

LAB

Biodiversity Action Plan



2008

CONTENTS

1. INTRODUCTION

Why we need a biodiversity action plan

Definitions

New Zealand's contribution to global biodiversity

New Zealand's biodiversity decline

Waitakere City's biodiversity challenge

Values of biodiversity

Ecosystem services

Community involvement and stewardship

2. VISION

3. GOALS

4. ROLES OF AGENCIES IN MANAGING BIODIVERSITY

5. ANALYSIS OF CURRENT BIODIVERSITY MANAGEMENT IN RELATION TO GOALS

6. ACTION PLAN

7. KEY PROJECTS FOR 2009-2019

1. Inventory of threatened plants

2. Long tailed bat recovery programme

3. Te Henga wetland management plan

4. Predator-free enclosure for fernbirds at Harbourview-Orangihina

5. Kereru recovery programme

APPENDIX: POLICY AND LEGISLATION

1. INTRODUCTION

Why we need a biodiversity action plan

New Zealand has an obligation, as signatory to the international Convention on Biological Diversity, to protect its indigenous biodiversity. Domestic legislation, such as the Resource Management Act 1991 and the Biosecurity Act 1993 reinforce this obligation. The New Zealand Biodiversity Strategy – Our Chance to Turn the Tide was prepared in 2000 to provide a framework for action to protect and maintain our biodiversity. The Council's own Green Network strategic platform holds the vision that streams and forests will be full of life, and seeks to link the Waitakere Ranges and the sea, connecting the everyday lives of the people of Waitakere with the natural world.

The Waitakere Ranges make up more than half of the City's land area and provide a home to a wide range of rare and common native plant and animal species. This expansive natural area has local, regional, national and international significance¹ for one reason or another, and the City has the collective responsibility for ensuring that these natural values are maintained, enjoyed and enhanced.

Native vegetation in the lowland area, which is the urban part of the City, is fragmented and primarily restricted to gullies and stream margins. There are small forest remnants, and an area of approximately 30ha of gumland vegetation in Waikumete Cemetery, but largely the vegetation is in the regeneration stage and commonly mixed with exotic species. The Council's Green Network strategic platform envisages linking the Waitakere Ranges through the City to the coast bringing the natural world into people's everyday lives.

Section 31 of the Resource Management Act 1991 charges territorial authorities with the control of any actual or potential effects of the use, development or protection of land, including for the purpose of the maintenance of indigenous biological diversity. The legislative framework for having regard to biodiversity maintenance and management is provided in Appendix 1 of this strategic action plan.

Waitakere's Biodiversity Strategy and Action Plan was adopted in June 2006. Since then Waitakere has become a member of ICLEI's Local Action for Biodiversity project and produced its Biodiversity Report in December 2007. This Biodiversity Strategic Action Plan reviews and reports on progress of Waitakere's biodiversity strategy since 2006.

Definitions

Biological diversity or biodiversity is the variety of all biological life – plants, animals, fungi, and microorganisms – the genes they contain and the ecosystems on land or in water where they live. It is the diversity of life on earth and includes:

- *Genetic diversity*: The variability in the genetic make-up among individuals (and between populations) within a single species.
- *Species diversity*: The variety of species within a particular geographical area.
- *Ecological (ecosystem) diversity*: The variety of ecosystem types (forests, streams, wetlands) and their biological communities that interact with one another and their non-living environments.

Ecosystem is an interacting system of living and non-living parts (sunlight, air, water, nutrients). Ecosystems can be small and short-lived (rotting logs on a forest floor), or large and long-lived (kauri forest, lake).

Biosecurity is about exclusion, eradication and effective management of pests and unwanted organisms. Where biosecurity and biodiversity issues cross over is in the potential for pest species to replace natives.

¹ Auckland Regional Policy Statement, 1999.

New Zealand's contribution to global biodiversity²

New Zealand's biodiversity is internationally important. We boast the world's only flightless parrot (kakapo); a bird with nostrils at the end of its beak (kiwi); a primitive frog that lays eggs that hatch into adult frogs (*Leiopelma* species); a large insect which fills a role that small rodents play in other countries (giant weta); and many other exceptional species.

A high percentage of New Zealand's indigenous species is endemic (they are found nowhere else on earth) — a result of isolated evolution and the diversity of New Zealand's land and seascapes. This level of endemism is remarkable internationally. Both species of New Zealand bat are endemic, as are all four frog species, all 60 reptile species, more than 90 percent of insect species and a similar percentage of marine molluscs, about 80 percent of vascular plants, and a quarter of all bird species. In contrast, Great Britain, which separated from continental Europe only 10,000 years ago, has only one endemic bird species (Scottish crossbill) and a handful of plant and invertebrate species (e.g. Swallowtail butterfly).

The ecosystems in which our native species live are also highly distinctive. The kauri forests of the northern North Island, the braided river systems of the eastern South Island, and our geothermal ecosystems are some examples.

The uniqueness of much of New Zealand's indigenous biodiversity means that responsibility for its continued existence is entirely ours; it cannot be conserved in nature anywhere else in the world.

New Zealand's biodiversity decline

New Zealand, one of the last places on earth to be settled by humans, has one of the worst records of indigenous biodiversity loss. While biodiversity varies in natural cycles, nothing since the extinction of the dinosaurs (65 million years ago) compares with the decline in indigenous biodiversity in New Zealand over the last century.

The first phase of decline was the loss of New Zealand's larger bird species when humans first settled here, including the world's largest eagle and several moa species. By around 1600, about a third of the original forests had been replaced by grasslands although other habitats, for example wetlands and coastal areas, remained largely unchanged. From around 1850, the gathering pace of European settlement started a new wave of forest destruction. Since then, a further third of our original forests have been converted to farmland, and there has been extensive modification of wetlands, dunelands, river and lake systems, and coastal areas. Other bird species, such as the huia and laughing owl, also became extinct during this time.

As far as we know, in the last 700-800 years, humans and their accompanying pests have caused the extinction of:

- 32% of indigenous land and freshwater birds;
- 18% of endemic sea birds;
- three of seven frog species;
- At least 12 species of invertebrates such as snails and insects;
- One fish, one bat and perhaps three reptile species; and
- Possibly 11 plant species³.

Today, about 1000 of our known animal, plant, and fungi species are considered threatened, and it is likely that many presently unknown species are also threatened. Many populations of these threatened species have disappeared from areas where they were once found. This pattern of local loss of populations and shrinking of a species range is the forerunner to species extinction.

