economic impact is not likely to be significant.
Feral pigs

8.3.7 Description
Feral pigs occupy about 92,000 hectares in New Zealand. Densities have reached over 100 animals per square kilometre in the past, and still reach about 40 per square kilometre in areas with good food supply and little hunting. The illegal release of feral pigs by hunters is thought to contribute to new populations continuing to establish.

Pigs cannot easily digest cellulose and so require a broad diet that includes succulent vegetation, fruit, seeds, fungi and animals. One limit to the distribution and density of pigs is their requirement for protein, particularly for sows rearing piglets. Their omnivorous diet and their ability to increase numbers very rapidly contribute to their potential problem.

8.3.8 Adverse effects
Feral pigs may affect the viability of threatened species and affect native ecosystems and biodiversity directly by eating plants and animals. Indirect threats arise from soil disturbance while rooting for food or by competing for food with native animals. In some favoured sites pigs can root up most of the ground surface. While this may encourage the regeneration of beech species particularly, constant disturbance negates this.

Predation on lambs and damage to pasture, while once a significant effect, is now isolated and largely dealt with by landowners.

Wasps

8.3.9 Description
Three species of introduced social wasps are present in Canterbury, although only two of these, the German wasp (Vespula germanica) and the common wasp (Vespula vulgaris) are established. The German wasp has been established since 1954 in the Region, but the common wasp is a more recent arrival and it now appears to be the dominant species in the Region. The common wasp has displaced the German wasp from beech forests containing honeydew although the two species appear to co-exist elsewhere.

When the common wasp was spreading into the Region in the late 1980s and early 1990s very high densities of the species were recorded, but since that time populations have fluctuated at lower levels. Wasps however still occur at high levels particularly in beech forest where honeydew is readily available, and the number of nests can range between 10 and 36 per hectare depending on the season in beech forest. Their numbers are typically lower in pasture, scrub, hardwood forests, and in beech forests in areas where the rainfall is high enough to wash the honeydew off the trees.

Wasps feed on carbohydrates such as nectar, honeydew, ripe fruit juice, and honey from beehives to meet energy requirements. Protein sources are required to feed developing larvae and include live invertebrates and flesh scavenged from dead animals.
8.3.10 Adverse effects

Wasps have a major impact on indigenous ecosystems through competition for food sources and predation on native insects. In native forest, up to 90 percent of the honeydew standing crop may be reduced in the peak wasp season, affecting the feeding of kaka, bellbird, tui, and silvereye. The prey intake of wasps in northern South Island beech forest is estimated to be similar to that of the entire insectivorous bird fauna. The impact of this predation is both on the native invertebrate biodiversity and the native insectivorous birds with which wasps have 80-100 percent of their identified diet in common.

As well as having effects on biodiversity, wasps also have an effect on human activities. Wasps affect public health through the use of their sting producing localised swelling and itching in most people, but are capable of causing a systemic hypersensitivity reaction in 3.3% of the population. This swelling can range from large local swelling to swelling of the airways and anaphylaxis. Deaths from wasp stings are rare – approximately two people die every three years from wasp or bee stings. Medical attention is more common but it is not possible to attribute a specific number of hospitalisations or general practitioner visits to wasp stings. Wasps may also pose a public health hazard through transmission of disease organisms, although again this is rare.

Wasps are a significant source of damage to amenity values. Department of Conservation offices in Hanmer Springs, Mt Thomas, and Arthur’s Pass (Craigieburn and Mt White areas) all report disruption of recreational users of conservation areas by wasps. Landcare Research at Lincoln receives over 1700 calls annually regarding wasp nests in and around Christchurch.

The impact of wasps on economic wellbeing arises through their impacts on the beekeeping industry. Wasps compete with honeybees for food sources, and rob hives and honey processing facilities. In beech forest, wasps have reduced honeydew abundance to the extent that bees do not feed on it for three to four months of the year. There are potentially some losses associated with fruit production, although these are more likely from disruption than direct damage. Other economic impacts may include the occasional stock death, possible deterrence of possum feeding at bait stations, and the impact on the tourism industry of high wasp numbers at scenic locations.

Argentine ants

8.3.11 Description

Argentine ant workers are small (2 – 3mm long), and they are a uniform honey-brown colour but can look brown/grey when foraging in urban areas. They are a similar size and colour to some of our native ants, but unlike native ants which only live outdoors, Argentine ants can be found both inside and outside of buildings. Most common household ants in New Zealand are black.

Argentine ants (Linepithema humile) look similar to another pest species – Darwin’s ant, but can be told apart from these by the squash and sniff test. When squashed between the fingers Darwin’s ants have a distinctive formic acid smell, Argentine ants do not. Argentine ants eat a wide range of foods including nectar, insects, seeds, carrion, and honeydew secreted by aphids and scale insects. Workers have a mostly sugar based diet, while larvae and queens feed mostly on protein.

8.3.12 Adverse effects

Argentine ants have invaded sites across Africa, Europe, North America, Australia and New Zealand. Although controlled by parasitoids in the native range of Southern Brazil, it effectively eliminates native ant and other arthropod species within introduced ranges. There is strong evidence that this ant can become prolific in fragmented areas, near urban development and areas dominated by exotic vegetation, especially where soils are sandy, sandy loam or clay loam. Other abiotic factors
restricting the distribution and daily activity patterns of the argentine ant are soil and air temperature and relative humidity.

The ants spread quite slowly naturally, but are great hitch-hikers. They establish nests in anything from potted plants and garden mulch to rubbish and recycling bins to cars and aircraft. When their homes are moved to a new location, the ants get to ride along too. Often the ants are not noticed until they become a nuisance, by which time they have been there for several years and have already spread into the surrounding areas. The spread of Argentine ants in Canterbury increases the probability of them hitching rides to critically important island ecosystems close to home (such as Quail, Motunau) and further afield (such as the Chathams, Stewart Island) through the freighting of commercial and personal goods.

Although Argentine ants don’t sting, they can bite, causing a reaction in some people. In urban areas they invade homes, gardens, commercial and industrial buildings. Residents in affected areas report a notable absence of most common garden insects following the establishment of the ants. They also notice a rise in the number of aphids and scale insects, as the ants actively farm these, protecting them from predators and even moving them to safety.

Argentine ants have been reported to attack nesting birds and kill nestlings and have the potential to spread into sensitive ecosystems such as coastal conservation areas. They out-compete native ants and other invertebrates for food, as well as preying on their eggs, larvae and adults. They also compete for nectar affecting pollination.

**European hedgehogs**

8.3.13 Description

Hedgehogs are small, spiny, mainly insectivorous nocturnal animals, most closely related to shrews and moles. They have the ability to roll into a tight prickly ball for defensive purposes. They are mostly abundant throughout lowland districts where food is plentiful, less numerous in the hills and rare in mountainous areas. Lowland stream and river sides are also favoured habitats. Cities and suburbs also support dense populations of hedgehogs, because invertebrates and dry sites for hibernating are available, as well as extra food purposely provided by householders.

Hedgehogs may eat 160 g of invertebrates per animal per day. Diets vary depending on site and season, but beetles are important foods in most habitats. In suburban areas and lowland farms, hedgehogs eat mainly slugs, snails and a great variety of ground insects and larvae. Earthworms are commonly eaten in pasture, but rarely in forest or drylands where weta and grasshoppers are more important. Earwigs and Lepidopteran larvae are eaten in large numbers where available. Hedgehogs also feed on mice, lizards, frogs, eggs and chicks of ground-nesting birds, and scavenge carrion.

8.3.14 Adverse effects

The effects of hedgehogs on indigenous fauna in New Zealand have not been quantified although they clearly have the potential to contribute significantly to the decline of numerous taxa, including threatened ground-nesting birds. For example, in the Mackenzie Basin between 1994 and 1999, hedgehogs were responsible for 19 percent of all recorded lethal events at 172 monitored banded dotterel, black stilt, and black-backed tern nests on braided river beds.
Ship and Norway rats

8.3.15 Description

There are two introduced European rat species in New Zealand. The ship rat has a pointed muzzle, large eyes and ears. The tail is longer than the combined length of the head and body. The body is quite sleek, with a scaly, sparsely haired tail. Ship rats are smaller than Norway rats, weighing 130–170g. The Norway rat is the largest rat in New Zealand (often weighing 150–300g), but can grow to more than 500g. It has a short body and a heavy tail, which is slightly shorter than the combined length of the head and body. The coat of both sexes is coarse and quite shaggy, greyish brown on the flanks with a darker brown along the back. The stomach and throat are pale grey. Norway rats are competent swimmers and are commonly called 'water rats'. This ability enables them to colonise offshore islands. In favourable conditions a crossing of 600m is possible. They can also jump up to 77cm vertically or 120cm horizontally.

Ship rats are found from sea level to tree line. They are found in a broad range of habitats, including urban areas, where they commonly reside in garden structures (sheds, compost heaps) and human dwellings (especially warm spaces such as attics and other crawl spaces), farmland, both native and exotic forests, and shrubland. They are nocturnal, excellent climbers and are probably the most widespread mammal predator found in non-beech forests on the New Zealand mainland. They reach their highest densities in lowland podocarp-broadleaved forests. Norway rats are generally confined to rivers and drains but venture away from them to forage nocturnally.

8.3.16 Adverse effects

Rats have been responsible for the extinction of a number of native species and they continue to have a major impact on New Zealand’s flora and fauna. They consume seeds and foliage, birds, eggs, invertebrates, snails and lizards. Ship rats have been the most damaging of the three rat species introduced to New Zealand because of their superior ability to climb trees (i.e. reach nesting birds). Ship rats eat seeds, fruits, flowers and other plant parts, which make up 80 per cent (by volume) of their diet. The damage they cause is extremely difficult to isolate in retrospect the historical damage during the nineteenth century, since their spread was contemporary with massive habitat destruction and, in the South Island, also with the spread of mustelids. Nonetheless, their spread at the time was more or less coincidental with increasing extinctions and rates of decline of birds. Norway rats tend to occupy coastal margins, but are also found in forests.

In mixed podocarp-hardwood forest a common sign of ship rats is the cached and gnawed remnants of miro (Prumnopitys ferruginea) or hinau (Elaeocarpus dentatus) seeds. Although they destroy many seeds, ship rats may also help to disperse some seeds, as shown in captive feeding trials. Insects including beetles, moths, stick insects, cicadas and especially weta, are always eaten when available. Only in New Zealand is there a seasonal predominance of arthropods in the diet. In areas where rat control has taken place, increases in insect abundance have been observed.
8.3.17 Objectives for animal pests and other animals to be controlled

Over the duration of the Strategy, reduce animal pests and other organisms to be controlled to, and maintain at, levels sufficient to ensure that biodiversity values are protected in targeted areas of the Canterbury region.

8.3.18 Principal measures to achieve the objectives

Environment Canterbury will take the following principal measures to achieve the stated objectives.

(a) Environment Canterbury will identify high-value environmental areas with land occupier agreement and undertake inspections in those areas to determine the incidence of animal pests and other animal organisms to be controlled.

(b) Where animal pests and other organisms to be controlled are adversely affecting priority high-value environmental areas, Environment Canterbury will undertake control operations with land occupier agreement to destroy them. Appropriate physical, biological or chemical measures will be utilised in an efficient and cost effective manner. Full or partial control of these animals may be achieved in many instances through the voluntary efforts of commercial and recreational hunters prior to any necessary control operations being undertaken by Environment Canterbury.

(i) Environment Canterbury will monitor areas where operations have been carried out to determine whether animal pests and other organisms to be controlled have been reduced to levels which do not threaten biodiversity values.

(ii) Environment Canterbury will provide advice and education to the community to increase awareness of animal pests and other organisms to be controlled.

(c) Environment Canterbury will facilitate and assist community and land occupier self-help programmes to destroy animal pests and other organisms to be controlled particularly adjacent to areas of high environmental value to complement control operations or in other areas if there is community support for control operations.

(d) Environment Canterbury will support continued research into the development of new control tools, including biological control. This may include co-ordinating the release of biological control agents.

8.4 Banana passionfruit

8.4.1 Description

The banana passionfruit species are virtually identical in their characteristics and appearance. They are tall, climbing vines that grow in forest and shrubland margins, stream-sides, coastline cliffs, consolidated sand dunes and in domestic gardens. The plants produce large pink tubular flowers throughout the year. These develop into oval fruit that turn yellow to orange-yellow when ripe.

8.4.2 Adverse effects

This plant produces fruit that is eaten and spread by animals, birds and humans. It is capable of smothering other plants and dominating the canopy. It grows rapidly and its stems will layer. It poses a major threat to the biodiversity values of the region.
8.4.3 Objective

Over the duration of the Strategy, reduce banana passionfruit to ensure that biodiversity values in targeted high-value environmental areas are protected in the Canterbury region.

8.4.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will progressively identify high-value environmental areas and prioritise the need for banana passionfruit control programmes in consultation with land occupiers and community groups.

(b) Environment Canterbury will facilitate or carry out control operations to destroy banana passionfruit within the targeted high-value areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options using appropriate physical or chemical methods.

(c) Environment Canterbury will inspect areas at risk to banana passionfruit to determine its presence. The frequency of inspection will depend on the threat posed by banana passionfruit to high-value environmental areas.

(d) Land occupiers and other persons will be encouraged to report the presence of banana passionfruit on any land to Environment Canterbury.

(e) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness for the removal of banana passionfruit.

(f) Environment Canterbury will facilitate Community Initiative Programmes to destroy banana passionfruit, particularly adjacent to areas of high environmental value that are subject to control programmes.

(g) Environment Canterbury will facilitate the use of Government funded employment initiatives where this could be an effective means for implementing the Strategy.

(h) Environment Canterbury will support continuing research into the development and application of new control tools, including biological control.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

8.4.5 Strategy Rule for banana passionfruit

Land occupiers and other persons shall not sell, propagate or distribute any banana passionfruit plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of this rule is provided to prevent land becoming infested by banana passionfruit through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
8.5 Bell heather

8.5.1 Description
Bell heather is a small shrub, sometimes very low and mat forming, but often straggling with stems to 30 centimetres high. It has a purple umbrella-like flower. It is confined to one site spread over 368 hectares on two adjacent properties in South Canterbury. This infestation is the only recorded site in the South Island.

8.5.2 Adverse effects
The plant occupies bare rocky sites and competes successfully with native species such as flax, dracophyllum and snow tussock. The seeds are known to last at least five years in the soil and are dispersed by wind.

8.5.3 Objective
Over the duration of the Strategy, reduce the extent of bell heather by 75 per cent to ensure that biodiversity values are protected in the Canterbury region.

8.5.4 Principal measures to achieve the objective
The following principal measures will be undertaken.

(a) Environment Canterbury will regularly inspect land known to contain bell heather and carry out control operations to destroy bell heather in an efficient and cost-effective manner using appropriate physical or chemical control.

(b) Environment Canterbury will provide advice and education to the community to increase awareness of bell heather. Methods may include:
   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events; and
   (iii) producing and distributing pamphlets and using media opportunities to convey relevant information.

(c) Landowners will be encouraged to report to Environment Canterbury the presence of bell heather on their land.

(d) Environment Canterbury will administer rules where it is necessary to achieve the objective.

8.5.5 Strategy Rule for bell heather
Land occupiers and other persons shall not sell, propagate or distribute any bell heather plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation
The purpose of this rule is to prevent land becoming infested by bell heather through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
8.6 Boneseed

8.6.1 Description

*Chrysanthemoides monilifera* (boneseed) is a shrub-type weed typically reaching 1.3 to 1.5 metres in its native area of South Africa. The leaves are thick and leathery, and palatable to stock. Boneseed occurs in coastal habitats throughout the North Island, and in many parts of the South Island in more limited distribution. Boneseed occupies coastal cliffs, sand dunes, gardens, shrubland and waste places. In Canterbury the major areas of infestation are in the Port Hills of Banks Peninsula. It has occupied coastal cliffs and ungrazed land set aside for development, and coastal sand dune areas to the north of the estuary where it has filled a niche created by the decline of the tree lupin (*Lupinus arboreus*).

Boneseed is also found in other parts of Banks Peninsula, as far north as Kaikoura, and south to the Waitaki River. To date, boneseed has occupied only coastal areas apart from areas of the Port Hills where it has spread as far inland as Evans Pass. It has been thought that its inland spread is limited by frost, but studies in South Africa and Australia indicate that it may be frost tolerant and that this may not be a limiting factor.

Boneseed can grow on a variety of soil types, although most infestations occur on sandy or low fertility soils. The plant also tolerates salinity, and one of its alternate common names is saltbush. Boneseed is spread by local seed drop and through its fruit which is attractive to birds and which cause both local and more distant spread. It is thought that its recent expansion has been caused by changes in coastal management including the decline of tree lupin and lower stocking rates on coastal pastures.

8.6.2 Adverse effects

Boneseed is palatable to stock, and is typically controlled by grazing at early stages of growth and therefore it has only a negligible economic impact.

Ecologically, boneseed represents a major threat to coastal plant communities, including dunes, coastal cliffs, and upper salt marshes. It has demonstrated an ability to displace native species from these sites and alter their composition. Canterbury has an estimated 800 kilometres of coastline and 24,000 hectares of coastal habitats are considered at risk.

Boneseed has a highly visible yellow flower, with peak flowering in August. It represents both a cost and a benefit in amenity terms – it is a hardy garden shrub, and some may consider flowering hillside to be visually attractive. However there are others who consider the bright green and yellow vista to be unnatural in the New Zealand landscape, and this may also have some negative impacts. Boneseed is capable of limiting access to coastal sites with some potential recreational impacts.
8.6.3 Objectives

Over the duration of the strategy, protect the biodiversity values in the Canterbury region by:

(i) Eradicating all boneseed plants, prior to seed set each year, from land outside of the Port Hills Zone; and

(ii) Reducing by 20% the area of land infested with boneseed within the Port Hills Zone identified on Map 3 in Appendix 8.

8.6.4 Principal measures to achieve the objectives

Environment Canterbury will take the following principal measures to achieve the stated objectives.

(a) Environment Canterbury will carry out or facilitate control operations to destroy boneseed on land outside of the Port Hills zone. Appropriate physical, grazing, chemical or biological measures will be utilised in an efficient and cost effective manner.

(b) Within the Port Hills zone, Environment Canterbury will progressively identify high value environmental areas and facilitate or carry out control operations with the agreement of land occupiers in those areas.

(c) Environment Canterbury will regularly inspect areas at risk to boneseed infestation to determine its presence and density. The frequency of inspection will depend on the proneness of the area to the plant pest.

