

Papaitonga Scenic Reserve

Management Plan



Department of Lands & Survey

This management plan has been prepared in terms of the procedures set down by Section 41 of the Reserves Act 1977.

Through these procedures the public and agencies were consulted in the drafting of the management plan and those submissions received when the draft plan was released for public comment have been incorporated where appropriate in the management plan.

I, therefore, approve the management plan pursuant to Section 41(6) of the Reserves Act 1977 and a delegation from the Minister of Lands.

Dated this day 13TH of DECEMBER 1986.


.....
E V Tyler
for Commissioner of Crown Lands

**PAPAITONGA SCENIC RESERVE
MANAGEMENT PLAN**

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PAPAITONGA SCENIC RESERVE MANAGEMENT PLAN

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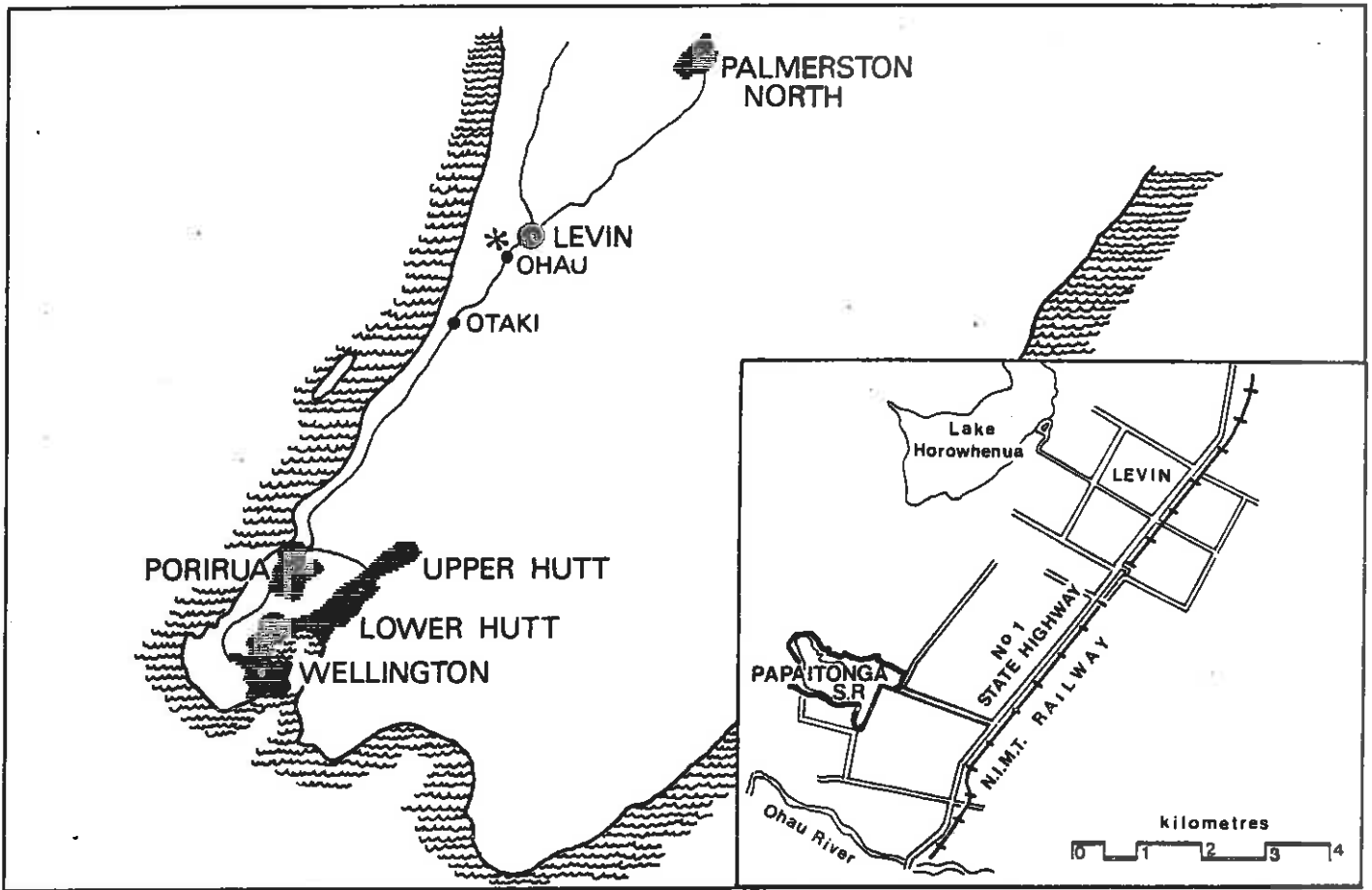
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1. PREFACE

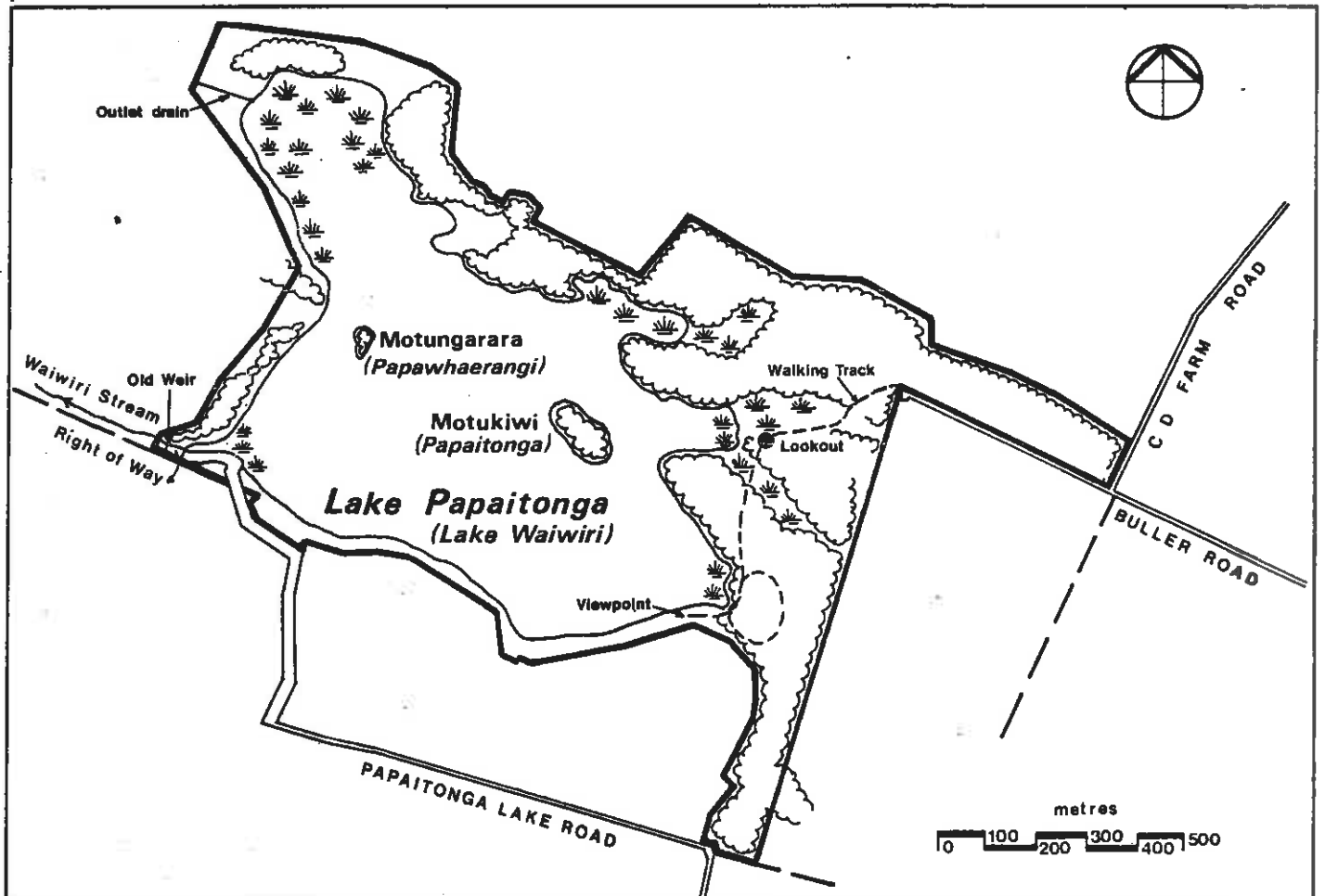
The aim of this management plan is to facilitate the best management of the reserve by providing guidelines for its control, usage, maintenance, development and planning.

This is achieved through forming management objectives and policies which take into account the particular characteristics of the reserve and its classification. . This plan is intended to retain a certain degree of flexibility, but will also ensure that in the long term there is continuity through the management process, even when the need for a review of objectives and policies arises.

MAP 1 - LOCALITY



- PAPAITONGA SCENIC RESERVE



2. INTRODUCTION

2.1 LEGAL DESCRIPTION

The reserve is currently Part Section 61, Block II Waitohu Survey District.

