Coastal Reserves Investigation

Patea County

Planning Team

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Preface

The objective of the Department of Lands and Survey's National Coastal Investigation is the stocktaking of New Zealand's Coastal fringe with a view to reservations for both preservation and public enjoyment.

The first step in the investigation is the undertaking of critical analysis of the coast on a county basis from field observations and extensive research. Consideration has been given to a wide range of natural features, historic associations, likely and possible utilisation and relativity to important features such as urban areas and transport systems.

An Inventory of coastal areas is necessary because of the pressures of conflicting interests on the coast. The results of the initial study lead to specific recommendations for reservation of land along the coast to achieve the following aims:

(a) To provide public access to and along the coast

(b) To preserve the quality of the coast for future generations.

(c) To provide a well-balanced hierarchy of reserves along the coast for public recreation.

(d) To preserve any natural, historical, scenic, scientific or other special features.

(e) To preserve habitat for species of waterfowl, wildlife and marinelife.

Any investigation should recognise the interrelationship between land and water. The Ocean is often the major reason for attracting people to the coast, and whether or not directly mentioned in the report, the ocean is therefore an integral part of the coastal resource.

Recreation on the coastal fringe is one of many land uses which has an impact on water quality and fauna & flora. This needs to be taken into account when considering reserve proposals as there may be areas which should be included in reservations or which must be considered as part of an integrated management plan. Similarly, the use of management techniques such as water classification should be related to proposed recreational uses along the coast.

The significance of a proposal relates to its relative importance, overall quality, and degree of use of the area.

(a) Local - where the use of the area will in the main be by residents of the county or immediate locality.

(b) Regional - where a significant proportion of the use is or will be from outside the county or immediate locality

(c) National - where the area is of such importance and attraction that it will be used by people from throughout New Zealand; or so unique or possessed of such historic or other values that its preservation is in the national interest.

These significance ratings are defined in planning terms and should not necessarily be considered to reflect financial or administrative responsibility.

The urgency for action will depend upon the pressures on the area and a priority rating is indicated as follows:

(i) High Priority

(a) Areas generally of easy access where public use is high in the near future ; or

(b) Areas which have a particularly important significance and which should be protected by reservation because of likely loss to the public or the nation; or

(c) Areas of medium rating which should eventually be acquired but where subdivision is imminent and the area is in immediate danger of being lost; or

(d) Areas that are strategic from the point of view of providing public access.

(ii) Medium Priority

Areas which would attract use if available as reserve but where there is no great danger of being lost through subdivision or other development. These areas would, to a lesser degree, have some of the features of high priority areas.

(iii) Low Priority

Areas which have long term potential as reserves but where acquisition is not necessary within the next few years.

This study is a re-evaluation of the initial Coastal Reserve Investigation completed in 1968. This report was done within a regional context and is not expected to define final proposal details such as boundary lines, fencing etc. which would be negotiated when under detailed consideration. Any input from other government departments, private organisations or individuals was most appreciated and continued criticism of the report is needed in order to evolve a workable and satisfactory coastal programme.

Introduction

Patea County is the most northerly County on the west coast of the Wellington Land District. In fact from Patea Borough north the County officially lies within the Taranaki Land District. The whole County will be considered in this report under agreement with the Department's New Plymouth office, for the purposes of continuity and inclusion of proposals in the County District Scheme.

Patea County has always been split between the Taranaki and Wanganui regions. For example the County is in the Taranaki Regional Water Board, half of it falls within the Egmont Electric Power Board, yet its hospital district is aligned to Wanganui.

Economic stagnation of the county has kept the population rural and stable over the years though recreational sites have continued to increase in popularity. This can be attributed to a general increase in affluence amongst county residents and a greater mobility of the people in the region as a whole. Waverley beach is the prime example of this increase in coastal recreation and the only outlet for bach development in the County. It is surrounded by Wairoa Domain land focusing further attention on the general area.

The geology of Patea's coast appears initially to be aligned closely with Taranaki formations; that is large cliffs with sand layers capped by hard conglomerate strata broken in only a few places by major streams and rivers. However, the erodibility of the mudstone cliffs and sandy beach base are dissimilar to the more stable volcanic cliffs and boulder strewn beaches to the north generally considered the Taranaki formation. There is a marked difference in height between the cliffs of Patea County 30 metres average and Hawera County 50 metres average. This reflects the physical change to Taranaki volcanic bedrock.

Where streams and rivers break the cliff face by down cutting, beaches have formed and access created. Consequently over the years these same areas have been the focus for recreation along the Coast.

The Patea Borough boundary marks the end of the extensive sand dune country characteristic of the Manawatu and Wanganui regional foreshore. These ancient sands became mobile with over grazing and even after reclamation have to be closely managed to prevent a relapse. Patea County has successfully developed much of this country especially in the northern areas where the sands are less extensive. In fact near Waipipi the black sands (titano-magnetite) are mined for export to Japan to be

used in steel production. As these ferrous sands are removed the top sand has been refilled, flattened and well stabilised by the company. This will in the future likely provide better pasture than existed before exploitation began.

The largest beach in the County runs north from the Waitotara River mouth to the boundary of the Wairoa Domain which itself includes the popular settlement of Waverley Beach. A proposal will be made in this report for this beach, adjacent wetlands, and Domain, to be included in a regional park complex that extends across the river into Waitotara County and including the Nukumaru Domain. This proposal highlights areas of interest for wildlife management, scientific study, cultural and historic significance as well as the full range of coastal recreation possibilities.

The rest of the County will be adequately served by provision of walking access along the cliffs and reservation of any significant areas where streams have created access and beach above M.H.W.

The Borough of Patea has within its boundaries a stretch of beach for public use that will be shown on the maps but not discussed as such in this investigation.

As is the case in Wanganui and Waitotara Counties erosion and ownership are the major issues affecting walking access and reserve designation. The ocean off the Patea Coast is quite similar to that to the south. It marks roughly the northern extent of the major South Taranaki Bight fishing grounds and its accompanied marine life system. As is the case southwards the numbers and variety of inshore marine organisms are limited throughout the length of the coast owing to the sandy bathymetry. However, as the cliffs become volcanic in origin north of Patea County, erosion produces rocky platforms and boulder strewn beaches which are a better habitat for inshore marine life. The ocean bottom offshore of the volcanic cliffs does not promote the commercial fishing grounds of the south for these same rocks that create a favourable habitat inhibit fishing techniques and the bottom falls off to deep water more rapidly limiting the fishing banks area. Many of the sites outlined for consideration as possible reserves are already in public use by tradition. Therefore consideration will mainly be given to additions to existing reserves, formalization of access along the coast, and the proposed regional park complex centred on the Waitotara river mouth
The coastline of Patea County is approx 37 kilometres long and can be divided into the following sections on the basis of topography and tenure:

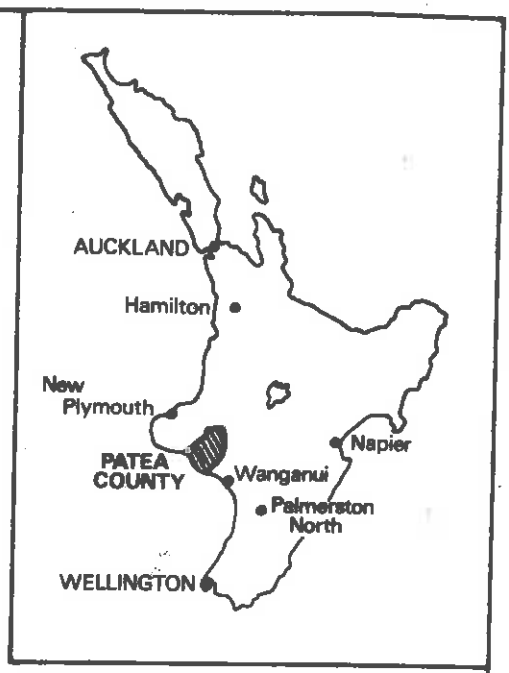
10 km of beaches
27 km of rocks and cliffs
2 km of developed beach
8 km of undeveloped beach
19 km of public lands
18 km of private land

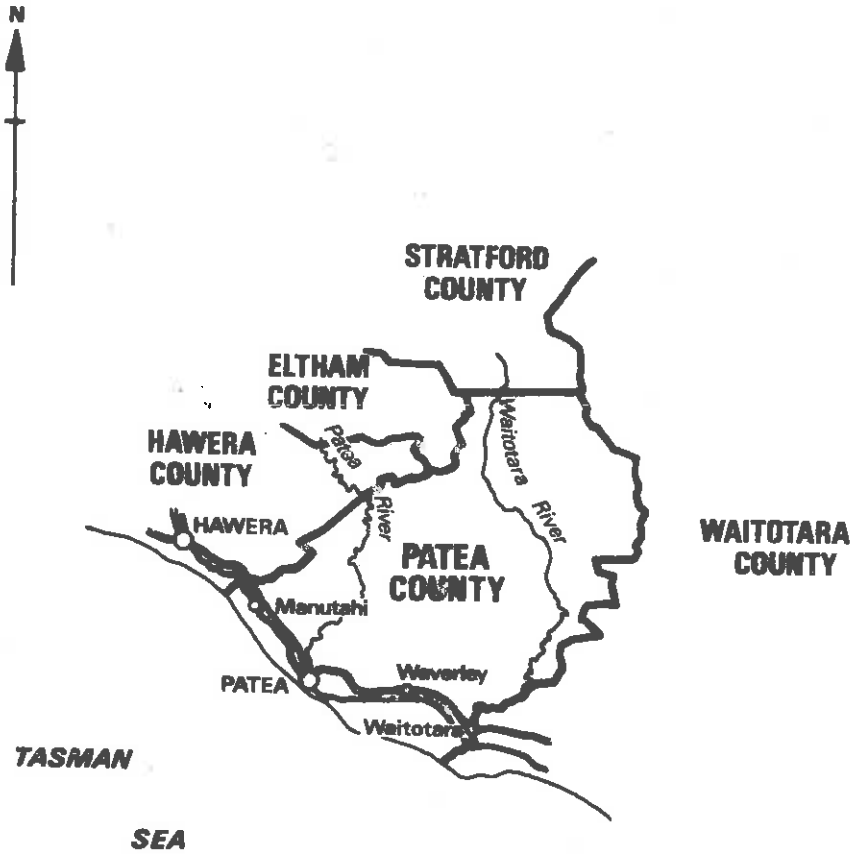
Map 1

COASTAL RESERVE SURVEY

PATEA COUNTY

LOCALITY





REFERENCE

Roads

Railways

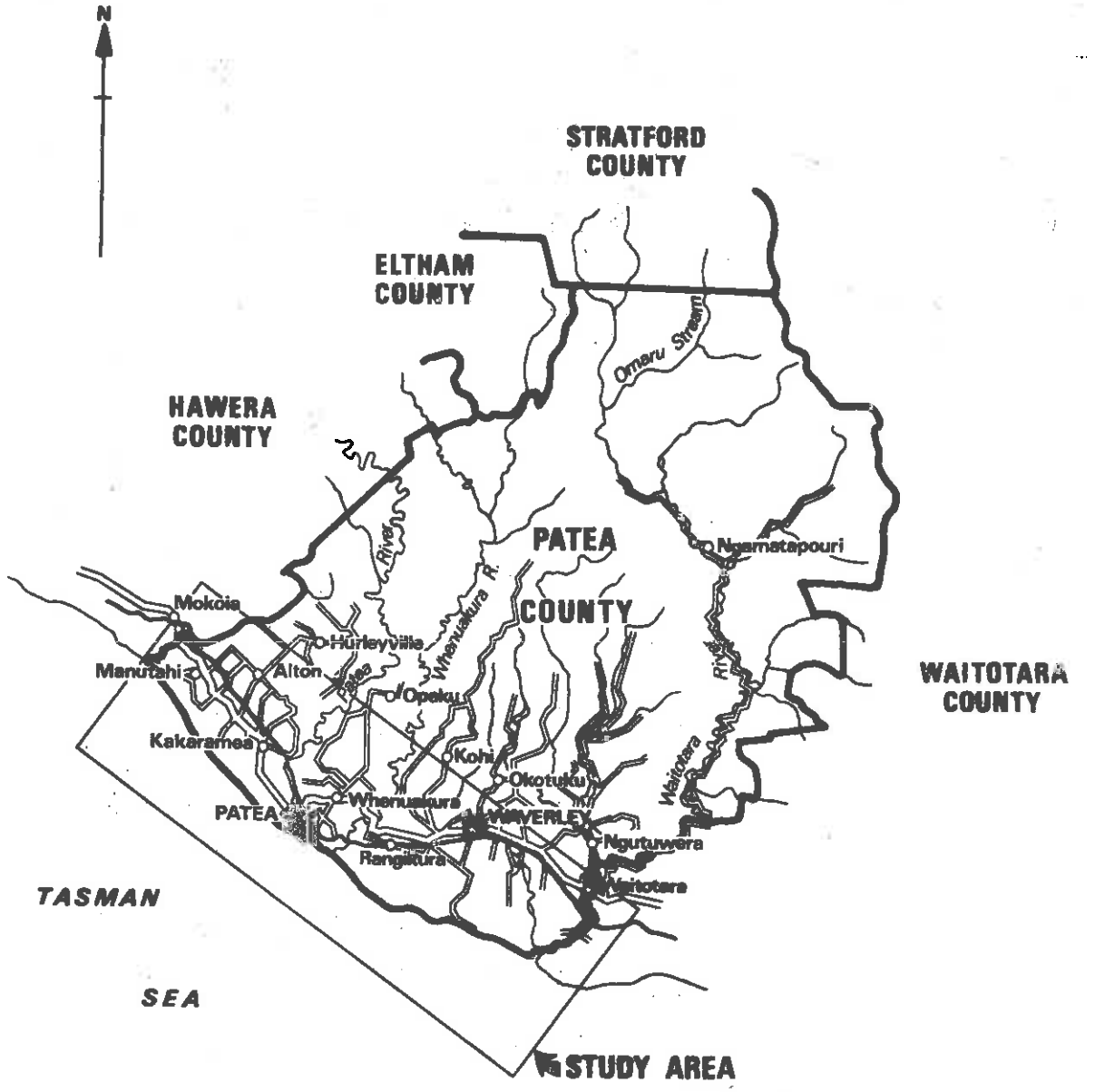
SCALE

20 0 20 40 60 km

Map 2

COASTAL RESERVE SURVEY

PATEA COUNTY



REFERENCE

Roads

Railways

SCALE

10 0 10 20 30 40 km

Coast south of Manawapou River.

Coast south of Delphi Point.

