



greater WELLINGTON
REGIONAL COUNCIL

Coastal & Marine Biodiversity Action Plan

Draft for Consultation

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1. Introduction

Biodiversity is identified in Greater Wellington's Ten Year Plan 2006 to 2016 – *A Sustainable Region* as a core function of Council.

Greater Wellington's work in the environment area touches on many aspects of Greater Wellington's involvement in biodiversity, for example, wetland restoration, riparian management, and protection of native forests areas on private land. The coastal and marine ecosystem programme is one such delivery programme for biodiversity, and the Coastal and Marine Biodiversity Action Plan will be a major outcome for the programme.

1.1 The Coastal and Marine Biodiversity Action Plan

The purpose of the Coastal and Marine Biodiversity Action Plan (the Plan) is to describe how the Greater Wellington intends to address the problem of coastal and marine biodiversity degradation, and improve the protection of coastal sites with high quality biodiversity.

It will do this by:

- Explaining why coastal and marine ecosystems are important; how they have been modified over time; what their current state is and the nature of the threats they presently face.
- Explaining why Greater Wellington must act to assist in their recovery.
- Proposing an overall vision for the region's coastal and marine biodiversity and goals to support that vision.
- Identifying how Greater Wellington will work with other agencies to achieve these goals through a series of actions.
- Describing the monitoring that will be undertaken to assess how well these results are being achieved.
- Identifying possible work areas on the coast.

This Plan describes Greater Wellington's work programme for the protection and restoration of coastal and marine biodiversity. This Plan will *not* consider marine biosecurity (control of pest plants and animals).

The potential work areas of the Plan include river and stream estuaries, coastal wetlands, coastal foredune dunes and back-dune habitats, coastal escarpments, and coastal streams.

1.2 Relationship to other biodiversity programmes

Since the release of the New Zealand Biodiversity Strategy in 2000, Greater Wellington has increased its investment in regional biodiversity, intending to halt the loss of remnant areas, native ecosystems and indigenous species. The biodiversity programme addresses the following threatened or depleted ecosystem types:

- Coastal dunes and beaches
- Escarpments and rocky platforms
- Estuaries and marine ecosystems
- Lowland forest
- Rivers and streams, and
- Wetlands and lakes.

Each of these ecosystem groupings is addressed either through plans and strategies or a wide variety of programmes and projects. For example, the “Wetland Action Plan” addresses all natural (as opposed to artificial) wetlands outside the coastal marine area. The strategic direction for ecosystems in rivers and streams is set out in the “Strategy for Achieving Riparian Management in the Wellington Region”. An action plan for indigenous lowland forest has recently been prepared for consultation.

2. Why coastal and marine biodiversity is important

2.1 Rare and unique species

Coastal areas are important habitats for a range of native and coastal birds; particularly as breeding grounds and feeding places on long migratory routes. It has been estimated that nation wide, less than 10% of our original coastal sand dunes remain close to their original condition.

Coastal plants and animals have evolved together in response to their unique environment and form complex and often fragile ecosystems. Usually these species occur only in coastal environments and some (particularly terrestrial invertebrates) are confined to just one or two areas in the country. For this reason they are very vulnerable to the impacts of human development.

Many unique marine species are now rare or threatened as a direct result of human activity. An increasing number of shellfish species are absent or only found in ‘pockets’ along the beach. For example tōheroa (*Paphies ventricosum*), were present on the Kapiti Coast and throughout other parts of the country but are now restricted to a few beaches in Northland. In other places, while good numbers of shellfish are present, the water quality has deteriorated to such an extent that it is no longer safe to take them for human consumption.

Estuaries occur where freshwater and marine waters meet and are home to a unique array of species. Generally, there is insufficient information available about our estuarine species to comment about their relative rarity. In the Wellington region, there are approximately 35 river estuaries - some are very small, for example Korokoro Stream estuary, while others like the Hutt River Estuary are large. The region's largest estuary, Pauatahanui Inlet, has one of the highest cockle (*Chironmus zealandicus*) densities in the world.

The Wellington Harbour has been relatively well-studied by research institutions including Victoria University of Wellington and the National Institute of Water & Atmospheric Research (NIWA). The Harbour has some unique marine features including a forest of giant kelp (*Macrocystis sp*) between Eastbourne and Pencarrow Head, and a population of the rare sponge (*Latrunculia brevis*) at Barrett's Reef.

