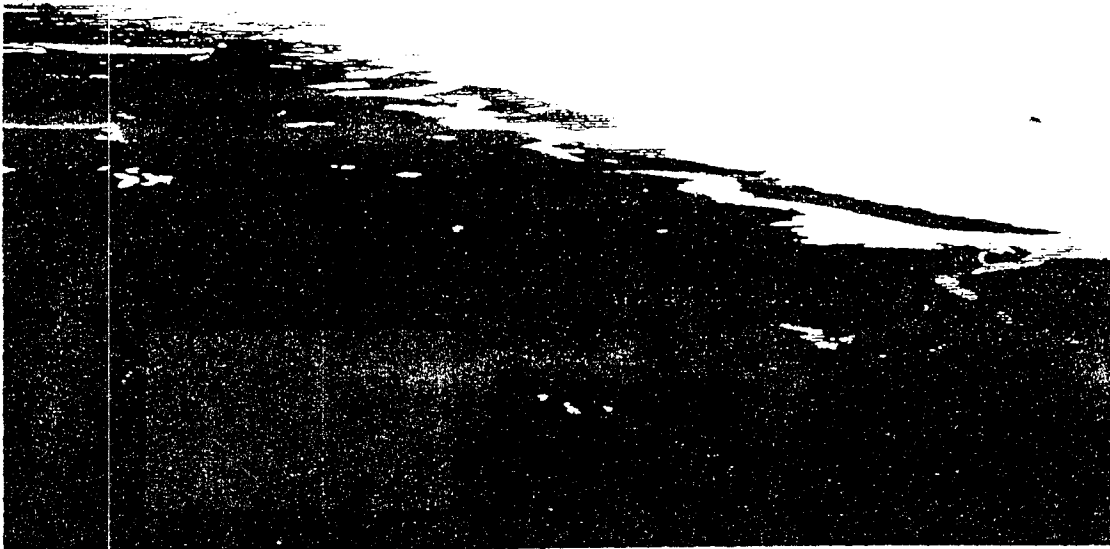


LAKE WAIRARAPA WETLANDS MANAGEMENT GUIDELINES



1991

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PREFACE

These Guidelines aim to provide a clear direction for the unified and balanced management of the Lake Wairarapa wetlands which protects and enhances the wildlife and conservation values of the wetlands while providing for the needs of the various users. If these Guidelines are successfully implemented, the quality of the Lake Wairarapa wetlands should be maintained or even improved for the benefit of future generations of wildlife and people.

The Guidelines are the product of the deliberations of the Lake Wairarapa Co-ordinating Committee. They are an expression of the policies formulated by consensus after the presentation of information and then subsequent discussion by the Committee.

The Guidelines do not necessarily represent the views of the statutory authorities represented on the Committee, but these bodies are urged to adopt the Guidelines and to incorporate appropriate Goals, Objectives and Policies into their strategic, policy and operational plans for management of the wetlands and surrounding catchments. Private landowners are also urged to voluntarily adopt the Guidelines as the basis for the management of their land in the wetland system.

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INTRODUCTION

OVERVIEW

The Lake Wairarapa wetlands, comprising Lake Wairarapa and Lake Onoke and their associated wetlands, form the largest wetland complex in the southern North Island. The wetlands have been significantly modified over the last 150 years through uplift of the former lake-bed in the 1855 earthquake, drainage for agricultural development, the diversion of the Ruamahanga River in 1967 to by-pass Lake Wairarapa and flow direct to Lake Onoke, and the introduction of exotic flora and fauna.

The wetlands, a key feature of the Wairarapa Plains Ecological District, are considered to be of national or international importance for flora and fauna. The National Water Conservation (Lake Wairarapa) Order 1989 recognises the outstanding wildlife habitat on the eastern shores of Lake Wairarapa. The Lake Wairarapa wetlands have been traditionally important for the Ngati Kahungunu people of the southern Wairarapa as an area for food gathering, and the shores of the lakes are dotted with historical sites. Of particular importance was the eel fishery of Lake Onoke, where eels were caught in large numbers at the shingle bar when the outlet was closed. Dried eels were traded widely through the southern North Island and northern South Island.

The wetland system is an integral part of the flood management scheme for the Ruamahanga River valley in the southern Wairarapa. Lake Wairarapa is used as a reservoir to store flood waters and the lake level is regulated by barrage gates at its outlet. The exit of the Ruamahanga River to the sea at Lake Onoke is periodically blocked, and this exit is artificially opened to lessen flooding dangers.

Most of the land surrounding the wetlands has been developed for pastoral production.

Because developed access points are limited, relatively few people visit the wetlands, but the wetlands are regionally important for several recreational pursuits, especially game bird hunting, yachting, fishing, and nature study.

Because of the range of competing land uses and perceptions on the role of the wetland system, and the desire to integrate land management around these fragile wetlands, a co-ordinating committee was set up to prepare guidelines for the management of the Lake Wairarapa wetlands. Members of the Co-ordinating Committee represented organisations with statutory responsibilities for the management of the wetlands, landowners, Iwi, user groups and scientific advisers. This document is the result of the committee's discussions during 1990 and 1991.

LAKE WAIRARAPA CO-ORDINATING COMMITTEE

The following organisations and people attended one or more of the 12 meetings of the Lake Wairarapa Co-ordinating Committee; those people shown in bold type attended six or more meetings:

Department of Conservation
(Wellington Conservancy)

Hugh Robertson (Chairperson)
Adrian Griffiths (Secretary)
Judy Robinson (Secretary)
Derrick Field
Peter Hapeta
Tim Harington
Bryan Jensen
Doris Johnston
David McKerchar

Wellington Regional Council
(Wairarapa Division)

Ellen Blake
Steve Blakemore
Ian Gunn
Sam Milligan
Cr John Read

Wellington Regional Council

Barry Chalmers
Ross Jackson
Curtis Thompson

Wellington Fish & Game Council

Ian Buchanan

South Wairarapa District
Council

Mayor John Garrity
David Whitehead

Ngati Kahungunu

Sue Ahipene
Mita Carter
Bill Mikaera
Sonny Wilson

Wellington Conservation Board

John Rhodes

Ducks Unlimited

Jim Campbell
Neil Hayes
Alan Wilks

Landowners	Stewart Barton Jane Gillett Roger Gillett Tony Lutyens Mike Moran Mark Pierce Gerry Smith Brian Wrigley
Landcorp	Mark Heffernan Grant McGhie
QE II National Trust	Euan McQueen Ben Thorpe
Ornithological Society	Barrie Heather
Royal Forest and Bird Protection Society	Jack Bull Norman Cameron
Wairarapa Yachting Club	Murray Hedges
Hovercraft Club	Gordon Blackwood Alister Lovatt
Iwi Transition Authority	Jared Couch
Chronicle Newspaper	Colin Wheeler
Commercial Fisherman	Graeme Higginson
Public	Noel Hayes Kevin Perry Bert Stafford Ray Zander

The committee's discussions were marked by a spirit of friendly debate and a desire by all interest groups to understand and allow for one another's points of view, with a common goal of reaching agreement on all fundamental aspects of the management of the Lake Wairarapa wetlands.

THE LAKE WAIRARAPA WETLANDS

Lake Wairarapa, in the southern part of the North Island, is shallow (mostly less than 2.5 m 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 only under flood conditions, from the Ruamahanga River via the Oporua Floodway in the middle of the eastern shore. The exit from the lake is regulated by six barrage gates operated by the Wellington Regional Council.

The western and eastern shores of the lake are very different. The western side is close to the foothills of the Rimutaka Range and the shoreline margin is very narrow. By contrast, the shoreline margin on the eastern side is very wide as the shore slopes very gradually from open water through zones of different wetland vegetation types to farmland. Natural fluctuations in water level caused by rainfall and the effect of wind direction and speed create zones of vegetation with varying degrees of tolerance to inundation. In the past, when lake levels were very low, 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. Near the northwest corner of Lake Wairarapa, a small lagoon (Turner's Lagoon) was similarly formed. These wetlands total some 900 ha.

Lake Onoke is a 650 ha brackish lake at the mouth of the Ruamahanga River. The lake 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 spit 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.

Recently separated from Lake Onoke by a stopbank are the Pounui Lagoons, which are fed by Battery Stream that flows from Lake Pounui. This deep lake is formed in a drowned valley in the foothills of the Rimutaka Range.

CORE AREA AND ADVOCACY ZONE

The Co-ordinating Committee recognised that policy statements were required for two distinct areas:

1. A *core area*, called the "Lake Wairarapa wetlands", defined as Lake Wairarapa and Lake Onoke, and their associated wetlands and margins (Figure 1). This definition is based on ecological grounds rather than land tenure status, and so includes both Crown and private land. This is the area to which the management guidelines of this document primarily apply.
2. An *advocacy zone*, defined as the entire catchments of the rivers, streams, and drains that enter into the core management area (Figure 2). The interest of the committee in this zone is to advocate policies to ensure that land use practices do not impact adversely on the intrinsic and cultural values of the core area, the Lake Wairarapa wetlands.

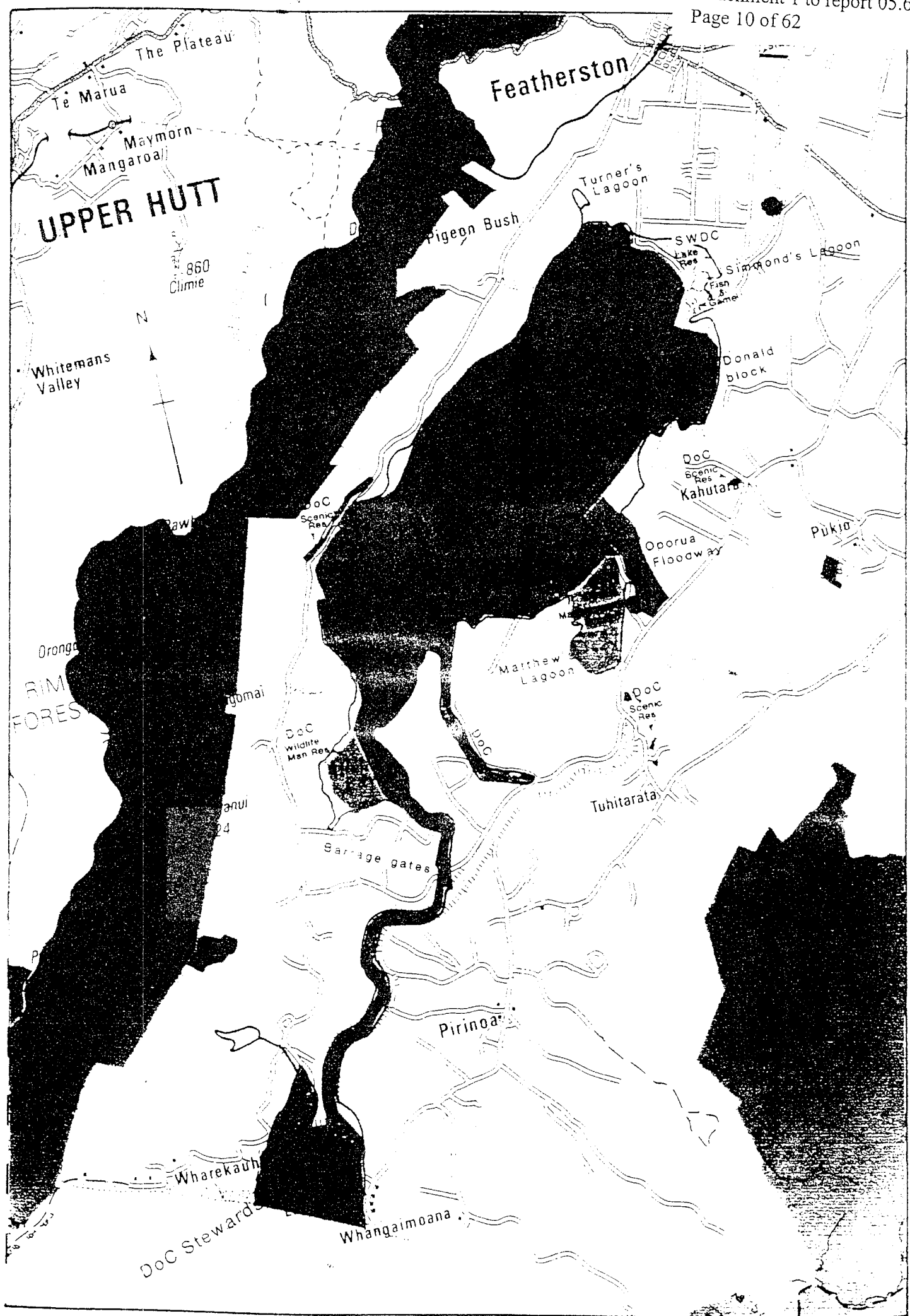


Figure 1. Core area (inside bold line) showing land tenures. Private land is shown in white.