PART 1 - The Land

(a) Geology and Physiography

(1) Geology

The Wanganui Subdivision includes the coastal counties of Patea, Waitotara, Wanganui and Rangitikei. The decipherable history of the area opens in the early Pliocence with deposition of marine sediment in a sea that at times extended over the whole area and well beyond it to the north and east. Intermittent geosynclinal sinking in south Taranaki and west Wellington allowed a great thickness of sediment to accumulate in this sea. Sediment came from sources far beyond the subdivision. In the Patea County area the sediments came from Tertiary rocks to the north of the Taranaki series, making the base rocks of the coastal cliffs the oldest in the subdivision.

The abundance of sandy sediment led to widespread estuarine conditions in the basin, where tidal scour-channels traversed extensive littoral and sublittoral sand-banks. This pattern continued over a great length of time interspaced with widespread layers of rhyolite and pumice from volcanic eruptions. Consequently a complex system of marine, estuarine, lacustrine and volcanic sediments piled one upon each other. Gradually the entire basin tilted westward causing the ocean to recede very slowly. This shallowing process without widespread emergence led to concentrations of fossil organisms which formed shell rock beds common throughout the coastal areas of Patea County. These early sedimentary processes eventually resulted in the formation of the present rocks of the cliffs along much of the coast and are collectively called the Wanganui Series.

Transposed onto the Wanganui Series were the rocks of the Hawera Series. Though not as deep or extensive these strata greatly affected present day drainage patterns, transportation routes and human settlement patterns. The volcanoes of Taranaki supplied sediment rich in titaniferous magnetite and angite throughout Hawera time. This material reached the County as ash showers, beach sand, and dune sand to mingle with products of the hypersthere - andesite volcanoes of Tongariro and Ruapehu, which were carried south by the main rivers. It was in the early Hawera Series that faulting and tilting reached their climax including the Waverley fault zone near Waipipi Point and the Waitotara fault coming ashore near the boundary of Wairoa Domain land and Crown land adjacent to the Waitotara River.

The areas of softer rocks were rapidly peneplained and the rivers flowed over a delta-plain veneered with alluvium from a surface of low relief. Eventually the peneplain was warped up and the streams entrenched deeply. The uplifting of the Coastal lowlands including large sand dune, volcanic ash, lacustrine clay and peats established several marine terraces, e.g. Rapuni and Brunswick Terrace. These terraces are largely obscured for several miles inland by erosion, recent dune complexes, and human settlement works i.e. roads and farms. However, the harder rocks of the Rapuni Terrace cap the soft mudstone cliffs in Patea County slowing erosion and providing water falls where small streams occur. The Brunswick Terrace occurs further inland than the Rapuni and has little effect on the Patea County Coastal lands established for the purposes of this report as between Highway 3 and the ocean.

Physiography

The Rapuni Terrace is a key element in the physiographic makeup of Patea County. In fact the terrace itself is significant scientifically as its position helps to establish old ocean levels and also helps to date volcanic eruptions (through fossil beds).

Recent dunes rise above the surface of the terrace which appears between them as flat areas, locally swampy. To the south in Waitotara County where the terrace has been broken up geologic rarities known as "ventifacts" exist in these flats.

The advancing dunes have ponded most of the small consequent streams draining the terrace, forming lakes that are fed by swampy, aggraded, headwater tributaries. Many of these lakes have a significant wildlife habitat and a certain amount of interest has been shown in them by Wildlife Service Department of Internal Affairs with respect to wildlife management proposals.

Beneath the Rapuni Terrace lies a large layer of iron sands of considerable economic importance. Currently a long term mining contract with Japanese Steel Companies calls for the removal of 55 million dry long tons of iron sand concentrate. This entire project has modified the immediate coastal topography considerably and could in the future if the market expands involve as much as half the coastal lands within the study area. This could be a problem in relation to a large regional park proposed for the Waitotara River mouth area. Refer appendix I for a paper on the Waipipi Ironsand Company operations.

A recreational land use dilemma arises when a large floating dredge removes the overburden and iron sand layer and then replaces the overburden. The Company stabilises it with lupin and marram grass. This creates a featureless plain that could be grazed to a higher degree than before but eliminates the natural character, plant life and wildlife of the dune country. Reserve status over a large dune area with its swamps and lakes intact would preserve at least some of this landscape type for the future. Such an area lies adjacent to the Waitotara River mouth and if combined with a large area of Crown land and Nukumaru Domain to the south in Waitotara County would have the features and size for a regional park complex. It would also allow for the management and protection of the river mouth as a unit including its related wildlife and marine life ecosystems. This same area would contain European and Maori Historic sites, geologic features of international importance, as well as the largest beach not backed by cliffs in the county. The expense of land acquisition would be small for most is Crown owned or public domain land. This proposal will be further outlined in Section C under the heading ownership.

As indicated earlier the raised lowlands were dissected deeply by the rivers and streams of the area. The major rivers - the Waitotara, the Patea, the Whenuakura and the Manawapou have downcut fairly large areas of the coastal plain to sea level and gradually destroyed the cliffs. During glacial times the rivers were larger and carved considerable gaps in the cliffs along the Coast. It is at these gaps and a few small stream cut breaks that recreation potential is concentrated. The proposals for reserves will include all these major breaks in the cliffs including that one at the Patea River where a portion of the coast lies within the Borough boundary itself. It is not normally included in the County report as such but serves to complete the coastal reserve investigation for the area on an inventory basis.

(b) Soils, Climate and Agriculture

(i) Soils

Patea coastal land is divided into two basic soil types; one, Egmont central yellow brown loams and, two, Foxton central yellow-brown sands.

The northern half of the county above the Patea River contains the volcanic loam soils virtually right to the ocean cliff edge. These Soils are derived from volcanic ash erupted from Mount Egmont during the last 50,000 years or more. They are andesitic material, gravelly near the mountain but grading into sand and silt textures near the coast. The ash beds rest either on bouldery mudflows or on marine

sediments. In Patea County the latter is true giving the group the name Warea soils. These deposits are marked by numerous small conical hills separated by flattish land.

These yellow-brown loams have some outstanding characteristics. Their friability and free drainage provide excellent physical conditions for plant growing and grazing in a wet climate; the soils are not sticky, and when moist they absorb large amounts of water without swelling. The soils require both phosphorus and potassium when extensively farmed because of the high retention of allophane, the dominant clay constituent.

In short, these are fertile soils that support excellent pasture for dairying, beef farming, or fat lambing and are not erosion prone. In northern Patea County the pasture can extend to the cliff edge and coastal land values are high. This pastoral setting helps establish the beginning of the Taranaki dominated region as opposed to the Wanganui-Manawatu pattern to the south. The lands are too valuable for forestry and do not contain economic layers of iron sands. Consequently, acquisition of these lands for foreshore walking access along the cliff tops would be expensive and an easement or public access zoning would be preferable.

The second soil group called the Foxton central yellow-brown sands cover the study area south of the Patea River and are found as far south as Paekakariki in Hutt County. Soils of this type on the younger sand drifts bordering the coast show little or no profile development and except on sand plains where the water table is high are droughty and unstable. Further inland the soils formed on older sand drifts are more weathered and slightly to moderately leached, but for growing plants leaching losses are more than offset by improved physical condition due to increases in organic matter and accumulations of fine particles of dust that increase the moisture holding capacity and resistance to erosion. The more weathered soils and those with high water tables are capable of maintaining high quality pastures for dairying and fat-lamb farming. Regular dressings of phosphate and potash are required and the wetter soils need drainage. On the more excessively drained yellow-brown sand soils exotic forestry is preferable to pastoral farming. This sandy soil group is not nearly as valuable or fertile as the volcanic loam soil of the north and consequently is relatively undeveloped for pasture. The public land holdings on the erosion prone coastal sandy soils are considerable while the loams soils are in generally freehold ownership. Thus ownership directly reflects soil qualities in Patea County.

The climate of Patea County again shows the Taranaki affiliation with rainfall averaging around 1250 mm as opposed to an average of 1000 mm in Counties south to Wellington. However, though the coastal lands are wetter, other climatic features have a close link to the Wanganui region. The temperature regime shows small variations from day to day, and about half of the total possible sunshine is recorded. The winds are from a westerly or north westerly quarter and generally steady.

Relative humidity remains constant summer to winter in Patea County and does not show the marked summer drop of areas to the south. This would make summer recreation conditions a little less comfortable in Patea than to the south.

The records for Patea coastal lands are not as complete as for areas south or north but indications are that wind strength remains constant throughout the year in Patea while lands to the south have a winter low period. However, the winds in Patea County even at their lowest are still on average higher than the strongest monthly total for areas to the south. This means a constant wind of considerable force blows through the area. This will contribute not only as an undesirable feature (e.g. blowing sand, strong surf) for most recreation pastimes in the County but make the sandy soil of the County susceptible to constant wind erosion. Transposed on the mean monthly wind pattern is a strong diurnal variation on the coast. This is caused by the heating and cooling of the land, night to day and along the coast, and can contribute 8km/p/h by mid-afternoon to any early morning wind speed.

The temperatures in Patea County are more moderate with lower summer temperatures on average but higher winter temperatures than areas to the south. The difference is not significant and the records too incomplete to establish any real pattern. The coastal lands being moderated by the sea have never recorded 32°C or 6°C and the daily range averages around 10°C.

The coastal lands in Patea average over 2000 hours sunshine per year with January as the highest month having 240 hrs plus.

The incidence of special phenomena such as snow, hail, thunder, fog and frost is rare and confined to winter with coastal fog occurring most frequently.

In summary, the prevailing air flow is from the westerly to northerly quarters, and except during the passage of the occasional depression or when a depression of tropical origin passes to the east of the North Island, the day to day weather conditions are not severe. A reasonably pleasant climate with few notable extremes.

The climate of Patea County puts no constraints on extensive summer recreation or for that matter most winter sports. Though the constant wind of high velocity could make conditions unpleasant, especially in the sandy southern portion of the County as even coastal walkers would find blowing sand on the beach or cliff tops unpleasant and perhaps dangerous.

(c) Ownership and Access

As can be expected from analysis of the geology and physiography of the County's coastline the northern half of the County divided at the Patea river is mainly freehold, a few kilometres of public land at Patea Borough and one small piece of Maori land, while the southern portion is chiefly publicly owned with a little freehold centred around the Whenuakura River. The public lands are mixed Domain Board run by the County, Crown lands administered under Section 58 of the Land Act 1948, Harbour Board land and Crown agricultural lease of short term over active sand dune country. The Patea Harbour Board Act 1903 gives the County control over all the land from MLW to the cliff base from the Kaikura Stream to the Wairoa Stream. The brown loams of the north are formed to virtually the cliff edge while in the southern half, beginning just south of the Patea river a band of eroding sand country gradually widens away from the cliffs reaching a km in width around Waipipi point and near the mouth of the Waitotara River. These two widest dune areas back the only two extensive beaches in the County which supply the sand to the hinterland under the steady strong winds.

One of the areas behind Waipipi point is the centre for iron sand extraction. A large barge floats on an artificial lake scooping up the iron sands from beneath the Rapuni Terrace, concentrating it and piping it in solution to an offshore loading platform. In the wake of the barge is left the overburden and waste sand which is spread out on the areas already mined to be stabilized with marram and lupin. The company has done a good job in its stabilization programme except in an area nearest the ocean where large active dunes are forming. These will be trouble as they will in time overwhelm the stabilized flats behind.

The other area of extensive active dunes lies along a 3 km front behind a large beach between the Waitorara river and Wairoa Domain land. This is Crown land under a 5 year grazing lease and is the best representative example of natural dune country and its complete eco-systems in the county. This land if coupled with Wairoa Domain lands to the north would be an excellent location for a regional park complex. In fact, in conjunction with Crown land and Nukumaru Domain land in Waitotara County such a regional park is proposed in this report, (refer Proposal 1).

Road access to the coastline of Patea County is extremely limited. There are only two paved roads to the coast, one ending at Waverley Beach subdivision and the other a short road within Patea Borough to the beach. Only one other public road has been formed to the coast that being the Manawapou Rd in the extreme north of the county ending at the mouth of the river with the same name. Public domain and reserves are already established at the end of the two paved roads and this leaves only the need for a reserve at the Manawapou River mouth.

Several unformed legal roads reach the coast but these would arrive at a high cliff face with little opportunity for recreation to potential users. These roads could serve as a legal access for coastal walkers who could then take circular walks for scenic views over short distances. (The scenic quality of the cliffs is their greatest recreation use along with associated activities such as picnicking). For these reasons these roads should remain as legal public road for access or should be considered for inclusion in the New Zealand Walkway System.

(d) Wildlife

Wildlife along the Coast is confined to common exotic mammals such as opossums, hedgehogs and rabbits, the latter being in nuisance proportions in the unstable sand dune country. Upland game birds such as pheasant, grouse and quail have been released along the coast especially in the lands adjacent to the Waitotara river giving local shooters an added recreational outlet. The Waipipi iron sand extraction has only temporary effect on the wildlife but the establishment of pasture on the levelled sand country will eventually remove some wildlands from an upland game environment.

The main wildlife area of the county is around the Waitotara River mouth including natural sand dune country, a large inland lake, swamps, the river estuary, several small creeks and semi-modified pasture land. There are many types of native and introduced waterfowl and land birds in this area and hunters and shooters use the area seasonally. Whitebaiting and eeling are done extensively in the river and creeks. Flounder spearing and fishing are done in the river and reports from locals indicate good catches (not unusual in any area).

The birds exist in conjunction with plant and marine life systems contained only in the river estuaries which if changed in even the smallest degree can result in the elimination of an entire species. Some management of the water fowl shooters is also necessary to maintain the present rich resource. This is urgent in view of the rarity of such terrain especially

the spring feed lakes surrounded by dunes and swamp where excessive killing has occurred recently. Refer Appendix 2 for a Wildlife Report on the area.

The County has ownership and control of the lands between MLW, and MHW (cliff base) between the Kaikura Stream north of Patea Borough and Wairou Stream south of Waipipi opens the possibility of precedent for control of important estuaries such as exist at the Whenuakura River mouth.

(e) History of Coastal Lands

The Maori history in the area is little recorded, though the Historic Places Trust in Appendix 3 describes the general setting and possible features to look for. Archaelogical sites such as the sand borrow pits used in Maori kumara farming and pa earth works are found and documented in the coastal lands though usually inland several kms rather than near the sea. The Waitotara river was a major inland route for the Maoris and during the Wars of 1860's and 1870's fighting took place at various places along the river. The mobile sand dunes would have covered the Maori sites nearest the coast though agricultural stabilization has preserved a pa site beside the Waitotara River across from Wilkies Bluff.

European History began with Wakefield's Wanganui purchase of lands including Patea County in the 1840's. Land development began immediately only to deteriorate during the Maori Wars and then steadily improved to today's situation. The county's ties were always torn between Taranaki and Wanganui leading to todays mixed jurisdictions. A large freezing works and slaughter house operates at Patea but the Harbour is now unusable and the produce goes to Wanganui City or New Plymouth for export.

