

A snapshot of council effort to address indigenous biodiversity on private land: a report back to councils

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Front cover photos (from top):
Unidentified landscape, Nature Heritage Fund
White-faced heron chick. Department of Conservation Te Papa Atawhai
Rimu fruit. Department of Conservation Te Papa Atawhai
Catlins River, Otago. Department of Conservation Te Papa Atawhai



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Executive Summary

Towards the end of 2003 the Minister for the Environment challenged local government to demonstrate how council activities and expenditure is addressing the loss of indigenous biodiversity. The Ministry for the Environment, Department of Conservation and Local Government New Zealand embarked on a joint project to collect information to respond to this and inform decisions on the National Policy Statement.

This project reports back on the key findings, which are summarised below.

Financial

- Regional councils surveyed in specific case studies are spending considerable amounts of money on biodiversity. This includes both direct and indirect spending. Much of this is not identified as 'biodiversity' but is spread across a number of functions of council work. We consider this result representative of regional councils in general.
- We have insufficient information to build a national picture of district and city council expenditure (both direct and indirect) on biodiversity in this report. However, contestable fund data indicates that many councils are spending significant amounts on work that directly benefits biodiversity.

Plans

- Some district plans have comprehensive and detailed provisions for the identification of significant sites and habitats. These provisions are backed up by a range of methods to protect the significant sites and habitats identified.
- Other district plans, however, have minimal (or no) identification of sites and lack adequate provisions to ensure protection.
- Most district plans fall into an intermediate level – neither particularly strong nor particularly lacking. A significant proportion of these contain general clearance rules but have no criteria for determining significance.

Capacity

- Many regional councils are working with landowners and communities to protect and restore biodiversity values. This is evidenced by:
 - the significant investment in contestable funds (\$4.26 million per annum) by regional councils alone
 - partnerships with the Queen Elizabeth II National Trust to increase the area under covenant.
- For many district and city councils, capacity remains a significant issue. By capacity we mean financial and human resources, which must be spread at times over considerable geographical areas and often a broad range of functions.

Policy tools

There is a wide range of policy tools available to councils. Most councils support on-the-ground activities (eg. covenants, landcare groups, education and advice to landowners) while also using regulations (eg. subdivision controls).

Biosecurity

Biosecurity programmes account for a large amount of council expenditure that impacts both directly and indirectly on biodiversity, including work funded through the Regional Pest Management Strategy and Animal Health Board.

Information/identification

An issue that has emerged is the lack of good-quality information on biodiversity across the country. Some areas are information rich, but many others lack adequate information on biodiversity in their areas.

Enforcement action

There is wide variance in the instruments being used to enforce rules relating to significant indigenous biodiversity. The results show that while some councils have taken a regulatory approach to biodiversity preservation, others still favour a voluntary approach and do not enforce regulation. The figures show that among those councils using regulation there is a wide range of both the frequency and type of enforcement action undertaken.

Legally protected areas for indigenous biodiversity

- Using Land Environments New Zealand Level II, we can see that 37 of 100 environments have less than 20% indigenous vegetation remaining. Of these 37 environments, 24 have less than 10% indigenous vegetation remaining.
- Only one of these 37 environments has more than 10% (11.8%) of its original extent under legal protection.
- The full range of New Zealand's remaining natural habitats and ecosystems is not fully represented on public conservation land.
- Queen Elizabeth II, Nga Whenua Rahui and Department of Conservation covenants on private land cover 0.6% of New Zealand's total area and often protect environments that are under-represented in public conservation land. For this reason they make an important contribution to New Zealand's effort to maintain and restore the full range of New Zealand's remaining natural habitats and ecosystems.

Introduction

Purpose

This report presents a snapshot of:

- the extent of council effort and expenditure on biodiversity
- the extent of biodiversity protection.

The report is not a policy document.

The information presented here is drawn from material collected to assist the Minister for the Environment to make decisions about a National Policy Statement on Indigenous Biodiversity.

This paper also constitutes a report back to councils and other agencies, including Queen Elizabeth II (QEII) National Trust and Nga Whenua Rahui, whose contribution informed the report.

Background

Most of New Zealand's remaining unmodified habitat is in remote mountainous areas, on offshore islands, in small lowland forest stands, or in other fragmented patches in lowland and coastal areas. Much of this habitat in mountainous areas and on islands is protected within extensive public conservation areas managed by the Department of Conservation (DoC). However, other scarce habitats (such as lowland and coastal forest remnants, lowland grasslands, wetlands and dunelands) are not in public conservation land. Conservation of these ecosystems and habitats relies on conservation by private landowners and the support and activities of councils. Private land often has a vital role in the protection of New Zealand's indigenous biodiversity.

At the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 an historic set of agreements was signed, including the Convention on Biodiversity, the first global agreement on the conservation and sustainable use of biological diversity. Under the convention governments are required to develop national biodiversity strategies and action plans and to integrate these into broader national plans for the environment and development. New Zealand ratified the convention in 1993 and produced the *New Zealand Biodiversity Strategy (2000)*¹ to reflect its commitment. The *New Zealand Biodiversity Strategy* sets out national goals for conserving and sustainably using New Zealand's biodiversity. At a general level, government agencies and organisations are guided by the principles of the strategy but it does not prescribe in detail how the specified actions are to be undertaken.

A key point highlighted in the *New Zealand Biodiversity Strategy* (p. 126) is that the conservation of all New Zealand's significant indigenous natural vegetation requires protection on both public and private land.

¹ MfE (2000) *The New Zealand Biodiversity Strategy*, Ministry for the Environment, Wellington.

New Zealand's public conservation land does not contain the full range of our ecosystems. How we manage the ecosystems and indigenous species outside of protected areas, on crown land not managed for conservation purposes, ie. private land and in freshwater environments is critical to halt the decline of New Zealand's biodiversity. Distinctive habitats and ecosystems in these areas continue to be at risk of declining condition and loss of their indigenous components.

To address the issue of the decline of indigenous biodiversity the Government has put together a broad package of initiatives, including:

- the biodiversity condition and advice funds
- increased government funding for national programmes to assist landowners and increase the extent of formally protected areas (Nature Heritage Fund, Nga Whenua Rahui, and the QEII National Trust covenanting programme)
- enhancing capacity in local government (Action Bio-Community, as part of this, aims to build local capacity in biodiversity management)²
- amendments to the Resource Management Act 1991 (RMA), which clarify the lead role of regional councils and the important role of territorial authorities in biodiversity conservation
- the preparation of a draft National Policy Statement on Biodiversity.

A national policy statement is a document prepared under the RMA. The Minister for the Environment can prepare a national policy statement to provide direction to local authorities on a matter of national importance.

This report will contribute to decisions on a National Policy Statement on Indigenous Biodiversity.

History of the joint project

This project is a response to the Minister for Environment's request that local government demonstrate how its activities and expenditures are addressing the loss of indigenous biodiversity.

The Ministry for the Environment, the Department of Conservation and Local Government New Zealand all have interests in the conservation of New Zealand's indigenous biodiversity. There has been much discussion around the issue and content of a National Policy Statement for Indigenous Biodiversity, but that discussion has been limited by the lack of good-quality information. This lack has prompted this information-collecting exercise, which aims to:

- collect and integrate currently fragmented information and data on local government biodiversity activities
- present a national picture of local government activities in relation to biodiversity conservation

² Action Bio-Community (ABC) is a project sponsored through Local Government New Zealand and the Ministry for the Environment's Sustainable Management Fund.

- report on the contribution of local government in managing biodiversity on private land
- help the Minister for the Environment make decisions about the National Policy Statement on Indigenous Biodiversity. This work may also act as a benchmark against which future progress can be monitored.

Representatives of Local Government New Zealand, DoC and the Ministry for the Environment agreed to co-operate in gathering information in four areas to complete this exercise:

- a Geographic Information Systems (GIS) analysis of the extent to which New Zealand's environments are represented in areas under legal protection
- a national local government biodiversity survey
- in-depth case-studies of three councils
- a review of biodiversity provisions in plans.

This would enable an assessment of the gap between what exists now in terms of biodiversity (and the activities in place to protect and manage it) and what might be needed in the future. The information may also give an indication on progress since the Ministerial Advisory Committee's final report in 2000.

Structure

The report is structured as follows.

The **Introduction** indicates what the report contains, including its purpose, history, background, scope, structure, audience, definitions of terms, and methodology.

The **first section** examines council efforts to address biodiversity issues by presenting the results of a national survey on local government activity that impacts both directly and indirectly on indigenous biodiversity. These findings are reinforced by more in-depth case studies.

The **second section** presents an estimation of the extent to which the full range of New Zealand's indigenous vegetation is represented in areas that are legally protected.

Finally, the **appendices** provide more detailed information (including maps) to supplement the discussion in the text.

Audience

This report is primarily written for the benefit of the contributing councils and survey participants, without whom the work could not have been attempted or completed.

Methodology

The project was overseen by a working group comprising members of each of the participating agencies in the partnership. Because of the different component parts of the project, a number of different methods were employed.

Local government biodiversity survey

The information for the assessment of local government activity in the area of biodiversity protection included consideration of actions, both direct and indirect, that impact on biodiversity outcomes. Much of the information for this assessment was obtained from a Local Government Biodiversity Survey which was distributed to all councils requesting quantitative information on key activities relating to biodiversity management.

Pest and weed control activities undertaken for biosecurity control also make a major contribution to biodiversity outcomes, so a separate survey covering biosecurity aspects of council activity was sent to all regional councils via the Regional Biosecurity Managers Group.

The survey produced high-level national information about council activity and effort. The survey was sent to all 86 regional district and city councils and responded to by 77 councils (ie. a 90% response rate).