Area : 11.4981 hectares.

The department has also acquired for addition to the reserve a further 111.3458 hectares of land (approximately). Survey of these areas is presently underway but it will be some time before final approval and reservation is completed. The lands to be added are:

Lots 1 and 2 DP 53924. Area : 10.3758 hectares.

Former unformed legal road shown as 'A' and 'B' on SO 33198.
Area : 8.97 hectares.

Lots 1-13 on LT Plan 53534. Area : approximately 92 hectares.

When these lands are added to the reserve, it will consist of approximately 122.8439 hectares. All of this land is currently managed as scenic reserve and is shown on Map 1, pending addition and reservation of the areas above.

2.2 LOCATION

The reserve is located at Ohau, about 5 kilometres south-west of Levin and 2 kilometres west of State Highway 1.

2.3 ACCESS

There are two legal formed vehicle roads. From the east, Buller Road and an unsealed extension from it provides access to a public walking track through the reserve. From the south, Papaitonga Lake Road provides access to a "corridor" of bush in the reserve, containing no formed tracks.

2.4 STATUS

In 1901, 27.5186 hectares of land north of Buller Road was made a reserve for the preservation of native bush (New Zealand Gazette 1901 page 161). In 1929, 16.1975 hectares were revoked for addition to the Weraroa Experimental Farm. The status of the balance of the reserve was changed to "scenic" in 1930 (New Zealand Gazette 1930 page 3579).

2.5 CLASSIFICATION

The reserve is not yet classified. When survey is completed it will be classified as a scenic reserve under Section 19(1)(a) of the Reserves Act 1977 which states that the principal or primary use of the reserve is:

"For the purpose of protecting and preserving in perpetuity for their intrinsic worth and for the benefit, enjoyment and use of the public, suitable areas possessing such qualities of scenic interest, beauty or natural features or landscape that their protection and preservation are desirable in the public interest."

2.6 DESCRIPTION

Lake Papaitonga (also known as Waiwiri) is set in a natural amphitheatre, being enclosed to the east and south-east by gently rolling land with a cover of bush running down to the lake edge. To the north and north west, low lying open swampland adjoins the lake while to the south, a thick bank of bush covers land gently sloping towards the lake.

The lake itself contains two islands. The larger one at the eastern end is known as Motukiwi (Papaitonga) and is approximately 1.21 hectares in area. It rises steeply from the water and is mantled in native

vegetation. The smaller island Motungarara (Papawhaerangi) is located at the western end, covers 3,000 square metres and is man-made.

2.7 DISTRICT SCHEME ZONING

The reserve is designated "Proposed Scenic Reserve" in the Horowhenua County District Scheme (operative 1980). There is an underlying zone of "Rural Intensive - Agriculture".

2.8 CONTROL AND MANAGEMENT

The reserve is controlled and managed by the Commissioner of Crown Lands, Wellington. The Commissioner liaises with the Wellington National Parks and Reserves Board in the preparation and review of management plans and the formulating of objectives and policies for reserve management.

3. RESOURCE INFORMATION

3.1 CLIMATE AND WEATHER

The Horowhenua region is generally described as having a warm and temperate, maritime climate without a marked dry season. Prevailing winds are west to northwest with relatively frequent gales.

Rainfall is evenly distributed throughout the year with the mean annual rainfall being 1095 mm. Sunshine hours average 1897 pa compared with Nelson, 2502 hours pa and Dunedin, 1695 hours pa.

3.2 GEOLOGY

The relatively narrow plain along the southwest coast of the Wellington province to the west of the Tararua Range has been formed by coastal progradation (building out with sand) derived from long shore drift from the Rangitikei-Wanganui area. Coastal progradation has been the dominant process over the last 6,000 years when sea levels have been similar to that of the present day.

As the coast prograded, the wind formed the sand into several well-defined sand dune units. These were stabilised once a vegetation cover was established. Rivers with catchments in the Tararua Range flowed across the coastal plain and, in the case of larger rivers such as the Ohau, deposited gravel, sand and silt which are interbedded with marine derived sand deposits.

Lake Papaitonga has formed in a depression behind the sand dunes where water from several sources has accumulated. Surface runoff from local drainage is a contributing water source. Springs also contribute water to the lake. These springs are formed where groundwater within the

1. Much of this resource information is adapted from "Papaitonga Scenic Reserve - Resource Analysis and Development Plan" by M J Archbold (1982).

river fan deposits encounters less permeable sand and clay deposits. The westward groundwater flow is impeded and as a result some groundwater flows to the surface to form springs at the boundaries of deposits of contrasting permeability.

Lake Papaitonga is basically a water table lake. The level fluctuates in response to local rainfall and drainage, the flow of the Ohau River and rainfall on fluvial deposits to the east of the coastal plain. It is one of an extensive series of dune lakes on the West Coast of the North Island, having in common the feature of an impounding barrier of sand. Motukiwi Island is an isolated mound of raised beach sandstone. Extensive swamps (Reporoa) used to border the western shore of the lake but these have mainly now been drained. The lake's natural outlet (Waiwiri Stream) flows through this area to the sea.

Water depth in the lake was measured in 1949 at 2.8 m maximum with a mean of 1.2 m and is shallower at the western end. More recently water levels have been measured as low as 0.7 m. The deepest part is a trench running along the southern shore of Motukiwi Island and then northwards towards Pau-a-Tiriaki headlands.

3.3 SOILS

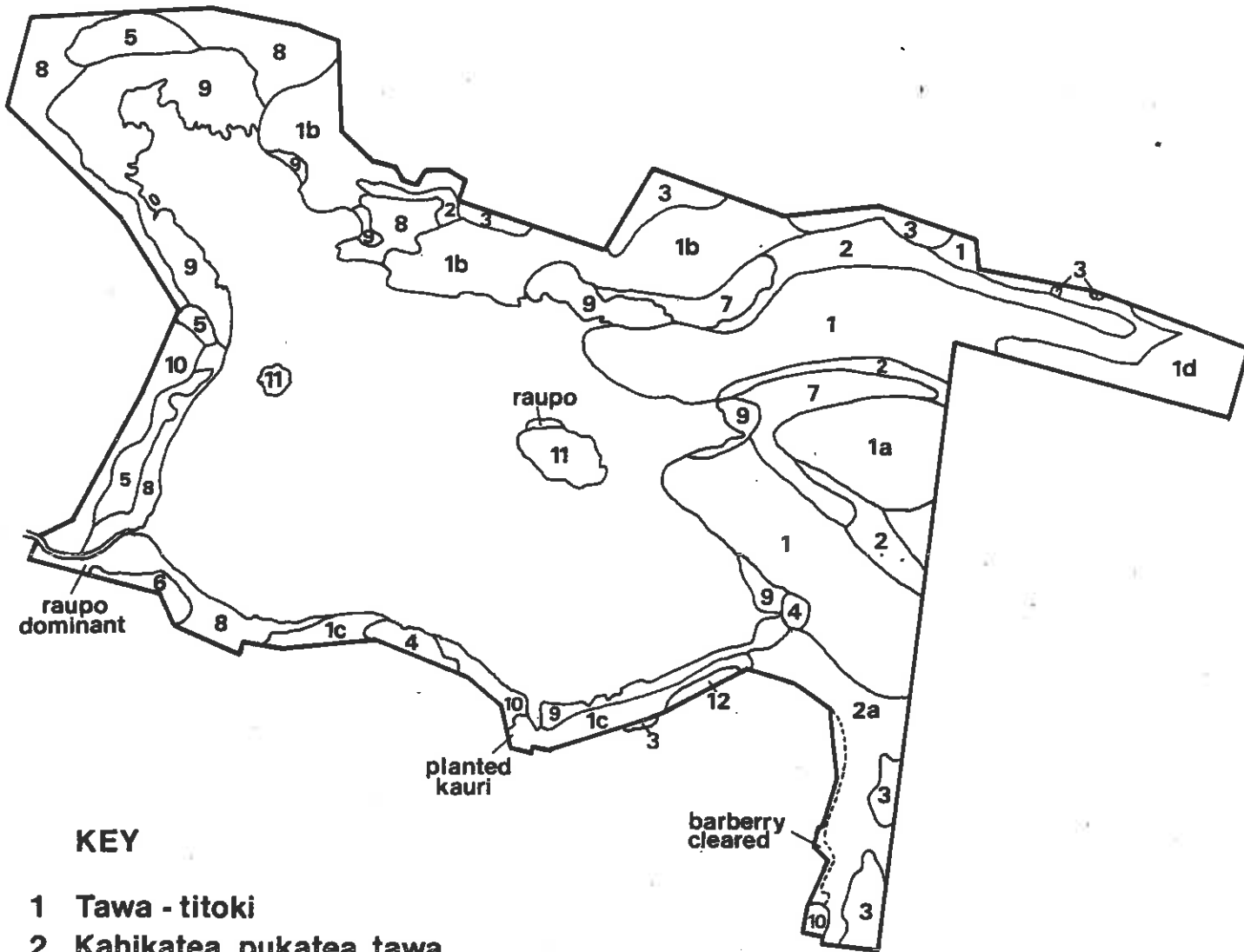
The soils on the higher terrace appear mainly to belong to the Levin series which are formed from about 1 m of Ohakean loess over sand, with some grading towards Shannon-type soils. There are local inclusions of Koputaroa soils. The Ohakean loess probably stopped accumulating 12,000 years ago and appears to be resting on Pleistocene "cold climate" sands. The local occurrence of Koputaroa Sand is due to subsequent "duning" of coastal sand into very localised mounds over this Ohakean loess. Peat soils are found around the margin of the lake. The Levin soils under forest in the reserve near the Buller Road entrance are the only significant area of these important horticultural soils under an indigenous vegetation, still largely similar to that existing before the clearance of forest from the Horowhenua.