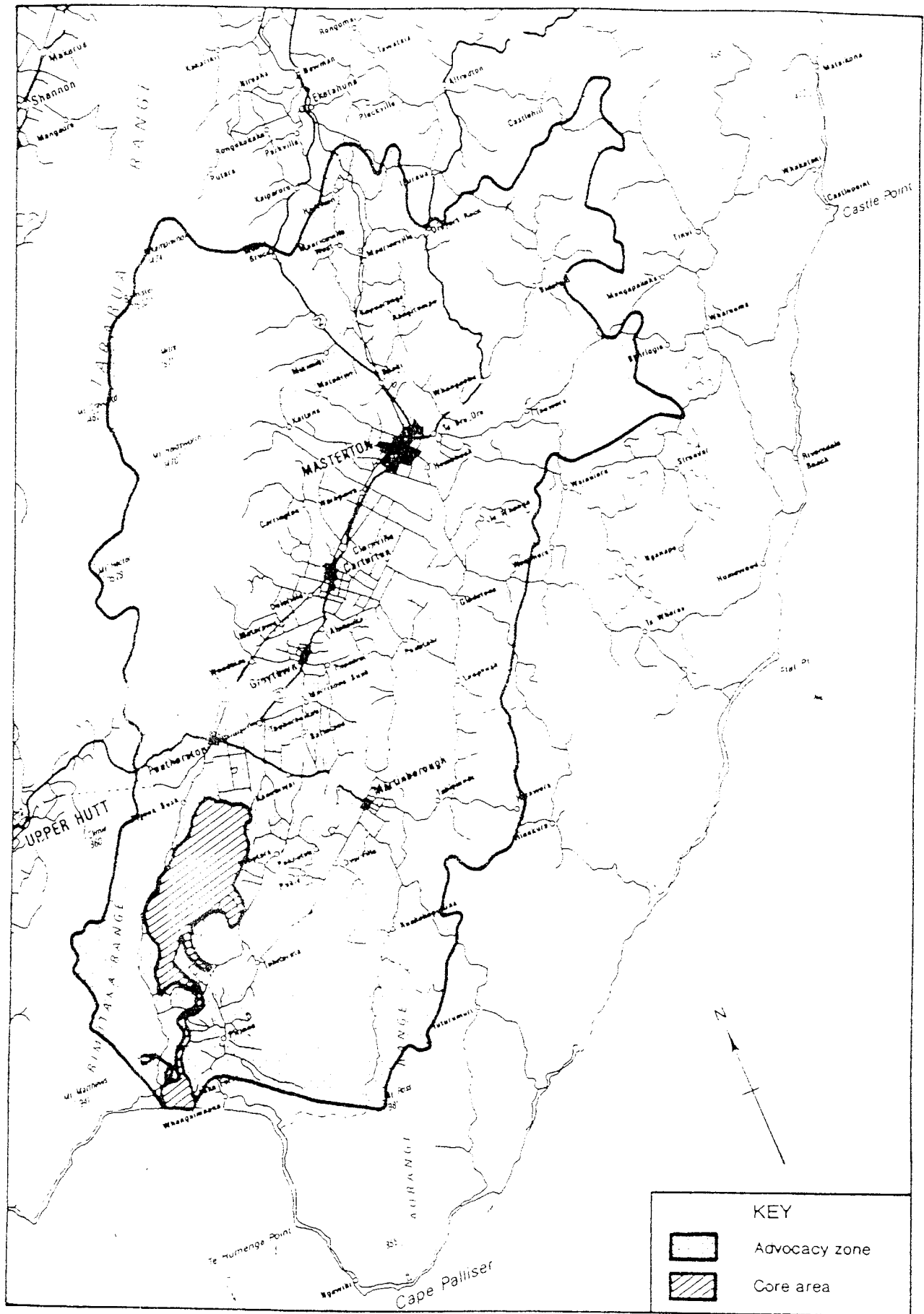


Figure 2. Areas covered by the management guidelines

WILDLIFE VALUES

In October 1984, the Wellington Acclimatisation Society, the Council of the North Island Acclimatisation Societies, and the National Executive of the New Zealand Acclimatisation Societies applied for a Water Conservation Order in respect of Lake Wairarapa under Section 20 of the Water and Soil Conservation Act 1967. The National Water Conservation (Lake Wairarapa) Order 1989 that was granted recognises 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 Lake Wairarapa wetlands, including the wetland areas surrounding Lake Wairarapa, and Lake Onoke and its associated wetlands, are considered of national or international importance for flora and fauna (Moore *et al.* 1984, Davis 1987).

Birds

The wetlands easily meet criteria established by the International Union for the Conservation of Nature (IUCN) for classification as a Wetland of International Importance (Appendix 1). In particular, over 1% of the New Zealand populations of at least 12 bird species regularly use the Lake Wairarapa wetlands, and the wetlands regularly support in excess of 10 000 ducks, geese and swans (Table 1). Five species of threatened or rare birds (Dabchick, Bittern, Variable Oystercatcher, Banded Dotterel and Caspian Tern) breed at, and/or regularly use, the wetlands, while other threatened species regularly or occasionally visit (e.g. Wrybill).

A total of 96 bird species has been recorded from the Lake Wairarapa wetlands in the last 15 years (Appendix 2); of these, 41 species regularly use the wetland areas, 25 are irregular or vagrant visitors to wetland areas, and 30 are mainly associated with surrounding scrubland and forest patches. Fernbirds, which inhabited the wetlands earlier this century, could be re-established.

The eastern shore of Lake Wairarapa from the Tauherenikau River mouth to the northern end of Allsops Bay is important feeding or roosting habitat for wading birds. These waders usually feed close to the land-water interface on invertebrates such as shellfish, worms and insects. Because of the variations in water levels caused by wind action, rainfall and the operation of the barrage gates, the flat eastern shore is particularly favoured because the shoreline is constantly changing and new invertebrate prey is being exposed. Arctic breeding waders such as Golden Plovers and Godwits arrive at Lake Wairarapa from October and remain until March or early April. Waders that breed in New Zealand mostly visit during their non-breeding season, from January to August. Some may be present all year, and a few Variable Oystercatchers, Banded Dotterels, Black-fronted Dotterels and Pied Stilts nest around Lake Wairarapa. Lake Onoke Spit is an important breeding site for Banded Dotterel and a few Variable Oystercatchers. Colour-banding studies by the Ornithological Society have shown that many of the endemic waders that visit Lake Wairarapa breed on the rivers of the Wairarapa or in the Lake Wairarapa wetlands, but Banded Dotterels that breed in the South Island also regularly visit the lake in winter.

Table 1: Bird populations at the Lake Wairarapa wetlands that exceed 1% of the national total. Data from Moore *et al.* (1984) and OSNZ bird counts (unpublished).

Population estimates			
Species	Average Maximum	National Population	% at Lake Wairarapa
NZ Dabchick	25	1,500	1.7%
Black Swan	5,000	51,000	8.8%
Paradise Shelduck	1,900	120,000	1.6%
Grey Teal	510	15,000	3.4%
NZ Shoveler	3,600	130,000	2.8%
Bittern	15	1,000	1.5%
Banded Dotterel	400	30,000	1.3%
Black-fronted Dotterel	100	3,000	3.3%
Pied Stilt	1,040	30,000	3.5%
Golden Plover	70	700	10.0%
Sharp-tailed Sandpiper	8	100	8.0%
Pectoral Sandpiper	3	10	30.0%

- Notes:
- (1) Average maxima for wetland birds (first group) are from Moore *et al.* (1984) from 1982-83. Average maxima for waders (second group) are from OSNZ counts, 1984-1991.
 - (2) National population estimates for wetland birds are from Moore *et al.* (1984), and those for waders are from OSNZ National Wader Census results (1983 - 1990).

Waterfowl breed on the small lakes and lagoons adjacent to Lake Wairarapa and Lake Onoke, and Black Swans also breed on Willow Island at the former mouth of the Ruamahanga River. The eastern shore and parts of the western shore of Lake Wairarapa, and Allsops Bay are important feeding, loafing and moulting sites for waterfowl outside the breeding season. Waterfowl feed on aquatic and terrestrial vegetation and seeds, but aquatic invertebrates form an important part of their diet during the breeding season. Loafing and moulting sites are usually in exposed places so that approaching predators can be detected easily; this is particularly important during the moult in summer or early autumn when waterfowl are flightless for about one month, as they renew their flight feathers. Moulting sites must provide good food supplies to sustain the birds during the flightless period. Studies by the Wellington Acclimatisation Society and the Wildlife Service (Moore *et al.* 1984) have shown that numbers of waterfowl on Lake Wairarapa increase after the breeding season to a peak during the moult, with a marked influx from other parts of the southern North Island and the northern South Island.

Other wetland birds such as Dabchicks, Bitterns, and crakes are resident in the small lakes and lagoons adjacent to Lake Wairarapa and Lake Onoke, and only rarely venture to the main lakes. A large and regionally important colony of Black, Little and Little Black Shags is in the southern part of the Matthews Lagoon complex. Lake Onoke Spit has the largest colony of Caspian Terns in the southern North Island with about 40 pairs nesting between October and January. Birds from the colony feed in adjacent coastal waters and as far inland as the Tauherenikau River delta. Colour-banded Caspian Terns from Invercargill Estuary have been recorded at Lake Wairarapa.

Fish

The state of the fisheries in the Lake Wairarapa wetlands is not well known. Davis (1987) ranked the wetland area as outstanding on the basis of the habitat it provided for fish species, the rare and endangered species that it was known to support, and the use of the fisheries resource.

The fish of the Lake Wairarapa wetlands include whitebait, smelt, brown mudfish, giant kokopu, short-finned eel, long-finned eel, yellow-eyed mullet, perch and flounder (Davis 1987). Several other fish species whose life-cycle includes stages in marine and freshwater environments, such as short-jawed kokopu, koaro and torrent fish, pass through the wetland system on their way between the sea and hill country streams. Marine fish such as kahawai enter the Lake Onoke estuary to feed and spawn. Of the fish in the Lake Wairarapa wetlands, brown mudfish, giant kokopu and short-jawed kokopu are regarded as threatened species.

The eels of the wetlands are exploited commercially, as are flounders in Lake Onoke. Whitebait, flounder, eels, perch and brown trout all provide a significant recreational fishery. Traditionally, the wetlands provided a major Maori eel fishery, Lake Onoke being one of the most important sites in the North Island, especially whenever its exit to the sea was naturally blocked during the seaward migration of breeding adult eels in autumn.

Recent knowledge of the fisheries of the Lake Wairarapa wetlands is poor, but the Department of Conservation has commissioned the Ministry of Agriculture and Fisheries to study the current status of the fisheries and the effects on fish movements of several recent modifications to the wetland system.

Native plants

Many of the native plant communities have been destroyed by agricultural development and drainage of wetlands, and also they have been taken over by exotic species. The various lakes and their shores have a complex and diverse pattern of plant communities, reflecting differences in physical conditions and influences by man. Important native turf plant communities are found on the periodically dry shores along the eastern shore of Lake Wairarapa, in some backwaters and on seasonally dry beds of lagoons adjacent to Lake Wairarapa. Wetland plants that are nationally threatened, or that are rare in the North Island, include Leptinella maniototo, Crassula ruamahanga, Carex cirrhosa, Pilularia novae-zelandiae, Hypsela rivalis, and Amphibromus fluitans.

Raupo is the dominant native plant in most wetlands away from the main lakes and it has probably benefited from an increase in the nutrient levels of the water in the wetlands. The spread of raupo in high nutrient water is very rapid, and it tends to form a monoculture, and so, in places, further spread is controlled currently by chemical spraying and some mechanical pulling.

The original large areas of flax that were traditionally used by the Maori people and commercially harvested last century have all but disappeared. Some small remnants of native trees, dominated by kahikatea, ti (cabbage tree) and divaricating shrubs, which were probably typical of the area, persist among the wetlands on the eastern side of Lake Wairarapa, but particularly on the western shore of Allsops Bay.

Lake Shore Scenic Reserve on the western shore of Lake Wairarapa is a remnant stand of mainly black beech, with some patches of titoki and karaka, and shrubs closer to the lake margin. This is probably typical of the original forest between the Rimutaka Range and Lake Wairarapa. Lake Onoke has important divaricating shrub communities including good stands of Plagianthus divaricatus.

Exotic plants

Willows and alders dominate the woody vegetation of the Lake Wairarapa wetlands and continue to invade new areas of wetland. On the exposed shores of Lake Wairarapa and around the margins of the wetlands, introduced plants, especially tall fescue, Juncus articulatus and Mercer grass, dominate the plant communities that are only partially covered by water. At Lake Onoke, Spartina spp. has the potential to be a serious weed problem, and this species is now being monitored by Noxious Plants Officers of the Wellington Regional Council.

The establishment of tall fescue on the eastern shore of Lake Wairarapa has been very rapid over the past 10 years, and it is adversely affecting the native turf communities by invading and then altering the shoreline accretion processes by trapping suspended sediments and so changing the habitat characteristics. The spread of tall fescue also reduces the availability of feeding and roosting sites for waders and waterfowl when lake levels rise above about 10.3 m, because these birds do not feed or roost amongst tall vegetation where they have difficulty moving and where they can not see predators approaching.

In some of the ponds east of Lake Wairarapa, Mercer grass has spread rapidly in the past five years; this forms a monoculture and replaces native turf communities that are intermittently exposed. The spread has been most rapid in lagoons that are suspected to receive high nutrient input, but this weed can be controlled now by chemical spraying and perhaps in the future by reducing the nutrient input to the lagoons.

WATER MANAGEMENT

Lower Wairarapa Valley Development Scheme

This Scheme was developed to protect the southern part of the Wairarapa Valley from flooding so that more land could be farmed.

The Wairarapa Valley has a long history of flooding, and will always experience some flooding because of its geography. The European settlers found flooding a hindrance to their farming operations and to travel.

In 1886, a South Wairarapa River Board was set up to attempt to control flooding on a community basis. Their main concern was to maintain a viable opening to the sea at Lake Onoke. At that time, Lake Onoke had to reach a high level before an opening was successful, meanwhile flooding much low-lying land in the valley. Over the years the River Board, in addition to maintaining an opening, built isolated stopbanks and erosion protection schemes to improve conditions for the landowners.