² The New Zealand Biodiversity Strategy, Our Chance to Turn the Tide, 2000.

³ Ministry for the Environment, The State of New Zealand's Environment, 1997 and 2007.

The challenge at the national level is to integrate biodiversity considerations across all sectors of government and the economy. The challenge regionally and locally is to translate national priorities and targets into local plans and programmes.

Waitakere City's biodiversity challenge

The Waitakere Ranges are botanically rich containing 20% of all New Zealand's flowering plant species and 60% of all native fern species⁴. Although the following statistics are drawn from a number of sources and subject to change, the Ranges are home to

- 542 species of native plant (111 species of these being native ferns)
- Many species of nationally threatened plants and 27 regionally threatened plant species
- 50 species of native bird
- 3 species of kauri snail (large land snail)
- 11 species of native freshwater fish
- 5 species of native reptile.
- 1 native frog species
- 1 native mammal (long-tailed bat)

Although records are not complete, it appears that we have lost 11 native bird species from the Ranges and 15 species from the lowlands. The short-tailed bat was once common in the region but has not been recorded for some time.

There are now 240 plant species identified as actual or potential threats to native vegetation, and there are 19 introduced bird species, 9 introduced mammals and 2 amphibians, all competing with our native species.

Maintaining biodiversity is not just about ensuring the survival of rare and endangered species. It is the whole range of different species, rare and common, and the variation between populations within a species that is important. Different populations of the same species, if isolated and subject to different selection pressures will vary over time and is the species' insurance against extinction. The reason for using eco-sourced or provenance plants in re-vegetation projects is first to ensure that the local gene pool of a species continues to survive, and secondly because the locally sourced material is well adapted to the local environmental conditions.

In summary, the challenge is to maintain the viability of local populations across the range of species that naturally occur in the region, the range of ecosystems, and to understand their significance and to facilitate community support and engagement in the long term.

Values of Biodiversity

Ecosystem Services

In addition to intrinsic value distinct from any human enjoyment or use, the value of Waitakere's biodiversity can be considered in terms of ecosystem services. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth. The air we breathe, the water we drink, the soils that sustain our pastures, forestry, orchards and crops are examples of environmental goods that benefit humans. Without them, life on Earth would be impossible. These goods – air, water and soil – arise from interactions between living things, such as chemical reactions and mechanical processes. Ecosystem processes that benefit humans are called "ecosystem services":

a) Provisioning services

Provisioning services are the products obtained from ecosystems, including, for example, genetic resources, food and fibre, and fresh water.

⁴ Waitakere Ecological District Survey Report, 1993

- Ecosystems and habitats that nurture fish and game, and other species that are harvested, either commercially, for customary or subsistence use, and/or for recreation.
- Ecosystems and habitats that provide opportunities for bioprospecting.
- Ecosystems and habitats that provide resources for scientific research.
- Ecosystems that provide fresh water for drinking, hydro and irrigation.

The Waitakere Ranges and its forest cover provide the water catchment for Waitakere's drinking water. The reservoirs in the Waitakere Ranges also supply parts of surrounding local authority areas. The forested area is subject to numerous botanical and zoological research projects and education programmes.

b) Regulating services

Regulating services are the benefits obtained from the regulation of ecosystem processes, including, for example, the regulation of climate, water, and some human diseases.

- Ecosystems and habitats that may capture carbon and regulate the effects of human-caused climate change.
- Vegetated catchments that regulate supply of water, mitigate flooding, reduce erosion, and reduce the rates of silting up of harbours and estuaries.

The forested Waitakere Ranges act as the lungs of the city; giving off oxygen and taking in and sequestering carbon dioxide. The forests also trap and hold moisture; so cooling the air.

c) Supporting services

Supporting services are ecosystem services that are necessary for the production of all other ecosystem services. Some examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.

- Native bees, which are varroa bee-mite resistant, may provide important pollination services for horticulture and pastoral farming.
- High-biodiversity ecosystems and habitats, such as wetlands, that provide nutrient recycling and environmental detoxification services to improve aspects of the environment such as water quality.
- Ecosystems – e.g. bacteria, flies, worms, fungi – that decompose decaying organic matter into essential minerals and other resources such as soil and purified water.

d) Cultural services

Cultural services are the non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experience, including, e.g., knowledge systems, social relations, and aesthetic values.

- Ecosystems and habitats that provide attractive places to visit for recreation (e.g. tramping, mountain-biking, camping, sightseeing, photography, snorkelling and diving), and for conservationists.
- Ecosystems and habitats in which people may pursue improved health and wellbeing, and/or for spiritual and/or cultural purposes.
- Ecosystems, habitats and scenery that provide the backdrop to New Zealand's clean, green image, and draw overseas tourists and film-makers to New Zealand.

Ecosystem services are often taken for granted, because they are "free", that is, not traded directly in markets – unlike fish, vegetables and timber. The value to society of ecosystem services becomes more apparent when:

- They are in decline – when air and water is polluted, when erosion and overgrazing degrades soils, when deforested catchments lead to flooding in heavy rain, when whitebait catches fall on the removal of wetlands and streams for farming.
- There are conflicting demands on use – between hydro companies, irrigators, kayakers, anglers and rafting companies for river flows; between diving tourism companies, recreational snorkelers and fishers for healthy marine environments.

In these situations, the ecosystem services are no longer free, but, in the absence of markets and well-defined property rights it is unclear how they should best be managed. Also, ecosystems are so complicated that it is impossible to reproduce them artificially. Rather, humans impact on ecosystems, and in some cases the impacts are irreversible. The more the ecosystems are modified, the simpler they are likely to become and provide fewer services.

However, it is also important to note that in many situations, particularly in the urban part of Waitakere, natural areas require active management if they are to maintain or improve their current ecological values. Thus, the interaction of humans and the natural environment in Waitakere is a 'two-way street', with humans receiving these 'ecosystem services' while actively managing City's natural areas. Indeed, for many people, participation in successful restoration projects is an extremely positive experience.

Community Involvement and Stewardship

Involvement in biodiversity management provides an opportunity for community connections and involvement in joint community events, as well as providing an education opportunity for people to learn more about Waitakere's natural environment.