2.2 Significance to Maori

The domain of Tangaroa, the coastal marine area is highly significant to tāngata whenua. Marine species are valuable sources of kaimoana (seafood) and coastal vegetation provides highly prized materials for raranga (weaving) and rongoa (medicine). These species and the places where they are harvested are important to Maori. Coastal areas are highly significant to the history and culture of iwi and hapū and contain important places including waahi tapu (sacred places), waahi taonga (sacred treasures) and mahinga kai (food gathering areas).

Within this region there are references to Maui fishing up the North Island or *Te Ika a Maui*, which translates to mean "The Fish of Maui". The Wairarapa has significance for many mythological sites. The Maui story notes Palliser Bay as the mouth of the fish "Te Waha o Te Ika a Maui". The region is often referred to as "The head of the fish" or "Te Ūpoko O Te Ika" and Lake Wairarapa as "The eye of the fish" or "Te Whatu O Te Ika a Maui". Other features include the Rimutaka Ranges and Tararua Ranges as the spine of the fish which extends through the middle of the North Island continuing to include the Ruahine Ranges.

2.3 Recreation, amenity and tourism

New Zealanders have a strong affinity with the coast and a well documented history of using coastal areas for recreation. This enjoyment is enhanced by the presence of naturally occurring native ecosystems, but in many places, intensive recreational use and urban development is putting these coastal and marine ecosystems under stress. The unique ecosystems can provide financial benefit through tourism (e.g. seal colony visits, snorkelling and diving trips etc).

2.4 Hazard protection properties of dunes

Coastal dunes provide a natural barrier that protects against inundation by the sea during storm surges, tsunamis, and king tides.

Sand bars in the tidal zone dissipate the energy of waves as they roll-in to break on the shoreline. Sand from the tidal zone is washed up onto the beach where it accumulates to form dunes. The native sand binding plants pīngao (*Desmoschoenus spiralis*) and kōwhangatara (*Spinifex sericeus*) are essential components of the dune building process; helping to stabilise sand against wind erosion and rebuilding dunes after storm events. Without this vegetation, dunes can become unstable and sand is blown inland. The importance of native sand binding plants and their ability to repair and build stable sand dunes to act as a barrier protecting land and property from coastal hazards will only increase in the future, as weather patterns are likely to become more erratic and the sea level rises in response to global climate change.

3. Threats to coastal biodiversity

Coastal environments ranging from sandy and stony beaches to rocky headlands support a wide range of biodiversity. They include isolated areas with relatively intact ecosystems like Cape Palliser as well as modified dunes in highly populated areas like the Kapiti Coast. These ecosystems are vulnerable to a range of threats, as detailed in the following sections.

3.1 Coastal residential development

Sand dune ecosystems are particularly vulnerable to damage from urban development, roading and other structures. Development within dune areas interrupts the natural process of erosion and accretion that occur in response to storm events. The accretion phase is dependent on sand binding foredune vegetation which catches and stabilises wind blown sand.

Residential developments with their associated environmental pressures of heavy foot traffic, local weed infestations, and vehicles can remove crucial dune species. When modified dunes are unable to recover following a natural erosive event such as a storm surge, or king tide; landowners resort to a variety of structures to protect their properties. These structures impact on remaining dune habitat nearby and may even exacerbate erosion further along the coast.

Coastal escarpments and rocky coastlines are now coming under more development pressure, which is increasingly displacing habitat that would otherwise support native ecosystems.

Stormwater can contain contaminants from urban and industrial areas. Stormwater from roofs and gutters, roads and other hard surfaces like vehicle car parks can contribute heavy metals and nutrients to the stormwater system which eventually flows to rivers and streams the coast. Recent studies by Greater Wellington for the Porirua Harbour and Pauatahanui Inlet have shown that contaminants in some stormwater discharges to the Porirua Harbour catchment clearly have the potential to cause significant adverse effects on the benthic ecology of the harbour. Some of these compounds, including total copper, lead and zinc in the Onepoto Arm, and Total DDT in both the Onepoto Arm and the Pauatahanui Arm, are present at concentrations above sediment quality guidelines (Milne 2006).