(d) Land occupiers and other persons will be encouraged to report the presence of boneseed on land, especially outside of the Port Hills zone, to Environment Canterbury.

(e) Environment Canterbury will provide advice and education to the community to increase awareness of boneseed.

(f) Environment Canterbury will facilitate community and land occupier self-help programmes to destroy boneseed.

(g) Environment Canterbury will support continuing research into the development and application of new control tools, including the understanding and application impacts of biological control. Environment Canterbury will co-ordinate the release of suitable biological control agents.

8.7 Darwin’s barberry

8.7.1 Description

Darwin’s barberry is a spiny, evergreen, semi-deciduous shrub that grows up to about four metres high. It is found in forest and bush margins, sometimes in pasture and ungrazed areas. It has glossy, dark-green leaves, up to three centimetres long, with spiny edges. The plant is identifiable by the group of five sharp spines at the base of each leaf.

8.7.2 Adverse effects

This plant produces berries that are eaten and spread by birds. It is capable of threatening the native purity of indigenous forests by invading intact, more or less undisturbed stands. Older plants can flower and produce seeds in the shade and so perpetrate the production of fresh seed.

8.7.3 Objective

Over the duration of the Strategy, reduce Darwin’s barberry to levels sufficient to ensure that biodiversity values are protected in targeted areas of the Canterbury region.
8.7.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will progressively identify high-value environmental areas and prioritise the need for Darwin’s barberry control programmes in consultation with land occupiers and community groups.

(b) Environment Canterbury will facilitate or carry out control operations to destroy Darwin’s barberry within the targeted high-value areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options using appropriate physical or chemical methods.

(c) Environment Canterbury will regularly inspect land at risk to Darwin’s barberry to determine the presence and density of Darwin’s barberry. The frequency of inspection will depend on the threat posed by Darwin’s barberry to high-value environmental areas.

(d) Land occupiers and other persons will be encouraged to report the presence of Darwin’s barberry on any land to Environment Canterbury.

(e) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness for the removal of Darwin’s barberry.

(f) Environment Canterbury will facilitate Community Initiative Programmes to destroy Darwin’s barberry, particularly adjacent to areas of high environmental value that are subject to control programmes.

(g) Environment Canterbury will facilitate the use of Government-funded employment initiatives where this could be an effective means for implementing the Strategy.

(h) Environment Canterbury will support continuing research into the development and application of new control tools including biological control.

(i) Environment Canterbury will administer rules where it is necessary to achieve the objective.

8.7.5 Strategy Rule for Darwin’s barberry

Land occupiers and other persons shall not sell, propagate or distribute any Darwin’s barberry plant or part thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of this rule is provided to prevent land becoming infested by Darwin’s barberry through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
8.8 Egeria

8.8.1 Description

*Egeria densa* (egeria) is a submerged, bottom-rooted perennial, which can form mono-specific growths up to five metres tall upon reaching the water surface. It propagates through stem fragments being carried on water currents, boats, aquarium and pond escapes and deliberate planting.

Egeria is abundant in the water bodies of the Waikato Region and is scattered throughout other water bodies in the North Island, with infestations recorded in Marlborough and Canterbury. The only known infestation still in existence in Canterbury is in the Kerrs Reach part of the Avon River in Christchurch. Two occurrences of this plant were found in 1999, one in a garden pond and the other in a pet shop fish tank. The plants were destroyed.

8.8.2 Adverse effects

Egeria is a potential threat to the aquatic environment because it forms dense, mono-specific colonies. These, by definition, exclude other parts of the aquatic ecosystem, and it further slows water and wave movement and causes local deoxygenation. While most slow moving water ecosystems are already heavily modified in New Zealand, it still represents a threat to the remaining biodiversity in these ecosystems. Egeria has the potential to clog waterways. Additional control costs will occur where the water carrying capacity of waterways needs to be maintained. The Christchurch City Council already operates weed cutters in the major waterways where egeria is an immediate threat, and estimates that its costs in respect of weed clearance will double if nothing were done to remove the weed.

Egeria changes the visual amenity of slow moving water locations particularly when the weed reaches the surface of the water. Rotting weed thrown up on the shore can reduce the amenity values associated with those locations, and the build up of weed within the water body can limit the recreational opportunities available.

8.8.3 Objectives

*Over the duration of the strategy, protect the biodiversity values associated with waterways in the Canterbury region by:*

(i) Preventing the establishment of egeria in waterways presently free from infestations; and
(ii) Containing egeria present in the Avon River within the Kerrs Reach Zone identified on Appendix 8 Map 4.
8.8.4 Principal measures to achieve the objectives

Environment Canterbury will take the following principal measures to achieve the stated objectives.

(a) Environment Canterbury will regularly inspect water bodies at risk to egeria infestation to determine its presence. The frequency of inspection will depend on the proneness of the water bodies to the plant pest.

(b) Environment Canterbury will carry out or facilitate control operations to destroy egeria found in waterbodies outside of the Kerrs Reach Zone. Appropriate physical or chemical measures will be utilised in an efficient and cost effective manner.

(c) Environment Canterbury will encourage the management of egeria in the Kerrs Reach Zone to contain or lessen the extent of the present infestations.

(d) Land occupiers and other persons will be encouraged to report to Environment Canterbury the presence of egeria in any waterbody.

(e) Environment Canterbury will provide advice and education to the community to increase awareness of the nature and threats posed by egeria.

(f) Environment Canterbury will use enforcement measures where land occupiers or other persons do not comply with the rules in the Strategy.

8.8.5 Strategy rule for egeria

Land occupiers and other persons shall not sell, propagate or distribute any *Egeria densa* plants or parts thereof.

A breach of this rule creates an offence under Section 154 (r) of the Biosecurity Act 1993, or may result in default work under section 128 of the Act, or both.

In accordance with section 80D(5) of the Biosecurity Act 1993, no exemptions to the rule 8.8.5 may be granted.

**Explanation**

The purpose of this rule is to prevent waterbodies presently clear of egeria becoming infested through human assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of waterbodies.

8.9 Hieracium

8.9.1 Description

The hieracium complex of weeds are collectively known as the hawkweeds, and as problem weeds in New Zealand comprise four main species: *Hieracium caespitosum* (field hawkweed) *H. lepidulum* (tussock hawkweed) *H. pilosella* (mouse-ear hawkweed) *H. praealtum* (king devil hawkweed) There are five other species of hieracium present in New Zealand, but they are not thought to be capable of causing significant problems as weed species.
Hieracium species are found throughout most of the country, and in many areas they are a minor species confined to localised areas such as roadsides and depleted sunny faces. Throughout the eastern hill and high country region from Marlborough to Southland hawkweeds are conspicuous over about 1 million hectares, although within this area there are localised areas where hawkweeds are dominant and also areas where they have low abundance. However, in addition the area of conspicuous abundance, there are 500,000 hectares where hawkweeds are the dominant species over extensive tracts of land. In particular where mouse-ear hawkweed is the dominant species, there may be few other plant species present.

There is continuing debate over whether hawkweeds are the cause of, or symptomatic of, ecological decline. On one side it has been pointed out that in resurveyed snow tussock remnants, hieracium has remained at negligible levels or increased only slightly between surveys over 30 years. On the other side it is known that hawkweeds will invade land that has been ungrazed or retired from grazing for a considerable period. Issues such as an allelopathic effect (see Appendix 1) have been shown in laboratory situations but not convincingly in the field.

A consensus explanation of hawkweed behaviour can be summarised as follows.

(a) Hawkweeds are highly invasive species, particularly in depleted or disturbed tussock grasslands.

(b) The competitive advantage of hawkweeds tends to increase from tall tussock to short tussock to non-tussock semi-arid grasslands. However the degree of hawkweed invasion varies according to local environmental and management factors and for each hawkweed species.

(c) Past management has predisposed many types of grassland to hawkweed invasion. Heavy grazing by stock and rabbits, and burning, are major factors in this process. Lower biomass and productivity, reduction in canopy cover and increase in bare ground resulting from these management impacts have reduced the competitive advantage of the grasslands and predisposed them to invasion.

(d) The present distribution and abundance of hawkweeds is strongly related to seed dispersal and vegetative spread, and possibly to associated climatic triggers. Establishment and spread are favoured by environmental and/or management factors.

(e) There is insufficient evidence to relate hawkweed spread to long-term changes in the soil organic matter or fertility.

(f) Natural disturbance regimes may predispose grasslands to hawkweeds, particularly in the moist, tall tussock grasslands.

The impacts of hawkweeds should be seen in the light of these behavioural characteristics.

8.9.2 Adverse effects

Hawkweeds are competitive with a range of pasture species in the high and hill country locations. While hawkweeds are palatable, they are generally less available for grazing, and their presence therefore decreases the amount of grazing available. There is however considerable debate regarding the role of hawkweeds in displacement of grass. Hieracium has a significant economic impact, but this may not be as great as the extent of the plant would suggest. The significance of the plant as an economic pest depends on its competitiveness relative to the next weediest pest that would occupy its environmental space. It may be that in the absence of hieracium much of the ground it occupies may be either left bare or covered by other species that have a similar competitive advantage in terms of their unpalatability or unavailability for grazing.

The economic effect is evidenced by the fact that the majority of contributors that presently fund a biocontrol programme are from private sources and runholders. However, scientific evidence is not yet complete on whether removal of hieracium will increase returns from affected land types.

Hieracium is generally seen as a threat to biodiversity values. While it may not be as invasive of ungrazed tussock grasslands compared with those modified by grazing, there are nevertheless a number of ways in which it threatens biodiversity values:
Regional Pest Management Strategy (2011)

(a) Unmodified natural environments - hieracium may not be as invasive in unmodified natural environments, but it does enter these environments, and forms an unwanted exotic component of these ecosystems. In some situations, particularly during environmental stress, it may increase in population.

(b) Modified natural environments - a number of natural environments are subject to natural disturbances, such as river flats, landslips, and snow avalanches. Hieracium is a strong competitor in these situations, and may displace other natural colonisers forming different communities than would otherwise be expected.

(c) Human modified environments - grazed tussock grasslands still retain a considerable proportion of their original biodiversity, up to 50% has been suggested, and the replacement of even heavily modified short tussock grasslands with hieracium dominant systems results in a loss of biodiversity values.

Recent evidence suggests that hieracium is not constrained to bare ground for establishment, and while it is more constrained by microsite availability in tall tussock grassland, will still establish in these locations. Its threat even on undisturbed tall tussock grasslands is greater than has previously been thought, and it should therefore be considered a significant threat to biodiversity values.

8.9.3 Objective

Over the duration of the Strategy, protect biodiversity values in targeted areas of the Canterbury region by reducing the area infested with hieracium by 20% at 10 sites.

8.9.4 Principal measures to achieve the objective

Environment Canterbury will take the following principal measures to achieve the stated objective:

(a) Environment Canterbury will support continued research into the understanding and application impacts of biological control, and into the development of new biological control tools including supporting the Hieracium Control Trust.

(b) Environment Canterbury will facilitate the release of biological agents for hieracium control in Canterbury.

8.10 Lagarosiphon

8.10.1 Description

*Lagarosiphon major* (lagarosiphon) is a submerged, bottom-rooted perennial, which can form mono-specific growths up to five metres tall upon reaching the water surface. It propagates through stem fragments being carried on water currents, boats, aquarium and pond escapes and deliberate planting.

Lagarosiphon has already established in the Ahuriri Arm of Lake Benmore (Te Ao Marama). There have been predictions that it could spread to encompass all of that lake as well as Lake Aviemore (Mahi Tikumu) and Lake Waitaki within five to ten years.
8.10.2 Adverse effects

Lagarosiphon is a potential threat to the aquatic environment because it forms dense, mono-specific colonies. These, by definition, exclude other parts of the aquatic ecosystem, and it further slows water and wave movement and causes local deoxygenation. While most slow moving water ecosystems are already heavily modified in New Zealand, it still represents a threat to the remaining biodiversity in these ecosystems.

Lagarosiphon also poses a serious threat to water abstraction, and the recreational and aesthetic values of lakes and water bodies. It can block boat and ski lane access, catch on fishing gear, obstruct swimming and water abstraction intakes. Stinking, rotting mats of lagarosiphon on the shoreline makes recreational areas unpleasant.

8.10.3 Objectives

Over the duration of the strategy, protect the biodiversity values associated with water bodies in the Canterbury region by:

(i) Preventing the establishment of lagarosiphon in those water bodies outlined in Appendix 5; and
(ii) Containing lagarosiphon present in any other water body.

8.10.4 Principal measures to achieve the objectives

Environment Canterbury will take the following principal measures to achieve the stated objectives:

(a) Environment Canterbury will regularly inspect water bodies at risk to lagarosiphon infestation to determine its presence. The frequency of inspection will depend on the proneness of the water bodies to the plant pest.

(b) Environment Canterbury will carry out or facilitate control operations to destroy lagarosiphon found in water bodies outlined in Appendix 5. Appropriate physical or chemical measures will be used in an efficient and cost-effective manner.

(c) Environment Canterbury will encourage the management of lagarosiphon in the water bodies not identified in Appendix 5 to contain or lessen the extent of the present infestations.

(d) Land occupiers and other persons will be encouraged to report to Environment Canterbury the presence of lagarosiphon in any water body.

(e) Environment Canterbury will provide advice and education to the community to increase awareness of the nature and threats posed by lagarosiphon.

(f) Environment Canterbury will use enforcement measures where land occupiers or other persons do not comply with the rules in the Strategy.

8.10.5 Strategy rule for lagarosiphon

Land occupiers and other persons shall not sell, propagate or distribute any lagarosiphon plant or parts thereof.

A breach of this rule creates an offence under Section 154(r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12. A breach of this rule may also result in default work under section 128 of the Act.

Explanation

The purpose of this rule is to prevent water bodies presently clear of lagarosiphon becoming infested through human-assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of water bodies.
8.11 Old man’s beard

8.11.1 Description

Old man’s beard is found throughout the region. Infestation levels vary from light to very dense. It is found in exotic forest, native forest remnants, shelterbelts, hedgerows, waste ground, riverbanks and gardens. This plant is thought to occupy approximately 80,000 hectares in the Canterbury region.

8.11.2 Adverse effects

This plant is a fast-growing perennial vine that quickly forms dense coverings and can eventually kill supporting plants. Older vines are woody, often brown or grey, whilst young vines are ribbed and often purple in colour. The leaf is composed of five leaflets compared with the native species that have three leaflets. Fluffy greyish white wind-dispersed seed heads are conspicuous in autumn, winter and early spring. Old man’s beard represents an extraordinary threat to the region’s conservation values.

8.11.3 Objective

Over the duration of the Strategy, reduce old man’s beard to levels sufficient to ensure that biodiversity values are protected in targeted areas of the Canterbury region.

8.11.4 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will progressively identify high-value environmental areas and prioritise the need for old man’s beard control programmes in consultation with land occupiers and community groups.

(b) Environment Canterbury will facilitate or carry out control operations to destroy old man’s beard within the targeted high-value areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options using appropriate physical or chemical methods.

(c) Environment Canterbury will inspect land at risk to old man’s beard to determine the presence and density of old man’s beard. The frequency of inspection will depend on the threat posed by old man’s beard to high-value environmental areas.

(d) Land occupiers and other persons will be encouraged to report the presence of old man’s beard on any land to Environment Canterbury.
(e) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness for the removal of old man’s beard.

(f) Environment Canterbury will facilitate Community Initiative Programmes to destroy old man’s beard, particularly adjacent to areas of high environmental value that are subject to control programmes.

(g) Environment Canterbury will obtain and distribute biological control agents and will take action to ensure the effective and co-ordinated use of new control tools including new biological control agents.

(h) Environment Canterbury will facilitate the use of Government funded employment initiatives where this could be an effective means for implementing the Strategy.

(i) Environment Canterbury will support continuing research into the development and application of new control tools, including biological control.

(j) Environment Canterbury will monitor land to determine whether the objective is being met.

(k) Environment Canterbury will administer rules where it is necessary to achieve the objective.

8.11.5 Strategy Rules for old man’s beard

(a) Land occupiers shall destroy old man’s beard infestations that cover up to 100 square metres in area and are greater than 20 metres from other old man’s beard infestations exceeding 100 square metres in area on the land that they occupy.

(b) Land occupiers shall destroy old man’s beard infestations on the land that they occupy within 20 metres of any adjoining property occupied by another land occupier where that adjoining property is clear of, or being cleared of, old man’s beard infestations within 20 metres of the boundary between the properties.

(c) Land occupiers and other persons shall not sell, propagate or distribute any old man’s beard plant or part thereof.

A breach of any of these rules creates an offence under Section 154r of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

Explanation

The purpose of these rules is to provide a defined level at which landowners must carry out control of old man’s beard infestations and to prevent land becoming infested by old man’s beard through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
8.12 Phragmites

8.12.1 Description

*Phragmites australis* (phragmites) is a robust perennial rhizomatous grass, with wide leaves borne on a stout, reed-like stem. It is generally an aquatic plant found on the margins of still or slowly flowing water bodies. It can grow in water depths of two metres, but is generally found in shallower water. It may also form floating mats that can completely cover small water bodies.

Phragmites is present in New Zealand in relatively few locations; specifically Napier, Murchison and Christchurch contain the only known current locations. Within Canterbury, there is an infestation in the Christchurch Botanic gardens that was inadvertently introduced at some time in the late 1940s. There are plants held in containment for research purposes at three further locations in Canterbury.

Phragmites reproduces largely by rhizomes as local vegetative extension or through fragments that break off and relocate. Reproduction through seed is considered reasonably rare, although there appears to be variation amongst cultivars. Overseas information shows the plant to have a high degree of adaptability, competitive ability, obstructive qualities, potential to invade native vegetation and a resistance to management.

8.12.2 Adverse effects

Phragmites is considered a serious potential threat to biodiversity values. Within its native range it usually grows as a dense, tall reed bed excluding other species, and in the United States introduced varieties have displaced a range of other wetland species. Wetlands in the Canterbury Region harbour a range of native species including the Canterbury Mudfish, of which there are fewer than 20 locations all in Canterbury, freshwater mussels, eels, freshwater crayfish, and several invertebrate species including, midges, snails and worms. It is also likely to compete with a range of native plants including flax and raupo.

If phragmites establishes in the wild in Canterbury, it has the potential to cause serious damage to wetland ecosystems. Its aggressiveness leads to the displacement of most of the margin species. In the United States, there has been an observed reduction in mammal and avian numbers and diversity, changes in stream flow and morphology, loss of spawning gravels and bird and fish feeding and resting areas. The mono-specific stands can reduce recreational and amenity values.

