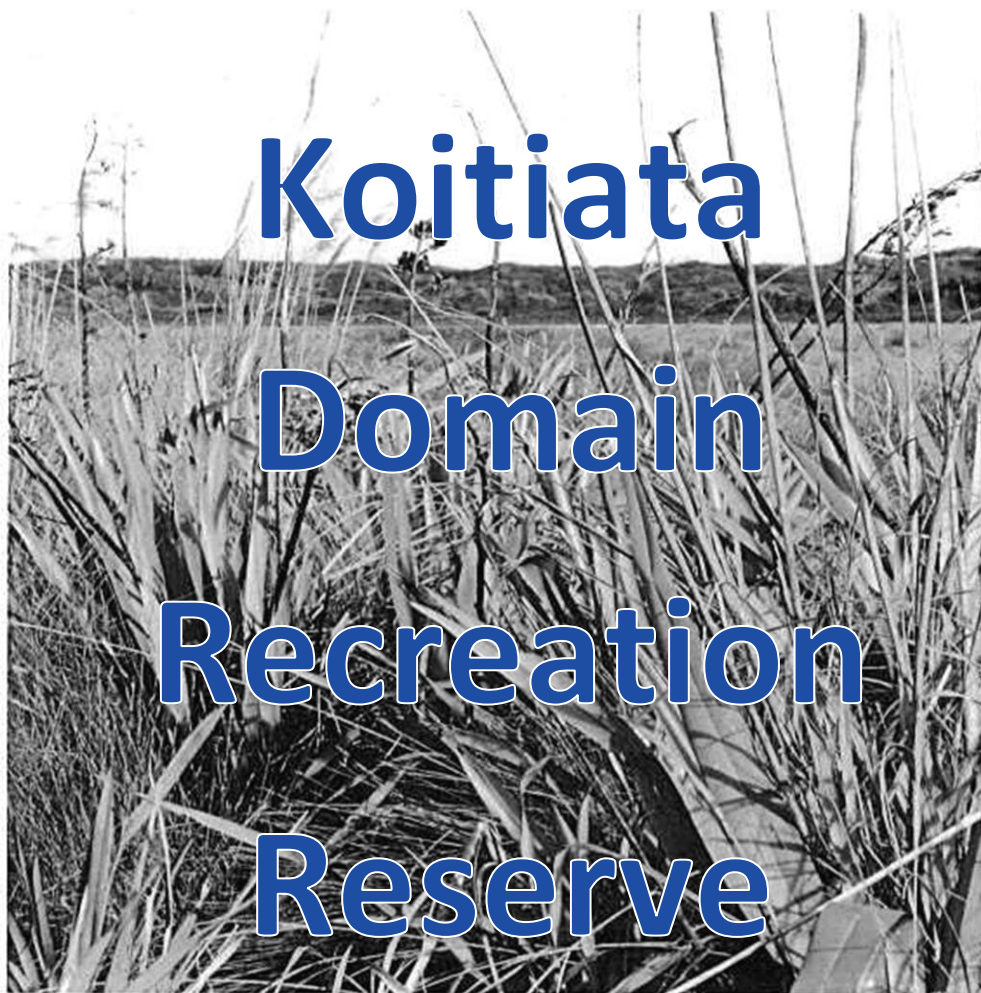


Koitiata Recreation Reserve



Laurel Stowell, RD 14, Wanganui.

Koitiata Domain Recreation Reserve

This following document was researched, created, and written by Koitiata resident, Laurel Stowell in 2007. It is a detailed and methodical look at, what Laurel herself described as “mostly, it’s a kind of no-mans-land”.

Laurel also express’s the hope that “a group of volunteers, with input from authorities, could halt the decline ...” The community is fortunate that there is now some activity (2022).

There has been a concerted effort put into the removal of numerous introduced weeds. When the weed removal is achieved, and provided it is ongoing, nature will be quite capable of looking after the rest. A bit of oversight from local authorities and community will help the reserve revert to and remain in its natural state.

There have been some formatting changes to the original printed document to make it suitable for posting on the web site, e.g., maps resized, content page re-written, but the content remains as written in 2007.