One interesting feature along the Coast is the presence of one of the earliest hydro-electric power plants in New Zealand. It is located north of Patea Borough at the Kaikura Stream. The Stream was dammed above the cliff and then an intake pipe led to a generator plant at the bottom of the cliff, the fall producing the required head for generation. It is no longer in operation and lies derelict but makes an interesting feature for any coastal walker.

PART II - The Ocean

(a) Marine Geology and Topography

The general sea bed of Patea County is the northern part of the Wanganui Geosyncline and dips gently out to sea reaching 50 metres at approximately the 30 km mark. It is composed generally of the same erosion prone formations as the land thus it has been levelled to a very uniform profile by wave action, tidal movement, gravity and ocean current forces as well as chemical and organic break-up. There are no major banks or canyons near the coast though eventually the sea bed falls off into the Cook Strait trough and gently back up to the South Island. The seas are very shallow off Patea County compared with counties north around Cape Egmont and to the south in the Manawatu.

The surface of the Cook Strait trough is fine mud and a cross section to Patea would pass through a broad band of coarse sand and shell before giving way to medium fine sand and finally very fine sand immediately offshore. The very fine sand belts end at the northern boundary of the County where cobbles and boulders dominate and stretches south to approx. the Whangaehu River mouth. This sand belt like the sands on shore contains a high iron content which may be economic to mine given demand and technical advances.

All along the coast the ironsand beach laps the base of the cliff and veneers a cut platform except the two large beaches mentioned earlier in Part 1. Under continuous wave attack the coastline regresses without leaving many stacks or reefs. Occasionally andesitic boulders derived from the overlying unconsolidated Rapuni Formation litter the foreshore. The cliff line is often deeply indented or crenulated, with picturesque caverns, caves and gulches. It can be demonstrated that these features occur along zones of weakness such as faults or joint planes. Over caves near Waverley collapse depressions have been formed in the terrace surface immediately behind the cliff crest. This coastline is actively retreating as numerous recent rock falls, slips and slides along the cliffs attest. This retreat has been studied and estimated at 1 metre per year at points in Waitotara County just a few kms south.

Offshore a short way the eroded material is frequently deposited in mobile sand bars that are constantly changed by storm waves, the tides and river sediments. The heavier iron sand or titanomagnetite is deposited in blue-black coloured beaches which typify the southern Taranaki region.

(b) Ocean Classification, Character and Quality

The west of New Zealand is affected by two currents, the southern branch of the East Australian current which in turn affects the Westland current and The North Branch which runs more easterly and north of its counterpart and feeds the south moving West Auckland current. The overall effect of these currents splitting and converging is as yet uncertain but cards released at various ocean locations from Cape Farewell up to Cape Egmont turn toward the west coast of the North Island. They landed between Foxton Beach and Makara if released in the Maui area and between Wanganui and Cape Terawhiti if released off the south island near Cape Farewell. This indraught is historically called the D'Urville current and could bring damage to beaches if a major oil spill occurred.

It should be remembered that the cards move on the surface and would have been affected by the dominant westerly winds and that cards released just several kilometres offshore were not recovered. As a matter of fact very few cards were recovered from any release and certainly not enough is known of the currents to confirm any detailed pattern.

More important to the Patea coastline from a recreation point of view than the large ocean currents are the littoral drift and the tides. These forces combine to sculpture the sea bed so as to make most in-water recreation safe or unsafe depending on many factors, e.g. a strong current or rip can make swimming dangerous even in shallow water or a high tide below cliffs can trap beach walkers. The tides along the coast would lie between 2 and 2.5 metres springs and 1 and 1.5 metres neaps with a north moving tidal stream flooding and south going component ebbing. The flow rate of the tidal stream is very light, somewhere around 0.4 knots. These figures mean in effect that the tides are neither high nor strong in flow, largely promoting water activities. This is due to the general open nature of the South Taranaki Bight. The tides are high enough however to reach the cliff base and could prove dangerous to coastal walkers not aware of this fact. The three beaches not backed by cliffs within the County are the centres for in-water activities and largely eliminate tidal problems from in-water recreation.

Average temperature over the surface of the ocean along Patea County ranges from 19°c in summer to 13°c in winter. These temperatures decrease towards the south and make the water excellent for swimming over the summer months and usable before many large beaches to the south by a few weeks. The water contains high counts of nitrate and phosphate at the lower depths indicating a good environment for marine life. Further work on water content

especially dissolved oxygen is needed to fully analyse the ocean potential for marine growth and life so as to protect its present status and manage its resources for recreation and commercial benefit.

The wave pattern along the coast is very regular and averages 1.20 metres in height on shore and 3.4 metres a kilometre offshore. These heights can increase three-fold during storms. It has also been noted that based on 15 months of data collection, the December to March period contained below average wave heights and fewer storm waves. The waves break regularly and parallel to the coast making swimming safe for most people and strong rips, though in evidence, are not excessive.

Water Classification

Under the Water and Soil Conservation Act 1967 sea water may be classified and the procedure is controlled by the Water Resources Council. Provision is made for a water classification which is suitable for various public uses which have a range of water quality standard associated with them. Any water classification which may be applied to part or all of this portion of the coast needs to be related to the existing natural quality after balancing relevant considerations of existing discharges and existing and planned future land and water use. Water classification is particularly useful in controlling pollution but is not necessarily needed when there has been no alteration in the natural state of the sea water along the coast. In the case of Patea County some study, as to the effects of the Freezing Works at Patea Borough along the Patea River and the sludge from the ironsand concentration plant at Waipipi, on the ocean water adjacent is likely needed. Also, the Patea Borough rubbish tip over the coastal cliff down to the foreshore is unsightly and pollutes the foreshore beach below. Parts of this unsorted debris have only a km to move to the borough public beach to the south. Dumping over the cliffs has also been observed along the Taranaki Coast to the north (e.g. Opunake).

(c) Marine Life

The ocean waters off Patea County are amongst the richest in sea life in New Zealand. The basic food supply for fisheries and shellfish the zooplankton biomass is 1335 mg/m^3 in the South Taranaki Bight which compares favourably with an average of 300 mg/m^3 in all other New Zealand shelf areas and only 204 mg/m^3 in the North Taranaki Bight.

The Pelagic (open ocean surface) fisheries are as yet largely under exploited in this area but catches of trevalli, kokawai, barracouta, mackerels, sardines and pilchards are taken currently in large numbers by foreign trawlers. These same fish are taken by New Zealand fishermen sailing from Wanganui and New Plymouth in excess of 9 times the Wellington catch. In 1970-71 a concerted effort was made on tuna fishing in several places around New Zealand, and New Plymouth was established as a tuna fishing port. Since then commercial quantities of tuna have been taken and a continued development is foreseen. Since the tuna fisheries have been found to thrive in summer waters averaging 19°C to 22°C Patea County is about the southern limit of this zone. Similarly it has been noted that along with the tuna other animals thrive, notably, dolphins baitfish, squid and sea birds making the Patea Coast rich in marine life.

In all 31 species of whales pass through the North Cook Strait area on their migrations probably largely due to the abundance of plankton and squid.

The demersel(bottom feeding) fish represent a large part of the New Zealand catch and one of the major fields has its northern limits just south of Patea County while 3 others end near the northern boundary of the County. This is due to a dramatic marine geological change north of Patea County around Cape Egmont which has changed the sandy regular bottom to irregular boulders near the shore and mud further out. Depth doubles in the same distance from shore and a noticable zone of limited fisheries is found. Oddly enough while the offshore marine life diminishes, the boulders and rock platforms of the Taranaki Coast promote greatly increased inshore marine life, e.g. paua, crayfish etc. compared with the sandy beaches from Patea County south. The reason for the fishing grounds existing off Patea County is a rubble-strewn platform 25 to 30 cm above the surrounding sea bed, ranging from a few hundred metres to 6 kilometres wide and containing abundant food species for fish such as corals, bryozoaos, sponges, crustacea, mullusca and polychaetous. This platform is not only a trawling zone but comes close enough to shore to promote recreational fishing by small boat or surf casting. Large numbers of sharks are to be found in conjunction with the fishing bed and represent the largest (by weight) catch on the coast.

The lower reaches of the Waitotara River are popular areas for white-baiting and the Manawapou River also has a recreational value based on white-baiting. Eels may be taken in any stream or river along the coast accounting for another recreational outlet associated with Waitotara River in particular.

Surprisingly, the coast is not heavily populated by shellfish which fossils would indicate was true of the past. Only small green mussels and a few small crabs inhabit the inter tidal platform. This same platform supports a heavy cover of marine organisms which are an intricate part of the marine eco-system. These organisms would draw the demersal fish near enough to shore for land fishermen to take some good catches.

The sandy area between the rock platform and the cliffs contains few marine species as it is often shifting and pounded by waves at high tide though beetles and land crabs come out at low tide. The cliff face itself shows signs of organic borings but it erodes so rapidly that these do not have time to develop significant strata

The rough nature of the ocean would prohibit the introduction of shellfish farming as we know it and makes even crayfishing for recreation dangerous.

(d) Recreational Use and Character

The nature of the coastline prohibits some active water sports such as sailing, power boating, water skiing and skin diving because of rough seas and murky conditions offshore. Several inland lakes and the Waitotara River act as outlets for most of these activities discouraged at sea.

The beaches at the Waitotara River mouth, Waipipi, Patea Borough, Waverley Beach and Manawapou River offer ample scope in size, access and isolation to suit local or regional demands for swimming, surf casting, surfing and picnicking. Waverley Beach settlement is the only beach sub-division in the County but it has ample room for expansion for baches as well as a camping ground and formal picnic sites

The remainder of the County especially from Patea Borough north is composed of large cliffs whose chief attraction is passive recreation especially walking and scenic outlooks. This would involve freedom of access along the top and the bottom of the cliffs. Features such as the old power station, caves, and small waterfalls previously sited in the report would be attractions on this coast. A garbage tip just north of Patea Borough beach dumps rubbish over the cliff face onto the beach, a practice not conducive to recreation either passive or active.

The large tract of Coastal Wildlands near the Waitotara River, mentioned earlier in discussion for a Regional Park complex, offer excellent water fowl and upland game shooting in the dunelands and swamps (including a large springfed lake) behind the beach. These recreational outlets when coupled with the beach and Waitotara River activities mentioned previously give the County and the region at large a prime location for a recreational complex especially if joined with the scientific and recreation complex proposed for lands adjoining in Waitotara County.

A series of small lakes very near the cliff edge in the northern part of the County could become excellent picnic areas providing good covers of native bush and shelter. These lakes could well have waterfowl shooting, eel and fishing uses as well. The fact that they are generally within only a few hundred metres of the cliffs opens the possibilities for their utilization by walkers and they should be considered for recreation in conjunction with public access proposals. In the past these lakes were recognised for this very role as some have unformed road access from a main unformed road along the cliff top and are in partial public ownership around the edges.

In other counties to the south as well as southern Patea County similar lakes, though often larger, have tended to compete with the ocean for recreations such as swimming, boating and fishing but these lakes are near enough to the ocean to directly interact with coastal recreation opportunities. This will be involved directly in the proposals where applicable.

PART III - Reserve Proposals

The identification of the qualities and values of the Coastal fringe in terms of natural landscape character and potential for public usage for recreation in the preceding sections provides the basis for a number of proposed lines of action. In the County the proposals cover, in principle the future provision of public access and usage in conjunction with conservation and preservation of the coastal environment.

South of the Patea River the coastline is a bold mixture of vertical cliffs and large black sand beaches while north of this river it is virtually continuous cliff formations. These cliffs to the north range from 50 to 60 metres high while those to the south are only 10 to 30 metres. Consequently the main appeal in the northern half of the County is scenic, and provision of access ways for cliff top hikes is proposed although erosion will continue to be a problem. Several unformed roads lead to this coastline and will help provide initial public access to the proposed accessway along the cliffs. Features such as waterfalls, small lakes and an old power plant highlight the dramatic cliff-top landscape. South of the Patea River continuous walking access is also sought and reserves are proposed where the Coast has recreational amenity and is accessible to the public. A large portion of this southern section of the County is in public ownership. The main area of reserve interest centres around the Waitotara River mouth where a number of features of historic, geological and scientific importance have been identified. (To a smaller degree the same can be said for the Whenuakura River estuary in the former case). The significance of these features along with those identified in Waitotara County across the river have led to a proposal for a regional park in this area. The complex nature of the physical environment and the management requirements will make this proposal a unique park, with a bias toward preservation of the features of national interest and the development of compatible recreation amenities. This proposed park will obviously have a regional significance and its establishment will be given a high priority.

This investigation and classification of the Coastal environment is an important phase of the Department's function in establishing and administering a national recreation and open space policy. It also facilitates the conservation of a highly valued national resource which was recognised by central Government in the Town and Country Planning Act Amendment 1973 which declared the "preservation of the natural character of the Coastal environment ... to be a matter of national importance".