Case studies

The national survey was necessarily broad in its approach. To provide more in-depth analysis three regional case studies were undertaken. The aim was to provide financial and attitudinal data with some analysis of the range of instruments being used by councils for biodiversity management. While we appreciate that this information comes from only a very small number of councils, these councils were chosen in an attempt to be as representative as possible. Within the time frame and resources available we sought to show a council with a low funding base managing a large amount of indigenous biodiversity, and one with a high funding base managing smaller amounts of biodiversity. Other criteria included ensuring one unitary authority in the study and councils from both the North and South Island. As a result, the regions selected for analysis were:

- Waikato
- Northland
- Marlborough (unitary authority).

Within these regions the primary focus was the regional council, with additional information gathered from districts within the region, where time permitted. The information for the three case studies was compiled from one-to-one interviews with key council staff on site and supplemented afterwards by phone and national survey information. These discussions examined the instruments, both direct and indirect, being used for biodiversity conservation and a financial analysis of the range of council activities that contribute to biodiversity outcomes. In addition to the discussions, the financial assessment used information obtained from the councils':

- 2003 annual reports
- 2003/2004 annual plan
- 2004/2005 draft Long Term Community Consultation Plan (LTCCP).

Review of biodiversity provisions in plans

This review gathered information from current regional policy statements and district plans, particularly information on the nature of existing rules dealing with indigenous biodiversity. This was a desktop exercise that involved analysing all policy statements and district plans. All 86 council plans were reviewed.

The following aspects of district plans were summarised:

- the type of approaches adopted, eg. voluntary measures, schedules of significant sites with rules, general vegetation clearance rules.
- the criteria being applied to define significant areas and habitats
- the extent to which plans differentiate and prioritise categories of significance
- the extent to which plans make provision for biodiversity that is not significant, eg. for amenity reasons.
- monitoring provisions for indigenous biodiversity.

Assessment of the extent to which New Zealand's environments are represented in areas under legal protection

The following data and classification systems were used in a Geographic Information System (GIS) to analyse the extent to which New Zealand's environments are represented in areas under legal protection:³

- mapped (digital) QEII National Trust,⁴ Nga Whenua Rahui and DoC data⁵ for covenants on private land and protected areas on public conservation land managed by DoC.
- Land Environments of New Zealand (LENZ) – a national classification of ecosystems mapped across New Zealand's landscape. For this analysis LENZ Level II which maps 100 different environments nationally was used.
- the Land Cover Database 1 (LCDB1) – a satellite image of New Zealand's land cover from 1996/97 - was used to classify and map 18 different land cover classes nationally, including the extent of indigenous vegetation remaining.

By overlaying mapped covenant areas and protected areas on public conservation land on the LENZ classification (also mapped) we are able to show the extent to which legally protected areas represent the full range of New Zealand's ecosystems. By overlaying this same information with the LCDB1 we can show the areas remaining in indigenous vegetation.

An explanation of LENZ, the LCDB1 and methods used in the GIS analysis are included in Appendix 1.

³ Due to time constraints or a lack of digital data, data about council covenants and reserves (eg. covenants via consent notices, water catchments with biodiversity values etc), Forest Accord covenants and areas being managed to protect biodiversity values outside legal protection schemes were not included in the analysis.

⁴ The QEII data excludes 505 covenants approved but awaiting registration, equalling 18,724 ha. Only registered and surveyed QEII covenants were included.

⁵ These datasets (DoC covenants and Nga Whenua Rahui covenants) are not complete nationally.

Terms used

Biodiversity – for the most part participants in the various surveys and interviews were invited to take a broader view of biodiversity to the one they might have been familiar with or indeed as defined in section 6c of the RMA. Councils in particular were asked to consider in the widest sense what they were doing to make a difference to sustaining New Zealand’s indigenous biodiversity (eg. any work undertaken in freshwater, wetland and riparian areas, pest and weed control, practical guidance and support to private landholders, etc). Participants were also encouraged to consider work that had both a direct and indirect impact on biodiversity outcomes.

Protection – while we have assumed that legal protection is an indication of conservation status, we also know that active management on private land contributes to biodiversity outcomes but might not necessarily be legally protected. At the national level we could not capture information about biodiversity conservation activity on unprotected land and as such we are under-reporting.

Activity – again participants were encouraged to take a broad view, and so ‘activity that impacts on indigenous biodiversity’ could include such things as identification of important areas for biodiversity, specific council programmes and initiatives, any support offered to private landholders in their management of biodiversity on private land, compliance, biosecurity provisions in plans and expenditure.

Private land – this is land in private ownership, ie. not public land managed by the Department of Conservation or any other public body.

Council Efforts to Address Biodiversity Issues

Capacity

There are 12 regional, four unitary and 70 district councils in New Zealand and they vary considerably in area and population. Of the district councils, 26 have populations less than 20,000, 24 (and the four unitary councils) have populations between 20,000 and 50,000 and 20 have populations greater than 50,000. In addition, council areas are not in proportion to the size of their populations. This variation affects the size of the task of biodiversity protection and the ability of councils to carry out their functions. Consequently there is wide variability in the capacity of local communities and their councils to address biodiversity issues.

The results of this project clearly reveal that regional councils are providing significant leadership for biodiversity in their regions. Many are working with landowners and communities to protect and restore biodiversity values.

When it comes to district and city councils the picture is not so clear. These councils are diverse and have adopted a wide range of approaches to biodiversity management, from active to limited involvement. This is reflected in the efforts and types of activities undertaken, but also in the quality and effectiveness of district plan provisions. Some councils are actively targeting specific sites or focus areas for the protection of natural values, and this is providing the impetus for more covenants.

While many district councils have the capacity to engage in proactive biodiversity work on their own, a significant number have relatively low population bases and large geographical areas with significant competition for limited resources. Ecologists within councils provide technical advice and expertise, both internally and to external stakeholders.

When asked who provides the majority of ecological advice within the council, of those who responded to the national survey:

- 21% indicated that council staff provide this
- 35% stated that external consultants provide most of it
- 31% use a combination of in-house expertise and external consultants
- 13% indicated 'Other', which includes advice gained from DoC, QEII and other councils.

Local authorities use a wide range of measures to fulfil their legislative obligations and maintain the mandate given to them by their constituents, including:

- the development and implementation of strategies and plans
- collecting information, including the identification of areas of importance for biodiversity
- provision of financial assistance, including contestable funding for landowners
- biosecurity activity
- enforcement action.

Strategies and plans

Many councils have established goals for biodiversity, which can be formal or informal. In the national survey 71% of respondents reported they have a strategy for biodiversity. Of these:

- 60% have a formal document
- 10% describe their strategy as informal
- 29% responded not applicable and 1% gave no answer.

The Local Government Act 2002 provides a broad mandate for local authorities to involve themselves in economic, social, environmental and cultural issues. The Act is outcomes-focused, meaning it requires local authorities to plan for and report on specific and measurable results in communities and their environments.

The main instrument the Local Government Act 2002 uses to promote sustainable development outcomes is the **Long Term Council Community Plan (LTCCP)**. LTCCPs are important documents because they provide a framework for the direction and priorities for each local authority. The advent of the new Local Government Act 2002 and its emphasis on sustainable development has sharpened the focus on maintaining biodiversity as a highly relevant – even critical – outcome for local authorities.

In the national survey, of those councils responding:

- 45% have a biodiversity outcome as part of their draft 2004 LTCCP
- 54% do not have biodiversity outcomes as part of their 2004 LTCCP
- 1% were undecided.

Note that some council LTCCPs had outcomes that were not biodiversity-specific but focused on the balance between the built and natural environments or had outcomes for the physical environment.

Part of the joint project involved in-depth desktop analysis of all regional policy statements and district plans prepared under the RMA. Information was summarised about the following aspects of **regional policy statements** and **district plans**:

- the types of approaches adopted (eg. voluntary measures, schedules of significant sites with rules, general vegetation clearance rules and the percentage of plans adopting these approaches)
- the criteria being applied to define significant areas and habitats
- the extent to which plans differentiate between categories of significance
- the extent to which plans make provision for biodiversity that is not significant (eg. for amenity reasons).

Regional policy statements use a variety of techniques to identify significant areas and habitats. The most common technique – employed by six of the 16 councils – is to use criteria that are the same as, or very similar to, criteria used under DoC's Protected Natural Areas programme.

Specific examples of regional council approaches

Taranaki's regional policy statement uses some of the Protected Natural Areas programme criteria but omits others, including naturalness, buffering and surrounding landscape. The Otago regional policy statement applies very limited criteria – rarity (of species and associations), coverage under statute or covenant, and importance for soil or water values.

Five of the regional policy statements have approaches that are not replicated in other regional policy statements. Hawke's Bay's, for example, applies standards (in part at least). Areas of indigenous vegetation over 40 hectares are considered to be significant, as are Forest Accord criteria. Areas under covenant or set aside by legislation, as well as areas recommended for protection under the Protected Natural Areas programme, are also included.

Wellington does not refer to significance. Instead it spells out ecosystems with the highest priority for protection based on the level of threat, the degree of representativeness and the degree of rarity.

Canterbury's regional policy statement focuses on regional significance. Its approach is not based on section 6(c) of the RMA. Instead it includes criteria to help decide whether an area or site falls within the regional council's purview. These criteria are based on endemism, uniqueness to Canterbury, its rarity in the region and its connectivity to other parts of the landscape.

Approximately 55% of the district plans examined (42 of 77⁶) included criteria for defining areas of significant vegetation and significant habitats. Most of these used general criteria, although 12 district plans were more specific about how at least some of the criteria were to be applied. Often this included details about the habitats of specific species that are to be protected.

Approximately 45% of the district plans (35) do not include any criteria for identifying significant areas or significant habitats. Most of these, however, have identified significant areas and habitats within the district plan. Three district plans have neither criteria nor identified areas, while some district plans have extensive criteria and have identified specific areas.