Several major schemes to control the flooding of the lower valley have been proposed over the years, including a scheme to create farms for soldier rehabilitation in 1948. But not until the Wairarapa Catchment Board was formed in the mid-1940s did an organisation exist that had statutory responsibility and a sufficiently wide brief to tackle a major flood prevention scheme. This Lower Wairarapa Valley Development Scheme included many of the ideas previously proposed. One of the first projects that the Wairarapa Catchment Board undertook was the realignment of the Tauherenikau River mouth (Rangipo) from the J.K. Donald block to its current position close to Simmonds Lagoon. The design work for the remainder of the Scheme was completed in the late 1950s and received government approval in 1960.

Work began in 1964. By 1974, the lower Ruamahanga River had been widened and stopbanked, the full diversion of the River at Kumenga peninsula, bypassing Lake Wairarapa, had been constructed, the barrage of floodgates on the outlet of Lake Wairarapa had been constructed, and the lower part of the overland Oporua Floodway had been completed. Between 1978 and 1984, the main river was stopbanked from Tuhitarata to Moiki and the rest of the overland floodway was completed (Figure 3).

Throughout this whole period bank stabilisation work was undertaken along the lower Ruamahanga River and its tributaries. Several pumped drainage schemes were installed, in areas which had either been reclaimed using material dredged out of the widened river channel, or were low-lying land now given protection from flooding. Between 1966 and 1981, 1237 ha of pond and swampland were drained or reclaimed in the lower Wairarapa, including the 386 ha Te Opai Lagoon. Pounui Lagoon was separated from the Lake Onoke system by a stopbank in the mid 1960s and a flapgate placed on the outlet from Pounui Lagoon to Lake Onoke.

Several flood events tested the system during this time and the flood protection works performed effectively. Figure 4 shows the extent of flooding in the lower Wairarapa Valley before and after the Scheme was completed.

Figure 3

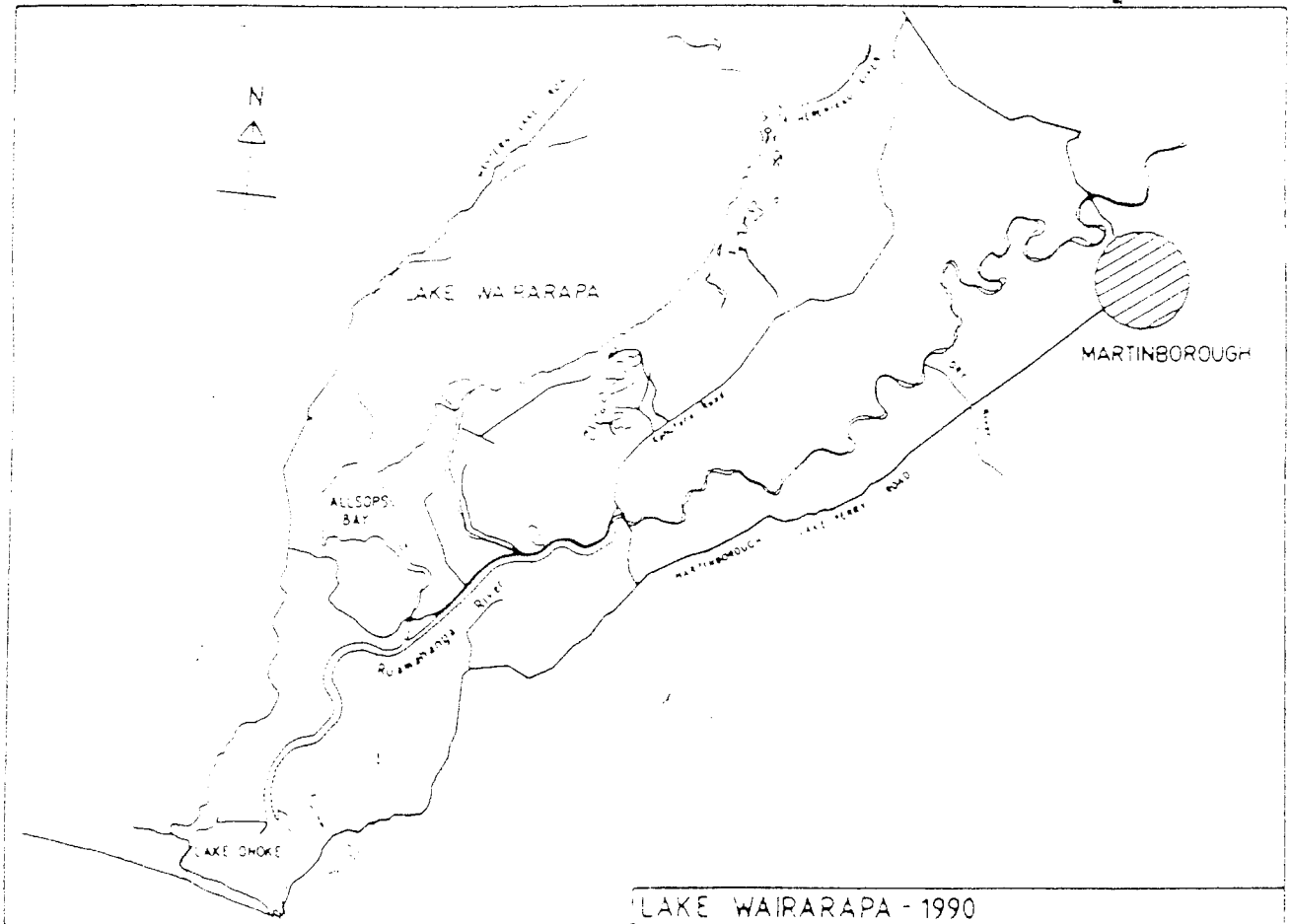
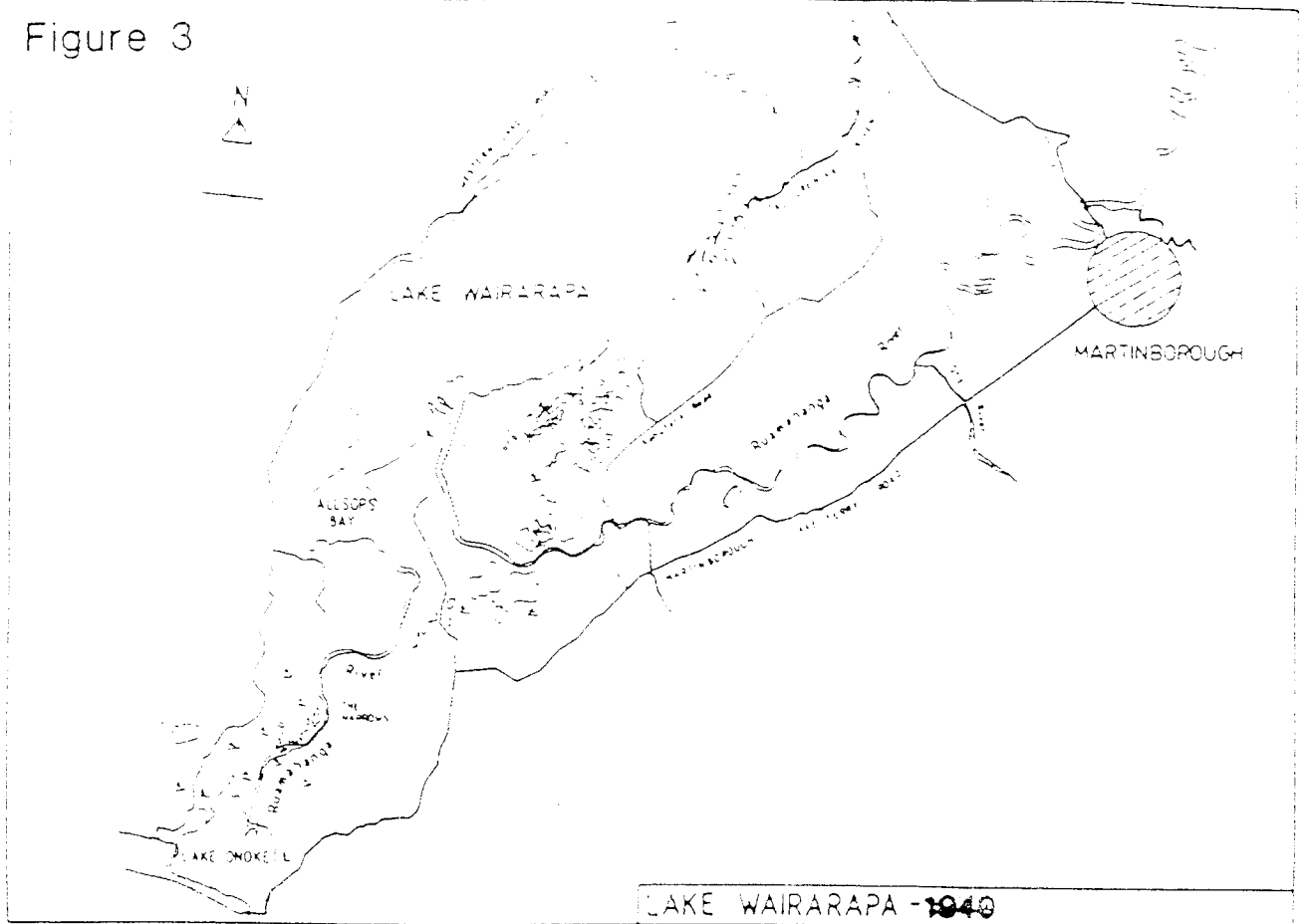
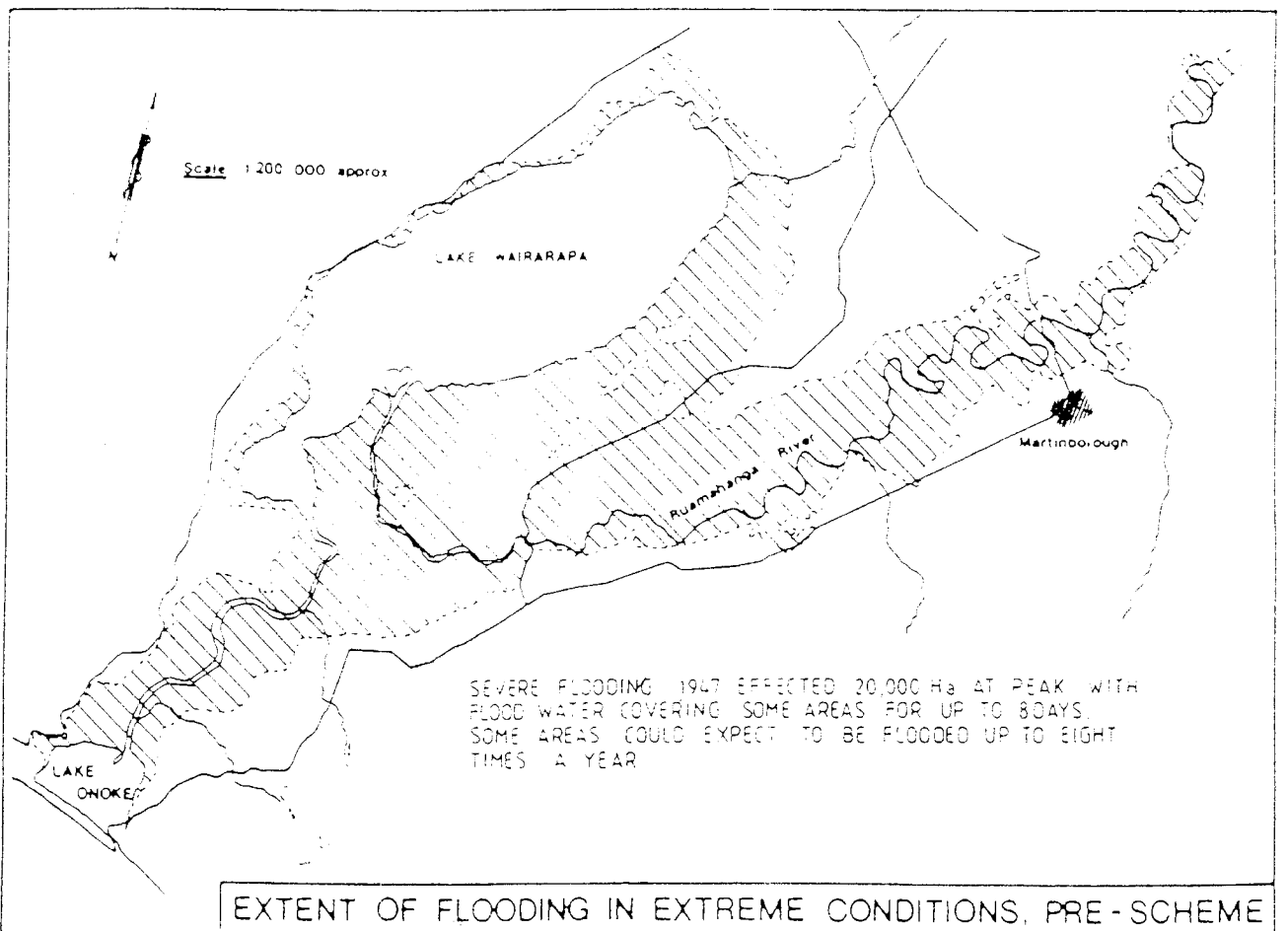
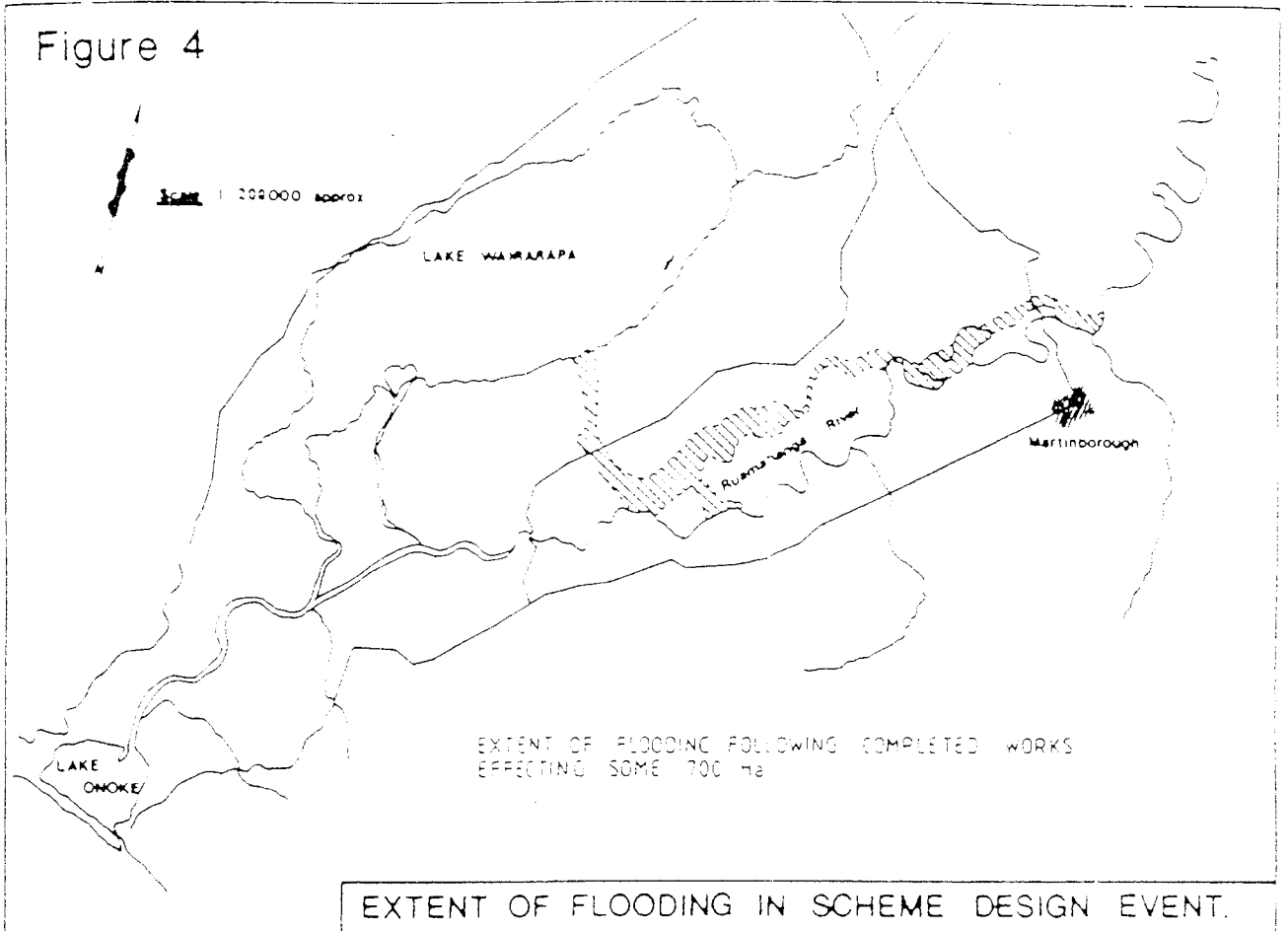