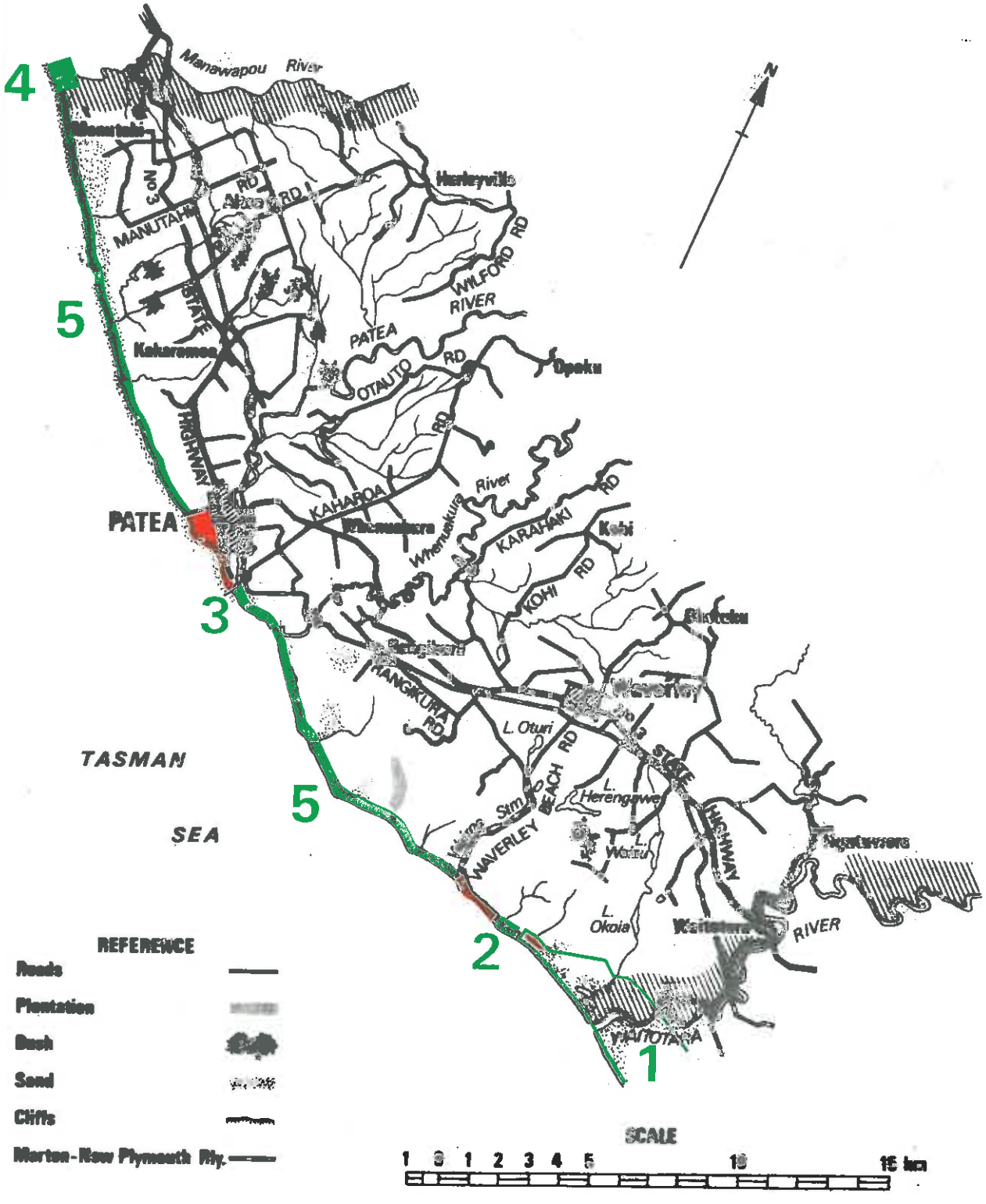
Map 3

COASTAL RESERVE SURVEY

PATEA COUNTY

Proposed Reserves

Existing Reserves



PROPOSAL 1 - WAITOTARA RIVER REGIONAL PARK

Aerial Photos: 3396 - 7/5/6/7, 3397 - 2/3/4/5/6/7, 3398 - 1/2/3/4/5

Aerial Mosaic : N.137 - 4/5

Aim: To establish a regional park complex which includes Sections 517, 518, 538, 539, 540 and 541 Block XI and XII, Wairoa Survey District. Wairoa Domain Land centred on Waverley Beach and Nukumaru Domain lands and proposed scientific reserves across the river in Waitotara County. The area is approx.2,000 hectares. All the land is Crown-owned though large portions are renewable lease(without the right to freehold) or deferred payment Crown lands both of which must be treated as virtually freehold.

General:

The prime reasons for the establishment of a Regional Reserve are:-

1) The physiography of the area dictates the need to include both sides of the Waitotara River which is, the border of Patea and Waitotara Counties raising the need for joint Council participation in the setting up and running of the park. This could give the area a regional flavour by virtue of planning and management.

2) The Waitotara River bordering on both Counties can change its channel, creating difficulties in tenure and boundary definition. If the land on either side of the river has the same status as part of a regional reserve, then changes in the river would have no complicating effects.

3) The regional complex contains the following major features, all of which are sufficiently different in nature to warrant mangement plans of special expertise and interest. The features and interests are as follows:-

a) Wildlife sanctuary and habitat development - Wildlife service of Internal Affairs Department. The entire setting contains the nesting grounds and living habitat for numerous native and exotic land, sea and fresh water birds. These include game birds such as duck, quail, grouse and pheasant as well as some protected species. Appendix 2 is a report by a Wildlife Game Management Officer after a joint inspection of the area. The report was directed at only Waitotara County sections but for reasons of continuity and similarities in terrain all comments are equally relevant to the Patea side of the river and more so in the case of wetlands because of the presence of a large permanent lake.

b) The largest single stretches of beach in either county move out north and south of the river mouth. In Waitotara County the beach led to the building of a public road and a demand for bach development(Crown settlement). The beach in Patea County is equally good for swimming, surf casting and surfing but no formed road enters the area. There is provision however for public access to the area with an unformed road to the river mouth and around the perimeter of the Crown land as far north as Waverley Beach. The presence of these beaches coupled with nearness of Wanganui City and absence of other beach sites is indicative of an increased demand on the area.

NOTE: Recently a 100 metre foreshore reserve was removed from the Agricultural lease of the Crown lands from the Waitotara River to the beginning of the Wairoa Domain land and a 60 metre strip from the Agricultural lease of the Crown lands from the Waitotara River mouth to the boundary of the Hawken estate upriver.

(c) The only agricultural lime deposit throughout the Wanganui-South Taranaki Districts exists extensively throughout some of the Nukumaru Domain land and other Crown lands in Waitotara County. Their importance in agriculture ensures their continued exploitation. These quarries are currently operating on Crown land under licence and on Domain lands unauthorised. The abandoned pits have become rubbish dumps and there are examples of gully and wind erosion where vegetation, has been removed. These pits should be either levelled and replanted or made available to the D.S.I.R. for study of the Nukumaru shellstone-limestone rocks. If any pits fill with water a little landscaping could make them an oasis in a desert setting and a potential wildlife habitat. No garbage should be dumped in the area because pollutants can travel through the high water table to contaminate water supplies thus detrimentally affecting all eco-systems.

(d) A substantial area of Pingao native plants at the mouth of the Waitotara River would require special consideration as they are used in Maori arts and crafts and no other such area has been established in the Wellington Land District. These plants are now becoming rare especially where artificial dune building has occurred and marram planted for stabilization. The management of such an area of plants, may require special knowledge of their characteristics and even harvesting.

(e) Several areas of archaeological interest lie within the area. The fossil totara trees covering the river mouth and giving the river its name. The former inn, Cavalry outpost on Wilkies Bluff, remains of a pa site, and old settlers cabin are all of different interest, and will require various approaches for restoration and information extraction if desired.

(f) The area has the National (Fossiliferous Interval) examples for two Geological time periods, Nukumaruan Limestone (quarries and ocean cliffs) and Waitotaran(Wilkies Bluff). These areas will require constant scientific investigation over a long period of time and by many agencies. The sites are internationally important and the rock types crop up on rare occasions as far away as South Westland. Once again the nature of the feature requires expert and unique management.

(g) Throughout the area especially in Waitotara County are beds of Geological oddities called 'ventifacts'. These are augite andesite rocks exposed or left from the erosion of conglomerate, shaped by wind and iron sand abrasion. The shapes they take and indeed their elements raise many geological questions on origin and dominant winds over the area and coast in general.

(h) Super-imposed over the entire area south of the Waitotara River is a Rangitikei-Wanganui Catchment Board sand stabilization plan covering 4560 ha which will ultimately become pine plantation. There are widespread recreational ramifications in this plan as well as the problems with the scientific areas.

4) The mixture in ownership and interests throughout the whole area will require joint discussions on land exchanges, jurisdiction, technical input, financial responsibility, management planning and development issues.

5) The proposed park site is at present almost entirely in public ownership and expensive outlays for land will not be necessary. This factor alone removes one of the greatest barriers to establishing similar parks elsewhere.

6) On a full regional perspective the Waitotara river mouth is the logical point to establish a regional park after Queen Elizabeth II Park and a proposed regional park at Tangimoana.

7) The Wainui Beach settlement has scope for expansion onto Crown land to the West and North should its popularity prove this to be desirable. This land described as Pt.Section 100 Block XIV, Wairoa Survey District is at present leased for agricultural purposes until mid 1977. There are areas of bare sand amongst lupin, boxthorn and marram which is grazed and there appears to be a satisfactory supply of underground water in the area. With a large number of different interests in the area, future planning of the beach settlement may find that a camping ground warrants consideration in any development of the Settlement.

History There is some mention of investigating a possible regional park in the area by H.O. Coastal Reserve Committee in 1972. The regional park concept was approved for an identical proposal in Waitotara County (2A)

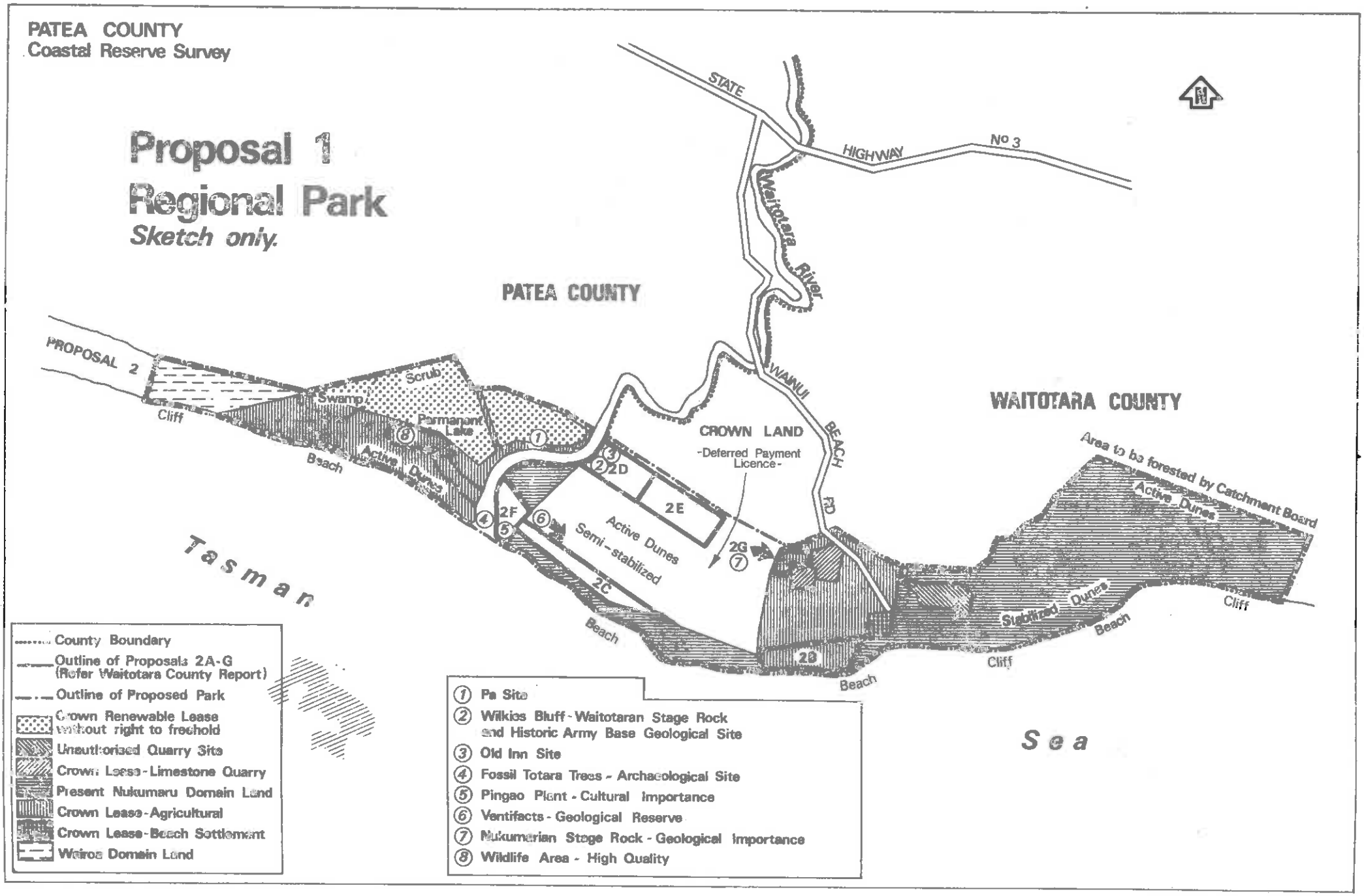
Significance Regional

Priority High

Action The Department of Lands and Survey to take action to advance the concept of a regional park.

Sand hills behind beach looking south adjacent to Waitotara River mouth

Waitotara River mouth looking south into Waitotara County


PATEA COUNTY
Coastal Reserve Survey
Proposal 1
Regional Park
Sketch only.
STATE
HIGHWAY
No 3
Waitotara River
PATEA COUNTY
WAITOTARA COUNTY
PROPOSAL 2
Cliff
Swamp
Scrub
Permanent Lake
Beach
Active Dunes
CROWN LAND
-Deferred Payment Licence-
WAIAUI BEACH RD
2D
2E
2F
2G
2C
2B
Active Dunes
Semi-stabilized
Area to be forested by Catchment Board
Active Dunes
Stabilized Dunes
Beach
Cliff
Tasman
Sea
County Boundary
Outline of Proposals 2A-G (Refer Waitotara County Report)
Outline of Proposed Park
Crown Renewable Lease without right to freehold
Unauthorised Quarry Site
Crown Lease - Limestone Quarry
Present Nukumaru Domain Land
Crown Lease - Agricultural
Crown Lease - Beach Settlement
Weiroa Domain Land
1 Pa Site
2 Wilkies Bluff - Waitotaran Stage Rock and Historic Army Base Geological Site
3 Old Inn Site
4 Fossil Totara Trees - Archaeological Site
5 Pingao Plant - Cultural Importance
6 Ventifacts - Geological Reserve
7 Nukumaruan Stage Rock - Geological Importance
8 Wildlife Area - High Quality

PROPOSAL 2 - EXTENSION TO THE WAIROA DOMAIN

Aerial Photos: 3396 3 and 4

Aerial Mosaic: N.137/4

Aim: To set aside an area of coast land as recreation reserve surrounded by the Wairoa Domain.

Land and Area: Part Section 465 Block XI Wairoa Survey District. Area 23.6 ha.

Location: An area of coastal land located between two parts of Wairoa Domain land i.e. Run 4 and Run 3 Block XI Wairoa Survey District. At the end of the Waipipi Rd which runs from Waverley Beach Road approx. 15 km. from Waverley Borough.

Status: Freehold

Vegetation: The area is 75 per cent flat and in good sown pasture, 15 per cent hummocky dunes in rough grass and marram, and 10 per cent bare cliff faces.

Access: No access except along unformed Waipipi Rd from Waverley Beach in the north or Brewers Lane in the south along the Waitotara River.

Utilization: The area is primarily good pasture which will give effective continuous public control over all the coastal lands from the Waitotara River to the Waipipi iron sands concentration plant. It will provide a valuable link in walking access along the coast and the land can be used to support development in the Domain lands nearer the beach sub division or the proposed regional park.