The effects of uncontrolled sedimentation can have a devastating effect on the marine environment as well. Poorly managed earthworks release vast quantities of silt and clays into low energy environments such as estuaries and river mouths. These small particles flocculate in contact with saline water to settle out to form bottom sediments that are not suitable for sediment dwellers. Clays are generally toxic to marine life; reducing visibility for fish and smothering their gills

3.2 Grazing and pest animals

Native plants and animals are suppressed and sometimes eradicated in coastal areas where stock are free to graze. Waste products from stock transfer the seeds of exotic plant species and also alter the soil fertility. This combination of factors causes a shift in species composition. Native plants are adapted to grow best in infertile soils (particularly in dune slacks and wetlands) because they are being out competed by introduced weeds. Trampling further accelerates erosion of fragile coastal sands and soils.

Rabbits present a serious problem to existing vegetation and restoration plantings around the region. While fencing can be used to exclude stock; rabbits usually require the use of on-going pest control methods.

Mustelids, rats, and feral cats are present throughout the region's coastal environments and have a significant impact on native fauna, as do domestic cats and dogs.

The impact of marine pest animals is less well understood. The bivalve mollusc (*Theora lubrica*) is present in Wellington Harbour. This animal originates from Japan, Korea, and Taiwan and was probably transported here either in ballast water or on the hulls of visiting ships. The Ministry of Fisheries is undertaking a marine biosecurity survey of New Zealand's main harbours, including Wellington Harbour. It is anticipated that more foreign marine animals will be found in our region. There have been no surveys for marine animal pests undertaken outside the main harbours.

3.3 Pest plants

On coastal dunes, escarpments and rocky coastlines native plant populations have been depleted to the extent that they require active restoration. A wide assortment of introduced plant species have become naturalised in coastal ecosystems.

Modified dunes are particularly susceptible to weed invasion, especially where dunes are close to built-up urban areas. Many areas are now largely dominated by pest plants including lupin, boneseed, blackberry, gorse and boxthorn.

Exotic marram grass (*Ammophila arenaria*) has been extensively planted on the foredune emulating Australian dune stabilisation programmes. Marram is invasive and increases erosion in the long term by out competing native foredune vegetation and building tall unstable dunes that are prone to suddenly collapse.

Boxthorn, boneseed and gorse are also commonly established on coastal escarpments following clearance, usually by fire. Managing these areas is difficult and expensive because access is poor. However, the Nga Uruora Kapiti Project demonstrates that highly motivated community groups can carry out low cost, successful pest plant control even on challenging sites like steep coastal scarps.

The problem of pest plants is not restricted to terrestrial ecosystems. In 1987, the Asian kelp (*Undaria pinnatifida*) was found growing from low tide level to 7 metres depth from Aotea Quay to Point Jerningham. This was the first recorded sighting of this plant in the Southern Hemisphere. It is thought to have arrived from the ballast water of Japanese and Korean fishing vessels. *Undaria* forms a thick canopy and competes for light and space with native brown seaweeds *Cystohora* and *Carpophyllum*. There are few remedial actions for tackling *Undaria*, except total removal from the sub-littoral zone.

3.4 Uncontrolled vehicle and pedestrian access

Coastal biodiversity is impacted in a number of ways depending on how we access the coast. People, dogs and vehicles disturb birds trying to feed, breed or rest and other types of biodiversity are easily crushed by pedestrians and vehicles. Trampled foredunes are more susceptible to wind erosion, creating blowouts (areas of rapidly moving highly mobile sand).

Community groups and city and district councils are working together to address this problem by creating designated access ways to keeping pedestrians and vehicles off dunes, and installing fences and signage, e.g., Coastal Strategy (Kapiti Coastal District Council, 2006), .

3.5 Nutrient enrichment

Estuaries in particular tend to accumulate nutrients from stream or river sediments that flow from agricultural, horticultural and forestry activities further-up in the catchment. On coastal land in some areas such as coastal dune slacks; stormwater, sewage disposal, animal dung and fertiliser run-off is increasing nutrients to naturally infertile environments. Poorly designed and maintained septic tank systems are another source of contaminants that are entering the coastal environment.

3.6 Other threats

Coastal areas are very vulnerable to fire, particularly during summer months. Combined with an inadequate local water supply, longer fire fighting response times and a lack of permanent residents to raise the alarm, there is an increased risk of damage to coastal ecosystems by fire. Bonfires and barbecues on the beach can also add to this risk. Native ecosystems can be permanently damaged if there is insufficient native habitat nearby to provide a source of seed and fauna for re-colonisation.

