



Lake Wairarapa wetlands action plan

2000 - 2010



Department of Conservation
Te Papa Atawhai

Lake Wairarapa wetlands action plan

2000 - 2010

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Preface

The Lake Wairarapa wetlands action plan sets out the management directions for lands administered by the Department of Conservation for the next 10 years. It is a non-statutory document. It provides direction for the Department's advocacy for the wider Lake Wairarapa Wetlands. The Plan has been developed in consultation with iwi/hapu, statutory agencies, including Fish & Game councils, and stakeholders involved in management of the lake.

The Lake Wairarapa wetlands comprise Lake Wairarapa, its associated wetlands and reserves, the Ruamahanga Cutoff, Lake Onoke and Pounui Lagoon. These form the largest wetland complex in the southern North Island. The wetlands are considered to be of international importance for their flora and fauna: they support a number of bird species and provide habitat for rare and endangered fish species, and a number of nationally threatened and regionally rare plants.

The Lake Wairarapa Wetlands are taonga to iwi/hapu. They offer a variety of recreational opportunities and provide an opportunity to interpret wetland values and promote the importance of wetlands to the wider community. Both cultural and ecological values are threatened by a variety of issues including invasion from pest plants, animal pests, drainage and water abstraction from rivers and natural aquifers, riparian grazing, nutrient inputs and chronic sedimentation.



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1. Context

1.1 INTRODUCTION

The Lake Wairarapa wetlands comprise Lake Wairarapa, its associated wetlands and reserves, the Ruamahanga Cutoff, Lake Onoke and Pounui Lagoon (see Map 1). The majority of this area is administered by the Department of Conservation.

The Department of Conservation's Conservation Management Strategy (CMS) for Wellington 1996-2005 identifies the need to prepare a "site plan" for the Lake Wairarapa wetlands. A separate plan was considered necessary due to the range and complexity of the issues at the Lake Wairarapa wetlands which could not be fully considered within the Conservation Management Strategy.

A "site plan" is a non-statutory document which records management actions proposed by the Department¹ for areas that it administers. It was decided that an "action plan" was a more suitable term to describe this document.

The "Lake Wairarapa Wetlands Management Guidelines 1991" (also a non-statutory document prepared by the Lake Wairarapa Co-ordinating Committee) and the Wellington Conservation Management Strategy provide the framework and guiding principles for this plan. Appendix 1 lists the goals and objectives from the Lake Wairarapa Wetlands Management Guidelines and Appendix 2 lists the goals and objectives from the CMS.

1.2 PURPOSE OF THE PLAN

The plan will help the Department implement the goals and objectives of the above documents that relate to land the Department administers. The plan indicates how the Department will work with iwi/hapu, statutory agencies and stakeholders, to achieve its objectives.

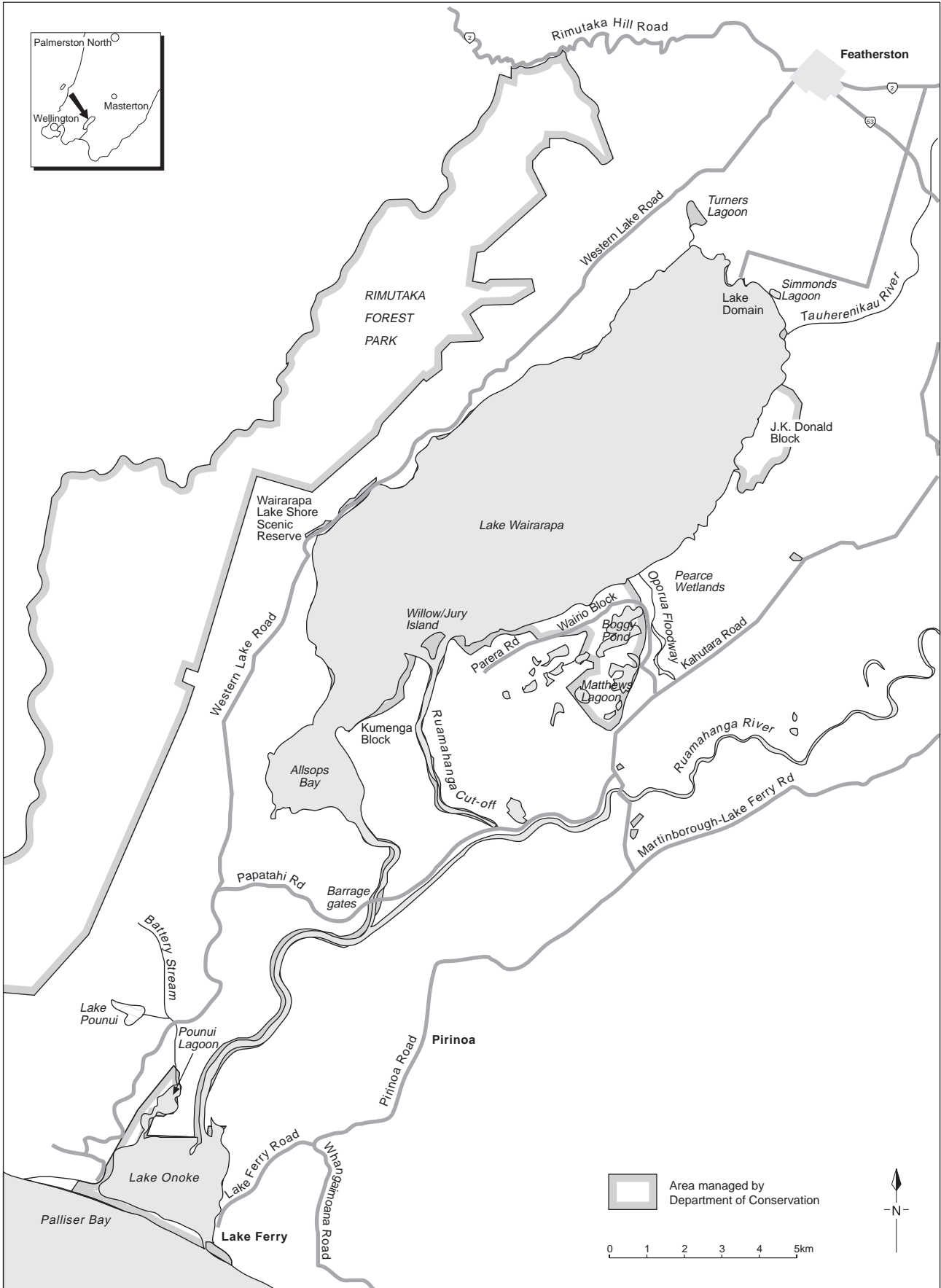
This plan is to be called "The Lake Wairarapa wetlands action plan 1998-2008, Department of Conservation". It is intended to have a ten year life span.

1.3 THE LAKE WAIRARAPA WETLANDS (see Map 1)

The Lake Wairarapa wetlands are situated within a rural landscape in the southern Wairarapa plains near Featherston. The Lake Wairarapa wetlands have ecological, cultural and recreational values that are generally considered worth protecting. It is the largest wetland complex in the southern North Island and is considered to be of national and international importance for indigenous plant and animal communities. The lake and wetlands are also important in the region for game bird hunting, boating, fishing and nature study. The Lake Wairarapa wetlands are traditionally and spiritually important to Maori as an area for food gathering, including eel, fish, waterfowl, and plant material, in particular, flax and raupo. Commercial eel fishing is currently undertaken on the lake.

¹ The "Department" refers to the Department of Conservation, Wellington Conservancy.

MAP 1: LAKE WAIRARAPA WETLANDS



Lake Wairarapa is shallow (mostly less than 2.5m deep) and about 18 km long and 6 km wide, with a surface area of 7800 ha. It receives water from the Tauherenikau River at the northeastern corner, several small streams along the western shores, and under flood conditions, from the Ruamahanga River via the Oporua Floodway in the middle of the eastern shore. The exit from Lake Wairarapa to Lake Onoke is regulated by six barrage gates operated by the Wellington Regional Council under a resource consent as provided for under the National Water Conservation Order for Lake Wairarapa. The operating regime is based on agreements reached in the Lake Wairarapa wetlands management guidelines (1991) and was reviewed in 1994 and 1998. The consent conditions require the Wellington Regional Council to allow for fish passage.

The eastern side of the Lake slopes very gradually from open water up through zones of different wetland vegetation types to grassland. Natural fluctuations in water level caused by rainfall and the effect of wind, as well as artificial regulation of water levels, create zones of vegetation with varying degrees of tolerance to inundation. In the past, when lake levels were seasonally very low and the lake bed was exposed, sandstorms deposited low dunes along the eastern shore and these, together with changes in river courses, trapped a series of lakes and wetlands from just north of the Tauherenikau River to the former entrance of the Ruamahanga River at Willow Island. The largest of these wetlands are Boggy Pond and Matthews Lagoon, several lagoons in the J. K. Donald Block, and Barton's Lagoon.

Lake Onoke is a 650 ha brackish lagoon at the mouth of the Ruamahanga River. It is separated from Palliser Bay by a 3 km long shingle spit, which is naturally breached by rising lake levels or, now more commonly, cut artificially to reduce the danger of flooding nearby farmland. For long periods the lake is tidal, but in southerly conditions with a low river flow the exit to the sea becomes blocked. The level of Lake Onoke can rise to such a height that there can be backflow through the barrage gates into Lake Wairarapa (Robertson 1991).

Pounui Lagoon drains into Lake Onoke through two culverts in a stopbank. Pounui Lagoon is fed by Pounui Stream which flows from Lake Pounui. Lake Pounui (outside the area covered in this plan) is a lowland lake with an essentially unmodified catchment.

1.4 MANAGEMENT BACKGROUND

Lakes Wairarapa and Onoke have long been important fisheries for local hapu. The value of the fishery was enhanced by the seasonal closure of the Lake Onoke outlet - a sand bar blocked the outlet, usually between December and April and large numbers of fish congregated in the lake. This formed the basis of a lucrative fishing season for local hapu.

It is estimated that since early European settlement 40-47 % of wetlands in the lower Wairarapa remain (or 7% of wetlands if open waters such as Lake Wairarapa are excluded) (Moore *et al*; 1984). Prior to the 1855 earthquake, the waters of both Lake Wairarapa and Lake Onoke varied between 10,000 ha and 21,000 ha. During the 1850s European settlers purchased land adjacent to the Lakes for pastoral farming. Pressure was placed on local hapu to allow the wetland system to be artificially opened to protect pasture from flooding. Local hapu did not generally support this practice. Nevertheless, some requests were considered and compensation was paid by farmers for the loss of fishing opportunities to fish and

the possible effect of lowering the level of the lake on fish habitats. This became a source of conflict, and pressure was put on the government by the new pastoralists to do something about the annual inundation of their lands. In 1896 the lakes were bought by the Crown which enabled it to control lake levels. This sale is subject to claims to the Waitangi Tribunal (Doig 1996)².

Despite control of the Lake Onoke opening and some minor flood protection works, severe flooding occurred in 1947, covering 200km² additional to the lake area. This prompted the establishment of the Wairarapa Catchment Board which subsequently planned for a Lower Wairarapa Development Scheme (Robertson 1991). The Soil Conservation and Rivers Control Act 1941 established the basis for Tauherenikau River control works, the existence, maintenance and functioning of the Ruamahanga cut off, Oporua spillway and the barrage floodgates.

The scheme established major changes to the hydrological regime of the Lake Wairarapa wetlands. Works undertaken between 1964 and 1984 as part of the scheme included the installation of the barrage control gates at the outlet to Lake Wairarapa in 1974, the diversion of the lower Ruamahanga River to bypass Lake Wairarapa and flow directly to Lake Onoke, the construction of the Oporua Floodway, the separation of Pounui Lagoon from Lake Onoke and drainage and reclamation of 1237 ha of wetlands.

As a result of these works, floods now only cover an area of about 7 km² additional to the lake areas (Robertson 1991). Lake level management has also reduced the duration of floods, which now generally last less than 10 days per year (Hicks 1993). Another aspect of the Lower Wairarapa Development Scheme was the planned reclamation of 2600 ha of lake bed and land adjacent to the eastern shore of Lake Wairarapa for development into farmland. This 'polder scheme' idea was put forward again in 1982 by the Wairarapa Catchment Board. There were major concerns about this concept and the possible impact it would have on wildlife habitat values. The NZ Wildlife Service of the Department of Internal Affairs produced a comprehensive report to answer questions regarding the possible impact of the polder scheme on birds (Moore *et al.* 1984). The polder scheme was cancelled due to a lack of support from the Government reflecting growing environmental concern at the time and approximately 600 ha of wetlands were set aside for wildlife management purposes.

A National Water Conservation Order (described in section 1.9) was placed over Lake Wairarapa in 1989. It recognises that the wildlife habitat, created in part as a consequence of the fluctuations of water levels in Lake Wairarapa, is an outstanding feature of Lake Wairarapa. These fluctuating water levels, manipulated through the operation of the barrage gates, create a unique habitat. The National Water Conservation Order also provides for a resource consent to be issued to operate the barrage gates for flood control.

In 1991 the Lake Wairarapa Co-ordinating Committee was established as a means of mediating between the various interests at the Lake Wairarapa wetlands. This Committee included landowners, iwi/hapu, recreation groups, and the organisations with statutory responsibilities in the area (Wellington Regional Council, South Wairarapa District Council, Wellington Fish & Game Council, Ministry of Fisheries and Department of Conservation). Through numerous meetings and discussions,

² Prior to the sale, in 1886 a South Wairarapa River Board was set up to control flooding on a community basis. Flood control measures included the artificial opening of Lake Onoke, and the building of some stopbanks and erosion protection schemes.

this group developed the Lake Wairarapa Wetlands Management Guidelines 1991. This provided overarching goals and objectives for the ongoing management of the Lake Wairarapa wetlands, and included an agreed water management regime for the operation of the barrage gates. The barrage gates currently operate under a twenty year consent, which is reviewed every five years (commencing October 1999).

1.5 VISION/KAUPAPA

The vision or kaupapa is a statement about how the Department would like to manage the Lake Wairarapa wetlands. The vision unites the diverse interests of the groups involved in the management of the Lake Wairarapa wetlands.

“The Lake Wairarapa wetlands are recognised locally, nationally and internationally as having important ecological, cultural and recreational values and these values are protected and enhanced through integrated management of the wider catchment with other interested parties.”

Iwi/hapu have expressed the following vision for the lake:

“Wai-rarapa: Tu tangata whenua

That the Lake Wairarapa wetlands and its surrounds are clean, healthy, shining and alive.”

1.6 MANAGEMENT APPROACH

The Department will adopt the following principles in its management of the Lake Wairarapa wetlands:

- *achieving conservation objectives is the primary guide for action*

The area managed by the Department is managed pursuant to the Conservation Act or the Reserves Act and management must achieve the purpose of those Acts.

- *the sustainable management of the catchment is integral to the protection of the Lake Wairarapa wetlands*

The conservation values of the Lake Wairarapa wetlands will not be sustainable without consideration of the effects of activities in the surrounding land and catchment. This will generally involve working with others.

- *integrated management with statutory agencies and iwi/hapu is essential*

There are currently five main agencies with statutory responsibilities at the lake and wetlands (the Department of Conservation, Wellington Regional Council, South Wairarapa District Council, Wellington Fish & Game Council, Ministry of Fisheries), which reflects artificial boundaries created by ownership of land and resources as well as the diverse range of interests in the resources of lake and wetlands. It is essential that these agencies and iwi/hapu operate in co-operation with each other to ensure that the objectives of this plan are implemented and it is essential that the Department works with each of these agencies in order to work towards integrated management.

- *the kaitiakitanga role of the tangata whenua will be established and promoted*

The kaitiakitanga role of iwi/hapu will be developed so that they participate in the management of the wetlands.

- *the Principles of the Treaty of Waitangi will be given effect to*

The Department has a statutory obligation under Section 4 of the Conservation Act to give effect to the principles of the Treaty of Waitangi. In managing and promoting integrated management at the Lake Wairarapa wetlands, the Department will recognise, action and give effect to the long spiritual, ancestral, cultural and traditional links that tangata whenua have through centuries of occupation. The Department will do this through developing protocols with iwi/hapu and working towards developing and maintaining a co-operative partnership that is meaningful, empowering, trusting, mutually beneficial and strengthens over time.

1.7 MANAGEMENT GOALS

The management goals for the Lake Wairarapa wetlands action plan are:

1. Protect and enhance the indigenous plant and animal species and communities and the ecological processes that ensure their survival on land administered by the Department;
2. Protect the cultural and historic values of the Lake Wairarapa wetlands on land administered by the Department;
3. Encourage recreational enjoyment and appreciation of the Lake Wairarapa wetlands while ensuring the protection of ecological, cultural and historic values on land administered by the Department;
4. Raise public awareness of the biological, cultural, historic, and recreational values and the geomorphology of the Lake Wairarapa wetlands;
5. Promote integrated management.

These goals are consistent with the Lake Wairarapa Wetland Management Guidelines 1991 and the Conservation Management Strategy for Wellington 1996 - 2005. The goals take place within the overall water management regime applied to Lakes Onoke and Wairarapa by the Wellington Regional Council.

1.8 LAKE WAIRARAPA WETLANDS - CURRENT TENURE (see Map 2)

Although the plan principally concerns land administered by the Department it also includes advocacy statements about conservation issues that affect the Lake Wairarapa wetlands. The Lake Wairarapa wetlands refers to land administered by the Department, Wellington Regional Council, South Wairarapa District Council, and Wellington Fish & Game Council, as well as private land, some of which has QEII Open Space Covenants in place. This area relates to the “core area” referred to in the Lake Wairarapa Wetland Management Guidelines 1991. Management responses in the plan apply to land administered by the Department of Conservation. When referring to land administered by other agencies, the plan uses ‘working with’ statements unless that agency has given an indication that direct management statements are appropriate.

The plan also contains a number of management responses that refer to a broader “advocacy area”, (referred to in the Lake Wairarapa Management Guidelines 1991). The advocacy area consists of the catchments of the rivers, streams and drains that enter the core area. It is important to recognise the effects of land-use activities in the catchment which may impact upon the natural, cultural, historic and

recreation values at the Lake Wairarapa wetlands. The action plan uses advocacy statements to promote land-use practices that do not impinge upon these values. The Conservation Act and Resource Management Act enable the Department to promote the conservation of indigenous plant and animal communities and the natural processes that sustain them, both on and off the areas it manages.

Lands administered by the Department of Conservation

The majority of the Lake Wairarapa wetlands is administered by the Department under the Conservation Act 1987, and the Reserves Act 1977 (see Appendix 3). Those areas administered under the Reserves Act have specific management objectives. Matthews and Boggy Pond, Allsops Bay, the Ruamahanga Cutoff, and some former esplanade reserves are “Government Purpose: Wildlife Management Reserves” and are managed for wildlife. The Department also administers the Wairarapa Lakeshore Scenic Reserve under the Reserves Act. This scenic reserve, on the western shore of Lake Wairarapa, is managed to protect and preserve its qualities of scenic interest and beauty for the benefit, use and enjoyment of the public.