Phragmites is likely to have both positive and negative economic impacts. Its positive economic impacts arise as a result of its potential use in reed bed treatment systems (RBTS) for sewage and wastewater treatment. Reedbed systems are used extensively in Europe, and are considered an optimal solution when compared with other constructed wetlands because the land requirements are lower. However their use is not universally recommended.
Three plant genera used in surface flow wetlands can also be used in subsurface flow systems (RBTS), being *Typha* spp. (Raupo), *Schoenoplectus* spp. (soft-stemmed bulrush) and phragmites. Raupo and soft-stemmed bulrush are both native to New Zealand. Results of side-by-side comparisons do not reveal any consistent ranking of one species relative to another, and it is not possible therefore to say that a lack of availability of phragmites would result in an economic loss. Phragmites poses potential negative economic impacts in Canterbury that would result from additional drain and waterway clearance should the weed become established.

8.12.3 Objective

*Over the duration of the Strategy, protect biodiversity values in the Canterbury region by eradicating all phragmites in the Canterbury region.*

8.12.4 Principal measures to achieve the objective

Environment Canterbury will take the following principal measures to achieve the stated objective.

(a) Environment Canterbury will carry out or facilitate operations to destroy phragmites. Appropriate physical or chemical measures will be utilised in an efficient and cost effective manner.

(b) Environment Canterbury will regularly inspect areas at risk to phragmites infestation to determine its presence. The frequency of inspection will depend on the proneness of the land to the plant pest.

(c) Land occupiers and other persons will be encouraged to report to Environment Canterbury the presence of phragmites on any area.

(d) Environment Canterbury will provide advice and education to the community to increase awareness of the nature and threats posed by phragmites.

(e) Environment Canterbury will use enforcement measures where land occupiers or other persons do not comply with the rules in the Strategy.

8.12.5 Strategy rule for phragmites

Land occupiers and other persons shall not sell, propagate, or distribute any *Phragmites australis* plants or parts thereof.

A breach of this rule creates an offence under Section 154 (r) of the Biosecurity Act 1993, or may result in default work under section 128 of the Act, or both.

In accordance with section 80D(5) of the Biosecurity Act 1993, exemptions to the rule 8.12.5 may only be granted for the purpose of scientific research.

Explanation

The purpose of this rule is to prevent areas presently clear of phragmites becoming infested through human assisted activities. Examples of such activities include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution of the plants.
8.13 Wilding Conifers

8.13.1 Introduction

Managed introduced conifers have a definite and positive role to play in the commercial and environmental future of the Canterbury region. However, natural regeneration of wilding spread into unmanaged areas with existing land use values, or where future land use options have yet to be decided, can cause problems.

The purpose of the Strategy is to facilitate voluntary partnerships with landowners to clear targeted high value environmental areas of self-seeded wilding conifers associated with the plantings that have taken place over the last one hundred years. Territorial local authorities are presently developing district plans under the Resource Management Act 1991 and it is in their power to have land use provisions and non-regulatory measures to address wilding tree spread issues associated with new plantings.

The Climate Change Response (Emissions Trading) Amendment Act 2008 (CCR Act) created an Emissions Trading Scheme (ETS). The ETS entitles people carrying out greenhouse gas removal activities to receive carbon credits, and requires people carrying out greenhouse gas producing activities to obtain carbon credits. Owning "post-1989 forest land" is a greenhouse gas removal activity, provided the land is not de-forested. Deforesting "pre-1990 forest land" is a greenhouse gas producing activity.

"Forest land" is defined as an area of land of at least 1 hectare that has or is likely to have tree crown cover from forest species of more than 30% in each hectare. The Act does not require the tree coverage to have been put in place on purpose; it may be self-seeded. Any land which met those qualifications as at 31 December 1989 is "pre-1990 forest land". Any land which did not meet those statutory qualifications as at 31 December 1989, but does now, is "post-1989 forest land".

Provision by way of regulations accompanying the CCR Act provide for the removal of tree weeds (including conifers) under certain circumstances from pre-1990 forest land without occurring emission liabilities. On the other hand, under section 188 of the CCR Act, the owner of post-1989 forest land may (but does not have to) register as a participant in the Emissions Trading Scheme created by the CCR Act. Registration enables the participant to claim carbon credits for the greenhouse gas removal activity of owning the post-1989 forest land, in a state of continuing forestation. However, an application must carry a compliance declaration in respect to any requirements of a pest management strategy prepared under the Biosecurity Act.

This situation may create an added impediment for the collaborative approach embraced for managing wilding conifers. Addressing the impediment is not so much about preventing landowners from availing themselves of the ETS entitlements but rather it is about ensuring spill-over or externality effects to neighbouring landowners are given due consideration when committing to a greenhouse gas removal activity.
8.13.2 Description

Wilding conifers are introduced conifer species that are self-sown or growing wild (i.e. naturally regenerating), and in Canterbury pose sufficient concerns to warrant inclusion in this Strategy. Within Canterbury, most river catchments have some wilding spread. The worst affected areas are the Waitaki, the Rakaia and Waimakariri river catchments, and the Amuri Range near Hanmer Springs.

Wilding spread is limited by factors such as the location of seed sources, prevailing winds, seed size and surrounding land use. Establishment is limited by altitude, climatic conditions, soil types, vegetation, and grazing. As a result, establishment is likely to be periodic in nature.

Most wilding conifers require open, low intensity grazing environments to establish successfully. However, corsican pine is less palatable than other conifers and can therefore be less limited by grazing. Douglas-fir is more limited by site and climatic conditions than the pines, but it is more shade tolerant and therefore able to invade canopy gaps in regenerating forest / shrublands.

8.13.3 Adverse effects

Potential adverse effects on biodiversity values include out-competing and terminally smothering indigenous plant communities, altering environments favourable to indigenous fauna and flora, and drying out wetlands and riparian areas. The threat to biodiversity values can usefully be divided into communities above and below tree line.

Above tree line, wildings of some species, such as lodgepole and mugo, are a significant problem as they are capable of growing at altitudes above the native forest communities. The potential exists therefore for them to replace native alpine scrub and alpine tussock communities, with resulting severe damage to these ecosystems. Typically wildings would not be expected to establish in healthy dense scrub or tussock grasslands, although opportunities for invasion are present and can be enhanced by the dynamic nature of these communities with slips and erosion creating bare ground openings for colonising plants. Subsequent seed pressure and the ability to overtop will eventually lead to a general conversion of these habitat types to conifer canopies. With no alternate native species capable of overtopping lodgepole or mugo, the likelihood is that introduced conifers above the native tree line can form the canopy species.

Below treeline, the situation is more complex because the majority of the vegetation types that are invaded by wildings are not climax communities and have been maintained as low grassland or scrub communities by continual intervention such as grazing or burning, and/or by the absence of seed sources for successional species. In these situations, wildings are a successional species, and since they are not shade tolerant (with the exception of Douglas-fir), are unlikely to form the canopy species. It is likely therefore that they will eventually be replaced by other species, including natives, although the time frame could be two hundred or more years.

When it comes to invasiveness, Douglas-fir differs from the pines in that it is more shade tolerant than the pines and is capable of regenerating in light wells within native forest, particularly where other native understorey species are not well represented. Most susceptible are open shrublands and regenerating native forest areas. As such, compared with the pines, it represents a different level of threat to conservation values below the tree line.

The establishment of a conifer forest in areas of tussock grassland that is at risk to wilding conifer spread has a number of implications, which need to be considered at the forest planning stage if wilding conifer species are involved. There are a number of ways to minimise the risk of spread and to deal with any spread that does occur.
The native communities that are replaced could represent important communities both as climax communities such as wetlands, and as part of natural seral succession pathways. These native communities could be valuable reservoirs of indigenous biodiversity, and may contain threatened species such as native wetas and grasshoppers. The key issue with biodiversity is that the full range of New Zealand’s biodiversity is not understood, and the only certain way of retaining as much as possible is to retain whole ecosystems. Loss of such ecosystems results in a loss of an unknown level of biodiversity, even if key known species are retained.

In summary, there is a greater risk of wildings impacting negatively on biodiversity values, than there is with planned tree planting. While wildings could provide benefits in terms of greater biomass and protection against erosion, improved soil structure and nutrient availability, better habitats for some species, and a potential successional pathway for native forest communities, there is a risk that this could be outweighed by damage to flora and fauna communities.

Landscape values are difficult to define let alone quantify. Limited studies do not draw strong conclusions relating to the landscape effects of wildings. It is clear that the question is not a simple trees/no trees preference – neither within individuals nor across groups of individuals. Indeed in some situations and for some individuals wildings will enhance the landscape values, while in others they will be viewed detrimentally. Therefore, it is not possible to conclude that all wilding spread adversely affects landscape values.

Wilding conifers can displace pasture on country where conditions are favourable to their spread, and this displacement results in a loss of pastoral production from those land types. Typically, wilding conifers invade pastures that are of low development status and only lightly grazed. Furthermore, once wildings are established it becomes expensive to convert the land to pasture or other land uses, limiting the option values for that land.

Pinus contorta is a particular problem. This is because it has little commercial value and is generally not pruned or thinned. It also seeds earlier and thus can spread more vigorously. It has been declared a “pest” rather than simply “an organism to be controlled”.

8.13.4 Objective

Over the duration of the strategy, protect biodiversity values in targeted areas of the Canterbury region by eradicating all self-seeded wilding conifers, prior to seed dispersal, in targeted high value environmental areas.

8.13.5 Principal measures to achieve the objective

Environment Canterbury will take the following principal measures to achieve the stated objective.

(a) Environment Canterbury will progressively identify high value environmental areas and prioritise the need for wilding control programmes in consultation with land occupiers and community groups.

(b) Environment Canterbury will facilitate or carry out control operations of outlier wilding trees particularly, and fringe-spread and other wilding trees where it is appropriate, within the targeted high-value areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options utilising appropriate physical or chemical methods.

(c) Environment Canterbury will regularly inspect areas at risk to wilding conifers to determine their presence. The frequency of inspection will depend on the proneness of the area to wilding spread.

(d) Land occupiers and other persons will be encouraged to report the presence of wilding trees on any land to Environment Canterbury.
(e) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness for the removal of wilding conifers.

(f) Environment Canterbury will facilitate community and land occupier self-help programmes to destroy outlier wilding trees particularly in or adjacent to areas of high environmental value subject to control programmes.

(g) Environment Canterbury will encourage land occupiers to remove existing high-risk plantations shelterbelts and amenity plantings from areas in or adjacent to areas containing of high environmental values or to develop management plans to prevent wilding spread from the plantations shelterbelts or amenity plantings.

(h) Environment Canterbury will advocate to territorial local authorities that they include appropriate measures in their district plans and conditions on resource consents and through non-regulatory measures to ensure wilding conifer spread arising from planned conifer establishment is controlled or prevented.

8.13.6 Strategy rule for self-seeded wilding conifers

Land occupiers shall take all steps, in relation to self-seeded wilding conifers on their land, as are reasonably necessary to prevent the communication, release or other spread of those self-seeded wilding conifers.

For the purposes of this rule, communication means passing on, transmitting or transporting in any way

Land occupiers may apply for an exemption from the above rule in accordance with the procedures set out in Chapter 12. Applicants shall provide evidence to Environment Canterbury in support of an exemption application. Such evidence should at least provide a risk assessment of the spread from any retained area of wilding conifers, the risk of wilding establishment in the surrounding areas and neighbouring properties and a proposed control programme including methods and timelines

Explanation

The purpose of this rule is to ensure that land occupiers fully consider the implications of utilising “post 1989” self-seeded wilding conifers as a permanent forest land use option, particularly under the ETS. Specifically, adjoining or downwind land occupiers should not have to bear the consequences of wind-borne seed spilling out from such deliberately established forest land. However, exemption provisions are available where wilding conifer tree spread can be successfully managed within a property, or it is not a problem to neighbouring land occupiers.
8.14 Wild thyme

8.14.1 Description

*Thymus vulgaris* was first introduced into New Zealand as a culinary herb. It has become widespread in the Otago Region, and occurs in the wild at two sites in Canterbury – in the upper Rangitata River and near Loburn in North Canterbury. Wild thyme has, in the past, spread in the Lindis Pass area, but is no longer known to be present in this area. The plant prefers dry stony soils, slopes, scree and terraces, and in Otago favours rabbit-disturbed sites. It is unpalatable and therefore has a competitive advantage in heavily grazed situations.

Wild thyme could be considered a pest for agriculture because it dominates dry lowland terraces suitable for grazing, however it has not exhibited this behaviour to any great extent in Canterbury. At the only significant current location in the Rangitata Gorge it infests the very stony and dry lowland sites of little or no agricultural value, and drier parts of lower hill slopes such as spur brows, scree and north facing lower slopes. While it has been at this site for a number of years, it has not spread into adjacent areas where there is any significant depth of soil, but has spread down dry stony watercourses toward the main river. There are no obvious impediments to it infesting the majority of the Tasman soils (dry, stony river terrace soils) in the Rangitata, and parts of the hill soils where the environment is particularly suitable and of a similar nature to its current range (dry and stony areas of the Mesopotamia soils).

8.14.2 Adverse effects

Wild thyme may infest some areas of agricultural land, but it does not appear to be capable of serious economic damage because it competes only on the drier and least productive of the pasture areas in Canterbury.

There is some potential for this strategy, which has the aim of eradicating wild thyme from the Region, to limit the opportunity for commercial harvest of wild crops. Additionally, there is some potential for “wild thyme” honey if bees can be made to feed exclusively on the crop. These benefits are considered likely to be relatively minor given that in Otago these have not proven to be major benefits associated with what is a very prevalent weed in that region.

Wild thyme’s ability to grow in dry conditions on shallow soils bordering rivers is likely to affect biodiversity values in these locations. Because it is little studied in Canterbury the magnitude of these effects are difficult to identify, but it is likely that alteration of the riparian habitat will have adverse biodiversity impacts. Riparian areas in Canterbury are regarded as important biodiversity areas nationally, particularly in terms of avian habitats.

8.14.3 Objectives

Over the duration of the strategy, protect the biodiversity values of the Canterbury region by:

(i) Eradicating all wild thyme plants, prior to seed set each year, within the zones identified on Map 5 in Appendix 8; and

(ii) Preventing the establishment of wild thyme outside of the zones identified on Map 5.

8.14.4 Principal measures to achieve the objectives

Environment Canterbury will take the following principal measures to achieve the stated objectives.

(a) Environment Canterbury will carry out control operations, in consultation with individual land occupiers, to destroy wild thyme plants. Appropriate physical, chemical or biological measures will be utilised in an efficient and cost effective manner.
(b) Environment Canterbury will regularly inspect areas at risk to wild thyme infestation to
determine its presence. The frequency of inspection will depend on the proneness of the area
to the plant pest.

(c) Land occupiers and other persons will be encouraged to report the presence of wild thyme to
Environment Canterbury.

(d) Environment Canterbury will provide advice and education to the community to increase
awareness of the nature and threats posed by wild thyme.

8.15 Magpies

8.15.1 Description
Magpies are a medium to large crow-like bird. They are mostly
black, grey and white and have a large, powerful straight beak.
The birds are omnivorous and feed mainly on the ground in
open or lightly wooded areas. Magpies were introduced from
Australia to control pasture invertebrate pests and are now
widespread throughout the country.

8.15.2 Adverse effects
Obtaining and defending a territory is central to magpie social behaviour. They have a complex social
system in which individuals may occur in non-territorial flocks, or territorial groups or pairs. Magpies
communally defend their territory and aggressive behaviour is frequently targeted at other species,
including people.

The main effect of magpie attacks on birds is apparently to move birds, perhaps 50-100 metres, away
from the areas where magpies feed. Attacks, both contact and non-contact, occur throughout the
year but killings are confined to the breeding season (July to January). Only about 17% of killings are
consumed. Common bird species are attacked more often, particularly those that mostly consume
pasture invertebrates as magpies do. Birds other than magpies avoid landing within 50 metres of a
feeding magpie.

The recent study shows that only 6% of individual birds that passed within 50 metres of territorial
magpies were chased, and in none of the cases did a magpie hit another bird. This suggests that the
much-publicised fatal attacks by magpies are in fact very rare. These findings are consistent with
other reported observation studies in New Zealand and Australia.

Of the native bird species, tui and kereru are most affected by magpie attack because, in a
fragmented landscape with isolated native forest fragments, the nearest escape cover or safe feeding
sites for them may be several kilometres away. However, no conclusive evidence could be found on
whether magpie attacks result in a lowering of abundance or just a lowering of conspicuousness of
other species.

Magpies can attack people on occasions, particularly during the breeding season. However, such
attacks are part of the natural behaviour and a large control programme would be necessary to make
any significant reduction in the numbers of attacks. Recent control studies have shown that re-
invasion was endless and eradication was never achieved. Therefore, controlling all magpies across
the whole landscape is likely to be a waste of time and effort.

8.15.3 Objective
Over the duration of the Strategy, reduce magpies to ensure tui and kereru populations are
maintained or increased in high-value environmental areas of the Canterbury region.
8.15.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Environment Canterbury will progressively identify high-value environmental areas and prioritise the need for magpie control programmes in consultation with land occupiers and community groups.
(b) Environment Canterbury will facilitate control operations to destroy magpies within the targeted high-value environmental areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options using appropriate physical or chemical methods.
(c) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness of magpies and their behaviour.

8.16 Ash, Holly, Red-flowering currant and Sycamore
8.16.1 Descriptions
Ash (common or European ash) is a deciduous tree that has seeds that are wind borne to considerable distances from the parent tree. They germinate vigorously and grow in almost any soil.

Holly (or English holly) is a tree that grows 10 to 20 metres in height and has large green prickly leaves and red berries.

Red-flowering currant is an erect shrub, 1-3 metres tall.

Sycamore is a deciduous tree that produces suckers and possesses winged ‘helicopter’ type fruit. It is found widely throughout urban settlements but is now becoming established in non-urban ecosystems.

8.16.2 Adverse effects
All of these plants are capable of invading natural ecosystems.

8.16.3 Objective
Over the duration of the Strategy, reduce ash, holly, red-flowering currant and sycamore to ensure that biodiversity values in high-value environmental areas are protected in the Canterbury region.