Dead seaweed, shells and driftwood washed up on beaches provide important habitat for a number of coastal species including many invertebrates and small reptiles. Removing this material depletes biodiversity. The accumulation of rubbish on the other hand, is problematic for coastal and marine biodiversity, especially the presence of plastics which do not breakdown and can kill native coastal fauna (e.g. birds can mistake plastic bags for food and die after eating them, or strangle after becoming entangled in plastic used to hold beer cans together). Other types of pollution event such as oil spills can cause enormous damage to coastal and marine biodiversity. Coastal birds, marine mammals and intertidal fauna are particularly at risk from oil or diesel spills.

4. Why improve coastal and marine biodiversity?

4.1 Resource Management Act 1991

The preservation of the natural character of coastal environment and its protection from inappropriate subdivision, use and development is a matter of national importance under section 6(a) of the Resource Management Act 1991 (RMA).

There are two ways that local authorities implement this part of the RMA. They are:

- Adopting *regulations* to control activities that affect the coastal environment.
- Using *non-regulatory* methods (such as providing education, motivation, advice and incentives) to encourage voluntary action.

The rules in the Regional Coastal Plan outline Greater Wellington’s regulatory approach to coastal management. The Regional Policy Statement and the methods and policies in the Regional Coastal Plan summarise the non-regulatory approach. The Wairarapa Coastal Strategy is also a non-regulatory document containing objectives, policies and methods for enhancing the Wairarapa coastal environment.

The methods and policies in the Regional Policy Statement, Regional Coastal Plan and Wairarapa Coastal Strategy discuss restoring natural character, working in partnership with other coastal management authorities, assisting volunteer based community coastal restoration projects, increasing public awareness about, and involvement in coastal management issues, enhancing public access, and protecting threatened and/or culturally important coastal habitats. This Plan is a key part of the development of Greater Wellington's non-regulatory approach and will meet some of our commitments in the Regional Policy Statement, Regional Coastal Plan and Wairarapa Coastal Strategy. The responsibility for *regulating* activities that affect the coast is shared between Greater Wellington and city and district councils.

4.2 New Zealand Coastal Policy Statement

Greater Wellington meets the requirements of the New Zealand Coastal Policy Statement with respect to coastal ecosystems through the rules, policies and methods of the Regional Coastal Plan and the Regional Policy Statement.

In addition to the regulatory and non-regulatory responsibilities described above, the New Zealand Coastal Policy Statement also requires the protection of nationally and regionally threatened native coastal vegetation, habitats and ecosystems. Some of our beaches and coastal dunes, escarpments and rocky platforms qualify.

4.3 Commitment to native biodiversity

Greater Wellington undertakes a broad programme of biodiversity management to help protect and restore ecosystems. The funding from this programme is largely devoted to the management and reduction of plant and animal pests in areas of high ecological value (largely indigenous forest areas but also wetlands, escarpments and dunes). Funds are also being used to manage freshwater environments.

Activities in Greater Wellington’s biodiversity programme that may benefit coastal ecosystems include:

- Pest control
- Support for QEII National Trust covenanting,
- *Take Care* community action programme.

4.4 Ecosystem-based approach

All living things are a part of complex, interacting webs or systems that are powered by natural processes. An ecosystem approach to resource management means attempting to sustain and support these processes by managing water, land, air, plants and animals, in ways that help these wider systems function in a healthy and viable manner.

This type of management is different from efforts to control discrete parts of the environment, such as the quality of water in a river or the conservation of soil on an eroding hillside, in isolation from an ecosystem, which they are a part. An ecosystem approach means managing a system of interacting parts, not just a discrete area or species. If a single part does require management, it means doing so in a way that increases its contribution to the health and viability of the wider system, as well as ensuring its own viability.

Greater Wellington signalled its intention to take an ecosystem-based approach to managing the environment in the Regional Policy Statement. A general description of the outcomes sought is:

- The overall quality (health) of ecosystems is increased by strengthening key processes.
- Healthy, functioning ecosystems are distributed throughout the region, including the rural and urban environments.
- The area and quality of native ecosystems is increased.
- The region has a diversity of healthy ecosystems which represent the full range of regional flora, fauna and habitats.
- Special ecosystems are actively protected and appropriately managed.

4.5 Greater Wellington

Greater Wellington is responsible for protecting coastal ecosystems and restoring habitats on land we own or manage. Greater Wellington manages two coastal parks East Harbour Regional Park and Queen Elizabeth Park.