Lands administered by the South Wairarapa District Council

The South Wairarapa District Council (SWDC) administers the Lake Domain Recreation Reserve at the north end of Lake Wairarapa. It was classified as a recreation reserve under the Reserves Act in 1979. The then Featherston County Council was appointed by the Crown to control and manage the reserve for recreation purposes. Under the Reserves Act the SWDC has responsibility for preparing a management plan for the Lake Domain Recreation Reserve (see 3.2).

Lands administered by the Wellington Regional Council

The Wellington Regional Council (WRC) owns the area known as the Oporua Floodway. This land was acquired by the Wairarapa Catchment Board in 1978 for soil conservation and river control purposes. It also administers a “River Protection and Improvements Reserve” known as Turanganui Delta on the northeastern side of Lake Onoke.

Lands administered by the Wellington Fish & Game Council

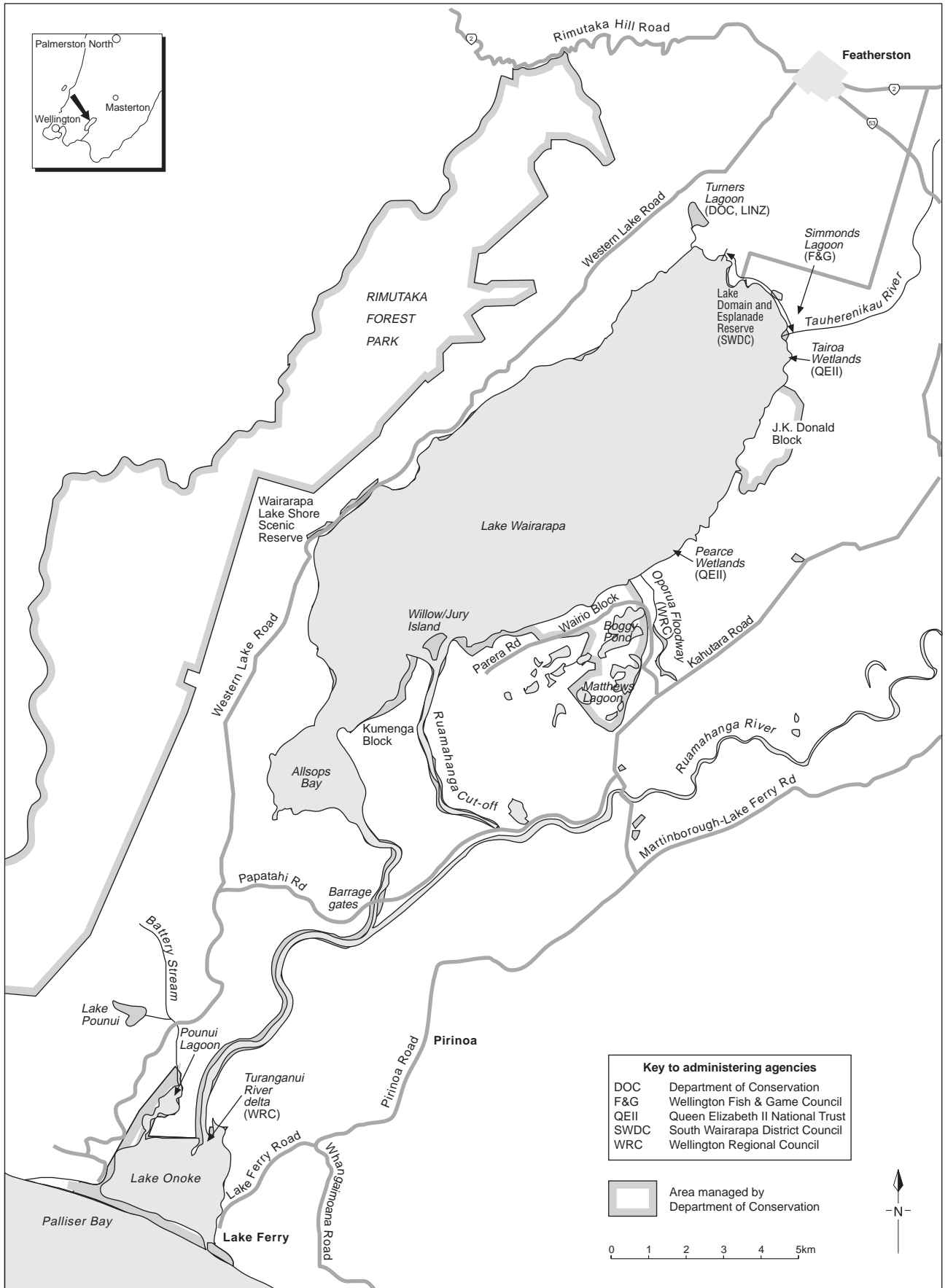
The Wellington Fish & Game Council owns land at the northern end of Lake Wairarapa, adjacent to the Lake Domain Recreation Reserve. This is known as Simmonds Lagoon. The Wellington Fish & Game Council acquired the land in 1984.

Private lands

The Pearce wetlands at the eastern lakeshore north of Oporua Floodway, is a link between the Department’s Boggy Pond and Matthews Lagoon Reserves and the J. K. Donald Block. Ducks Unlimited, its previous owners, registered a QEII Open Space covenant on its title which is binding on all future owners of the land. A management plan has been prepared for the wetlands which is not inconsistent with this document.

Tairoa Wetlands also on the eastern shore, south of Simmonds Lagoon, is in the process of obtaining a QEII Open Space covenant on its title. A management plan has been prepared for the area which is not inconsistent with this document.

MAP 2 LAKE WAIRARAPA WETLANDS CURRENT TENURE



1.9 RELATIONSHIP TO LEGISLATION AND OTHER MANAGEMENT DOCUMENTS

Apart from the Conservation Act 1987 and the Reserves Act 1977 (see above at 1.7), the Resource Management Act 1991 is the main piece of legislation which affects the Department's management of the Lake Wairarapa wetlands and its catchment. The Resource Management Act (RMA) provides for district and regional councils to prepare regional and district plans. These RMA plans provide the objectives, policies and methods for the sustainable management of natural resources within a certain area, and control land use activities and the use of water, including the taking of water and discharging to water.

Plans that are relevant to the Lake Wairarapa wetlands and its catchment include the Wellington Regional Council's Regional Policy Statement, the Freshwater Plan, proposed Soil Plan, Discharges to Land Plan, Coastal Plan and the South Wairarapa District Council, Carterton District Council and Masterton District Council District Plans. The plans most directly related to the Lake Wairarapa wetlands recognise the high conservation, cultural and recreation values of the area.

The RMA enables opportunities for public involvement in management of the natural environment mainly through submissions on the district and regional plans, and on some resource consent applications. The Department uses these opportunities to promote the protection of water ecosystems within the Lake Wairarapa wetlands catchment. The protection of the conservation values within the Lake Wairarapa wetlands is dependent on the quality of water entering the wetlands, and sustainable land-use activities adjacent to the lake (see Issue 1.2 & 1.3).

A National Water Conservation Order (WCO), initiated and financed by the Acclimatisation Society, was placed over Lake Wairarapa (up stream of the barrage gates) and the Ruamahanga Cut-off in 1989 under the Water and Soil Conservation Act (now under the RMA). The WCO declares that:

“the wildlife habitat created in part as a consequence of the natural fluctuations of water levels, particularly over the eastern shoreline, is an outstanding feature of Lake Wairarapa”.

The WCO prohibits the diversion of water within the Lake and the granting of any water rights if the effect would be to diminish significantly the outstanding wildlife habitat features of any part of the lake. The Wellington Regional Council is responsible for giving effect to the Water Conservation Order through its functions for water under the Resource Management Act.

2. Management

Goal One:

To protect and restore indigenous plant and animal species and communities and the ecological processes that ensure their survival on land administered by the Department

ECOLOGICAL VALUES (Map 3)

The Lake Wairarapa wetlands comprise a high diversity of wetland habitats³. They include the open water of the lake, shallow water including many backwaters, bare sandflats, marshlands including extensive areas of native turf and short rushes, open water in ponds, emergent swamp vegetation especially raupo, extensive areas of mingimingi (*Coprosma propinqua*) shrubs, and wetland forest dominated by willows (Moore *et al.* 1984).

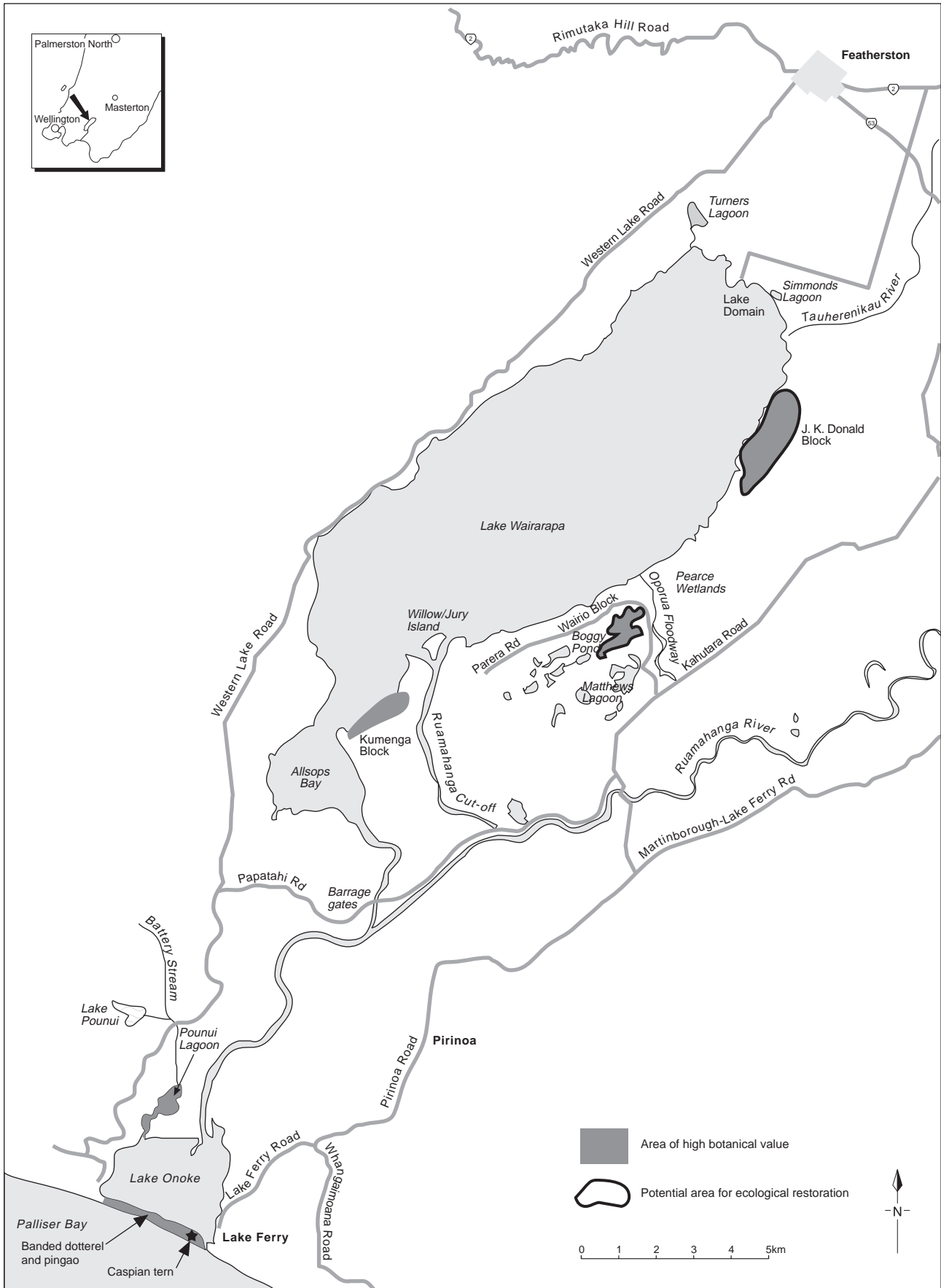
The eastern lakeshore and wetlands contain the most diverse wetland habitats at the Lake Wairarapa wetland complex, and is the priority area for management by the Department. It consists of marshland (low vegetation) and mudflats which are alternately flooded and exposed. Ponds and swampland lie adjacent to the northern and eastern shores (Moore *et al.* 1984). The extensive mudflats on the eastern lake shore (which is the more permanently submerged zone of shore) are inhabited by numerous invertebrates, including worms and aquatic snails, which are subject to seasonal changes in abundance and activity. Certain areas in the Lake Wairarapa wetlands, such as lake edges and salt marshes at Lake Onoke, have been identified in the protected natural areas programme (PNAP) report for the Wairarapa Plains as recommended areas for protection (RAP). The PNAP report assesses the relative biological importance of areas based on ecological information collected in the area.

Vegetation

The lake edge, which is regularly inundated by water and then exposed, supports a submerged "turf" community of small native plants which is greater in area than in any other North Island lake. Turf plant communities also occur on the edges of some of the ponds cut off from the main lake such as within the J. K. Donald Reserve, Boggy Pond and Matthews Lagoon (Ogle *et al.* 1990). There are more than 40 species of these indigenous aquatic turf plants at Lake Wairarapa (Ogle 1984), including nationally and regionally threatened plant species such as *Amphibromus fluitans*, *Pratia perpusilla*, *Gratiola sexdentata*, *Leptinella maniototo* and *Crassula ruamabanga*, (see Appendix 6 for threatened species found at Lake Wairarapa wetlands). The rare swamp grass *A. fluitans* is abundant at a few sites

³ The ecological values of the Lake Wairarapa wetlands have been described in detail elsewhere, for example in Moore *et al.* (1984) and Ogle *et al.* (1990). A short summary of the values follows (Appendix 4 contains a preliminary bibliography of plant checklists compiled for areas at Lake Wairarapa and Western Lake Shore Scenic Reserve).

MAP 3: LAKE WAIRARAPA WETLANDS ECOLOGICAL VALUES



in Boggy Pond and Matthews Lagoon. The cover of turf communities increases in density on exposure after long periods of seasonal inundation. Similarly, turf plant communities become more sparse on substrate that is rarely exposed.

At the water's edge other vegetation types are dominated by rushes, sedges, raupo and flax. These plants can survive prolonged periods of flooding and drought. Raupo is the dominant plant in wetlands away from the main lake, and has benefited from accretion and high nutrient level of the water.

At the outer edge of the wetlands are plant associations which include grassland, scrubland and forest. The mistletoe *Ileostylus micranthus* and *Kortbalsella clavata* are found in the extensive areas of mingimingi (*Coprosma propinqua*) at Boggy Pond and J. K. Donald Block. The nationally threatened mistletoe *K. salicornioides* is common on manuka and kanuka on the western lake shore especially near Allsops Bay. There are scattered stands of kahikatea and cabbage trees and isolated totara, ribbonwood, kowhai and lacebark which suggests that more extensive areas of these once existed (Ogle *et al.* 1990). Now the dominant trees at the Lake Wairarapa wetlands are crack willow, hawthorn and alder. These exotic forests contain native plant species which are of local and national importance. The swamp stinging nettle (*Urtica linearifolia*) and a white flowering native violet (*Viola lyalii*) are found in willow forests at Boggy Pond, J. K. Donald Block, Allsops Bay, Matthews Lagoon and Tauherenikau delta. Willows also provide breeding and roosting habitat for black, little black and little pied shags.

The Lake Shore Scenic Reserve on the western shore consists of a stand of mainly black beech, with some patches of titoki and karaka, and shrubs closer to the lake margin. It is the only remaining area supporting the vegetation sequence that would have existed between the Rimutaka Range and Lake Wairarapa prior to agricultural development.

Lake Onoke has extensive areas of divaricating shrub communities with salt marsh ribbonwood (*Plagianthus divaricatus*). Onoke Spit duneland is home to pingao, spinifex and mat plant communities of *Raoulia australis* and *Pimelea arenaria*. Vegetation within the permanent water in the main lake and ponds has not been surveyed in detail. Much of the open lake water is devoid of aquatic vegetation, perhaps because of its high turbidity, with the ponds tending to have more dense aquatic vegetation (Ogle *et al.* 1990).

Birds

A study by the Wildlife Service (Moore *et al.* 1984) found that the Lake Wairarapa wetlands are of major significance for wildlife, and the wetland complex ranks as internationally important wetlands for this reason. The habitat diversity of the Lake Wairarapa wetlands is important for attracting a wide range of wetland birds. The eastern shore of the lake is the most significant area for wildlife in terms of both numbers and species of birds

A total of 96 bird species has been recorded at the Lake Wairarapa wetlands in the last 15 years (Robertson 1991). Each bird species uses only part of the range of habitats, and some use a different combination of habitats from most other species. Hence the presence of a wide variety of species is dependent on the maintenance of a large variety of habitats. The eastern lake shore provides habitat of national importance for water and wader birds, including large numbers of bar-tailed godwit, golden plover, pied stilt, banded dotterel, black-fronted dotterel, great knot, Japanese Snipe and Caspian tern (Robertson & Heather 1999). The wetlands are important breeding, feeding and roosting habitat for waterfowl, including grey duck, NZ shoveler, grey teal and paradise shelduck (see 3.1). Other wetland species include

three species of shag, New Zealand dabchick, Australasian bittern, marsh crake and spotless crake and may be banded rail. Moore *et al.* (1984) found that changes in the quality of the wetlands have led to a decline and even local extinction of some bird species (e.g., black swan and fernbird respectively) and an increase in others (e.g., pied stilt, mallard, and paradise shelduck) .

Freshwater Fish

Lakes Wairarapa and Onoke and surrounding wetlands have been identified as wetlands of national importance to fisheries (Hicks 1993). Species present include 10 native species which migrate between the sea and fresh water including longfinned and shortfinned eel, and 2 native species confined to fresh water (Hicks 1993).

The nationally threatened brown mudfish occupies some of the ephemeral wetlands (e.g., J. K. Donald Block, Boggy Pond, and Lake Domain Reserve), but their habitat has been severely reduced in the lower Wairarapa. These fish need water in autumn and winter for breeding and survival, but tolerate dry conditions in summer. The nationally threatened fish species, giant kokopu have also been recorded in the wetlands, but their current abundance and distribution is unknown.

Invertebrates

There is little known about the presence of aquatic invertebrates at the Lake Wairarapa wetlands, although tadpole shrimp (*Lepidurus apus viridis*), a species which is a priority for protection within the Wellington region, is known to be present at Boggy Pond. *Pimelea* mat plant communities at Onoke Spit form habitat for native moths.

ISSUE 1.1 WEEDS/PEST PLANTS

There are more than 100 adventive plant species present at the Lake Wairarapa wetlands (Ogle *et al.* 1990). Of these, several are considered to be pests, and a threat to the ecological values at the Lake Wairarapa wetlands (see Appendix 6). Some of the main plants considered pests at the Lake Wairarapa wetlands are identified below. Plants considered pests by the Wellington Regional Council and identified in the Wellington Regional Council Pest Strategy are referred to as pest plants (see Appendix 7).

Tall fescue, is an invasive exotic grass which colonises the open eastern lake shore where it accelerates the rate of accretion. This encourages the subsequent succession of gorse, willow and alders. The resulting grass dominated vegetation displaces native turf plant communities and reduces suitable breeding and roosting habitat for wading birds. Waders find this vegetation inhibiting as it restricts vision and provides cover for predators.