Contents	<i>These page numbers differ from those at the bottom of the original printed pages</i>
Page 4	Abstract
Page 5	Introduction
Page 10	Geology
Page 12	Soils
Page 14	Climate
Page 15	Plants
Page 23	Animals
Page 25	Natural values
Page 26	Human impacts
Page 29	History
Page 32	Present ownership and management
Page 39	Local perceptions
Page 41	Ethical considerations
Page 42	Recommendations for management
Page 44	Prognosis for the future
Page 45	References
Page 51	Appendices

Koitiata Recreation Reserve



Laurel Stowell, RD 14, Wanganui.

Abstract

Laurel Stowell, 2007. I.D. 07681097

Koitiata Recreation Reserve

Rangitikei District

Grid reference: NZMS 260 S23 930225

Altitude: all less than 20m above sea level

In 1917, 165 coastal acres (67 hectares) were set aside as a place of recreation for the people of Rangitikei. About 7ha has since been subdivided for housing, with the remainder a 3ha mown flat area (the domain), approximately 1ha mown and with amenities such as a campground and children's playground, and the remaining 56ha undeveloped wetland and dunes.

Though undeveloped the 56ha has been changed by human activity - introduced animals and weeds, excavation of ponds for firefighting and sewage oxidation, being traversed by vehicles and being used as a rubbish dump.

Its dunes and wetland still have substantial natural values - values appreciated by some of its visitors.

This wild end of the reserve receives a minimum of management from the Conservation Department, Rangitikei District Council and Horizons Regional Council. Local Maori tribe Ngati Apa also has an interest in it, as does the Wellington Fish & Game Council. None of these groups is willing to take full responsibility for it, however.

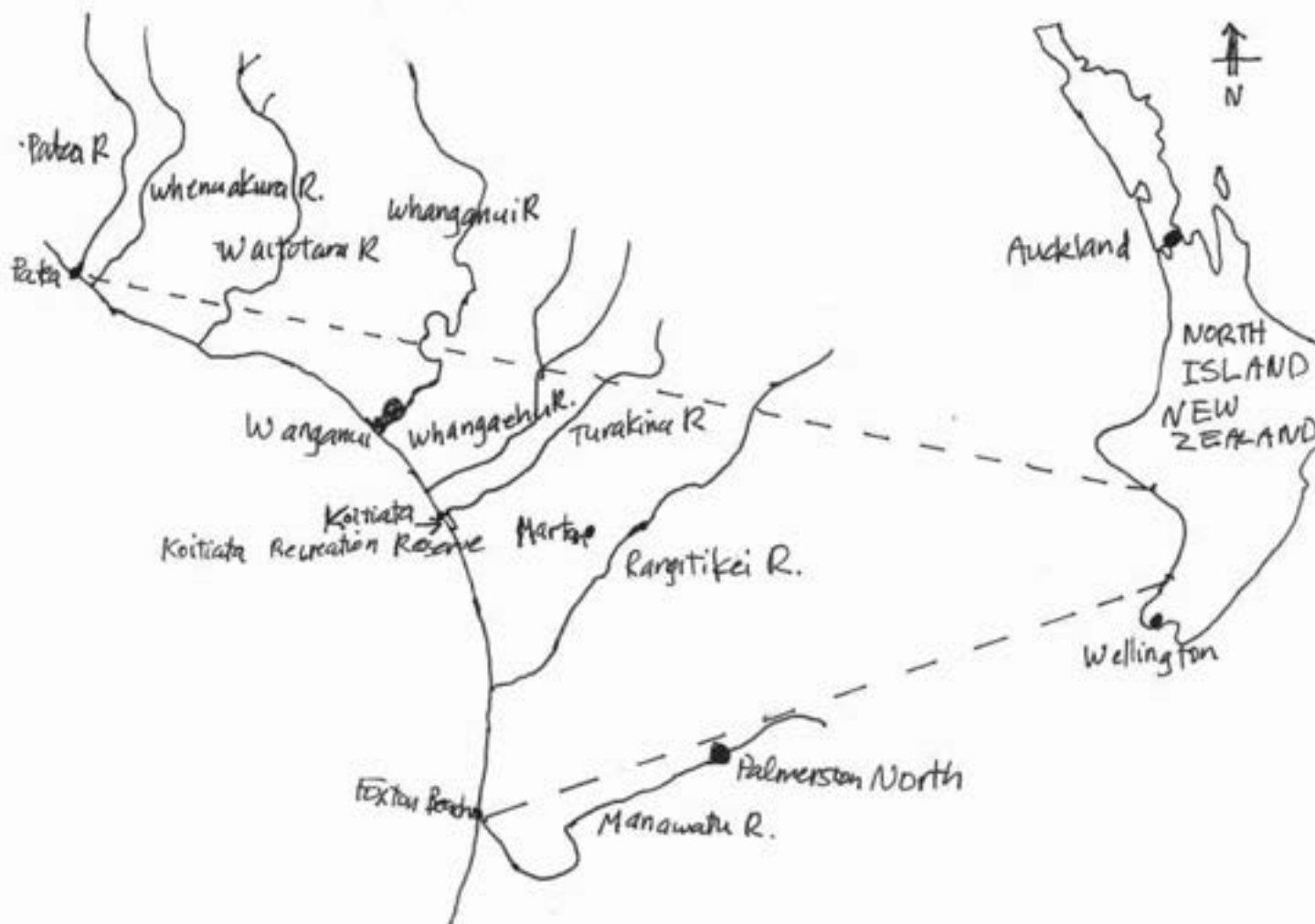
Mostly, it's a kind of "no man's land".