At Queen Elizabeth Park, Greater Wellington manages one of the few remaining beaches on the Kapiti Coast not modified by residential development.

Greater Wellington has made the following commitments in the Park:

- Restore coastal foredune and back-dune habitats.
- Protect and restore nationally threatened coastal forest remnants.
- Produce a pest plant management plan and carry out a pest plant management programme on sand dunes.

- Enable staff participation in national research programmes on coastal dune restoration and contribute to further research into restoration techniques through involvement with the Coastal Dune Vegetation Network.
- Provide opportunities for community involvement in coastal restoration.
- Demonstrate coastal dune restoration techniques that can be applied to similar coastal environments in other parts of the Region.

This work will increase Greater Wellington's ability to provide advice and assistance to restoration projects on private land, and land managed by agencies.

5. The Vision and Goals

Our vision is...

We will protect and preserve areas of high quality coastal biodiversity and rehabilitate to a reasonable condition coastal ecosystems that are presently degraded.

To achieve this vision, Greater Wellington will run complementary programmes targeting coastal ecosystems for protection and restoration respectively, according to two different sets of priorities.

Goal 1: Protection of high quality coastal ecosystems

Coastal ecosystems are easily damaged when poorly managed. Sometimes this damage is irreparable, particularly where the habitat is so extensively modified that very few examples are left and there are no nearby stocks to re-colonise from. It can be a long, expensive and difficult task to try and restore degraded habitats into functioning ecosystems. For this reason the highest priority must be to avoid further damage to intact coastal ecosystems, especially where they are very rare on a national or regional scale. We will proactively seek the legal protection of the key ecosystem sites (where they are not already protected), and assist with on-going management where appropriate.

Goal 2: Rehabilitation of degraded coastal ecosystems

Greater Wellington will continue to participate in coastal restoration projects through existing programmes including the:

- *Take Care* - community groups' environmental restoration projects.
- Coastal restoration on land managed by city and district councils.
- Iwi projects.

It may be appropriate to initiate community restoration initiatives in coastal environments of high ecological value, which could benefit from community restoration efforts, where they are potential communities of interest.

6. Achieving the Vision

This section outlines *what* Greater Wellington will do to achieve the vision and the goals, the main components are:

- employing protection mechanisms;
- restoration; and
- building relationships.

6.1 Protection of areas from further degradation

Protecting areas that are nationally or regionally significant is a key goal. Greater Wellington has through the Regional Policy Statement, Regional Coastal Plan and Wairarapa Coastal Strategy identified areas that are regionally significant in the coastal marine area and coastal environment. City and district councils and Department of Conservation have also identified areas deemed to be important. These areas can be protected in a number of ways outlined here:

6.1.1 Land managed by the Crown

Where there are areas on Crown Land (land managed by the Department of Conservation, and Land Information New Zealand) that are significant and have not already been protected through some form of formal process, they should be examined for further protection. The procedure for protection are via Reserves Act 1977, Conservation Act 1987, or through a Department of Conservation covenant.

6.1.2 Private land

Many important coastal areas are on private land. Therefore landowner involvement is crucial to protecting areas of coastal biodiversity. Greater Wellington has considerable experience working with private landowners to protect areas of biodiversity. Possible mechanisms include:

(a) QEII National Trust Covenants

A covenant is a legal agreement that binds the landowner (and subsequent landowners) to manage a piece of land in a particular way for conservation purposes. The land remains in private ownership. The Trust and Greater Wellington can offer financial assistance with the costs of establishment and Greater Wellington may also assist with the management of covenanted areas. Covenanting of coastal land in private ownership is a cost effective way of ensuring protection in perpetuity. Land protected by QEII covenant is also eligible for management assistance under Greater Wellington's Key Native Ecosystem programme.

(b) Key Native Ecosystems Programme (KNE)

Key Native Ecosystems (KNE) are areas of high value native forest, coastal escarpments and wetlands on private or public land (other than Crown Land) that are considered vital to the long-term viability of the region's unique plant and animal life.

Under the KNE programme Greater Wellington can help landowners manage these areas. Participation in the KNE programme by private landowners is voluntary. Landowners must have a covenant or other legal protection in place to receive Greater Wellington assistance.