Mercer grass, thrives in wet locations. It invades ephemeral lagoons and lakes east of Lake Wairarapa, smothering the open areas and destroying habitats of waders and semi-aquatic native plants. There appears to be direct competition between Mercer grass and the rare native swamp grass *A. fluitans*. The effect of the Mercer grass on the native vegetation has been monitored at Boggy Pond since 1997.

Willows and alders also accelerate accretion rates by trapping sediment with their extensive root systems. Alder seedlings have been controlled at Wairio wetlands and the lake to slow rates of accretion and alder forests establishing.

Hornwort (*Ceratophyllum demersum*) blocks waterways and smothers native aquatic plants and blocks waterways. Hornwort rapidly spreads within waterways by fragmenting – the fragments are dispersed in the waterway and can root only once they settle on suitable substrate. Infestations exist and are spreading from Matthews Lagoon, Ruamahanga cutoff, the northern side of Lake Domain, the Oporua spillway, Barrage Gates, Mangatite stream, and drains on private lands. Hornwort is identified as a total control species in the Wellington Regional Council's Regional Pest Plant Management Strategy and landowners are obliged to destroy hornwort if it occurs on their property.

Nutrient enriched water from non-point and point discharges in the catchment accelerates the growth of some plants such as Mercer grass, willow and hornwort at the Lake Wairarapa wetlands. This is one cause of the weed problems (see Issue 1.2).

Because of the extent of the Lake Wairarapa wetlands, it is not practical to eradicate all pest plants from land administered by the Department. Consequently, management of pest plants is focused on key sites of biological importance and on infestations of certain pest plants that have the greatest potential to threaten the biological values of the lake. Priority for control or eradication is determined by evaluating the inherent conservation values of the site, the threat a weed species poses to the site, practicality of control, and the resources available. Pest plant inventories and control plans have been developed for Lake Wairarapa Scenic Reserve, J. K. Donald Block, Matthews Wildlife Reserve and their buffer areas. The Department has a statutory requirement under the Biosecurity Act 1993 to control certain weeds on its land, independent of whether they are a risk to native plant and animal communities. The Wellington Regional Council's Regional Pest Plant Management Strategy identifies which pest plant species are priority to control under the Biosecurity Act. Of the species identified in the Strategy, those that occur at the lake include hornwort (requiring eradication), and gorse, ragwort, and variegated thistle which require boundary control (see Appendix 5). Options for control of hornwort are currently limited. Priority will be given to discovering and manually controlling new infestations, containing existing infestations and investigating future control options. Because hornwort is present on extensive areas of Crown and private land, an integrated approach to its control is essential.

Grazing by cattle has been the main large scale method for controlling tall fescue, Mercer grass and other exotic grasses at the eastern shore and wetlands. It is the most cost effective method with revenue being gained from grazing licenses. However, cattle grazing causes pugging, sediment disturbance, nutrient loading and damages native vegetation (especially cabbage trees and flax). It is unclear how effective cattle grazing is compared to other methods such as chemical spraying, burning, water level manipulation, or grazing by sheep. Chemical control of isolated clumps of tall fescue is another option to help control its spread into turf plant communities. Areas such as J. K. Donald Block and Boggy Pond which have established native plant communities with regeneration potential will be priority areas to exclude from grazing on Department administered land. The impact of grazing on land managed by the Department will continue to be monitored.

Potentially, new pest species, may establish at the Lake Wairarapa Wetland. This can happen through wind and water-borne seed or fragments of plants caught on nets or craft. Of particular concern is the dumping of garden waste in river beds, road sides and reserves.

Chemicals have been used to control willows, alder seedlings and raupo⁴. The use of chemicals is currently being re-evaluated and alternative controls are being considered. Glyphosate ('Round-up') is the main herbicide used for willow and alders. It is biodegradable in water and is not considered to have adverse side effects on water quality. Willows have been and continue to be sprayed in some areas by Wellington Regional Council for flood control purposes. Mechanical removal of willows, alders and raupo is another option but is more time consuming than chemical control. If current manual forms of controlling hornwort are not effective, Diquat spray may be needed to control infestations of hornwort on land administered by the Department. The effects of the spray on water and native aquatic plants need to be carefully assessed. Fire is another potential method to control exotic grasses on the lakefront, but has yet to be trialled.

There has been little research done about the long term weed issues or the effectiveness of the above methods for protecting the native plant and animal habitats at the Lake Wairarapa wetlands.

Management Response

1. Implement the Departments strategic plan for managing invasive weeds and the pest plant control plans.
2. Prepare Department's pest plant inventories and control plans for priority areas not already covered by existing plans (e.g. Boggy Pond).
3. Trial and monitor different grazing regimes, to determine effective weed control methods that have minimal adverse effects on conservation values.
4. Seek research to look at long term options for the control of tall fescue, and reassess undertaking a trial using fire as a control method along lake edge in the interim.
5. Continue monitoring the impact of Mercer grass and tall fescue in ephemeral wetlands at Boggy Bond and its impact on native plant species.
6. Investigate management techniques to control Mercer grass - set up and monitor trials and implement best practice in J. K. Donald Block and Boggy Pond.
7. Not undertake or approve spraying of raupo in areas administered by the Department identified for cultural harvest unless iwi/hapu and Wellington Fish & Game Council identify areas where this may be appropriate (see Issue 2.2)
8. Undertake to fulfil Biosecurity Act obligations by controlling pest plants as identified in the Wellington Regional Council's Pest Plant Management Strategy on land administered by the Department.
9. Work with Regional Council and other statutory agencies, adjacent landholders, boat owners and fishers to reduce threats of weed invasion (e.g., advocate the use of sterile stock for shelterbelt trees such as willows and, where appropriate, advocate the substitution of indigenous species; advocate removal of weeds from outboard motors or nets and advocate the development of control programmes in areas where weeds are likely to spread from.)
10. Control existing infestations of hornwort.
11. Regularly inspect areas for new infestations of pest species that may colonise the Lake Wairarapa wetlands and take necessary actions if they are considered a risk to ecological values.
12. Investigate and support research on control options for hornwort and continue to conduct trials on new control options.

⁴ Raupo, an indigenous species with high cultural values, has been sprayed in the past to keep areas of open water for waterfowl hunting purposes (see Issue 2.2).

ISSUE 1.2 WATER QUALITY

The indigenous flora and fauna at the Lake Wairarapa wetlands depend on specific habitats for their continued survival. The increase of nutrients to the system encourages the growth of some weeds and pest plants, such as tall fescue, willows, alder and Mercer grass, which threaten these habitats. The direct effect of high nutrient water on indigenous wetland plants is largely unknown (although raupo growth is known). Iwi/hapu are kaitiaki of their environment. Lake Wairarapa and its tributaries have a spiritual and economic association for iwi/hapu in the district. The Maori cultural demand for the maintenance of pure water streams makes despoilation a cultural offence, and a desecration, thus damaging the mauri of the waterway and the mana of the people.

The level of nutrients entering the Lake Wairarapa wetlands reflects the underlying geology, the state of the catchment and the land use practices within the wider catchment (the advocacy area) as well as within the core area.

Nutrients can enter the system in two main ways:

1. Through direct discharges into water ways (point source discharges);
2. Through non-direct discharges from general runoff from the land (non-point source discharges).

The Wellington Regional Council is responsible for controlling direct discharges to water under the Resource Management Act. Whilst the Regional Council actively encourage discharges to land rather than water, it recognises that in some cases discharges to water may be appropriate if suitable standards can be met.

Most of the direct discharges are currently being assessed by the consents staff at the Regional Council. For example, resource consents for dairy shed effluent⁵ and the Featherston, Greytown, Martinborough, Masterton and Carterton sewerage systems (where effluent enters waterways in the Lake Wairarapa catchment after primary and secondary treatment)⁶ are being reconsidered when they come up for replacement.

Under the Proposed Freshwater Plan the majority of the Lake Wairarapa wetlands are classified to be managed for aquatic ecosystem purposes and recreation. Improved treatment of discharges into water within the catchment may be needed to achieve this water quality standard.

The Wellington Regional Council and the District Councils are responsible for minimising nutrients entering watercourses indirectly. A non-point source discharge is runoff from the land into waterways. In the Lake Wairarapa catchment the streams entering the western part of the Lake originate in the bush-covered Rimutaka Range but streams and drains entering the eastern part of the lake and wetlands traverse farmland and so have a higher nutrient load from waste from stock⁷, sediment from earth works, spray residue etc. The mechanical clearance of drains, as well as being

⁵ All discharges to water are pre-treated in some way, usually through ponds or long ditches. There are currently 40-50 discharges of dairy effluent to water out of approximately 220 dairy sheds in the Wairarapa area.

⁶ Featherston sewage treatment plant discharges directly into the lake via Abbots Creek. In normal operating conditions Greytown, Martinborough, Masterton and Carterton sewerage systems discharge into Lake Onoke via the Ruamahunga River. When Lake Onoke is high and the Barrage Gates are open or during flood events when the spillways are in use treated effluent enters Lake Wairarapa.

⁷ Before renewing consents for dairy shed effluent discharges to land, the Wellington Regional Council checks the ground water in vulnerable aquifers for nitrogen content (where downstream bores/wells are available), and the soil types to estimate appropriate discharge rates in order to minimise run off and/or leaching. The land area required for discharge is calculated to ensure that no more than 150 kg/ha/year is discharged to land, so that the risk to waterways from nutrient contamination is reduced.

time consuming and costly, damages in-stream habitat of fish and invertebrates (insects). Grazing within the Lake Wairarapa wetlands also increases the input of nutrients to the system (see Issue 1.1).

The problem with non-point source discharges is that they are more difficult to regulate, as there is no direct source. Controlling the effects of certain land use activities, such as earthworks, septic tank disposal fields, and spraying of dairy shed effluent through the Regional and District Plans is one method, although a costly one for land owners and councils alike. For this reason, councils around the country are interested in promoting voluntary methods, aimed at the source of the problem. For example, encouraging farmers to undertake their own water quality monitoring, and to respond to any trends of water quality determination, not to graze stock adjacent to waterways, and revegetating stream margins to act as a filter for runoff. "Landcare and streamcare" groups are being established around the country. These farmer-initiated groups maybe supported by technical advice from Ministry of Agriculture and Forestry, Regional Councils, and the Department. There are currently no Landcare groups in the catchment of Lake Wairarapa.

The 1991 Guidelines established a water quality monitoring regime, whereby the Regional Council monitors the major water bodies within the core area and advocacy zone for turbidity, biologically available oxygen, pH, nitrogen, phosphate and other compounds. This information is collected as baseline data to detect changes in water quality over time. Changes in the trophic status of the Lake over time have been analysed and indicate that there has been no significant change since monitoring commenced in 1994. Temporal trend analysis has not been conducted on the smaller wetlands because the data sets are currently too small.

Management Response

1. Recognise that iwi/hapu consider discharge to water and diversion of waterways to be culturally offensive.
2. Advocate for the reduction of nutrients entering waterways in the catchment by supporting the implementation of the Wellington Regional Council's Freshwater Plan in conjunction with the Wellington Regional Council, South Wairarapa District Council, Masterton District Council and Carterton District Council, iwi/hapu and Wellington Fish & Game Council.
3. Monitor the effect of high nutrient water on threatened wetland plant species at Lake Wairarapa wetlands through management trials.
4. Minimise the effects of cattle grazing within the Lake Wairarapa Wetland reserves by protecting riparian and wet areas where possible and by habitat management, only allowing grazing at the level required for weed control.
5. Keep informed of water quality monitoring results undertaken by Wellington Regional Council, in particular in Matthews Lagoon and Lake Wairarapa and liaise with iwi/hapu about the results.
6. Work with Wellington Regional Council to prioritise areas for riparian protection and promote voluntary water care initiatives undertaken by landowners.

Boggy Pond and Matthews Lagoon

Wetlands will naturally transform into drylands over time (succession) resulting in a decrease in the amount of surface water and water depth. Some wetland areas within Matthews Lagoon have recently completely dried up. Boggy Pond was separated from the influence of the waters of Lake Wairarapa during the 1960s with the formation of Parera Road, resulting in it having relatively low nutrient levels because the only water entering it was rain and groundwater. The difference in water quality from the adjoining Matthews area is paralleled by the two reserves having different native floras. The survival of the nationally threatened swamp grass *Ampibromus fluitans*⁸ and other threatened plants such as *Pilularia novaezelandiae* in Boggy pond, (these plants are not found in the Matthews area) may be dependent on keeping these low nutrient levels (Moore *et al.* 1984).

Due to 'excessive' drying out in summer, it was decided that additional water was required for Boggy Pond. In 1984 the Wildlife Service allowed the Wellington Fish & Game Council to open the stopbank between Matthews Lagoon and Boggy Pond, and since 1990 water from the Oporua Floodway is pumped into Boggy Pond in order to reach suitable water levels for waterfowl hunting purposes in consultation with the Department. Resource consents for this water management regime are held by Wellington Fish & Game Council⁹. High water levels will reduce habitat for wading birds¹⁰.

By letting water in to Boggy Pond from Matthews Lagoon and the Oporua Floodway, the ecological diversity that was present has been reduced. Moore *et al.* (1984) and Ogle (1990) recommended that the pre-1984 water management be restored by discontinuing the direct connection between Boggy Pond and Matthews Lagoon. This would result in low water levels during late summer in Boggy Pond and have an impact on the ecological, cultural and recreational values of Boggy Pond. Monitoring the water level regime at Boggy Pond will provide information on which to base future management to ensure the protection and enhancement of the diverse range of habitats at the Lake Wairarapa wetlands.

J. K. Donald Block

The water levels in the ponds in the J. K. Donald Block are presently being managed by Wellington Fish & Game Council for waterfowl hunting purposes. Water from Otakura Stream is diverted into the J. K. Donald Block from late summer, to reach target levels for waterfowl hunting. Wellington Fish & Game Council have resource consents for this water management regime.

Lake Wairarapa and Lake Onoke

In 1989 a National Water Conservation Order was placed on Lake Wairarapa, (including the Ruamahanga Cut-off). The Water Conservation Order declares that the wildlife habitat created in part as a consequence of the natural fluctuations of

⁸ *Ampibromus fluitans* faces a high probability of extinction in the wild in the near future and actions to protect it are a high priority.

⁹ The Water Right for the Wellington Fish and Game Council to operate the current water management regime is due for renewal in 2002.

¹⁰ Wader birds used Boggy Pond in summer and autumn according to a 1984 study (Moore *et al.*). Waders are now only occasionally present.

water levels, particularly over the eastern shoreline, is an outstanding feature of Lake Wairarapa. It states that no water rights shall be granted in respect of any part of Lake Wairarapa if the effect would be to diminish significantly the outstanding wildlife habitat features of any part of the lake. It allows for the operation of the barrage gates.

The diversion of surface water and groundwater can have an affect on water quality and water level in the Lake Wairarapa wetlands. Iwi/hapu have concerns that takes of water and diversions from waterways will adversely affect the mauri of water bodies. Minimum flows and water allocations for rivers and aquifers are controlled by Wellington Regional Council by the allocation of water permits. The Wellington Regional Council Freshwater plan requires consents for the diversion and abstraction of water. It also prohibits any reclamation of Lake Wairarapa. The Lake Wairarapa levels are controlled by the Wellington Regional Council through the barrage gates. Water levels are recorded every half hour and they are held in accordance with the water levels agreed by the Lake Wairarapa Co-ordinating Committee in 1991 (Table 1). These water levels are set by the resource consent for the barrage gates. To date there has been no strong disagreement with the water level regime agreed in 1991, although a comprehensive assessment of data to review the suitability of the water levels has not been undertaken.

TABLE 1: WATER LEVELS SET BY THE LAKE WAIRARAPA CO-ORDINATING COMMITTEE

SEASON	PERIOD	TARGET LEVELS
Spring	1 October to 30 November	10.00m
Summer	1 December to 28 February	10.15m
Autumn	1 March to 31 May	10.00m
Winter	1 June to 30 September	9.95m

The Department has some concerns with Lake Wairarapa water levels because of uncertainty of the effects high water levels in summer have on rare turf plant communities along the eastern edge of the lake. It is considered that submersion of the turf plant communities may be occurring at the wrong time in summer when the turf plants are flowering or setting seed.

The Wellington Regional Council has monitored the eastern shoreline since 1985, surveying the shore profile on fixed transects and recording the different vegetation types. An analysis of trends has yet to be made. Such an analysis would be useful to give an indication of the effect of the current barrage gate operating regime on native turf plant communities. Recent bird counts (between 1984 and 1994), indicate that current water levels are appropriate for seasonal use of mudflats by wading birds (Heather and Roberston 1999).

Any change in the water management regime would need to be debated amongst the various interest groups (through the Lake Wairarapa Co-ordinating Committee), and taking into account the above information. The Wellington Regional Council will take any recommended changes into account when it is reviewing the resource consent for the Barrage Gates (October 2004 and every five years there after).

Lake Onoke is separated from Palliser Bay by Onoke Spit that is naturally breached

by rising lake levels. For long periods the lake is tidal, but in southerly conditions with a low river flow, the exit to the sea becomes blocked. When the water level in Lake Onoke gets too high, the closed outlet is artificially opened by the Wellington Regional Council to reduce the danger of flooding of the lower Wairarapa valley. Traditionally Lake Onoke was an important site for eel fishing during these conditions in particular in Autumn when the seaward migration of adult breeding eel congregated at the lake (see 1.3).

A comprehensive review of the water regime management for Lake Onoke has not been carried out since 1991. Opening Lake Onoke to the sea is a permitted activity under the Regional Coastal Plan.

The Tauherenikau river delta is growing at an increasing rate due to the amount of gravel and sediment deposited by the Tauherenikau river. The delta has become a significant habitat for wader birds. The wetlands at the north western end of Lake Domain are gradually infilling and the position of the river mouth is likely to move as the wetland aggrades. The Wellington Regional Council are developing a management plan for the Tauherenikau river which will have an effect on the delta, the wetlands and the position of the river mouth.

Management Response

1. Monitor, evaluate and reassess current water management regimes at Boggy Pond, Matthews Lagoon and J. K. Donald Block with Wellington Fish & Game Council, iwi/hapu, landowners and other interested parties. (This will necessitate putting in place a gauge in Boggy Pond to monitor the effect of water management regimes).
2. Work with the Wellington Regional Council, iwi/hapu, universities and any other interested groups to analyse the available data to help assess the effect of the current water level management regime at Lakes Wairarapa and Onoke on the indigenous plant and animal communities.
3. Identify monitoring gaps and investigate where practical.
4. Support the South Wairarapa District Council and the Wellington Regional Council in the implementation of their district and regional plans which control drainage of wetlands around the Lake Wairarapa wetlands and abstraction of water and diversion of waterways in the wider catchment.
5. Revisit and discuss current target lake levels with Lake Wairarapa Co-ordinating Committee and advocate any recommended changes to the Wellington Regional Council during the review of the Barrage Gates resource consent.
6. Provide input to the Wellington Regional Council's review of the future management of the Tauherenikau river and other relevant catchment planning initiatives.
7. Encourage the WRC to consider a whole catchment approach to the management of the Tauherenikau river, in particular soil conservation measures in the upper catchment.