Maintaining biodiversity is important to Te Kawerau a Maki as traditional iwi, and their concerns are to:

- Have access to flora and fauna for harvesting and craft;
- Ensure the protection and enhancement of native flora and fauna and their ecosystems;
- Support the eradication of exotic (introduced) plants and animals that are damaging, destroying or competing with native species or their ecosystems;
- Participate in decisions regarding the introduction of exotic flora and fauna into New Zealand, and
- Ensure that property rights are not ascribed to native species in breach of Treaty rights.

2. VISION

Native forests full of native birds linking streams full of native fish contributing to a resurgence of the whitebait swarms in the harbours

Fulfilling this vision will involve commitment by Waitakere City Council, Auckland Regional Council, community groups and indeed all residents of Waitakere City.

Vision for the forests

Increased levels of legal protection for areas of native bush.

Increase in population of kereru.

Expansion in numbers and range of the long-tailed bat populations in the Waitakere Ranges and foothills.

Stabilisation in the occurrence and population levels of threatened plant species.

Increased visits by birds from the off-shore islands.

Land snails and other invertebrate species becoming more common in the Waitakere Ranges and the foothills.

Hochstetter's frog becoming more common throughout the Waitakere Ranges.

Successful re-introduction of species lost from Waitakere City.

Vision for the freshwater habitats

A weed-free Te Henga wetland.

A breeding population of fernbird at Orangihina.

Continuous vegetated riparian margins along streams.

Inanga commonly found in all streams.

Giant kōkopu becoming more common in streams.

Vision for the coast

Little blue penguins successfully nesting along the west coast.

Dotterels and terns successfully nesting at Whatipu.

Dunes of the west coast are protected from over-use, maintained as a natural and dynamic system, and re-vegetated to provide habitat for indigenous species.

A viable population of Maui's dolphin off the west coast.

Vision for the urban area

Expansion and enhancement of native forests in the lowland/urban areas.

Kereru visiting gardens throughout the urban area.

Project Twin Streams rolled out across the rest of the City.

Banded rail along Henderson Creek.

Wildlife refuges established in reserves, for example, seeding grasses, nectar-producing flowers, fruiting native species, thick under storey below stands of trees.

3. GOALS FOR WAITAKERE'S BIODIVERSITY

- Goal 1: Establish the state of Waitakere's biodiversity.
- Goal 2: Provide for the maintenance and long-term viability of the City's indigenous biodiversity.
- Goal 3: Enable the re-establishment of species lost from the City and replenishment of threatened species
- Goal 4: Enable the effective involvement of tangata whenua in the management of biodiversity and fulfil their responsibilities as kaitiaki.
- Goal 5: Co-ordinate, contribute to and build community capacity for the maintenance and enhancement of indigenous biodiversity.
- Goal 6: On-going research and monitoring to refine management practices.

4. ROLES OF AGENCIES IN MANAGING BIODIVERSITY

Ministry for the Environment

The Ministry for the Environment advises Central Government on New Zealand's environmental laws, policies, standards and guidelines, monitors how they are working in practice, and takes any action needed to improve them. This includes making sure that the Treaty of Waitangi is taken into account in environmental management.

The Ministry works closely with local government, which is responsible for day to day environmental management,

Department of Conservation

The Department of Conservation is the central government organisation charged with conserving the natural and historic heritage of New Zealand on behalf of and for the benefit of present and future New Zealanders.

Its mission is "to conserve New Zealand's natural and historic heritage for all to enjoy now and in the future".

The Department manages or administers on behalf of New Zealanders:

- national parks and conservation parks (formerly called forest parks)
- reserves and conservation areas
- protected indigenous forests
- protected inland waters and wild and scenic rivers
- indigenous/native wildlife
- non-commercial freshwater fisheries
- historic places on conservation land
- marine reserves and protecting marine mammals offshore islands set aside for conservation

Auckland Regional Council

The Auckland Regional Council (ARC) is responsible for the region's coasts, beaches and natural environment. The role of the ARC is to protect the region's air, soil and water resources from pollution and to ensure their sustainable use as Auckland develops and its population grows.

The ARC is also a major land owner with responsibility for the management of the Waitakere Ranges Regional Park.

Waitakere City Council

Waitakere City Council is a regulator under the Resource Management Act 1991 with responsibility for developing and administering their district plan which must give effect to the Auckland Regional Policy Statement and the Regional Plans for Auckland or any national policy statements (National Coastal Policy Statement). The Council's regulatory functions in regards to biodiversity are mandated under section 31 of the Resource Management Amendment Act 2003, and encompassed in the Waitakere City District Plan.

Waitakere City Council is also land owner with responsibility for management of a number of reserves under the Reserves Act 1971.

The Council also has a strategic leadership role, as an eco city and partner in the international Local Action for Biodiversity (LAB) project, to take a proactive role in biodiversity management and to inspire and support the community to follow that lead. Under the LAB project, the Council has produced its Biodiversity Report that provides a current state of Waitakere's biodiversity, identifies the Council's role and describes the level of biodiversity management effort to date.

Conservation Groups

There are a number of conservation groups that work co-operatively with ARC and Waitakere City Council on park land and private land to maintain ecological systems and biodiversity.

Land Owners

Land owners have responsibility for managing their own land and its resources according to the Waitakere City District Plan.

Iwi

Iwi exercise kaitiakitanga or stewardship of natural resources in their rohe or area. There is the opportunity for iwi to develop iwi management plans.

5. ANALYSIS OF CURRENT BIODIVERSITY MANAGEMENT IN RELATION TO GOALS

Current Mechanisms

Legislation

- District Plan - objectives, policies and rules relating to managing bush, streams, coastal margins and habitats.
- Waitakere Ranges Heritage Area Act 2008 – regulatory and non-regulatory methods for protecting the landscape, biodiversity and heritage values of the Waitakere Ranges and foothills.

Direct Action

- Parks pest management, ecosourcing and restoration programmes
- Green Network Community Assistance programmes
- Project Twin Streams
- The many volunteer groups that care for their local environment.

Leadership

Local Action for Biodiversity membership and programme commitments

Draft Park and Open Space Strategy – objectives, policies, priorities and actions to address biodiversity protection and enhancement on public land and private land.