Sooner or later the growing demand for coastal land and growing appreciation of nature will make people value this piece more highly. But by then it will probably be more degraded as well.

A group of conservation volunteers, with some input from authorities, could halt the decline at least partially - but this may never happen.

Introduction

This reserve is a strip of dune and wetland that lies between Koitiata village and Santoft Forest to the southeast and a coastal lagoon to the west, south of the mouth of the Turakina River, on the west coast of the lower North Island. The centre of the reserve is found on NZMS 260 series map S23 at 930225.



Its size is said to be about 56ha by the Department of Conservation (Fiona Wilson, pers. comm.). It is 1.5km long and 400m wide (Ravine, 1989). For an aerial photograph, see **Appendix 1**.

Most of it is an unmanaged wilderness, but a strip of about 1ha west of the settlement has been developed. It is mown, with a children's playground, petanque court, and basketball hoop and barbecue area. See Fig 1.

A vehicle track through the mowed area gives access to the beach via a built-up road across a low-lying wet area, and then a rough ford across the lagoon.

The wilder southern portion of the reserve is covered with a mixture of long grass, weeds and native plants. Residents use it for walking (often with dogs) and riding (horses, bicycles, motor bicycles, quad bikes, beach buggies), and for dumping rubbish.

Children sometimes catch tadpoles in some of its three ponds. The ponds are 3m to 4m deep and deepened every three years (Pat McCarthy, forest manager, pers. comm.).



Fig. 1. *Playground and barbecue amenities lie between the village and the track to the beach.*

The northern portion also contains a 40m by 40m sewage pond that serves 17 houses. Fig. 2, below.