Figure 4



The reclamation of land along the eastern lakeshore was a major feature of the scheme proposals, similar in concept to the polders found in the Netherlands. However, the cost-benefit ratio and an increase in national conservation awareness in the 1970s placed the polder scheme under close scrutiny. The original proposal greatly underestimated the costs of reclamation as well as the wildlife and conservation values of the area. This part of the Lower Wairarapa Valley Development Scheme was finally abandoned in 1984.

The objectives of the Scheme have been largely achieved; that is, to provide flood protection to a large area of farmland, enabling that land to reach optimum productivity, and to protect roading in the district.

Lake levels

The Lake Wairarapa wetland system is dynamic, with many factors influencing the levels of the two main lakes, Wairarapa and Onoke. Two major factors are the amount of water in the rivers, influenced by the amount of rainfall in the catchments, and the condition of the sand bar at Lake Onoke. Lake Wairarapa covers about 7800 hectares and water can pass only slowly through the outlet (barrage gates) to the Ruamahanga River. Therefore, even when the gates are open the water level changes only slowly. A 0.1 metre drop in lake level can often take two days. This is highly dependent on conditions at the time and in particular the head (hydraulic gradient) difference between Lake Wairarapa and the Ruamahanga River.

The datum level used for the lakes (and all Regional Council Wairarapa measurements) is the high water ordinary spring tide mark at Palliser Bay. This is measured as 10 metres (originally 100 feet) so that lesser levels can be measured as a positive value. Levels of Lake Wairarapa have been traditionally measured by an automatic gauge at Burlings, on the western shore. Other automatic gauges are installed on either side of the barrage gates, and a gauge was recently installed on the eastern shore at the Oporua Floodway. The Lake Onoke water level is measured by an automatic gauge on the lake shore near the Lake Ferry Hotel.

LAKE WAIRARAPA

Historical changes

Lake levels have been profoundly influenced by the three stages of development of the Lower Valley Development Scheme. In the pre-diversion stage (1954-1967), the highest and very low lake levels were recorded, 12.90 m and 9.71 m above a datum, with an average annual maximum of 12.00 m. In the pre-barrage stage (1968-1974), maximum levels were reduced to an annual average of 11.27 m. In the present post-barrage stage, the lake levels have been more stable with the minimum level generally just below 10.0 m and the annual maximum averaging 10.99 m (Appendix 3). The lake levels are influenced by the northwesterly wind, which lowers the recording at the western site, Burlings, while raising the lake on the eastern shore. Recently a recording station has been installed at the Oporua Floodway, on the eastern shore, to measure this wind-set effect.

Relationship between wader numbers and lake levels.

Since November 1984, Ornithological Society members (mainly Barrie Heather and Hugh Robertson) have made a continuous series of monthly counts of wetland birds (but excluding waterfowl) on the eastern shore of Lake Wairarapa from the Oporua Floodway to the Tauherenikau River.

During the 69 monthly counts which have been analysed, the lake levels have varied from 9.87 m to 11.34 m. Only 11 counts have been conducted when lake levels were higher than 10.3 m, because at that level the shore becomes difficult to traverse.

For each of the three native wader species (Pied Stilt, Banded Dotterel and Black-fronted Dotterel) for which Lake Wairarapa is an important wintering site, there was a significant negative correlation between the number of birds present (expressed as a percentage of the long-term average for that month) and the lake level on the day of the count (Figure 5). The main reason for the negative correlations appeared to be that at lake levels above 10.3 m the numbers of birds (especially the two short-legged dotterel species) were almost invariably below the average count for that month. This was because their normal feeding habitat becomes completely submerged and hence inaccessible, and so the birds are displaced to adjacent farm paddocks and further afield. When the lake levels drop, birds quickly return to the lake shore, indicating their preference for that feeding habitat. Although the sample size is inadequate to test the relationship, at extremely low lake levels (below 9.95 m) the numbers of birds are lower than normally expected, perhaps because there is less invertebrate food available in the substrates which are only rarely exposed, and as the upper part of the exposed shore dries out it becomes unsuitable for invertebrates.

These data indicate that the ideal lake level for wading birds is probably within the range of 9.95 m to 10.30 m.

Pied Stilt

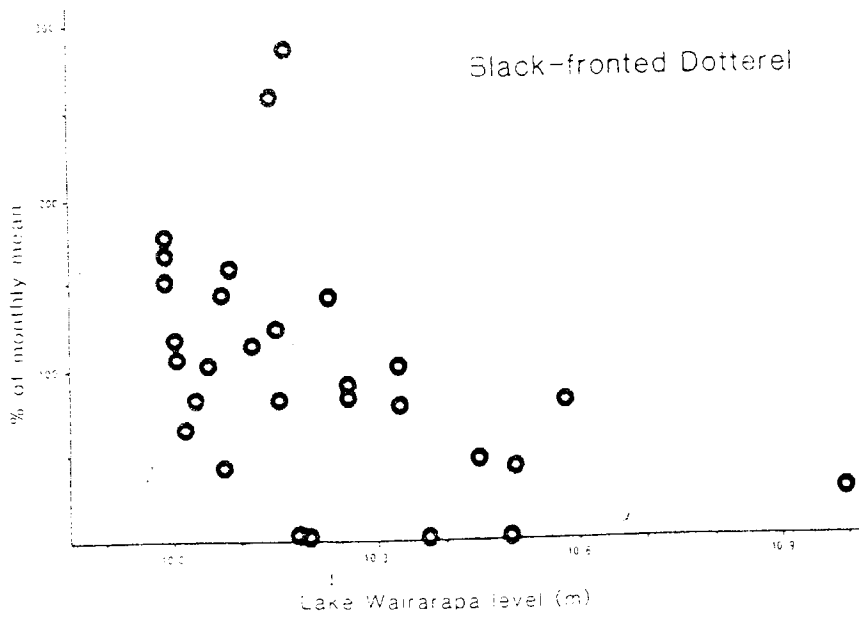
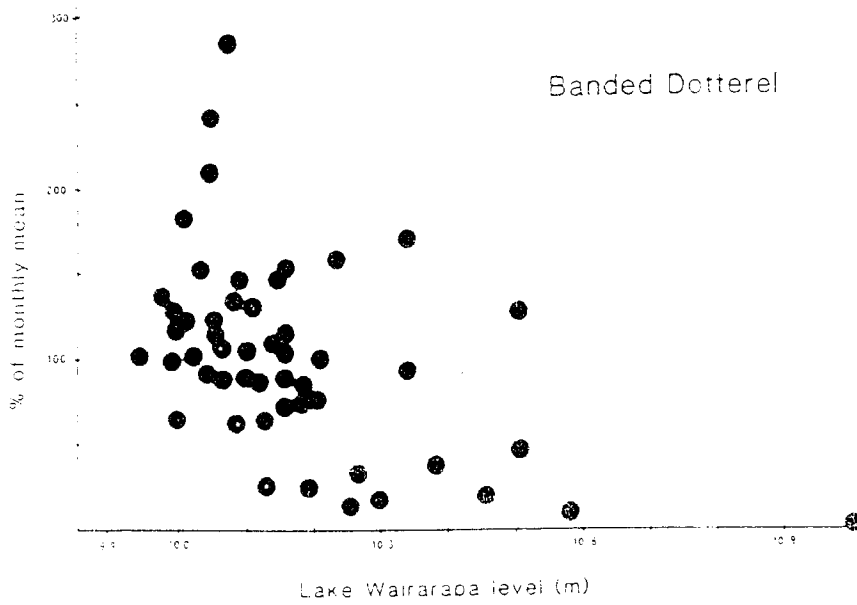
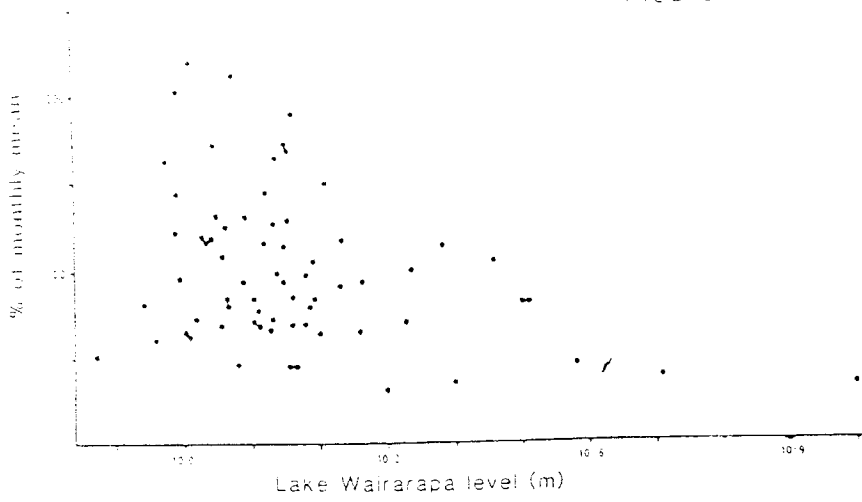


Figure 5. Numbers of three species of indigenous wader at Lake Wairarapa (expressed as a percentage of the monthly mean) in relation to lake levels.

Relationship between farming and lake levels

Farms adjoining Lake Wairarapa are vulnerable to flooding, more often from May to October, when peak rainfall events occur in the Wairarapa, and when soakage rates and evapotranspiration are low. During this period, a low lake level provides extra storage capacity for freshes and in the event of a major flood, when water passes through the Oporua Floodway, the peak level in both the lower Ruamahanga River and the lake is reduced, and more time is given to remove stock to high ground. Productive farmland is inundated at lake levels above about 10.30 m and so any levels above this have an impact on farming regimes.

Water management policies and operation

Up until 1991, the policy was to maintain as far as possible lake levels of

- 10.15 m summer level from 1 December to 31 March
- 10.00 m winter level from 1 April to 30 November

The levels have been traditionally measured at the Burlings recording station on the western lakeshore. The lower winter level was to allow more storage capacity in Lake Wairarapa to accommodate floodwaters in a large flood.

The level of water in Lake Wairarapa is regulated by opening or closing the barrage gates. Normally only the two automated gates are operated, as most of the water flow is through them. The other four gates can be operated manually as conditions dictate. A gap left underneath one of the gates allows fish to pass through. The effectiveness of this fish-pass needs to be reviewed.