Goal	Strengths	Weaknesses	Threats	Opportunities
Establish the state of Waitakere's biodiversity	Existing staff skills Level of interest and information available on the Waitakere Ranges	Lack of good data on the area of Waitakere outside the Waitakere Ranges	Inaccessibility of much of the area of the Waitakere Ranges	Information sharing with volunteer groups Partnerships with Universities and Crown Research Institutes
Provide for maintenance and long-term viability of the City's biodiversity	Supportive legislation -Waitakere Ranges Heritage Area Act -District Plan Natural environment of the Waitakere Ranges	Inadequate evaluation of restoration projects	Urban development Loss of habitat Plant and animal pests Climate change	Co-ordination of biodiversity effort by all players

Enable re-establishment of species lost	Ark in the Park capability Department of Conservation support Proximity of island sanctuaries such as Tiritiri Matangi and Motuhie	Limited resources in terms of availability of species and expertise to undertake transfers	Plant and animal pests Climate change	Partnering with Ark in the Park and Department of Conservation
Enable effective involvement of tangata whenua	Political environment Current relationship with iwi Standing of Te Taumata Runanga	No direct action or iwi management plans	Inaction	
Co-ordinate, contribute to and build community capacity	Number and quality of volunteer groups	Lack of funds Fluctuating interest and involvement by individuals		Sources of funding include: Green Network Community Assistance funding Biodiversity Condition and Advice Fund
On-going research and monitoring	There are data on 5-minute bird counts and fresh water fish surveys going back to 1999, and phenology and invertebrate monitoring since 2004	Consistency of data collection Selection of meaningful data Adequate analysis of data	Monitoring information not informing management practices	Sources of funding include: Sustainable Management Fund Foundation

6. ACTION PLAN

§ Key projects for 2009-2019

WEB = Within existing budgets

NBR = New budget required

STO = Staff time only

Goal 1. Establish the state of Waitakere's biodiversity.

Action	Who can do it	How it might be done	Funding	Initial target	Progress since 2006 Biodiversity Strategy adopted
Collate and summarise existing information on Waitakere's biodiversity	Strategy ARC Parks Planning Conservation groups	Desk-top literature research Monitoring results Local knowledge and observations	STO	On-going	LAB Biodiversity Report completed in December 2007
§ Prepare an inventory of local species that are threatened or at risk	Strategy ARC DoC Botanical Society	Literature search	NBR \$75,000	On-going	Fauna list incorporated in the Biodiversity Report 2007 Plant species in preparation
Make biodiversity information available to all Council staff and the community	Strategy Public Affairs Parks Planning EcoWater	Make information available on the Council website	WEB	June 2007	Biodiversity Strategy 2006 loaded on to the Council website August 2006

		Prepare flyers or booklets			Biodiversity Report printed and loaded on the Council website in March 2008
		Keep the State of the City Report updated			Community information pack including a booklet on biodiversity of the Waitakere Ranges prepared ready for the launch of the Waitakere Ranges Heritage Area Act 2008
					State of Biodiversity chapter of the State of the City Report loaded on the Council website in 2001

Goal 2. Provide for the maintenance and long-term viability of the City's indigenous biodiversity.

Action	Who can do it	How it might be done	Funding	Initial target	Progress since 2006 Biodiversity Strategy adopted
Identify high priority or high risk sites for conservation	Strategy Parks Planning Conservation groups	PNA Survey information New sightings and field assessments	WEB	On-going	Waitakere Ranges Heritage Area Act 2008
Ensure existing biodiversity is taken account of on proposed	Consent Services ecologists	Conditions on consents	WEB	On-going	

development sites	Strategy				
Continue to identify Ecological Linkages in the District Plan as areas desirable for restoration	Strategy Policy Implementation	Plan Changes	NBR	District Plan review in	
Encourage landowners to take up the Green Network Community Assistance programme	Parks Planning	Secure additional funding in the Long term Council Community Plan 2009-2019	NBR	Budget identified in the Long term Council Community Plan 2006-2016	
Provide advice on District Plan changes to ensure sites are adequately protected and objectives, policies and rules can adequately address biodiversity objectives and challenges	Strategy	Co-ordinate with Policy Implementation on District Plan Changes	NBR	Co-ordinate with District plan reviews	
When preparing or reviewing Reserve Management Plans ensure that biodiversity is recognised and provided for	Parks Planning	Surveys Submissions on consultation	WEB	On-going	
Update and implement the WCC Weed Management	Parks Planning Parks & Open	Regular review	WEB		Waitakere City Parks Weed Management Strategy and 5-

Plan	Spaces				year weed management programme adopted February 2007
Work with other parties to co-ordinate plant and animal control work	Parks Planning Parks & Open Spaces	Co-ordinate with ARC, MAF, Conservation Groups	WEB	On-going	Started in 2003, Ark in the Park has undertaken predator control in a 2000-hectare area of the Waitakere ranges
Prepare and implement a pest animal control plan for high conservation areas	Parks Planning	Co-ordinate with ARC	STO		Waitakere City Parks Animal Pest Strategy and Five Year Animal Pest Control Work Programme adopted February 2007
§ Determine location of and resources used by long-tailed bats outside the Waitakere Ranges Regional Park	Strategy	Bat monitoring of known colony locations and identification of flight movements	WEB	Commence bat monitoring in 2008/09 summer	
Continue and strengthen partnerships with the community through the Green Network Community Assistance programme	Parks Planning	Working with land owners	WEB	On-going	
Strengthen the awareness of biodiversity importance for consideration when processing applications for	Strategy Consent Services	Information leaflets Pre-application meetings	WEB	On-going	

new developments					
Support and implement the Northwest Wildlink	Strategic Partnerships Advisor-Environmental Parks Planning	Co-ordinate with ARC, NSCC, RDC	WEB	On-going	Launched in February 2006, Community Forum held in April 2006
Implement the protective measures for biodiversity in the Waitakere Ranges Heritage Area Act 2008	ARC Consent Services	Conditions on consents	STO	On-going	
Promote and implement eco-sourcing for planting projects	Parks Planning Parks & Open Spaces Consent Services	Inform nurseries Conditions on consents	WEB	On-going	

Goal 3. Enable the re-establishment of species lost from the City.