ISSUE 1.4 LOSS OF FISH HABITAT

Agricultural and river development and flood control have resulted in drainage of large areas of Lake Wairarapa wetlands which have reduced bird habitat, and diversion of waterways have reduced the ecological values of the wetlands.

The Department's role in recreational freshwater fisheries management is to preserve as far as practicable all indigenous freshwater fisheries and protect

recreational freshwater fisheries and freshwater fish habitats. Fishing is not permitted in Allsops Bay, Boggy Pond, Matthews Lagoon and the Ruamahanga Cutoff unless consent is given. The Department advocates the protection of fish habitat. For example it advocates for increased water quality within the catchment (see Issue 1.2), and ensuring there is sufficient water within streams and rivers to sustain fish habitat. This is undertaken mainly through the Resource Management Act processes. The Department also administers the Freshwater Fisheries Regulations 1983 to ensure that fish passage up and down waterways is not impeded as most native fish species migrate to and from the sea at different stages of their life cycles). There are limited data on the current abundance and distribution of indigenous fish at the Lake Wairarapa wetlands and the catchment. Anecdotal evidence suggests that some species are less common in the wider catchment than in the past, and that numbers of some species, such as eel and flounder, have decreased markedly. The size range of eels currently being caught is also considered to be smaller (Hicks 1993) (see Issue 2.2).

Two nationally threatened fish species, brown mudfish and giant kokopu, occur at the Lake Wairarapa wetlands but their current abundance and distribution is unknown. These two species are priorities for the Department to establish baseline data through survey and monitoring. There is little known about the presence of aquatic invertebrates at the Lake Wairarapa wetlands.

Habitat loss is a major cause of lowered species diversity and abundance, through drainage of wetlands, channelling natural watercourses, clearance of vegetation from streams, increased water temperature through removal of riparian vegetation, stock trampling banks (used by fish as spawning sites), elevated nutrient levels, weed invasion, low water levels and siltation caused by catchment clearance and in-stream works.

It is considered that habitat loss contributes significantly to lowered productivity of the fisheries although some people consider that commercial fishing is also a major contributor (see Issue 2.2). Despite limited data on the health of the fishery, it is considered appropriate to err on the side of caution.

Mudfish have been recorded in the Donald Block, and this has implications for water management. Mudfish may actually require dry habitat in summer to reduce competition and predation. Therefore the seasonal water level changes required by brown mudfish are probably the exact opposite of the current water regimes at Boggy Pond and the J. K. Donald Block in which lake levels are maintained artificially high in summer, and lowered in winter for flood protection (Hicks 1993).

The Lake Wairarapa barrage gate

Flood control schemes, weirs, culverts and other works can render some waterways impassable to native fish, but if properly constructed can assist fish migration. The velocity of water effects the ability of fish to pass upstream. Current scientific knowledge shows that a velocity greater than 0.3 m/s will hinder the passage of most indigenous fish species (Mitchell 1989).

There is concern that the Lake Wairarapa barrage gates may not provide sufficient fish passage. Fish passage was provided for at the time of construction of the barrage gates in 1974, through a small rectangular hole in the centre of the concrete base of the barrage gate. The effectiveness of this fish passage has been questioned due to the high water velocity through the hole. The Department commissioned a report in 1995 for the design of a fish passage structure that could be attached to the Barrage gates (Mitchell 1995).

When the Lake Wairarapa Guidelines were being developed in 1990/91, there was very little fisheries information to input to that process. As a result the Department commissioned a report by the National Institute of Water and Atmosphere (NIWA) to investigate the fish and fisheries of the Lake Wairarapa wetlands (Hicks 1993). Hick's report states that the combination of the reduced outflow of freshwater from the Lake (due to the diversion of the Ruamahanga River) and the Barrage gates appear to have caused significant changes to fish populations (Hicks 1993). Hick's Report made four main recommendations.

1. Keep the barrage open as often as possible between August and April to maximise the number of fish entering and leaving Lake Wairarapa.
2. Automate all six barrage gates, and open all gates simultaneously.
3. When the gates are open, ensure they are open to the surface or above to allow the passage of surface-swimming juvenile galaxiids and eels, which swim at the surface at the peak of their migration when close to the sea.
4. Restore some flow to Lake Wairarapa via the Ruamahanga Cutoff. This would require installation of a gate at the upstream end of the Cutoff that could be opened in periods of normal flow and closed to prevent flooding at high flow.

Recommendations 1, 2 and 3 have been put into effect to some extent by the Wellington Regional Council. The current consent for the operation of the barrage gates requires the opening of at least two of the lateral gates during spring and summer months at specific times when the head differences at the gates are small enough to allow for fish passage and will have a negligible effect on lake levels. This will allow juvenile galaxiids and eels to migrate from the sea into freshwater in the spring, and adult black flounder to migrate upstream mid-summer to autumn. The effect of this management regime will be monitored and results will be taken into account in the 5 yearly review of the consent.

Recommendation (4) has not been implemented. Further investigation and discussion is required on the advantages and disadvantages of this option.

Pounui Lagoon

In the mid 1960s Pounui Lagoon was separated from Lake Onoke by a stopbank, with the lagoon only connected with Lake Onoke through two culverts. Flapgates on the culverts stop tidal flows moving back into the lagoon, and thereby prevent flooding of farmland.

Hick's (1993) looked at the effect the flapgates had on fish habitat and fish passage. He concluded that the flapgates restricted the entry of saline water as well as fish. He recommended the complete removal of the flapgates as automation was likely to be too costly. As a compromise a 10 x 30 cm slot was cut into one of the floodgates in 1995. The effects of the slot have not yet been monitored.

Management Response

1. Work with Wellington Regional Council, Ministry of Fisheries Wellington Fish & Game Council and iwi/hapu to establish baseline data and record changes in the spatial extent of indigenous fish within the Lake Wairarapa wetlands, including above and below the barrage gates, and in the catchment. Priority will be given to surveying sites previously recorded as having nationally threatened species (brown mudfish, giant kokopu, and tadpole shrimp) and threatened invertebrates to measure changes in habitat.
2. Use a consultative approach and advocate for the protection of native fish habitat, including fish spawning sites that are not on lands administered by the Department.

3. Promote the installation of effective fish passages where necessary and monitor effects as provided for in the Freshwater Fisheries Regulations 1983.
4. Work with the Wellington Fish & Game Council to assess fish passage through the Otakura Stream diversion and surrounding waterways.
5. Liaise with the Wellington Regional Council over the effectiveness of the operation of the barrage gates to try to improve the opportunities for fish passage at the gates.
6. Discuss the feasibility of Hicks's (1993) recommendation to restore water flow to the Ruamahanga Cut-off with Wellington Regional Council and the co-ordinating committee.
7. Work with the Wellington Regional Council, and landowners to protect priority whitebait spawning areas (including restricting clearing of drains during spawning from February to May).
8. Monitor the effects of the slot on the flapgates between Lake Onoke and Pounui Lagoon and the Otakoura diversion on fish migration.

Exotic Fish

Exotic species known to inhabit the Lake Wairarapa wetlands are brown trout, tench, perch and rudd. There is little information available about the impact of exotic fishes on the indigenous fauna. In some instances native species have not done well when in competition exotic species (McDowall 1990). Rudd is considered a noxious fish in most of the country, including the Wellington Acclimatisation District. They can become so numerous that they displace other species and disrupt the food pyramid. There is little that can be done once noxious fish are present in a water body of the size and extent of the Lake Wairarapa wetlands.

It is illegal to introduce new fish species to a water body without the consent of the Minister of Conservation. Both rudd and tench were released illegally into the Lake Wairarapa wetlands.

Management Response

1. Promote and enforce the provisions of the Conservation Act and Freshwater Fisheries Regulations 1983 regarding the introduction of noxious fish.
2. Monitor populations of rare indigenous fish and exotic species to distinguish changes in population structure of species and liaise with interested parties including iwi/hapu.
3. Work with Wellington Fish & Game Council and coarse fishing clubs to eliminate the illegal transfer of exotic fish.

ISSUE 1.5 ANIMAL PESTS

Animal pests known to be present at the Lake Wairarapa wetlands include rats, mustelids (ferrets, stoats, weasels), rabbits, hares and feral cats. Predators are common and widespread in the wetlands and are seen most often in areas of willows (Moore *et al.* 1984). Rabbits and hares are more common within Lake Domain Reserve.

Possoms and deer are also present and are considered to be a Tb threat to farm stock. The Wellington Regional Council control possums regularly at the Lake Wairarapa wetlands as part of its Tb possum control programme. They have also carried out limited ferret control on the eastern lake shore of Lake Wairarapa and occasionally control cats and mustelids.

While no research has been done at the Lake Wairarapa on the effects of these animal pests, it is considered that deer are likely to cause browsing damage to indigenous plants, and mustelids, rats and feral cats will prey on bird eggs, young and adult birds. The Department does not undertake pest control at the Lake Wairarapa wetlands as it does not rank as high priority compared to other sites in the Wellington region.

Dogs are considered to be a problem at Lake Onoke Spit during the Caspian tern and banded dotterel breeding season (August - January inclusive), as they can disturb and kill nesting birds and chicks (see Issue 3.1). Under Part Vc of the Conservation Act, it is possible to make the spit a Dog Control Area, which would require people to apply for a permit to take dogs there. Permits will be difficult to gain during the breeding season.

Canada geese, introduced by the Wellington Fish & Game Council as a game bird, are considered to be a nuisance to farmers as they graze farmland. In wetlands high concentrations of Canada Geese (along with black swans) can keep vegetation clipped off at a depth which makes it unavailable for dabbling ducks. The Wellington Fish & Game Council are responsible for monitoring numbers and control of Canada geese. The Department does not consider this to be a priority conservation issue.

Some exotic fish present in the wetlands system are likely to be preying native fish, but the effects are not qualified in this location.

Management Response

1. Initiate the process to ensure Onoke Spit becomes a Dog Control Area. Restrict permits for dogs to enter the spit during Caspian tern and banded dotterel breeding season (see Map 2).
2. Establish honorary rangers at the Lake Wairarapa wetlands, and Lake Ferry to help enforce regulations.
3. Liaise with Wellington Regional Council pest management staff to obtain possum and ferret control monitoring results.
4. Support Wellington Fish & Game Council to develop a Canada goose management plan.
5. Work with Wellington Regional Council, Wellington Fish & Game Council, the Ornithological Society, and landowners to monitor and control pests that threaten natural and historic values (including Onoke Spit).

ISSUE 1.6 RESTORATION

Historically the lake edge on the western shore of Lake Wairarapa and southeastern hills were predominantly podocarp-broadleaf forest and swamp forest. Scattered groves of swamp forests, turf plant communities, harakeke, sedges and tall grasses dominated the lower Wairarapa plains in the 1850s (Perfect and Beadel 1998).

There are possibilities to restore to the Lake Wairarapa wetlands indigenous plant and animal communities that once occurred there, or to reinstate lost physical conditions at the Lake.

Restoration may first involve minor works to protect what is already there. For example, fencing remaining areas of cabbage trees and kahikatea, followed by actions to reinstate lost species or physical conditions. Restoration activities can also take the form of a 'start from scratch' operation by establishing new populations

of plants (e.g., flax, dune vegetation), or by creating an environment which would encourage the re-establishment of native species and allow vegetation succession to naturally occur. Organisations such as Wellington Fish & Game Council are interested in creating new wetlands through mechanical excavation and positioning culverts to restore water levels and/or facilitate fish passage). The Department also advocates on a catchment basis for the restoration of elements essential to a functioning wetland system, including water quality, water flow and biological values (see Issues 1.2 & 1.3).

Priority sites for Wellington Conservancy's restoration projects are islands such as Mana and Matiu/Somes. Mainland restoration is considered a priority at sites where threatened species occur or rare and endangered plant and animal communities exist.

Restoration projects may be "adopted" by the community, e.g. university and school groups, and funding through Lottery Grants and other funding agencies is often available. The involvement of these groups in restoration is encouraged, and ecological advice for restoration projects at the Lake Wairarapa wetlands will be given by the Department on request. Wellington Fish & Game Council and Ducks Unlimited are currently investigating recreating and restoring a wetland in the Wairio block with support from the Department of Conservation. Iwi/hapu are interested in establishing areas for flax, pingao (*Desmoschoenus spiralis*) and other culturally important plant materials within the Lake Wairarapa wetlands to be available for cultural harvest. Further sites suitable for cultural harvest need to be identified with iwi/hapu, and appropriate management regimes discussed.

Potential areas for restoration, based on what is still present, what has disappeared and what can be restored are identified on Map 2.

Management Response

1. Investigate and prioritise areas within the Lake Wairarapa wetlands suitable for restoration, (in particular Boggy Pond, Wairio block and the J. K. Donald Block) including the extent of restoration that would be required, in consultation with Wellington Fish & Game Council, Ducks Unlimited, iwi/hapu and others.
2. Collect seed from remnant areas of vegetation within the Lake Wairarapa wetlands to provide local stock for replanting programmes which may be undertaken.
3. Encourage and provide advice to any group wishing to undertake a restoration project at Lake Wairarapa wetlands.
4. Identify with iwi/hapu suitable restoration sites and management regimes for cultural harvest, and provide ecological advice for their development.
5. Advocate for legal and physical protection of areas that are biologically important.

ISSUE 1.7 RESEARCH AND DATA COLLECTION

In terms of long term management to maintain and enhance indigenous plant and animal communities at the Lake Wairarapa wetlands, there has been limited analysis of available data to provide guidance on integrated management. There are many unanswered questions regarding the most appropriate management for the Lake Wairarapa wetlands. It is noted that anecdotal evidence from long time users of the area can also be used to help answer management questions.

Research and surveys, by agencies other than the Department of Conservation, can provide useful information on the wetlands generally contributing to a better understanding of the area. At the Lake Wairarapa wetlands research is currently being addressed through the following ways:

- by field staff with the objective to look at different management regimes on a small and large scale and to monitor the results of management. The Department's intentions for monitoring specific areas are raised throughout the plan.
- Science and Research Division of the Department, or other science providers (Public Good Science Fund; Manaaki Whenua etc). This generally focuses on research which would have relevance on a national scale. Bids need to be put forward for research projects.

Other scientific research can be undertaken by universities in discussion with field staff and Wellington Regional Council as part of their statutory responsibilities to collect data as part of monitoring. This information could be used to analyse issues of mutual concern with the Department. Data on lake shore and vegetation profiles along the eastern lake front has been collected since 1985 by the Wellington Regional Council but this has not been analysed.

Management Response

1. Identify and prioritise research questions and the time and resources required to answer them. (Appendix 8, Table 2 summarises the areas identified in this document as requiring further research, monitoring and data collection).
2. Ensure that funding applications for scientific research projects at a national level are properly targeted.
3. Undertake priority research and survey or contract to other agencies to obtain information to assist in the management of the wetlands.
4. Monitor, analyse and disseminate the results of experimental management.
5. Prepare an inspection schedule for areas administered by the Department as part of a monitoring programme.
6. Encourage other agencies to undertake research and survey where there will be educational, scientific or conservation benefits and little or no adverse effect on the habitats or species.
7. Any research or survey undertaken within this area will comply with the Department's policy and protocol. A concession or other authorisation generally will be required prior to the commencement of research on land managed by the Department (see 3.1 Recreation/ Concessions).
8. Liaise with iwi/hapu, Wellington Regional Council and other statutory agencies, including Wellington Fish & Game Council, with regard to monitoring and research results and provide opportunities for feedback.

Appendix 8 summarises key research areas, monitoring and data collection.

GOAL 2: Protect and recognise the cultural and historic values of the Lake Wairarapa wetlands

HERITAGE VALUES

The Lake Wairarapa wetlands have a long history of human habitation and this is an important aspect of the character of the area. The lakes and wetlands were important to iwi/hapu as a source of food and materials and for access to transport produce, which was traded throughout the North Island. The changes of the last 150 years have meant many traditional fishing sites and sources of plant material have declined, and changes in the shoreline mean that many archaeological sites are now in farmland to the east of the lake.

The area has strong associations with European settlement history: the first sheep stations in the Wairarapa; the beginning of flood control measures; the relationship between early settlers and Maori and the effects of the 1855 earthquake were particularly significant.

The wetlands have always been important to wildfowl hunters and naturalists. Campaigns against the Lake Wairarapa Polder scheme ensured that much of the wetlands surviving at the time, remain today (see Issue 3.1).

TANGATA WHENUA VALUES

Lake Wairarapa is the defining entity for the people of the Wairarapa. For centuries Lakes Wairarapa and Onoke and the associated wetlands have been a vital food source (he kaiwairua) for Maori of the Wairarapa. While various species of whitebait, flounder, fin fish and water fowl were taken, it was tuna that were historically most important to Maori. This significance extended beyond just the subsistence of those living near the lake as eels were an important commodity traded with groups both further north and in the South Island. When the Crown purchases were made of lands contiguous with the lake in the 1850s, Maori tried hard to ensure that the lake was excluded from these sales, thus protecting their important fisheries¹¹ (see 1.3, and Issue 1.3).

Due to the changes to the Wairarapa Wetlands, many traditional mahinga kai (food and materials) sites were destroyed, habitats lost or greatly reduced. For example areas of flax, ti kouka (cabbage tree) around the Wairarapa Wetlands and pingao at Onoke spit are now sparse. Many traditional eel fishing sites no longer exist, and the numbers and size of eel are believed to have diminished significantly (see Issue 1.4).

The Lake Wairarapa wetlands is considered by iwi/hapu to be a taonga for many reasons including their spiritual linkage to the area through whakapapa, their historic association with the area and its taonga.

¹¹ The sale of the land to the Crown and the issue of the fishery are both the subject of claims to the Waitangi Tribunal by the iwi Ngati Kahungunu ki Wairarapa and Rangitane o Wairarapa. These claims re to be heard by the Waitangi Tribunal. The Department will assist Government to address Treaty claims in its consideration of Waitangi Tribunal recommendations when these are available. In the meantime the Department will ensure that its actions do not prejudice settlement of any claims under the Treaty of Waitangi. Information relating to the value of the lakes for the fishery and other mahinga kai is outlined in the Appendix to the Journals of the House of Representatives (AJHR) 1891 G-4 'Report on claims of Natives to Wairarapa Lakes.

ISSUE 2.1 APPROPRIATE RECOGNITION OF TANGATA WHENUA VALUES

Up until recently, there appears to have been little recognition of the values manawhenua consider important in management decisions regarding the Lake Wairarapa wetlands. This is partly because flood control and waterfowl hunting have been the major reason for managing the area. Greater recognition of the conservation values present at the Lake Wairarapa wetlands in the last decade has meant that iwi/hapu values are also being recognised, as in many aspects manawhenua values and conservation values coincide.

Under section 4 of the Conservation Act the Department is required to give effect to the principles of the Treaty of Waitangi in interpreting and administering the Act. The Wellington Conservation Management Strategy identifies the development of co-operative working relationships between the Department and iwi/hapu as a priority.

At present, iwi/hapu are being consulted and kept informed of works and research projects being undertaken at Lake Wairarapa wetlands, by the Department on a fairly informal level. There is a need to determine protocols that will ensure that appropriate, effective and enduring relationships between the Department staff and iwi/hapu are established. Until protocols have been developed staff will consult and inform iwi/hapu of issues of concern to them (see Appendix 8: Guidelines for consultation with iwi/hapu).