3.4 FAUNA

The open water of the lake and the surrounding wetland vegetation provide opportunities for shelter, feeding, resting and breeding for a variety of water dependent birds. The terrestrial vegetation provides similar opportunities for a number of bird species not dependant upon the presence of wetlands, but nevertheless reliant upon the presence of bush (tree and shrub association). While numerous bird species are found occupying the same habitats, most have specialised requirements and commonly use a particular part of the habitat. Typically, swans tend to avoid confined areas and feed in deeper water, while wading birds, like the pied stilt, feed in the wet margins and shallow waters. Each habitat therefore contains a number of bird species which use one or more parts of the reserve. The Australasian Bittern and Spotless Crake are two wetland dwelling species about which there is some concern. The draining of swampland for farming purposes has caused their natural habitats to shrink and these species are not common elsewhere in the region. New Zealand Dabchick is also uncommon nationally and the lake helps to maintain local populations. (See Appendix 2 for full species list.)

Three Paryphantid snail sub-species are found in the reserve; *Powelliphanta traversi traversi*, *Powelliphanta traversi florida* and *Rhytida greenwoodi greenwoodi*. *P t traversi* is ranked 13th out of the 41 species of *Powelliphanta* in terms of priorities for conservation and management. All three are protected under the Wildlife Act 1953. (See Appendix 1). Indigenous, long-finned eels (*Anguilla dieffenbachii*) and short-finned eels (*Anguilla australis schmidtii*) are found in Lake Papaitonga. The native bully (*Goblomorphus sp*) and introduced carp are also present. Possums and rats are believed to be present in moderate numbers. Other mustelids including rabbits, hares and mice are also believed to be present in the reserve.

MAP 2 - VEGETATION



KEY

- | | |
|---|---|
| 1 Tawa - titoki | 8 Flax and raupo swamp |
| 2 Kahikatea, pukatea, tawa and tree fern in gullies and swamp margins | 9 Tussock, flax and raupo swamp |
| 3 Macrocarpa and pine tree forest | 10 Wet pastureland of tall fescue and yorkshire fog |
| 4 White poplar forest | 11 Karaka with ngaio and cabbage trees |
| 5 Manuka forest with fern | |
| 6 Gorse and flax shrubland | |
| 7 Flax and koromiko shrubland | |

See appendix 3 for more detailed description, including vegetation types 1a-1d



3.5 FLORA AND VEGETATION

The reserve contains both forest and swamp vegetation in very good condition. Vegetation in periphery areas of the reserve has been grazed with consequent loss of ground and understorey plants. There is an intact vegetation sequence from wetland plants to swamp and terrace forests containing 11 distinct vegetation types in the reserve (see map 2). The Buller Road section of the reserve was strongly invaded by sycamores during the 1950's and *Clematis vitalba* has been found in the reserve.

Paratrophis banksii, *P microphylla* and *Loranthus micranthus* are locally rare plants and an *Asplenium* hybrid species is also of scientific interest. (See Appendices 3 and 4).

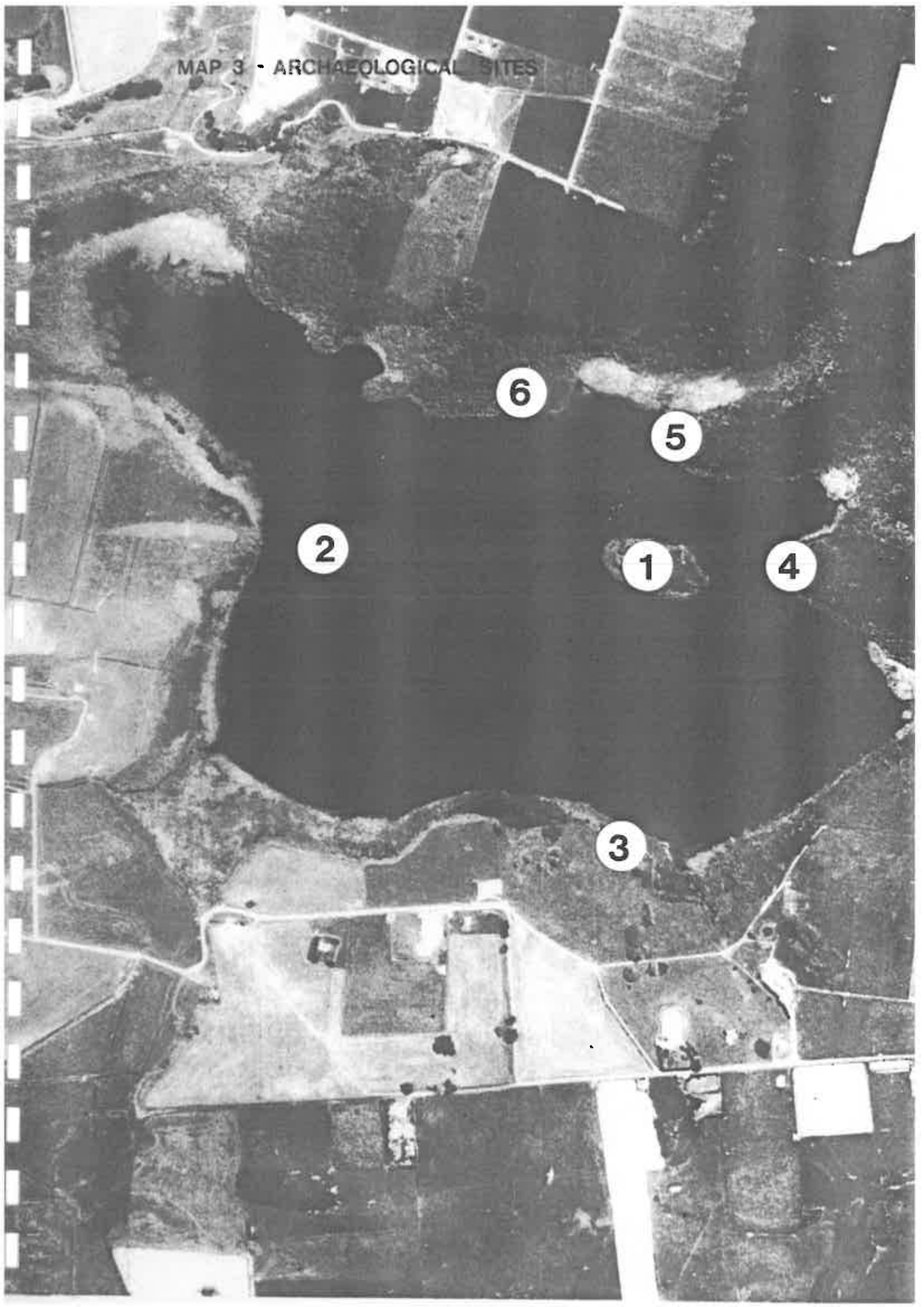
3.6 ARCHAEOLOGICAL SITES

The reserve contains evidence of Maori habitation dating back to the 1800's. The Papawaerangi pa site is particularly significant, being built as an artificial island in the lake. Virtually all the sites in the reserve are under the cover of 60 year old forest with large trees and this can do no further harm in terms of destroying archaeological evidence. Six main archaeological areas have been identified in Papaitonga Scenic Reserve (see Map 3):

1. Motukiwi (Papaitonga) Island

The topography of the island has been modified by terracing with the construction of Papaitonga Pa. This terracing is evident on all sides of the island though most extensive on the eastern end. A terrace just above the present water level exists around the whole island. These terraces rise to a central platform. Midden scatter is recorded over most of the surface with one large midden exposure on the south side of the island. Midden consists mainly of *Hyridella menziesi* with some *Amphidesma subtriangulatum*.

MAP 3 - ARCHAEOLOGICAL SITES



2

6

5

1

4

3



Ovenstones and charcoal have been recorded both on the island and in the water around the edge of the island. At the western end of the island there is a raised rim pit 2.9 m by 2.6 m.

2. Motungarara (Papawhaeranqi) Island

This island (man made) has some terracing with midden scatter over most areas with associated ovenstones. Shell species in midden material are the same as on Motukiwi Island.