8.16.4 Principal measures to achieve the objective
The following principal measures will be undertaken.
(a) Environment Canterbury will progressively identify high-value environmental areas and prioritise the need for ash, holly, red-flowering currant and sycamore control programmes in consultation with land occupiers and community groups.
(b) Environment Canterbury will facilitate or carry out control operations to destroy ash, holly, red-flowering currant and sycamore within the targeted high-value environmental areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options using appropriate physical or chemical methods.
(c) Environment Canterbury will inspect areas at risk to ash, holly, red-flowering currant and sycamore to determine its presence. The frequency of inspection will depend on the threat posed by sycamore and red-flowering currant to high-value environmental areas.
(d) Land occupiers and other persons will be encouraged to report the presence of ash, holly, red-flowering currant and sycamore on any land to Environment Canterbury.
(e) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness for the removal of ash, holly, red-flowering currant and sycamore.
8.17 Barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss

**Barberry**

### 8.17.1 Description

Barberry (*Berberis glaucocarpa*) is an evergreen or semi-deciduous spiny shrub that grows up to 5m in height. It has yellow flowers and reddish-black berries with a whitish bloom. It is a long-lived tree that produces many seeds. It tolerates a wide range of environments including poor soils, salt, wind, temperature variations and wet or dry conditions. However it is only tolerant of a small amount of shade.

Barberry has been planted as hedges in many parts of the country and has spread out of control in many areas. Trees are often present around old homesteads and near plantation forests. It produces copious seed which remain viable for a long time. The seed is spread by birds over large distances.

### 8.17.2 Adverse effects

Barberry can invade disturbed forest and shrubland, short tussock grassland and bare stony ground. It is regarded as one of the least desirable exotic species on Banks Peninsula. Scattered plants and occasionally dense stands can replace native species. However, it is intolerant of deep shade so it is only competitive on the margins of forest or in forest with a poor canopy. In open environments like tussock grassland it does compete with native species.

**Boxthorn**

### 8.17.3 Description

Boxthorn (*Lycium ferocissimum*) is a densely branched spiny evergreen shrub from South Africa. It can grow up to 6m tall and has orange red berries. The plant tolerates a wide variety of soil types (sand to rocky cliffs), drought, salt, wind and a wide range of temperatures. It is a long-lived shrub that forms dense tall stands, excluding most other vegetation. Because of its tolerance to salt spray and its ability to grow on unstable sand dunes it is often the only woody plant present on some coastal sites.

### 8.17.4 Adverse effects

Boxthorn is an aggressive coloniser of sand dunes, gravel, coastal pasture, scrub and waste places. Boxthorn berries are spread by birds from farm hedges and waste places and is largely unpalatable to stock. It can overtop native plants, excluding light and absorbing water and nutrients to the detriment of the native species. Limestone rock outcrops may harbour threatened plants. *Heliohebe maccaskillii* and *Gentianella calcis* ssp. waipara are nationally threatened species and occur only on some North Canterbury limestone outcrops. Boxthorn may entrap petrels and other seabirds that become entangled in the thorny trees.
Carex

8.17.5 Description
Carex is a tall, exotic, shade tolerant, perennial sedge which grows in damp areas. It is the tallest sedge growing in New Zealand with stems up to 2.5m long. It has distinctive drooping flower spikes crowded with many seeds. This large sedge looks similar to some native sedges (Carex lessoniiana and Carex geminate) but the native sedges are smaller (to 1.5m tall). Carex is typically found on river banks but appears to thrive in other wetland areas and in open forest.

The first New Zealand collection of Carex was in 1962 at Otahuna near Tai Tapu. It is a garden escape and is classified as fully naturalised. Although it is native to Europe, Asia and North Africa there are many reports of it recently expanding its range in England. It is sold as an ornamental plant but gardeners are discovering its weedy tendencies. It matures and sets seed rapidly with thousands of seeds germinating.

8.17.6 Adverse effects
Its large size and prolific seeding can result in displacement of native species in a range of habitats. It is a threat to natural areas and restoration projects, especially near waterways and wetlands. Because it is shade tolerant it can form dense swaths under forest thereby preventing regeneration of native species in the understorey.

Common polypody

8.17.7 Description
Common polypody (Polypodium vulgare) is a small hardy evergreen fern. It has a creeping rhizome but probably spreads mainly by its spores. Common polypody was first recorded as naturalised in New Zealand on the Port Hills near Lyttelton during the 1960s and 1970s, but was probably present earlier. It is now widespread, occurring from Godley Head to Gebbies Pass.

8.17.8 Adverse effects
Common polypody is a very significant threat to small and sparse populations of rare plants on rock outcrops. It occupies a full range of habitats from dry sunny sites to shady wet mossy sites on rock outcrops and cliffs. These are the specific habitats of several threatened plants. On the Port Hills rock outcrops it is competing with rare and threatened plants including the rare blanket fern (Pleurosorus rutifolius) and Lyttelton forget-me-not (Myosotis australis var. lyttonensis), the iconic prostrate kowhai (Sophora prostrata) and several regionally endemic species such as the Banks Peninsula hebe (Heliohebe lavaudiana), Banks Peninsula blue tussock (Festuca actae), Banks Peninsula hebe (Hebe strictissima) and a diverse range of other rock outcrop plants. As it is also shade tolerant common polypody can also affect the forest understorey structure and prevent regeneration. There are no native species of the genus Polypodium in New Zealand but common polypody belongs to the same family as one of our common native ferns, hound’s tongue (Microsorum pustulatum).
Puna grass

8.17.9 Description
Puna grass (*Achnatherum caudatum*) is a tall tussock-like grass that grows up to 1m tall with flower heads similar in appearance to nassella tussock. Its country of origin is South America. The plant is a weed of grasslands and riparian vegetation, as well as waste areas and roadsides, but only occupies two known sites in Canterbury.

8.17.10 Adverse effects
Puna grass is considered to be similar in threat-potential to nassella tussock. It is not particularly palatable to stock and, as a consequence, it is capable of displacing other palatable grass species. Stock can spread the seed and it is difficult to control once established. The soils at the two infestation sites are sandy and so the coastal areas in Canterbury would be vulnerable to invasion.

Russell lupin

8.17.11 Description
Russell lupin (*Lupinus polyphyllus*) is a perennial that can grow up to 1.5 metres tall. It flowers and sets seed in the summer and dies back to the stem base over winter. Russell lupins produce long, colourful flower heads. The flowers are pea-like and come in a variety of colours. Stout seedpods are produced that explode in the summer heat, releasing many dark brown seeds.

8.17.12 Adverse effects
Although Russell lupins have attractive flowers, they can be an aggressive weed. Of particular concern is the invasion of Russell lupins into Canterbury’s braided riverbeds, and the impacts they have on these ecosystems. Lupins are well adapted to living in the challenging environments of braided rivers. They can produce their own nutrients (nitrogen) and are very effective at dispersing their seeds. The seeds are dropped close to the parent plant, allowing the population to spread a couple of metres each year. Seeds also spread further if they are carried in waterways, allowing Russell lupins to creep down riverbeds and invade new areas.

Canterbury’s braided rivers are home to unique native plant communities. Special plants such as the cushion-forming forget-me-not (*Myosotis uniflora*) and rare, tiny woodrush (*Luzula celata*) are mostly confined to riverbeds. Whole plant communities are especially adapted to growing in the challenging environment of shifting gravels, extreme temperatures and limited nutrients. This natural vegetation is often low-lying and sparse, leaving plenty of room for Russell lupins to move into. Dense stands of lupins eventually shade out and displace these special threatened plants and whole native plant communities.

Unique birds live and breed in the braided riverbeds of Canterbury. Birds such as the vulnerable wrybill and black-fronted tern have adapted to nesting and feeding in unstable braided river environments. One of the world’s rarest wading birds, the black stilt, also feeds in shallow river braids. Russell lupins change these unstable braided river environments by forming dense stands on the bare gravel areas. Their roots become entwined and hold the gravel together, forming stable areas. The river erodes the edges, forming steep banks which drop into deep, fast-flowing channels, unsuitable for wading birds to feed in. The dense stands also take over the open spaces braided river birds like to nest in.
8.17.13 Description

Vipers bugloss (Echium vulgare) is a bristly annual or biennial herb which can grow to nearly 1m high. It has blue funnel-shaped flowers and small seeds that are easily dispersed. Vipers bugloss grows and matures quickly and like many annual/biennials produces many long-lived seeds. It tolerates poor soils, wind and dry conditions. It is not particularly palatable but stock will graze it if food is scarce. Vipers bugloss grows on roadsides, river beds and on pasture and open waste land in dry areas. It is sometimes so abundant that in early summer, when it is flowering, roadsides and hillsides may be a sea of blue.

8.17.14 Adverse effects

Vipers bugloss is widespread and common on disturbed sites throughout Canterbury especially inland dry places. It tends to invade dry disturbed land but as with most annual/biennials it is dependent on favourable conditions for good germination and growth and may vary in cover from year to year. Vipers bugloss may have a temporary smothering effect in open, disturbed, low growing indigenous plant communities. However as it is an annual or biennial this effect is temporary and dependent on suitable conditions for good seed germination. Vipers bugloss has fine silica hairs which irritate and embed in the skin causing discomfort to people and animals. It threatens high value environmental areas where those areas are still clear of infestations.

8.17.15 Objective

Over the duration of the Strategy, reduce barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss to ensure that biodiversity values in high-value environmental areas are protected in the Canterbury region.

8.17.16 Principal measures to achieve the objective

The following principal measures will be undertaken.

(a) Environment Canterbury will progressively identify high-value environmental areas and prioritise the need for barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss control programmes in consultation with land occupiers and community groups.

(b) Environment Canterbury will facilitate or carry out control operations to destroy barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss within the targeted high-value areas in consultation with land occupiers and community groups. Control will involve efficient and cost-effective control options using appropriate physical or chemical methods.

(c) Environment Canterbury will inspect areas at risk to barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss to determine its presence. The frequency of inspection will depend on the threat posed by sycamore and red-flowering currant to high-value environmental areas.

(d) Land occupiers and other persons will be encouraged to report the presence of barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss on any land to Environment Canterbury.

(e) Environment Canterbury will provide advice and education to land occupiers and the community to increase the awareness for the removal of barberry, boxthorn, carex, common polypody, puna grass, Russell lupin and vipers bugloss.
9 Restricted Sale Programme

9.1 Introduction

The Regional Pest Management Strategy (1998) contained a Surveillance Plant Pest category that encompassed 97 plant species. The purpose for the inclusion of this category related to the need for a co-ordinated national approach to prevent the sale or distribution of potentially invasive plants. However, regional councils chose to introduce regional pest management strategies over varying time periods between 1996 and 1998. As a result, the five-yearly reviews have not occurred uniformly across all regional councils and the mechanism for co-ordinating the list was not maintained.

A large number of organisms have now been designated by central government as “unwanted organisms”. This means that it is an offence under sections 52 and 53 of the Biosecurity Act to sell, propagate or distribute those organisms anywhere in New Zealand.

Restricted Pests are plant pests that were previously Surveillance Plant Pests in the Regional Pest Management Strategy (1998), but have not been designated by the Government as “unwanted organisms”. They are restricted in a similar way to “unwanted organisms” in that land occupiers and other persons are not able to sell, propagate, or distribute them.

9.2 Unwanted Organisms

In order to provide for a level of national consistency and a process for determining which plants should be banned from sale and distribution, central government has expanded the list of plants that have been designated as “unwanted organisms”. The unwanted organism designation means that it is an offence under sections 52 and 53 of the Biosecurity Act to sell, propagate or distribute those organisms anywhere in New Zealand.

Further, the Ministry of Agriculture and Forestry has promoted the establishment of a National Pest Plant Accord (the Accord). The focus of the Accord is to prevent the sale, distribution, or propagation of specified pest plants, namely a subset of species declared as unwanted organisms. A full list of unwanted organisms and the subset of plants listed in the Accord is available on the Ministry of Agriculture and Forestry’s website at www.maf.govt.nz/..

Appendix 2 lists the pest plants included in the National Plant Accord as at 1 October 2001. Most regional councils, including Environment Canterbury, have committed to the Accord and will undertake inspections of plant nurseries and other commercial outlets to ensure that the unwanted organisms are not being offered for sale. Table 9.1 sets out those plants previously listed as Surveillance Plant Pests under the Regional Pest Management Strategy (1998) that have subsequently been declared unwanted organisms and subject to the Accord.
Table 9.1: Surveillance Plant Pests (RPMS 1998) now declared Unwanted Organisms

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alligator weed.</td>
<td>Alternanthera philoxeroides</td>
</tr>
<tr>
<td>Banana passionfruit.‡</td>
<td>Passiflora molissima</td>
</tr>
<tr>
<td></td>
<td>Passiflora mixta</td>
</tr>
<tr>
<td>Bartlettina.</td>
<td>Bartlettina sordida</td>
</tr>
<tr>
<td>Bladderwort.</td>
<td>Utricularia gibba</td>
</tr>
<tr>
<td>Blue morning glory.*</td>
<td>Ipomoea indica</td>
</tr>
<tr>
<td>Bog bean.</td>
<td>Menyanthes trifoliata</td>
</tr>
<tr>
<td>Bone seed.‡</td>
<td>Chrysanthemoides monilifera</td>
</tr>
<tr>
<td>Cathedral bells.*</td>
<td>Colbæa scandens</td>
</tr>
<tr>
<td>Clasped pondweed.</td>
<td>Potamageton perfoliatus</td>
</tr>
<tr>
<td>Climbing asparagus.</td>
<td>Asparagus scandens</td>
</tr>
<tr>
<td>Eel grass.</td>
<td>Vallisneria (Lake Pupuke, Meola Creek varieties)</td>
</tr>
<tr>
<td>Egeria oxygen weed.‡*</td>
<td>Egeria densa</td>
</tr>
<tr>
<td>Fountain grass.</td>
<td>Pennisetum setaceum</td>
</tr>
<tr>
<td>Fringed water lily.</td>
<td>Nymphoides peltata</td>
</tr>
<tr>
<td>Green cestrum.</td>
<td>Cestrum parqui</td>
</tr>
<tr>
<td>Heather.*</td>
<td>Calluna vulgaris (excluding double flowered cultivars)</td>
</tr>
<tr>
<td>Horse nettle.</td>
<td>Ceratophyllum demersum</td>
</tr>
<tr>
<td>Horsetail.*</td>
<td>Equisetum arvense</td>
</tr>
<tr>
<td>Houttuynia.</td>
<td>Houttuynia cordata</td>
</tr>
<tr>
<td>Hydrilla.</td>
<td>Hydrilla verticillata</td>
</tr>
<tr>
<td>Evergreen Italian buckthorn.*</td>
<td>Rhamnus alaternus</td>
</tr>
<tr>
<td>Japanese honeysuckle.*</td>
<td>Lonicera japonica (including cultivars but not hybrids)</td>
</tr>
<tr>
<td>Kahili ginger.</td>
<td>Hedychium gardnerianum</td>
</tr>
<tr>
<td>Lantana.*</td>
<td>Lantana camara var aculeata</td>
</tr>
<tr>
<td>Lagarosiphon oxygen weed.‡</td>
<td>Lagarosiphon major</td>
</tr>
<tr>
<td>Lodgepole pine. ‡</td>
<td>Pinus contorta</td>
</tr>
<tr>
<td>Manchurian wild rice.</td>
<td>Zizania latifolia</td>
</tr>
<tr>
<td>Mexican daisy.*</td>
<td>Erigeron karvinstianus</td>
</tr>
<tr>
<td>Mignonette vine.*</td>
<td>Anredera cordifolia</td>
</tr>
<tr>
<td>Mile-a-Minute.</td>
<td>Dipogon lignosus</td>
</tr>
<tr>
<td>Monkey apple.</td>
<td>Acmena smithii</td>
</tr>
<tr>
<td>Moth plant.*</td>
<td>Araujia sericifera</td>
</tr>
<tr>
<td>Pampas grass.*</td>
<td>Cortaderia selloana</td>
</tr>
<tr>
<td></td>
<td>Cortaderia jubata</td>
</tr>
<tr>
<td>Parrots feather.</td>
<td>Myriophyllum aquaticum</td>
</tr>
<tr>
<td>Phragmites.†</td>
<td>Phragmites australis</td>
</tr>
<tr>
<td>Plectranthus.*</td>
<td>Plectranthus ciliatus</td>
</tr>
</tbody>
</table>

* Known to be present in Canterbury as at 1 April 2003.
‡ Incorporated as a pest under the RPMS (2011)
**Table 9.1 cont:**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privet – tree.*</td>
<td>Ligustrum lucidum</td>
</tr>
<tr>
<td>Sagittaria.*</td>
<td>Sagittaria platyphilla</td>
</tr>
<tr>
<td>Senegal tea.*</td>
<td>Gymnocronis spilanthoides</td>
</tr>
<tr>
<td>Smilax.*</td>
<td>Asparagus asparagoides</td>
</tr>
<tr>
<td>Water poppy.</td>
<td>Hydrocleys nymphoides</td>
</tr>
<tr>
<td>Water primrose.</td>
<td>Ludwigia peploides ssp. montevidensis</td>
</tr>
<tr>
<td>Yellow ginger.</td>
<td>Hedychium flavescens</td>
</tr>
<tr>
<td>Yellow flag.*</td>
<td>Iris pseudacorus</td>
</tr>
<tr>
<td>Yellow water lily.</td>
<td>Nuphar lutea</td>
</tr>
</tbody>
</table>

* Known to be present in Canterbury as at 1 April 2003.  
‡ Incorporated as a pest under the RPMS (2011)

Given the provisions of the Act and the commitment of Environment Canterbury to participate in the implementation of the National Pest Plant Accord, it is unnecessary to include plants declared as unwanted organisms as Restricted Pests in the Strategy. Environment Canterbury will liaise with central government and assist with national initiatives to control unwanted organisms where appropriate.

### 9.3 Restricted Pests

A number of plants that were subject to the objectives, tactical methods and strategy rules for Surveillance Plant Pests in the Regional Pest Management Strategy (1998) have not been declared as unwanted organisms. It is considered that maintaining the ban on the sale propagation and distribution of these plants would be useful in preventing their establishment in Canterbury or containing their spread to the wild. Table 9.2 sets out those plants previously listed as Surveillance Plant Pests under the RPMS (1998) that are included in this Strategy as Restricted Pests.