The Department has a policy that applicants seeking to carry out commercial activities on lands managed by the Department are to consult with the appropriate iwi/hapu. The Department then checks with the iwi/hapu to ensure that adequate consultation occurred and follows up any concerns raised by the iwi/hapu.

Ensuring the protection of waahi tapu and archaeological sites

It is understood that there are few archaeological sites within the Lake Wairarapa wetlands based on existing file records held by the New Zealand Archeological Association. The Department acknowledges that iwi and hapu may have knowledge of additional archeological or waahi tapu sites. The Department will consult with iwi/hapu concerning the management of the Lake Wairarapa wetlands.

Sites that have been identified and any sites discovered in the future are legally protected under the Historic Places Act 1993. The Act makes it an offence to modify, damage or destroy any archaeological site.

The Department recognises that the whole of the Lake Wairarapa wetlands is considered a taonga and the kaitiakitanga of iwi/hapu over the area is acknowledged. It is understood that certain areas within the wetlands are waahi tapu and require greater protection. Any specific sites within land managed by the Department that iwi/hapu identify as requiring greater protection will be appropriately managed with the iwi/hapu.

Management Response

1. Develop and sustain a co-operative working relationship, akin to partnership, with iwi/hapu over management at the Lake Wairarapa wetlands.
2. The Department will consult with iwi/hapu over the issuing of concessions and other permits at the Lake Wairarapa wetlands.
3. Work with iwi/hapu to ensure the protection of archaeological sites and special sites within the Lake Wairarapa wetlands.

4. Develop protocols between the Department staff and iwi/hapu to ensure that Treaty-appropriate, effective and enduring relationships are established.
5. Bid for funding for tikanga atawhai projects that recognise iwi/hapu initiatives in conservation at the Lake Wairarapa wetlands.
6. Ensure that ongoing and progressive relationships with iwi/hapu are provided for and supported by the Department.

ISSUE 2.2 MAHINGA KAI (AREAS OF FOOD AND OTHER RESOURCES)

As outlined above, the Lake Wairarapa wetlands were a major and important source of kaiwairua to Maori. With the loss of the vast majority of the wetland habitat, many traditional fishing sites and sources of plant materials (e.g., harakeke (flax), raupo, cabbage tree, pingao) have been lost or greatly reduced. Consequently the remaining areas containing mahinga kai are of great value to iwi/hapu. Tuna (eels), raupo, harakeke and are the most commonly harvested today.

A major concern voiced by iwi/hapu (and others) in the preparation of this document is the lack of tuna present in the Lake Wairarapa wetlands and wider catchment. Another issue for iwi/hapu is that some sectors of the community consider raupo to be a weed and the chemical spraying of raupo in the wetlands is considered offensive. The issue of restoring areas of mahinga kai has also been raised. These issues are discussed below.

Eel Fishing

Eel fishing is allowed at the Lake Wairarapa wetlands other than in the Wildlife Management Reserves. Taking any plant or animal, including fish, in the Wildlife Management Reserves (Boggy Pond, Matthews Lagoon, Allsops Bay, Ruamahanga Cutoff) at the Lake Wairarapa wetlands without permission from the Department is an offence under the Reserves Act 1977. Commercial fishing in Wildlife Management Reserves at the Lake Wairarapa wetlands has been prohibited under the Reserves Act. To undertake customary and recreational fishing in Wildlife Management Reserves any person must obtain a permit from the Department. The reason for the requirement for a permit is that Wildlife Management Reserves are set up to protect the animals and plants within them. While in some cases it may be appropriate to take plants and animals from the Reserve, this needs to be considered on a case by case basis in light of the purpose of the Reserve. The decision to grant a Reserves Act permit to fish in these particular reserves rests with a commissioner (being a position appointed under the Reserves Act). The commissioner cannot delegate these powers. In relation to these reserves the persons who have been appointed commissioners are the Conservator and the Community Relations Manager, Wellington Conservancy.

The requirement for a permit is considered inappropriate to the local hapu, who had always fished at the Lake Wairarapa wetlands. The Department considers it is appropriate to accommodate customary fishing within the wildlife management reserves at the Lake Wairarapa wetlands. The Department is working with iwi/hapu to set up a process for kaitiakitanga to be exercised so that:

1. iwi/hapu can exercise their customary-use right within the wildlife management reserves through a lawful and easily administered system;
2. iwi/hapu and the Department can then be assured that the only fishing taking place is in accordance with appropriate practices, and is sustainable.

In terms of any other permits requested from the Department for the wildlife management reserves, the Department will consult with iwi/hapu over such applications.

This idea has been discussed with a group of hapu with interests at the Lake. The Department is waiting to hear back from iwi/hapu on the appropriate group to manage and be the kaitiaki for the customary eel fishery at the Reserves.

Management Response

1. Support iwi/hapu to develop and administer a system which will allow customary harvest of eel within the Wildlife Management Reserves, including a system for ongoing monitoring of take.
2. Liaise with Ministry of Fisheries and iwi/hapu concerning an appropriate system for customary harvest compliance.

The commercial eel fishery

There is concern from iwi/hapu and recreational fishers at the relative lack of eels present at Lake Wairarapa and the catchment. It is perceived that this is due to habitat destruction within the Lake Wairarapa catchment, and to commercial fishing. This concern about lack of eels and to commercial fishing has been around for several years, and was identified in the 1991 Guidelines.

The Department has no authority to manage or make regulations governing commercial fishery. The legislation prohibits commercial fishers from reserves managed under the Reserves Act (including Boggy Pond). This is for conservation purposes, and is not considered to be a form of control of the commercial fishery. The Ministry of Fisheries is responsible for the sustainable utilisation of all non-acclimatised fish species (excluding whitebait) within the Lake Wairarapa wetlands fisheries. Commercial, customary and recreational fisheries exist for eel and flounder. The Ministry of Fisheries can issue permits, and make regulations, as well as use other tools for the management of sustainable utilisation of the fishery. The Ministry is not able to authorise commercial activities in reserves managed under the Reserves Act. The Ministry is willing to meet with iwi/hapu and the commercial fishers and anyone else interested to discuss what options are available to address the concerns regarding commercial fishing at the Lake Wairarapa wetlands and the wider catchment. For example, the Ministry has helped iwi/hapu and commercial eel fishers develop a management strategy which guides the sustainable utilisation of the eel fishery at Lake Waihora (Ellesmere).

The Department will help facilitate such a meeting happening in the Wairarapa.

Management Response

1. Promote ongoing communication between the Ministry of Fisheries, iwi/hapu and the Department over commercial fishing in Lake Wairarapa to work towards sustaining a healthy eel population.

Raupo harvesting

Raupo is a native wetland plant, which flourishes in wetland areas with high nutrient levels, such as the eastern wetlands of Lake Wairarapa. Raupo is an important plant material for the Wairarapa iwi/hapu. It is harvested and used in a variety of ways, as a food source, for weaving, and whare building¹². Iwi/hapu have a permit to harvest raupo within the Wildlife Management Reserves.

¹² The Museum of New Zealand - Te Papa Tongarewa, contains a raupo whare made by Ngati Hinewaka using raupo from the Lake Wairarapa wetlands.

In the past, areas of raupo have been regularly sprayed with herbicides, sometimes using a helicopter because raupo has been considered to be a weed as it colonises open water, thereby reducing waterfowl hunting areas. Wellington Fish & Game Council usually undertook raupo control prior to the duck hunting season.

The harvesting of raupo and the spraying of raupo in the same area are incompatible. It is unclear whether spraying is inappropriate everywhere, or whether there are areas where herbicide spraying can be carried out. The option of mechanical removal rather than spraying to allow for open water for waterfowl hunting purposes also needs to be investigated.

The Department will not allow any spraying in the Lake Wairarapa wetlands until the above questions have been resolved with iwi/hapu and Wellington Fish & Game Council.

Management Response

1. In conjunction with hapu/ iwi and Wellington Fish & Game Council develop a long term raupo management strategy. In developing the strategy determine whether any spraying is appropriate, and if so, where and when. This will be developed by the year 2000. The Department will not allow any spraying of raupo in the Lake Wairarapa wetlands in the interim.

Cultural harvest sites

There are areas within the land managed by the Department where there is potential for re-establishment of mahinga kai resources and taonga raranga, for example, flax and pingao. The Department would support any such projects initiated by iwi/hapu and can help identify suitable sites, and give ecological advice.

Management Response

1. Support the re-establishment of mahinga kai sites within the Lake Wairarapa wetlands.
2. In conjunction with iwi/hapu, identify current distribution and potential/and appropriate areas for the re-establishment of flax and pingao.

Goal 3: To allow for recreational use of the Lake Wairarapa wetlands whilst ensuring the protection of ecological, cultural and historic values.

RECREATION VALUES (MAP 4)

There are many recreational uses of the lake. These include waterfowl hunting, fishing, motor boating, yachting, windsurfing, kayaking, camping, picnicking, swimming, walking, and studying nature. The Lake Wairarapa wetlands is identified in the Wellington Conservation Management Strategy as a special wildlife habitat, along with Kapiti and Mana Islands, and as a key recreation and tourist attraction. For example, there are many wildlife viewing opportunities around the Lake Wairarapa wetlands. For many members of the public, recreation is their main link with the natural environment and conservation. Recreation is, therefore, important in assisting the Department to achieve its advocacy goals.

The Lake Wairarapa wetlands are regionally important area for gamebird hunting. Approximately 10% (500) of Wellington Fish & Game Council hunters hunt at the lake each year (50% of those within the first weekend of the hunting season). In addition, about 200 hunters come from further afield. Birds hunted are ducks (mallard, grey duck, New Zealand shoveler), black swans, paradise shelducks and Canada geese. The Wellington Fish & Game Council and its members have for many years been instrumental in ensuring that the Lake Wairarapa is maintained as a wetland habitat.

There is high community interest in the Lake Domain Reserve, in particular from the Featherston Community Board, and regular users of the Domain. The regular users of the Domain have recently formed a “Friends of the Lake Domain Reserve” group, established with the aim of advocating the protection and enhancement of the recreational values present at the Domain

ISSUE 3.1 MANAGING RECREATIONAL IMPACTS

Whilst there are many positive outcomes from recreational use, it can cause impacts on natural and historic resources and other recreation activities. The 1991 Guidelines included a policy to monitor recreational activity to ensure that recreation does not have an adverse effect on the values of the lake and wetlands or on other wetland users. Formal monitoring has not been undertaken. The following section outlines the recreational activities that occur at the Lake Wairarapa wetlands and discusses their impacts and the management responses that will be undertaken.

Waterfowl hunting

The waterfowl hunting season is from early May to the end of June. All of the Lake Wairarapa wetlands are open to hunting, including the Wildlife Management Reserves. Waterfowl hunters entering land managed by the Department must carry a current hunting permit¹³. The South Wairarapa District Council administers

¹³ The permitting system is administered by the Wellington Fish and Game Council under delegated authority from the Department of Conservation.

hunting access at Lake Domain Reserve. Hunting on the northern and western sides of the Lake and Pounui Lagoon is by access through private land. Most of the Lake Wairarapa wetlands are controlled hunting areas (see Map 3) and are managed by the Wellington Fish & Game Council who allocate hunting stands by ballot for opening weekend. After opening weekend no restrictions are placed on the numbers of permits issued.

The Wellington Fish & Game Council are responsible for setting bag limits and monitoring wildfowl populations to enable their sustainable management. Population limits are set for black swans and Canada geese. Wellington Fish & Game Council run a management programme which considers the effect of high numbers of geese on other values. This includes an autumn population survey and, when necessary, summer and autumn harvests. High population numbers of Canada geese at the wetlands could have an impact on other wetland species and their habitat. The impact of hunting activity on non-game species such as displacement from feeding grounds during the hunting season has not been quantified. Non-game species such as grey teal are also taken accidentally. The Department of Conservation through the Wairarapa Area Office is responsible for managing the Wildlife Management Reserves for wildlife purposes. The Area Office will work with Wellington Fish & Game Council to monitor the effects of hunting activities on non-game species.

The effect of lead shot on wetland environments is currently being assessed nationally by a working party with representatives from Ministry for the Environment, Department of Conservation and the New Zealand Fish & Game Council. Alternatives to lead shot (steel and bismuth) will be evaluated and alternatives adopted by the Wellington Fish & Game Council if the assessment shows adverse effects on wetlands.

The water level of Boggy Pond is managed by Wellington Fish & Game Council in consultation with Department area staff, to ensure that there is enough water in the wetlands to provide for waterfowl breeding and feeding habitat and hunting. Water level management should also take into account the ecological and cultural values of the wetland (see Issue 1.3 and 2.1). Monitoring the water level regime at Boggy Pond will provide information on which to base future management to ensure the protection and enhancement of the diverse range of habitats at the Lake Wairarapa wetlands.

Maimais built on land managed by the Department require consent from the Department through its Wairarapa Area Office. A number of maimais at the wetlands are in disrepair. The Conservancy is developing guidelines with the Wellington Fish & Game Council for maimais built on land that it manages. These guidelines will include conditions that maimais should be well constructed and maintained, will restrict the use of indigenous plant material for camouflage and promote the planting of indigenous vegetation around maimais. It is also noted that the 1991 Guidelines and Conservation Management Strategy prohibited the use of mobile hunting stands on land administered by the Department as they can disturb the aquatic turf plant communities.

Management Response

1. Investigate options with the Wellington Fish & Game Council to assess the effects of hunting on non-gamebird species, including nominating areas for monitoring effects.
2. Support the Wellington Fish & Game Council to promote waterfowl identification by hunters.

3. Develop with Wellington Fish & Game Council a code of conduct to address standards of maimais which will be enforced by Wellington Fish & Game Council.
4. Continue to prohibit the use of mobile hunting stands.
5. Investigate with Wellington Fish & Game Council areas appropriate for hunting and wetland restoration.

Unauthorised dwellings

The Lake Wairarapa wetlands contain a number of unlicensed maimais which have been converted to baches. The Department's policy, outlined in the Wellington Conservation Management Strategy, is that land held under the Conservation and Reserves Act is for the benefit of all citizens, and private use without public benefit is not acceptable, even if the environmental effects are minor. The Department, in conjunction with Wellington Fish & Game Council will be assessing the effects of individual baches on conservation values, making an inventory and subsequently set a time limit on arranging licenses or removing them. The timeframe for this assessment and subsequent removal or licensing is by 2001 (by way of concession - see Concessions page 38). Licences will be issued to the current owner only, and will be non-transferable.

Management Response

1. In conjunction with Wellington Fish & Game Council make an inventory and assess current baches in the Lake Wairarapa wetlands in 1999 and subsequently remove or license them (see Recreation Concessions).

Motorised off road vehicles (MORVs)

The Lake Wairarapa Guidelines 1991 has a policy to restrict the use of vehicles to formed roads and tracks only, except for management purposes (Appendix 1: 3.1.10). Preventing access by MORVs is difficult to control. One reason it occurs at Lake Wairarapa wetlands is that there is nowhere else close by to go which has the same enjoyment value.

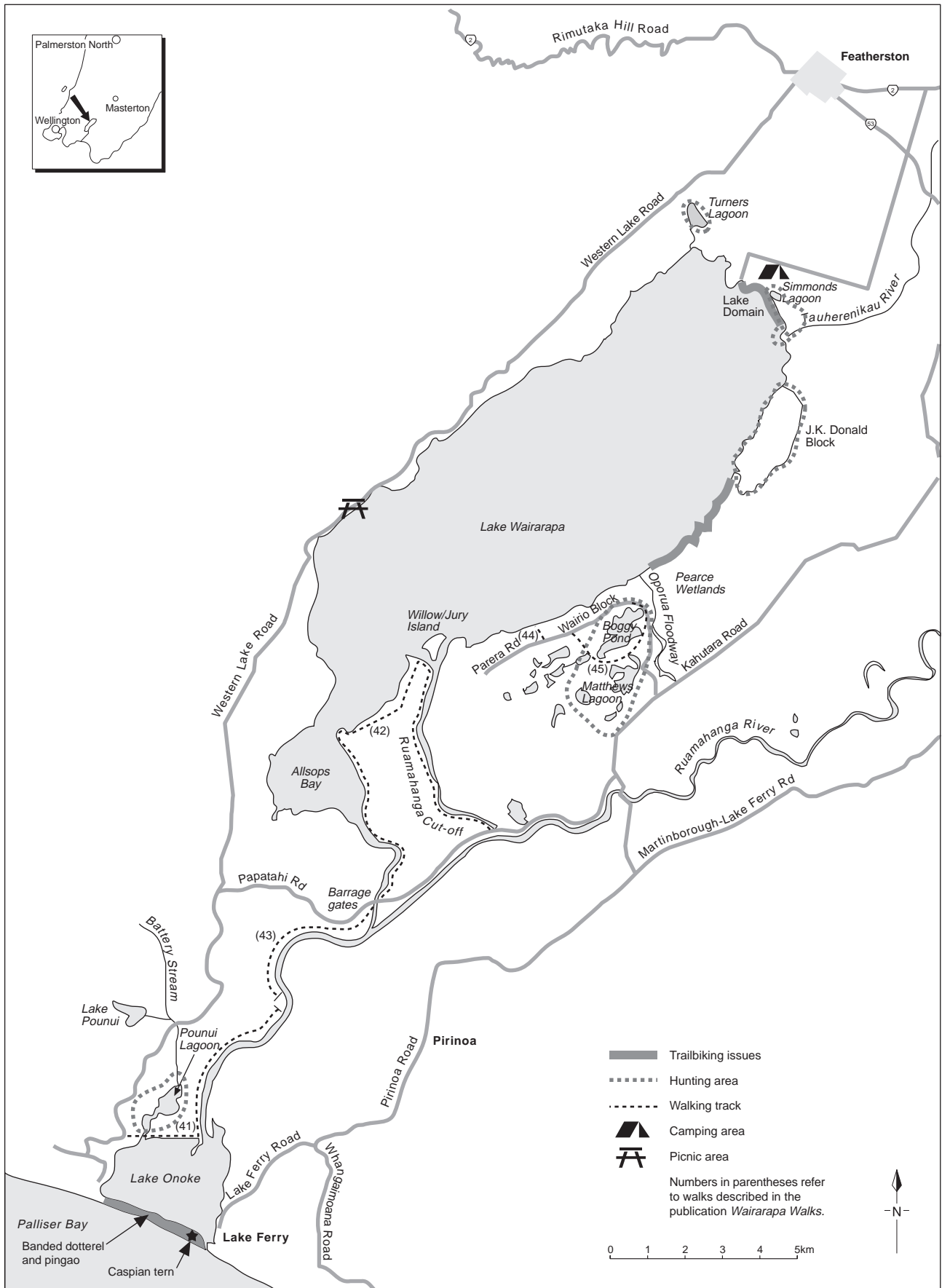
The use of MORVs within the Lake Wairarapa wetlands occurs mainly at Lake Domain Reserve and Lake Onoke Spit. At Lake Domain Reserve, the main disturbance is to other users of the Domain (see 3.2).