When the programme began in 1996, all KNE were native forest, and the chief management activity was possum control. In 2001 the KNE programme was extended to include other ecosystems. Few coastal ecosystems are managed under the KNE programme, although possum control is being undertaken for some Wellington City coastal escarpments. There is potential for this programme to be extended to include important coastal areas with high biodiversity on private land.

6.1.3 Land managed by city and district councils

City and district councils manage some reserves on coastal land. They also influence activities on privately owned coastal land through their district plans and bylaws. Greater Wellington will liaise with relevant city and district councils to discuss management of key sites. Where Greater Wellington and city and district councils work together, it is possible to achieve integrated management of coastal areas and the biodiversity that inhabits them.

6.2 Restoration of coastal areas

Greater Wellington provides information and advice to community groups, private landowners and iwi groups upon request. Greater Wellington also runs programmes specifically designed to provide practical advice and financial support. The main way that groups participate in coastal restoration is through the *Take Care* programme.

6.2.1 *Take Care* programme

Since 2000, Greater Wellington has offered contestable funds and staff assistance to community groups undertaking environmental restoration projects in threatened ecosystems including dunes, estuaries and coastal escarpments. Groups can apply for funds totalling up to \$19 000 over a period of five years. Table 1 below lists the sites and groups that have received assistance through the programme to date.

Table 1: Coastal projects Greater Wellington has supported through the Take Care programme.

Coastal restoration projects supported through <i>Take Care</i>				
Site	Care Group	TA	Ecosystem Type	Period Funded
Queen Elizabeth Park	Friends of Queen Elizabeth Park	KCDC	estuary & dunes	2000-10
Otaki	Waitohu Streamcare	KCDC	estuary & dunes	2000-10
Robinson's Bay	Eastbourne Dunes' Protection Group	HCC	sand dunes	2004-08
Island Bay	Oku Coastcare	WCC	sand dunes	2003-07
Otaki Beach	Otaki North Beachcare	KCDC	sand dunes	2004-09
Paraparaumu Beach	DUNE	KCDC	sand dunes	2004-08
Riversdale Beach	Riversdale Beach Care	MDC	sand dunes	2001-08
Paekakariki	Nga Uru Ora Kapiti	KCDC	escarpment	2004-08
Waikanae Estuary	Waikanae Estuary Care Group	KCDC	estuary & dunes	2004-08
Day's Bay	Day's Bay Beach Care	HCC	sand dunes	2002-05
Pauatahanui	Guardians of Pauatahanui Inlet	PCC	estuary	2002
Greta Point	NIWA Little Blue Penguins Habitat Restoration Group	WCC	penguin habitat	2000-03
Te Horo Beach	Te Horo Beachcare	KCDC	estuary	2003-04
Castlepoint Beach	Castlepoint Beachcare	MDC	Dunes	2000-03
Pukerua Bay Beach	Pukerua Bay Beachcare	PCC	Dunes	2002-03

Restoring threatened coastal ecosystems will continue to be a priority for Greater Wellington support through the *Take Care* programme.

6.2.2 New maintenance programmes

Care groups tend to form in more heavily populated parts of the coastline where biodiversity is often already depleted. Many of the sites with high biodiversity values presently receive little or no assistance. They tend to occur along isolated parts of the Wairarapa coastline where it is unlikely that a community of interest will take up the existing schemes. Through this plan, assistance could be offered to enhance and protect vulnerable areas by setting up regular pest plant and animal control programmes and funding fencing to prevent stock access. Each of these sites would need an individual plan of action.

6.2.3 Habitat restoration in regional parks

Coastal habitat restoration projects in regional parks provide an ideal opportunity for educating and involving the public in caring for the coast. They can also showcase restoration techniques and inform visitors about ways to reduce their impact on coastal ecosystems.

Queen Elizabeth Regional Park has approximately 300,000 visitors per year. The environmental asset management plan for this park outlines a pest control programme for the dunes including both plant and animal pests. This programme is funded through the Long Term Council Community Plan. The Queen Elizabeth Park Coastal Dunes Management Discussion Document describes potential community based coastal habitat restoration projects, and strategies for dune protection activities. A number of dune restoration projects are currently underway in the park.

Staff will continue to work with the local community on coastal habitat restoration activities at Queen Elizabeth Park, and to explore further opportunities for using the Park to educate beach users about key issues affecting coastal ecosystems, and what they can do to help.

6.3 Building relationships

Greater Wellington will work in partnership with other organisations, groups and interested individuals to achieve the vision and goals of this Plan.