3. Southern Shore

A number of shells and ovenstones have been recorded visible in a cutting for access to the lake shore. The midden has been destroyed by tree roots and erosion.

4. Paopao roa Headland

On the slopes of the headland there is a surface scatter of freshwater mussel shells. There are deposits under tree roots at the base of the terraces as well as on the spur. The shells are *Hydridella menziesi*.

5. Kopuru Kainga

Evidence in a number of small exposures of scattered, fragmentary *Hyridella menziesi* and ovenstone. Some scattered midden is also visible on the banks at the end of the spur.

6. Northern Shore

Surface scatterings of *Hydridella manziesi* shells, and ovenstone have been found.

3.7 LIMNOLOGY

Compared with other lakes in the Wellington-Wanganui area, Lake Papaitonga has comparatively low phosphorus and nitrate levels. It is currently in an oligotrophic state which maintains a natural balance in the aquatic ecosystem and a low level of biological production.

Water temperature is quite high (6°C - 25°C) because of the shallow nature of the lake (2-2.5 m).

Nutrients such as nitrogen and phosphorus are present in the muddy bottom of the lake (about 1.5 m thick) in an anaerobic, insoluble state. If these sediments are disturbed, algae "blooms" could occur in summer. Water weed such as filamentous spirogyra (a seasonal algae) have been observed on the lake bed with fleeting strands occurring in the water. In profuse amounts this weed could de-oxygenate the water causing problems for fish survival.

3.8 LAKE HYDROLOGY

There are two main outlets at the western end of the lake. The main one, Waiwiri Stream flows from the southwest corner of the lake through adjacent farm land and discharges directly into the sea.

In 1950 the Manawatu Catchment Board upgraded the Waiwiri Stream channel to a point 500 m from the lake to assist the drainage of Reporoa Swamp. This caused the lake to be maintained at its then level of 9.5 m above Mean High Water at Waikawa Beach.

During the 1970's a drain was cut through the Marokura Swamp on the northwest arm of the lake and discharges approximately the same volume of water from the lake as the natural Waiwiri Stream outlet. There is a non-functional weir on the Waiwiri Stream within the reserve.

There has been no granting of water rights to date by the Manawatu Catchment Board for direct abstraction of water from the lake nor any right to discharge into the lake. The closest bore used for irrigation is 400 m from the northwest end of the lake. The board considers land drainage and abstraction of underground water will increase as land use around the reserve intensifies.

The minimum water level required for the ecological safety of the lake's flora and fauna and for scenery preservation is unknown and research is needed.

3.9 ADJACENT LAND USE

Land uses adjacent to the reserve, range from market gardening to dairy farming. Land to the north, east and south of the reserve is zoned "Rural - Intensive Agriculture" in the Horowhenua County District Scheme (operative 1980). Adjoining the western side of the reserve the land is zoned "Rural - General Farming" in the same district scheme. The reserve is only partly fenced from adjoining farmland and new boundary fencing is urgently required.

Portions of the gullies east of the eastern boundary of the reserve are privately owned and retain some indigenous swamp vegetation. The last remnants of Reporoa Swamp behind the western shore have recently been drained.

Land to the southwest of the reserve is undeveloped wetland under Maori ownership.

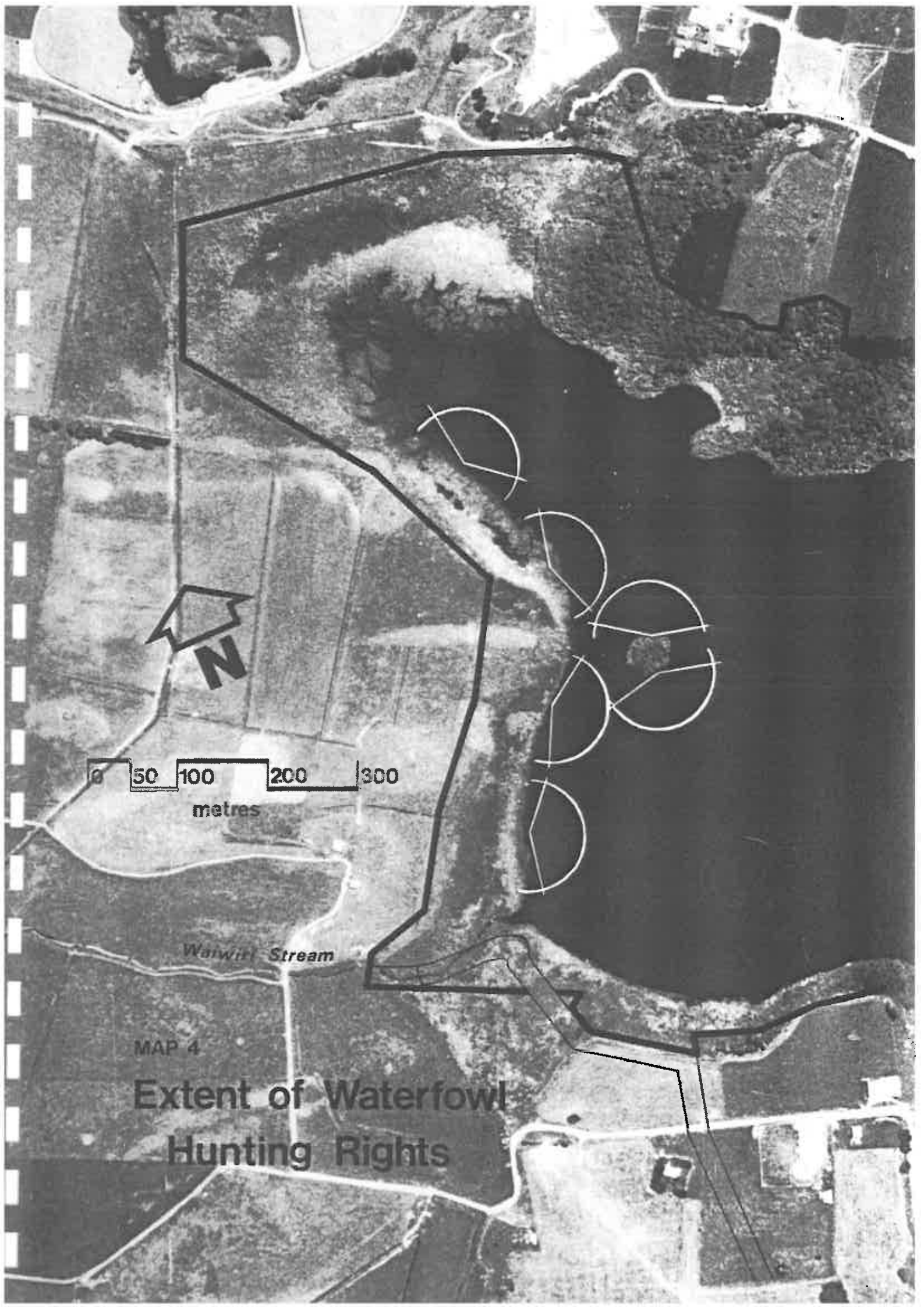
3.10 PRESENT USE

The reserve is used mainly by bush walkers, picnickers, birdwatchers and for school nature study groups. Rights to limited waterfowl hunting and

eel fishing have been granted to a former part owner of Papaitonga.
(See Map 4, Extent of Waterfowl Hunting Rights, and Appendix 6).

3.11 HISTORY

See Appendix 5 for Maori and European History.



0 50 100 200 300
metres

Waiwiri Stream

MAP 4

Extent of Waterfowl Hunting Rights



4. RESERVE EVALUATION

4.1 SCENIC VALUES

Papaitonga Scenic Reserve contains high scenic qualities with a variety of vegetation forming a bush backdrop to the lake itself. The presence of two islands and abundant birdlife on the lake can be easily observed by the public from the walking track and "lookout".

4.2 ARCHAEOLOGICAL VALUES

The reserve has important archaeological values associated with previous Maori habitation around the lake and on both islands. Motungarara Island especially, is of national significance being wholly man-made during Maori times.

Both islands are highly vulnerable to damage if public access is freely permitted.

4.3 SCIENTIFIC VALUES

The reserve is important for scientific studies in a number of areas; particularly, the uncommon native snail species (*Powelliphanta spp*) and past geology (changes in Ohau River course).

Future research on the distribution and possible hybridism of the native snails would be scientifically valuable. The Levin soils under forest in the reserve are the only significant area of these horticultural soils under indigenous vegetation, still largely similar to that existing before the clearance of forest from the Horowhenua. Consequently the site is of importance for soil science.

4.4 WILDLIFE VALUES

The lake and surrounding vegetation is important to birdlife for shelter, feeding, nesting and breeding requirements (see 3.4 Fauna). The vegetation hosts a number of insect species including the uncommon snail species previously described.

4.5 RECREATIONAL VALUES

In the past, the lake has been used for boating regattas, fishing and waterfowl hunting. Rights to continue the latter two activities have been granted to a former part-owner of the lake as mentioned.