The six gates were installed in the early 1970s and have the road running beside them. Each gate is 12 metres wide by 7.3 metres high and weighs 13 tonnes. The gates are opened via cables to a twin drum winch system, which operates at a rate of 0.3 metre per minute. Mains power is connected to the control house with an auxiliary supply available. Originally the intention was that all gates would remain open, keeping Lake Wairarapa levels low, and would be closed in flood times to store floodwaters. However, the opposite has occurred, and the gates are usually closed, as it has been found beneficial to have moderate lake levels for wildlife habitat and to maintain the 'water table' in surrounding lands, and also to prevent brackish water passing upwards through the barrage.

After considerable discussion, the Lake Wairarapa Co-ordinating Committee recommended a change in lake levels policy, including the concept of using minimum levels rather than average or target levels. The proposed regime allows for more fluctuation in seasonal levels with the aim of enhancing wildlife values and lowering the risk of farmland being flooded. These changes formed the basis for the water rights granted to the Wellington Regional Council in 1991.

LAKE ONOKE

Lake Onoke water levels depend largely on natural forces, although the stopbanking and other river control works have had their impact. The level is altered artificially only when the sand bar at the Lake outlet to the sea becomes blocked and the water level rises beyond 10.6 m. A water right for this activity was granted in 1991 which formalised this long-standing practice. The outlet can become blocked under certain conditions, especially when a heavy southerly swell builds up the sand bar faster than the lake waters can wash it away, or when there are extended periods of low river flows.

FARMING

The first Europeans followed the coast from Wellington to Lake Onoke and settled the eastern coast of the Wairarapa, but they also farmed the lower Ruamahanga valley around the Lake Wairarapa wetlands. Much of the lower Ruamahanga valley was only moderately wooded and much was already open grassland. The first stations were established from 1844 and mainly produced wool, but cattle also played a vital part in the early development of pastoralism.

During the second half of the 19th century, proper surveys were done and fences were erected to delineate properties, Romney sheep largely replaced the Merinos that were initially used, wheat was harvested for flour-making and dairying was established to supply the Wellington market. The Featherston Co-operative Dairy Company was established in 1895, and other dairy factories followed, especially along the eastern side of Lake Wairarapa and near Pirinoa, where land was subdivided into dairying units.

Because of the frequent flooding caused by the natural blockage of the exit of Lake Onoke, early European settlers made moves to open the outlet to the sea. This was opposed vigorously by the local Maoris because it disturbed their fisheries. After a huge flood in 1880, which caused great stock losses, pressure was put on the government, through a series of court hearings, to provide flooding relief. The problem was not legally resolved until the ownership of the lakes was transferred to the government in 1896. Many drainage and stopbanking schemes evolved to acquire or protect farmland, but this was not coordinated on a regional scale until after a disastrous flood in 1947. The Lower Wairarapa Valley Development Scheme started in 1964 and has made over 10,000 ha more productive, but wetland reserves were also set aside from farming development. With rising costs and conservation pressure, the plans for the reclamation of about a quarter of Lake Wairarapa to make 45 dairying units (the "Polder Scheme") was abandoned.

The farming areas surrounding the Lake Wairarapa wetlands are well watered from artesian bores generally 20-60 m deep, and directly from the wetlands and rivers themselves. The soils are considered to be very fertile and provide opportunities for various pastoral and arable farming; however, the prevailing strong northwest winds limit the development of horticulture. The current farming practice around the Lake Wairarapa wetlands of sheep, beef and dairying has become adapted to the natural fluctuations of water levels in the wetlands.

The development of farming around the Lake Wairarapa wetlands has led to the establishment of a number of communities based on servicing the agricultural industry, and good access to many parts of the wetlands has been provided as a consequence of servicing the new farm developments.

GOALS AND OBJECTIVES FOR THE MANAGEMENT OF 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 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.
- 4.2 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.

Objective

- 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 habitat 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 interest and to preserve and manage them to retain their values.

Priority for protection will be given to indigenous species currently or formerly in the core area, especially those species for which Lake Wairarapa is nationally important. Over 1% of the national population of 11 species of indigenous bird (Dabchick, Paradise Shelduck, Grey Teal, NZ Shoveler, Bittern, Banded Dotterel, Black-fronted Dotterel, Pied Stilt, Golden Plover, Sharp-tailed Sandpiper and Pectoral Sandpiper) regularly occur in the Lake Wairarapa wetlands system, some as breeding species and some as seasonal migrants from elsewhere in New Zealand or from the Arctic. Brown Mudfish, Giant Kokopu and Short-jawed Kokopu, all regarded as nationally threatened fish species, have been recorded from the wetlands but their current status is unknown. Lake Wairarapa is an important site for a number of nationally or regionally rare wetland plants such as Leptinella maniototo and Pilularia novae-zelandiae that form the marsh-turf associations on the eastern shore of Lake Wairarapa and nearby lagoons. Little is known of the aquatic or terrestrial invertebrates of the Lake Wairarapa wetlands.

Nationally threatened indigenous species, not known previously in the Lake Wairarapa wetlands, may be introduced to maintain the viability of the species, subject to an environmental impact assessment showing no significant adverse impact on existing indigenous flora and fauna. The Department of Conservation has the responsibility of issuing permits for the liberation of protected species under the Wildlife Act 1953 and will consult the public and affected groups before any such transfer.

Increasing the diversity of habitats will increase the range of plant and animal species using the wetlands, or will provide wildlife with the alternative feeding or breeding sites they need at different times of the year or under different physical conditions (e.g. weather or water levels). It is recognised that introduced waterfowl are an important part of the Lake Wairarapa wetlands ecosystem and ecological processes, and that certain areas have been protected and developed primarily as waterfowl habitat. Whenever further development of waterfowl habitat will have adverse impacts on other natural values, the conflict will have to be resolved case by case.

In habitat enhancement or creation work, priority will be given to enhancing areas of remnant native vegetation, which will be fenced and planted with appropriate species to extend and improve the quality of the sites.

The wetlands have a long history of human habitation and sites of early habitation are an important component of the character of the wetlands and so should be preserved. An archaeological site is defined in the Historic Places Act 1980 as a site associated with human activity which occurred more than 100 years ago. The Act makes it an offence to modify, damage or destroy any archaeological site. The Historic Places Trust maintains a national register of historic sites.

Sites of historic interest less than 100 years old can be protected by Heritage Orders under the Resource Management Act 1991. The Orders can not only cover the site but also place controls on surrounding land uses which could affect the site. The responsibility for initiating Heritage Orders over sites in the Lake Wairarapa wetlands lies with the Department of Conservation, the Wellington Regional Council and the South Wairarapa District Council.

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.

The Lake Wairarapa wetlands comprise a regionally unique landscape containing a range of habitats that are unified and distinguished from their surroundings by their flat terrain, their distinctive vegetation, open spaces, and the presence of water.

The diversity of landscapes is related to the biological value of the wetlands, and when managing the wetlands for protection, flood control, commercial use and recreation, this diversity should be preserved. Landscape guidelines, based on a landscape assessment, is a means to co-ordinate the maintenance and enhancement of the essential components of the

wetland landscape. These guidelines would be used in the planning of habitat restoration schemes and the assessment of visual impacts of public utilities and buildings.

Landscape development will seek to enhance the biological, recreational and educational values of the wetlands and assist in the management of the wetlands by providing low-maintenance plantings and habitats.

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.

Marginal strips form a buffer between developed land and the natural feature being protected. Grazing of invasive exotic vegetation, such as tall fescue, is seen as a legitimate management tool; however edges of lakes, streams and drains provide valuable habitat to indigenous plants and provide spawning and feeding sites for fish. Fencing selected areas off to exclude stock can enhance wildlife values and also reduce erosion caused by trampling and wave action.

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.

Various introduced plants and animals are currently a problem in the Lake Wairarapa wetlands. Of particular concern are the invasion of tall fescue, willows, alder and gorse onto the eastern shore of Lake Wairarapa and the invasion of Mercer grass in lagoons and lakes east of Lake Wairarapa. In these cases habitat for native plants, waders and waterfowl is being lost, especially at high water levels, and the diversity of habitat types is declining since these species tend to form monocultures. The tall fescue additionally speeds up the rate of accretion on the eastern shore of Lake Wairarapa because it establishes very quickly on exposed shoreline at low lake levels and then traps sediment very efficiently and prevents wind erosion of the silt and so vegetated sandbars appear very rapidly and become stable fixtures. The Department of Conservation is looking at a range of options to manage tall fescue growth on land that it controls, including managed grazing, rotary slashing, scraping, and perhaps chemicals. The proposed water regime should help to slow the further spread of fescue because of the moderately high minimum levels set during the summer growing season of fescue.

The main problem animals are possums, which are vectors of bovine tuberculosis. Possums living in areas of willow and alder move out into nearby pasture to feed, where they transmit disease to farm stock. Mustelids and feral cats can cause significant losses at waterfowl, wader and Caspian Tern breeding sites.

Recently, Canada Geese have been introduced to Lake Wairarapa as a game bird and their numbers have increased very rapidly to over 1000 birds in January 1991. They are grazing birds which, like all grazers, prefer the more succulent plant species. In high numbers, they could therefore be a source of conflict with farmers. Fish and Game Council will monitor the Canada Goose population and set limits which will not cause significant conflicts with agricultural interests. Measures for controlling Canada Geese, such as having a limited season in the autumn, could be in conflict with other wildlife values and recreational users.

1.1.5 FIRES

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

Fire permits are issued subject to the South Wairarapa District fire plan and any seasonal restrictions that may be imposed by the South Wairarapa District Council or the Department of Conservation. A permit from the Department of Conservation is needed for any fires within 1.0 km of Department of Conservation estate. It is recognised that fires may be a useful management tool on both private and Crown land.

For policies on fires at campsites see Policy 3.1.5 [a].

Objective

- 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 origin, 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 Wahitapu and Urupa.

Despite the importance of the Lake Wairarapa wetlands to the Maori people over several hundreds of years, relatively few archaeological sites of Maori origin remain intact. This is probably because of the great changes to the extent and shape of the Lake Wairarapa

wetlands over the past 150 years, partially through the effects of the 1855 earthquake and partially because of pastoral development. Those sites already identified and any sites discovered in the future are protected by the Historic Places Act 1980. The Act makes it an offence to modify, damage or destroy any archaeological site, and makes provision for the maintenance of a national register of sites. Additionally, because of the special significance of certain sites to Iwi, it may be appropriate not to advertise their whereabouts, or to restrict access to these sacred sites by people or farm stock.

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.

With the changes to the Lake Wairarapa wetlands over the past 150 years many traditional fishing sites and sources of plant materials such as flax, ti (cabbage tree) and pingao have been lost or greatly reduced. With appropriate management and plantings, some of these sites could be restored specifically for the sustainable harvest of cultural materials, which would have the additional benefit of increasing habitat diversity for wildlife.

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.

The National Water Conservation Order (Appendix 4) protects the wildlife habitat, which in part is created by the natural fluctuations of water levels, particularly along the eastern lakeshore. This wildlife habitat is declared an outstanding feature. The National Water Conservation Order was gazetted for Lake Wairarapa in early 1989, after the Acclimatisation Societies had applied for the order in 1984. The Order protects the outstanding wildlife values of the Lake by prohibiting the issue of new water rights for the Lake that would significantly diminish these values. It permits existing water rights to be renewed and provides for the continued operation of the barrage gates.

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 water 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.

A variety of different habitats exists within the wetlands due primarily to the quality of the water entering them. In the south the tidal entry of sea water into Lake Onoke sets up a brackish water system which gradually disappears in the Ruamahanga River. Boggy Pond until recently had a high water quality; the only water input, after it had been isolated by stopbanks as part of the Lower Wairarapa Valley Development Scheme, was from rain, which is low in nutrients. This probably benefited the native plants by not favouring exotics, which thrive in a high nutrient environment. The opening of the stopbank between Matthews Lagoon and Boggy Pond has allowed water to enter Boggy Pond from Matthews Lagoon. This has apparently led to an increase in exotic plants, and these now threaten the existence of the rare plant Amphibromus fluitans, which seems to prefer low nutrient water. More recently, water has been drawn from Oporua Floodway into Boggy Pond to maintain summer lake levels, but the nutrient content of this water is not known.

The current mechanism to maintain water quality is to classify the water under the Water and Soil Act 1967. The purposes to which the water is to be put determine the quality desired, for example, for drinking, swimming, or taking shellfish. All uses of the water must then meet the parameters of the classification. The Resource Management Act will continue water classifications under section 69. The classifications set out in the Resource Management Act's Third Schedule differ from those existing at present, and it will be possible to design classifications to fit individual situations. Classes AE, FS, and NS in the Resource Management Act may all apply in the core area.

The waters of the core area were classified in 1967. The area around Lake Domain and 200 yards into the lake were classified C (Gazette, 14 April 1967). All the rest of the freshwaters are Class D. There is no classification of sea waters at present.

The National Water Conservation Order for Lake Wairarapa further protects the water quality by prohibiting the issue of water rights that would diminish the wildlife habitat. The relationship between the classification and the Conservation Order is governed by section 21(3A) of the Water and Soil Conservation Act 1967. This section deals with the issuing of water rights. A water right to discharge waste must meet the specifications set out by the water classification. The combined effect of all the water rights must also be within the conservation order, and conditions are imposed to ensure this.

The Resource Management Act will continue National Water Conservation Orders under section 368 (2b), which is substantially the same as the provisions made under the Water and Soil Act 1967. Water classifications will become part of regional plans under section 397(2b) of the new Act.