Sixteen of the 77 district plans specifically refer to Maori values (eg. habitats for taonga species) as a criterion for defining significance. It should be noted, however, that areas of significance to Maori are often dealt with more broadly within tangata whenua sections.

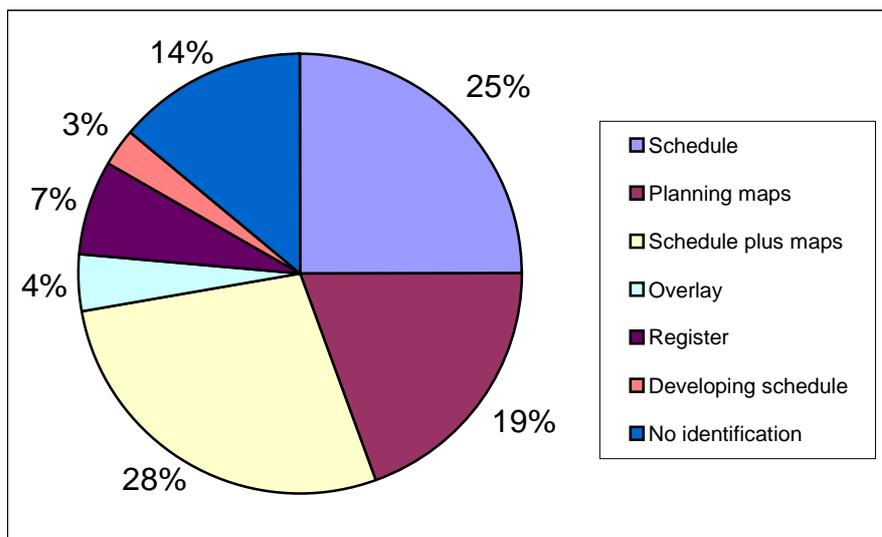
Seventeen district plans (approximately 23%) differentiate between categories of significance. Generally this classification separates the areas into those with outstanding, high, high-to-moderate, moderate and potential significance. This differentiation did not generally translate into different rules.

⁶ Note –

Auckland City Council has 3 sections to its plan

Marlborough District Council has 2 sections to its plan

Figure 1: Mechanisms used to identify sites with significance to biodiversity



Fifty-five district plans use some mechanism to identify sites within the plan. Mechanisms used include (Figure 1):

- a schedule – 18 district plans
- planning maps – 14 district plans
- schedule plus maps – 21 district plans
- overlay⁷ – three district plans.

In addition, four district plans referred to a register that would not form part of the district plan.

Councils also protect indigenous vegetation and habitats through the provision of **protection mechanisms**. These include general clearance rules, rules applying to scheduled areas, zoning, voluntary methods and financial incentives. Several councils adopt more than one approach.

- A large majority of district plans (72 out of 77) have rules covering the clearance and disturbance of areas of significant vegetation and significant habitats. Four district plans contain no rules for the protection of significant indigenous vegetation.
- Forty-five district plans have general clearance rules to cover areas and habitats not specifically identified as significant within the district plan. Thirty have no general clearance rules.
- A total of 12 councils adopt a zoning approach. For example, Hauraki District Council is working towards developing conservation zones. These zones will also have specific rules that relate only to the designated zone.
- Twenty-three councils stressed the importance of encouraging voluntary methods for protecting indigenous vegetation and habitats. This approach was coupled with an extensive awareness raising and education programme mentioned by 16 councils.
- Twenty-three councils outlined provisions to deal with the existence of biodiversity on private land. Councils adopt a number of approaches here, including financial incentives, rates relief and promoting the use of covenants.

⁷ 'Overlay' refers to where a base map was used with an overlay of sites.

Identification of areas of importance

A key issue emerging from the project is the value of good information and good information exchange. Councils that have access to good and useful information do so because they have conducted investigations, enabling them to identify significant natural areas.

In the national survey, councils were asked about their ability to identify where indigenous vegetation was located in their area. Of those who responded:

- 77% could identify areas of indigenous vegetation in their area
- 18% could not identify the location of indigenous vegetation in their area
- 5% could only partially identify the location of indigenous vegetation.

Councils maintain landowner contact lists for various reasons. Some use them to liaise with landowners who have significant areas of indigenous vegetation on their land. Some councils have databases to facilitate consultation and get landowner approval for entering land, etc. Landowner contact details are also kept for significant natural areas (SNAs) on private land. Other councils have lists, but they are not comprehensive. When surveyed about keeping contact lists of owners of land which has been identified as important for biodiversity outcomes in their areas:

- 36% of respondents maintain contact lists for owners of such land
- 61% did not maintain such a register
- 3% had registers for some of the areas identified but felt the scope of these was limited.

Money spent on biodiversity

The total amount invested by councils on biodiversity is difficult to quantify. It is often a combination of money spent on activities specifically identified as contributing to biodiversity and on activities not specifically targeted at biodiversity protection or enhancement but contributing nonetheless to the achievement of some biodiversity gain.

Expenditure on biodiversity – case studies

Funds can be spent on activities that impact directly or indirectly on indigenous biodiversity. The results of a financial review that estimated the level of spending that impacted on indigenous biodiversity are summarised in Table 1 below. This table indicates the level of resource spent on biodiversity for the 2003/04 year for the three case study councils, based on financial information provided by these councils. The councils were then asked to estimate what percentage of this amount benefits biodiversity.

Table 1: Estimated level of 2003/04 funding by case study councils that impacts on biodiversity

Area of funding	Marlborough District Council (\$000)	Northland Regional Council (\$000)	Environment Waikato (\$000)
Animal pests	83	812	860
Plant pests	476	185	793
Protection of habitats (significant areas, ecological sites, landcare groups)	140	114	1314
Riparian margin management (soil conservation, reserves, landscaping, water quality)	110	27	696
Other services (forums, policy, general initiatives)	100	5	48
Total	909	1081	3711

From Table 1 we can see that money spent on pest control, both animal and plant (ie. rows one and two), accounts for the majority of money spent that directly benefits indigenous biodiversity. For the 2003/04 financial year:

- Marlborough District Council estimated that \$0.56 million directly benefited indigenous biodiversity
- Northland Regional Council estimated that \$1.00 million directly benefited indigenous biodiversity
- Environment Waikato estimated that \$1.65 million directly benefited indigenous biodiversity.

Pest control expenditure

Plant and animal pest control plays an important part in maintaining New Zealand's indigenous biodiversity. Although landholders have primary responsibility for pest and weed control on their land, all regional councils control animals and weeds that have been identified as pests in their regions. The majority of animal pest control work is done for the control of bovine TB. Much pest control work undertaken for agricultural advantage has indirect benefits for biodiversity.

The National Biodiversity Survey asked biosecurity pest managers in the 12 regional councils and three unitary authorities (Tasman covers biosecurity for Nelson City Council) specific questions about pests and weeds. Fourteen councils responded. These questions were designed to highlight the link between biosecurity management and biodiversity conservation.

When asked how many plant pest and animal pest species each council actively controls through poisoning, trapping, regulation etc, the respondent councils indicated that the plant pests they actively controlled varied from 15 to 178, while animal pests controlled numbered between four and 25.

The council budget range for pest control is presented below in Table 2.

Table 2: Council budget range for pest control for the 2003/04 financial year

	Council budget – range	
	Plant pests	Animal pests
Labour	\$70,000–\$1,179,150	\$16,000–\$698,144
Goods, services and plant	\$4,500–\$1,342,000	\$500–\$4,250,000
Total	\$70,000–\$1,694,000	\$16,500–\$2,033,729

The range of council expenditure on pest control for both plant and animal pests is considerable (see Appendix 2, Table iv for more detail).

When asked whether pest and weed control funding specifically targeted pest and weed threats to biodiversity, 86% of respondents indicated that their funding was so targeted. This expenditure ranged between \$23,500 and \$3,378,000 for the 2003/04 financial year, with the average being \$1.06 million. This expenditure targeted between 100 and 16,000,000 ha (approximately), which gives an indication of how much is being spent on pest control that directly benefits biodiversity.

In considering how programmes for pest control are being integrated with other pest control agencies:

- 86% of respondents' programmes were aligned with DoC and other agencies, and community group programmes such as QEII
- 7% were partially aligned
- 7% were not aligned.

Bovine TB possum control is a council pest management activity that impacts on biodiversity outcomes, and of the councils that responded:

- 86% are involved in the National Pest Management Strategy for bovine TB
- 14% were not involved in the strategy because they did not have TB control issues in their area.

Of those councils indicating involvement in the National Pest Management Strategy, the anticipated regional expenditure for bovine TB possum control for the 2003/04 financial year averaged \$4.1 million and ranged between \$300,210 and \$7,823,000 for the Animal Health Board share, and averaged \$0.44 million and ranged between \$5,000 and 910,000 for the regional council share (see Appendix 2, Table v for more information).

Of the money spent on bovine TB possum control, councils estimated that between 35% and 100% contributed to biodiversity outcomes.

Contestable funds

Most regional councils are successfully working with landowners and communities to protect and restore biodiversity values. Twelve out of 16 regional councils and unitary authorities have contestable funds available for landowners, amounting to an investment of \$4.26 million per annum. This is comparable to the Government's contestable funding for both the biodiversity condition fund and the biodiversity advice fund. Regional councils are also involved in other activities including forums and general initiatives (up to \$50,000 per council per annum).

When it comes to district and city councils there is not the same level of information available. Of the 64 councils that responded to our national survey, 20 have contestable funds (31% of respondents) totalling \$447,000 in 2002/03.