**Table 9.2: Restricted Pests under this Strategy**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian sedge.</td>
<td>Carex longebrachiata</td>
</tr>
<tr>
<td>Barberry.*</td>
<td>Berberis glauccarpa</td>
</tr>
<tr>
<td>Bathurst bur.*</td>
<td>Xanthium spinosum</td>
</tr>
<tr>
<td>Blackberry (wild aggregates).*</td>
<td>Rubus fruticosus agg.</td>
</tr>
<tr>
<td>Boxthorn.*</td>
<td>Lycium ferocissimum</td>
</tr>
<tr>
<td>Broomsedge.</td>
<td>Andropogon virginicus</td>
</tr>
<tr>
<td>Buddleia.*</td>
<td>Buddleja davidii (excluding hybrids)</td>
</tr>
<tr>
<td>Burdock*</td>
<td>Arctium minus</td>
</tr>
<tr>
<td>Cape honey flower.*</td>
<td>Melianthus major</td>
</tr>
<tr>
<td>Cape ivy.*</td>
<td>Senecio angulatus</td>
</tr>
<tr>
<td>Goats rue.*</td>
<td>Galega officinalis</td>
</tr>
<tr>
<td>Hawthorn.*</td>
<td>Crataegus monogyna</td>
</tr>
<tr>
<td>German ivy.*</td>
<td>Senecio mikanioides</td>
</tr>
<tr>
<td>Hemlock.*</td>
<td>Conium maculatum</td>
</tr>
<tr>
<td>Himalayan honeysuckle.*</td>
<td>Leycesteria formosa</td>
</tr>
<tr>
<td>Mistflower.</td>
<td>Ageratina riparia</td>
</tr>
</tbody>
</table>
### Table 9.2 cont.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nardoo.*</td>
<td>Marsilea mutica</td>
</tr>
<tr>
<td>Noogoora bur.</td>
<td>Xanthium strumarium</td>
</tr>
<tr>
<td>Nutgrass (purple nutsedge).</td>
<td>Cyperus rotundus</td>
</tr>
<tr>
<td>Oxylobium.</td>
<td>Oxylobium lanceolatum</td>
</tr>
<tr>
<td>Palm Grass.</td>
<td>Setaria palmifolia</td>
</tr>
<tr>
<td>Perrenial nettle.*</td>
<td>Urtica dioica</td>
</tr>
<tr>
<td>Plectranthus.*</td>
<td>Plectranthus ecklonii</td>
</tr>
<tr>
<td>Plumeless thistle.*</td>
<td>Carduus acanthoides</td>
</tr>
<tr>
<td>Privet – Chinese.*</td>
<td>Ligustrum sinense</td>
</tr>
<tr>
<td>Sheeps bur.*</td>
<td>Acaena agnilia</td>
</tr>
<tr>
<td>Spanish heath.*</td>
<td>Erica lusitanica (excluding double flowered cultivars)</td>
</tr>
<tr>
<td>Spartina.*</td>
<td>Spartina spp.</td>
</tr>
<tr>
<td>Spiny broom.</td>
<td>Calicotome spinosa</td>
</tr>
<tr>
<td>St Johns wort.*</td>
<td>Hypericum perforatum</td>
</tr>
<tr>
<td>Sweet briar.*</td>
<td>Rosa rubiginosa</td>
</tr>
<tr>
<td>Velvet groundsel.*</td>
<td>Senecio petasitis</td>
</tr>
<tr>
<td>Wild cotoneaster.*</td>
<td>Cotoneaster glaucophyllus</td>
</tr>
<tr>
<td>Wild elaeagnus.*</td>
<td>Elaeagnus x reflexa</td>
</tr>
</tbody>
</table>

* Known to be present in Canterbury as at 1 July 2003.

### 9.3.1 Objectives

**Over the duration of the Strategy:**

(i) Ensure Restricted Pests known to be present in the Canterbury region are not knowingly spread by sale, propagation or distribution; and

(ii) Prevent the establishment of Restricted Pests known not to be present in the Canterbury region.

### 9.3.2 Principal measures to be used to achieve the objectives

The following principle measures will be undertaken.

(a) Environment Canterbury will regularly inspect places from which plants are being sold, propagated or distributed to determine the presence of Restricted Pests.

(b) Environment Canterbury will provide advice and education to the community to increase the awareness of the nature and threats posed by Restricted Pests. Methods may include:

   (i) responding to public enquiries;
   (ii) discussions with runanga, participating in discussion groups, field days, Agricultural and Pastoral Association shows and other appropriate public events;
   (iii) producing and distributing pamphlets and using media opportunities to convey relevant information; and
   (iv) encouraging group activities that will be of assistance in meeting the outcomes of this Strategy.
(c) Environment Canterbury will utilise the most appropriate means available under the Biosecurity Act 1993 to prevent any observed or reported infestation of Restricted Pests known not to be present in the Canterbury region as at 1 July 2003 from becoming established. Such means may include the removal of isolated plants where they are discovered.

(d) Environment Canterbury will administer rules where it is necessary to achieve the objectives.

9.3.3 **Strategy rule for Restricted Pests**

Land occupiers and other persons shall not sell, propagate, or distribute any Restricted Pest or part thereof.

A breach of this rule creates an offence under Section 154 (r) of the Biosecurity Act 1993 and may initiate the regulatory procedures set out in Chapter 12.

**Explanation**

The purpose of rule 9.3.3 is to prevent land becoming infested by Restricted Pests through human-assisted activities. Examples of human assistance include selling plants commercially or at fairs, the multiplication of plants for personal or commercial use or any distribution through recreational uses or other uses of land.
Part III  Processes

10  Funding

10.1 Introduction

The provisions of the Act in relation to funding are complex. To facilitate understanding of the requirements, they are set out in detail below.

The Act requires that the following matters be specified in a proposed strategy in relation to any organism:

(a) the extent to which any person or persons of any class, kind, or description are likely to benefit from the strategy;

(b) the extent (if any) to which any persons or persons of any class, kind, or description by their activities or inaction contribute to the creation, continuance, or exacerbation of the problems proposed to be resolved by the strategy;

(c) the rationale for the allocation of costs; and

(d) whether any unusual administrative problems or costs are expected in recovering the costs allocated to any of the persons who are required to pay.

10.2 Beneficiaries and exacerbators

The extent to which any person benefits or is likely to benefit from a strategy depends on the organism to be controlled and the area for which expenditure is being incurred. Beneficiaries include land occupiers and the community as a whole. Land occupiers may benefit from increased productivity as a result of the effects of a strategy on their own property and from reduced risk of spill-over effects from other properties. The community as a whole may obtain non-producer benefits from the implementation of the Strategy.

Non-producer benefits include a reduction in the actual and potential effects of pests and other organisms to be controlled on one or more of the following:

(a) the viability of rare or endangered species or organisms;

(b) the survival and distribution of indigenous plants or animals;

(c) the sustainability of natural and developed ecosystems, ecological processes and biological diversity;

(d) soil resources or water quality;

(e) human health or enjoyment of the recreational value of the natural environment;

(f) the relationship of Maori and their culture and traditions with their ancestral lands, waters, sites, wahi tapu, and taonga;

(g) New Zealand’s international obligations, assurances and reputation; and

(h) other aspects of the environment including amenity and landscape values.
Spill-over effects result in costs or benefits to people other than the land occupier on whose property the pests are located. They include the effects of the spread of plant or animal pests onto neighbouring properties and environmental effects that have costs or benefits to the community as a whole. For example, the spread of rabbits or seeds of plants onto neighbouring properties or damage to indigenous ecology are spill-over effects. The reduced risk of spill-over occurs because the strategy brings about the control of pests, thereby reducing the risk to neighbouring properties and the risk of non-producer values being affected.

The non-spill-over benefit (producer benefit) that producers receive by way of extra production and lower control costs, when they control pests on their property, occurs regardless of whether a Regional Pest Management Strategy is in place.

The extent to which persons contribute to the problems to be resolved by the Strategy depends on whether their inaction has the potential to result in spill-over effects that cause significant harm to other persons or to the environment generally.

Table 10.1 provides a summary of the identified beneficiaries and exacerbators.

**Table 10.1: Beneficiaries and Exacerbators**

<table>
<thead>
<tr>
<th>Pests and other organisms to be controlled</th>
<th>Beneficiaries</th>
<th>Exacerbators</th>
</tr>
</thead>
</table>
| Coltsfoot and entire marshwort.           | • Regional community for the protection of biodiversity values | • Landowners where these plants occur on their properties.  
 • Persons who knowingly sell, propagate or distribute these plants. |
| African feather grass, african love grass, baccharis, bur daisy, saffron thistle and white-edged nightshade. | • Rural landowners for the protection of economic values.  
 • Regional community if these plants threaten biodiversity values. | • Landowners where these plants occur on their properties.  
 • Persons who knowingly sell, propagate or distribute these plants. |
| Rooks. | • Rural landowners for the protection of crops and newly planted pasture.  
 • Rural landowners where rookeries may become established. | • Persons who knowingly disturb rookeries. |
| Nassella tussock and Chilean needle grass. | • Rural landowners for the long-term protection of economic values.  
 • Neighbouring properties for the prevention of spill-over.  
 • Regional community for the protection of biodiversity values. | • Landowners not controlling nassella tussock/CNG on their properties.  
 • Persons who knowingly sell, propagate or distribute nassella tussock/CNG. |
| Rabbits. | • Rural landowners for the protection of economic values.  
 • Neighbouring properties for the prevention of spill-over.  
 • Regional community for the protection of conservation values. | • Landowners where pests occur on their properties. |
### Table 10.1 cont.

<table>
<thead>
<tr>
<th>Pests and other organisms to be controlled</th>
<th>Beneficiaries</th>
<th>Exacerbators</th>
</tr>
</thead>
</table>
| Bennett’s wallaby.                        | • Rural landowners for the protection of economic values.  
• Neighbouring properties for the prevention of spill-over.  
• Regional community for the prevention of spread outside of the Wallaby Containment Area.  
• Regional community for the protection of conservation values. | • Landowners not controlling wallabies on their properties.  
• Persons who knowingly distribute wallabies to new areas. |
| Broom and gorse.                          | • Rural landowners for the protection of economic values.  
• Neighbouring properties for the prevention of spill-over.  
• Some regional community benefit for the protection of biodiversity, recreational access and landscape values. | • Landowners not controlling broom and gorse on their properties.  
• Persons who knowingly sell, propagate or distribute broom and nassella tussock. |
| Nodding thistle, variegated thistle and ragwort. | • Rural landowners for the protection of economic values.  
• Neighbouring properties for the prevention of spill-over. | • Landowners not controlling these plants on their properties.  
• Persons who knowingly sell, propagate or distribute these plants. |
| Old man’s beard, Darwin’s barberry, ash, holly, banana passionfruit, sycamore, red-flowering currant and bell heather. | • Regional community for the protection of biodiversity values. | • Landowners within high-value environmental areas where these plants occur on their properties.  
• Persons knowingly selling, propagating or distributing the plants. |
| Magpies.                                  | • Regional community for the protection of biodiversity values. | • Persons releasing magpies in or adjacent to areas where magpie control is being undertaken. |
| Lagarosiphon (within targeted water bodies). | • The regional community for the protection of biodiversity values.  
• Waterbody abstractors within the targeted water bodies. | • Persons knowingly selling, propagating or distributing the plants. |
| Possums (within Community Initiated Programme Areas). | • Landowners for the protection of economic and amenity values.  
(Note: the Regional Pest Management Strategy – Biodiversity Pests (2002) addresses the protection of biodiversity values from the threats arising from possums. | • Landowners with possums occurring on their properties. |
### Table 10.1 cont.

<table>
<thead>
<tr>
<th>Pests and other organisms to be controlled</th>
<th>Beneficiaries</th>
<th>Exacerbators</th>
</tr>
</thead>
</table>
| Wilding conifers.                          | - Regional community from prevention of damage to biodiversity values.  
- Landholders from prevented loss of production (depending on species) and prevention of spillover (in some situations). | - Crown in respect of research plantings in high country.  
- Landholders for wittingly allowing wilding spread. | |
| Boneseed.                                  | - Regional Community for prevention of damage to biodiversity values. | - Landholders on whose properties boneseed is present. | |
| Wild thyme.                                | - Regional community receives majority of benefit  
- Some localised benefit for prevention of damage to economic values. | - Landholder on whose property wild thyme currently is located. (The other site is riverbed with uncertain ownership). | |
| Phragmites.                                | - Regional community receives all the benefit from prevention of damage to wetland biodiversity values. | - Landholders on whose property phragmites are present. | |
| Egeria.                                    | - Regional community receives all the benefit from prevention of damage to wetland biodiversity values.  
- Regional Community receives benefit from prevention of damage to biodiversity values elsewhere. | - Persons wittingly or unwittingly spreading egeria into waterways. | |
| Hieracium.                                 | - Regional community receives a benefit from prevention of damage to biodiversity values.  
- Rural landholders in affected areas receive an economic benefit from less vigorous hieracium. | | |
| Wasps.                                     | - Regional community for protection of recreation, and potentially some biodiversity benefits. | - Landholders harbouring wasp nests within the habitat range of a HVEA. | |
| Animal Pests and other animals to be controlled (possums, feral deer, feral goats, feral pigs, mustelids and feral cats). | - Regional Community for prevention of damage to biodiversity values.  
- Adjacent landholders for reduction of spillover of Tb causing organisms and reduced incidence of pests and other organisms to be controlled.  
- Participating landholders for advice on controlling animal pests and other organisms to be controlled. | - Landholders on whose properties animal pests and other organisms to be controlled can spread to HVEA.  
- Persons liberating animals into the wild. | |
10.3 Cost allocation and funding rationale

In giving effect to this Strategy, both the Biosecurity Act 1993 and the Local Government (Rating) Act 2002 require that funding should be sought from:

- Those people who have an interest in the strategy;
- Those who benefit from the strategy;
- Those who contribute to the pest problem; and
- In a way which reflects economic efficiency, equity, the ability to target those funding the Strategy and the costs of collecting the funding.

In general, efficiency is best achieved by targeting the costs to those closest to a particular set of works where those paying have the power to act in respect of those works. If a decision-maker has to pay for the results of their action (or inaction), it may alter their behaviour to minimise any such resulting costs. This will lead to the least-cost outcome for society as a whole. However, if the costs resulting from their actions are borne by another party, there is little incentive for any change in behaviour, and this may result in a higher cost for society as a whole. Efficiency includes close targeting of costs to benefits as well as to those contributing to the problem (exacerbators). Equity is difficult to establish, particularly where there is a “public good” component. In general there are no universally applicable guidelines.

Practicality will determine the extent to which different beneficiaries can be targeted. There is generally a point at which the transaction costs of recovering costs from a smaller group of beneficiaries will exceed the benefits of more closely targeting that group. Alternatively, the mechanisms available may not be able to target a particular group, for example, particular land uses such as dairying, and a larger aggregate such as all rural land must be used.

The aim of the funding system should be to maximise the efficiency of resource decision-making by participants. There are two ways in which this happens. They are:

(i) Charging beneficiaries ensures that the decisions on whether an activity is worthwhile are closely related to the benefits received. If the beneficiaries are charged for the activity, but do not perceive the level of benefit that has been ascribed to them, they will act to reduce the charge and therefore the level of the activity. Similarly where stakeholders demand more of an activity where they are required to pay, the council can be assured that the level of benefit from the activity exceeds the costs, and that the activity is being undertaken at an appropriate level; and

(ii) Charging exacerbators ensures that where a management action causes problems for other parties, the costs of those problems are fully integrated into the decision on whether the management activity is worthwhile. Thus for pest management the land-use decisions by landowners affects the level and type of pest problem. By charging land managers directly for these effects in a way that encourages them to take account of pest problems in their management, the most efficient resource allocation decisions are made. Ideally this leads to land managers seeking the most efficient means of achieving pest management objectives.

A key feature of exacerbator payments, however, is that it only achieves greater efficiency where the incentive exists for landowners to take account of the objective in their decisions. Rating does not achieve this because the landowner experiences the cost regardless of whether they change their management decision to take account of the objective. Direct charges, which reflect the level of contribution to the problem, are therefore preferred.

The funding rationale incorporates the principle that those who fund the Strategy should not pay for activities within the Strategy for which they receive no benefit or for which another party would normally consider is its role to fund. For instance, education is offered as part of the Strategy but environmental education is also offered by Environment Canterbury from regionally collected funds.
It may therefore be inequitable to fund the environmental education component of the Strategy from a rate on rural land. The rationale, therefore, adopts an activity-based approach where funding shares are identified by Strategy activity. An activity-based approach allows the incremental benefit from specific activities, as opposed to pest management generally, to be assessed.

The Strategy outlines measures to achieve the objectives. The activities involved in each of the measures are as follows.

(a) **Inspections**

Environment Canterbury will inspect properties to ascertain infestation levels of pests and to establish compliance with the rules of the Strategy. The frequency of inspections will depend on the population dynamics of the pests and the proneness of the land to infestations. Qualitative methods such as the Modified McLean Scale for rabbits and the Guilford Scale for wallabies will be used to determine their abundance. For other pests, the presence or the spatial extent of the pest will be used.

The activity may also include Environment Canterbury undertaking limited destruction of pests during inspection where it is cost-effective to do so.

(b) **Advice and Education**

Advice and education is undertaken to encourage the efficient and effective control of pests. Activities include responding to public enquiries about pests, producing and distributing pamphlets, participating in discussion groups, field days and appropriate public events. In addition, guidance is given on the correct and safe use of herbicides and alternatives to herbicides. Facilitation of community initiative programmes and self-help programmes will also be undertaken.

(c) **Control**

Individual landowners will generally carry out the control of pests. However, Environment Canterbury (or its contractor agents) will carry out control operations in the following situations:

(i) undertaking total control programmes for rooks, african feather grass, african love grass, baccharis, bur daisy, coltsfoot, entire marshwort, rooks, saffron thistle and white-edged nightshade;

(ii) undertaking biodiversity programmes within the targeted high-value areas for boneseed, egeria, phragmites, wilding conifers, magpies, possums, mustelids, feral cats, feral deer, feral goats, feral pigs, wasps, old man’s beard, darwin’s barberry, ash, holly, banana passionfruit, lagarosiphon, bell heather, sycamore, red-flowering currant and any other organisms to be controlled;

(iii) undertaking containment control programmes for rabbits and possums where funding is arranged via a land occupier rating pool system;

(iv) undertaking enforcement action; and

(v) on a user pays basis.

(d) **Monitoring**

Environment Canterbury will monitor pest population trends to determine the effectiveness of the objectives contained in the Strategy. The information gathered provides regional trends and is not used for property-specific activities.