Other recreational values of the reserve include picnicking, bird watching and bush walking. The Ngati-Kikopiri hapu of the Ngati Raukawa tribe have traditionally fished the lake, taken medicinal plants and other materials from the surrounding land with the former owner's knowledge.

4.6 SUMMARY

One of the essential management requirements is to maintain lake levels which do not affect land snail populations or archaeological sites detrimentally and allow a suitable habitat for waterbird populations and fish (especially indigenous species).

These levels must not detract from the high scenic qualities of the reserve nor the use of surrounding private land.

Public use must be managed to protect the natural and cultural values of the reserve, some of which are of national importance.

All of these values can be adequately protected under a "scenic" classification which recognises the intrinsic worth of the natural beauty of the reserve as its principal or primary function. This also permits controlled public enjoyment and the resolution of potential use and conservation conflicts.

5. MANAGEMENT OBJECTIVES

These objectives provide the basic long-term aims for the future management of Papaitonga as a scenic reserve:

1. To protect and preserve the indigenous flora and fauna, ecological associations, historical and archaeological values, natural environment and beauty which give Papaitonga its special qualities and value.
2. To allow and provide for public access and encourage public enjoyment and passive use of the reserve to the extent compatible with the first objective.
3. To maintain the value of the reserve, to the extent compatible with the first objective, for soil and water conservation.

6. MANAGEMENT POLICIES

These management policies act as guidelines to guide individual management decisions so that any decisions made are compatible with the long term aims of management (i.e. the management objectives). The management policies are therefore, related to specific management problems and issues and reflect the intent of the management objectives. Where problems arise for which there are no relevant policies, new policies will need to be formulated on the same basis as present policies.

6.1 ADMINISTRATION

Policy *To retain administration and management of this reserve under the control of the Commissioner of Crown Lands, Wellington.*

Explanation The reserve will be administered under the provisions of the Reserves Act 1977, and other relevant legislation, with the Wellington National Parks and Reserves Board being responsible for the oversight of policy matters including the management plan.

6.2 LIAISON

Policy *To maintain liaison with all persons and bodies whose activities in any way affect reserve management or the achievement of the management objectives.*

Explanation There are many persons and organisations able to make valuable contributions to the management and well-being of the reserve through providing valuable resource data.

Examples are the Manawatu Catchment Board, Horowhenua County Council, the Ngati Kikopiri Marae Committee, Manawatu Museum, DSIR, Wildlife Service, Royal Forest and Bird Society and adjoining landowners.

6.3 SCIENTIFIC RESEARCH

Policy *To coordinate and encourage research programmes which are compatible with the management objectives.*

Explanation Research programmes yielding additional resource information which will assist in future management are supported. These programmes will require the prior approval of the Commissioner and interested persons and organisations should liaise with the Commissioner on likely areas of research and conditions. Research proposals should not result in damage to the flora and fauna of the reserve and the taking of specimens will be carefully controlled.

6.4 WATER LEVELS AND QUALITY

Policy 1. *To maintain adequate lake levels and quality of water in the reserve, necessary for the preservation of scenery and indigenous plants and animals.*

 2. *To apply for a Water Conservation Order for the lake under the Water and Soil Conservation Amendment Act 1981.*

Explanation Protection under a Water Conservation Order will ensure certain conditions, restrictions and prohibitions are applied to any granting of water rights for the lake. It is recognised that drainage from adjoining farmland provides a major part of the lake water supply, hence water quality is partly dependent on adjoining landuse. Currently organic effluent from a milking shed is being discharged into Waiwiri Stream in the southwest corner of the reserve, and is possibly affecting the water quality of the lake,

Research is required into the most desirable water level for the lake. The department will apply for a water conservation

order for the lake seeking to establish minimum and maximum lake levels.

6.5 STOCK AND FENCING

- Policy
1. *To maintain boundary fences in a stock proof condition and prohibit grazing of stock within the reserve.*
 2. *To remove stock and other exotic animals found in the reserve and which constitute a threat to flora, fauna and other reserve attributes.*

Explanation

Present fencing is adequate on the north, west and eastern reserve boundaries, but the lack of fencing along the southern boundary has caused stock to trample vegetation.

Through an administrative arrangement with the Horowhenua County Council, the Buller Road extension giving access to the reserve will be grazed until planting is completed.

6.6 WILD ANIMALS

Policy

To remove as far as practicable, wild animals found in the reserve.

Explanation

Wild animals can constitute a threat to the survival of indigenous flora and fauna, e.g., possums selectively eating certain plant species and rats preying on the eggs and chicks of the rarer bird species such as spotless crane.

6.7 NOXIOUS PLANTS

Policy

To remove as far as practicable any noxious plants which constitute a threat to the reserve or adjacent land uses.

Explanation To promote a co-operative relationship with adjacent landowners, noxious plants will be carefully controlled along boundaries and within the reserve. For example barberry (*Berberis glaucocarpa*) is found along southern boundaries and should be eradicated.

6.8 EXOTIC PLANTS

- Policy**
1. *To remove as far as possible exotic plants from the reserve where they are likely to spread and modify existing vegetation.*
 2. *To undertake annual inspections to ensure regrowth does not occur.*

Explanation The eradication of species likely to spread more widely in the reserve is to take precedence, e.g. sycamore trees and *Clematis vitalba*. It is recognised that the complete removal of exotic plants is very difficult but their presence will be monitored and control programmes carried out.

6.9 GAME AND FISH

Policy *Subject to the existing rights and authorisation by the Minister of Lands, to permit the non-commercial harvesting of game birds, eels and introduced fish by the public.*

Explanation Appendix 6 describes commercial eeling access rights, exclusive hunting rights over parts of the lake and exclusive possession of the southern shore given to an adjoining owner and the conditions attached to these rights. The policy allows for the Minister of Lands to authorise non-commercial harvesting only on those parts of the reserve not covered by the existing rights.

Harvesting assumes that the action permitted will not unduly deplete the number of any species, damage ecological associations or the values of the reserve and that activity is only undertaken for sport and food.

6.10 REMOVAL OF FLORA AND FAUNA

Policy *To prohibit the removal, damage or destruction of indigenous flora and fauna except for the purposes of public safety, or for approved scientific or educational purposes.*

Explanation In the past, collectors have amassed large collections of indigenous snails from the reserve. Permission for removal of plants and animals must be sought from the Minister of Lands and in the case of protected wildlife, also from the Minister of Internal Affairs. Maori cultural arts and crafts are considered to be an "Educational purpose" in terms of this policy.

6.11 SIGNS

Policy *To provide and maintain signs for the public to locate and identify the reserve.*

Explanation Strategic and economic use of signs will aid protection and preservation of the scenic reserve.

6.12 FIRES

Policy

- 1. To prohibit the lighting of open fires in the reserve.*
- 2. To maintain fire protection and control under the relevant New Zealand Forest Service Fire Plan.*

6.13 ARCHAEOLOGICAL SITES

Policy *To preserve archaeological sites in the reserve.*

Explanation Archaeological sites are currently being well preserved under forest canopy. The consent of the New Zealand Historic Places Trust is necessary for any disturbance of an archaeological site and any antiquities found in the reserve must be dealt with under the provisions of the Antiquities Act 1975.

6.14 PLACE NAMES

Policy 1. *To foster use of the correct Maori place names when referring to features within the reserve.*

2. *To support the Ngati Kikopiri Marae Committee and Ngati Pareraukawa Maori Committee in an application to the New Zealand Geographic Board to officially change inappropriate place names.*

Explanation Names in common usage such as "Lake Papaitonga", "Motukiwi" and "Motungarara" are of European origin. It is appropriate to name the reserve after the main Pa but otherwise in reserve interpretation to preserve the earlier Maori place names of Lake Waiwiri, Papaitonga and Papawhaerangi Islands.

6.15 INTERPRETATION

Policy *To provide information of interest to visitors, outlining historical and natural features such as past landform changes, flora, fauna and early history of the area.*

6.16 ACCESS

- Policy**
1. *To maintain public vehicle access from Buller Road.*
 2. *To provide public walking tracks in Papaitonga reserve in areas containing high scenic value.*

Explanation It is intended to keep tracks away from environmentally or archaeologically sensitive areas in keeping with management objectives. To reduce potential management problems, vehicle access in the short to medium term will be from Buller Road only. It is envisaged that walking tracks will be kept to the eastern side of the reserve in order to maintain, undisturbed, the wildlife habitat values of the balance of the reserve. In parts there is a very narrow reserve margin and the general swampy nature of the ground precludes unnecessary development. Walking tracks are appropriate to increase visitors appreciation and enjoyment of the reserve.

6.17 RECREATIONAL ACTIVITIES

- Policy**
1. *To allow only low intensity, mainly passive, recreational activities in those areas best able to sustain public use.*
 2. *To discourage activities in those areas which are sensitive and require protection.*

Explanation Activities compatible with the management objectives include bird watching, nature and history studies, bush walking (along defined tracks), picnicking and controlled waterfowl hunting and eel fishing. Motorised boating on the lake could stir up muddy sediments promoting algal blooms and lead to damage to historical sites on both islands. However, canoeing and row boats would be acceptable on the lake.