Private landowners also make a large contribution to biodiversity conservation. Taranaki Regional Council, for example, estimates that for every \$1 the council spends, the landholder spends \$10. Initiatives by private landowners make a significant contribution to New Zealand's overall biodiversity, but there is little accurate information on how much money landowners are spending on biodiversity.

Other policy tools

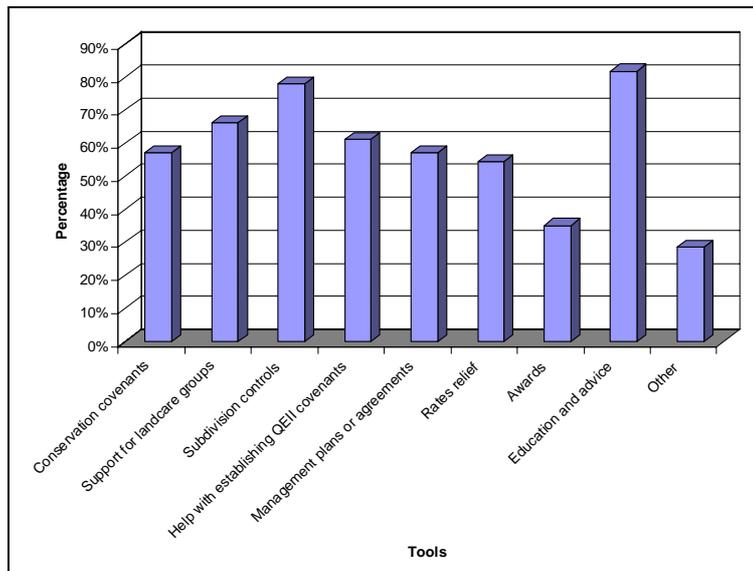
There is a wide range of policy tools available to councils. Of the councils responding to the survey:

- 57% use conservation covenants
- 66% support landcare groups
- 78% use subdivision controls
- 61% help with establishing QEII covenants
- 57% include biodiversity protection in management plans and agreements
- 55% offer rates relief
- 35% have awards
- 82% provide education and advice for landowners
- 29% use other tools, which might include support for volunteer community groups, conservation trusts, waiving of consent fees, etc.

These results are summarised in Figure 2 below.

The results show that councils use a combination of policy tools and mechanisms to support biodiversity. A majority of councils use regulation through subdivision controls and support for on-the-ground activities (covenants, landcare groups, education and landowner advice).

Figure 2: Policy tools used by councils



Enforcement action

Regulation is one policy tool used by councils to protect indigenous biodiversity. Some councils are working to raise the profile of biodiversity by taking action against those who destroy significant native vegetation. Other councils take enforcement action for illegal discharges, unauthorised drainage, etc that affect indigenous biodiversity.

The national survey asked councils if they had rules relating to biodiversity in their plans and whether they take enforcement action for non-compliance. The results indicate a mix of enforcement relating specifically to biodiversity provisions and other provisions where biodiversity gains benefit. Of the councils responding:

- 84% have rules in their plans relating to biodiversity
- 16% do not have such rules in their plans
- 31% have undertaken enforcement action regarding unauthorised destruction of land identified as important for biodiversity
- 69% have not undertaken any enforcement action regarding unauthorised destruction of land identified as important for biodiversity.

Of the 31% of respondents who undertake enforcement action, that action can be broken down into:

- 7% prosecution
- 37% abatement notices
- 44% enforcement fines
- 12% other regulatory mechanisms such as Environment Court cases, restoration at owner's expense, etc.

Enforcement frequencies of the 24 councils that have taken enforcement action in the last five years are given below.

Table 3: Enforcement action undertaken by councils

Enforcement type	Undertaken once	Undertaken twice	Undertaken more than three times
Prosecution	7 councils	3 councils	2 councils (range 3–20)
Abatement notices	3 councils	3 councils	9 councils (range 3–69)
Enforcement/infringement fines	4 councils	1 councils	7 councils (range 3–150)
Other	2 councils	0 councils	3 councils (range 3–40)

Legally Protected Areas for Indigenous Biodiversity

Of New Zealand's total area of 26,209,053 hectares, 8,210,570 hectares (31.3% of the total) are formally protected. This can be broken down into:

- 8,064,290 ha in public conservation land managed by the Department of Conservation (DoC) (30.7% of New Zealand's total area)
- 146,280 ha in QEII, Nga Whenua Rahui and DoC covenants on private land (0.6% of New Zealand's total area). (Note this does not include the 18,724 ha approved but waiting to be covenanted by Queen Elizabeth II Trust.)

We have tried to assess the extent to which the full range of ecosystems are legally protected. We know that active management contributes to biodiversity outcomes even if the land is not legally protected. However at the national level we do not have information about biodiversity conservation activities on unprotected land so we were unable to capture this in our assessment.

Two tools were used to make this assessment. Land Environments of New Zealand (LENZ) and the Land Cover Database (see Appendix 1 for details). LENZ classifies and maps areas (called environments) that have similar environmental or ecosystem character using information likely to influence the distribution of species groups (including climate, landform and soils). The Land Cover Database is a satellite image that has been used to classify and map New Zealand's land cover (eg. urban, mines, wetlands, indigenous forest).

Extent of indigenous vegetation remaining

We used the Land Cover Database to identify areas of indigenous vegetation and assess the extent of indigenous vegetation remaining in each of the LENZ environments. We found that of 100 different land environments across New Zealand, 37 have less than 20% of their total area remaining in indigenous vegetation (see Appendix 1, Table iii for details). Of these 37 environments, 24 have less than 10% of their total area remaining in indigenous vegetation.

We can use LENZ to identify the indigenous vegetation that could occur in an environment. The Land Cover Database does not allow us to do this because the current vegetation may not be the same as what occurred prior to human settlement. Tables ii, Appendix 1, provides a description of the ecosystem character (potential indigenous vegetation) for the 37 environments and where they are found, eg. lowlands, coastal plains and river valleys with some in low to moderate elevation hill country.

Extent of legal protection

By overlaying legally protected areas onto the information from LENZ and the Land Cover Database we examined how much remaining indigenous vegetation is protected. Table iii in Appendix 1 gives these details for each of the 100 LENZ environments. Figure 3 shows this for the 37 environments with less than 10% and less than 20% of indigenous vegetation remaining. Only one of these environments has more than 10% (11.8%) of its original extent under legal protection.

Figure 3: Extent of legal protection for the 37 LENZ Level II environments with up to 10% and from 10 to 20% indigenous vegetation remaining