It is desirable that public road access into the proposed regional park will be from an extension to Waverley Beach Road across proposal 2. It is essential that this land is in public control for management control purposes for if the only public road access is along the Waitotara River, then the delicate wildlife situation is in jeopardy through overvisitation. Yet the public if stopped at the end of the existing Waitotara River road will be denied an opportunity to enjoy other features of the Park, e.g. the beach and dune country.

Outside of the access opportunity the nature of the land provides scenic viewing and a valuable flat piece of land for the expansion of camping opportunities. The present Wairoa Domain adjacent has a camping ground that is crowded in the summer and the regional park complex will need an area for campers away from the natural dune lands in order to maintain their character. The land has been valued at $24,470 by the Department of Lands and Survey in preparation for an approach to the owner for acquisition.

General: Zoning is rural.

History: In an earlier coastal reserve investigation the area was identified as being investigated for addition to the Wairoa Domain.

Significance: Regional

Priority: Low

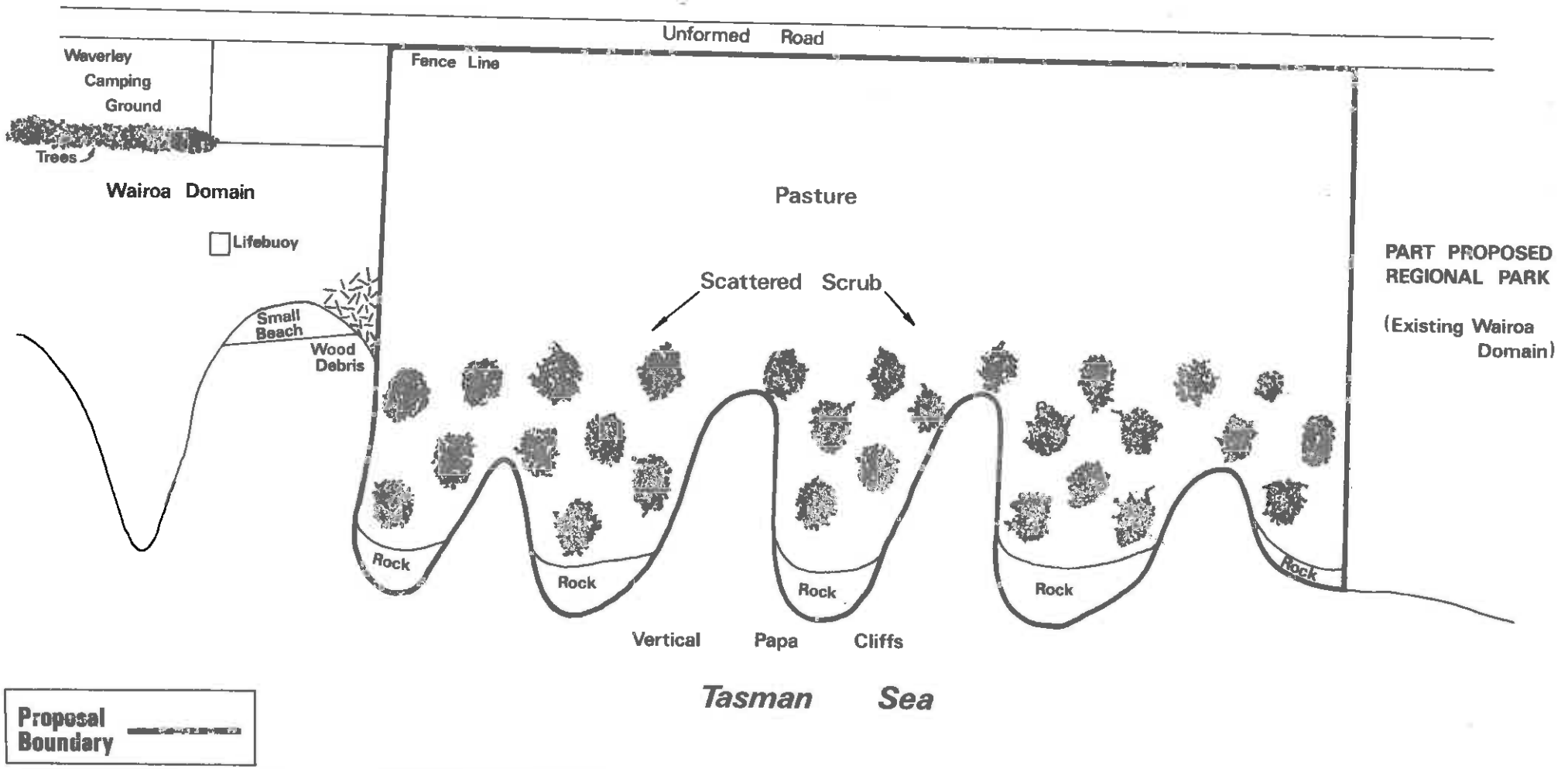
Action: That the Local Authority be asked to designate the area as "proposed recreation reserve " on the Patea County District Scheme.

Looking south at Waverley Beach.

PATEA COUNTY
Coastal Reserve Survey

Proposal 2

Sketch only.



PROPOSAL 3 - PATEA RIVER MOUTH

Aerial Photos: 3393 1/2

Aerial Mosaic: N/36/3

Aim: To set aside an area of coast as recreation reserve. DP.2918 Block VII Carlyle Survey District, Taranaki Land District.

Land and Area: The coastal lands between the railway line, the river thecliffs and the ocean - 2 hectares approx.

Location: Adjacent to the south mole of the Patea River and stretching back over dunes to the railway line.

Status: Patea Harbour Board including the lands between LWM and HWM, the latter being considered the cliff face where it exists.

Vegetation: Marram grass, lupin and boxthorn

Access: An extension of the Kaharoa public road runs across the railway line to end, near the beach. It is unmetalled in the coastal lands running over dunes and is suitable to 4 WD

Utilization: The area presents opportunities for swimming, surfing and surf fishing on a beach 300 metres long protected by the river moles. The south mole itself presents opportunities for line fishing.

General: The area is used by residents of Patea Borough for all the recreations mentioned above and, is a logical extension to the Borough recreation opportunities on coastal lands. It is also an important point that both sides of the river estuary be in public lands for environmental reasons. The dunes behind the beach provide some shelter for picnics and evidence of camp fires is scattered throughout the dunes. Zoning is rural. Not previously considered by the Coastal Review Committee.

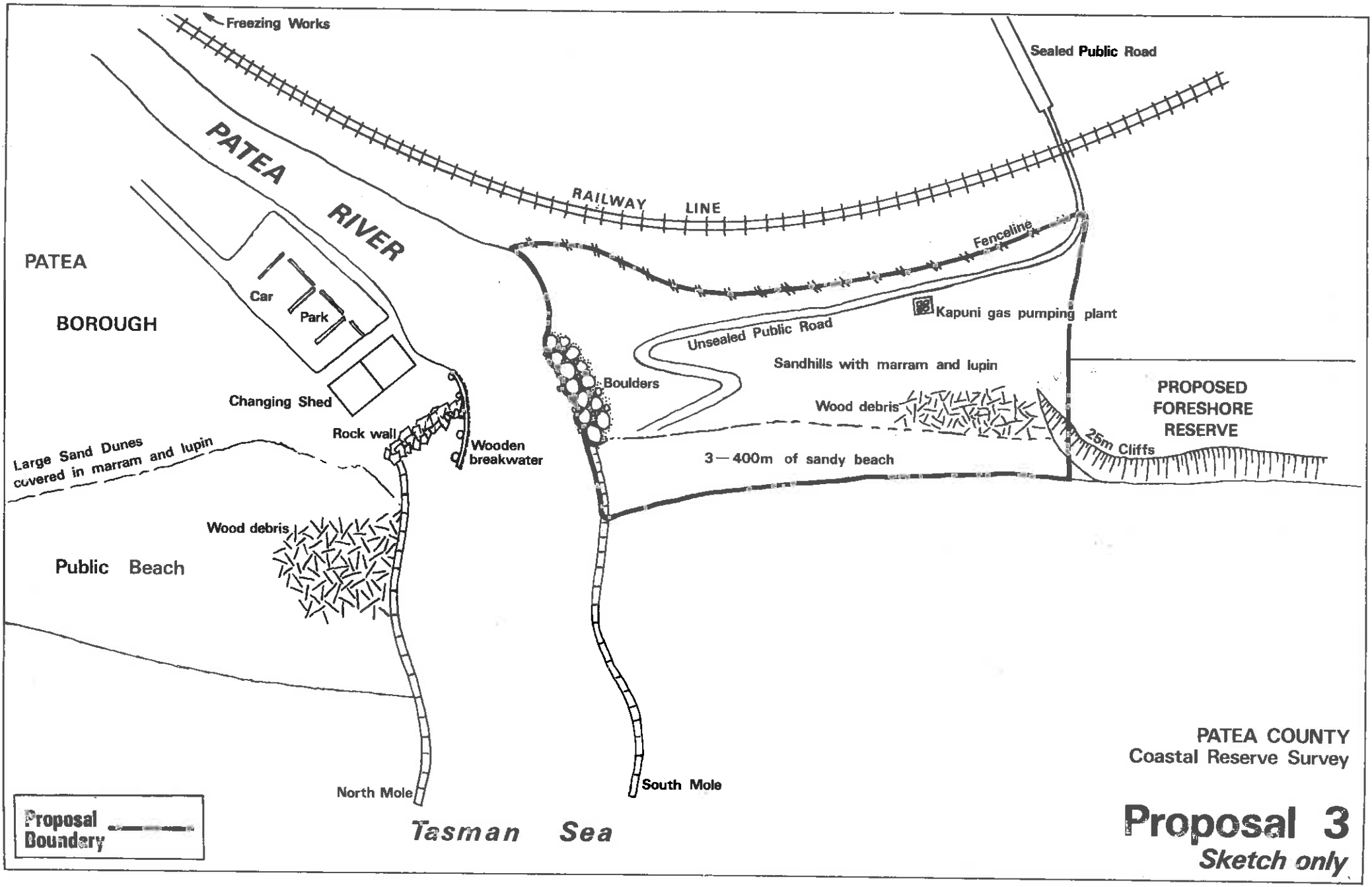
History:

Significance: Local

Priority: Low

Action: That the Local Authority be asked to designate the land as "proposed Recreation Reserve" on the Patea County District Scheme.

Views of beach adjacent to south breakwater, Patea River.


Freezing Works
Sealed Public Road
PATEA RIVER
RAILWAY LINE
Fenceline
PATEA
BOROUGH
Car
Park
Kapuni gas pumping plant
Unsealed Public Road
Sandhills with marram and lupin
Boulders
Changing Shed
Wood debris
PROPOSED
FORESHORE
RESERVE
Rock wall
Wooden
breakwater
25m Cliffs
Large Sand Dunes
covered in marram and lupin
3—400m of sandy beach
Wood debris
Public Beach
North Mole
South Mole
Tasman Sea
Proposal
Boundary
PATEA COUNTY
Coastal Reserve Survey
Proposal 3
Sketch only

PPROPOSAL 4 - MANAWAPOU RIVER

Aerial Photos: 4678/1

Aerial Mosaics: N.129/8

Aim: To set aside an area of coast as recreation reserve.

Land and Area: Part Lots 2 DP.7324 Sections 300 and 661Block XIV Hawera Survey District. It would also include an area on the north side of the river in Hawera County. Area: 2 hectares.

Location: An area at the end of Manawapou public road(unmetalled) adjoining the Manawapou River 20 kilometres south of Hawera along State Highway No.3.

Status: Freehold land.

Vegetation: Mostly pasture with some scattered native shrub along the river edge.

Access: An unmetalled track across pasture land that is a legal extension of the metalled Manawapou Road.

Utilization: The area is used by whitebaiters and surf fishermen. There could be some sheltered areas for picnicking and perhaps limited swimming opportunities.

General: This area is located at the end of the County and is the only break in the cliffs north of Patea Borough within Patea County. Because the river has eroded the cliffs, access to the foreshore has been created. The river is small but has as many as a dozen whitebaiters or surf fishermen per day in season. The large numbers of people in such a small area implies the lack of access to the ocean along the general coastline of the region. A Maori pa on European historic site sits on a ridge above the river in Hawera County. The Mokoia public road in Hawera County also gives access to the northern river bank. A small terrace below the general countryside but about 15 metres above the river allows for parking for about 10 cars or more, being the end of the track access. Zoning is rural .

History: Not previously considered by the Coastal Review Committee.

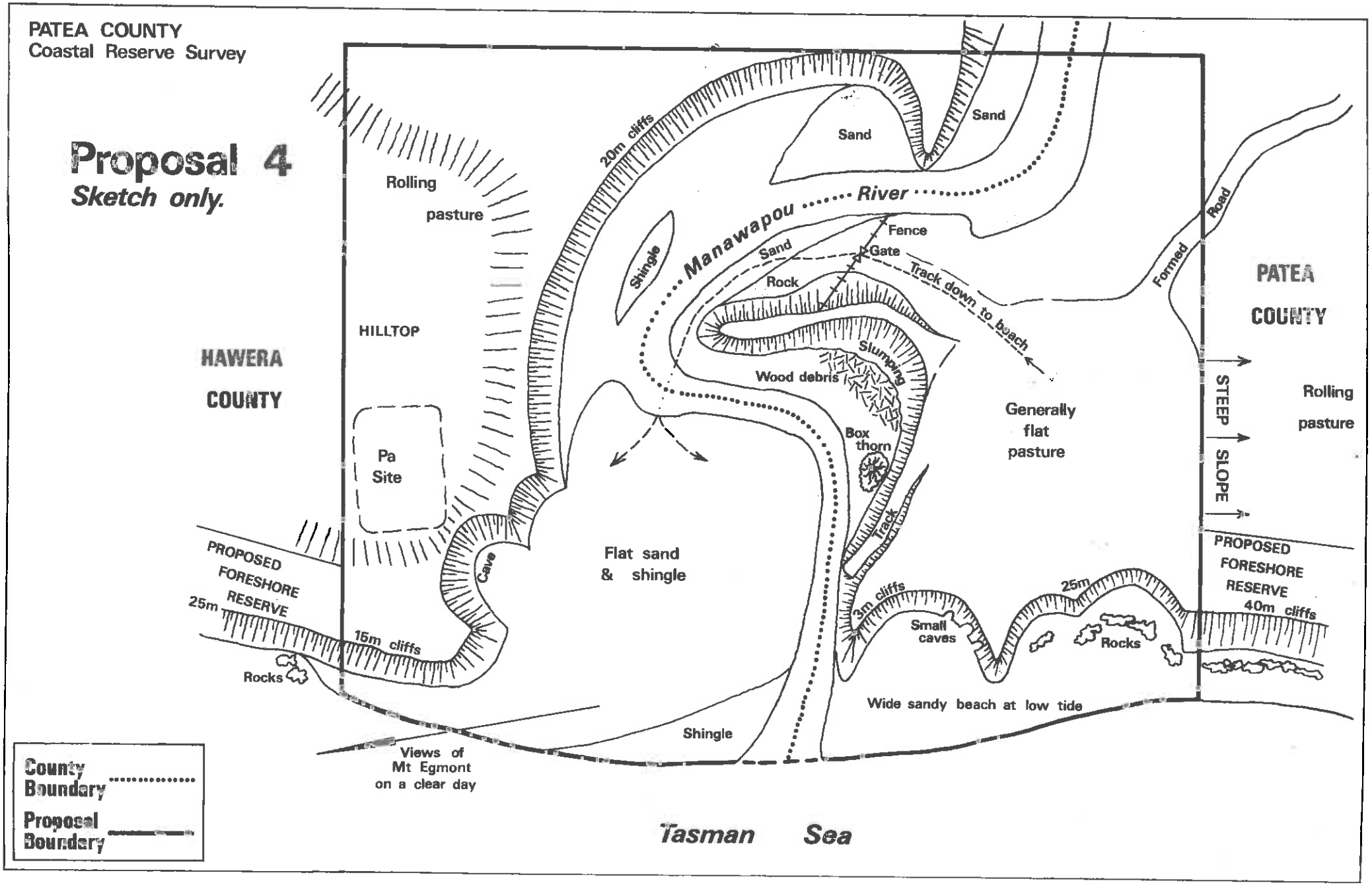
Significance: Local

Priority: Low

Action: That the Local Authority be asked to designate the land as "proposed recreation reserve" on the Patea County District Scheme.