(e) **Investigations**

Environment Canterbury will support continuing research into the development and application of existing and new control tools, including biological control. Co-ordinating the release of biological control agents may also be undertaken.
(f) **Enforcement**

Environment Canterbury will use enforcement measures where land occupiers or other persons do not comply with the rules in the Strategy.

For cost allocation purposes Environment Canterbury has assigned funding formulae according to the RPMS (1998), the RPMS – Biodiversity Pests (2002) and the RPMS (2005), i.e. the status quo.

The significant exception to this is the funding formula for Education and Advice in relation to gorse and broom. The Regional Pest Management Strategy (1998) splits this 90% to Rural Land Occupiers and 10% to the Regional Community. A review of the actual expenditure under this category has identified that much of this expenditure is on advice and education unrelated to particular properties and not related to rateable rural land. The funding formula for Education and Advice in relation to gorse and broom is now 50% to Rural Land Occupiers and 50% to the Regional Community.

The funding formulae for the Strategy are set out in the following table.

**Table 10.2: Funding formulae under this Strategy**

<table>
<thead>
<tr>
<th>Funding formula</th>
<th>Rural land occupiers</th>
<th>The regional community</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total, Progressive, Containment and Restricted Control Programmes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rabbits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Prone</td>
<td>33</td>
<td>67</td>
</tr>
<tr>
<td>Medium Prone</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Low Prone</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Monitoring</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Control</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Wallabies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within containment area</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Outside containment area</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Monitoring</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within containment area</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Outside containment area</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td><strong>Rooks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Monitoring</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Control</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Nassella tussock, Chilean needle grass</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Monitoring</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Control</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 10.2 cont.

<table>
<thead>
<tr>
<th>Funding formulae</th>
<th>Rural land occupiers</th>
<th>The regional community</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td><strong>Broom, gorse</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Monitoring</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Control</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Nodding thistle, variegated thistle, ragwort</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Monitoring</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Control</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td><strong>African feather grass, african love grass, baccharis, bur daisy, saffron thistle, white-edged nightshade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Monitoring</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Control</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td><strong>Coltsfoot, entire marshwort</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Monitoring</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Control</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td><strong>Restricted Pests</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Monitoring</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td><strong>Other activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforcement</td>
<td>User pays wherever possible</td>
<td>General rate where it is not possible</td>
</tr>
<tr>
<td>Investigations</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Biodiversity Protection Programmes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant pests and other organisms to be controlled (old man’s beard, ash, holly, banana passionfruit, boneseed, Darwin’s barberry, bell heather, egeria, lagarosiphon, phragmites, sycamore, red-flowering currant, wild thyme, magpies, barberry, boxthorn, carex, puna grass, Russell lupin, vipers bugloss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Monitoring</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Education and Advice</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Control (HVEAs)</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 10.2 cont.

<table>
<thead>
<tr>
<th>Funding formulae</th>
<th>Rural land occupiers</th>
<th>The regional community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilding Conifers</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Control Costs</td>
<td>0</td>
<td>100% of initial control of dense infestations. Land owners may voluntarily contribute towards control of light and scattered infestations</td>
</tr>
<tr>
<td>Inspection and facilitation</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Monitoring and Investigations</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Hieracium</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Biological control</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Animal pests and other animals to be controlled (possums, feral deer, feral pigs, feral goats, mustelids, feral cats and wasps, Argentine ants, European hedgehog, ship rat, Norway rat) in HVEA’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control costs</td>
<td></td>
<td>Regional community together with a voluntary in kind contribution from participating landowners</td>
</tr>
<tr>
<td>Facilitation</td>
<td></td>
<td>Regional community together with an in kind contribution from participating landowners</td>
</tr>
<tr>
<td>Monitoring and Investigations</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Other Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforcement</td>
<td>User pays wherever possible</td>
<td>General rate where it is not possible</td>
</tr>
<tr>
<td>Investigations</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

The overall level of inspection, monitoring, advice and education is determined by Environment Canterbury as part of the Strategy independently of the pest problem on any particular property. On the other hand, control will vary directly with both the pest problem and the landowner’s response to it on a particular property. It is important that landowners directly bear the full consequences of their actions. This is likely to promote the best or optimal response from the point of view of the community as a whole.

There are no unusual administrative problems or costs expected in recovering costs from any of the persons who are required to pay. It is recognised that there may be a need to recover enforcement costs for some exacerbators through the courts. In some cases, for example where not all exacerbators can be identified, full cost recovery will not be realised and a rating contribution will be required.

The funding of costs allocated to rural land occupiers will be through targeted rates applied to occupiers of rateable rural land. Where there is an agreed rating district for possum control, costs are allocated to land occupiers via a targeted rate applying to all rateable land. The rating base is land value, which reflects the potential effects of pests on land assets. Land area is an alternative rating base but it is less equitable for larger properties in the region because much of the land is not affected by spill-over of pests from neighbouring properties. However, in the case of the service
delivery for rabbits in rating pool areas, land area is appropriate given the differential assessment work previously undertaken.

Environment Canterbury will negotiate with Crown agencies to secure agreement to be bound by the Strategy and contribute to the costs of implementing the Strategy.

For applying the funding formulae for rating purposes, the various pest districts are assessed as a whole as high, medium or low rabbit prone based on the predominance of the actual classification of land in the pest district. The following applies:

<table>
<thead>
<tr>
<th>Pest District</th>
<th>Rabbit proneness classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaikoura</td>
<td>medium</td>
</tr>
<tr>
<td>Amuri</td>
<td>medium</td>
</tr>
<tr>
<td>Waikari</td>
<td>medium</td>
</tr>
<tr>
<td>Ashley</td>
<td>low</td>
</tr>
<tr>
<td>Selwyn</td>
<td>low</td>
</tr>
<tr>
<td>Banks Peninsula</td>
<td>low</td>
</tr>
<tr>
<td>Ashburton</td>
<td>low</td>
</tr>
<tr>
<td>South Canterbury</td>
<td>low</td>
</tr>
<tr>
<td>Mackenzie</td>
<td>high</td>
</tr>
<tr>
<td>Omarama</td>
<td>high</td>
</tr>
<tr>
<td>Kurow</td>
<td>high</td>
</tr>
</tbody>
</table>

10.4 Pest Management Rates – Description

Rateable land will be land that is included in a valuation roll prepared for Environment Canterbury. Pest management rates are to be set and levied to reflect the required contributions from the beneficiaries of this Strategy. The pest management rates are to be consolidated from the following components:

(a) **Targeted Pest Management Rate – Pest Rating Districts**

A rate levied on occupiers of rateable rural land in specified pest rating districts. The rate is levied on the basis of land value.

This rate funds the rural land occupiers’ share of pest management costs assigned on a pest rating district basis.

(b) **Targeted Pest Management Rate – Uniform**

A rate levied on occupiers of rateable rural land in the region. The rate is levied on the basis of land value.

This rate funds the rural land occupiers’ share of pest management costs not assigned on a pest rating district basis.

(c) **Targeted Pest Management Rate – Service Delivery Rabbits**

A rate levied on occupiers of rateable rural and rural-residential zoned parcels of land, greater than 4 hectares in area, on a differential land area basis to fund rabbit control (service delivery) undertaken by Environment Canterbury or its contractor for the Banks Peninsula pest rating district.

In preparing the differential rating system the following matters were taken into account:

(i) the benefits that are in the opinion of Environment Canterbury likely to accrue directly or indirectly to rural and rural-residential properties in the separate, defined, pest districts in the Canterbury region from works and services for pest (rabbit) control;
(ii) the zoning of properties under any operative or transitional district plans under the Resource Management Act 1991, within the Canterbury region;

(iii) the area of land comprising each rural and rural-residential zoned property;

(iv) the soil type of each rateable property expressed as soil sets in accordance with New Zealand Land Resource Inventory Data as the prime indicator of rabbit proneness modified as necessary by vegetation factors; and

(v) the more recent pest control services within each of the respective classes for the separate, defined, pest control (rabbit) districts within the region.

The differential rating system will include a range of six classes of property type:

(i) A = Extreme
(ii) B = High
(iii) C = Moderate
(iv) D = Low Plains
(v) E = Low High Country
(vi) F = Negligible.

The classes are in descending order of rabbit proneness. The number of classes within any one of the separate districts shall include all or any of the above classes.

The system of rating has the objective of establishing and preserving as far as practicable a relationship between each class based on the total proceeds of rates to be received from each class within each separate rating district according to the points of benefit for each separate rating district.

Table 10.3 sets out the classes together with the relationship between classes used in each pest district together with an estimated maximum rate for each class.

<table>
<thead>
<tr>
<th>Separate Rabbit Pest Rating District</th>
<th>Classes</th>
<th>Relationship between classes (points of benefit)</th>
<th>Estimated maximum rate ($/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banks Peninsula</td>
<td>C</td>
<td>500</td>
<td>1.8062</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>400</td>
<td>0.5529</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>100</td>
<td>0.4367</td>
</tr>
</tbody>
</table>

Any person upon enquiry, either in person at the office of the Regional Council, or in writing addressed to the Chief Executive of the Canterbury Regional Council, shall be advised of the type of group of property to which a particular property is allocated for the purpose of this differential rating system.

Any ratepayer may, at any time after the adoption of this Strategy, object to the Canterbury Regional Council in accordance with Section 29 of the Local Government (Rating) Act 2002 against the inaccurate allocation of a property to a particular type or group.

(d) Targeted Pest Management Rate – Service Delivery Possums

A rate levied on occupiers of rateable land in the Banks Peninsula pest district. The rate is levied on the basis of land value.

This rate funds the land occupiers’ share of pest management costs associated with the control (service delivery) of possums for the Banks Peninsula pest rating district.
(e) Pest Management Rate – General

A rate levied on all ratepayers in the region on capital value. This rate funds the non-producer share of the costs of implementing this Strategy.

Pest rating districts are described in Appendix 7.

Pest management rates are used in proportion to the funding formulae in the following manner:

Targeted pest management rate
- pest district basis
  Inspections, advice and education associated with rabbit, wallaby, nassella tussock, Chilean needle grass, broom, gorse, nodding thistle, variegated thistle and ragwort.

Targeted pest management rate
- uniform basis
  Inspections, monitoring, control, advice and education associated with rook, african love grass, african feather grass, baccharis, bur daisy, saffron thistle and white-edged nightshade.
  Monitoring nassella tussock and Chilean needle grass.

Targeted pest management rate
- service delivery rating district
  Rabbit and possum control.

Pest management rate
- general basis
  Inspections, monitoring, advice, education and control for all pests in proportion to the funding formulae.
  Facilitating community initiative programmes and self-help programmes.

User Pays
  Enforcement and control where requested by landowners.

10.5 The anticipated costs of implementing the Strategy

The anticipated costs of the Strategy reflect a best estimate of the level of expenditure required. However if the circumstances change and pest levels alter, the funding levels will need to be adjusted accordingly. The use of any alternative funds will be sought by Environment Canterbury and used as an alternative to rate funding, or as a value added component to rate funding in appropriate circumstances.

The expenditure and revenue estimates in the Strategy are those budgeted for 2003/2004 and are expressed in 2002/2003-dollar values. Table 10.4 sets out the funding revenue source and the anticipated annual costs for the pests and other organisms to be controlled included in the strategy. The anticipated annual costs set out in the table indicate the overall level of expenditure required in present value terms. Some cost escalation may be unavoidable but the annual planning process undertaken by Environment Canterbury should serve to constrain any significant increase in the scale of activity authorised under this strategy.
Table 10.4  Anticipated annual costs and revenues

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost ($)</th>
<th>Pest Rating Districts</th>
<th>Uniform</th>
<th>Differential</th>
<th>Possums</th>
<th>User Pays</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection</td>
<td>1,234,000</td>
<td>729,250</td>
<td>26,500</td>
<td></td>
<td></td>
<td>478,250</td>
<td></td>
</tr>
<tr>
<td>Advice and Education</td>
<td>145,000</td>
<td>32,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112,500</td>
</tr>
<tr>
<td>Service Delivery</td>
<td>742,300</td>
<td>47,000</td>
<td>73,300</td>
<td>45,000</td>
<td>30,000</td>
<td>547,000</td>
<td></td>
</tr>
<tr>
<td>Enforcement</td>
<td>73,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18,250</td>
</tr>
<tr>
<td>Pest Management Liaison</td>
<td>105,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>105,000</td>
</tr>
<tr>
<td>Committees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trend Monitoring</td>
<td>213,000</td>
<td></td>
<td>96,500</td>
<td></td>
<td></td>
<td></td>
<td>116,500</td>
</tr>
<tr>
<td>Investigations</td>
<td>120,000</td>
<td></td>
<td>50,000</td>
<td></td>
<td></td>
<td></td>
<td>70,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,632,300</strong></td>
<td><strong>808,750</strong></td>
<td><strong>246,300</strong></td>
<td><strong>45,000</strong></td>
<td><strong>30,000</strong></td>
<td><strong>1,447,500</strong></td>
<td><strong>54,750</strong></td>
</tr>
</tbody>
</table>

* No allowance has been made for any contributions that the Crown may agree to which may result in a reduction in the Pest Management Rates.
11. Powers conferred

Environment Canterbury will use the statutory powers from Part 6 of the Act as shown in Table 11.1 together with any other powers from the Act and powers given to Environment Canterbury by Regulations made under Part 9 of the Act for the purposes of implementing the Strategy.

The Principal Officer (Chief Executive) of the Environment Canterbury may appoint authorised persons for the purpose of exercising functions, powers and duties under the Act. Set out in Table 11.1 are the Sections of the Act under which the Principal Officer will confer one or more powers upon authorised persons, and those Sections under which powers will be sought from other parties for authorised persons.

Environment Canterbury has the power to enforce restrictions on the sale, propagation and distribution of pests in accordance with section 52 and section 53 of the Act. Authorised persons also have the power to request information from occupiers of land under Section 43 of the Act.

Table 11.1: Powers to be used

<table>
<thead>
<tr>
<th>Administrative Power</th>
<th>Reference in the Biosecurity Act (1993)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The appointment of authorised and accredited persons</td>
<td>Section 103(3) &amp; (7)</td>
</tr>
<tr>
<td>Delegation to authorised persons</td>
<td>Section 105</td>
</tr>
<tr>
<td>Power to require assistance</td>
<td>Section 106</td>
</tr>
<tr>
<td>Power of inspection</td>
<td>Section 109, 110 &amp; 112</td>
</tr>
<tr>
<td>Power to record information</td>
<td>Section 113</td>
</tr>
<tr>
<td>General powers</td>
<td>Section 114, 114A</td>
</tr>
<tr>
<td>Use of dogs and devices</td>
<td>Section 115</td>
</tr>
<tr>
<td>Power to intercept baggage etc</td>
<td>Section 120</td>
</tr>
<tr>
<td>Power to examine organisms</td>
<td>Section 121</td>
</tr>
<tr>
<td>Power to give directions</td>
<td>Section 122</td>
</tr>
<tr>
<td>Power to act on default</td>
<td>Section 128</td>
</tr>
<tr>
<td>Liens</td>
<td>Section 129</td>
</tr>
<tr>
<td>Declaration of restricted area</td>
<td>Section 130</td>
</tr>
<tr>
<td>Declaration of controlled area</td>
<td>Section 131</td>
</tr>
<tr>
<td>Options for cost recovery</td>
<td>Section 135</td>
</tr>
<tr>
<td>Failure to pay</td>
<td>Section 136</td>
</tr>
<tr>
<td>Prosecution</td>
<td>Section 154</td>
</tr>
</tbody>
</table>
12. Regulatory management

This chapter describes the procedure that is followed in the event of land occupiers or other persons not complying with the strategy rules or other general duties under the Act in relation to declared pests. It details policies for enforcement and consequential regulatory procedures.

12.1 Policy for enforcement

In the event of a land occupier or other persons failing to comply with any strategy rule prescribed in Part II of the Strategy or with any provisions of the Biosecurity Act 1993 in relation to declared pests, an authorised person of Environment Canterbury will:

(a) advise the land occupier or other person of their non-compliance, advise they take remedial action and initiate the regulatory procedures set out in Section 12.2 of the Strategy; or
(b) advise the land occupier or other person that they have committed an offence against the Act and initiate Court proceedings.

12.2 Regulatory procedures

12.2.1 Issue of direction

If an occupier of land or any other person fails to comply with any rule prescribed in Part II of the Strategy, an authorised person will issue a direction under section 122 of the Biosecurity Act 1993. The direction will be given in a Notice of Direction, which is a legal document, and will include the following matters:

(a) a description of the land on which works or measures are to be undertaken;
(b) the pest for which the works or measures are required;
(c) the Strategy rule or provision of the Act;
(d) the works or measures to be undertaken to comply with any strategy rule or provision of the Act;
(e) the time within which the works or measures are to be undertaken;
(f) actions that may be undertaken by Environment Canterbury if the land occupier fails to comply with any part of the direction;
(g) the name of the authorised person issuing the direction; and
(h) the contact address, telephone or fax number of the issuer.

If the recipient of a direction disagrees with the basis upon which the direction has been issued, local landowners, farmer support organisations, the local Pest Management Liaison Committee or its Chairperson may be consulted for guidance, mediation or arbitration requested or legal advice sought by the recipient. Similar dispute resolution procedures are available for the extension or variation of a direction and the recovery from the land occupier of costs incurred by Environment Canterbury.
12.2.2 Extension or variation of direction
Where, upon the representation of an occupier of land issued with a direction, an authorised person is satisfied that:

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

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

12.2.3 Cancellation of direction
When an authorised person is satisfied that:

(a) works or measures have been undertaken in accordance with the direction; or
(b) for some other reason it is no longer appropriate to enforce the direction;

the authorised person may cancel that direction in writing.

12.2.4 Failure to comply
Where a direction has been given to an occupier of land under Section 122 of the Act and described in section 12.2.1 of the Strategy, and the land occupier has not complied with the requirements of the direction within the time specified, then Environment Canterbury may enter onto the land specified in the direction under section 128 of the Act and carry out, or cause to be carried out, the works or measures specified in the direction, or such other works or measures (including prosecution action) as are reasonably necessary or appropriate for the purpose of giving effect to the requirements of the direction.

12.2.5 Recovery of costs incurred
In accordance with Section 128 of the Act, Environment Canterbury will recover actual and reasonable costs where Environment Canterbury has entered onto the land specified in the legal direction and ascertained that the legal direction has not been complied with.

Environment Canterbury may recover further costs and expenses reasonably incurred by it in carrying out the works and measures as a debt due from the land occupier to whom the direction was given.