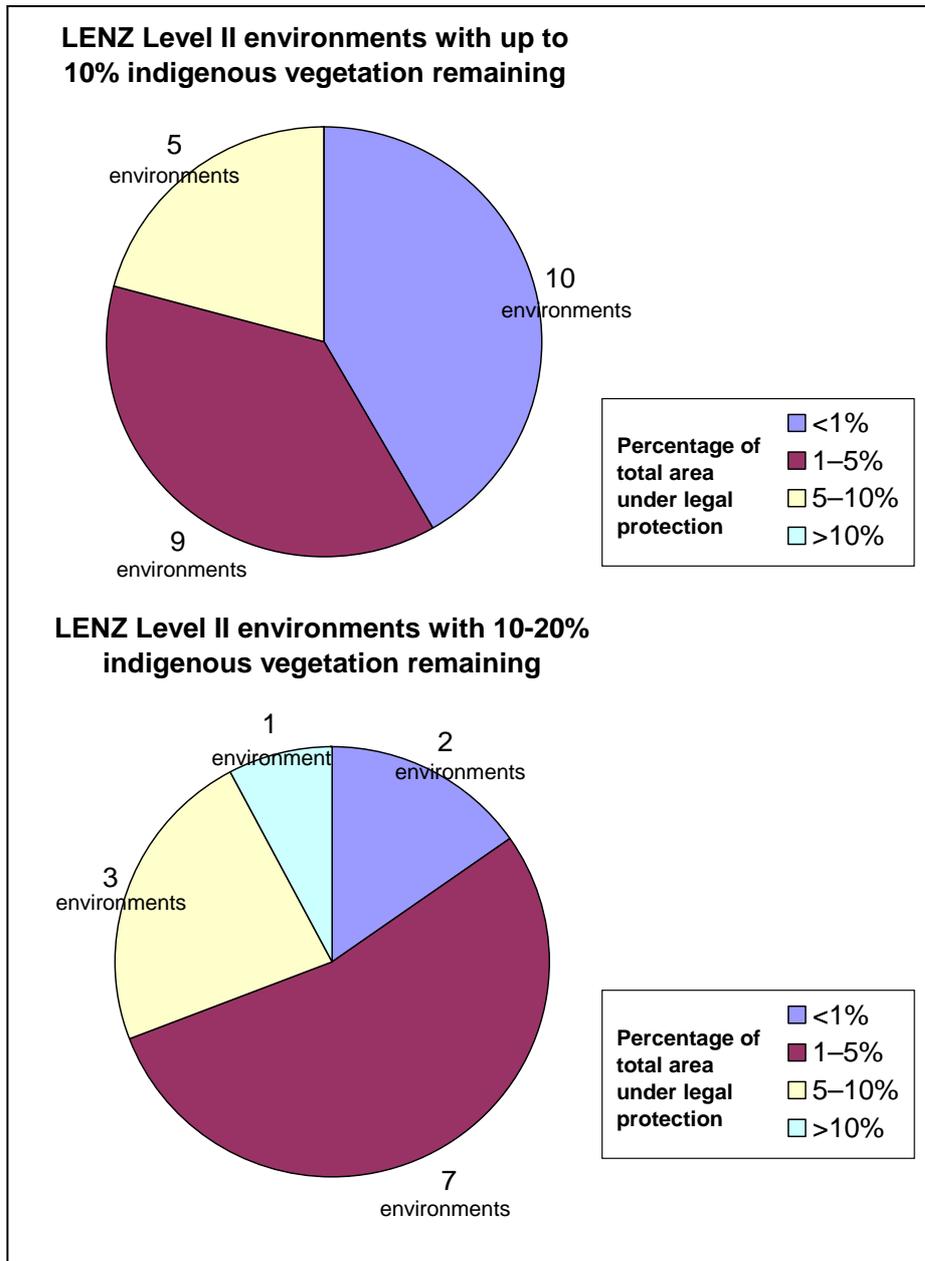
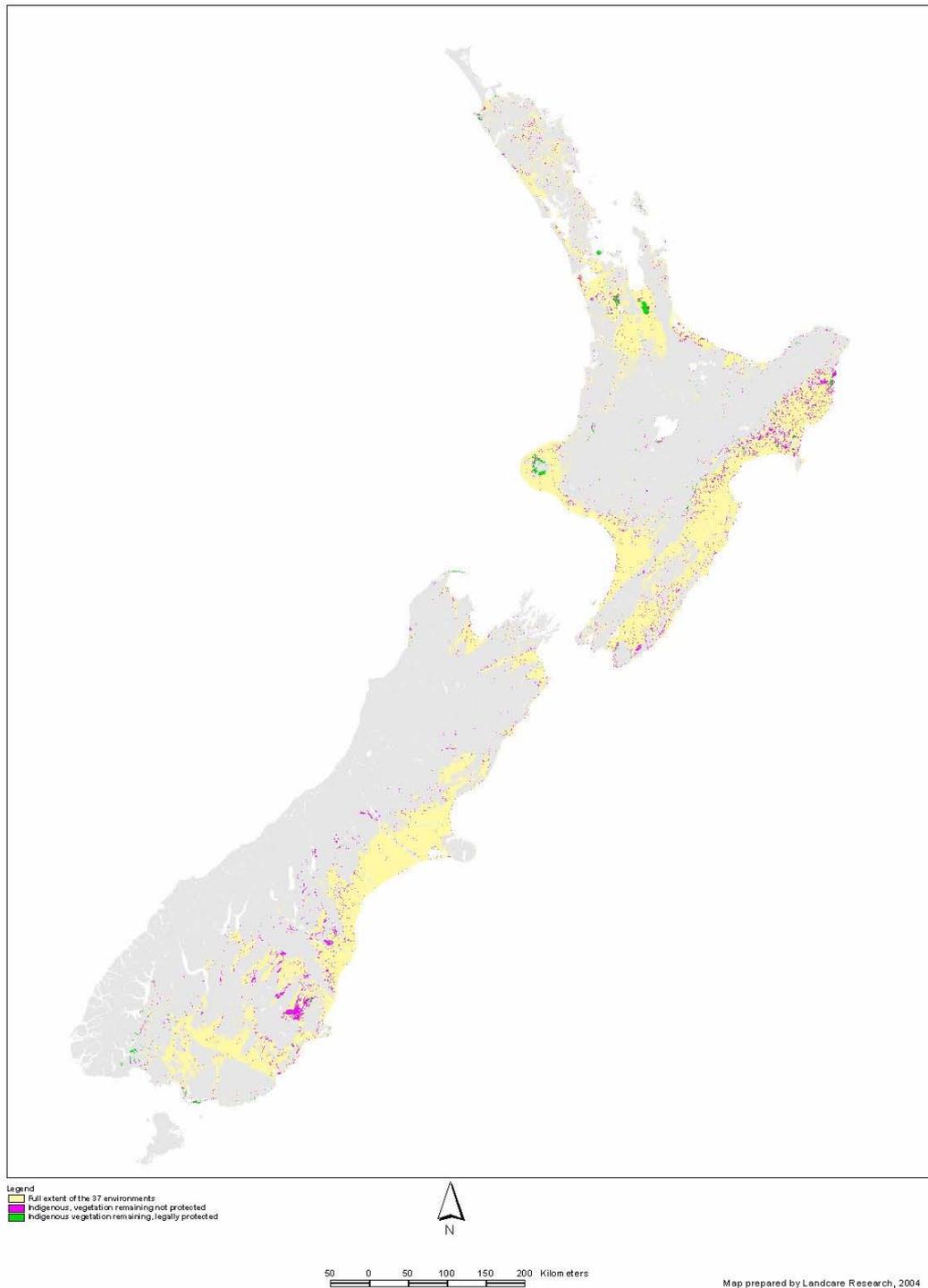


Figure 4 below shows the location and full extent of the 37 environment with less than 20% of their total area remaining in indigenous vegetation. It also shows areas of indigenous vegetation remaining and those which are legally protected. Table i in Appendix 1 shows the regions where each of the 37 environments is found. Every region has some proportion of the 37 LENZ environments.

Figure 4: Location of the 37 LENZ Level II environments with less that 20% indigenous vegetation remaining, showing areas of legal protection



Contribution of covenants on private land

By overlaying the legally protected areas data onto the LENZ classification we can show that New Zealand's environments are not fully represented on public conservation land. Almost half of the public conservation land managed by DoC occurs in two mountainous environments P and R (refer to Map 1, Appendix 1) that together comprise slightly less than 20% of New Zealand's total area. By contrast coastal plains, and lowland and hill country environments are poorly represented in public conservation land. QEII, Nga Whenua Rahui and DoC covenants on private land cover 0.6% of New Zealand's total area and often protect the environments that are under-represented in public conservation lands. For this reason they make an important contribution to New Zealand's effort to maintain and restore a full range of remaining natural habitats and ecosystems, for example, 50% of the current protection for three land environments (B1, B5 (dry hill country in central New Zealand), G6 (lowlands of the northern two-thirds of the North Island) is on private land (see Table iii Appendix 1 for details).

Overall, this assessment of legally protected areas for indigenous biodiversity show that there are a number of environments where further conservation effort is needed if we are to achieve the New Zealand Biodiversity Strategy goal to maintain and restore the full range of remaining natural habitats and ecosystems.

Appendix 1: Tools – Descriptions and Maps

What is the Land Environments of New Zealand (LENZ) classification?

LENZ is a national environment-based classification of ecosystems mapped across New Zealand's landscape. LENZ uses 15 climate, landform and soil variables likely to influence the distribution of species to classify and map areas that have similar environmental or ecosystem character. The classification is used to identify areas that are similar regardless of where they occur – sites not necessarily the same in all respects but likely to have similar groups of species and similar biological interactions and processes (ie. similar ecosystems). For example, swampy areas on poorly drained recent soils on coastal plains and in river valleys in eastern New Zealand occur from Gisborne to mid Canterbury. Although geographically separated from each other these areas are environmentally similar and form one type of LENZ environment (Environment I: Central Poorly Drained Recent Soils).

LENZ can be used at four levels of detail containing 20, 100, 200 or 500 environments respectively. Map 1 shows the LENZ Level 1 classification of 20 environments for New Zealand. Note the location of P and R, which together comprise 20% of New Zealand's total area. P and R also comprise 50% of the environments protected on public land. The different levels of LENZ simply reflect greater detail and hence an increase in the number of environments. Different levels are more or less appropriate for use depending on the level of detail needed to address a particular question. For our analysis of legally protected areas for indigenous biodiversity we used LENZ level II which maps 100 different environments nationally. Level II is considered appropriate for national to regional scale assessments. LENZ Levels III and IV would be appropriate for local scale assessments.

To identify each different land environment a letter and numbering system is used, ie. A to T for each of the environments at Level I or 20 environments nationally. As levels of detail increase (ie. 100, 200 and 500 environments) numbers and additional letters are added to the A to T system to identify the further division of ecosystem boundaries within the Level I environment, eg. A1 for LENZ Level II or 100 environments, A1.1 for LENZ Level III or 200 environments and A1.1a for LENZ Level IV or 500 environments. Map 1 shows the LENZ Level I classification or 20 environments for New Zealand.

What is the Land Cover Database?

The Land Cover Database 1 (LCDB1) is a digital theme-based map of land cover for mainland New Zealand. It was completed in June 2000 but based on satellite images from the Spot II satellite taken over the summer of 1996/97. Sixteen land cover classes were used for most regions with a 17th class (riparian willows) added in some regions. The cover classes address cultural (modified by people) and natural landscapes, eg. Urban Area, Mines and Dumps, Primarily Pastoral, Indigenous Forest, etc. The 17 classes were classified manually with boundaries superimposed on satellite images that were field checked. These satellite images have a 20 m spatial resolution. The overall classification accuracy was independently assessed at 93% at ± 25 m. The minimum mapping unit used was one hectare and the data is suitable for application at the 1:50,000 mapping scale or coarser.

To identify areas of indigenous vegetation we combined eight land cover classes from the Land Cover Database (indigenous forest, inland water, coastal wetlands, inland wetlands, coastal sands, scrub, tussock and bare ground) into one indigenous vegetation class. By overlaying information from the Land Cover Database with areas of public conservation land and private land we know there are about 14,033,769 hectares of indigenous vegetation remaining in New Zealand and about 8,210,570 hectares is legally protected. This leaves about 5,823,199 hectares of indigenous vegetation scattered across New Zealand. Some of this will be protected by council covenant schemes on private land or in council reserves. Some remnants in plantation forests will be protected under the Forest Accord, a scheme run with the Forest Stewardship Council (the Ministry of Agriculture and Forestry estimate there is about 1,000,000 hectares of indigenous vegetation scattered through production forests). Some areas will be managed outside legal protection schemes for conservation and although not legally protected will still contribute to biodiversity outcomes, eg. community or non-government organisation (NGO) pest and weed control activities and restoration programmes.