Action	Who can do it	How it might be done	Funding	Initial target	Progress since 2006 Biodiversity Strategy adopted
Identify and prioritise sites and corridors for restoration	Parks Planning Parks & Open Spaces Strategy	Surveys Contractor feedback Community feedback	STO	On-going	Conceptually identified in the draft Environment Strategy – Green Network 2008
Prepare and implement restoration plans for priority	Parks Planning Strategy	Specialist ecologist advice and using	NBR	On-going from 2010	

sites		results of the Threatened Plant Survey and Biodiversity Monitoring programme			
Prepare and implement species recovery plans for threatened species.	ARC DoC Strategy	DoC database and Threatened Plant Survey with advice from DoC	NBR	On-going from 2010	
Promote the planting and conservation of threatened plants such as the Huia hebe and Astelia grandis	Parks Planning Consent Services Strategy	Planting on parks Conditions on consents Advice from DoC and Botanical Society	WEB	On-going and according to any Threatened Species management recommendations	
Manage reserve networks to allow for and facilitate their response to long-term environmental changes and future risks (climate change, biosecurity incursions)	Strategy Parks Planning Parks and Open Spaces	Specialist ecological advice	NBR as climate change takes effect	On-going	
Support the re-introduction of species lost to the Waitakere ranges in safe habitats.	Strategy Parks Planning Parks & Open Spaces for public land	Co-ordinate with ARC, DoC	STO/WEB	On-going	Ark in the Park re-introduced: Whitehead in 2004 North Island robin in 2005 Stitchbird in 2007

Identify vulnerability status of Waitakere species	Strategy	DoC database, literature research and monitoring results	STO	On-going	
§ Undertake a feasibility study to determine the viability of creating a predator-free enclosure on Harbourview to encourage fernbirds and other threatened species known to inhabit the area	Strategy Parks Planning Parks & Open Spaces	Predator-proof fencing of part of the coastal wetland and pest control	NBR \$660,000	Fencing by 2018	

Goal 4. Enable the effective involvement of tangata whenua in the management of biodiversity and fulfil their responsibilities as kaitiaki.

Action	Who can do it	How it might be done	Funding	Initial target	Progress since 2006 Biodiversity Strategy adopted
Develop partnerships with Te Kawerau a Maki and Ngati Whatua as nga kaitiaki	Strategy Parks Planning Parks & Open Spaces Ecowater Transport Assets Consent Services Green Team	Regular meetings and sharing information	WEB	On-going	

Include Te Kawerau a Maki and Ngati Whatua values in biodiversity actions and management.	Parks Planning Parks & Open Spaces Ecowater Transport Assets Consent Services Green Team	Regular meetings and sharing information	WEB		
Facilitate the sustainable gathering of cultural material from council managed sites	Parks Planning Parks and Green Assets Ecowater Project twin Streams	Working with cultural groups and Corban Estate groups	STO	On-going	

Goal 5. Co-ordinate, contribute to and build community capacity for the maintenance and enhancement of indigenous biodiversity.

Action	Who can do it	How it might be done	Funding	Initial target	Progress since 2006 Biodiversity Strategy adopted
Strengthen existing arrangements and create new ones to encourage people to participate in supporting biodiversity.	Parks Planning Ecowater	Assist membership and funding of conservation groups. Green Network Community Assistance Programme Project Twin Streams	STO	Annual Plan 2007/08	

		Local Area Plans			
Continue to provide information and encouragement for voluntary initiatives for biodiversity protection	Parks Planning Ecowater	Produce relevant pamphlets Community Assistance Programme Project twin Streams Local Area Plans	STO	On-going	
Continue to provide funding for the Green Network Community Assistance Programme of restoration and covenanting of privately owned land	Parks planning	Budget provision Conservation Covenant Programme Heritage Covenants Project twin Stream covenants	WEB	On-going	
Develop a database of biodiversity conservation effort in Waitakere City for information sharing		Build on the Green Network Community Assistance database Co-ordinate with ARC	STO	?	
Continue to support education programmes at all levels in the community	Public Affairs Parks Planning	Environmental education and advocacy Green Network Community Assistance Programme	STO	On-going	
§ Develop a joint Council/community management plan for Te	Strategy Parks Planning Landowners	Ecological and geomorphological surveys	NBR \$45,000	2009-2012	Build on the report prepared by NIWA in 2003 and the draft Te

Henga wetland	DoC F&B RDC ARC Fish & Game Waitakere River Care Group	Consultation Plan development Action planning Cost sharing			Henga Wetland Strategic Direction document
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Goal 6. On-going research and monitoring.

Action	Who can do it	How it might be done	Funding	Initial target	Progress since 2006 Biodiversity Strategy adopted
Review Biodiversity Monitoring data 1999-2007 and develop a refined programme	Strategy	Determine management practices that could influence key indicator species Identify key sites Preliminary survey of sites for suitability	WEB	Review completed by March 2008 Survey completed by July 2008 Programme established by October 2008	
§ Use monitoring information to improve management of sites	Strategy Parks Planning Parks Assets Conservation groups Landowners	Management plans Planting plans Weed management	WEB	On-going	

Develop relationships with research organisations to contribute to biodiversity knowledge	Strategy Parks Planning Ecowater Project Twin Streams	Keep up to date with research literature Host guest speakers Engage students	STO		
Explore opportunities for community involvement in monitoring and ways of publicising and using results	Parks Planning Ecowater Project Twin Streams Strategy	Project Twin Streams WaiCare Green network Community Assistance Programme Local Area Plans	WEB	On-going-	

KEY PROJECTS FOR 2009-2019

1. Inventory of threatened plant species in Waitakere reserves

There is an inventory with management requirements for threatened plant species of the Waitakere Ranges but very little is known about threatened plants that will certainly occur in Waitakere reserves in the urban area. Working from a Department of Conservation database, recorded sites are first to be confirmed and accurately located using hand-held GPS recorders. New records will be built up over time with the assistance of the Auckland Botanical Society, conservation groups and contractors. Recovery or management plans will then be prepared to ensure the on-going survival of these plant populations.

Estimated budget

Survey \$50,000 from Strategy

Estimated timeframe: 2009-2011

2. Long tailed bat recovery programme

Bats are the only land mammal native to New Zealand. With the greater short-tailed bat (*Mystacina robusta*) thought to be extinct, there are now only two species; long-tailed (*Chalinobus tuberculatus*) and short-tailed (*Mystacina tuberculata*). Long-tailed bats were common throughout New Zealand in the 1800s and were recorded in colonies of 'score', 'hundreds' and 'thousands.' By 1900-1930 they were becoming scarce in many districts with the reduction in bat distribution paralleling the extensive reduction in forested areas. Although habitat modification, competition and predation may displace or kill individual bats, there are no data available to indicate the consequences of these losses on the long-term viability of entire populations. The long-tailed bat is now classed as Vulnerable by the IUCN.