At Lake Onoke Spit MORV use disturbs the Caspian tern colony and banded dotterels especially at nesting time between August and January. MORV use has also damaged the local plant communities. On Lake Onoke spit this includes *Raoulia australis*, the nationally threatened species *Austrofestuca littoralis*, and the regionally threatened pingao. Because of the remoteness of Onoke Spit, it is difficult to control. Signs erected in the past have been vandalised. One response is to put in place regulations under the Conservation Act to enable the Department to restrict access to MORVs in certain areas. Another response is to run an education campaign involving local people, MORV clubs and the media to promote the protection of the ecological values that exist there. A third response is for the Department, South Wairarapa District Council, Wellington Regional Council, and perhaps private landowners, to identify and set aside a more appropriate area for the use of MORVs.

Management Response

1. Seek regulations under the Conservation Act to restrict the use of MORVs from certain areas at Lake Onoke Spit 2.

MAP 4: LAKE WAIRARAPA WETLANDS RECREATION ISSUES



2. Work with local users to promote the protection of the ecological values at Lake Onoke Spit.
3. Work with the Wellington Regional Council to assess whether there are any alternative suitable areas for trail bike riding in the vicinity
3. Develop and run an education campaign involving local community and MORV clubs and the media to promote the protection of ecological values that exist at Lake Onoke, particularly prior to and during bird breeding season (August to January).
4. Make use of media opportunities to highlight the threat trail bikes pose to bird nesting areas and mat plant communities at Lake Onoke Spit
5. Erect signs at the entrance to Onoke Spit indicating breeding times, areas where birds are breeding, how to identify mat communities and appropriate MORV tracks

Boating

In relation to boating (yachting, powerboating, hovercrafting, kayaking, water skiing) the 1991 Guidelines contained a policy that boating activity on Lake Wairarapa, Lake Onoke, and the lower Ruamahanga River continue to be unrestricted (Appendix 1: 3.1.2). The Department was concerned that powerboating might disturb bird habitat, but discussions with the jet boating groups indicate that their activities do not take place in sensitive habitat areas. As there do not appear to be any conflicts that have arisen since 1991 it is proposed that there is no need for action unless circumstances change.

Safety issues relating to boating are the responsibility of the Maritime Safety Authority and the Water Safety Council of New Zealand and the South Wairarapa District council can regulate boating through their powers under the Resource Management Act if necessary to control the adverse effects of boating activities.

Walking tracks

Walking tracks help ensure that walkers do not disturb native turf plant communities and nesting sites and other sensitive plant and animal communities. Walking tracks also provide opportunities for the public to observe the plant and animal communities at the Lake Wairarapa wetlands (see 4.1).

There are a limited number of walking tracks from which to view ecological values of the lake and its wetlands. Current walking tracks are poorly signposted and difficult to follow. Many opportunities could be developed.

Map 3 outlines the current walkways. Most of these walkways have been set up by the Wellington Regional Council as part of the flood control scheme, and follow the tops of stop banks.

Management Response

1. In conjunction with interested groups and landowners identify and promote key locations for the development of walking opportunities to enhance visitor appreciation of the wetlands.
2. Work with local community and iwi/hapu where there are initiatives to establish walking tracks on DOC administered lands.
3. Promote existing walkway opportunities by providing input into publications, media articles, signage and interpretation.
4. Work with the Wellington Regional Council, South Wairarapa District Council, iwi/hapu, Wellington Fish & Game Council and others to erect signs showing access points and routes through the Lake Wairarapa wetlands.

Concessions

Concessions allow commercial parties to extend the range of uses and recreational opportunities beyond what the Department can offer. Any trade, business, or occupation of an area administered by the Department requires a concession. This may include commercial recreation, recreational activities which are undertaken for specific monetary gain or reward, a grazing lease or a bach occupancy. A concession is an official authorisation to carry out an activity on an area managed by the Department. There are currently no concessionaires operating at the Lake Wairarapa wetlands. It is expected that the number of visitors to this area will increase and concession applications will need to be assessed carefully to ensure the protection of the natural and historic values and to avoid adverse impacts on the recreational experience of others. The Department will process applications for concessions on the lake, lake bed and wetlands. All applications will be assessed and processed in accordance with the Conservation Act 1987. Applications must include, among other things, a description of the activity, where it is proposed to be carried out and its potential effects.

The following issues will be considered during assessment of all applications:

- how the proposed service will enhance public use and enjoyment of the area;
- whether the service offered is of high quality;
- whether the service will enhance visitor's appreciation of the natural and historic values of this area;
- the nature of any actual or potential adverse effects on natural and historic values;
- whether the applicant has adequately assessed how any adverse effects will be avoided, remedied or mitigated;
- the impacts on users of the area;
- whether the applicant has produced an audited visitor safety plan;
- whether the applicant has qualifications and experience to conduct this activity;
- any other matters which the Department considers to be relevant.

Concession agreements may include any conditions necessary to address these issues. Additional information including an Environmental Impact Assessment may also be required.

The applicant will also be advised to consult with the appropriate iwi/hapu and other interested groups. Any issues raised by iwi/hapu in this initial discussion will be followed up by the Department. This process gives the applicant the opportunity to talk directly with iwi/hapu and to receive feedback and to discuss if there are concerns how these can be ameliorated.

Management response

1. Assess and process concession applications giving regard to the issues listed above.
2. Advise the concession applicant to consult with iwi/hapu and follow up any outstanding issues raised by iwi/hapu when assessing the application.
3. Monitor all concessions to ensure compliance with the conditions and ensure that any adverse effects on the natural values of the area are kept to a minimum.

ISSUE 3.2 LAKE DOMAIN RESERVE

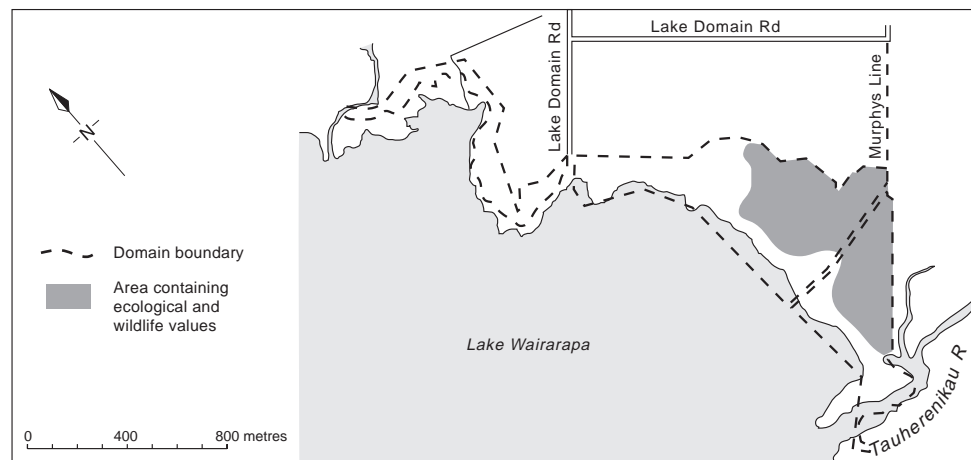
Background

Lake Domain Reserve is considered to be part of the Lake Wairarapa wetlands and the Department has an interest in ensuring the protection of the ecological values present which mainly occur at the eastern end of the reserve. The area is recommended for protection under the Wairarapa Plains Protected Natural Areas report.

The Lake Domain Reserve was identified in the 1991 Guidelines and in recent meetings as the key area for focusing resources for recreation and interpretation due to this being the area most used by the general public.

The Lake Domain Reserve was vested by the Crown in the South Wairarapa District Council who administer it as a recreation reserve¹⁴. The South Wairarapa District Council undertakes minimal management at Lake Domain Reserve (emptying rubbish bins, providing a toilet). A draft management plan has been prepared for the Lake Domain area by South Wairarapa District Council, as required by the Reserves Act. A recent analysis of reserves managed by the Council has determined that Lake Domain is a low priority site for management by the District Council. The Council is currently considering alternative management options, including having the day to day management carried out by another body or trust.

MAP 5: AREA OF LAKE DOMAIN RESERVE CONTAINING ECOLOGICAL AND WILDLIFE VALUES



Issues

There are a number of issues that need to be considered in the future management of Lake Domain Reserve. These include:

1. the effect of the Tauherenikau River on access to swimming areas, water flow and sedimentation of wetlands;
2. the effect of maintenance of the Tauherenikau River mouth on ecological values, and flood control;
3. trail bikes damaging vegetation and disturbing wildlife;
4. provision of visitor facilities, e.g., such as toilets;
5. army use of the Lake Domain Reserve;

¹⁴ Prior to local Government reforms in the 1980s Lake Domain Reserve was managed by Lake Domain Board.

6. invasion of waterways by hornwort;
7. high local interest in the future use and management of the Domain;
8. protection of ecological values.;
9. whether the reserve is developed as a focus for visitors to the wider lake.

Management Response

1. Discuss options for management with key players including iwi/hapu, Wellington Regional Council, South Wairarapa District Council and Wellington Fish & Game Council.
2. Ensure that the above issues are considered when discussing future management of the reserve.
3. Support and be involved in an integrated approach to the future management of the reserve.

Goal 4: Promote public awareness of the biological, cultural, historical and recreational importance of the Lake Wairarapa wetlands

EDUCATIONAL VALUES

The Lake Wairarapa wetlands have high ecological, cultural, historic and recreational values. The health of the wetlands is dependant on the health of the catchments that supplies water to it. Greater awareness of the values of wetlands, the threats to these values and management options will assist the integrated management of the area. At present there is little awareness of these values apart from by those people directly associated with the area, and use-levels are low compared with other areas within the Wellington area. There is, however, considerable potential to raise the profile of the area as one of New Zealand's largest remaining wetland systems. The potential to promote the area was recognised in the Wellington Conservation Management Strategy which described a range of facilities that might be provided. This included activities and structures both on land managed by the Department and land managed by other agencies.

ISSUE 4.1 INTERPRETATION

The Department considers the Lake Wairarapa wetlands to be a significant location for interpretation of wetland ecosystems. There is currently a limited amount of on-site and ex-situ interpretive material available with regards to the ecological and cultural values and recreational opportunities at the Lake Wairarapa wetlands. The Department's priorities would be:

- an interpretation sign at either Boggy Pond and Matthews Lagoon or Lake Domain Recreation Reserve (proposed by the 1991 Guidelines as the best place for such a sign) which would tell the story of the wetlands and would give an overview of conservation values and outline access points, walkways and history;
- a nature walk with viewing hides in the eastern wetland area of the Lake Domain Recreation Reserve;
- good signage at the bottom of the Rimutaka Hill road.

In seeking to provide these facilities the Department will work with other groups. The Department will support other initiatives taken by community and user groups to provide interpretation of values at the Lake Wairarapa wetlands. Funding may be sought from the Lottery Grants Board and Hillary Commission etc. Local business, given the benefits they accrue from increased visitor numbers, may also be interested in contributing resources for interpretative signs and brochures. The Department would support such projects by providing interpretive information.

Management Response

1. Prioritise sites and provide interpretation panels at either Boggy Pond and Matthews Lagoon or Lake Domain Reserve.
2. Encourage and contribute to further signs, and interpretation of the area which may be carried out jointly by the Department, Wellington Regional Council and South Wairarapa District Council in consultation with iwi / hapu.

3. Determine appropriate level of recreational facilities and discuss partnership opportunities with Wellington Regional Council, South Wairarapa District Council, Wellington Fish & Game Council, iwi/ hapu and others.

ISSUE 4.2 RAISING THE PROFILE OF THE LAKE WAIRARAPA WETLANDS

There are a number of opportunities to increase the public's awareness of the Lake Wairarapa wetlands. The Department will circulate information, co-ordinate field days and events (such as World Wetlands Day, 2 February) and use media to highlight visitor opportunities, threats, management of threats and values of the Lake Wairarapa wetlands.

International recognition as a "Ramsar" site

Another way to promote the values of the Lake Wairarapa wetlands would be to nominate it as a "Ramsar Wetland of International Importance". The Ramsar Convention is a treaty signed in 1971 with the aim to prevent the worldwide loss of wetlands and conserve those that remain through wise use and management. The treaty was signed in the Iranian town of Ramsar resulting in the convention being referred to as the "Ramsar Convention". Today more than 80 countries, including New Zealand are parties to the Ramsar Convention. (For further information see Appendix 11).

The Lake Wairarapa wetlands meet the criteria established under the Ramsar convention because of the habitat values and the contribution it makes in maintaining genetic and ecological diversity. Nominating the Lake Wairarapa wetlands as a Ramsar Wetland Site of International Importance would promote its values nationally and internationally. Further recognition of the importance of the area could attract further funding for management and advocacy including, Departmental funding. If accepted as a wetland of international importance under the Ramsar Convention, the Lake Wairarapa wetlands would be monitored to ensure it retained its special ecological characteristics (see Goal One), and the profile and importance of the area would be raised locally, nationally and internationally. The legal status of the wetlands would remain and current uses of the wetlands such as wildfowl hunting would be protected. The convention considers peoples' use of the area as essential to protecting the area and recognises that sustainable use of resources can help to generate guardianship over the wetlands.

Submissions received on the action plan reflect divergent opinions with regard to nominating the Wairarapa Wetlands as a Ramsar site. Many felt that they did not know enough about the effect that Ramsar status would have on their activities in and around the wetlands. The Department will facilitate the process if further support for nominating the wetlands is received from the community. The Lake Wairarapa Co-ordinating Committee will be involved in the process of seeking further advice from the community on the appropriateness of such a nomination.

Management Response

1. Encourage an "adopt a wetland" project with the local community and promote the Lake Wairarapa wetlands through public awareness opportunities such as World Wetland Day.

2. Circulate information, co-ordinate field days and use media opportunities to highlight visitor opportunities, threats, management of threats and values of the Lake Wairarapa wetlands.
3. Circulate information about Ramsar sites and their effects nationally and internationally to stakeholders.
4. Assess public comment on the option to nominate Lake Wairarapa wetlands as a Ramsar Wetland of International Importance with a view to nominating the Lake Wairarapa wetlands as a Ramsar site.
5. The Department will use national conservation events to promote and highlight the importance of the Lake Wairarapa wetlands.

Goal 5: Integrated Management

The Lake Wairarapa wetlands are managed by five different agencies with different statutory roles (the Department of Conservation, Wellington Regional Council, South Wairarapa District Council, Wellington Fish & Game Council, and the Ministry of Fisheries; see Map 2). Iwi/hapu also have a strong interest in the area. There are several other groups and individuals who use and appreciate the Lake Wairarapa wetlands and who are also interested in the management of the area. These include conservation groups (such as the NZ Ornithological Society, Royal Forest & Bird Protection Society, Ducks Unlimited), recreation groups (such as MORV clubs, boating clubs, Friends of Lake Domain), commercial recreation interests, Federated Farmers and neighbouring landowners.

ROLES OF OTHER BODIES

Wellington Regional Council

The Regional Council has a variety of responsibilities/functions at the Lake Wairarapa wetlands. It is responsible for controlling the water level in the lake, largely by the use of the barrage gates, which the Regional Council has a resource consent to operate and maintain. As part of the lake level management, it is often necessary for the Regional Council to open the mouth at Lake Onoke. The Lake Wairarapa wetlands form an integral part of the overall Lower Wairarapa Valley flood control scheme, with Lake Wairarapa acting as a storage area during flood events. The Lower Wairarapa Valley Development Scheme commenced construction in 1964 and was completed in 1984. Ongoing maintenance continues today.

The Regional Council also has responsibility for monitoring water quality in the Lake Wairarapa wetlands. Six water quality sites are regularly sampled. Cross sections of the eastern shoreline of Lake Wairarapa are undertaken to assess the vegetation types and sediment build-up, and any apparent changes. Soil conservators at the Regional Council have worked with farmers to control wave lap erosion on the western side of Lake Wairarapa. This has involved planting and the retirement of areas from grazing, and has created more water fowl breeding habitat. The Biosecurity Department of the Regional Council controls pest plants and pest animals at the wetlands which are identified in the Regional Pest Management Strategies.

South Wairarapa District Council

Lake Wairarapa is recognised as significant ecological feature in the district plan. The district council is responsible for controlling any actual or potential effects on the Lake Wairarapa wetlands from land-based activities through the resource consent process. The South Wairarapa District Council (SWDC) administers the Lake Domain Recreation Reserve at the north end of Lake Wairarapa.

Wellington Fish & Game Council

The Wellington Fish & Game Council have a statutory role in managing fish and gamebirds. The Lake Wairarapa Wetland are regarded as the largest gamebird resource in the Wellington region and as such the council is particularly concerned with protecting wetland gamebird habitat. Wellington Fish & Game Council monitor

trout and gamebird numbers in the area. The Council, in collaboration with the Department of Conservation, manages hunter access at the Lake Wairarapa wetlands. The Wellington Fish & Game Council is primarily concerned with protecting gamebird, sportsfish and trout habitat at the Lake Wairarapa wetlands. The Council is involved in managing water levels at the wetland significantly at Boggy Pond and the J. K. Donald Block for gamebirds. The Council is also concerned about the presence of grass carp in the wetlands.

Ministry of Fisheries

The Ministry of Fisheries is responsible for ensuring the sustainable utilisation of commercial, recreational and customary fisheries, with the exception of whitebait (Department of Conservation) and acclimatised sport fisheries (New Zealand Fish & Game Council).

Iwi/hapu

The Lake Wairarapa wetlands is considered by iwi/hapu to be a taonga for many reasons including their spiritual linkage to the area through whakapapa, their historic association with the area and its taonga. As kaitiaki iwi/hapu are involved in any activity or issue that has a potential effect on the Lake Wairarapa wetlands. See Goal 2 and Appendix 8: Guidelines for consultation with iwi/hapu).

Lake Wairarapa Co-ordinating Committee

The Lake Wairarapa Co-ordinating Committee was established in 1990 and includes most of the above agencies, groups and interests. The committee aims to provide clear direction for unified and balanced management to protect and enhance natural and historic resources while providing for the needs of various users. The Lake Wairarapa Guidelines, prepared by the group, outline the Committee's goals and objective. (see Appendix 1: 4.2.1). This included annual meetings as a forum for discussion on management of the wetlands. The purpose of the Co-ordinating Committee is to help achieve integrated management and to enable a forum for any new issues that have arisen to be discussed. The Department of Conservation will convene an annual meeting in March each year, which will include other statutory agencies, iwi/hapu and interest groups and individuals. The meeting will be open to the public to provide an opportunity for everyone to contribute to the management of the wetlands.

Management Response

1. To convene annual meetings of the Lake Wairarapa Co-ordinating Committee with statutory agencies, iwi/hapu, interest groups and individuals invited to discuss current issues and actions to be undertaken.
2. Ensure that the Co-ordinating Committee is representative of all interested parties and that meetings are open to the public.
2. Maintain ongoing communication with interest groups, landowners and individuals and endeavour to seek opinions when issues arise through media releases, correspondence and an occasional newsletter.
3. Work with Wellington Fish & Game Council, the Ornithological Society and other groups concerning issues highlighted in this plan.
4. Liaise with Queen Elizabeth II National Trust, Wellington Fish & Game Council, private landowners and iwi/hapu with regard to management objectives for the wetlands.

Acknowledgements

Many people have helped in the preparation of this plan. Rachel Puentener drafted the plan, Aalbert Rebergen (Department of Conservation) provided essential information regarding the management of the area, as well as providing enthusiasm and support for the development of the plan. The late Tim Harington also provided important information and direction. Other people including Derrick Field (Wairarapa Area Manager), staff from Wellington Conservancy and Head Office, have provided the all important peer review.