Map 1: Land Environments of New Zealand: geographic distribution of the 20 Level I environments

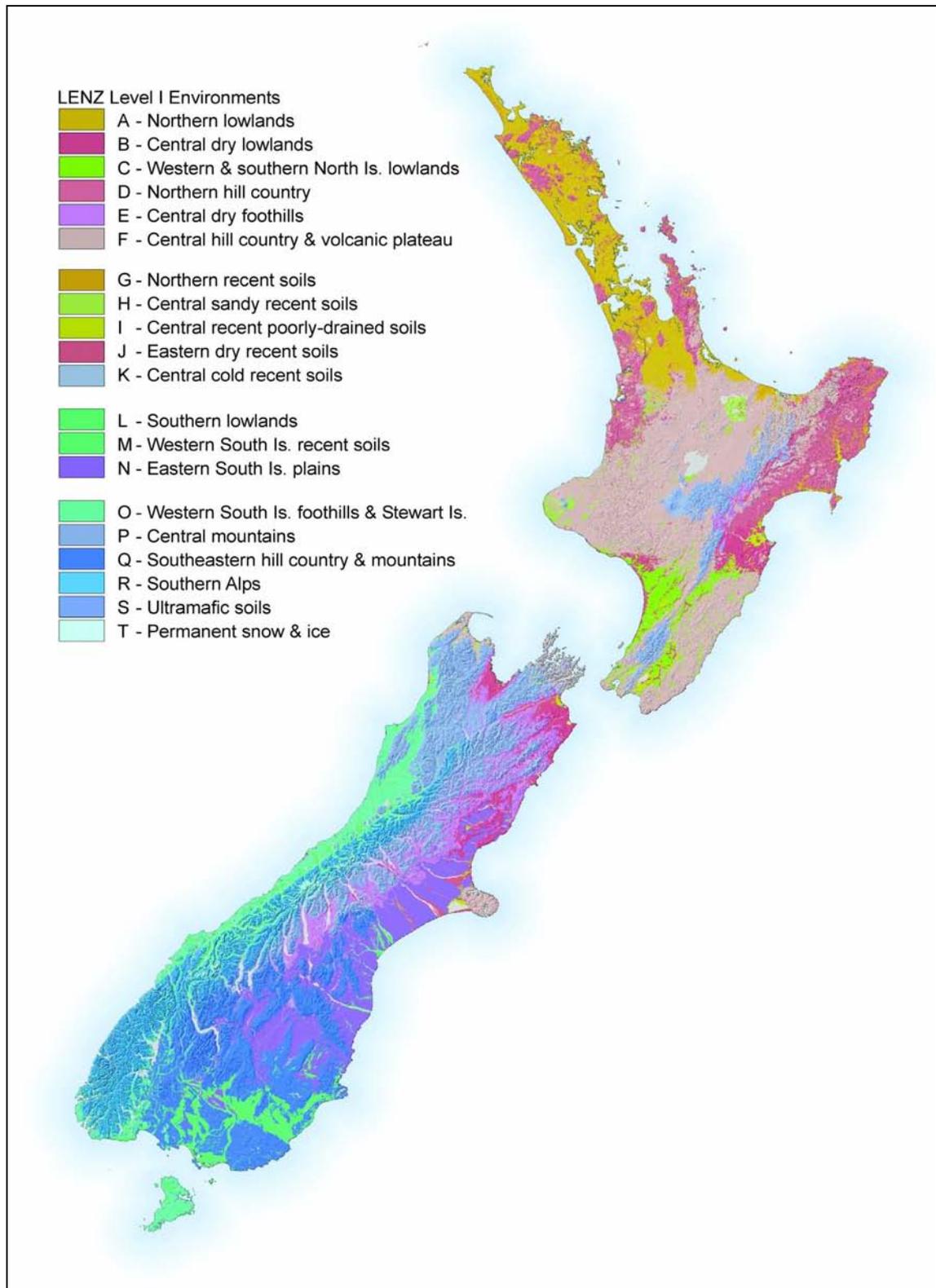


Table i: Regional distribution of 37 of the 100 LENZ Level II environments with less than 20% indigenous vegetation remaining nationally

Environments blocked in yellow are those with up to 10% indigenous vegetation remaining nationally (ticks denote regions where the 37 environments are located)																	
LENZ Level II Environment	Auckland	Bay of Plenty	Canterbury	Gisborne	Hawke's Bay	Manawatu–Wanganui	Marlborough	Nelson City	Northland	Otago	Southland	Taranaki	Tasman	Waikato	Wellington	West Coast	Total
A5	✓	✓		✓	✓				✓			✓		✓			7
A7	✓	✓		✓	✓				✓			✓		✓			7
B1					✓	✓	✓	✓				✓	✓	✓	✓		8
B2				✓	✓	✓								✓			4
B4							✓	✓					✓				3
B5				✓	✓	✓											3
B6			✓				✓										2
B7			✓	✓	✓	✓	✓										5
B9			✓				✓										2
C1	✓	✓		✓	✓	✓			✓			✓	✓	✓	✓	✓	11
C2					✓	✓						✓		✓	✓		5
C3					✓	✓						✓			✓		4
D3	✓	✓		✓	✓	✓								✓			6
F4						✓	✓	✓				✓	✓	✓	✓	✓	8
F5						✓	✓	✓				✓	✓	✓	✓	✓	8
G3	✓	✓		✓	✓				✓			✓		✓			7
G4	✓	✓		✓										✓			4
G6	✓	✓		✓	✓									✓			5
H3					✓	✓	✓	✓				✓	✓			✓	7
I2					✓	✓									✓		3
I3			✓				✓										2
I4			✓				✓										2
I5				✓	✓												2
I6				✓	✓												2
J1			✓				✓	✓					✓				4
J2			✓				✓										2
J3			✓				✓										2
J4					✓	✓						✓		✓	✓		5
L1			✓							✓	✓						3
L2			✓							✓							2
L4			✓							✓	✓						3
L5										✓	✓						2
N1			✓				✓			✓	✓						4
N2			✓				✓			✓	✓		✓				5
N3			✓							✓	✓						3
N5			✓							✓	✓						3
N8			✓							✓							2
Total	7	7	16	12	18	13	14	5	4	9	7	11	7	12	8	3	

Table ii: Ecosystem character (potential vegetation) of 37 of the 100 LENZ Level II environments with less than 20% indigenous vegetation remaining

Environment A: Northern Lowlands (extensive lowlands of the northern North Island)	
A5	Once supported extensive kahikatea forests. On wet ground pukatea was also common, swamp maire was a characteristic smaller tree and kie kie, supplejack and <i>Gahnia xanthocarpa</i> formed impenetrable understoreys. On drier ground matai was co-dominant, and small-leaved trees such as milk tree, rohutu and, near Kaitaia, the rare <i>Pittosporum obcordatum</i> were in lower storeys. The Waikato basin and Haukraki Plains also had extensive peatlands, including raised peat domes supporting bogs dominated by <i>Empodisma minus</i> and <i>Sporadanthus ferrugineus</i> , the latter being endemic to this community. Except for reserved portions of these domes, the swamps have been drained and converted to pasture. Groves and scattered trees of kahikatea are all that remain of these kahikatea forests.
A7	Undulating dunes with pingao and spinifex to low hills colonised by pohutakawa, eventually joined by mangleo, mahoe, puriri and titoki. On mature soils, forests graded from totara and matai to kahikatea.
Environment B: Central Dry Lowlands (dry hill country in Central New Zealand, mostly at low elevations)	
B1 B2	Rimu, matai, totara forests with a broadleaved component of tawa (Wanganui), titoki (Hawke's Bay), nikau, kawakawa, supplejack and, towards the coast, ngaio. Black beech was sporadic on ridges along streams in the North Island, whereas in Nelson, forest on hills consisted mainly of black beech, and silver beech occurred in narrow valleys. Kahikatea occupied damp ground.
B4	Carex swamp and kahikatea forest, with silver and black beech present in inland areas.
B5 B6 B7 B9	Gentle lower slopes and terraces, to high, steep, dissected hills with a pre-human vegetation of podocarp broadleaved forest dominated by matai and totara, although dry upper slopes and crests may have been treeless. The prevailing vegetation on hills after European settlement was bracken, tutu and cabbage trees. Short tussock grassland on the South Island's higher slopes, grasslands on the Hawke's Bay lowlands. Shrublands increased after grazing began, with manuka, kanuka, tauhinu (near the coast), matagouri (South Island) and small-leaved Caprosmas on moister sites. Forests on steep cliffs near the sea with mahoe, titoki, ngaio and flax. Endemic shrubs differ around the country.
Environment C: Western and Southern North Island Lowlands (low-lying areas occurring almost entirely in the lower half of the North Island)	
C1	Harakeke (flax), <i>Carex</i> and (at Lake Taupo) <i>Apodamia</i> , with raupo extending into deeper water. Drier swamps were colonised by cabbage trees, shrubs such as manuka and small-leaved Caprosmas, and kiokio fern, forming gradations to swamp forest with kahikatea, pukatea, swamp maire (in the North Island), and dense understoreys of kiekie, supplejack and <i>Gahnia xanthocarpa</i> .
C2	Kahikatea forest accompanied by matai, joined by rimu and totara on sloping ground.
C3	Largely native grasslands with patches of swamp and forest mostly dominated by kahikatea.
Environment D: Northern Hill Country (hill country of low to moderate elevation in the northern two-thirds of the North Island)	
D3	Podocarp/ broadleaved forests with four locally occurring beech species.
Environment F: Central Hill Country and Volcanic Plateau (large areas of low to mid-elevation hill country in central New Zealand)	
F4	Gentle topography and drier conditions, with forests consisting of matai, kahikatea and especially totara. Titoki, karaka, kowhai and cabbage tree occur frequently.
F5	Represented by alluvial terraces with dense stands of matai, rimu, miro, kahikatea and totara, as well as black and silver beech in the Marlborough Sounds. In Golden Bay, soils are mostly leached and support forests of rimu and black beech, or secondary vegetation dominated by tangle fern and manuka. In the Taranaki lowlands a broadleaved canopy dominated by tawa prevails, with podocarps usually forming only scattered overstorey.
Environment G: Northern Recent Soils (lowlands of the northern two-thirds of the North Island)	
G3 G4	Floodplain forests dominated by kahikatea and pukatea, and probably matai and totara on the better-drained areas, and swamps with islands of kahikatea-dominated forest.
G6	Podocarp/ broadleaved forest similar to Environment D3. Scattered cabbage trees and titoki remain.
Environment H: Central Sandy Recent Soils (scattered areas of recent soils formed generally on sandy parent materials in the central and southern North Island and the northern South Island – Taranaki ringplain and inland Taranaki, southern Waikato, Urewera ranges, northern Marlborough westward to just south of Karamea)	
H3	Wet alluvial substrates supporting stands of kahikatea, pukatea and (in the North Island) swamp maire, other important species being rimu, northern rata, kamahi, mahoe, toro, supplejack and kiekie and cabbage trees. These merged into swamp.