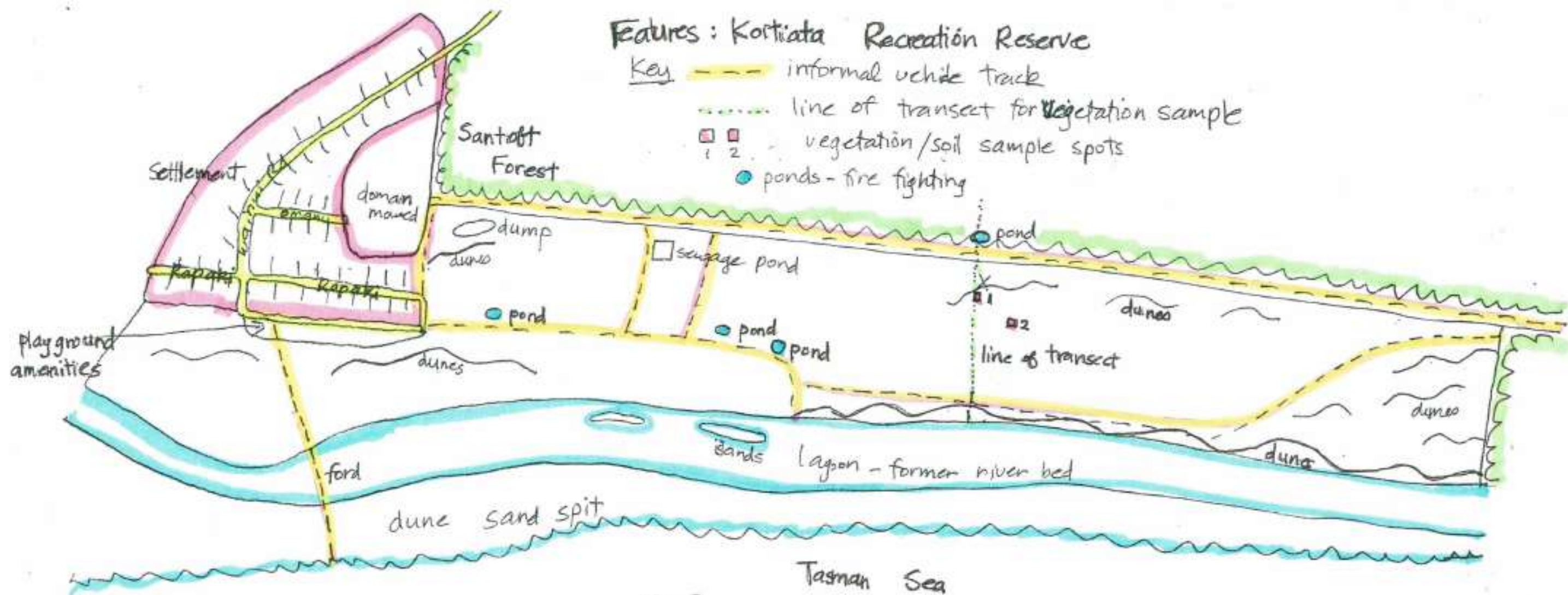


Fig.3

Fig. 3. Features within and surrounding the reserve

Kaitiata settlement consists of 106 houses, 57 of which are occupied by 114 full-time residents. Residents tend to be older and on lower incomes than the New Zealand average (Statistics New Zealand, 2001 Census). About half of the houses are used only at weekends and holidays.

Kaitiata Domain, an open mowed area of 3.171ha, adjoins the northeastern end of the reserve. To the north and east of the village is land farmed for dairying by Bob Major, and to the southeast the 5000ha Santoft Forest stretches along the coast.

A peculiar feature of the west coast sand country is the shifting nature of river mouths. The dominant longshore drift is southeastward, and beach sand tends to form bars northwest of the mouths of rivers (Fleming 1953).

In 1998 the Turakina River had such a sandbar, about 3km long. Then, while in flood, the river suddenly cut directly through to the coast. The old river channel formed a shallow, brackish coastal lagoon for much of its length.

The water table in the reserve is high, and salt water seeps through into the lagoon from the sea, especially at high tide (Pat McCarthy, pers. comm.) At very high tides and in storm conditions waves can also wash over the coastal dunes in places. The lagoon is too salty to be a good source of water for stock (Arnold Nation, pers. comm.).

Since 1998 a new bar has formed, currently more than 1km long and festooned with driftwood carried downriver by heavy rains in 2004 and 2006. Local people are speculating on whether the river will eventually break through to its old channel again, or whether the new bar will lengthen until the river again takes a straight line to the coast and a new lagoon is formed.

"You are never going to stop that river. It will just do what it wants to do," resident Arnold Nation said.

Any flowing streams on the reserve tend to be temporary, and appear after periods of heavy rain. The water table is so high that water level in some of the ponds changes with the tides.

The coast is extending by about 1m a year and there is noticeably more coastal land than there was 50 years ago (Barry Gilliland, Hilary Webb, pers. comms.).

Geology

The upper approximately 3m to 10m (if measured from the top of a sand dune) of soil in the reserve consists of sand deposited there probably in the Waitarere dune forming phase 100 years ago (Molloy 1988). The depth of the sand layer is likely to be greater near the river mouth, because rivers tend to wash away the solid ground underneath (Fleming 1953).

The sand particles arrived by being washed southward down the coast by the predominant southeasterly longshore drift. Then they were blown inland.