12.2.6 Modes of service
A direction to an occupier of land under Section 12.2.1 of the Strategy is to be served in accordance with Section 164A of the Act.

12.2.7 Offences
Any person who contravenes Section 154 of the Biosecurity Act 1993, including but not limited to, breaching a rule in the Strategy or without reasonable excuse failing to comply with a direction or failing to comply with the Act, commits an offence against the Act. For the purpose of clarity, the existence of rules in the Strategy in no way limits the application of any provision of the Act.

Environment Canterbury will, at its discretion, bring a prosecution against any person who commits an offence against the Act.
12.3 Exemption power

Any occupier or other person may, upon representation to the Environment Canterbury, seek an exemption from any provision of a strategy rule prescribed in Part II of this strategy. Such exemption will be considered as follows:

(a) Environment Canterbury may, if it considers it appropriate and upon such conditions as it considers appropriate, exempt any person from any specified requirement in any rule included in this Strategy in accordance with this Act.

(b) Before granting an exemption under this section, Environment Canterbury must be satisfied in the circumstances of each case that:

(i) the requirement has been substantially complied with and that further compliance is unnecessary; or

(ii) the action taken or provision made in respect of the matter to which the requirement relates is as effective or more effective than actual compliance with the requirement; or

(iii) the prescribed requirements are clearly unreasonable or inappropriate in the particular case; or

(iv) events have occurred that make the prescribed requirements unnecessary or inappropriate in the particular case,

and that the granting of the exemption will not significantly prejudice the attainment of the objectives of this Strategy.

Note that an exemption to the strategy rule for egeria (Strategy Rule 8.8.5) will not be considered in any circumstance and an exemption to the strategy rule for Chilean needle grass (Strategy Rule 6.3.5) and phragmites (Strategy Rule 8.12.5) will only be considered for scientific research.

Environment Canterbury will maintain a register recording the number and nature of exemptions granted. This register will be available for public inspection during normal office hours.

The Strategy identifies the rules for nassella tussock in chapter 6 and for gorse and broom in chapter 7 as particular rules where exemptions may be sought.

Exemptions from the rules may be sought so that the landowner can agree with Environment Canterbury on a binding programme of gorse and/or broom control for a property that is consistent with the objective, and is carried out within a fixed time frame. For example, such a programme could include initially dealing with larger gorse and/or broom infestations ahead of smaller non-complying gorse or broom infestations. Exemptions are also sought in situations where gorse and broom provide natural cover and a nursery for regenerating native bush and where exotic forestry is used as a control method. Any such exemptions would need to take account of possible spill-over effects on neighbouring properties.
13. Monitoring and Review

13.1 Measuring the extent to which the objectives are being achieved

Table 13.1 outlines how the Environment Canterbury will undertake monitoring to measure the extent to which the objectives of the Strategy are being met.

<table>
<thead>
<tr>
<th>Anticipated result</th>
<th>Indicator</th>
<th>Method of Monitoring</th>
<th>Frequency of Monitoring</th>
<th>Reporting to Council</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Control Programmes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active sites for <em>african love grass</em>, <em>baccharis</em>, <em>entire marshwort</em>, <em>saffron thistle</em> and <em>white-edged nightshade</em> reduced to zero. Active sites for <em>bur daisy</em> reduced to 15. Active sites for <em>coltsfoot</em> reduced to 20. Active sites for <em>African feather grass</em> reduced to 25.</td>
<td>Presence or absence of seeding plants.</td>
<td>Population assessment.</td>
<td>As reported.</td>
<td>Annual.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As reported from land occupiers or other persons.</td>
<td>As reported.</td>
</tr>
<tr>
<td><strong>Progressive Control Programmes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progressive reduction in <em>nassella tussock</em> and <em>Chilean needle grass</em> plants.</td>
<td>5-year rolling average decrease in the number of plants left growing after the seasonal control programmes have been completed.</td>
<td>Population assessment.</td>
<td>As reported.</td>
<td>Annual.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As reported from land occupiers or other persons.</td>
<td>As reported.</td>
</tr>
<tr>
<td><strong>Containment Control Programmes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 13.1 cont.

<table>
<thead>
<tr>
<th>Anticipated result</th>
<th>Indicator</th>
<th>Method of Monitoring</th>
<th>Frequency of Monitoring</th>
<th>Reporting to Council</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Containment Control Programmes continued</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toxin averse rabbit populations eradicated and no development of new neophobic populations.</td>
<td></td>
<td>Database of 1080 poison use.</td>
<td>Ongoing.</td>
<td>Annual.</td>
</tr>
<tr>
<td>Effectiveness of RHD in rabbit populations is maximized.</td>
<td>Immunity levels in rabbit populations do not exceed 30 percent.</td>
<td>Database of immunity levels.</td>
<td>Ongoing.</td>
<td>Annual.</td>
</tr>
<tr>
<td><strong>Wallaby densities below Guilford Scale Level 3 within the Wallaby Area.</strong></td>
<td>Wallaby density above Level 3.</td>
<td>Guilford Scale assessment where required.</td>
<td>Annual.</td>
<td>Annual.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Faecal pellet counts.</td>
<td>Guilford Scale.</td>
<td>Guilford Scale.</td>
</tr>
<tr>
<td><strong>Wallabies contained to Wallaby Area.</strong></td>
<td>Presence of wallabies outside the Wallaby Area.</td>
<td>As reported from land occupiers or other persons.</td>
<td>Annual.</td>
<td>Annual.</td>
</tr>
<tr>
<td><strong>Broom and gorse are restricted to below their present spatial extent.</strong></td>
<td>Presence of Gorse or Broom adjacent to boundary fences.</td>
<td>Property Monitoring.</td>
<td>Annual.</td>
<td>Annual.</td>
</tr>
<tr>
<td></td>
<td>Aerial transect photography.</td>
<td>Twice during the period of the Strategy.</td>
<td>Twice during the period of the Strategy.</td>
<td></td>
</tr>
<tr>
<td><strong>Nodding thistle, variegated thistle and ragwort destroyed within Community Initiated Programme areas.</strong></td>
<td>Absence of nodding thistle, variegated thistle and ragwort.</td>
<td>As reported from land occupiers or other persons.</td>
<td>Annual.</td>
<td>Annual.</td>
</tr>
<tr>
<td><strong>Nodding thistle, variegated thistle and ragwort are restricted to below their present spatial extent.</strong></td>
<td>Presence of nodding thistle, variegated thistle and ragwort adjacent to boundary fences.</td>
<td>As reported from land occupiers or other persons.</td>
<td>Annual.</td>
<td>Annual.</td>
</tr>
<tr>
<td>Anticipated result</td>
<td>Indicator</td>
<td>Method of Monitoring</td>
<td>Frequency of Monitoring</td>
<td>Reporting to Council</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td><strong>Containment Control Pest Programmes continued</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nodding thistle and ragwort populations infested by biological control agents.</td>
<td>Level of infestation by biological control agents.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possum densities below 10% RTC in Community Initiated Programme areas.</td>
<td>Possum densities above 10% RTC in Community Initiated Programme areas.</td>
<td>Trap monitoring lines.</td>
<td>Annual.</td>
<td>Annual.</td>
</tr>
<tr>
<td>Possum densities above 10% RTC in Community Initiated Programme areas.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity Protection Programmes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old man’s beard, Darwin’s barberry, ash, holly, banana passionfruit, sycamore, red flowering currant, barberry, boxthorn, carex, common polypody, puna grass, Russell lupin, vipers bugloss and bell heather destroyed in high-value environmental areas.</td>
<td>Old man’s beard, Darwin’s barberry, ash, holly, banana passionfruit, sycamore, red flowering currant barberry, boxthorn, carex, common polypody, puna grass, Russell lupin, vipers bugloss and bell heather.</td>
<td>Presence/absence.</td>
<td>Following control operations.</td>
<td>As appropriate.</td>
</tr>
<tr>
<td>Magpies destroyed in high-value environmental areas.</td>
<td>Population levels of tui or kereru.</td>
<td>Population assessment.</td>
<td>Pre and Post control operations.</td>
<td>As appropriate.</td>
</tr>
<tr>
<td>Possums reduced to 10% RTC at targeted high-value environmental sites.</td>
<td>Possums above 10% RTC.</td>
<td>Trap monitoring lines.</td>
<td>Annually.</td>
<td>Annually.</td>
</tr>
</tbody>
</table>
Table 13.1 cont.

<table>
<thead>
<tr>
<th>Anticipated result</th>
<th>Indicator</th>
<th>Method of Monitoring</th>
<th>Frequency of Monitoring</th>
<th>Reporting to Council</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biodiversity Protection Programmes continued</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilding conifers eradicatd from high value areas.</td>
<td>Wilding conifers.</td>
<td>Presence/absence.</td>
<td>Following control operations.</td>
<td>As appropriate.</td>
</tr>
<tr>
<td>Boneseed contained in the port hills area and eradicated elsewhere in the Region.</td>
<td>Boneseed.</td>
<td>Presence/absence in the eradication area and transects in the containment areas.</td>
<td>Annually.</td>
<td>Annually.</td>
</tr>
<tr>
<td><strong>Restricted Sale Programme</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13.2 Monitoring management agency performance

The monitoring of Environment Canterbury’s performance, as the management agency, will be carried out as part of Environment Canterbury’s annual planning and reporting process, and will include the following performance measures:

(a) preparation of an operational plan within three months of the Strategy being approved;
(b) review of the operational plan and, if necessary, amendment;
(c) report on the operational plan annually within five months of the end of each financial year;
(d) achievement of a programme of education and advice, inspections, enforcement measures and pest control to implement the Strategy in accordance with the operational plan; and
(e) maintenance of up-to-date databases of complaints, pest levels and densities, and Regional Council and land occupier responses.

13.3 Review of the Strategy

Monitoring the effects of the Strategy will ensure that it is continuing to achieve its purpose and that relevant circumstances have not changed to such a significant extent that a review of the Strategy is required. A review of the Strategy may be needed if:

(a) there are changes to the Act and a review is needed to ensure that the Strategy is not inconsistent with it;
(b) other harmful organisms create problems, or have the potential to create problems, that can be resolved through integrating them into the Strategy;
(c) monitoring shows a significant change in the problems posed by pests or other organisms to be controlled covered by the Strategy; or
(d) circumstances change to such a significant extent that Environment Canterbury believes that a review would be appropriate.

Failing the need to review the Strategy under any of the above circumstances, the Strategy will be reviewed in accordance with section 88 of the Act. Such a review may extend, amend, revoke or leave the strategy unchanged.

The procedures to be used to review the Strategy will include:

(i) an assessment by officers of Environment Canterbury of the efficiency and effectiveness of the measures of achievement (specified for each individual pest and other organisms to be controlled or group of pests or other organisms to be controlled) for achieving the objectives of the Strategy;
(ii) an assessment by officers of Environment Canterbury of the impact of the organism covered by the Strategy on the region and any other harmful organisms that should be considered for inclusion in the Strategy; and
(iii) liaison with public authorities, Ngāi Tahu and key interest groups on the effectiveness of the Strategy.
14 Pest Management Liaison Committees

Environment Canterbury intends to maintain and further develop its widely accepted system of Pest Management Liaison Committees. The purpose of these committees is to provide advice to Environment Canterbury on implementing and funding the Strategy.

Advice on implementation covers the operational and policy needs to successfully bring about local inspection requirements, information and service delivery needs and suggestions of any new pests. Funding advice is given on the level of financial resources that meet affordability and quality standards expected by the local community, while taking into account the need to ensure the Strategy objectives are met.

Better linkages between the Committees and the wider community will be encouraged. The committees provide a forum for discussion on a wide range of pest management matters and bring an element of impartiality to many situations. This often enables potential problems to be diffused before they get out of hand.

Pest Management Liaison Committees may also have an expanded role under the Biodiversity Pest Programmes and with respect to any Community Initiative Programmes.

The chairperson of Pest Management Liaison Committees may also have a disputes resolution role as discussed in Chapter 12.

15 Coordination with other Pest Management Strategies

Environment Canterbury will carry out consultation with other persons or parties to ensure that the Strategy is not inconsistent with:

(a) any other Regional or National Pest Management Strategies; or

(b) any regulation or any regional policy statement or regional plan prepared under the Resource Management Act 1991.

Consultation will also ensure the resolution of cross boundary issues relating to pest management.

16 Compensation and disposal of receipts

The Strategy does not provide for compensation under Section 86 of the Act to be paid to any persons as a result of obligations imposed by the Strategy.

Whilst the Strategy provides for the destruction of pests and other organisms to be controlled, it does not provide for the seizure and subsequent disposal of any goods. Information concerning the disposal of the proceeds of any receipts arising in the course of implementing the Strategy is therefore not needed.
## Appendix 1  Glossary of Terms

The use of italics indicates meanings taken from Section 2 of the Biosecurity Act 1993. Where a term has an asterisk (*) its definition is taken from Environment Canterbury’s Regional Policy Statement.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allelopathic</td>
<td>means the release of plant growth inhibitors by a plant to prevent competition from other plants.</td>
</tr>
<tr>
<td>Appropriate</td>
<td>means as determined to be appropriate by Environment Canterbury or its officers acting under delegated authority.</td>
</tr>
<tr>
<td>Authorised Person</td>
<td>has the same meaning as in the Biosecurity Act 1993: “a person for the time being appointed an authorised person under section 103 of this Act.”</td>
</tr>
<tr>
<td>Benefits*</td>
<td>includes benefits of any kind, whether monetary or non-monetary.</td>
</tr>
<tr>
<td>Beneficiaries</td>
<td>means the receivers of benefits accruing from the implementation of a pest management measure or strategy.</td>
</tr>
<tr>
<td>Biodiversity *</td>
<td>means the variability among living organisms from all sources including, among other things, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part. This includes diversity within species, between species, and of ecosystems.</td>
</tr>
<tr>
<td>Biological Control</td>
<td>means the introduction and establishment of natural enemies that will prey on or adversely affect a pest or other organisms to be controlled.</td>
</tr>
<tr>
<td>Capital Value</td>
<td>has the same meaning as in the Rating Valuations Act 1998: “capital value of land means, subject to sections 20 and 21, the sum that the owner’s estate or interest in the land, if unencumbered by any mortgage or other charge, might be expected to realise at the time of valuation if offered for sale on such reasonable terms and conditions as a bona fide seller might be expected to require.”</td>
</tr>
<tr>
<td>Crown</td>
<td>means the New Zealand Government.</td>
</tr>
<tr>
<td>Costs*</td>
<td>includes costs of any kind, whether monetary or non-monetary.</td>
</tr>
<tr>
<td>Destroy</td>
<td>means pull, breakdown, demolish, make useless, kill, cause to cease to exist.</td>
</tr>
<tr>
<td>Direction</td>
<td>means a notice issued in accordance with section 122 of the Biosecurity Act 1993 requesting a person or land occupier to carry out certain work or measures.</td>
</tr>
<tr>
<td>Distribute</td>
<td>means to transport or in any way spread a pest.</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>means a dynamic complex of plant, animal and micro-organism communities and their non-living environment, interacting as a functioning unit.</td>
</tr>
</tbody>
</table>
**Effect**

unless the context otherwise requires, the term “effect” includes:
any positive or adverse effect;
any temporary or permanent effect;
any past, present or future effect;
any cumulative effect which arises over time or in combination
with other effects - regardless of the scale, intensity, duration or
frequency of the effect, and also includes -
any potential effect of high probability; and
any potential effect of low probability which has a high potential
impact.

**Environment**

has the same meaning as in the Biosecurity Act 1993:
“includes—
(a) Ecosystems and their constituent parts, including
people and their communities; and
(b) All natural and physical resources; and
(c) Amenity values; and
(d) The aesthetic, cultural, economic, and social conditions
that affect or are affected by any matter referred to in
paragraphs (a) to (c) of this definition.”

**Environment Canterbury**

means the name used to refer to the Canterbury Regional
Council.

**Eradicate**

means to completely remove from the region.

**Exacerbator**

means the person aggravating or contributing to a particular
pest management problem by action or inaction.

**Financial Envelope**

means the financial provision adopted by Environment
Canterbury in its Annual Plan.

**Feral**

means wild or otherwise unmanaged.

**Habitat**

means the place or type of site where an organism or population
normally occurs.

**Inanga**

means whitebait.

**Indigenous**

means produced by, or naturally belonging to, a particular
region or area.

**Landowner**

has the same meaning as occupier in the Biosecurity Act 1993:
“occupier,—
(a) In relation to any place physically occupied by any
person, means that person; and
(b) In relation to any other place, means the owner of the
place; and
(c) In relation to any place, includes any agent, employee,
or other person, acting or apparently acting in the
general management or control of the place.”

**Management Agency**

has the same meaning as in the Biosecurity Act 1993:
“the Department, authority, or body corporate specified in a pest
management strategy as the agency given the task of
implementing the strategy.”

For the purposes of this document, Environment Canterbury is
the management agency for pests and other organisms to be
controlled in the Canterbury region.
Monitoring means the difference between the total benefits in present day terms and the total costs in present day terms at a specified discount rate.

Occupier has the same meaning as in the Biosecurity Act 1993:

(a) In relation to any place physically occupied by any person, means that person; and
(b) In relation to any other place, means the owner of the place; and
(c) In relation to any place, includes any agent, employee, or other person, acting or apparently acting in the general management or control of the place.”

Operational Plan means a plan prepared by the Management Agency under Section 85 of the Act.

Organism has the same meaning as in the Biosecurity Act 1993:

(a) Does not include a human being or a genetic structure derived from a human being:
(b) Includes a micro-organism:
(c) Subject to paragraph (a) of this definition, includes a genetic structure that is capable of replicating itself (whether that structure comprises all or only part of an entity, and whether it comprises all or only part of the total genetic structure of an entity):
(d) Includes an entity (other than a human being) declared by the Governor-General by Order in Council to be an organism for the purposes of this Act:
(e) Includes a reproductive cell or developmental stage of an organism:
(f) Includes any particle that is a prion.”

Person has the same meaning as in the Biosecurity Act 1993:

“includes the Crown, a corporation sole, and a body of persons (whether corporate or unincorporate).”

Pest has the same meaning as in the Biosecurity Act 1993:

“an organism specified as a pest in a pest management strategy”

Pest Management Liaison Committee is a committee established by Environment Canterbury in a pest rating district to provide advice on the extent of pest management activity and its cost in a pest rating district.