Environment I: Central Poorly Drained Recent Soils (coastal plains and river valleys in eastern New Zealand – Gisborne to mid Canterbury)	
I2 I3	I2 comprised inland swamps with occasional islands of kahikatea similar to environment C1. These swamps have been drained and only cabbage trees and occasional patches of kahikatea exist. I3 includes inland areas that have been converted to agriculture or urban development, eg. Christchurch, Rangiora and the lower Wairau Valley where rushes, cabbage trees, <i>Phormium tenax</i> clumps and <i>Carex</i> species and raupo along creeks and drains are all that survive of the original native vegetation.
I4	Small areas along the Kaikoura Coast, where occasional ngaio and cabbage trees remain from what was probably a mosaic of swamp and coastal forest.
I5	Swamp areas covered by sedge and harakeke, with tutu, native grasses and Maori cultivations at the time of European settlement.
I6	A coastal lagoon that was uplifted 2 m by the Hawke's Bay earthquake of 1931 to become salt marsh, part of which has since been reclaimed for agriculture and the Napier airport.
Environment J: Central Well Drained Recent Soils (floodplains and terraces along major lowland rivers in the southern North Island and northern and eastern South Island)	
J1 J2 J3 J4	Successional duneland, wetland and forest areas on floodplains and terraces along major lowland rivers in the Southern North Island and the northern and eastern South Island. J1 includes kowhai, kanuka, matagouri and cabbage trees in valleys and upper river reaches, totara and black beech in upper catchment areas and akeake, taupata and ngaio on gravel beach ridges. J2 now has little trace of native vegetation on its fertile soils. But on light soils in Canterbury there are still areas where tree and dwarf kowhai and kanuka are scattered or, locally, form continuous woodland or, where grazing perpetuates, short grassland of mainly native plants, species of <i>Rytidosperma</i> , <i>Acaena</i> , <i>Leptinaella</i> , <i>Raoulia</i> and dwarf native brooms. J3 includes extensive woodlands dominated by kanuka and, on older soils, forest remnants with kanuka, kowhai, titoki, hinau, mahoe, ngaio, matai, with black maire near its southern limit. J4 includes inland river flats that still have remnant kowhai, kanuka and, on wet ground, kahikatea, as well as the extensive Manawatu dunes, which support forest patches.
Environment L: Southern Lowlands (lowlands of Southland, areas in South Canterbury, coastal Otago and Stewart Island)	
L1 L2 L4 L5	Environment L is the southern equivalent of environments A and C, with forests lacking important species that reach the north of the South Island, notably pukatea on wet ground and tawa on the hills. L1 and L2 both have dry climates. L1 occupies extensive areas of floodplain soils. L2 is much less extensive, occurring on flat, poorly drained sites on floodplains in South Canterbury and coastal Otago. L1 once had swamps and stands of kahikatea on floodplains, of totara, mountain totara, rimu, matai and kahikatea on the better drained low terraces, and of kowhai and lowland ribbonwood along river banks. Pre-European burning would have extended areas of harakeke, tutu, toetoe and other grasses. Today only fragments of forest and swamp remain. L2 consisted entirely of swampland. In the only large area remaining, adjoining Lake Waihola, raupo, <i>Carex secta</i> , <i>C. coriacea</i> , harakeke and, locally, exotic crack willow dominate. L4 was mainly forest with matai, totara, rimu and kahikatea, but by the time of European settlement the prevailing cover had become red tussock grassland and narrow-leaved snow tussock on the downlands, bracken, manuka and (north of the Clutha River) kanuka on steeper slopes and towards the coast, and strips of <i>Carex secta</i> swamp along water courses. L5 occupies the seaward parts of river valleys, and supported forest and swamp similar to that in L1. In the Catlins district there are also stands of silver beech along river margins.
Environment N: Eastern South Island Plains (extensive plains and inland basin floors of Canterbury, Otago, Southland)	
N1	Podocarp forests, largely of matai and totara. There were also kahikatea stands and open swamps. Occasional fires may have maintained areas of kanuka, woodland and grassland. When European settlement began, the plains were covered mainly by grassland, with kanuka and manuka on light soils, and <i>Carex</i> and harekeke swamps along channels. Probably hard and silver tussock dominated the grassland.
N2	Similar to N1 except red tussock appeared as rain increased towards the ranges and in the south. Forest extended into the highest parts of the plains north of the Rangitata River. In remnants, small-leaved shrubs form most of the understorey, and include the rare <i>Coprosma peidelata</i> and the liane <i>Carmichaelia kirkii</i> .
N3	The downlands of South Canterbury and North Otago, once covered with forest of totara, matai and trees such as broadleaf, ribbonwood, narrow-leaved lacebark and kowhai. Ngaio occurred by the coast. The highest, driest, more inland parts supported forest of mountain totara and mountain toatoa.
N5 N8	Originally woodland, scrub and grassland. N5 at the time of European settlement supported almost continuous grassland, with some areas of kanuka. N8 supported the driest grasslands dominated by endemic species. Saline soils once occurred in N5 and N8 with communities of endemic cresses.

Table iii: Legally protected and not legally protected areas in indigenous and non-indigenous land cover for each LENZ Level II environment

LENZ Level II	Total LENZ area	Area legally protected (hectares)			Area not legally protected (hectares)		
		Indigenous	Non-indigenous	Total protected	Indigenous	Non-indigenous	Total not protected
Environment A: Northern Lowlands (extensive lowlands of the northern North Island)							
A1	49,537	15,863	3,205	19,068	9,512	20,957	30,469
A2	30,834	4,745	557	5,302	6,277	19,254	25,531
A3	796	720	76	796			–
A4	9,362	201	154	355	2,047	6,961	9,008
A5	383,312	17,699	1,790	19,489	17,707	346,117	363,823
A6	885,509	38,791	4,359	43,150	201,514	640,845	842,359
A7	473,105	4,702	1,864	6,565	27,862	438,678	466,540
Environment B: Central Dry Lowlands (dry hill country in Central New Zealand, mostly at low elevations)							
B1	182,007	760	515	1,275	13,555	167,177	180,732
B2	69,059	1,067	404	1,471	3,272	64,317	67,588
B3	187,533	1,683	859	2,541	56,023	128,968	184,991
B4	2,703	46	8	55	305	2,343	2,648
B5	50,021	51	560	611	806	48,604	49,410
B6	29,222	4	224	227	703	28,291	28,995
B7	53,089	37	197	234	2,448	50,408	52,856
B8	85,430	2,028	367	2,395	35,765	47,271	83,036
B9	18,671	91	498	589	1,337	16,745	18,082
Environment C: Western and Southern North Island Lowlands (low-lying areas occurring almost entirely in the lower half of the North Island)							
C1	83,454	3,437	719	4,156	7,400	71,899	79,299
C2	255,001	1,233	663	1,896	10,187	242,918	253,105
C3	293,928	489	843	1,332	7,181	285,415	292,596
Environment D: Northern Hill Country (hill country of low to moderate elevation in the northern two-thirds of the North Island)							
D1	668,573	208,983	9,929	218,913	232,549	217,112	449,660
D2	446,108	54,803	2,443	57,246	110,193	278,669	388,862
D3	686,161	14,092	5,649	19,740	98,422	567,998	666,420
D4	311,310	154,570	5,811	160,381	62,153	88,776	150,929
Environment E: Central Dry Foothills (dry foothills and basin floors at mid-elevations in the eastern parts of both main islands)							
E1	925,527	173,223	2,577	175,799	542,335	207,393	749,728
E2	16,455	4,980	239	5,219	3,267	7,969	11,236
E3	68,824	1,001	377	1,378	15,835	51,611	67,446
E4	316,663	36,701	1,453	38,155	228,157	50,351	278,508
Environment F: Central Hill Country and Volcanic Plateau (large areas of low to mid elevation hill country in central New Zealand)							
F1	1,832,883	406,197	13,556	419,753	505,747	907,382	1,413,130
F2	13,406	5,658	17	5,675	5,175	2,556	7,731
F3	96,263	2,740	1,839	4,579	19,289	72,396	91,685
F4	377,564	1,639	829	2,468	32,639	342,456	375,095
F5	296,556	15,479	1,031	16,510	14,404	265,641	280,045
F6	1,205,644	343,418	23,571	366,989	189,645	649,010	838,655
F7	1,407,198	207,573	31,979	239,553	200,671	966,974	1,167,645