The Wellington Regional Council already does some water quality and salinity monitoring in the core area and in streams flowing into the core area. This includes an annual heavy metal survey of the discharge from the Featherston sewage ponds, which are also monitored monthly for nutrient levels. A programme of monthly sampling from 10 tributaries to the Lake Wairarapa wetlands is being set up by the Wellington Regional Council. Samples will be analysed for nutrients, biochemical oxygen demand, dissolved oxygen, temperature, conductivity and pH. Water courses with high nutrient loads will be identified and appropriate action taken to remedy this. All discharges into the waters must meet certain

standards, either to comply with water right requirements or to meet the water classification. The Department of Conservation and Wellington Regional Council will measure the rate of erosion or accretion from transect lines around the lakeshore. These transects were set up by the Wairarapa Catchment Board in 1985 to record changes to lakeshore vegetation and topography. The relationship between lakeshore vegetation and lake levels is close.

Geologically, wetlands are only temporary structures, but the condition of the river catchments can often accelerate their demise. High sediment loads can fill in areas quite quickly. Many examples of this dynamic process are evident around the Lake Wairarapa system, such as the deltas at the mouth of the Tauherenikau River and Oporua Floodway. Although new habitat is created by the material deposited, native plants in particular are often unable to cope with rapid change. Today, to allow the survival of the little wetland habitat that remains, soil conservation measures should be used to protect these areas from such accelerated aggradation.

Soil conservation measures include replanting barren slopes and stabilising stream channels to reduce the impact of water run-off. As a result, the silt load carried by streams is less, enhancing the water quality. Control of pests, such as possums, that destroy vegetation is an important part of this work. The streams entering the western part of Lake Wairarapa originate mainly in the bush-covered Rimutaka Range, but streams and drains entering the eastern part of the lake traverse farmland and so have a higher nutrient load.

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.

(That is, leave the barrage gates open as long as water flows out of the Lake until the 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.

The Co-ordinating Committee agreed that a minimum water level regime should be adopted, not the average levels which have been used as the basis of lake level management in the past. That is, instead of having target levels that are open to misinterpretation, specific and clearly understood minimum levels are set.

The proposed levels aim to enhance the wildlife habitat while accommodating flood flows. Vegetation surveys have established that most marshland lies above the 10.05 m level, and the marshland mosaic changes to 'dryland' vegetation at about a level of 10.38 m. Different varieties of birds will use the different zones (Moore *et al.* 1984). The higher summer lake level aims to suppress the growth of fescue, which quickly replaces the feeding and roosting habitat of waders and waterfowl along the eastern shore. Fescue also increases the rate of sedimentation by trapping debris. Higher summer levels will help maintain the wetland environment in surrounding areas. Fluctuations in levels also aid flowering of native plants, many of which require exposure to air to flower.

The lower winter level allows a larger storage capacity in Lake Wairarapa for floodwater, and improved drainage in surrounding farmland.

Keeping the lake levels below 10.3 m is seen as desirable to provide adequate feeding areas for wading birds and to protect farmland.

The water regime minimises the backflow of water from Lake Onoke and the Ruamahanga River. This water is likely to be more saline, making it unsuitable for irrigation purposes.

Vegetation profiles of the eastern lakeshore are monitored to establish any changes over time which may relate to the water regime. The rapid spread of fescue, a vigorous and unpalatable introduced grass, is an example.

The number and species of wading birds using the eastern shore of Lake Wairarapa have been monitored by the Ornithological Society of New Zealand for seven years. The Fish & Game Council and its predecessors have monitored the numbers of waterfowl using the Lake Wairarapa wetlands for several decades. Both monitoring programmes are expected to continue.

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, fisheries, 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.

The outlet of Lake Onoke is opened artificially on average nine times each year. A contractor is notified when the lake opening has closed, and stands by until the lake reaches 10.6 m as recorded on the gauge near the Lake Ferry Hotel. A new outlet can be made in a few hours with favourable conditions, but in a big sea swell the outlet can remain closed for several days or even weeks. The Lake Onoke outlet would open naturally given enough water in the lake to top the sand bar, but this may not happen before the water damages flood protection works and causes severe flooding.

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.

Several existing water rights impact on the core management area. One of the major rights is for flood mitigation. The Operations Department of the Wairarapa Division, Wellington Regional Council, after community consultation, applied for a water right to enable it to operate the Lower Wairarapa Valley Development Scheme. Water Right No.900071 was granted on 26 March 1991, as follows:

"To dam and divert natural water from Lake Wairarapa and the Ruamahanga River by operation of the Geoffrey Blundell Barrage Gates to provide flood control for the Lower Wairarapa Valley, and to maintain minimum season water levels in Lake Wairarapa for environmental purposes, subject to the following special conditions:

- (1) Minimum lake levels will be pursued, that is the gates will be closed when these levels are achieved.
- (2) Levels will be those recorded at the Council's Western Lake recorder site at Burlings.
- (3) The minimum lake levels will be -
 - (a) Summer minimum 10.15 metres (1 December to 28 February)
 - (b) Autumn minimum 10.00 metres (1 March to 31 May)
 - (c) Winter minimum 9.95 metres (1 June to 30 September)
 - (d) Spring minimum 10.00 metres (1 October to 30 November)
- (4) When Lake Wairarapa levels exceed 10.3 metres and a minimum head difference of 0.15 metres is evident, all Gates will be opened at least until the level of 10.3 metres is achieved.
- (5) The backflow of water from Lake Onoke and the Lower Ruamahanga River will be prevented. However, under conditions which may lead to damage of the stopbanks in these locations, backflow will be permitted. Such conditions typically occur when levels of 11.00 metres or greater occur at the Lake Onoke recorder site.
- (6) Provision is provided for variances to be made from the above conditions to cope with emergency (property and life threatening) situations that may arise. Variations under such conditions are at the discretion of the Divisional Manager, Wairarapa.
- (7) A review of the proposed water regime, involving the Lake Wairarapa Co-ordinating Committee and all other interested parties, is to be completed prior to 1 June 1994."

At the same time a second Water Right No.900072 was granted. This was to divert natural water from Lake Onoke into Palliser Bay by maintaining hydraulically efficient lake openings (via mechanical operations) as required for flood control purposes in the Lower Wairarapa Valley.

The following special conditions were attached:

- "(1) Operations to open the lake are to commence once a level of 10.6m or greater is recorded at the Lake Onoke recording station, subject to prevailing sea and tide conditions.
- (2) Provision is provided for variances to be made from the above condition to cope with emergency, property and life threatening situations that may arise. Variations under such conditions are at the discretion of the Divisional Manager, Wairarapa.
- (3) A review of the proposed water regime, involving the Lake Wairarapa Co-ordinating Committee and other interested parties is to be completed prior to 1 June 1994".

Both water rights expire on 31 May 1994 and will be subject to a consultative review before this time.

Water rights are held for irrigation purposes by several of the eastern lakeshore dairy farms. Some of the larger abstractions are at the Moonmoot pumping station north of the barrage gates. The Whakawiriwiri drain collects several discharges from dairy units; this material would find its way to the lake through the Oporua/Floodway. The Longwood water race system similarly discharges into several of the tributaries to the lake such as the Tauherenikau River, Bartons Lagoon and Abbotts Creek. The Te Opai Lagoon area has drainage works established and also receives discharges of dairy effluent. The Featherston sewage treatment ponds also discharge into Donalds Creek and from there via Abbotts Creek into the lake.

Other water rights in the core area are for the purpose of maintaining and enhancing environmental values. The Fish and Game Council holds several water rights. It can pump water from a drain on the Oporua Floodway into the Matthews Lagoon/ Boggy Pond area in the summer months. Similarly, water can be backflowed from the Ruamahanga River under flood conditions into the reserve area, maintaining the wetland environment. The J K Donald Reserve can be supplemented with water diverted from the Otakura Stream. Simmonds Lagoon has been stopbanked and dammed to maintain water levels. The Department of Conservation is similarly enhancing the Wairio wetland area by a system of stopbanking and weirs that prevents water from flowing into Lake Wairarapa but allows water to enter the area when the lake is high.

These water rights will remain in effect until they are reviewed, when they will be re-assessed. Information about water rights is held at the Wellington Regional Council offices in Masterton.

There are several flood pumps throughout the area that operate in times of flooding to pump water away from farmlands and back into the river system.

The artificial opening of Lake Onoke may upset the natural patterns of fish migration. However, keeping the lake open may also maintain feeding grounds for wading birds and create recreation fishing opportunities at the lake mouth. Feeding grounds for birds will diminish as the lake level rises and water is constrained by stopbanks. Monitoring the conservation and recreation values of Lake Onoke in relation to the state of the lake mouth will provide information on the effects of the new water right to open the outlet. Likewise, members of the Co-ordinating Committee will monitor the effects on wildlife, recreation and farming values of the new water right for the operation of the barrage gates at the outlet of Lake Wairarapa.

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.
- 3.2 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.

3.1.1 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.

The information below about recreational activity is largely derived from the various user groups. The Co-ordinating Committee will be able to monitor the level of activity and its impacts.

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.

The Yacht Club has club rooms, jetty, boat ramp and storage sheds at the Lake Domain. The Yacht Club's use of the Lake is largely confined to the northwest corner, where there is adequate water depth. Shallow water restricts wider use of the lake. Lake Onoke has the potential to be a venue for an attempt on a world sailing speed record, as the spit creates an area of consistent wind strength. Further camping facilities may be needed for large events. Current use of Lake Onoke is low, but there has been a renewal of interest in yachting on Lake Wairarapa. Like yachting, windsurfing (popular on Lake Onoke), rowing and canoeing are unlikely to conflict with other lake users.

Powerboating is well established, largely on the lower Ruamahanga River in front of the clubhouse. The Ruamahanga River is the most suitable stretch of water for powerboating in the Wairarapa. Lakes Wairarapa and Onoke are little used for powerboating because they are shallow and have many snags. The Power Boat Club has a boat ramp, club rooms and toilets near the barrage gates.

The Hovercraft Club, which has a clubhouse northeast of the Yacht Club's, meets once a month if the wind is favourable. At present, four hovercraft are in use, but this is expected to increase slightly. Most of the craft have a special exhaust system to minimise noise, and the Club believes that the craft have little impact on wildlife. Lake Wairarapa is one of the few suitable areas in the Wellington Region to use hovercraft. September to April is the main period they are used and this could potentially conflict with the birds nesting on the eastern shore and around rivermouths on the northern and western shore.

Potential conflicts between motorised boating and other users include noise activity that disturbs wildlife or people fishing, propellers increasing turbidity, and boats causing some erosion from shoreline wash. All boating uses on the lakes are limited by wind conditions and the shallow water depth.

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.**

The area is important for recreational fishing for flounder, eels, trout, whitebait, kahawai and perch. It also supports some commercial fishing of flounders and eels. Conflict between the two groups arises from competition for a limited resource, particularly flounder. There are also problems with the lack of a quota for the eel take, which can lead to overfishing of eels.

It is suspected that the fishery has been affected by the barrage gates and river diversion. These have resulted in a reduction of fishing area for estuarine species to the lower Ruamahanga River and Lake Onoke.

These management guidelines do not have the statutory authority to regulate fishing activity; that is covered by the Fisheries Act 1983, and the Maori Fisheries Act 1989. However, it has been suggested that the creation of a taiapure (local fishery) area for the core area would be a good mechanism to manage the fisheries. Consequently the Co-ordinating Committee supports the creation of a taiapure in this area.

The Department of Conservation has commissioned MAF Fisheries to study the status of the Lake Wairarapa fishery and the effects on fish movement of the fish pass at the barrage gates and flap-gates within the wetland system. The study will also include a recreational user survey. Results of this research will be useful in assessing the current water rights and provide other useful information for the management of the wetland system.

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.

Game bird hunting around Lake Wairarapa has been practised for many years. It is an important area within the southern North Island for game bird hunting. Half the hunters using the core area come from the Wairarapa and half from Wellington and further afield. The opening weekend often attracts regular hunters from Auckland. A total of 700 hunters visits the Lake Wairarapa wetlands during an average season, with 450 present during the opening weekend. The eastern wetlands area has the greatest concentration of hunters. The total bag (catch) from the core managed area for the season is 8000 - 10 000 ducks, 3000 Black Swans, 500 Paradise Shelducks and 300 Canada Geese. Before 1970, access for hunting was by arrangement with private landowners. The acquisition of land for public use, i.e. Boggy Pond and the J K Donald Block, has increased public access to the wetlands.

The hunting area managed by the Fish and Game Council (see Appendix 5) comprises most of the eastern side of Lake Wairarapa and has 152 two-person hunting stands available. Hunting from Lake Domain is administered through a Committee of the South Wairarapa District Council. Hunting on the northern and western sides of the Lake is by access through private land. Pounui Lagoon also has about 15 stands available, access being through private land. Most hunters use permanent stands but a few use mobile stands, depending on the lake level fluctuations.

The duck hunting season is currently for the two months May and June. Most shooting is from hunting stands, but these are not needed to shoot Canada Geese.

The Co-ordinating Committee defined a hunting stand as "a camouflaged shelter for the purpose of shooting from; it does not include any form of accommodation. After the first weekend of the shooting season, the stand should be available for use by any hunter according to hunting protocol." Over the years some hunting stands have been turned into baches and used for accommodation.