The long-tailed bat has a wing span of less than 300mm, weighs 8-11 grams and can fly at 60 kilometres per hour with a home range of up to 100 km². They are believed to produce only one off-spring each year.

There are still several small colonies of the long-tailed bat in the Waitakere Ranges and the eastern foothills. These bats are insect feeders and emerge in the evening about half an hour after sunset to forage over large distances, often along stream corridors. During the day they roost in hollow trees or caves usually in small numbers. Recent research by the Department of Conservation has revealed that bats actively select the largest and oldest trees in the forest for roosting and breeding.



Flight paths and roosting sites outside the regional park should be identified so that these habitats can be protected and bat colonies maintained.

Estimated budget:

Initial bat presence monitoring \$20,000 over three years

Habitat use tracking \$30,000 for three sites
Restoration/habitat protection \$50,000

Estimated timeframe:

This project could potentially be funded fully from Waitakere's Strategy budget over 2008-2013.

3. Te Henga wetland management plan

The 80-hectare Te Henga wetland is the largest coastal freshwater wetland in the region and home to a wide range of wetland species including fernbird, bittern, marsh crake, spotless crake and banded rail. It contains all of the notable northern-swamp plant species and supports up to 15 native bird species



Te Henga wetland is of high ecological value as such habitats are increasingly rare. The Royal Forest and Bird protection Society owns approximately 30 hectares; Auckland Acclimatisation Society owns two blocks totalling 13 hectares with the balance in private ownership.

Auckland Regional Council, Waitakere City Council and Rodney District Council have all contributed to weed management of the wetland in the past. A comprehensive management plan could address wider issues than weed management with more active management of the ecology agreed and funded by all parties.

Estimated budget:

Initial investigation and literature search	\$10,000
Issues and options paper	\$5,000
Consultation	\$6,000
Workshops with interested parties	\$3,000
Drafting a plan	\$10,000
Public consultation	\$6,000
Finalise plan	\$5,000

It is anticipated that this project over three years would be share funded by Waitakere City Council, Auckland Regional Council, Rodney District Council, Royal Forest and Bird protection Society and Auckland Acclimatisation Society.

Estimated timeframe: 2010-2012

4. Predator-free enclosure for fernbirds at Harbourview-Orangihina

The reserve contains the largest area of salt marsh and complete ecotone from saline to brackish to freshwater wetland around the Waitemata Harbour. The foreshore of this reserve is a habitat for fernbird (*Bowdleria punctata vealeae*)⁵. This small population is split into two separate areas of rush-dominated vegetation.

Fernbirds prefer a two-tiered vegetation structure and it has been recommended that the areas between the fernbird habitats are reconnected by planting flax and *Olearia solandri*, both of which are present in the wetland. The expansion of a two-tiered vegetation structure to link the two occupied areas would enable the population to make more use of the wetland and increase the survival chances. The increase in residential development around the reserve will also result in an increase in domestic pets. It may be necessary in the near future to undertake pest management either through construction of a pest-proof fence around the fernbird habitat or intensive trapping.



Other species that may be attracted to an improved wetland habitat and protected from disturbance could be Australian bittern (*Botaurus poiciloptilus*) and banded rail (*Rallus philippensis*)⁶.

Estimated budget:

Fencing of protection area	\$600,000
Pest control	\$50,000 over three years
Planting	\$10,000

External funding would be required to implement this project. Possible sources could be ASB Charitable Trust, Ministry for the Environment's Sustainable Management Fund or the Foundation for Research, Science and Technology funding.

Estimated timeframe: The project implementation would be over a five to eight year period, 2010-2018.

5. Kereru recovery programme

Bird counts in the Waitakere Ranges carried out by ARC over the past five years were established in order to monitor change in bird numbers as a result of Operation Forest Save, the possum control programme. There is insufficient data to statistically show a change although numbers of tui and kereru (*Hemiphagia novaeseelandiae novaeseelandiae*) show an increase in 2001 compared with 1997 but may be just normal fluctuation.

⁵ Bioresearches 1996a.

⁶ Bioresearches 1996b.

It is known that possum out competes kereru for the same food resources, and kereru require substantial amounts of their fruit food source to maintain body weight. Kereru numbers are considerably higher per hectare on the gulf islands where possums are absent. Kereru numbers have also increased through successful nesting in areas where possums have been dramatically reduced, such as at Wenderholm Regional Park in Rodney District



A comparison of bird numbers and breeding success inside and outside the ‘predator-free’ Ark in the Park area will establish the benefit of pest control for bird species such as kereru. Pest control can be targeted to nesting territories and key food sources during critical periods of the year.

Estimated budget:

Assessment of pest control on kereru occurrence and breeding success	\$10,000
Location of breeding sites	\$30,000
Pest control	\$100,000

Estimated timeframe:

This project could be jointly funded from Waitakere’s Strategy and Parks Planning budgets over 2010 – 2012.

APPENDIX: POLICY AND LEGISLATION

International Commitment

The Convention on Biological Diversity was adopted at the Earth Summit in Rio de Janeiro. This international convention concerns the conservation of biological diversity including the variety and variability of genes, species, populations and ecosystems which provide the foundation for the earth's ecological services.

New Zealand ratified the Convention in 1993, adopting the three main goals:

- The conservation of biological diversity
- The sustainable use of its components, and
- The fair and equitable sharing of the benefits from the use of genetic resources.

Other international initiatives in which New Zealand is involved include the World Heritage Programme (with three sites recognised in New Zealand: Tongariro National Park, South Westland and a group of five Sub Antarctic Islands), and the RAMSAR Convention for the conservation and wise use of wetlands and their resources (with five sites in New Zealand: Farewell Spit, Firth of Thames, Kopuatai Peat Dome, Waituna Lagoon and Whangamarino).

A special interest in Antarctica and the Southern Ocean has led to our being a party to the Convention on the Conservation of Antarctic Marine Living Resources, developed under the Antarctic Treaty

National policy and legislation

The New Zealand Biodiversity Strategy - Our Chance to Turn the Tide 2000

The Convention on Biological Diversity, ratified by New Zealand in 1993, requires us to prepare national strategies or plans to set national goals to conserve and sustainably use biodiversity.

New Zealand made a commitment to prepare a national strategy to set clear goals for New Zealand's indigenous biodiversity in the Environment 2010 Strategy released in 1995⁷. In 1997 a "State of the Environment" report was prepared for New Zealand which identified just how bad things have become for our biodiversity⁸. In 1998, the Government adopted "halt the decline of indigenous biodiversity" as one of its ten Strategic Priorities.