6.18 PROVISION OF FACILITIES

Policy *To provide and maintain only those facilities necessary for the recreational use and management of the reserve.*

Explanation Facilities to be provided include those associated with car parking and picnic areas while those for boat access and launching are not appropriate. Walking tracks will be provided in those parts of the reserve which give an overall appreciation of the scenic and natural values of the reserve and at the same time protect environmentally and archaeologically sensitive areas.

6.19 RUBBISH

Policy

1. *To foster a "take-home" policy with regard to litter.*
2. *Any rubbish found in the reserve shall be removed.*

Explanation Currently visitor-derived rubbish is not a problem. Potential problems of rubbish disposal will be minimised if visitors remove their own rubbish from the reserve.

APPENDIX 1

FAUNA : SNAIL SPECIES

Powelliphanta traversi traversi is restricted to the Levin area at three locations and while Papaitonga is not the type locality, the reserve affords the best remaining habitat.

This snail is ranked 13th out of 41 species of *Powelliphanta* in terms of priorities for conservation and management. It is very sensitive to soil moisture changes, reduction in leaf litter and ground cover, and is vulnerable to predators, especially rats. The snails are restricted to the creekbeds and low lying wet areas.

Powelliphanta traversi florida - This "form", a darker variety of the type species, is generally found at the Buller Road end of the reserve with fair numbers of live specimens found in wet gullies. Apparently *P. traversi florida* hybrids with *P. traversi traversi* at the Buller Road end of the reserve and the mixing of these two forms is explained by past changes in the Ohau River course. Evidence strongly suggests that the Ohau River once flowed at a considerable distance north of its present course, passing through Lake Horowhenua which was the dammed-up remnant of an earlier river course in Pleistocene times (Adkin, 1911). It seems evident that the Ohau River has formed a fluctuating barrier to the free dispersal of the snails of the coastal plain resulting in development of the *P. traversi traversi* hybrid to the north side and *P. traversi florida* to the south side (Powell, 1946).

Rhytida greenwoodi greenwoodi - This snail species is found within the secondary, mixed broadleaf forest within the reserve. It is small, light brown and is distributed over most of the North Island, south of Auckland. (Powell, 1976).

APPENDIX 2

BIRD SPECIES LIST

NB - This species list is not exhaustive and further studies will add to this list.

Birds - absolutely protected under the Wildlife Act 1953

Water

Australasian Bittern
Black Swan
Kingfisher
Little Shag
Pied Shag
NZ Dabchick
Pied Stilt
Welcome Swallow
White-faced Heron
Paradise Shelduck
Spotless Crake

Bush

Silvereye
Greywarbler
North Island Fantail

Waterbirds that may be hunted subject to the Wildlife Act

Mallard
Grey Duck
NZ Shoveler
Pukeko

Other Birdlife

Black Shag
Blackbird
Chaffinch
Goldfinch
Greenfinch
Harrier Hawk
Redpoll
Skylark
Song Thrush
Starling
White-backed Magpie
Yellow hammer

APPENDIX 3

VEGETATION ZONES PRESENT (From Map 2)

1. Mature forest canopy of tawa-titoki and in places kohekohe, reaching up to 25 m. There is a well developed understorey dominated by mahoe and kawakawa with nikau, mamaku, *Melicope simplex*, *Coprosma grandifolia* and kohekohe reaching up to 10 m. Lianes are common especially supplejack. The rich ground flora is dominated by ferns, bush rice grass and seedlings of titoki and nikau. This forest type grades into a mahoe-mamaku forest on steep slopes above the lake.
 - (a) A very disturbed open forest with much evidence of wind damage to canopy trees. The canopy is more open at the western end of the terrace. Other canopy species include hinau, pigeonwood, ngaio and puka. The understorey is poorly developed with patches of kawakawa, hangehange and mahoe present. Small leaved trees and shrubs of *Melicope simplex*, *Coprosma rhamnoides* and *C areolata* predominate on the periphery of this forest. The ground cover is dominated by introduced grasses including sweet vernal, cocksfoot and Yorkshire fog and the native grass *Oplismenus imbecillus*. Clumps of *Carex ssp* occur along with *Juncus gregiflorus*.
 - (b) A degraded version of 1 with a closed canopy of trees but an open understorey, and poorly developed ground flora. There are areas of secondary mahoe - kawakawa forest where the taller trees have been removed or damaged by windthrow. Stock grazing until recent times have reduced the understorey and ground vegetation substantially.
 - (c) Small areas of remnant forest around the perimeter contain an open canopy of mahoe, with occasional pukatea, kahikatea, cabbage tree and karaka.
 - (d) Secondary vegetation dominated by mahoe, rangiora and *Coprosma grandifolia* reaching 4 m height. The canopy is overtopped by

sycamore trees reaching up to 10 m. Some sycamore have been successfully poisoned but the majority are still healthy. The understorey is bracken, introduced weeds and sycamore seedlings.

2. Tall swamp forest containing kahikatea trees reaching 30-35 m above a canopy of pukatea and tawa of 25-30 m height. The climbers kiekie and supplejack form dense thickets. Wheki tree fern is common in the understorey with hen and chicken fern common on the ground floor.
 - (a) Low swamp forest of pukatea - tawa - swamp maire reaching up to 15 m. An understorey of supplejack, kiekie, pigeonwood, kawakawa, hangehange, wheki treefern and mahoe co-exists. The groundfloor is rich in ferns and seedlings with thickets of *Elatostema rugosum* common on stream banks and on very wet ground. There are dense areas of pukatea saplings especially in gullies with tawa, rewarewa, titoki and hinau on gully sides. Stock have had access to the western margin of this forest and here there is a sparse understorey with barberry weeds.
3. Tall trees of radiata pine and macrocarpa planted in groups on the forest edge. Some felling has occurred with little undergrowth.
4. Stands of white poplar.
5. Areas of manuka shrubland occurring on the western and northwestern margins with a height of 2-3.5 m. The shrubland is quite open in the western stands with a dense understorey of *Histiopteris incisa*, *Gleichenia microphylla* bracken, wheki treefern, *Coprosma tenuicaulis* and *Baumea tenax*. In the northwest corner of the reserve, manuka is very dense, containing occasional *Coprosma propinqua*, *C robusta*, *C areolata* and *Baumea articulata*.
6. A small area of gorse dominates vegetation in the southwest corner of the reserve reaching a height of 2 m. Wet grassland species e.g. tall fescue, scattered flax and raupo are also present.

7. Varying proportions of flax and koromiko dominate in swampy areas reaching a height of 2.5 m. Lesser proportions of *Coprosma areolata*, karamu, putaputaweta, toetoe and wheki are also present. The fern *Blechnum minus* is common under the shrub layer, with *Carex virgata* and *Baumea tenax*.
8. Tall flax reaching up to 3 m occurs in dense stands, with raupo, sedges and rushes. Areas near the periphery of the reserve contain wetland grass species, blackberry, bracken and shrubs of *Coprosma areolata*, *C robusta* and *C propinqua*.
9. Swamp of *Carex secta* clumps dominate in bays alongside the lake. Raupo and flax occur in varying proportions. Associated swamp species include *Scirpus fluviatilis*, *S lacustris*, *Baumea spp*, *Urtica linearifolia*, *Epilobium pallidiflorum* and *Carex virgata*.
10. Wet pastureland of tall fescue with Yorkshire fog, sweet vernal, white clover and creeping buttercup.
11. Islands dominated by a dense shrub-tree cover of mainly karaka, with lesser proportions of ngaio and cabbage tree. The larger island contains an area of raupo on its northern margin.

APPENDIX 4

BOTANICAL SPECIES LIST : Indigenous Plants

<u>Family</u>		<u>Common or Maori Name</u>
<u>Angiosperms : Dicotyledons</u>		
<i>Apocynaceae</i>	<i>Parsonsia capsularis</i> <i>Parsonsia heterophylla</i>	Maori jasmine kaihua
<i>Araliaceae</i>	<i>Pseudopanax arboreus</i> <i>Pseudopanax crassifolius</i> <i>Schefflera digitata</i>	five finger lancewood pate
<i>Atherospermataceae</i>	<i>Laurelia novae-zelandiae</i>	pukatea
<i>Campanulaceae</i>	<i>Wahlenbergia gracilis</i>	NZ harebell
<i>Caryophyllaceae</i>	<i>Stellaria parviflora</i>	
<i>Compositae</i>	<i>Brachyglottis repanda</i> <i>Cassinia leptophylla</i> <i>Cotula coronopifolia</i> <i>Gnaphalium gymnocephalum</i> <i>Gnaphalium limosum</i> <i>Olearia rani</i> <i>Senecio hispidulus</i> <i>Senecio minimus</i>	rangiora tauhinau bachelor's button cudweed cudweed heketara fireweed fireweed
<i>Coriariaceae</i>	<i>Coriaria arborea</i>	tutu
<i>Cornaceae</i>	<i>Griselinia lucida</i>	shining broadleaf
<i>Corynocarpaceae</i>	<i>Corynocarpus laevigatus</i>	karaka
<i>Cruciferae</i>	<i>Cardamine sp</i>	NZ bitter cress
<i>Cunoniaceae</i>	<i>Weinmannia racemosa</i>	kamahi
<i>Droseraceae</i>	<i>Drosera binata</i>	forked sundew
<i>Elaeocarpaceae</i>	<i>Aristotelia serrata</i> <i>Elaeocarpus dentatus</i>	wineberry hinau
<i>Epacrideae</i>	<i>Leucopogon fasciculatus</i> <i>Leucopogon fraseri</i> <i>Cyathodes juniperina</i>	mingimingi patotara prickly heath
<i>Escalloniaceae</i>	<i>Carpodetus serratus</i>	marble leaf