Hunting protocol means that hunting stands in the managed hunting areas are exclusive only for the opening weekend of the season, by arrangement with the Fish and Game Council. All hunting stands are allocated, initially by public ballot, on a permanent basis to pairs of hunters. Annual application is required for hunters to retain their allocated stand, and this is automatic, provided they have complied with the basic rules of use. Hunting stand owners have a preferential right to use their stand until 7.30 a.m., but at other times stands are available to hunters for casual use.

Hunters have used mobile stands of many and various forms to reach their favourite shooting grounds along parts of the eastern shore of Lake Wairarapa. These mobile stands are engineering marvels that range from home-built machinery to camouflaged tractors and/or trailers. Although these machines have allowed hunters to chase good locations as water levels fluctuate, they do have their drawbacks: they are not available for other users of this important hunting area, making sections of hunting ground unavailable to other users, and the shifting of hides from place to place can disturb other hunters and damage native turf communities on the bed of the lake.

The Fish and Game Council will monitor numbers of Canada Geese, and will set bag limits that maintain numbers at a level which will not cause significant conflict with agricultural interests.

3.1.5 PICNICKING/ SWIMMING

- [a] **To develop to a high standard any picnic areas created to meet increased demand.**

The Co-ordinating Committee identified potential picnic sites (in priority order) as Lake Ferry, Lake Domain, the Boat Club/barrage gate areas and Kilmore Lodge (Boggy Pond).

The level of picnicking around the wetlands is low. Picnicking requires good road access. The picnic sites identified are those most heavily used and they provide a variety of settings with a range of opportunities for development. These areas would be developed in conjunction with local authorities.

The Tauherenikau River mouth (Rangipo) is well patronised for swimming. The two main lakes are too shallow and muddy to be popular for swimming, and the mouth of Lake Onoke is dangerous for swimming.

3.1.6 CAMPING

- [a] **To allow serviced camping incorporating approved barbeques 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.**

Lake Onoke and Lake Domain already have some facilities, which could be developed further before new areas need to be developed. Servicing of campsites would be restricted to those areas above, and camp fires would be restricted to the facilities provided.

Pollution of other non-serviced sites may be a problem. Given the unsuitable weather for camping in the district, long-stay campers should not become an issue.

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.

In the wetlands reserves, private baches have been built without the consent of the Department of Conservation. Baches have an effect on the environment. The most obvious is the visual effect of buildings in a natural or semi-natural landscape. Other effects are changes caused to recreation patterns, to pollution levels [sewage\ rubbish], vegetation and landforms.

Baches do not necessarily affect the landscape and conservation values adversely. Licensing could be used to provide a means of control for existing baches with historical, cultural or landscape 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.

Two distinct groups were seen to be interested in this activity. The serious ornithologist/botanist only needs access to the eastern shore of Lake Wairarapa and Lake Onoke Spit. The more casual visitors, seeking a view of nature they might not otherwise get, need tracks and hides developed in areas at Lake Domain and 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.

The major limitation on walking activity is access, and where walkways are to cross private land the agreement of owners would be needed first. There is a need to identify clearly and signpost existing accessways. Specifically additional access could be developed into Willow Island, Papatahi/Waiorongomai boundary on the western shore of Allsops Bay, the landing reserve, the western bank of the Ruamahanga (from the barrage to Lake Onoke), Pounui Lagoon stopbank, and along the Waiorongomai shoreline. A very attractive walkway along the western shore could be developed to complement the opportunities on the eastern shore and provide a complete picture of Lake Wairarapa.

Potential conflict exists between nature watching or walking and game bird hunting, although the times of year for these activities are largely mutually exclusive. Access for walkways over private land may have to include agreements to close the walkway during critical times of the farming year, such as the lambing season.

3.1.10 VEHICLES

- [a] To restrict the use of vehicles to formed roads and tracks only, except for management purposes.

Recreational vehicles, such as trail-bikes and 4-wheel drives, within the core area conflict with conservation values and with other users, through noise pollution and damage to wetland habitats.

3.2.1 SCIENCE

- [a] To encourage research of benefit to the understanding, management, and interpretation of the Lake Wairarapa wetlands.

Scientific research by statutory organisations and scientific societies has helped the Coordinating Committee to understand the geological and biological features and processes of the Lake Wairarapa wetlands and to draw up these management guidelines. Further scientific studies will be encouraged where these will help to understand and manage the wetland system, or to monitor changes, either natural or induced by management.

Objectives

- 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.
- 3.4 To ensure that conflicts between competing uses of the intrinsic features and facilities of the area are minimised and to concentrate development as far as possible either outside the Lake Wairarapa wetlands or in specific amenity areas.

3.3.1 GRAZING

- [a] To issue grazing licences on reserve and stewardship land when necessary to maintain and enhance conservation values.

Grazing is a management tool used to control the large areas of exotic grass on the margins of the wetland. The invasion by exotic grasses reduces the habitat of the wetland birds and invertebrate food sources, excludes native plants, and adds to the fire risk in summer. Grazing on reserves supplements the area of grazing available on private land, especially in summer.

Overgrazing in wet habitats can very severely affect conservation values, and so all grazing needs to be monitored closely and site-specific grazing regimes should be developed that take into account the conservation values of the site.

3.3.2 COMMERCIAL FISHING

- [a] To advocate to the Ministry of Agriculture and Fisheries that commercial fishing of flounders and eels be set at a level which does not prejudice recreational fishing and fish populations.

Fishing of eels and other fish within the wetland system by the Tangata Whenua and Europeans is a long established activity. Today commercial fishing is restricted primarily to eel and flounder. The Committee was of the opinion that the current level of fishing is threatening the value of the area as a recreational fishery, and that commercial fishing should be limited.

Under the provisions of the Reserves Act 1977, commercial fishing is not permitted within Wildlife Management Reserves and so this activity is not allowed in Boggy Pond/Matthews Lagoon, the Ruamahanga cutoff, or parts of Allsops Bay.

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.

The Committee saw no reason for excluding from the wetlands commercial recreation such as horse trekking, canoeing, or guided walking, provided the conditions above are met and the commercial recreation activities are in accordance with the policies for non-commercial recreation. The Co-ordinating Committee at its annual meetings will assess the effects on conservation values of any commercial activity.

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]

Mining is incompatible with the conservation objectives of the wetlands and will generally be opposed by the Committee.

All applications for mining and mineral exploration should be subject to a resource consent application to the relevant statutory authority and should be accompanied by an environmental impact assessment and a mining operations plan.

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.

Public utilities such as power lines and pipelines may conflict with the conservation values of the wetlands. Power pylons in particular may detract from the scenic qualities of the wetlands and can be a hazard to waterfowl and other birds. The Committee considered public utilities to include windmills for electricity generation, power pylons and other power lines, pipelines, telecommunications facilities, roads and railways.

The visual impact of public utilities should be carefully assessed, and any adverse effects mitigated. Landscape guidelines, as proposed in Section 1.1.2, will assist in the assessment of the visual effects of public utilities.

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.

Objective

- 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.

Information on Lake Wairarapa should initially be provided at the Featherston Information Centre. The Centre is a good initial contact site to provide information on wetland management, ecology, recreational opportunities and access.

There are many opportunities for the wetlands to be used for educational purposes but few are realised at present. The Co-ordinating Committee considered that the provision of a visitor centre at the Lake Domain would be the best option for realising the educational potential of the wetlands. There are formal and informal aspects of the educational potential of the area. The formal opportunities relate largely to schools, with opportunity available to incorporate aspects of wetland management and ecology into school science programmes. Resource kits could be prepared on specific subjects.

Informal opportunities for education are largely in interpretation and the general provision of information to the public. The provision of a visitor centre at Featherston, the promotion of the Lake Wairarapa wetlands as a component of a wider area of wildlife interest, and the production of a leaflet are some of the options available.

Education and information provision is one of the key methods in reducing conflict among lake users. It is also the key method to increase appreciation of the wetland environment. The Department of Conservation, Regional and District Councils, and other statutory bodies will be encouraged to provide information for the public on access routes and the conservation values of the wetlands.

Objective

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.

The Co-ordinating Committee will consist of representatives from statutory organisations, Iwi, adjoining landowners, main user groups, and scientific organisations. The Committee should meet at least annually to discuss annual operational plans of the statutory organisations, management of the wetlands and any issues which have arisen. Special meetings can be called at any other time to discuss any outstanding and urgent issue. The Department of Conservation is requested to provide ongoing administrative support for the Co-ordinating Committee, in conjunction with the other statutory bodies.

The Co-ordinating Committee has a role in reviewing the water regime for the the wetlands, established in March 1991 by water rights no. 900071 and 900072 granted to the Operations Section of the Wairarapa Division of the Wellington Regional Council. Both water rights expire in May 1994 and are subject to a condition that a review of the proposed water regime involving the Lake Wairarapa Co-ordinating Committee and all other interested parties is completed before 1 June 1994. The review will be used to evaluate the appropriateness of the water regime for the conservation values, agricultural uses and recreational uses of the wetlands.

After 1994, the role of the Co-ordinating Committee should be reviewed by the persons and organizations involved.

Some private land within the wetlands is of high conservation value and with the consent of the landowners should be protected in perpetuity. For example, Ducks Unlimited has recently covenanted its property with the Queen Elizabeth II Trust Board.

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APPENDIX 1: CRITERIA FOR IDENTIFYING WETLANDS OF INTERNATIONAL IMPORTANCE

1. Quantitative criteria for identifying wetlands of importance to waterfowl.

A wetland should be considered internationally important if it:

- (a) regularly supports either 10,000 ducks, geese and swans; or 10,000 coots; or 20,000 waders;
- or (b) regularly supports 1% of the individuals in a population of one species or subspecies of waterfowl;
- or (c) regularly supports 1% of the breeding pairs in a population of one species or subspecies of waterfowl.

2. General criteria for identifying wetlands of importance to plants or animals.

A wetland should be considered internationally important if it:

- (a) supports an appreciable number of a rare, vulnerable or endangered species or subspecies or plants or animal;
- or (b) is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna;
- or (c) is of special value as the habitat of plants or animals at a critical stage of their biological cycles;
- or (d) is of special value for its endemic plant or animal species or communities.

3. Criteria for assessing the value of representative or unique wetlands.

A wetland should be considered internationally important if it is a particularly good example of a specific type of wetland characteristic of its region.

Note: Waterfowl are defined as birds which depend on water habitats and so include waders.

APPENDIX 2: BIRDS OF THE LAKE WAIRARAPA WETLANDS

Key:

Category : E = endemic, N = native, M = migrant, V = vagrant, I = introduced

National Conservation Status : E = endangered, T = threatened, R = rare
based on Bell (1986)

Lake Wairarapa Status : R = resident, M = migrant, I = irregular, V = vagrant, E = extinct
s = summer only, w = winter only
lower case indicates low maximum numbers (<c.100)

Breeding : C = certain, P = possible (in some or all years)

	Category	National Conservation Status	L. Wairarapa Status	Breeding
New Zealand Dabchick	E	T	r	C
Fluttering Shearwater	E		I	
Gannet	N		I	
Black Shag	N		R	C
Pied Shag	N		v	
Little Black Shag	N		r	C
Little Shag	N		R	C
Spotted Shag	E		I	
White-faced Heron	N		R	C
White Heron	N	T	r	
Little Egret	V		v	

Poliocephalus rufopectus
Puffinus gavia
Morus serrator
Phalacrocorax carbo
Phalacrocorax varius
Phalacrocorax sulcirostris
Phalacrocorax melanoleucos
Stictocorbo punctatus
Ardea novaehollandiae
Egretta alba
Egretta garzetta

	Category	National Conservation Status	L. Wairarapa Status	Breeding
Cattle Egret	M		iw	
Nankeen Night Heron	V		v	
Australasian Bittern	N	T	r	C
Glossy Ibis	V		v	
Royal Spoonbill	N	T	i	
Mute Swan	I		i	
Black Swan	I		r	C
Canada Goose	I		r	C
Paradise Shelduck	E		r	C
Chestnut-breasted Shelduck	V		v	
Mallard	I		r	C
Grey Duck	N		r	C
Grey Teal	N		r	C
Australasian Shoveler	N		r	C
New Zealand Scaup	N		r	C
Australasian Harrier	E		i	
NZ Falcon	N		r	C
California Quail	E		T	
Brown Quail	I		r	P
Ring-necked Pheasant	I		r	P
Banded Rail	I		r	P
Spotless Crake	N		v	C
Marsh Crake	N		r	C
Pukeko	N		r	C
Australian Coot	N		r	P
Pied Oystercatcher	N		i	C
Variable Oystercatcher	E	R	m	C
Pied Stilt	N		r	C
Black Stilt	E	E	r	C
			i	

- Bubulcus ibis
- Nycticorax caledonicus
- Botaurus potoiophilus
- Plegadis falcinellus
- Platalea regia
- Cygnus olor
- Cygnus atratus
- Branta canadensis
- Tadorna variegata
- Tadorna tadornoides
- Anas platyrhynchos
- Anas superciliosa
- Anas gracilis
- Anas rhynchos
- Aythya novaeseelandiae
- Circus approximans
- Falco novaeseelandiae
- Callipepla californica
- Synotus ypsilophorus
- Phasianus colchicus
- Rallus philippensis
- Porzana tabuensis
- Porzana pusilla
- Porphyrio porphyrio
- Fulica atra
- Haematopus ostralegus
- Haematopus unicolor
- Himantopus himantopus
- Himantopus novaeseelandiae