The New Zealand Biodiversity Strategy was finally adopted in February 2000, identifying the conservation and sustainable use of New Zealand's biodiversity as a matter of national importance⁹. The Biodiversity Strategy aims to halt the decline in our biodiversity and sets out a vision where:

- New Zealanders value and better understand biodiversity;
- We all work together to protect, sustain and restore our biodiversity, and enjoy and share in its benefits, as a foundation of a sustainable economy and society;
- Iwi and hapu as kaitiaki are active partners in managing biodiversity;
- The full range of New Zealand's indigenous ecosystems and species thrive from the mountains to the ocean depths; and
- The genetic resources of our important introduced species are secure and in turn support our indigenous biodiversity.

⁷ Environment 2010 Strategy – A Statement of the Government's Strategy on the Environment, 1995, Ministry for the Environment.

⁸ The State of New Zealand's Environment, 1997, Ministry for the Environment.

⁹ The New Zealand Biodiversity Strategy: Our Chance to Turn the Tide, 2000, Department of Conservation and Ministry for the Environment.

The Strategy includes four main goals for achieving this:

Goal One: Community and individual action, responsibility and benefits

Enhance community and individual understanding about biodiversity, and inform, motivate and support widespread and co-ordinated community action to conserve and sustainably use biodiversity; and

Enable communities and individuals to equitably share responsibility for, and benefits from, conserving and sustainably using New Zealand's biodiversity, including the benefits from the use of indigenous genetic resources.

Goal Two: Treaty of Waitangi

Actively protect iwi and hapu interests in indigenous biodiversity, and build and strengthen partnerships between government agencies and iwi and hapu in conserving and sustainably using indigenous biodiversity.

Goal Three: Halt the decline in New Zealand's indigenous biodiversity

Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified ecosystems in production and urban environments; and do what else is necessary to

Maintain and restore viable populations of all indigenous species across their natural range and maintain their genetic diversity.

Goal Four: Genetic resources of introduced species

Maintain the genetic resources of introduced species that are most important for economic, biological and cultural reasons by conserving their genetic diversity.

It has been recognised that one of the keys to achieving these goals is to address how the management of private land affects indigenous biodiversity. The Ministerial Advisory Committee on Biodiversity noted that achieving goals for biodiversity will not result from forced compliance or from increased public funding alone, and that it will take combined resources and co-operation from all involved to halt the decline in New Zealand's biodiversity¹⁰.

Resource Management Act 1991

Section 6(c) of the Resource Management Act (RMA) identifies the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna as matters of national importance, and section 7(d) requires particular regard to be had to the intrinsic values of ecosystems.

The Waitakere City District Plan protects these areas of significant vegetation and habitats identified in Waitakere City through the Protected Natural Area survey programme. However, this itself does not necessarily ensure protection or maintenance of biodiversity.

Section 6(e) identifies as a matter of national importance the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga. Maori hold a holistic view of the environment where people are part of nature and biodiversity. As the people are intrinsically linked with the natural world, the mana of the iwi, hapu or whanau is directly related to the well being of the natural resources within their rohe, or region. Understanding and valuing the Maori worldview is an essential step towards a bicultural approach to biodiversity management¹¹.

Amendments to the RMA in 2003 have added a definition of indigenous biodiversity, and amended Sections 30 and 31 to clarify that managing biodiversity is an explicit function of both regional councils and territorial authorities. They must provide for the maintenance of biodiversity in regional and district plans.

¹⁰ Bio-wait, 2000, Ministry for the Environment.

¹¹ Te Kawerau A Maki Resource Management Statement, 1995.

Local Government Act 2002

This Act provides for local authorities to play a broad role in promoting the social, economic, environmental, and cultural well being of their communities, taking a sustainable development approach. Maintaining biodiversity is one of the critical measures of sustainability. Although there are many perspectives on sustainable development, there can be little argument that a world where species and ecosystems are being lost is not sustainable by any measure. The state of biodiversity is therefore a core determinant of the success of local governance as defined by the Local Government Act.

Maintaining biodiversity obviously has environmental benefits but it also has:

Economic benefits in the form of ecosystem services (water quality, soil fertility, pollination etc.) tourism opportunities and potential commercial and medical uses.

Social benefits in the form of national identity, recreational and educational benefits.

Cultural benefits in the form of being able to recognise and continue Maori traditions, knowledge and customary uses.

Waitakere Ranges Heritage Area Act 2008

This Act establishes the Waitakere Ranges Heritage Area, states the national significance of the Heritage Area and establishes a set of objectives for the Heritage Area and its heritage features to ensure long-term protection.

Biosecurity Act 1993

Regional Pest Management Strategies are prepared under the provisions of the Biosecurity Act.

Biosecurity Strategy for New Zealand 2003

Protect New Zealand, the Biosecurity Strategy has a three-pronged focus to protect New Zealand's economy, environment and human health. The new focus is very much on protecting New Zealand's indigenous biodiversity.

Regional policy and legislation Auckland Regional Policy Statement (ARPS)

The ARPS does not specifically address biodiversity but only contains policies and methods for protecting and enhancing natural heritage where it is degraded or potentially affected by development.

Objectives relating to natural heritage in the Auckland Regional Policy Statement are as follows:

(6.3) 2. To preserve or protect a diverse and representative range of the Auckland Region's heritage resources.

(6.3) 3 To protect and restore ecosystems and other heritage resources, whose heritage value and/or viability is threatened.

There are policies for establishing the significance of natural heritage, providing for kaitiakitanga, controlling the effects of land use on natural heritage, and use and access to natural heritage. Policies relating to restoration of natural heritage state:

Significant ecosystems that have been damaged or depleted should be protected and restored to the stage where their continued viability is no longer under threat.

The ARPS identifies areas of significance in Waitakere City. In particular:

- The Te Henga-Wainamu swamplands, lakes dunes and native forest provide a complex of habitats with rich and diverse flora and fauna not found elsewhere in the Region. The area is considered to be of national importance.
- The Waitakere Ranges is a biologically rich area considered to be of national and international importance.

Auckland Regional Pest Management Strategy 2008-2013

As well as providing a framework and priority ranking for the Council's plant and animal pest management, the Waitakere Ranges are identified as one of the few parts of the Auckland Region in which active management of a number of weed species is required. Active control of possums is also carried out by the Auckland Regional Council.