We also thank those people of the Wairarapa whose enthusiasm for the area make us believe that the values present will be protected. In particular, people who attended hui at Pirinoa, and those who have contributed to other meetings that have been held, including the other agencies with management responsibilities.

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Glossary

accretion	build up of extra material
CMS	Conservation Management Strategy
ephemeral	temporary, lasting only a few days
hapu	subtribe (Waitangi Tribunal report [Wai 27] 1991)
harakeke	flax
iwi	tribe, people (Waitangi Tribunal 1991)
kaitiakitanga	guardianship
kaiwairua	spiritual food
kaupapa	first or general principles, ground rules
mahinga kai	food, resources and materials
maimai	wildfowl hide/hunting stand
mana whenua	customary authority exercised by an iwi or hapu in an identified area (Resource Management Act 1991)
mauri	life force, sacred essence, ethos
MORV	motorised offroad vehicles
PNAP	Protected Natural Areas Programme
RAP	Recommended Area for Protection
succession	the process by which a plant or animal community successively gives way to another community
taiapure	local fishery of special significance to iwi or hapu, set aside under the Fisheries Act 1986
tangata whenua	people of the land
taonga	prized possession, property (Waitangi Tribunal report [Wai 27] 1991)
taonga raranga	plants which produce material highly prized for use in weaving (Resource Management Act 1991)
tikanga maori	Maori customary values and practices (Resource Management Act 1991)
ti kouka	cabbage tree
tuna	eel
urupa	human burial site
waahi tapu	sacred place
whakapapa	genealogy
WRC	Wellington Regional Council

Appendix 1: Lake Wairarapa Wetlands Management Guidelines 1991

Prepared by the Lake Wairarapa Co-ordinating Committee

GOALS AND OBJECTIVES FOR THE MANAGEMENT OF THE LAKE WAIRARAPA WETLANDS

Goal 1

To manage the Lake Wairarapa wetlands to protect and enhance their intrinsic and cultural values.

Objectives

- 1.1 To advocate for, protect, maintain and enhance the flora, fauna, historical and landscape values and natural processes of the Lake Wairarapa wetlands.
- 1.2 To recognise the spiritual and cultural significance of the Lake Wairarapa wetlands to the Maori people and to consult with and give full consideration to the views of the appropriate Iwi authorities.

Goal 2

To integrate land-use management of the Lake Wairarapa wetlands and surrounding productive land.

Objective

- 2.1 To give effect to the National Water Conservation (Lake Wairarapa) Order 1989 and develop a water regime as part of the operations of the Lower Wairarapa Valley Development Scheme that best meets the needs of conservation, recreation, commercial and flood management uses.

Goal 3

To promote enjoyment by the public and to provide for sensitive recreational, scientific and commercial use of the natural and historical resources of the Lake Wairarapa wetlands.

Objectives

- 3.1 To provide for the management of a wide range of recreational activities and scientific study that is consistent with the preservation of the intrinsic and cultural values of the Lake Wairarapa wetlands.
- 3.2 To plan for and provide opportunities to meet appropriate recreational needs by carefully controlled development and provision of facilities and services for the benefit of visitors.
- 3.3 To allow for commercial and farming practices, within the Lake Wairarapa wetlands, which are not incompatible with the preservation of the intrinsic and cultural values.

Goal 4

To promote public understanding of and foster support for the protection of the natural and historic heritage of the Lake Wairarapa wetlands.

Objectives

- 4.1 To enhance, through the provision of facilities and services for the benefit of visitors, an appreciation and awareness of the intrinsic and cultural values of the Lake Wairarapa wetlands.
- 4.2 To ensure a unified approach to the management of the core area in order to maintain and enhance the various values of the Lake Wairarapa wetlands.

SECTION 1: PROTECTION

Goal 1

To manage the Lake Wairarapa wetlands to protect and enhance their intrinsic and cultural values.

Objectives

- 1.1 To advocate for, protect, maintain and enhance the flora, fauna, historical and landscape values and natural processes of the Lake Wairarapa wetlands.
 - 1.1.1 PROTECTION
 - [a] To protect and enhance existing communities and habitats for indigenous flora and fauna, and waterfowl.
 - [b] To create a wide diversity of habitats, primarily for indigenous species but also for introduced waterfowl.
 - [c] In habitat restoration or creation work, to use indigenous plants propagated from local wild sources within the Wairarapa Plains Ecological District.
 - [d] To protect all archaeological sites and places of historical and cultural interests and to preserve and manage them to retain their values.
 - 1.1.2 LANDSCAPE
 - [a] To conserve and enhance the existing landscape values of the wetlands as a regionally unique landscape.
 - [b] To advocate the preparation of a landscape plan for the wetlands in order to develop landscape guidelines for use in the core area.
 - [c] To advocate that agencies responsible for the management of public use sites prepare detailed landscape plans and present these to the Co-ordinating Committee before implementation.
 - 1.1.3 HABITAT INTEGRITY
 - [a] To advocate the retention or creation of marginal strips around sensitive and vulnerable habitats, waterways and erosion-prone sites.
 - [b] To fence marginal strips where necessary to exclude stock
 - 1.1.4 INTRODUCED PLANTS AND ANIMALS
 - [a] To control or preferably eradicate introduced plants and animals wherever they adversely impact on the management objectives.
 - [b] To allow the artificial introduction of plant or animal species new to the area only when an environmental impact assessment has shown that they will have no significant impact on existing indigenous flora and fauna.

1.1.5 FIRES

- [a] To allow fires which have been authorised by landowner permission and necessary statutory permissions.

- 1.2 To recognise the spiritual and cultural significance of the Lake Wairarapa wetlands to the Maori people and to consult with and give full consideration to the views of the appropriate Iwi authorities.

1.2.1 SPIRITUAL VALUES

- [a] As required by law, to protect all archaeological sites of Maori original, and preserve and manage them to maintain their archaeological and spiritual values.
- [b] To allow for appropriate management and control over access to areas which have been identified as having spiritual values such as wahi tapu and urupa.

1.2.2 CULTURAL VALUES

- [a] To maintain traditional Maori practices and rights, in accordance with Objective 1.1 and Tikanga Maori.
- [b] To manage certain areas of the Lake Wairarapa wetlands primarily for the sustainable harvest of cultural materials.

SECTION 2: WATER MANAGEMENT

Goal 2

To integrate land-use management of the Lake Wairarapa wetlands and surrounding productive land.

Objective

- 2.1 To give effect to the National Water Conservation (Lake Wairarapa) Order 1989 and develop a water regime as part of the operations of the Lower Wairarapa Valley Development Scheme that best meets the needs of conservation, recreation, commercial, and flood management uses.

2.1.1 WATER QUALITY

- [a] To pursue the maintenance of a high quality of water entering the core area.
- [b] To maintain and enhance the natural diversity of water qualities and hence habitats in different bodies within the core area.
- [c] To achieve the above policies by:
 1. monitoring all major water bodies within the core area and advocacy zone for turbidity, biologically available oxygen, pH, nitrogen, phosphate and other compounds, to provide a sound database for future management and planning.
 2. monitoring the rate of accretion and erosion around the shore of Lake Wairarapa.
 3. promoting soil conservation measures in all catchments in the advocacy zone.
 4. recommending that the Wellington Regional Council classify the waters on the Lake Wairarapa wetlands under the Resource Management Act to at least the level of Class C water under section 26C of the Water and Soil Conservation Act 1967, or in such a way as to maintain habitat diversity.

2.1.2 LAKE WAIRARAPA LEVELS

Note: Water levels refer to measurements taken at the Burlings gauge on the western side of Lake Wairarapa.

- [a] To set summer (December - February) levels at a minimum of 10.15 m.
- [b] To set autumn (March - May) levels at a minimum of 10.00 m.
- [c] To set winter (June - September) levels at a minimum of 9.95 m.
- [d] To set spring (October - November) levels at a minimum of 10.00 m.
- [e] When the lake level is over 10.30 m, to lower it as soon as possible.
- [f] To maintain the outflow of water from Lake Wairarapa whenever possible until the seasonal minimum level is reached.
- [g] To monitor standardised shore vegetation profiles annually around Lake Wairarapa.
- [h] To continue monitoring the use of Lake Wairarapa by wetland birds.
- [i] To review the above policies after 3 years and where necessary revise them, and review them no more than every 5 years thereafter.

2.1.3 LEVELS OF OTHER LAKES

- [a] To study water levels of Lake Onoke and establish a water management regime that best suits the wildlife, flood management and recreational requirements.
- [b] To manage water levels in wetlands adjacent to Lakes Wairarapa and Onoke to best meet Objectives 1.1 and 1.2 while also catering for waterfowl hunting and farming practices.

2.1.4 WATER RIGHTS

- [a] To examine existing water rights as they are reviewed; to examine each water right application in the core area and advocacy zone and consider its implication for the objectives and policies of the management guidelines; and to advocate changes when necessary.
- [b] To allow water extraction, diversion and discharges in the core area in accordance with the provisions of the National Water Conservation (Lake Wairarapa) Order 1989 for Lake Wairarapa, and so that the wildlife habitat features of the rest of the core area are not diminished significantly.
- [c] To monitor the effects of artificially opening Lake Onoke to the sea, and operating the barrage gates using the regime supported by the Co-ordinating Committee.

SECTION 3: HUMAN USE

Goal 3

To promote enjoyment by the public and to provide for sensitive recreational, scientific and commercial use of the natural and historical resources of the Lake Wairarapa wetlands.

Objectives

3.1 To provide for the management of a wide variety of recreational activities and scientific study that is consistent with the preservation of the intrinsic and cultural values of the Lake Wairarapa wetlands.

3.1.1 MONITORING ACTIVITIES

- [a] To assess regularly the level of recreational activity to ensure that no activity is having adverse effects on the intrinsic values of the wetland or on other lake users.

- [b] When adverse effects are identified, to impose restrictions on continued use.
- 3.1.2 BOATING (includes yachting, powerboating, hovercrafting, canoeing, etc)
 - [a] To allow boating activity taking place on Lake Wairarapa, Lake Onoke, and the lower Ruamahanga River to continue to be unrestricted.
- 3.1.3 FISHING
 - [a] To allow for recreational fishing in accordance with the appropriate legislation.
 - [b] To support the concept of a taiapure for Lake Onoke and the lower Ruamahanga River.
- 3.1.4 GAME BIRD HUNTING
 - [a] To allow for game bird hunting in accordance with the appropriate legislation.
 - [b] To license all hunting stands on reserve and stewardship land to ensure that acceptable building standards are met and approximately the current density of stands is not exceeded.
 - [c] To prohibit the use of mobile hides on reserve and stewardship land in the core area and discourage their use on other land.
- 3.1.5 PICNICKING/SWIMMING
 - [a] To develop to a high standard any picnic areas created to meet increased demand.
- 3.1.6 CAMPING
 - [a] To allow serviced camping incorporating approved barbecues and fireplaces at Lake Ferry, Lake Domain, Boat Club/barrage area and Kilmore Lodge.
 - [b] To allow casual camping only where camping does not conflict with conservation values.
- 3.1.7 BACHES
 - [a] To prohibit the construction of new private baches on reserve or stewardship land.
 - [b] To remove baches that adversely affect conservation values.
 - [c] To license existing baches whose historical and/or cultural landscape significance outweigh any interference with public use and conservation values.
- 3.1.8 NATURE STUDY
 - [a] To advocate the construction of facilities such as hides and walkways for birdwatching and other nature study, first at Lake Domain and second at Boggy Pond/Matthews Lagoon.
- 3.1.9 WALKING
 - [a] To maintain existing access and encourage the creation of new walking opportunities by providing additional access.
- 3.1.10 VEHICLES
 - [a] To restrict the use of vehicles to formed roads and tracks only, except for management purposes.
- 3.2 To plan for and provide opportunities to meet appropriate recreational needs by carefully controlled development and provision of facilities and services for the benefit of visitors.
 - 3.2.1 SCIENCE
 - [a] To encourage research of benefit to the understanding, management, and interpretation of the Lake Wairarapa wetlands.

- 3.3 To allow for commercial and farming practices, within the Lake Wairarapa wetlands, which are not incompatible with the preservation of the intrinsic and cultural values.
- 3.3.1 GRAZING
- [a] To issue grazing licences on reserve and stewardship land when necessary to maintain and enhance conservation values.
- 3.3.2 COMMERCIAL FISHING
- [a] To advocate to the Ministry of Fisheries that commercial fishing of flounders and eels be set at a level which does not prejudice recreational fishing and fish populations.
- 3.3.3 COMMERCIAL RECREATION
- [a] To provide for commercial recreation activities which do not conflict with the conservation values of the Lake Wairarapa wetlands, and which do not compromise public use or access.
- [b] To allow facilities for commercial recreation in the form of buildings or structures, provided they are not obtrusive in the landscape, do not compromise public use or access, and do not impinge on the conservation values or water quality of the Lake Wairarapa wetlands.
- 3.3.4 MINING AND MINERAL EXPLORATION
- [a] To permit the extraction of aggregates of sand, gravel, soil, and/or mud only for the purposes of river management or the maintenance and enhancement of conservation values.
- [b] To oppose mining and mineral extraction, other than under Policy 3.3.4[a].
- 3.3.5 PUBLIC UTILITIES
- [a] In general to oppose the routing and siting of public utilities, e.g., transmission lines and pipelines, through or around the Lake Wairarapa wetlands in a way which would detract from conservation and landscape values.
- [b] In general to allow public utilities which provide a major public benefit or contribute to an understanding of the environs of the wetlands.
- [c] To encourage the re-routing and burial of existing power lines at key locations where they have adverse effects on the landscape and wildlife values.
- 3.4 To ensure that conflicts between competing uses of the intrinsic features and facilities of the area are maintained and to concentrate development as far as possible either outside the Lake Wairarapa wetlands or in specific amenity areas.

SECTION 4: ADVOCACY

Goal 4

To promote public understanding of and foster support for the protection of the natural and historical heritage of the Lake Wairarapa wetlands.

Objectives

- 4.1 To enhance, through the provision of facilities and services for the benefit of visitors, an appreciation and awareness of the intrinsic and cultural values of the Lake Wairarapa wetlands.

4.1.1 EDUCATION

- [a] To encourage the statutory organisations involved in the management of the Lake Wairarapa wetlands to provide information at Featherston on access to and the conservation values of the Lake Wairarapa wetlands.
 - [b] To encourage the establishment of an interpretation centre in conjunction with the development of wetlands at the Lake Domain.
- 4.2 To ensure a unified approach to the management of the core area in order to maintain and enhance the various values of the Lake Wairarapa wetlands.

4.2.1 CO-ORDINATING COMMITTEE

- [a] To maintain a Lake Wairarapa Co-ordinating Committee whose purpose is to discuss and resolve conflict arising from wetland management practices and policies within the core area and in the advocacy zone until 31 December 1994.
- [b] To maintain at least annual meetings of the Co-ordinating Committee as a forum for discussions on management of the wetlands and to assist in the review of the water regime instigated in 1991.
- [c] To review the purpose of the Co-ordinating Committee in 1994.
- [d] To advocate for the statutory protection through appropriate means [e.g., purchase, covenant, District Plan protection] of private land within the core area where such protection would enhance the conservation values of the Lake Wairarapa wetlands.

Appendix 2: Conservation Management Strategy for Wellington 1996 - 2005

LAKE WAIRARAPA WETLANDS - OBJECTIVES

1. Conservation of the ecological, historical and landscape values
2. Consultation with iwi/hapu to identify their management objectives and the protocols necessary to maintain the area's historical and cultural integrity
3. Integrated management of the Lake Wairarapa wetlands and their catchments to protect conservation values within the wetland area
4. Provision of passive recreation opportunities and interpretation of the natural and historic resources.

Appendix 3: Land administered by the Department of Conservation

(see section 1.7)

The majority of the Lake Wairarapa wetlands is administered by the Department as either “stewardship” land under the Conservation Act 1987, or “Government Purpose: Wildlife Management Reserve” under the Reserves Act 1977 (see MAP 1). The Reserve status allows for specific management.

The Stewardship areas are Lake Wairarapa, Lake Onoke, Pounui Lagoon, and blocks of land on the eastern side of the lake known as Wairio, Dunes, Kumenga, Willow/ Jury Island, and the J. K. Donald Block. The J. K. Donald Block includes several lagoons including one named Barton’s lagoon. “Stewardship” land status gives general guidance for management, its objective being to hold the land for conservation purposes. Land may be reclassified to other categories to recognise more specific management objectives for the area.

The “Government Purpose: Wildlife Management Reserves” are Matthews and Boggy Pond, Allsops Bay, and the Ruamahanga Cutoff. These areas were set apart as Wildlife Management Reserves under the Reserves Act during the 1970s and 1980s because they were seen as key areas of wetland habitat (Moore *et al.* 1984). The former esplanade reserve around Turners Lagoon, north of Lake Wairarapa and a former esplanade reserve at the north western end of the lake have recently been acquired from the South Wairarapa District Council. These areas have the specific management objective of wildlife management. The Reserves Act enables control over entry and human use of the flora and fauna within the reserve. In the case of the Wildlife Management Reserves at the Lake Wairarapa wetlands, permits are required to take flora and fauna, including fish, and commercial fishing has been prohibited. Waterfowl hunting is permitted subject to certain conditions.

Turners Lagoon is Crown land held by Land Information New Zealand (LINZ). The Department is currently in the process of seeking the transfer of this lake to the Department as Government Purpose Reserve: Wildlife Management.

The Department also administers the Wairarapa Lakeshore Scenic Reserve under the Reserves Act. This scenic reserve, along a stretch of the western shore of Lake Wairarapa, is managed to protect and preserve its qualities of scenic interest and beauty for the benefit, use and enjoyment of the public.

The Department also manages for the Crown some esplanade reserves around Lake Wairarapa and the Ruamahanga River.

Appendix 4: Preliminary bibliography of plant checklists compiled for areas at Lake Wairarapa and Western Lake Shore Scenic Reserve

(All plant lists held by the Department of Conservation at Wellington Conservancy.)