Many of the particles originated from accelerated inland erosion caused by the clearing of forest, especially since 1850. They consist of sandstone, siltstone and mudstone particles from the sedimentary hill country inland. But they also include andesitic material (midway between acidic and basic and consisting of 52 to 66 percent silica) from the Tongariro volcanoes, rhyolitic material, including pumice (acidic, and composed more than 66 percent of silica) from the Taupo eruption of 131AD, and greywacke material from the central North Island ranges.

The Whenuakura, Waitotara, Whanganui, Whangaehu and Turakina rivers carried these particles to the coast.

But there's yet more variety. The sand particles also include material from the Taranaki volcanoes, carried to the coast by rivers from the Patea River northward. This tends to be high in heavy ferromagnesian minerals, especially augite, hornblende, titanomagnetite and ilmenite, and is the substance that gives the sand of Turakina Beach its dark grey colour (Molloy 1988).

West coast beaches further north have even darker sand. By the time the iron-rich material has been washed south of the Turakina River it is greatly diluted by paler silica-rich particles.

Sediment has been blown inland into dunes. The most recent of these line the coast. They form two distinct, though broken, barriers within the reserve, largely aligned with the present coastline but further inland. Possibly the low point between these two lines of dunes was once a former river channel, and possibly the current lagoon will become such a place in future.

Dunes are still forming or being eroded by the wind and longshore drift. This process is aided by continued accelerated erosion inland, the Turakina River and the Tasman Sea.

Underlying the coastal sand is sedimentary rock of the Wanganui series, laid down during the Pliocene and Pleistocene geological periods approximately 5.3 to 1.4 million years ago (New Zealand Geological Survey 1959). At the beginning of this time the area lay under a shallow, warm sea and was receiving eroded material from rapidly rising land to the west. By 2 million years ago, the Pleistocene period, the central North Island ranges had formed and were eroding massively into the South Wanganui basin, which was

sinking. The result was a layer of lightish sediment 2km thick (Neall, 2007).

It consisted of shell beds, sandstone and mudstone, with some limestone, lignite (brown coal) and conglomerate bands. Under that again, at a depth of approximately 5km, is basement greywacke rock of unknown structure (New Zealand Geological Survey 1959). A geological map is attached as **Appendix 2**.

People sinking bores at present day Koitiata village say the upper layer of sand is only 3m to 4m deep. Below that is a layer of mudstone about 20cm thick, then more sand, more mudstone and a thin layer of pebbly stones, then more sand (Arnold Nation, pers. com.).

Water taken from bores in the village can have up to 100ppm of chloride (a component of salt). This is higher than that of most rivers. Seawater has more than 20,000ppm of chloride (Barry Gilliland, pers. comm.).

Dunes on the reserve tend not to have the characteristic parabolic (hairpin) shape of older dunes inland.

Soils

The reserve's soils are formed of grey sands with only 1 to 8 percent clay (Molloy 1988). They are labeled yellow-brown sands (Ravine, 1989) and Waitarere Sand for the dunes with Hokio Sand on the sand plains between the dunes (Campbell, 1978). See physiographic map at **Appendix 3**, taken from Cowie et al, 1967.

The Dune Soils

Having been formed very recently, the dune soils typically have only 2 to 3 cm of topsoil overlaying their sandy parent material. Soil structure varies from weak crumb to free sand grains (Molloy, 1988).

Because of their weak structure and the strong winds they are exposed to, they are highly susceptible to wind erosion if they are not vegetated. They don't retain moisture or nutrients well, and have little or no organic matter. They are low in nitrogen and potassium, but shell fragments provide a source of calcium (Cowie 1967).



Fig. 4. Soil profile near top of sand dune.

The Sand Plain Soils

In low points, a few of which are below the water table all year round, vegetation tends to accumulate faster than it can be broken down. Soils tend to be slightly more compacted sand, with about 6cm of darker brown topsoil over dark grey sand. They are moderately to slightly acid, high in calcium and nitrogen, with moderate levels of phosphorous and low levels of potassium (Molloy, 1988).



3cm brown sand, with
organic matter
8cm shading toward
grey sand

- water at 50cm

Fig. 5. Soil profile on sand plain.

Land Use Capability

All of the reserve falls into land use capability classes (LUC) VI and VII in the New Zealand Land Resource Inventory. This means it has moderate to severe limitations under a perennial vegetation cover.