<i>Geraniaceae</i>	<i>Geranium potentilloides</i> <i>Pelargonium inodorum</i>	kopata
<i>Haloragaceae</i>	<i>Haloragis erecta</i> <i>Myriophyllum propinquum</i>	shrubby Haloragis milfoil
<i>Hypericaceae</i>	<i>Hypericum japonicum</i>	swamp Hypericum
<i>Icacinales</i>	<i>Pennantia corymbosa</i>	kaikomako
<i>Lauraceae</i>	<i>Beilschmiedia tawa</i>	tawa
<i>Lobeliaceae</i>	<i>Lobelia anceps</i> <i>Pratia angulata</i>	shore Lobelia panakenake
<i>Loganiaceae</i>	<i>Geniostoma rupestre</i>	hangehange
<i>Loranthaceae</i>	<i>Loranthus micranthus</i>	mistletoe
<i>Meliaceae</i>	<i>Dysoxylum spectabile</i>	kohekohe
<i>Monimiaceae</i>	<i>Hedycarya arborea</i>	pigeonwood
<i>Moraceae</i>	<i>Paratrophis banksii</i> <i>Paratrophis microphylla</i>	large-leaved milk tree turepo
<i>Myoporaceae</i>	<i>Myoporum laetum</i>	ngaio
<i>Myrsinaceae</i>	<i>Myrsine australis</i> <i>Myrsine salicina</i>	mapou toro
<i>Myrtaceae</i>	<i>Kunzea ericoides</i> <i>Leptospermum scoparium</i> <i>Lophomyrtus bullata</i> <i>Metrosideros diffusa</i> <i>Metrosideros fulgens</i> <i>Metrosideros perforata</i> <i>Metrosideros robusta</i> <i>Syzygium maire</i>	kanuka manuka ramarama akakura akatea northern rata Maire-tawake
<i>Oleaceae</i>	<i>Nestegis cunninghamii</i> <i>Nestegis lanceolata</i> <i>Nestegis montana</i>	black maire white maire narrow leaved maire
<i>Onagraceae</i>	<i>Epilobium insulare</i> <i>Epilobium nummulariifolium</i> <i>Epilobium pallidiflorum</i> <i>Epilobium rotundifolium</i> <i>Fuchsia excorticata</i> <i>Fuchsia perscandens</i> <i>Fuchsia excorticata</i> x	swamp Epilobium tree fuchsia scrambling fuchsia hybrid fuchsia

<i>Oxalidaceae</i>	<i>Oxalis exilis</i>	
<i>Passifloraceae</i>	<i>Passiflora tetrandra</i>	kohia or NZ passionvine
<i>Piperaceae</i>	<i>Macropiper excelsum</i>	kawakawa
<i>Pittosporaceae</i>	<i>Pittosporum cornifolium</i> <i>Pittosporum eugenioides</i> <i>Pittosporum tenuifolium</i>	perching Pittosporum lemonwood kohuhu
<i>Polygonaceae</i>	<i>Muehlenbeckia australis</i> <i>Muehlenbeckia complexa</i> <i>Polygonum sp</i>	large leaved Muehlenbeckia wireweed swamp willow weed
<i>Proteaceae</i>	<i>Knightia excelsa</i>	rewarewa
<i>Ranunculaceae</i>	<i>Clematis paniculata</i> <i>Ranunculus hirtus</i> <i>Ranunculus macropus</i> <i>Ranunculus rivularis</i>	puawhananga kopukapuka waoriki
<i>Rosaceae</i>	<i>Acaena anseriniifolia</i> <i>Acaena novae-zelandiae</i> <i>Rubus australis</i> <i>Rubus cissoides</i> <i>Rubus schmidelioides</i>	bidibidi bidibidi swamp lawyer tataramoa lawyer
<i>Rubiaceae</i>	<i>Coprosma areolata</i> <i>Coprosma grandifolia</i> <i>Coprosma lucida</i> <i>Coprosma rhamnoides</i> <i>Coprosma robusta</i> <i>Coprosma tenuicaulis</i> <i>Coprosma propinqua</i> <i>Galium propinquum</i> <i>Nertera depressa</i> <i>Nertera setulosa</i>	kanano karamu ka-karamu
<i>Rutaceae</i>	<i>Melicope simplex</i> <i>Melicope ternata</i>	poataniwha wharangi
<i>Santalaceae</i>	<i>Mida salicifolia</i>	maire
<i>Sapindaceae</i>	<i>Alectryon excelsus</i>	titoki
<i>Scrophulariaceae</i>	<i>Gratiola sexdentata</i> <i>Hebe stricta</i>	koromiko
<i>Solanaceae</i>	<i>Solanum aviculare</i> <i>Solanum nodiflorum</i>	poroporo
<i>Umbelliferae</i>	<i>Centella uniflora</i> <i>Hydrocotyle heteromeria</i>	

	<i>Hydrocotyle elongata</i>	
	<i>Hydrocotyle moschata</i>	
<i>Urticaceae</i>	<i>Elatostema rugosum</i>	parataniwha
	<i>Parietaria debilis</i>	
	<i>Urtica incisa</i>	nettle
	<i>Urtica linearifolia</i>	swamp nettle
<i>Violaceae</i>	<i>Melicytus ramiflorus</i>	mahoe
<i>Winteraceae</i>	<i>Pseudowintera axillaris</i>	horopito
 <u><i>Angiosperms : Monocotyledons</i></u>		
<i>Agavaceae</i>	<i>Cordyline australis</i>	cabbage tree
	<i>Phormium tenax</i>	swamp flax
<i>Cyperaceae</i>	<i>Baumea articulata</i>	
	<i>Baumea tenax</i>	
	<i>Carex dissita</i>	
	<i>Carex geminata</i>	
	<i>Carex lambertiana</i>	
	<i>Carex lessoniana</i>	
	<i>Carex maorica</i>	
	<i>Carex secta</i>	niggerhead
	<i>Carex solandri</i>	
	<i>Carex testacea</i>	
	<i>Carex virgata</i>	
	<i>Cyperus ustulatus</i>	toetoe-upoko-tangata
	<i>Eleocharis acuta</i>	
	<i>Eleocharis gracilis</i>	
	<i>Eleocharis spachelata</i>	
	<i>Gahnia pauciflora</i>	
	<i>Gahnia xanthocarpa</i>	
	<i>Schoenus maschalinus</i>	
	<i>Scirpus fluviatilis</i>	
	<i>Scirpus lacustris</i>	
	<i>Scirpus prolifer</i>	
	<i>Uncinia banksii</i>	hookgrass
	<i>Uncinia clavata</i>	hookgrass
	<i>Uncinia ferruginea</i>	hookgrass
	<i>Uncinia scabra</i>	hookgrass
	<i>Uncinia uncinata</i>	hookgrass
<i>Gramineae</i>	<i>Cortaderia toetoe</i>	toetoe
	<i>Echinopogon ovatus</i>	hedgehog grass
	<i>Microlaena avenacea</i>	bush rice grass
	<i>Microlaena stipoides</i>	meadow rice grass
	<i>Opismenus imbecillus</i>	
	<i>Poa anceps</i>	
<i>Iridaceae</i>	<i>Libertia ixioides</i>	mikoikoi