Pest Management Strategy has the same meaning as in the Biosecurity Act 1993:

“a strategy, made under Part 5 of this Act, for the management or eradication of a particular pest or pests.”

Plant means any plant, tree, shrub, herb, flower, nursery stock, culture, vegetable, or other vegetation; and also includes fruit, seed, spore and portion or product of any plant; and also includes all aquatic plants.

Plant Pest any plant that is the subject of a regional pest management strategy.
Propagate means to multiply or reproduce by sowing, grafting, breeding or any other way.

Rule means a rule included in a pest management strategy in accordance with section 80B of the Biosecurity Act 1993.

Sale includes bartering; offering for sale; exposing, or attempting to sell; or having in possession for sale; or sending or delivery for sale; causing or allowing to be sold, offered, or exposed for sale; and also includes any disposal whether for valuable consideration or not. “Sell” has a corresponding meaning.

Scientific research in relation to phragmites means bona fide research of physical and biological science including environmental monitoring and scientific and technological development but does not include field tests of the commercial viability of the use of phragmites as a reed bed treatment system.

Spillover Effects these result in costs or benefits to people other than the land occupier on whose property the pests or other organisms to be controlled are located. They include the effects of the spread of plant or animal pests or other organisms to be controlled onto neighbouring properties and environmental effects that have costs or benefits to the community as a whole.

Tangata Whenua* means people of the land, the people who hold the turangawaewae and the manawhenua in an area, according to tribal and hapu custom.

Taonga* means treasured possessions of Tangata Whenua including both tangible and intangible treasures.

Toxin means a poison, whether produced by a living organism or not.

Tuna means an eel.

Wahi Tapu* means places of sacred and extreme importance to Tangata Whenua.

Wai koura means freshwater crayfish.

Wild in relation to thyme means any plant not subject to husbandry management.

Wilding in relation to conifers means any tree established by natural agency.
Appendix 2  National Pest Plant Accord List

The list that follows is the First Schedule of the National Pest Plant Accord, with all the pest plants included in it as at 1 October 2001. All plants on the list are designated as Unwanted Organisms, and are banned from sale, propagation and distribution throughout New Zealand.

Plant species may be added or deleted periodically after review by the Technical Working Group.

To check for alterations visit the Ministry of Agriculture and Forestry web site (www.maf.govt.nz/biosecurity/pests-diseases/plants).

First Schedule of the National Pest Plant Accord

<table>
<thead>
<tr>
<th>Common Name/s</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>African club moss, selaginella.</td>
<td>Selaginella kraussiana</td>
</tr>
<tr>
<td>African love grass.</td>
<td>Eragrostis curvula</td>
</tr>
<tr>
<td>Akebia, chocolate vine, five-leaved akebia.</td>
<td>Akebia quinata (added in 2007)</td>
</tr>
<tr>
<td>Alligator weed, pigweed.</td>
<td>Alternanthera philoxeroides</td>
</tr>
<tr>
<td>Aristeia, wild iris, blue iris.</td>
<td>Aristeia ecklonii (added in 2007)</td>
</tr>
<tr>
<td>Arrowhead, delta, Hawaiian and Californian.</td>
<td>Sagittaria montevidensis, platyphylla, sagittifolia</td>
</tr>
<tr>
<td>Artillery plant, aluminium plant.</td>
<td>Galeobdolon luteum</td>
</tr>
<tr>
<td>Asiatic knotweed, Japanese knotweed, Mexican bamboo.</td>
<td>Reynoutria japonica (and hybrids)</td>
</tr>
<tr>
<td>Australian tree fern, lacy tree fern.</td>
<td>Cyathea cooperii (added in 2008)</td>
</tr>
<tr>
<td>Balloon vine, small balloon vine.</td>
<td>Cardiospermum grandiflorum, halicacabum</td>
</tr>
<tr>
<td>Banana passionfruit, Northern banana passionfruit.</td>
<td>Passiflora tripartita (all subspecies), tarminiana</td>
</tr>
<tr>
<td>Bladderwort, humped bladderwort.</td>
<td>Utricularia arenaria, gibba, livida, sandersonii</td>
</tr>
<tr>
<td>Blue morning glory.</td>
<td>Ipomoea indica</td>
</tr>
<tr>
<td>Blue passion flower.</td>
<td>Passiflora caerulea</td>
</tr>
<tr>
<td>Bogbean.</td>
<td>Menyanthes trifoliata</td>
</tr>
<tr>
<td>Bolivian fuchsia.</td>
<td>Fuchsia boliviana</td>
</tr>
<tr>
<td>Bomarea, climbing alstromeria.</td>
<td>Bomarea caldasii, multiflora (added in 2008)</td>
</tr>
<tr>
<td>Boneseed.</td>
<td>Chrysanthemoides monilifera</td>
</tr>
<tr>
<td>Bushy asparagus, fern asparagus, emerald feather, Sprenger's fern, Sprenger's asparagus, foxtail fern, possum tail, climbing asparagus.</td>
<td>Asparagus densiflorus (excluding cultivar &quot;Myersii&quot;), scandens</td>
</tr>
<tr>
<td>Californian bulrush.</td>
<td>Schoenoplectus californicus</td>
</tr>
<tr>
<td>Cape sundew.</td>
<td>Drosera capensis</td>
</tr>
<tr>
<td>Cape tulip.</td>
<td>Homeria collina</td>
</tr>
<tr>
<td>Cathedral bells.</td>
<td>Cobaea scandens</td>
</tr>
<tr>
<td>Cat's claw creeper, cat's claw vine, cat's claw ivy, yellow trumpet vine.</td>
<td>Macfadyena unguis-cati</td>
</tr>
<tr>
<td>Chameleon plant.</td>
<td>Houttuynia cordata</td>
</tr>
<tr>
<td>Chilean flame creeper.</td>
<td>Tropaeolum speciosum</td>
</tr>
<tr>
<td>Chilean glory creeper, Chilean glory vine, glory vine, Chilean glory flower.</td>
<td>Eccremocarpus scaber</td>
</tr>
<tr>
<td>Chilean rhubarb.</td>
<td>Gunnera tinctoria</td>
</tr>
<tr>
<td>Christmas berry, Brazilian pepper tree.</td>
<td>Schinus terebinthifolius</td>
</tr>
<tr>
<td>Clasped pondweed.</td>
<td>Potamogeton perfoliatus</td>
</tr>
<tr>
<td>Clematis, fragrant virgin's bower, plume clematis.</td>
<td>Clematis flammula (added in 2008)</td>
</tr>
<tr>
<td>Climbing spindly berry, oriental bittersweet.</td>
<td>Celastrus orbiculatus</td>
</tr>
<tr>
<td>Coltsfoot.</td>
<td>Tussilago farfara</td>
</tr>
<tr>
<td>Crack willow.</td>
<td>Salix fragilis</td>
</tr>
<tr>
<td>Darwin's barberry.</td>
<td>Berberis darwinii</td>
</tr>
<tr>
<td>Eelgrass.</td>
<td>Vallisneria gigantean, spiralis</td>
</tr>
<tr>
<td>Egeria, oxygen weed, Brazilian elodea.</td>
<td>Egeria densa</td>
</tr>
<tr>
<td>Fairy crassula.</td>
<td>Crassula multicava</td>
</tr>
<tr>
<td>False tamarisk.</td>
<td>Myricaria germanica</td>
</tr>
</tbody>
</table>
First Schedule of the National Pest Plant Accord cont.

Fire tree, Candle-berry myrtle.
Firethorn, orange firethorn, yellow firethorn.
Formosa lily, trumpet lily, St Joseph's lily, Taiwan lily.
Fringed water lily.
Giant hogweed, cartwheel flower, wild parsnip, wild rhubarb.
Giant knotweed.
Giant reed, arundo grass.
Great reedmace, cumbungi, common cattail.
Green cestrum.
Green goddess.
Grey willow, pussy willow, grey sallow.
Guinea grass, green panic, buffalo grass.
Hawkweed.
Heather, ling.

Hornwort, coontail.
Horsetail.
Hydrla.
Ice plant
Italian jasmine.
Japanese honeysuckle.
Japanese spindle tree.

Johnson grass.
Kahili ginger yellow ginger.
Khasia berry.
Lagarosiphon, oxygen weed.
Lantana.
Lodgepole pine, contorta pine.
Madeira vine, mignonette vine.
Manchurian wild rice, Manchurian rice grass.
Marshwort, entire marshwort.
Mexican daisy.
Mexican water lily, banana water lily.
Mickey mouse plant.
Mile-a-minute.
Monkey apple.
Mothplant, cruel plant, white bladder flower.
Nassella.
Old man's beard.
Pampas purple pampas.
Parrot's feather, Thread of life, Brazilian watermilfoil.
Pennisetum (excluding kikuyu grass and pearl millet).
Phragmites.
Pig's ear.
Plectranthus, blue spur flower.
Port Jackson fig.
Primrose willow, floating primrose willow, water primrose.
Purple loosestrife.
Pyp grass.
Queensland poplar, bleeding heart tree, poplar leaved omalanthus.

Myrica faya
Pyracantha angustifolia
Lilium formosanum (added in 2007)
Nymphoides peltata
Heracleum mantegazzianum
Reynoutria sachalinensis (and hybrids)
Arundo donax
Typha latifolia
Cestrum parqui
Zantedeschia "Green Goddess"
Salix cinerea
Panicum maximum
Hieracium (all species)
Calluna vulgaris (excluding double flowered cultivars)
Ceratophyllum demersum
Equisetum (all species)
Hydrilla verticillata
Carpobrotus edulis and hybrids
Jasminum humile
Lonicer a japonica
Euonymus japonicus (does not include small-leaved cultivars such as Microphylla and Emerald Gem
Sorghum halepense
Hedychium gardnerianum, flavescens
Cotoneaster simonsii
Lagarosiphon major
Lantana camara (all varieties)
Pinus contorta
Anredera cordifolia
Zizania latifolia
Nymphoides geminata
Erigeron karvinskianus
Nymphaea mexicana
Ochna serrulata
Dipogon lignosus
Acmena smithii
Araujia sericifera
Nassella (all species)
Clematis vitalba
Cortaderia selloana, jubata
Myriophyllum aquatic, spiatum
Pennisetum (all species but excluding P. clandestinum and P. glaucum)
Phragmites australis
Cotyledon orbiculata (added in 2008)
Plectranthus ciliatus
Ficus rubiginosa
Ludwigia peploides subsp. Montevideensis
Lythrum salicaria
Ehrharta villosa
Homalanthus populifolius
First Schedule of the National Pest Plant Accord cont.

Rhamnus, evergreen buckthorn.
Royal fern.
Rum cherry, wild black cherry, mountain black cherry, black cherry.
Salvinia, kariba weed.
Senegal tea, temple plant, costata.
Small balloon vine.
Smilax, bridal creeper.
Snow poppy, poppy of the dawn, Chinese bloodroot.
Sweet pea shrub, sweet pea bush, myrtle leaf milkwort.
Sweet pittosporum, Victorian box, Australian cheesewood, New Zealand daphne.
Tasmanian ngaio.
Tree of heaven.
Tree privet.
Tuber ladder fern.
Tutsan, sweet amber.
Wandering Jew.
Water hyacinth.
Water lettuce.
Water poppy.
White bryony.
Wild rhododendron, pontic rhododendron, pontian rhododendron.
Woolly nightshade, tobacco weed, wild tobacco tree, white-edged nightshade.
Yellow flag iris.
Yellow water lily, spatterdock, cow lily, brandy bottle.

Rhamnus alaternus
Osmania regalis
Prunus serotina (added in 2008)
Salvinia molesta
Gymnecorones spilanthoides
Cardiospermum
Asparagus asperagoides
Eomecon chionantha
Polygala myrtifolia (excluding Grandiflora cultivar)
Pittosporum undulatum
Myoporum insulare (and hybrids)
Alanthus altissima
Ligustrum lucidum
Nephrolepis cordifolia
Hypericum androsaemum
Tradescanteia fluminensis
Eichhornia crassipes
Pistia stratiotes
Hydrocleys nymphoides
Bryonia cretica
Rhododendron ponticum (added in 2008)
Solanum mauritianum, marginatum
Iris pseudacorus
Nuphar lutea
Appendix 3  Map 1: Nassella Tussock
Appendix 4 - Map 2: Bennett’s Wallaby Containment Area
Appendix 5   Lagarosiphon Schedule

The following schedule outlines the water bodies that will be protected from lagarosiphon infestation.
(a) Lake Ohau and the tributaries that flow into it.
(b) Lake Pukaki and the tributaries that flow into it.
(c) Lake Alexandrina and the tributaries that flow into it.
(d) Lake Tekapo and the tributaries that flow into it.
(e) Lake Heron and the tributaries that flow into it.
(f) Lake Coleridge and the lakes and tributaries that flow into it.
(g) Waimakariri River above the gorge at Woodstock, including the lakes and tributaries that flow into it above the gorge.
(h) Ashley River above the Ashley Gorge Road bridge, including the lakes and tributaries that flow into it above that point.
(i) Hurunui River above SH 7, including the lakes and tributaries that flow into it above that point.
(j) Waiau River above the Waiau/Hanmer confluence, including the lakes and tributaries that flow into it above that point.
(k) Clarence River above the Clarence/Acheron confluence, including the lakes and tributaries that flow into it above that point.

Appendix 6   Modified McLean and Guilford Scales

Modified McLean Rabbit Infestation Scale
This scale assesses rabbit population levels.
1. No sign found. No rabbits seen.
2. Very infrequent sign present. Unlikely to see rabbits.
3. Odd rabbits seen; sign and some buck heaps showing up. Pellet heaps spaced 10m or more apart on average.
4. Pockets of rabbits; sign and fresh burrows very noticeable. Pellet heaps spaced between 5m and 10m apart on average.
5. Infestation spreading out from heavy pockets. Pellet heaps spaced 5m or less apart on average.
6. Sign very frequent with pellet heaps often less than 5m apart over the whole area. Rabbits may be seen over the whole area.
7. Sign very frequent with 2-3 pellet heaps often less than 5m apart over the whole area. Rabbits may be seen in large numbers over the whole area.
8. Sign very frequent with 3 or more pellet heaps often less than 5m apart over the whole area. Rabbits likely to be seen in large numbers over the whole area.

Guilford Wallaby Infestation Scale
This scale assesses wallaby population levels.
1. No faecal or track sign seen but area known to be within feral range of wallabies.
2. Infrequent faecal sign seen. Track sign absent. One or two pellet groups seen when traversing 100m. Unlikely to see any wallabies.
3. Frequent faecal and track sign seen, but only in isolated pockets. Likely to see some wallabies.
4. Faecal and track sign very obvious and consistent. Tracks well used. High probability of seeing wallabies.
5. High densities of faecal and track sign distributed almost uniformly. Tracks well used. High probability of seeing wallabies.
Appendix 7  Pest Rating Districts

The following is a general description of the pest rating districts within the Canterbury region:

(i)  Plant and Animal Pest Rating Districts:

Kaikoura  land north of the Conway River.
Amuri  land between the Conway and Hurunui Rivers.
Waikari  land between the Hurunui and the Waipara River (South Branch).
Ashley  land between the Waipara (South Branch) and Waimakariri Rivers bounded to the west by the main ridge of the Puketaraki range.
Selwyn  land between the Waimakariri and Rakaia Rivers bounded by Banks Peninsula.
Banks Peninsula  land on Banks Peninsula within the Banks Peninsula District Council area with the exception of land lying to the north of a line running from Lyttelton Harbour along Gebbies Pass Road and the Christchurch Akaroa Road to its intersection with the Halswell River.
Ashburton  land between the Rakaia and the Rangitata Rivers.
South Canterbury  land between the Rangitata and Waitaki Rivers bounded to the west by a line running along the main ridges of the Hunter Hills and the Rollesby Range to Burkes Pass and thence along the main ridge of the Two Thumbs Range to the Main Divide.
Mackenzie  land south west of a line running south along the main ridge of the Two Thumbs Range to Firewood Stream and down Firewood Stream to the foot of Mt Dobson and then straight across to Albury Range, down Albury Range and then down the western side into Duck Creek, down Duck Creek to Tengawai confluence with Lockhart Creek, up Lockhart Creek to Lockhart Saddle to the Kirkleston Range and thence west to Lake Benmore, thence along the north shore of Lake Benmore to the Ohau River, and thence along the Ohau River to Lake Ohau and thence along the Hopkins River to the Main Divide.
Omarama  land south west of the Hopkins River and Lake Ohau, and south of the Ohau River, and west of Lake Benmore and the Otematata River.
Kurow  land within a line running from the Waitaki River mouth upstream to its confluence with the Awamokaho Stream and thence north from the Waitaki River along the Hunter Hills, thence west through the Hakatamea Pass and along the main ridge of the Kirkleston Mountains to Lake Benmore, thence along the eastern shore of Lake Benmore to the Waitaki River and thence south along the Otematata River.

(ii)  Hurunui Nassella Tussock Pest Rating District

Generally all land within the Hurunui District Council area but excluding that land within the Kaikoura Pest District.

(iii)  Service Delivery – Rabbits and Possums

Banks Peninsula - as described in (i).

Figure A4.1 indicates the boundaries for the Pest Rating Districts. Detailed Maps showing the location of pest districts are available from the Christchurch office of Environment Canterbury.
Figure A4.1
Pest Rating Districts

- Hurunui Nassella Tussock District
- Kaikoura
- Amuri
- Waihari
- Selwyn
- Ashley
- Banks Peninsula
- Omarama
- Kurow
- South Canterbury
- Mackenzie

Legend:
- Gray: Hurunui Nassella Tussock District
- White: Pest Rating Districts

Scale:
- 0 20 40 60 80 100 Kilometers
Appendix 8  Maps for Boneseed, Egeria, Wild Thyme and Chilean needle grass
Map 4: Egeria Containment Zone
Refer Objective 8.8.3

Digital Terrain Information obtained from
Land Information New Zealand (LINZ)
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Avonside
Wellington
Wainoni
New Brighton
Map 6: Chilean Needle Grass Containment Zone

- Eliminated infestations as at 1 May 2010

Management Areas within the Containment Zone

Area A: Total control, all plants eliminated using knockdown and residual herbicide. Fence isolated sites wherever possible.

Area B: Progressive control, spraying (knockdown herbicide) or mowing of all CNG to prevent panicle seed production. This will require ongoing work from October – May.

Area C: ‘No go’ areas. Restricted access containment zones. Spray (knockdown herbicide) peripheries periodically and remainder of area once annually. If possible fence and plant trees to eventually shade out CNG.