It can either barely support grazing (best case), or support only light grazing or forestry.

In the case of this reserve, the low points are subject to flooding, a limiting factor added to the likelihood of wind erosion if vegetation cover is removed.

Climate

The Rangitikei coast has warm summers and mild winters, with slightly less rain than inland but more wind, especially strong westerlies and northwesterlies. It is both warmer and sunnier than inland Rangitikei (Molloy 1988).

Temperatures average 17degC in February, the warmest month, and 8degC in July, the coldest month (Cowie 1967).

Annual rainfall is 800mm-900mm, with February and March the driest months (Fleming 1953). Winter is the wettest time, with another peak of rainfall in October.

Winds are predominantly west and northwest, with frequent gales, especially in spring and early summer. These gales carry both sand grains and salt spray inland (Cowie 1967). They can, and do, desiccate and damage tender plant growth.

Plants

Vegetation in the reserve is extremely varied, due to differences in soil moisture, differences in exposure to wind and salt, and differences in human interference.

The Conservation Department has listed as notable six plants that are or used to be on the reserve: *Mazus pumilio*, *Libertia peregrinans*, *Sebaea ovata*, *Pimelea 'Turakina'*, *Pimelea arenaria* and *Isolepsis basilaris*. Of these, *Libertia* and *Isolepsis* are known to be still present, with possibly the *Mazus* as well (see inventory form at **Appendix 4** and plant list 25 at **Appendix 5**).

A P Druce compiled the plant list. Revisions in later years have included the addition in 2006 of native sneezeweed (*Centipeda minima*) and half-star (*Selliera rotundifolia*) to the list of endangered or declining plants found in the reserve.

Plants of Wet Places

On and fringing the ponds the most noticeable plants are the introduced water celery (*Apium nodiflorum*), duckweed (*Lemna minor*) and red water fern (*Azolla rubra*). There is a small amount of watercress (*Nasturtium officinale*) in ditches close to the settlement.



Fig. 6. Red water fern and water celery on a pond.

Parts of the reserve, mainly fringing the lagoon near the village, are under water much of the time. Raupo (*Typha orientalis*) and kikuyu grass (*Pennisetum clandestinum*) grow there.

In the past there were extensive areas of seasonally wet sand flats. The reduction in these has diminished numbers of plants such as *Isolepis basilaris* and *Selliera rotundifolia*. There is one similar area of this type though. It is beside the ford of the lagoon, and bachelor's button (*Cotula coronopifolia*), sand sedge (*Carex simplex*) and three square (*Schoenoplectus pungens*) grow there.

Plants of Dry Places

Prior to European settlement the plants on dunes close to the sea were spinifex (*Spinifex sericeus*) and pingao (*Desmoschoenus spiralis*), with cottonwood/tauhinu (*Cassinia leptophylla*), *Coprosma acerosa* and sand daphne (*Pimelea arenaria*) a bit further inland (Cowie 1967).

Those plants are still there in places, as are other natives that Cowie did not list, but they have been joined and jostled by a host of other plants introduced to New Zealand.

The most common newcomers are marram grass (*Ammophila arenaria*), lupin (*Lupinus arboreus* - affected by blight since 1988 so its health and numbers fluctuate), sand wattle (*Acacia sophorae*), pink ragwort (*Senecio glastifolius*) and pampas (*Cortaderia selloana*).

Attempts are being made to eradicate South African pyp grass (*Ehrharta villosa*). In a survey for the Conservation Department in 1989, Don Ravine noted a dense mat of this covering 1ha of dunes. It was two metres high, spreading aggressively and smothering marram and boxthorn.