<i>Juncaceae</i>	<i>Juncus australis</i> <i>Juncus gregiflorus</i> <i>Juncus pallidus</i> <i>Juncus planifolius</i> <i>Juncus sarophorus</i> <i>Luzula sp</i>	
<i>Juncaginaceae</i>	<i>Triglochin striatum</i>	
<i>Lemnaceae</i>	<i>Lemna minor</i>	duckweed
<i>Liliaceae</i>	<i>Arthropodium candidum</i> <i>Astelia grandis</i> <i>Astelia solandri</i> <i>Collospermum hastatum</i> <i>Dianella nigra</i>	swamp Astelia kowharawhara kakaha blueberry
<i>Orchidaceae</i>	<i>Bulbophyllum pygmaeum</i> <i>Bulbophyllum tuberculatum</i> <i>Corybas trilobus</i> <i>Corybas orbiculatus</i> <i>Dendrobium cunninghamii</i> <i>Drymoanthus adversus</i> <i>Earina autumnalis</i> <i>Earina mucronata</i> <i>Gastrodia cunninghamii</i> <i>Microtis unifolia</i> <i>Orthoceras strictum</i> <i>Pterostylis banksii</i>	spider orchid hirituriti raupeka peka-a-waka huperei Maori Onion large greenhood orchid
<i>Palmae</i>	<i>Rhopalostylis sapida</i>	nikau palm
<i>Pandanaceae</i>	<i>Freycinetia baueriana ssp banksii</i>	kiekie
<i>Potamogetonaceae</i>	<i>Potamogeton cheesemanii</i>	
<i>Smilacaceae</i>	<i>Ripogonum scandens</i>	supplejack
<i>Sparganiaceae</i>	<i>Sparganium subglobosum</i>	burweed
<i>Typhaceae</i>	<i>Typha orientalis</i>	raupo
<u>Gymnosperms</u>		
<i>Podocarpaceae</i>	<i>Dacrycarpus dacrydioides</i> <i>Dacrydium cupressinum</i> <i>Podocarpus totara</i> <i>Prumnopitys ferruginea</i> <i>Prumnopitys taxifolia</i>	kahikatea rimu totara miro matai

Ferns

<i>Adiantaceae</i>	<i>Adiantum cunninghamii</i> <i>Pellaea rotundifolia</i>	maidenhair fern
<i>Aspleniaceae</i>	<i>Asplenium bulbiferum</i> <i>Asplenium gracillimum</i> <i>Asplenium flaccidum</i> ssp. <i>flaccidum</i> <i>Asplenium hookerianum</i> <i>Asplenium oblongifolium</i> <i>Asplenium polyodon</i> <i>Asplenium bulbiferum</i> <i>Asplenium flaccidum</i> ssp. <i>flaccidum</i> x	hen and chicken fern drooping spleenwort Hooker's spleenwort shining spleenwort
<i>Athyriaceae</i>	<i>Diplazium australe</i>	chevron fern
<i>Azollaceae</i>	<i>Azolla filiculoides</i>	floating water fern
<i>Blechnaceae</i>	<i>Blechnum</i> sp. (<i>B. capense</i> agg.) <i>Blechnum chambersii</i> <i>Blechnum discolor</i> <i>Blechnum filiforme</i> <i>Blechnum fluviatile</i> <i>Blechnum minus</i> <i>Blechnum penna-marina</i> <i>Doodia</i> sp	kiokio crown fern
<i>Cyatheaceae</i>	<i>Cyathea dealbata</i> <i>Cyathea medullaris</i>	ponga mamaku
<i>Davalliaceae</i>	<i>Arthropteris tenella</i>	
<i>Dennstaedtiaceae</i>	<i>Hypolepis distans</i> <i>Hypolepis rufobarbata</i>	
<i>Dicksoniaceae</i>	<i>Dicksonia fibrosa</i> <i>Dicksonia squarrosa</i>	wheki-ponga wheki
<i>Dryopteridaceae</i>	<i>Lastreopsis glabella</i> <i>Lastreopsis hispida</i> <i>Lastreopsis microsora</i> <i>Polystichum richardii</i> <i>Rumohra adiantiformis</i>	tutoke
<i>Gleicheniaceae</i>	<i>Gleichenia microphylla</i>	waewaekaka
<i>Hymenophyllaceae</i>	<i>Hymenophyllum bivalve</i> <i>Hymenophyllum demissum</i> <i>Hymenophyllum ferrugineum</i> <i>Hymenophyllum flabellatum</i> <i>Hymenophyllum multifidum</i>	

	<i>Hymenophyllum revolutum</i>	
	<i>Hymenophyllum sanguinolentum</i>	
	<i>Trichomanes reniforme</i>	kidney fern
	<i>Trichomanes venosum</i>	
<i>Ophioglossaceae</i>	<i>Botrychium australe</i>	parsley fern
<i>Osmundaceae</i>	<i>Todea hymenophylloides</i>	single crepe fern
<i>Polypodiaceae</i>	<i>Anarthropteris lanceolata</i>	
	<i>Phymatosorus diversifolius</i>	hound's tongue fern
	<i>Phymatosorus scandens</i>	
	<i>Pyrrhosia serpens</i>	
<i>Pteridaceae</i>	<i>Histiopteris incisa</i>	water fern
	<i>Paesia scaberula</i>	ring fern
	<i>Pteridium esculentum</i>	bracken fern
	<i>Pteris pendula</i>	
	<i>Pteris tremula</i>	
<i>Thelypteridaceae</i>	<i>Pneumatopteris pennigera</i>	
<u>Fern Allies</u>		
<i>Lycopodiaceae</i>	<i>Lycopodium varium</i>	
	<i>Tmesipteris elongata</i>	

APPENDIX 5

MAORI HISTORY

About 1820, the Muaupoko tribe (original landowners in the Horowhenua region) became established mainly around Lake Papaitonga. For defence purposes they built a pa on Motukiwi (Paipaitonga) Island with the number of inhabitants estimated to be more than 500. Patakas (elevated food houses) were erected around the island on long wooden posts protruding from the water.

Because of the cramped living conditions on Motukiwi Island, the Muaupoko tribe built the smaller Motungarara (Parawhaerangi) Island to the west.

Initially, poles were driven in to define the extent of the proposed island. Piles of "niggerhead" were brought from the shores and deposited between the poles. Then enormous quantities of "kakahī" shells from refuse heaps were brought from the shore by canoes. Finally, many canoe loads of soil were thrown on top. Dry fern and other vegetation was spread over the island and four residential whares erected.

In 1822, Te Rauparaha and his Ngati Toa tribe settled near the Ohau River. The Muaupokos, having felt the force of the northern tribes, invited Te Rauparaha and his tribe for a feast at Lake Papaitonga. That night the Muaupoko, assisted by the Rangitanes from the Manawatu, killed most of the Ngati Toas. Te Rauparaha escaped to Kapiti Island, but his son and daughter were killed.

Te Rauparaha later returned with his armed followers, attacked the island pa and massacred the Muaupoko tribe. The remaining survivors fled to Hawkes Bay, but later returned to Horowhenua near Lake Horowhenua under the grace of Te Whatanui.

In 1879, Kapa Rangī hiwi nui (Major Kemp), Chief of the Muaupoko increased his territory, overruling an impending, adverse decision of the Native Land Court and obtained ownership of Lake Papaitonga.

EUROPEAN HISTORY

Early in 1862, Sir Walter Buller, acting as Governor Sir George Grey's representative, attempted to purchase Lake Papaitonga from the Maoris. By 1884, Buller had obtained a 25 year lease of the Horowhenua Block 14 containing Papaitonga Scenic Reserve, from Major Kemp, Chief of the Muaupoko tribe.

Major Kemp in order to obtain finance for legal matters with the Native Land Courts, mortgaged the land containing Papaitonga Scenic Reserve to Sir Walter Buller.

As Kemp was unable to repay the mortgage, Buller obtained an order from the Supreme Court to acquire the land including Lake Papaitonga. Buller later faced much criticism from all quarters, including questions from the Bar of Parliament.

In 1897, a Royal Commission enquired into the mortgage and awarded Buller the original mortgage money plus interest; considerably less than the amount claimed. That year the block, containing the scenic reserve, was auctioned and purchased by Buller for 7,000 pounds, which was then a fairly reasonable price. Buller acquired Block 14 with the main intention of preserving all the area surrounding the lake for future generations to enjoy. He was considered pre-eminent in his knowledge of New Zealand birds and other natural history. In 1900 Buller returned to London and during 1901, 27.5186 hectares of native bush at Papaitonga was set apart as a reserve for the preservation of native bush.

APPENDIX 6

EXISTING RIGHTS

In acquiring the Papaitonga land from D H Murray (a former owner), for reserve purposes, the Crown agreed to the following conditions:

- (a) Vendor to have exclusive access rights for commercial eeling for a period of 10 years from 1 September 1980, with no more than 38 tonnes to be taken in that period [Section 50(1) Reserves Act and the Fisheries Act apply].
- (b) Vendor to have exclusive hunting rights over the lake for his family and invitees, to be exercised only from certain parts of the lake shore and island and with a 6-gun limit (Map 4). This right to run only for so long as the vendor retains ownership of the adjoining land or otherwise to terminate on 30 August 2015. Archaeological features on Motungarara are not to be disturbed. The Wildlife Act 1953 applies.
- (c) Vendor to have exclusive possession by lease-back of part of the southern shore line for a term of 21 years from 1 September 1980. This licence to be personal to the vendor and to terminate in the event of the adjoining land changing hands or on the vendor's death.
- (d) The unformed northward leg of Papaitonga Lake Road to remain as road and a right of way be granted by the Crown over part of the acquisition area to preserve legal access between two parts of the vendor's farm (see Map 1). The Crown has also agreed to grant a Right of Way over the former road area (Buller Road extension) adjacent to Lot 1 DP 2463 to the owner of that lot. The lake is not considered to be "navigable" and is not therefore subject to the Harbours Act 1950.

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