- Anonymous. 1987. Flora of the Ruamahanga Cut-off. Ruamahanga Cut-off Wildlife Management Reserve Draft Management Plan.
- Anonymous. 1987. List of flora recorded from Allsops Bay Wildlife Management Reserve. Allsops Bay Wildlife Management Reserve - Draft Management Plan.
- Anonymous. 1985. Plants for which Lake Wairarapa is an important site. Unpublished D.S.I.R. (Botany Division) list.
- Druce, A.P. 1974. Indigenous higher plants of Lakes Wairarapa and Onoke and surrounding non-forest wetlands, Wairarapa (N161 and N 165). Unpublished list number 125.
- Druce, A.P. 1971. Indigenous vascular plants in vicinity of Western Lake Reserve, Lake Wairarapa (N161 71-30). Unpublished list number 17.
- Gabites, I. 1986. Wairarapa Lake Shore Scenic Reserve. Scenic Reserves of the Lower North Island. Biological Survey of Reserves No. 14. Department of Lands and Survey, Wellington.
- Ogle, C.C.; Moss, T.; Druce, A.P. 1990. Indigenous vascular plants of the Pearce Wetlands, Wairarapa. Plant list derived from Lake Wairarapa list.
- Ogle, C.C.; Moss, T.C.; Druce, A.P. 1984. Vascular plants of Lake Wairarapa and its adjacent wetlands. Appendix 4 (pp 144-147) in Moore, P.; Ogle, C.C.; Moynihan K. "Habitat requirements of wetland birds in the Lake Wairarapa wetlands". Occasional publication No. 5. New Zealand Wildlife Service.
- Ogle, C.; Moss, T.C.; Druce, A.P. 1990. Vascular flora of Lake Wairarapa and its adjacent wetlands. Department of Conservation Science and Research Series No. 20. Department of Conservation.
- Ogle, C.C. 1982. Donald Reserve, Lake Wairarapa. Wellington Botanical Society programme, Jun - Nov 1981.
- Townsend, A.; Rebergen, A. 1996. Allsops Bay, Lake Wairarapa (approx. grid reference NZMS 260 S27 90-88- and 90-89-). Unpublished list compiled 6 December 1996.
- Wellington Botanical Society. 1996. Western Lake Shore Scenic Reserve. Centred on grid. reference NZMS 260 S27 930962. Unpublished list.

Taken from: Sawyer, J.W.D. 1998. A bibliography of plant checklists and vegetation survey data sets for areas in Wellington Conservancy, Department of Conservation, Wellington.

Appendix 5: Threatened species found at the Lake Wairarapa wetlands

NATIONALLY THREATENED PLANTS (TOWNSEND *ET AL.* 1998)

SCIENTIFIC NAME	COMMON NAME	NATIONAL STATUS (Cameron <i>et al.</i> 1995)	NATIONAL PRIORITY (Molloy and Davis 1994)
<i>Amphibromus fluitans</i>		Critical	O
<i>Atriplex cinerea</i>	grey salt bush	Local	-
<i>Austrofestuca littoralis</i>	hinarepe	Rare	-
<i>Centipeda minima</i>		Local	-
<i>Crassula ruamabanga</i>		Rare	-
<i>Isolepis basilaris</i>		-	B
<i>Kortbalsella salicornioides</i>	mistletoe	Insufficiently known	O
<i>Mazus novaezeelandiae</i>	dwarf musk	Vulnerable	C
<i>Pterostylis micromega</i>		Critical	A
<i>Urtica linearifolia</i>	swamp nettle	Vulnerable	B

The national status of plants was taken from Cameron *et al.* (1995). The definitions are:

- **Critical:** Taxa with an extremely high probability of extinction in the wild within the immediate future (a proposed IUCN category).
- **Endangered:** Taxa in danger of extinction and whose survival is unlikely if causal factors continue operating.
- **Vulnerable:** Taxa believed likely to move into the Endangered category in the near future if causal factors continue operating.
- **Rare:** Taxa with small populations which are not Endangered or Vulnerable but are at risk.
- **Insufficiently known:** Taxa that are suspected but not definitely known to belong to any of the above categories because of a lack of information.
- **Local:** Taxa that are sufficiently restricted to warrant noting and some monitoring.

The national priority of plants was taken from Molloy and Davis (1994). The definitions are:

- Category A: highest priority threatened species.
- Category B: second priority threatened species.
- Category C: third priority threatened species.
- Category O: species which are threatened in New Zealand but which are known to be secure in other parts of their range outside New Zealand.

REGIONALLY THREATENED PLANTS (FROM EMPSON & SAWYER 1996)

SCIENTIFIC NAME	COMMON NAME	REGIONAL MAINLAND STATUS
<i>Carex buchbananii</i>		Vulnerable
<i>Carex cirrhosa</i>		Endangered
<i>Desmoschoenus spiralis</i>		Vulnerable
<i>Eleocharis sphacelata</i>		Vulnerable
<i>Gunnera prorepens</i>		Susceptible
<i>Ileostylus micranthus</i>	pirita	Vulnerable
<i>Isachne globosa</i>	swamp millet	Susceptible
<i>Kortbalsella clavata</i>		Indeterminate
<i>Pilularia novae-zelandiae</i>		Indeterminate
<i>Pratia perpusilla</i>		Susceptible

The following categories are used for Regional Mainland Status (Empson and Sawyer 1996).

Critical: Taxon facing very high probability of extinction in the wild in the near future.

Endangered: Taxon facing high probability of extinction in the wild in the near future.

Vulnerable: Taxon facing high probability of extinction in the wild in the medium-term.

Susceptible: Taxon of concern because its range is restricted or it is found at few locations which makes it susceptible to effects of human activities.

Indeterminate: Taxon with indeterminate or unknown status.

NATIONALLY THREATENED ANIMALS (FROM DEPARTMENT OF CONSERVATION 1996)

COMMON NAME	SCIENTIFIC NAME	NATIONAL STATUS (DOC 1996A)	NATIONAL PRIORITY (MOLLOY & DAVIS 1994)
Australasian bittern	<i>Botaurus poiciloptillus</i>	Vulnerable	O
Banded dotterel	<i>Charadrius bicinctus</i>	Vulnerable	C
Caspian tern	<i>Sterna caspia</i>	Vulnerable	O
Curlew sandpiper	<i>Calidris ferruginea</i>	Rare	-
Grey duck	<i>Anas superciliosa superciliosa</i>	Vulnerable	-
Least golden plover	<i>Pluvialis fulva</i>	Rare	-
New Zealand dabchick	<i>Poliiocephalus rufopectus</i>	Vulnerable	C
Royal spoonbill	<i>Platalea leucorodia regia</i>	Vulnerable	O
Sharp-tailed sandpiper	<i>Calidris acuminata</i>	Rare	-
Variable oystercatcher	<i>Haematopus unicolor</i>	Rare	C
White-fronted tern	<i>Sterna striata</i>	-	C
White heron	<i>Egretta alba modesta</i>	Endangered	O
Fish			
Brown mudfish	<i>Neobanna apoda</i>	Vulnerable	B
Giant kokopu	<i>Galaxias argenteus</i>	Threatened	B
Koaro	<i>Galaxias brevipinnis</i>	Rare	C
Lamprey	<i>Geotria australis</i>	Indeterminate	-
Tadpole shrimp	<i>Lepiduris apus viridis</i>	Indeterminate	-

The national status was taken from Cameron et al. (1995). The definitions are:

- **Critical:** Taxa with an extremely high probability of extinction in the wild within the immediate future (a proposed IUCN category).
- **Endangered:** Taxa in danger of extinction and whose survival is unlikely if causal factors continue operating.
- **Vulnerable:** Taxa believed likely to move into the Endangered category in the near future if causal factors continue operating.
- **Rare:** Taxa with small populations which are not Endangered or Vulnerable but are at risk.
- **Insufficiently known:** Taxa that are suspected but not definitely known to belong to any of the above categories because of a lack of information.
- **Local:** Taxa that are sufficiently restricted to warrant noting and some monitoring.

The national priority of plants was taken from Molloy and Davis (1994). The definitions are:

- Category A: highest priority threatened species.
- Category B: second priority threatened species.
- Category C: third priority threatened species.
- Category O: species which are threatened in New Zealand but which are known to be secure in other parts of their range outside New Zealand.

Appendix 6: Plant species that have the potential to become or are already pests at the Lake Wairarapa wetland complex

SPECIES

<i>Agrostis capillaris</i>	browntop
<i>Alnus glutinosa</i>	alder
<i>Ammophila arenaria</i>	marram grass
<i>Aster lanceolatus</i>	Michaelmas daisy
<i>Carduus tenuiflorus</i>	winged thistle
<i>Ceratophyllum demersum</i>	hornwort
<i>Cirsium arvense</i>	Californian thistle
<i>Cirsium vulgare</i>	Scotch thistle
<i>Cortaderia selloana</i>	pampas
<i>Crataegus monogyna</i>	hawthorn
<i>Cupressus macrocarpa</i>	macrocarpa
<i>Cytisus scoparius</i>	broom
<i>Dactylis glomerata</i>	cocksfoot
<i>Elodea canadensis</i>	Canadian pondweed
<i>Festuca arundinacea</i>	tall fescue
<i>Iris pseudacorus</i>	yellow flag
<i>Juncus articulatus</i>	jointed rush
<i>Juncus effusus</i>	soft rush
<i>Lagarosiphon major</i>	oxygen weed
<i>Lolium perenne</i>	perennial ryegrass
<i>Lotus pedunculatus</i>	lotus
<i>Lupinus arboreus</i>	tree lupin
<i>Mimulus guttatus</i>	monkey musk
<i>Paspalum distichum</i>	paspalum
<i>Pinus radiata</i>	Monterey pine
<i>Populus alba</i>	white poplar
<i>Populus nigra</i>	Lombardy poplar
<i>Rorippa nasturtium-aquaticum</i>	watercress
<i>Rosa rubiginosa</i>	sweet brier
<i>Rubus fruticosus</i> agg.	blackberry
<i>Salix cinerea</i>	willow
<i>Salix fragilis</i>	crack willow
<i>Salix</i> sp	willow
<i>Sambucus nigra</i>	elder
<i>Sedum acre</i>	stonecrop
<i>Senecio jacobaea</i>	ragwort
<i>Tradescantia fluminensis</i>	wandering jew
<i>Typha orientalis</i>	raupo
<i>Ulex europaeus</i>	gorse

Appendix 7: Plant species at Lake Wairarapa specified as pests by Wellington Regional Council in the Regional Pest Plant Management Strategy

Under sections 52 and 53 of the Biosecurity Act 1993 the sale, propagation and distribution of any organism specified as a pest in a regional pest management strategy is prohibited (see W.R.C. 1996).

PEST PLANT STATUS ¹⁴	LATIN NAME	COMMON NAME	WELLINGTON REGIONAL COUNCIL 'OBJECTIVE/S'	OCCUPIER OBLIGATIONS*
Total control	<i>Ceratophyllum demersum</i>	hornwort	To ensure that all known sites of hornwort are totally controlled on an annual basis with the view to eventual eradication from the region	Complete destruction of all plants before seeding, using approved methods*
Boundary control	<i>Senecio jacobaea</i>	ragwort	To provide adjoining occupiers whose land is clear or being cleared of ragwort protection from further ragwort invasion.	Control all infestations within 50m of legal boundaries, where adjoining/ neighbouring land is clear or being cleared of ragwort. Control to be undertaken before plants reach the erect stem stage.

continued overleaf

¹⁴ See Wellington Regional Council. 1996. Regional Pest Plant Management Strategy. Wellington region 1996-2001.

PEST PLANT STATUS ¹⁴	LATIN NAME	COMMON NAME	WELLINGTON REGIONAL COUNCIL 'OBJECTIVE/S'	OCCUPIER OBLIGATIONS*
Boundary control	<i>Sylibum marianum</i>	variegated thistle	Where complaints are received, an authorised person will take action. To ensure that where adjoining land is clear or being cleared of gorse, neighbouring occupiers maintain the control of gorse in areas specified in the Strategy	Control all plants within 20m of all legal boundaries where adjoining/ neighbouring land is clear or being cleared of variegated thistle. Control is to be undertaken by the occupier prior to plants seeding.
Boundary control	<i>Ulex europaeus</i>	gorse	Where complaints are received, an authorised person will take action. To ensure that where adjoining land is clear or being cleared of gorse, neighbouring occupiers maintain the control of gorse in areas specified in the Strategy	Control all plants within 10m of all legal boundaries where adjoining/ neighbouring land is clear or being cleared of gorse (waiver provisions may apply).
Regional surveillance	<i>Cortaderia jubata</i> <i>Lagarosiphon major</i>	pampas oxygen weed	To reduce the spread of the plant in the Wellington region.	
National surveillance	<i>Cortaderia selloana</i> <i>Crataegus monogyna</i> <i>Cytisus scoparius</i> <i>Rosa rubiginosa</i> <i>Iris pseudacorus</i>	pampas hawthorn broom sweet brier yellow flag	To reduce the spread of the plant in the Wellington region.	
Education	<i>Rubus fruticosus</i> agg.	blackberry	To advise occupiers of potential adverse effects. To encourage occupiers to control blackberry, using recommended techniques, so as to mitigate the potential agricultural and environmental effects, or externality effects imposed on adjoining occupiers.	

¹⁴ See Wellington Regional Council. 1996. Regional Pest Plant Management Strategy. Wellington region 1996-2001.

Appendix 8: Key areas for research, monitoring and data collection

WEEDS
Trial and monitor different grazing regimes to determine most effective weed control with minimal adverse impacts associated with grazing.
Trial fire as a method to control tall fescue along lake edge
Investigate long term options for the control of tall fescue
Management techniques to control mercer grass
Monitor <i>Amphibromus fluitans</i> at Boggy Pond
WATER QUALITY
With the Wellington Regional Council and the Wellington Fish & Game Council, assess the effects of riparian protection on water quality.
WATER LEVEL MANAGEMENT
Assess current water management regime at Boggy Pond, Matthews Lagoon and J.K. Donald Reserve
Analyse available data to help assess the effect of the current water level management at Lake Wairarapa on turf plant communities and accretion
FISH
Determine the spatial extent of nationally threatened species within the Lake Wairarapa wetlands
Collect data on fish present above and below barrage gates to help determine effect of the barrage gates on fish passage
Monitor the effect of the slot in the flapgates at Pounui Lagoon for fish passage and habitat above the flapgate
FLORA AND FAUNA
Create an inventory of flora and fauna by summarising existing reports and field work.

Appendix 9: Guidelines for consultation with iwi/hapu

These guidelines for consultation will help the Department to develop and sustain a co-operative working relationship, akin to partnership, with iwi/hapu over management at the Lake Wairarapa wetlands.

Meetings will take place with iwi/hapu twice a year - once prior to business planning to enable iwi to provide input into the following years projects and another impromptu meeting during the year.

Key Issues that require consultation with Iwi/hapu whenever issues arise include:

- Spraying within wetlands;
- Any discharge to water, take or diversion of water;
- Water level management at Boggy Pond, Matthews and J. K. Donald Block;
- Introduction of exotic species;
- Areas suitable for restoration;
- Concessions and other permits;
- Pingao, raupo and eel;
- Fish habitat and passage;
- Interpretation;
- Lake domain;
- Public access;
- and any other issue raised by iwi/hapu.

Consultation involves the statement of a proposal not yet finally decided upon, listening to what others have to say considering their responses and then deciding what will be done. The Department will:

Inform iwi/hapu when any new information becomes available with regard to:

Water quality monitoring results (supplied by WRC)

Distribution of rare indigenous fish species and exotic fish species

Research results and provide opportunities to provide for feedback

Work with iwi/hapu to:

identify areas for cultural harvest (in particular harakeke and raupo);

develop protocols to ensure that appropriate, effective and enduring relationships are established;

identify areas for restoration and provide ecological advice for their development in particular pingao;

identify appropriate areas for spraying;

develop and manage key projects with significance to iwi/hapu that fosters training opportunities;

protect and manage archaeological sites and special sites.

bid for funding for tikanga atawhai projects;

support development and administration of a system which will allow for customary harvest of eel within the Wildlife Management Reserves, including a system for on-going monitoring of take and compliance;

establish walking tracks or identify access points and routes through and onto DOC-administered lands.

Provide advice and share information with iwi/hapu in preparing submissions regarding activities which affect the Lake Wairarapa wetlands, particularly water quality and quantity.

Appendix 10: Ramsar Fact Sheet

Ramsar Convention on Wetlands

What is the Ramsar Convention on Wetlands?

The *Convention on Wetlands* is an intergovernmental treaty adopted on 2 February 1971 in the Iranian city of Ramsar. It has come to be known popularly as the “Ramsar Convention”. Ramsar is the first of the modern global intergovernmental treaties on conservation and wise use of natural resources.

The official name of the treaty, *The Convention on Wetlands of International Importance especially as Waterfowl Habitat*, reflects the original emphasis upon the conservation and wise use of wetlands primarily as habitat for waterbirds. Over the years, however, the signatories to the Convention have developed and interpreted the treaty to keep it abreast of changing world perceptions, priorities, and trends in environmental thinking.

The Convention now covers *all aspects* of wetland conservation and wise use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation and for the well-being of human communities. Wetlands are defined to include lakes, rivers, estuaries, underground waterbodies and shallow coastal waters, as well as swamps, bogs and marshes.

The Convention entered into force in 1975 and now more than 110 governments have signed it. Approximately 900 wetlands covering more than 65 million hectares are included in the List of Wetlands of International Importance. In addition, the signatory governments and partner non-governmental organisations (NGOs) have committed to promoting wise-use (sustainable management) for all significant wetlands.

The Ramsar Convention on wetlands provides a framework for governments to take co-operative action to protect and wisely use wetlands, to share expertise and experience, and to help conserve habitat for migratory birds which may depend on particular wetland systems. Recently, the Convention on Biological Diversity agreed that the Ramsar Convention processes should be the primary method for promoting conservation and sustainable use of aquatic biodiversity in inland waters. The two conventions are now developing joint work plans.

Why Conserve Wetlands?

Wetlands are among the world’s most productive environments. They provide economic benefits worth more than \$35,000 per hectare per year and are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival. High concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species depend on wetlands. Of the 20,000 species of fish in the world, more than 40% live in fresh water. Wetlands are also important storehouses of plant genetic material. They provide habitat for migratory birds, some of which “commute” vast distances (e.g., between Siberia and New Zealand) between wetland systems.



What are Wetlands of International Importance?

The Convention contains processes and a set of criteria by which governments can nominate wetlands to be listed as being of International Importance. Other parties, including partner NGOs, can develop proposals for governments to nominate. In New Zealand, the Department of Conservation administers the Convention. The list contains wetlands which are very important for their:

- storehouse of biodiversity
- habitat for waterfowl or fish
- rarity or representativeness

In addition, the wetlands identified will often be important to indigenous people, or to other nations (as habitat for migratory birds, fish or as water sources and storage areas).

Identifying wetland areas as internationally important will encourage recognition of their values and place an obligation on the administering body to monitor and report on these values. These values include recognition of international values such as migrating birds and fish. Such recognition will potentially increase funding for research and facilities.

What New Zealand areas are of International Importance?

New Zealand has five sites totalling almost 39,000 hectares formally designated on the list of International Importance:

- Whangamarino Wetland (Lower Waikato)
- Koupoutai Peat Dome (Hauraki Plains)
- Waituna Lagoon (Southland)
- Farewell Spit (Golden Bay)
- Firth of Thames (Miranda)

There are at least another 68 New Zealand wetland systems which meet the criteria for listing as internationally significant. At present three sites are under consideration for nomination to the list:

- Aotea Harbour (Kawhia)
- Lake Wairarapa (Wairarapa)
- Awarua Plains (Southland)

World Wetlands Day

On 2 February 1997 - the anniversary of the 1971 signing of the Ramsar Convention on Wetlands - the first annual World Wetland Day was celebrated in many countries around the world. World Wetland Day is an opportunity for governments, organisations, and citizens to raise public awareness of the values and benefits of wetlands in general, and the Ramsar Convention in particular. A wide range of activities aimed at using WWD to raise public awareness, and world-wide participation in 1998 was enormous.

For more information about the Ramsar Convention and the Department of Conservation, visit the web sites www.ramsar.org and www.doc.govt.nz.