LENZ Level II	Total LENZ area	Area legally protected (hectares)			Area not legally protected (hectares)		
		Indigenous	Non-indigenous	Total protected	Indigenous	Non-indigenous	Total not protected
Environment G: Northern Recent Soils (lowlands of the northern two-thirds of the North Island)							
G1	103,273	16,512	3,660	20,173	15,964	67,137	83,100
G2	7,729	502	164	666	4,475	2,589	7,064
G3	149,141	1,991	1,797	3,788	15,902	129,451	145,353
G4	56,426	2,070	633	2,703	4,165	49,559	53,723
G5	279	14	27	41	48	190	238
G6	19,676	81	219	300	1,982	17,395	19,377
Environment H: Central Sandy Recent Soils (scattered areas of recent soils formed generally on sandy parent materials in the central and southern North Island and the northern South Island)							
H1	51,825	5,821	577	6,397	6,559	38,869	45,428
H2	60,504	13,301	876	14,176	10,226	36,102	46,328
H3	8,218	299	133	431	469	7,318	7,787
H4	13,942	11,448	20	11,467	690	1,785	2,475
Environment I: Central Poorly-drained Recent Soils (coastal plains and river valleys in eastern New Zealand – Gisborne to mid Canterbury)							
I1	1,627	121	22	143	614	871	1,485
I2	48,290	416	692	1,108	1,252	45,930	47,182
I3	27,440	841	1,821	2,662	999	23,779	24,778
I4	432	–	3	3	39	390	429
I5	39,774	123	105	229	690	38,855	39,545
I6	4,166	138	124	261	96	3,808	3,904
Environment J: Central Well-drained Recent Soils (floodplains and terraces along major lowland rivers in the southern North Island and northern and eastern South Island)							
J1	53,721	278	1,876	2,154	3,450	48,116	51,567
J2	116,133	1,627	12,100	13,727	16,542	85,865	102,407
J3	15,044	396	197	593	2,548	11,902	14,451
J4	108,872	771	1,386	2,157	8,642	98,073	106,715
Environment K: Central Upland Recent Soils (recent soils at moderate to high elevation in cool, mostly inland parts of both main islands)							
K1	96,322	23,163	717	23,880	53,589	18,853	72,442
K2	10,984	592	3	595	9,718	671	10,388
K3	31,301	803	478	1,281	14,429	15,591	30,020
K4	16,048	565	30	595	10,539	4,914	15,453
K5	4,771	161	185	345	1,692	2,733	4,425
Environment L: Southern Lowlands (lowlands of Southland, areas in South Canterbury, coastal Otago and Stewart Island)							
L1	201,670	7,975	8,622	16,597	18,481	166,592	185,073
L2	9,673	437	106	542	866	8,265	9,131
L3	110,435	34,733	839	35,572	24,785	50,078	74,863
L4	406,572	654	1,848	2,502	15,600	388,470	404,070
L5	60,515	4,438	771	5,209	3,629	51,676	55,305
L6	12,137	11,778		11,778	359		359

LENZ Level II	Total LENZ area	Area legally protected (hectares)			Area not legally protected (hectares)		
		Indigenous	Non-indigenous	Total protected	Indigenous	Non-indigenous	Total not protected
Environment M: Western South Island Recent Soils (recent alluvial terraces along major rivers on the west coast of the South Island, Buller to Fiordland)							
M1	90,358	32,361	3,127	35,488	13,511	41,359	54,870
M2	74,700	18,165	3,721	21,886	14,174	38,640	52,815
M3	397	146	63	208	181	7	188
M4	55,021	54,156	47	54,203	552	266	818
Environment N: Eastern South Island Plains (extensive plains and inland basin floors of Canterbury, Otago, Southland)							
N1	402,929	340	4,361	4,701	6,377	391,851	398,228
N2	486,572	745	4,014	4,759	9,984	471,830	481,814
N3	593,152	3,033	2,251	5,284	76,767	511,101	587,869
N4	243,676	1,908	2,536	4,443	159,973	79,260	239,233
N5	162,647	286	1,282	1,568	11,087	149,992	161,079
N6	92,820	3,288	466	3,754	62,254	26,812	89,066
N7	11,964	218	277	495	3,379	8,091	11,470
N8	36,182	143	815	958	3,183	32,040	35,223
Environment O: Western South Island Foothills and Stewart Island (low to middle elevations in Westland, western Southland and on Stewart Island)							
O1	485,927	312,318	5,825	318,143	85,562	82,221	167,783
O2	479,351	462,670	484	463,154	13,790	2,407	16,197
O3	88,121	57,189	820	58,009	16,940	13,173	30,112
O4	148,400	134,623	317	134,940	9,032	4,428	13,460
O5	207,684	195,044	2	195,046	12,620	17	12,638
Environment P: Central Mountains (the mountains of the central and southern North Island, Taranaki and northern and eastern parts of the South Island)							
P1	1,160,774	643,937	479	644,416	514,491	1,867	516,358
P2	171,365	130,985	1	130,986	40,379	0	40,379
P3	360,456	351,453	109	351,562	8,742	152	8,894
P4	46,217	44,343		44,343	1,874		1,874
P5	489,179	342,722	4,045	346,767	80,530	61,882	142,412
P6	410,255	286,815	3,979	290,794	56,741	62,720	119,461
P7	442,427	274,893	471	275,364	154,879	12,184	167,063
P8	197,912	151,838	980	152,818	38,404	6,690	45,094
Environment Q: Southeastern Hill Country and Mountains (the mountains and hill country of the southeastern South Island, extending from the Rangitata River through Otago to the Catlins in eastern Southland and westwards to the eastern fringes of Fiordland)							
Q1	915,364	289,709	2,074	291,783	596,329	27,252	623,581
Q2	649,134	38,298	4,321	42,618	432,567	173,949	606,516
Q3	419,385	67,873	4,522	72,395	256,572	90,418	346,990
Q4	1,292,459	179,514	10,864	190,378	215,043	887,039	1,102,081
Environment R: Southern Alps (extends along the main divide of the South Island from the Spencer Mountains south along the Southern Alps to the Fiordland Mountains. Also includes small areas of the crests of ranges to the east and west of the Main Divide)							
R1	980,822	860,227	20	860,247	120,572	3	120,575
R2	953,114	952,535	30	952,565	548	1	549

LENZ Level II	Total LENZ area	Area legally protected (hectares)			Area not legally protected (hectares)		
		Indigenous	Non-indigenous	Total protected	Indigenous	Non-indigenous	Total not protected
Environment S: Ultramafic Soils (occurs in several locations scattered through the western South Island, mainly in Nelson, eg. Red Hills, Marlborough, South Westland and inland Southland)							
S1	3,758	1,513	23	1,536	1,562	660	2,221
S2	16,953	16,777	13	16,790	99	64	163
S3	12,706	12,706		12,706	0		0
Environment T: Permanent Snow and Ice (the ice caps and permanent snow fields of the Southern Alps, including Franz Josef and Fox Glaciers)							
T1	157,419	153,362		153,362	4,056		4,056
Water	210,811	38,163	7,999	46,163	119,768	44,880	164,648
	26,209,053			8,210,570	119,272		17,998,483

Appendix 2: Pest and Weed Expenditure – Additional Information

Table iv: Council pest and weed expenditure

	Total money spent on plant pests (\$)	Total money spent on animal pests (\$)	Total expenditure (\$)
Auckland Regional Council	1,694,010	1,804,474	3,498,484
Environment Bay of Plenty	1,280,887	1,123,503	2,404,390
Environment Canterbury	1,507,000	686,000	2,193,000
Environment Southland	421,000	440,000	861,000
Environment Waikato	1,683,000	1,226,000	2,909,000
Gisborne District Council	238,000	460,000	698,000
Greater Wellington	1,006,200	1,193,300	2,199,500
Hawke's Bay Regional Council	313,750	2,033,729	2,347,479
Horizons	1,333,406	521,702	1,855,108
Marlborough	476,306	83,000	559,306
Northland Regional Council	370,000	1,270,000	1,640,000
Otago Regional Council	250,000	199,000	449,000
Taranaki Regional Council	365,000	1,300,000	1,665,000
Tasman District Council	234,500	16,500	251,000
West Coast Regional Council	70,000	10,000	4,940,000
Total	11,243,059	17,227,208	28,470,267
Average			1,898,018

Table v: Expenditure on bovine TB possum control and its contribution to biodiversity outcomes

	Anticipated regional expenditure for bovine TB possum control, Animal Health Board share (\$)	Anticipated regional expenditure for bovine TB possum control, regional share (\$)	Total anticipated expenditure for bovine TB possum control (\$)	Estimated expenditure for bovine TB possum control contributing to biodiversity outcomes	
				%	Amount \$
Auckland Regional Council	300,210	41,825	342,035	98	335,194
Environment Bay of Plenty	1,315,965	131,596	1,447,561	40	579,024
Environment Canterbury	6,440,000	760,000	7,200,000	35	2,520,000
Environment Southland	7,823,000	910,000	8,733,000	100	8,733,000
Environment Waikato	7,044,000	650,000	7,694,000	80	6,155,200
Gisborne District Council	NA	NA	NA	NA	NA
Greater Wellington	5,096,830	750,170	5,847,000	90	5,262,300
Hawke's Bay Regional Council	4,887,263	444,684	5,331,947	100	5,331,947
Horizons Regional Council	6,872,000	824,000	7,696,000	40	2,748,800
Marlborough	3,086,000	280,000	3,366,000	75	2,314,500
Northland Regional Council	NA	NA	NA	NA	NA
Otago Regional Council	400,000	NA	400,000	75	300,000
Taranaki Regional Council	?	5,000	5,000	95	4,750
Tasman District Council	1,677,800	172,100	1,849,900	85	1,572,415
West Coast Regional Council	4,550,000	324,000	4,874,000	50	2,437,000
Total	49,493,068	5,293,375	54,786,443		38,294,131
Average	4,124,422	441,115	4,214,342		