But there are many other introduced plants that have become weeds: Montbretia (*Crocasmia x crocosmiiflora*), *Senecio elegans*, boxthorn (*Lycium ferrocissimum*), kikuyu (*Pennisetum clandestinum*), hare's tail grass (*Lagurus ovatus*), evening primrose (*Oenothera stricta*), boneseed (*Chrysanthemoides monilifera*), *Pinus radiata*, *Agapanthus orientalis*, German ivy (*Senecio mikanooides*), Cape ivy (*Senecio angulata*), Californian thistle (*Cirsium arvense*), convolvulus (*Calystegia silvatica*), puha (*Sonchus oleracea*), two tortured willows (*Salix tortuosa*), climbing dock (*Rumex sagittatus*), cocksfoot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), *Cupressus macrocarpa*, mullein (*Verbascum thapsus*), vetch (*Vicia sativa*), a cotoneaster, tall fescue (*Festuca arundinacea*), fleabane (*Conyza sumatrensis*), clover (*Trifolium repens*), a cacti, alstroemeria, brush wattle (*Paraserianthes lophantha*), cat's ear (*Hypochoeris radicata*), hawk's beard (*Crepis capillaris*) - and many more.

Near the illegal greenwaste dump, which is in a dryer part of the reserve near the domain and village, garden rejects have taken root: bearded iris, pelargonium, gazania, iceplant (*Carpobrotus edulis*), alyssum (*Lobularia maritime*), Pride of Madeira (*Echium fastuosum*) and others.

Other native plants in the dunes include: karo (*Pittosporum crassifolium* - native to New Zealand, but not to this area), taupata (*Coprosma lucida*), pohutukawa (*Metrosideros excelsa* - native to New Zealand but not to this area), nihinihi (*Calystegia soldanella*), sand sedge (*Carex simplex*), many mosses, *Muehlenbeckia complexa*, toetoe

(*Cortaderia toetoe*), leafless sedge/wiwi (*Isolepsis nodosa*), jointed wirerush (*Apodasmia similis*), New Zealand spinach (*Tetragonia trigyna*), and many others, as **Appendix 5** will show.



Fig. 7 Plants of the dunes

A 2m by 2m square was chosen in July. Plants within it were: wiwi, hawkbit, pink ragwort, Yorkshire fog, fleabane, cocksfoot, a low moss and a vetch. Some of the sedges and grasses appeared to be dead.

Plants of Damp Places

The low areas, where soil is moister, are more densely vegetated and tend to have fewer introduced plants.

Dominant on large areas is a mixture of jointed wirerush/oioi (*Apodasmia similis*) and wiwi/leafless sedge (*Isolepsis nodosa*). Among them and protected by them in many places are ferns: *Paesia scaberula*, *Blechnum minus*, *novae-zeelandiae* and *triangularifolium*, *Asplenium polyodon* and *oblongifolium* and others.

There are also salt marsh ribbonwood (*Plagianthus divaricatus*), coastal tree daisy (*Olearia solandri*), manuka (*Leptospermum scoparium*), swamp flax (*Phormium tenax*), cabbage trees (*Cordyline australis* - some dead), coastal cutty grass (*Cyperus ustulatus*), *Coprosma propinqua* and *Coprosma robusta* and hybrids of these two species, wild lobelia (*Lobelia anceps*) and swamp pennywort (*Hydrocotyle novae-zeelandiae*) and others.

Other ferns include maidenhair (*Adiantum cunninghamii*), button fern/tarawera (*Pellaea rotundifolia*), sickle spleenwort/petako (*Asplenium polyodon*), bracken (*Pteridium esculentum*) and a few mamaku (*Cyathea medullaris*).

The low areas have their share of weeds too, though they are a smaller percentage of total cover. Chief among them would be gorse (*Ulex europaeus*), silver poplar (*Populus alba*) (2ha of this noted by Ravine in 1989), Spanish heath (*Erica lusitanica*), blackberry (*Rubus fruticosum*), crack willow (*Salix fragilis*), introduced buttercup (*Ranunculus repens*) and some introduced grasses.



Fig. 8. Plants of the damp sand flats.

A 2m by 2m square was chosen in July. The plants densely packed within it were: oioi, wiwi, *Blechnum novae-zeelandiae* and *Paesia scaberula*.

Vegetation Transect

A typical cross section of plants across dune and wetland is shown below. It was made by noting the largest plants at bootfall, at intervals of 2 paces each, on a line from the edge of Santoft Forest west to the lagoon.

The line was walked about one third of the reserve's length from the village, and near the sites of the soil profiles.

An atypical feature is the dominance of silver poplar in one section of the sand plain – the cross section happened to cut across the largest infestation of this on the reserve. It should be noted that there were native plants among the silver poplar – notably flax, coprosmas, ferns, swamp pennywort, wiwi, and oioi. See Fig. 9, overleaf.