Manawapou River mouth.

Whitebaiters at Manawapou River mouth.


PATEA COUNTY
Coastal Reserve Survey
Proposal 4
Sketch only.
Rolling pasture
20m cliffs
Sand
Sand
Manawapou River
Shingle
Fence
Gate
Sand
Rock
Track down to beach
Formed Road
PATEA COUNTY
HILLTOP
HAWERA COUNTY
Slumping
Wood debris
Box thorn
Generally flat pasture
STEEP SLOPE
Rolling pasture
Pa Site
Cave
Flat sand & shingle
Track
PROPOSED FORESHORE RESERVE
25m
15m cliffs
Rocks
3m cliffs
Small caves
25m
Rocks
40m cliffs
PROPOSED FORESHORE RESERVE
Wide sandy beach at low tide
Shingle
Views of Mt Egmont on a clear day
County Boundary
Proposal Boundary
Tasman Sea

PROPOSAL 5 - WALKING ACCESS

Aerial Photos: 3396 - 1/2/3/4, 3394 - 1/2/3, 3395 - 1/2/3/4/5, 3396 - 1/2/3/4 plus Taranaki photos.

Aerial Mosaics: N.1374/4, N.137/1, N.136/3, N.129/9/8/5

Aim: To set aside a strip of coast as coastal reserve

Land and Area: Crown land north of Wairoa Domain. Part Sections 362, 363, 367, 368, 370, Part DP.4749, Lot 1 and 2. Sections 26, 87, 23, Part Section 676, 642, 675, 674, 673, 491, 4 of 637, 3 of 637, 2 of 637, 1 of 637, 485 DP.5346 Lot 1 and 2 DP.5030, Lot 6 Section 622 and DP.7324 Lot 1 Block V,X,XI,XII Wairoa Surveys District. Block I, II, VI, VII Carlyle Survey District, Block XIV Hawera Survey District.

Area. 33.5 km x 40 metres (average) = 1340 hectares

Location: A strip of coastal land stretching from Wairoa Domain at Waverley Beach north to the Manawapou River, joining up all the block reserves proposed in this report

Status: Crown land, Patea Harbour Board(Patea County) freehold.

Vegetation: Ranging from good sown pasture to scrub, marram grass pingao, lupin, boxthorn with bare sand and cliffs in different combinations.

Access: Several unformed roads run to this strip of coast and could be used by the public to gain initial access to the foreshore reserve. All the formed public roads on tracks to the coast are covered by block reserve designations.

Utilization: Mainly for walking and viewing the ocean from the cliff tops.

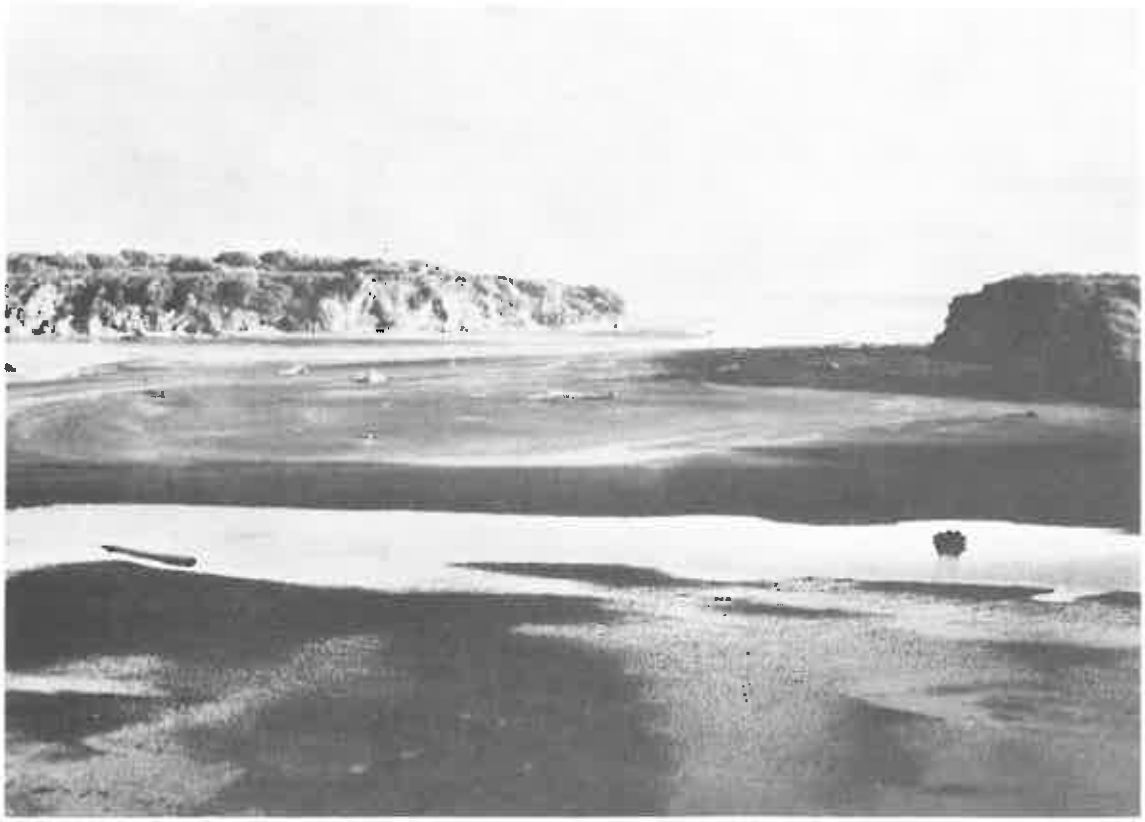
General: Several features along the coast make walking desirable such as the old power station at the Kaikura Stream, the numerous waterfalls over the cliff to the sea, small bush surrounded lakes and river estuaries, such as the Whenuakura with its bird life and Maori pa. These are in addition to the views generally seen from the cliffs out to sea.

The foreshore reserve will have bulges in it to cover estuaries, pa sites, lakes and historic sites.

Significance: Local

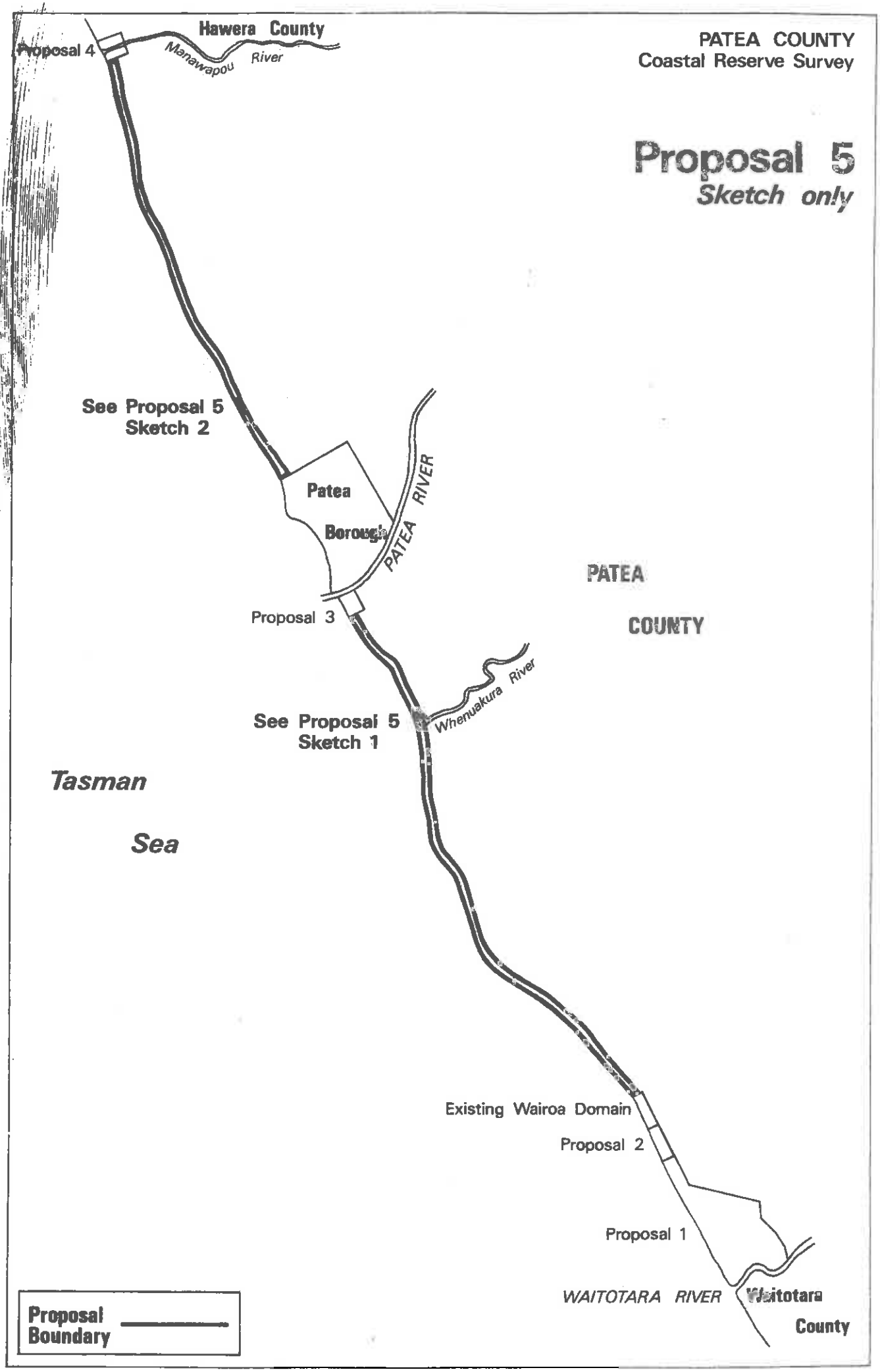
Priority: Low

Action: To request the Local Authority to designate the strip of coastline shown on the map as "proposed coastal reserve"(esplanade) on the Patea County District Scheme recognizing that in some sections where walking access only is required, a legal right of way or easement may be an acceptable alternative to purchase or lease as a reserve.



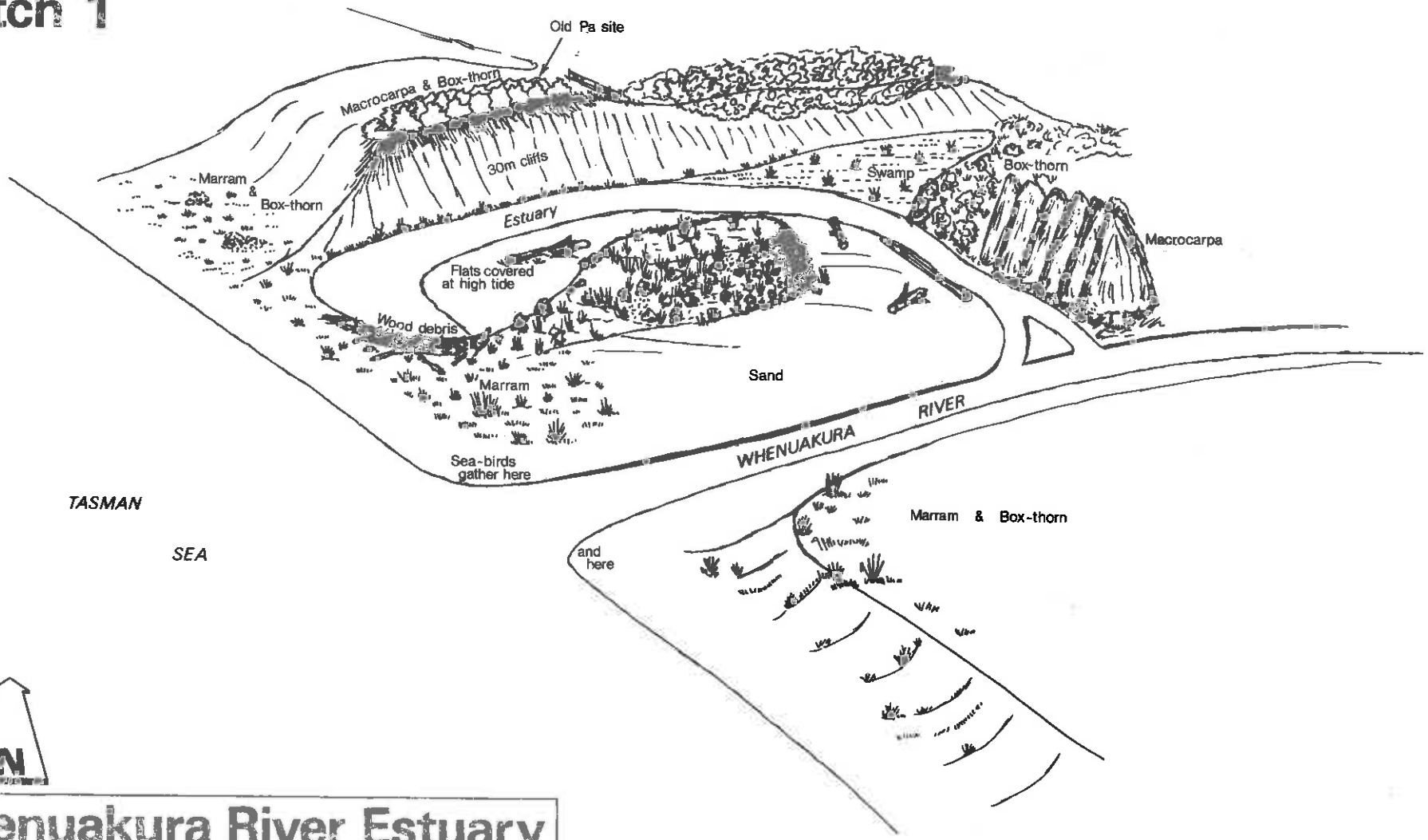
Whenuakura River Estuary looking south.