6.3.1 Iwi

We will consult with local iwi who indicate that they want to be involved with biodiversity protection and restoration in coastal areas.

6.3.2 Interested community groups

There are a number of groups around the region who are interested in coastal biodiversity, particularly the restoration of sand dune and estuarine habitat. Many of these groups are already working with Greater Wellington as part of the Take Care Programme. Other groups such as local branches of Forest and Bird also work to improve the health of the coastal environment.

6.3.3 Private landowners

We will work with land owners who indicate a willingness to restore areas of high biodiversity on their own land.

6.3.4 City and district councils

City and district councils have a statutory role in the coastal environment through the provisions of their district plans. Apart from the district plans, some have completed coastal management plans (Wellington City Council), while others are just beginning, e.g., Kapiti Coast District Council has recently released its *Coastal Strategy*.

6.3.5 Department of Conservation

The Department of Conservation is a national agency with responsibilities for maintaining and enhancing coastal and marine biodiversity. Greater Wellington will work closely with the Department (Wellington Conservancy, - Kapiti, Poneke and Masterton Area offices) to ensure areas of vulnerable indigenous habitat are protected and enhanced. The Department has staff with expertise and information that will be useful to improving coastal biodiversity for the region.

6.3.6 Dunes Restoration Trust of New Zealand

Greater Wellington is a research partner in the Dunes Trust (formerly CDVN). Greater Wellington staff will meet with city and district council representatives in August 2006 to discuss existing coastal projects and regional issues.

7. Potential Work Areas

Several potential sites have been identified throughout the region as priorities for action because of their high biodiversity, these include:

- Recommended areas for Protection (RAPs) described by the Department of Conservation and significant areas identified by city and district councils;
- Other areas recommended by the Department of Conservation for legal protection because of their biological importance;
- Areas recommended by the Department of Conservation for ecological restoration work to re-establish the biodiversity of coastal areas, and
- Areas where foredune protection or restoration projects are already underway.

The initial sites selected are described briefly below. In addition to their biodiversity value, their selection reflects

- regional equity –trying to get a good geographic spread; and
- practicality.

This is not a definitive list, but indicates an initial focus for biodiversity protection and restoration work. Other key sites will be identified over time.

Sites identified in this Plan will require a detailed inspection and agreed plan of action to determine the most appropriate management options.

7.1.1 Waikanae estuary

The Waikanae River estuary is protected as a Scientific Reserve managed by the Department of Conservation. The estuary is approximately 27 hectares comprising severally nationally under-represented habitat types. There are good sequences of salt marsh, freshwater wetlands, and dune systems. Surveys of the estuary date back to 1941-43 and in 1971-74, with some 60 to 70 bird species recorded (Kazimerz et al, 1978). Birds that are common to the estuary are Australasian bittern, Caspian tern, and occasionally the Australian White Heron. Plant species of importance are *Carex litorosa*, *Pimelea aff Arenaria*, *Coprosma acerosa*, *Spinifex sericeus*, *Leptinella dioica spp* (Department of Conservation, 1996).

In early 2005, Greater Wellington commissioned the Cawthron Institute to survey the intertidal zone of the estuary. The survey found the estuary has a wide range of amphipods, polychaetes and gastropods. The presence of high numbers of amphipods reflects the presence of organic material, predominately terrestrial plant matter on the sediment surface, while other species are typical of a sandy coastal estuary. The survey suggests the estuary is generally in a healthy condition and showed no signs of adverse nutrient enrichment or chemical contamination.

Geoff Park recently prepared a restoration plan for the estuary. This plan is being implemented by the Waikanae Estuary Care Group, Department of Conservation, Greater Wellington and the Kapiti Coast District Council. Many of the early plantings have been heavily browsed by rabbits. The restoration will be enhanced by their control.

7.1.2 Makara estuary

The Makara estuary on Wellington's west coast is the only large (14.6ha) estuary in the Wellington city district. The estuary has two contributing catchments – Makara and Ohariu. Both streams drain largely rural catchments dominated by drystock pasture with pockets of residential development, and plantation forestry.

The streams' fish population has recently been surveyed by Greater Wellington (NIWA database). A recent survey by Cawthron (2006) showed that the estuarine area is dominated by water with the intertidal habitat predominately cobbles and boulders. The estuary is in good health with most metal concentrations below the ANZECC guidelines.