	Category	National Conservation Status	L. Wairarapa Status	Breeding
Banded Dotterel	E	T	R	C
Black-fronted Dotterel	N		R	C
Wrybill	E	T	m	
Pacific Golden Plover	M		Ms	
Spur-winged Plover	N		R	C
Turnstone	M		Ms	
Lesser Knot	M		Ms	
Curlew Sandpiper	M		Ms	
Sharp-tailed Sandpiper	M		is	
Pectoral Sandpiper	M		ms	
Red-necked Stint	M		ms	
Whimbrel	M		ms	
Little Whimbrel	M		vs	
Bar-tailed Godwit	M		vs	
Black-tailed Godwit	M		Ms	
Hudsonian Godwit	M		vs	
Greenshank	M		vs	
Marsh Sandpiper	M		is	
Lesser Yellowlegs	M		is	
Great Skua	M		vs	
Black-backed Gull	N		iw	
Red-billed Gull	N		R	C
Black-billed Gull	N		R	P
White-winged Black Tern	E		R	
Black-fronted Tern	M		vs	
Caspian Tern	E	T	mw	
White-fronted Tern	N	T	R	C
Little Tern	E		R	P
	M		is	

Charadrius bicinctus
Charadrius melanops
Anathynchus frontalis
Pluvialis fulva
Vanellus miles
Arenaria interpres
Calidris canutus
Calidris ferruginea
Calidris acuminata
Calidris melanotos
Calidris ruficollis
Numenius phaeopus
Numenius minutus
Limosa lapponica
Limosa limosa
Limosa haemastica
Tringa nebularia
Tringa stagnatilis
Tringa flavipes
Catharacta skua
Larus dominicanus
Larus novaehollandiae
Larus bulleri
Chlidonias leucopterus
Sterna albobriata
Sterna caspia
Sterna striata
Sterna albifrons

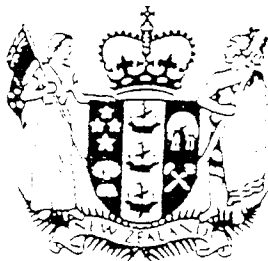
	Category	National Conservation Status	L. Wairarapa Status	Breeding
New Zealand Pigeon	E		r	P
Rock Pigeon	I		r	C
Eastern Rosella	I		r	P
Shining Cuckoo	N		ms	C
Morepork	N		r	P
New Zealand Kingfisher	N		R	C
Skylark	I		R	C
Welcome Swallow	N		R	C
Fairy Martin	N		R	C
New Zealand Pipit	V		v	C
Duncock	N		r	C
Blackbird	I		R	C
Song Thrush	I		R	C
Fernbird	I		R	C
Grey Warbler	E		E	C
New Zealand Fantail	E		R	C
Silvereye	N		R	C
Bellbird	N		R	C
Tui	E		i	C
Yellowhammer	E		r	C
Chil Bunting	I		r	C
Chaffinch	I		r	P
Greenfinch	I		R	C
Goldfinch	I		R	C
Redpoll	I		R	C
House Sparrow	I		R	C
Starling	I		r	C
Australian Magpie	I		R	C
Rook	I		R	C
	I		r	C
<u>Hemiphaga novaeseelandiae</u>				
<u>Columba livia</u>				
<u>Platycercus eximius</u>				
<u>Chrysocolaptes lucidus</u>				
<u>Ninox novaeseelandiae</u>				
<u>Halcyon sancta</u>				
<u>Alauda arvensis</u>				
<u>Hirundo tahitica</u>				
<u>Hirundo arcticus</u>				
<u>Anthus novaeseelandiae</u>				
<u>Prunella modularis</u>				
<u>Turdus merula</u>				
<u>Turdus philomelos</u>				
<u>Bowdleria punctata</u>				
<u>Gerygone olivacea</u>				
<u>Rhipidura fuliginosa</u>				
<u>Zosterops lateralis</u>				
<u>Anthornis melanura</u>				
<u>Prothemadera novaeseelandiae</u>				
<u>Emberiza citrinella</u>				
<u>Emberiza ciris</u>				
<u>Fringilla coelebs</u>				
<u>Carduelis chloris</u>				
<u>Carduelis carduelis</u>				
<u>Carduelis flammea</u>				
<u>Passer domesticus</u>				
<u>Sturnus vulgaris</u>				
<u>Gymnorhina tibicen</u>				
<u>Corvus frugilegus</u>				

APPENDIX 3: Annual minimum and maximum levels of Lake Wairarapa as measured at Burlings gauge. Data from the Wellington Regional Council.

Pre-diversion			Pre-barrage			Post-barrage		
Year	Min	Max	Year	Min	Max	Year	Min	Max
1954	9.96	12.19	1968	9.92	11.54	1975	9.91	11.20
1955	9.73	12.25	1969	9.90	11.30	1976	9.95	11.20
1956	10.05	12.88	1970	9.93	11.68	1977	9.90	11.37
1957	9.98	11.91	1971	9.91	11.19	1978	9.95	10.64
1958	10.00	12.19	1972	9.97	11.53	1979	9.95	11.09
1959	9.71	12.21	1973	10.18	10.40	1980	9.95	10.96
1960	9.90	11.56	1974	9.91	11.27	1981	9.88	11.49
1961	10.07	12.90				1982	9.70	11.00
1962	9.80	11.65				1983	9.96	10.82
1963	9.90	11.59				1984	9.83	10.56
1964	10.00	12.40				1985	9.84	11.56
1965	9.91	12.07				1986	9.87	10.78
1966	10.00	11.72				1987	9.79	10.64
1967	9.96	10.44				1988	9.83	10.95
						1989	9.83	10.66
Mean:	9.93	12.00		9.96	11.27		9.88	10.99

Note 1: The minimum levels before 1980 are probably not very accurate because the inlet channel to the recorder was sometimes silted up, and consequently it would not record levels below about 9.90 m. The recorder was resited to prevent this problem. This is one reason why the average minimum is less post-barrage.

Note 2: The extreme levels are instantaneous figures, not averaged over time.



THE NATIONAL WATER CONSERVATION (LAKE WAIRARAPA)
ORDER 1989

PAUL REEVES, Governor-General

ORDER IN COUNCIL

At Wellington this 6th day of March 1989

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL

PURSUANT to section 20B of the Water and Soil Conservation Act 1967, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following order.

ORDER

1. Title and commencement—(1) This order may be cited as the National Water Conservation (Lake Wairarapa) Order 1989.

(2) This order shall come into force on the 28th day after the date of its notification in the *Gazette*.

2. Interpretation—In this order, unless the context otherwise requires,—

“Act” means the Water and Soil Conservation Act 1967;

“Lake Wairarapa” means the more or less continuous area of water commonly known as Lake Wairarapa, including the Ruamahanga Cut-off, in Featherston County, the shoreline of which is the outer edge of the area within which the vegetation changes from predominantly aquatic to predominantly terrestrial, except at the outlet of the lake, where the shoreline is the lakeward foot of the barrage gates. For the avoidance of doubt it is declared that the

shoreline adjacent to the land known as Lots 1 and 2 on Deposited Plan 4547 (Wellington Land District) is the lakeward foot of the stopbank on that land.

3. **Outstanding features**—It is hereby declared 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.

4. **Prohibition on water rights**—(1) No right to divert any water within Lake Wairarapa shall be granted under section 21 of the Act.

(2) No general authorisation to divert any water within Lake Wairarapa shall be made under section 22 of the Act.

5. **Water rights and general authorisations**—(1) No water rights shall be granted, and no general authorisation shall be made, 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.

(2) Nothing in this order shall be construed as limiting the effect of the second proviso to section 21 (1) of the Act relating to the use of water for domestic needs, for the needs of animals, and for or in connection with fire-fighting purposes.

(3) Nothing in this order shall prevent the renewal of any water right or general authorisation which is current on the commencement of this order.

(4) Subject to subclause (1) of this clause, nothing in this order shall prevent the issue from time to time of water rights in connection with the barrage gates at the outlet of Lake Wairarapa.

MARIE SHROFF,
Clerk of the Executive Council.

EXPLANATORY NOTE

This note is not part of the order, but is intended to indicate its general effect.

This order 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 order also includes various provisions to preserve and protect the wildlife habitat.

Issued under the authority of the Regulations Act 1936.

Date of notification in *Gazette*: 9 March 1989.

This order is administered in the Ministry for the Environment.

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WELLINGTON FISH & GAME COUNCIL

Ref: 12.04.01

LAKE WAIRARAPA CONSERVATION LAND - HUNTING MANAGEMENT

INTRODUCTION

The Lake Wairarapa Wetlands Management guidelines makes provision for controlled access for waterfowl hunting during the annual game season. Waterfowl hunting is a traditional use of this area and approximately 10% (500) of Wellington Fish & Game Council hunters take advantage of hunting opportunity provided by the Lake and wetlands each year. The establishment of the Department of Conservation in 1987 and allocation of Crown owned wetlands at Lake Wairarapa to the Department provided the opportunity to bring the control of hunting access to all of the areas into a single system.

AREA DESCRIPTION

Controlled hunting access will apply to the Conservation lands known as J K Donald Reserve, Boggy Pond Reserve, Matthews Reserve, Raumahanga Cut-off, Alsops Bay Reserve, Eastern Lake Wairarapa shore from the Tauherenikau River mouth to the north boundary of the Pierce property, Wairio farm lake shore from the Oporua spillway to Alsops Bay, Pounui Lagoons and Lake Onoke. Detailed descriptions of these areas can be found in the Management Guidelines.

TRADITIONAL HUNTING

Prior to 1960 the wetlands were in private ownership or were unoccupied Crown land. Access for hunting was under the control of private landowners. During the 1960's the Crown purchased large areas of Wairio (central eastern shore) and Roto (north eastern shore) for ultimate development as agricultural land. The Boggy Pond Reserve was set aside from development in 1968, followed by the Raumahanga Cut-Off, Matthews, J K Donalds (Roto), Alsops Bay and Pounui Lagoons in the mid 1970's. The eastern Lake shore farm development proposal was abandoned in 1981 and became Conservation land in 1987. From 1970 to 1978 Boggy Pond was balloted annually for hunting access by the Wellington Acclimatisation Society. Traditional access remained for hunters using all other areas. Prior to the 1979 game season all long term hunters using Matthews, Raumahanga Cut-Off and J K Donalds were identified and retained long term access to their stands. All Boggy Pond stands, plus a large number of new stands on the other Reserves, were allocated by ballot for the 1979 and subsequent seasons. This gave all standholders the right to use their allocated stand for opening weekend each year, provided they reapplied prior to each season and complied with conditions of entry for hunting. All game licence holders had the opportunity for applying for a casual permit to hunt on the Reserves after opening weekend and no restrictions were placed on the numbers of permits issued. This system was extended to cover the eastern lake shore in 1986. Traditional access remains for the Pounui Lagoons and Lake Onoke.

S C Smith
Manager

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STAND ALLOCATION

Policy:

All hunting stands will be allocated for opening weekend of the game season with annual right of renewal.

Policy:

Total stand numbers for the management area will not exceed the number used in 1991.

Hunters holding stands for the 1991 game season will have first right to their stands for 1992 and subsequent seasons, on application to the Wellington Fish & Game Council.

Policy:

Unoccupied stands and new stands will be allocated by public ballot and successful ballottees will have annual right of renewal.

Implementation:

- (i) Where existing stands are vacated (ie: not re-applied for) and where new stand locations are identified, written applications for these stands will be publicly advertised in mid-March.
- (ii) Where the number of applications exceeds the number of stands available a ballot, supervised independently, will be held to allocate the stands.
- (iii) Successful ballottees will be notified in early april and advised of entry conditions and renewal rights.

Policy:

All stands will be limited to two hunters as joint standholders unless otherwise authorised.

Policy:

Where one stand partner is unable to continue as a standholder, this must be notified by the remaining partner at the time of re-application and a new partner nominated.

CASUAL HUNTERS

Policy:

Any holder of a current game licence may apply for and obtain a general permit to hunt from any stand after the opening weekend of that game season.

Implementation:

- (i) Casual hunting permits will be issued, on application, to game licence holders.
- (ii) Casual permit holders will be provided with conditions of entry and access maps and information with their permits.

- (iii) The provisions of the Wildlife Act 1953 relating to the stand holder's right to occupy his/her stand prior to 7.30am on any day applies.

STAND CONSTRUCTION

Policy:

Hunting stands in all areas are to be constructed of permanent materials to minimum standards set by the Department, and maintained to this standard.

Policy:

All damaged or disused stands are to be removed from the hunting areas by standholders.

Implementation:

- (i) Standholders will be provided with details of stand construction materials and minimum standards for stands.
- (ii) Existing stands that do not comply with required standards are to be modified or reconstructed prior to the 1992 game season. All surplus material is to be removed from the area.

Policy:

All construction and maintenance is to be completed two weeks prior to the opening of the game season.

CONDITIONS OF ENTRY FOR HUNTING

1. All persons entering on to the Conservation Lands for waterfowl hunting must carry a current entry permit issued in their name.
2. Standholders must occupy their stand on opening morning of the game season. If he/she is unable to do so for any reason the Fish & Game Council must be notified.
3. Standholders have the right to occupy their stand prior to 7.30am on any day after opening weekend. After that time any holder of an entry permit may use any unoccupied stand.
4. All waterfowl hunting is to be done from designated hunting stands, except Canada Goose hunting on the Lake shore when temporary stands may be used.
5. Only boats powered by oars or paddles may be used to gain access to stands or for retrieving shot birds.
6. No litter of any description is to be case into any water area or left around the margins.
Dogs must be kept under control at all times.
8. Only legal game species may be shot at. There is to be no indiscriminant shooting at unprotected birds or thrown targets.
9. The provisions of the Wildlife Act 1953 covering the taking of game are to be observed.

Penalty:

Any person not complying with the conditions of entry may be denied the right to hunt on these Conservation lands for a period determined by the Council.