Old power station north of Patea Borough.


PATEA COUNTY
Coastal Reserve Survey
Proposal 5
Sketch only
Hawera County
Proposal 4
Manawapou River
See Proposal 5
Sketch 2
Patea
Borough
PATEA RIVER
PATEA
COUNTY
Proposal 3
Whenuakura River
See Proposal 5
Sketch 1
Tasman
Sea
Existing Wairoa Domain
Proposal 2
Proposal 1
WAITOTARA RIVER
Waitotara
County
Proposal
Boundary

PATEA COUNTY
Coastal Reserve Survey

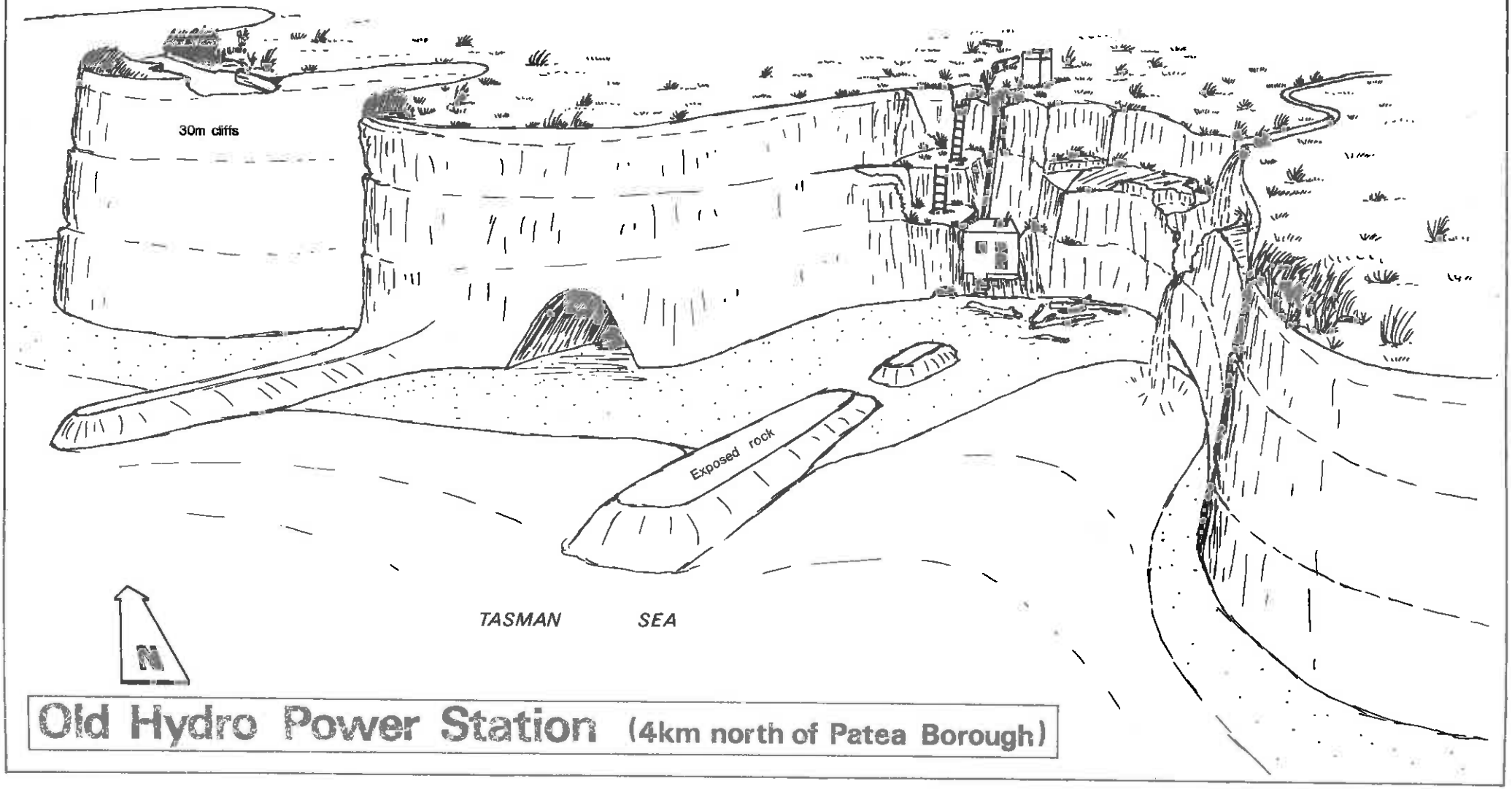
Proposal 5
Sketch 1



Whenuakura River Estuary

PATEA COUNTY
Coastal Reserve Survey

Proposal 5
Sketch 2



Old Hydro Power Station (4km north of Patea Borough)

BIBLIOGRAPHY - PATEA

Coastal Zone Resource Management, Praeger Special Studies in U.S. Economic and Social Development, Praeger Publisher 1971 edited by James C. Hite and James M.Stepp.

Coastal Chart Series 1 : 200,000 Cook Strait Bathymetry N.Z. D.S.I.R. Oceangraphic Institute.

Coastline Change at Wanganui. New Zealand. PhD. Thesis, University of Canterbury. J.S.Burgess 1971.

Drift Card Observations of Currents in the Central N.Z.Region N.Z. D.S.I.R. Oceanographic Institute. R.A.Heath (Reprinted from the N.Z. Journal of Marine and Freshwater Research. Vol 3, No.1. March 1969)

Geological Map of New Zealand. Sheet 10, Wanganui D.S.I.R. March 1959

Marine Farming. Planning for Marine Farms particularly along the West Coast of the Coromandel Peninsula. Department of Lands and Survey 1974.

Maui Development Environmental Study. Report on Phase one 1974. Report prepared by the University of Auckland for Shell, B.P. and Todd Oil Service Ltd. Auckland Copy Centre November 1974.

Soils of New Zealand. Part 1. N.Z. D.S.I.R. Soil Bureau Bulletin 26(1) Government Printer, Wellington 1968.

Summaries of Climatological Observations to 1970. N.Z. Meteorological Service, Ministry of Transport, Government Printer, Wellington 1973.

The Coastal Heritage A conservation policy for coasts of high quality scenery. Countryside Commission, Her Majesty's Stationery Office, London 1970.

The Geology of Wanganui Subdivision. N.Z. D.S.I.R. N,Z. Geological Survey C.A.Fleming, Government Printer, Wellington 1953.

Wanganui Region. National Resources Survey. Part VII. Compiled by the Town and Country Planning Division, Ministry of Works. Government Printer, Wellington 1971.

APPENDIX I

WAIPIPI IRON SANDS LIMITED

The Waipipi black ironsand deposit is located on the South Taranaki Bight, 40 airline kilometres West-Northwest of Wanganui and approximately 88 airline kilometres South-Southeast of New Plymouth. The closest town is Waverley, seven kilometres to the Northeast.

Titano-magnetite, or black ironsands, are widespread along the West coast of New Zealand's North Island, and were derived from eroding Mount Egmont andesitic rocks. The detritus from this erosion was transported by rivers and coastal drift and redeposited along the beaches North and South of Cape Egmont, where it has been reworked and concentrated to form the present-day black sand beaches and dunes.

Conditions favourable to deposition and reworking of black sand beaches in the Waipipi area were created by sea level fluctuations, a dropped faultblock, and ancient wave action. The deposit located inland from today's beaches has been revealed by exploration drilling to be continuous over more than 32 square kilometres, averaging 10 metres in thickness, and resting on a "papa" or mudstone formation that dips flatly toward the sea.

Surface elevations of the portion of the deposit being mined are 12 to 50 metres above sea level and most of the deposit is covered by tussock grass meadows and scrub vegetation.

The Waipipi Mining Area is estimated to contain 300 million dry long tons of crude sand, which will yield about 55 million dry long tons of concentrate with a total iron content in excess of 56 percent.

The iron sand concentrate produced at Waipipi is shipped to the steel mills of Japan, where it is blended into the blast furnace feed to preserve the refractory lining of the blast furnace and as an aid in the reduction of nitrogen in the pig iron.

OPERATION

The crude sand is mined by the dredge "Waipipi" floating in its own pond. The dredge is capable of mining up to 1800 tons of sand per hour. The sand is broken away from the pond face by a rotating cutter and is then recovered through a suction pipe and pumped, in a liquid or slurry form, to the treatment plant which is floating in the same pond.

The crude sand from the dredge is discharged through a revolving trommel screen into a surge, or density control, bin located on the treatment plant. This separates buried driftwood, vegetable matter and debris from the ore.

From the surge bin the ore is pumped, at controlled density, into the treatment plant and distributed to 16 two-stage, magnetic separators. The primary magnet of each separator has a magnetic strength of 600 gauss while the secondary magnet is rated at 350 gauss.

The resultant non-magnetic, or reject sand, is collected and discharged from the plant in slurry form by a manoeuverable stacker. The magnetic, or primary concentrate, is collected and pumped through a secondary trommel screen mounted above the spirals. This isolates the undesirable high silicate, plus $\frac{1}{8}$" cemented modules which have been carried through with the magnetic concentrate, and discharges them in the pond.

The finer material passing through the secondary trommel screen is distributed to the spirals. The final heavy iron concentrate is collected through nine ports on each of the 448 Humphrey type spiral separators. The spiral or final concentrate is then pumped to shore and from there to the stockpile for storage. Approximately 225,000 tons of concentrate can be stored in this area prior to the arrival of a Carrier.

A tunnel extends under the entire length of the stockpile. In the roof of the tunnel are hydraulically operated hatches, 20 in total, which are opened to reclaim the concentrate for shiploading. The iron concentrate falls through the hatches onto a belt conveyor which carries it into the shiploading pumphouse. This is the only stage in the operation where the sand is handled in a dry condition.

In the pumphouse the concentrate is reslurrified and pumped through a submarine pipeline to the off-shore mooring buoy, 3 kilometres out to sea. The buoy is anchored to the sea floor by 14 anchors each weighing more than 20 tons. The buoy is 11 metres in diameter and stands 6 metres high. The actual loading is carried out by coupling-up a moored Slurry Carrier to a floating hose attached to the buoy. A loading rate of 1300 tons of concentrate per hour is achieved through six pumps mounted in series in the pumphouse.

All process water used in the operation is piped from a fresh water reservoir formed by a dam across the Hairoa Stream located near the entrance to the Mining Property.

The fresh water is also used to make up the iron concentrate slurry for pumping from the floating plant to the stockpile. At this stage the slurry is de-watered by cyclones mounted on the stockpiling gantry, the concentrate dropping onto the stockpile, and the water overflow pumped to a separate water storage reservoir. From this reservoir the water is used a second time to form the slurry in the shiploading operation.

Under terms of agreements with landowners and the New Zealand Government, Waipipi is required to reclaim mined lands as operations proceed. After passage of the mining operation, the tailings area is levelled, profiled, fertilized and planted with grasses for soil stabilization and pasture restoration.

HISTORY

A Licence to explore for iron sands between the Tongaporutu and Whangaehu Rivers was granted Marcona Corporation in February 1969 after a determination was made in consultation with the Mines Department and the New Zealand Steel Company that iron sands in this area were not considered as a potential reserve for domestic steel manufacture. Marcona, which is a U.S. based international mining and shipping company, immediately commenced extensive field exploration work evaluating a number of iron sand areas. This effort by field geologists led to the location of the present Waipipi mining site South of Waverley. A total of 53 exploratory drill holes were put down in the area which extends along the shoreline for approximately 8 kilometres and inland for a distance of about 4 kilometres. This drilling indicated that the iron sands in the Waipipi area were of satisfactory quality. Later in 1969 a pilot plant was installed to produce a 4000 ton test cargo of iron sand concentrate which was transported by rail to New Plymouth and loaded on board a vessel for export to Japan.

Marcona engineers worked with the Japanese Steel Mills in evaluating this new product which is used for periodic blending in small quantities with higher grade ores from other areas of the world. Iron sands are not economically usable by themselves in blast furnace operations, due to their high titanium content which is objectionable in standard ironmaking practice.

This work led to the signing of a contract with six Japanese mills for delivery to Japan of approximately 11,000,000 tons of iron sands concentrates over a 10-year period.

To provide New Zealand participation in this new export industry the Marcona Corporation joined with Europa Oil (New Zealand) Limited to form Waipipi Iron Sands Limited and invest approximately 11 million dollars for plant and auxiliary facilities to mine and concentrate the iron sands. An offshore loading system has been installed in the area of the mine and concentrates are being pumped in slurry form aboard Marcona's special 50,000 ton and 70,000 ton slurry carriers moored approximately 3 kilometres offshore.

Waipipi Iron Sands Limited has initiated a new era in the New Zealand mining industry. The initial production level represents a foreign currency gain for New Zealand of over 4 million dollars per year and it is anticipated that this will increase over the foreseeable future.

Construction of the plant commenced in July 1970 and the first shipment left Waverley Harbour on 6 July 1971.

TECHNICAL SUPPLEMENT

The magnetite sands of the Waipipi formation have already been partially concentrated by wind and wave action. Heavier minerals, including magnetite, have been separated to some extent from the lighter silicates, but this natural gravity separation has not been completed and further concentration is required to produce a marketable product.

The Waipipi sands were derived from andesitic rocks as erosional fragments transported by rivers and coastal currents. The crude sand consists of variable proportions of titaniferrous magnetite grains mechanically mixed with generally high-gravity silicates, such as augite, epidote and hornblende, together with quartz, plagioclase feldspar. Composite grains of magnetite and heavy silicates are fairly common, and magnetite-quartz composites are also found in small quantities. Hematite also occurs, both as free grains and as composites with magnetite.

Titanium is present predominantly in exsolution lamellae of ilmenite in magnetite. These lamellae, 0.8 to 7 microns in thickness, are not separable from the magnetite by physical means. Ilmenite generally forms not more than 25 percent by volume of the composite grains in which it occurs.

Minor ilmenite is also present as separable discrete grains which are rejected by magnetic separation. Leucoxene is occasionally observed as orange-white partial coatings on ilmenite grains and ilmenite-magnetite composites. No rutile has been found in Waipipi sand.