The area surrounding the estuarine zone is dominated by weeds (78%) and grassland (10%). The estuary is a mix of private and public reserve. Areas have been fenced-off for vegetation protection, but more work is required on weed and animal pest control. Common skink and common gecko have been reported in the vicinity of the beach and estuarine zone (Department of Conservation, 1995).

Further work is required to reduce the high percentage of weeds in the surrounding area and prevent stock gaining access to the sensitive estuarine vegetation.

7.1.3 Wellington South Coast

The Wellington South Coast (Owhiro Bay to South Karori Stream) has long been an area for sight seeing, visiting Red Rocks, mountain biking, 4WDs and fishing. The area is a mixture of private and public land ownership. The Department of Conservation administers three tiny reserves along this area. The Red Rocks Scientific Reserve is an area of pillow lava that was uplifted from the sea in the 1855 earthquake. The Sinclair Head Scientific Reserve protects the seal haul out along this part of the coast. The Speargrass Reserve protects a small area of speargrass for the Speargrass weevil (Department of Conservation, 1996). The Speargrass weevil habitat is under threat from rodents, and vehicular activity.

Along the coastal escarpment common geckos, copper skinks, and common brown skinks have been found, including the very rare Marlborough minimac gecko (Department of Conservation, 1995). Restoration of the area in the vicinity of the old Owhiro quarry has been underway for several years, with promising results. Further work is required to protect vulnerable areas of vegetation and replanting is required on areas damaged by public use.

7.1.4 Lake Onoke beach

Lake Onoke beach or Ocean beach is a strip of shingle about 3 kilometres long that separates Palliser Bay from Lake Onoke. The beach is composed of cobbles and very coarse sands with a mixture of vegetative types – *Austrofestuca littoralis*, pingao, and *Pimelea arenaria*, (Department of Conservation, 2002). The beach is naturally breached by rising lake levels or is cut artificially to reduce the danger of flooding to nearby farmland. The site is an important breeding site for the banded dotterel, and Caspian tern. Katipo spiders have also been recorded in areas of the beach (Department of Conservation, 2002).

The beach is administered by the Department of Conservation as part of the Lake Wairarapa conservation unit.

The largest issue facing the beach ecosystem is damage caused by vehicles (mostly 4WD's, quads and motorbikes). More work is required to protect sensitive vegetation and prevent the spread of weeds.

7.1.5 Uriti Point

The Uriti Point dunelands extend for approximately 100 ha on either side of the point. They are the largest extent of dunelands on the Wairarapa coast. The dunes are home to the Red Katipo spider (Department of Conservation, 2002) and the spotted skink (Department of Conservation, 1995). The dunes have vehicle tracks cutting through them, with other modifications for beach access and the parking of boat. The dunes are privately owned. The dunes could be better protected by defining access ways, and ensuring boat access is not further damaging dune frontages.

7.1.6 Flat Point

There is an extensive dune sequence south of Flat Point that extends for approximately 7 km to the Arawhata stream. The dunelands have spotted and common skinks and contains the largest extent of the Red Katipo spider in the region (Department of Conservation, 2002). The dune area is all in private ownership. The owners have indicated a preference for enhancing the natural environment of the area.

7.1.7 Pahaoa Estuary

There is a duneland of particular importance from Rerewhakaaitu River north to the Glendu Rocks comprising river mouth and bar, flat coastal terrace and steep hillslopes including colluvial fans. These dunelands are remote from other on the Wairarapa coast so have less extensive marram grass and other weed species.

8. Monitoring

Monitoring the success of our biodiversity enhancement work is an important component of this Plan. It is only by undertaking some form of monitoring that we can determine if the management strategies outlined in this Plan are achieving the objectives.

In general terms we will design monitoring to:

1. *Measure the total area of coastal vegetation over time. This will provide information on the change in extent.*

This monitoring indicator will provide a useful overview of coastal vegetation in the region, and information on the change in extent.

2. *Measure the improvement in biodiversity in coastal and marine areas when pressures such as pest plants and animals are removed. This will provide us with confirmation that our programmes are working and to what degree.*

While it is relatively easy to measure the changes in the number of hectares of coastal vegetation, it is more difficult to get an overall picture of biodiversity condition. We cannot measure the changes in every population of biota, but we can measure the response of selected examples of biota to establish if our programmes are actually making a difference.

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