Auckland Regional Parks Management Plan

The Waitakere Ranges Regional Park encompasses more than 16,000 hectares and is managed by the Auckland Regional Council under the Auckland Regional Parks Management Plan. This plan contains general objectives and policies for habitat and ecosystem protection, restoration and enhancement, indigenous species protection and for species reintroduction for regional parks. The plan indicates that specific species management programmes will be developed, among other species, for:

- Waitakere Rock Hebe (*Hebe bishopiana*).
- Wood rose (*Dactylanthus taylorii*).
- Hochstetter's frog.
- Long-tailed bat.

Local policy and legislation

Waitakere City District Plan

Botanical surveys have been completed for the Waitakere Ecological District and for Waitakere part of the Tamaki and Rodney Ecological Districts (PNA surveys). The outstanding and significant vegetation identified from these surveys has been mapped and protected under the Waitakere City District Plan.

The District Plan's Objective for biodiversity is

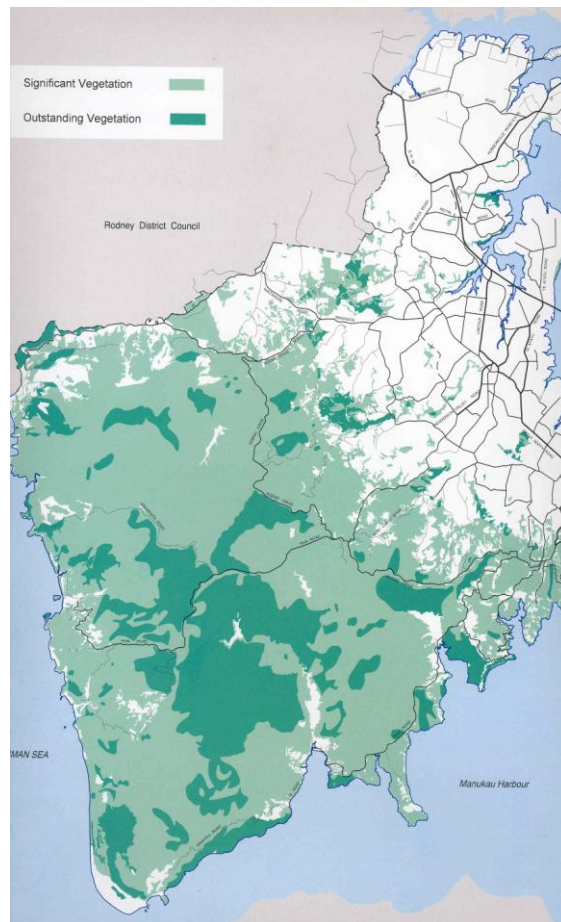
Objective 2 To protect the City's native vegetation and fauna habitat, including protecting:

- *The quality and resilience of the resource;*
- *The variety and range of species and their contribution to the biodiversity of the City*
- *Their ecological integrity;*
- *Their healthiness as a potential source of harvest for cultural purposes.*

Rules in the District Plan regulate vegetation clearance, earthworking, natural area rules and riparian protection. The Plan further advocates for restoration of areas and:

Objective 5 To protect processes of natural regeneration within the City, and promote and maintain links between areas of significant and outstanding native vegetation and fauna habitat, so that their resilience is protected and enhanced.

Outstanding and Significant Areas of Vegetation.



Sites of Special Wildlife Interest have also been identified through the PNA surveys¹² and listed in Appendix F of the policy section of the District Plan.

Long Term Council Community Plan 2006-2016

The Council's Long Term Council Community Plan, prepared under Section 93, identifies sustainable development as one of the City's five priorities, including through supporting ecosystem capacity and respecting environmental limits. A key indicator of sustainability is the maintenance of local biodiversity. The concept of sustainability is also supported by the Community Outcomes sought: Sustainable Environment and Environmental Protection. The Council's nine strategic platforms include the Green Network, which is about caring for natural areas.

The LTCCP targets the Waitakere Ranges for a higher level of protection, in particular, through managing weeds and pests, ensuring ecosystems are not compromised by urban sprawl or visitor pressure, and re-establishing corridors to link the Ranges to the sea. The LCCP includes funding to support this programme. Delivery is through the Green Network strategic platform.

¹² Waitakere Ecological District, 1993. Ecological Survey of Waitakere City Lowlands, 1998, Rodney Ecological District Survey report, 1983-4.

Waitakere City Strategic Direction:

- **Sustainable Development Priority**

Maintaining native biodiversity is a cornerstone to sustainability.

- **Green Network Strategic Platform**

The 2020 vision for the Green Network is that the Waitakere Ranges will be permanently protected. There will be a network of bush and trees from the Ranges, through town centres and suburbs, to the coasts, bringing the natural world into people's everyday lives and filling the streams and forests with life. This platform is about caring for natural areas. The City's parks, bush and streams form a green network that provides homes and highways for wildlife and recreational areas for people. It also assists with managing and filtering stormwater. Protection and enhancement is sought on both public and private land, community involvement is encouraged, as is the protection of landscapes, native plants, wildlife and ecosystems.

This strategic platform is incorporated into the Waitakere District Plan, and so has a regulatory and non-regulatory underpinning.

- **LTCCP Community Outcomes**

Relevant Community Outcomes include the Green Network, Sustainable Development reflecting the Council's strategic platform and priority, and Environmental Protection or Kaitiakitanga.

Draft Environment Strategy

The draft strategy sets the strategic direction for protecting and managing the Green Network.

Waitakere City Biodiversity Strategy and Action Plan 2006

This was the first biodiversity strategy and action plan prepared for Waitakere and has now been updated with the Waitakere City Biodiversity Report 2007 and this document.

Waitakere City Biodiversity Report 2007

This report provides a snapshot of Waitakere's biodiversity and current biodiversity management undertaken by lead agencies. The report was prepared as part of the Local Action for Biodiversity Project under ICLEI

Waitakere City Parks Weed Management Strategy 2006

The goal of the Weed Management Strategy is for the protection of the quality, resilience, biodiversity and ecological integrity of Waitakere City's natural habitat from the impacts of environmental weeds. The strategy contains criteria for prioritising weed management programmes as well as best practice guidelines. The 2006 review provides a new five-year prioritised work programme.

Waitakere City Parks Animal Pest Strategy 2006

This strategy provides the five-year work programme for animal pest management in reserves.