Magnetite proportions tend to be somewhat higher near the surface, gradually becoming lower with depth. Magnetite grains are predominantly well-rounded to spheroidal, although subangular grains and occasional crystal octahedra and concordant twins occur. Magnetite forms composites with silicates, quartz, hematite and ilmenite, and in some cases it is found as finely dispersed inclusions in gangue mineral grains. Orange powdery coatings observed on some grains are probably limonitic oxidation products.

The Waipipi sand yields a concentrate anomalously high in FeO and concentrate at 56 percent total iron, for example, will contain over 27 percent FeO.

While the rounded magnetite grains are relatively closely sized between 48 and 150 mesh, the silicate gangue minerals are coarser and more angular. Composites of dispersed magnetite in augite and basaltic hornblende are sufficiently magnetic to appear together with the smaller, rounder free magnetite grains in a magnetic concentrate. Gravity separation, on the other hand, tends to reject these coarser, lower specific gravity grains. Lower grade portions of the orebody are distinctly coarser and ordinarily yield relatively coarse, low grade primary magnetic concentrates. Such concentrates can be upgraded by additional stages of magnetic separation at decreasing field strengths, followed by gravity separation to achieve acceptable grade. Cemented iron nodules are occasionally encountered. These are returned to the pond by the $1\frac{1}{2} \times 4\frac{1}{2}$ metres secondary trommel screen.

Concentrate produced in the Waipipi plant with two stages of magnetic separation plus spiral gravity separation is very closely sized, having less than 10 percent plus 65 mesh, 50 percent minus 100 mesh and less than 10 per cent minus 150 mesh. Minus 200 mesh size particles in Waipipi concentrate are less than 2 percent.

* * * *

Dredge + Concentrator
Booster Pump House
Workshops + Warehouse
Office Block
Helicopter Pad
Ore Century
Stockpile
25 Million Gallon Reservoir
Shipload Pumphouse
Lighthouse
Light Beacon
Submarine Pipeline
S.P.M. Buoy
75,000 Ton Mercantile
Pumps + Dam
Waverley Stream
Waverley Town
State Highway
Hawera

APPENDIX 2

Please Quote

WILDLIFE SERVICE
DEPARTMENT OF INTERNAL AFFAIRS

WIL 37/1/21

Private Bag, Wellington, N.Z. Telephone 738-699 Telegrams and Cables 'Internal'

2 June 1977

The Commissioner of Crown Lands,
Department of Lands and Survey,
P.O. Box 5014,
WELLINGTON.

PROPOSED COASTAL RESERVE
WAITOTARA RIVER MOUTH TO WAVERLEY BEACH ROAD

The coastal land evaluated by the Wildlife Service lies approximately 6.4 km south west of Waitotara township, Patea County.

The land is bounded to the east by the Waitotara River, to the north by Durie Road to the west by Lennox Road, and extends south to the Coastline. See locality map attached. The land in question is both Crown lease and privately owned, presently under the control of the Hawken Estate for agricultural and stock grazing purposes. The land to the north of the unformed Waipipi Road, which divides the proposed reserve is predominantly privately owned; and includes Pts 410, 409, 466 and 346. The land to the south is the Crown lease and includes Run No. 5, No. 6 and No. 7. Collectively they form a total acreage of approximately 890 hectares. Of this the Wildlife Service is interested in, the total area to the south of Waipipi Road, and part of Lot 410, in all being approximately 364 hectares.

The value of this land as a wildlife habitat for protected and game birds species is unsurpassed by any other habitat in the region, and so has a direct influence on the abundance and distribution of wildlife in that region.

The large shallow lake adjacent to the Waitorara River mouth is considered the most valuable, supporting large numbers of water-birds, both game and protected species, including the regionally uncommon dabchick.

The shallow water area provides excellent feeding and breeding conditions for waterfowl and rail species, and also provides an opportunity for recreational hunting.

A second wetland, located in Lot 410 to the north of Waipipi Road contains a man made lagoon of several acreas and a large associated wetland thickly vegetated. This provides ideal natural habitat for rail and crake species, both of which are endemic and totally protected.

The land between Waipipi Road and the seacoast, and land inland of Waipipi Road is excellent upland game habitat and contains large populations of both pheasant and quail.

At present the upland game habitat, i.e., the dunelands, is periodically grazed which maintains a semi open habitat ideal for pheasant and quail. However the situation at present will not be maintained if grazing pressure is increased. This type of wildlife habitat and hunting area is fast disappearing throughout N.Z., and cannot be replaced. Its considerable value can only be adequately safeguarded by sound management and public ownership.

It is recommended that the wildlife values of the area could best be protected by setting apart all that land between Waipipi Road and the seacoast, including the lagoon at the Waitotara River mouth and bounded to the west by Lennox Road as a reserve for wildlife management purposes. In addition the wetland lying north of Waipipi Road should also be acquired for wildlife management purposes.

While the action proposed above would give emphasis on the wildlife resource, administration and management for wildlife purposes and associated recreation would not detract from other passive public uses of the land. In fact management for wildlife can include provisions for compatible public uses, whereas emphasis on public use will undoubtedly lead to diminution of wildlife values. In addition game bird hunting for which this land is ideally situated is almost sure to be diminished if incompatible land uses or reserve status are applied and as indicated above, land for this type of recreation is disappearing rapidly throughout New Zealand through land development, recreational development and subdivision.

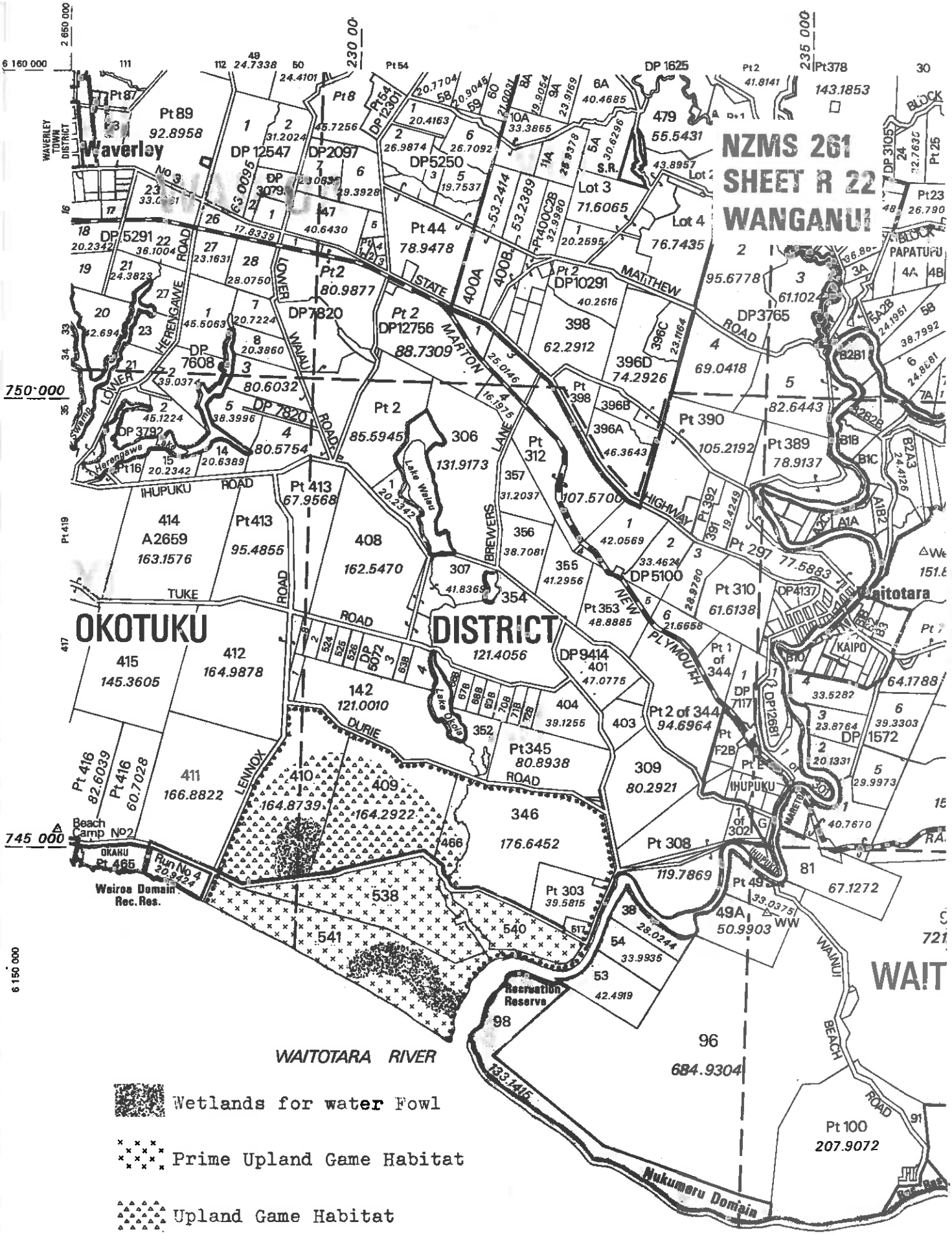
The general locations of the areas of high value for wildlife are shown on the attached map.

A.J. Roxburgh.

(A.J. Roxburgh)
for Secretary for Internal Affairs

N.B.

Please note that a Coastal Reserve Survey has recently been carried out by the Department of Lands & Survey covering Runs 5, 6 & 7, as mentioned in this report. The land is now described as Sections 538, 540 & 541.


NZMS 261
SHEET R 22
WANGANUI
OKOTUKU
DISTRICT
Waverley
WAITOTARA RIVER
Wetlands for water Fowl
Prime Upland Game Habitat
Upland Game Habitat
Land Area Evaluated

APPENDIX 3

NEW ZEALAND HISTORIC PLACES TRUST

P.O. Box 12255 WELLINGTON
TELEPHONE 42 391
TELEPHONE 724-341

PLEASE REFER TO HP 8/3/6

6 November 1975.

District Commissioner of Lands
Wellington Office,
Department of Lands and Survey,
State Insurance Building,
Lambton Quay,
WELLINGTON.

Dear Sir,

ARCHAEOLOGICAL SITES, HOROWHENUA-PATEA COUNTIES.
Attention Mr Carlin.

I have checked our available records (which is the Archaeological Association Site Record file) and discussed this matter with Mr Daniels, Trust Director, and find that I am really unable to give you any precise details of archaeological sites located in the coastal zone of the Counties from Horowhenua through to Patea. But obviously this does not mean that no sites existin the area. Rather our lack of data is due to the fact that the areas have been inadequately recorded. So I am reduced to providing only some general comments which you may find useful for your plan.

1. The area with which you are concerned consists in the main of alluvial deposits of various marine and riverine origins, which are generally of low relief, and to a large degree, somewhat unstable. A number of major rivers and many smaller watercourses disgorge from the hinterland to cross this coastal plan. Throughout the region, numerous lakes and swampy areas of various sizes have been formed.

2. The area as a whole would have provided a rich resource area for prehistoric occupants. There would have been the fish of the sea, rivers and lakes, the birds of the bush and lakes, the fertile, easily cultivated land, the edible plants and berries, and the trees and plants which were available for industrial uses. Hence it is only to be expected that many sites of this former occupation will exist, in many forms, throughout the area.

However, due to the unstable nature of the coastal areas, and the vast changes of topography, drainage and vegetation brought about by European clearance and farming of the land, it is now very difficult to locate and identify these prehistoric sites. And many sites have been destroyed, either directly or indirectly by the farming operations. More recent developments such as afforestation and iron sand extraction have compounded the difficulties. But I would stress that a great number of sites of many types still exist throughout this area.

4. The main general localities where sites might be expected to be found are:-

   (a) at river mouths on the coast, or along the flanks of river valleys where they cut into the older sediments;

   (b) along the line of the first terraces and slopes inland of the unstable and less fertile sand dune areas;

   (c) around the more permanent lakes and swampy areas.

5. The main types of sites which may be expected to be found are:

   (a) Pa Sites: These will be found at river mouths, around and within lakes and swamps, on defendable coastal or riverine headlands, and even on relatively flat areas where extensive defensive ditching would have to be employed. These sites would be recognized by their major earthworks, and sometimes by thercomplexes of pits.

   (b) Pit Complexes: These may have existed throughout the area, but they are today most easily recognized where they occur on the more stable land which has been cleared for farming. Of course, most are partly filled in and disguised by ploughing. They may occur singly or associated with pa sites, but more often they occur in isolated complexes. Many are not recognized as Maori pits by the present landowners.

   (c) Quarry or Borrow Pits: From which material has been taken for addition to cultivated soils.

   (d) Field patterns: These have been largely ploughed out, but there are areas, e.g. near Patea, where the prehistoric field patterns may still be recognized.

   (e) Small Settlement Sites: These will be found at river mouths, around lakes or associated with pa and pit complexes. They are perhaps easiest recognised by their shell rubbish dumps, or middens, but they are important sites for they contain a great deal of information about the prehistoric exploitation of the area. These sites are difficult to recognize, and the level of destruction through farming has been high.

   (f) Isolated midden heaps, particularly close to the coast where access to the beach is easy.

6. Having stressed the great number of sites which do exist throughout the area, I would now note the number of sites which have been recorded:

NZMS 1 N136-16) The work mainly of 1 interested person
N137-23) living in Hawera
N143- 1
N148- 1
N152- 2
N175/156-77 The work of the Wellington Archaeological Society, but mostly south of Waikanae.

You will appreciate that such a low level of recording and unevenness of coverage, makes it impossible for me to give you any meaningful, specific information. There is not really any point in trying to give you a map of site distribution as it would have no real meaning.

7. I think that you should note in your plan the two recent Acts of Parliament which will affect activity in your planning area. The first is the Historic Places Amendment Act which from 1 April 1976 will make it necessary for any person or organization carrying out work which will adversely affect an archaeological site to obtain a permit for such work from the Trust. The Trust may refuse any application or may attach special conditions to permits which are granted. The second is the Antiquities Act 1975 which from 1 April 1976 controls the trading in and export of a wide range of antiquities, and also provides that a newly discovered Maori artefact will become the property of the Crown (not the landowner or the finder) and all such finds must be reported to the Secretary for Internal Affairs. You might also note that discoveries of human remains are covered by the Burials and Cremations Act and the Police Offenses Act.

8. To conclude, I would think that for your planning purposes, you will be restricted to statements of general site type and probability of occurrence. Should you require more detailed information on specific areas, special surveys would have to be carried out. It may be possible for the Trust to arrange to have these done. However, the Trust is now obliged to establish a New Zealand Register of archaeological sites and although this will take several years, we are establishing priority areas, which include coastal zones under threat, so perhaps we will be able to arrange for general surveys in your area before very long.

I am sorry that I am unable to provide you with the precise details which you require, but I hope that which I have been able to provide will be of some assistance.

Yours faithfully,

(J.R. McKinlay)
Archaeologist.