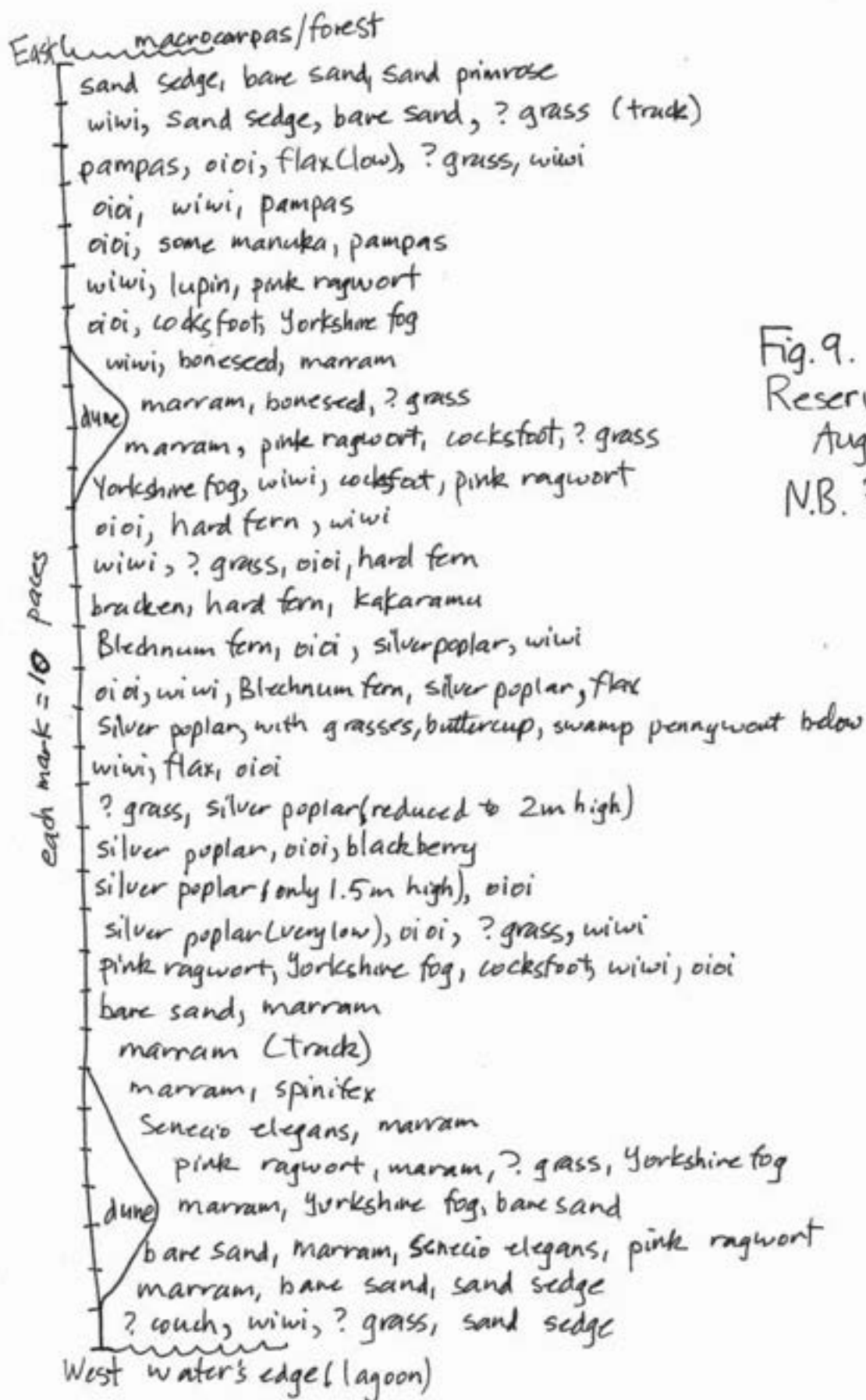


Fig. 9.

Reserve transect
August 5, 2007

N.B. ? grass = tall fescue



Fig. 10. *View from east end of transect westward toward the Tasman Sea. Note patches of bracken and deciduous silver poplar in middle distance.*

For a rough overall guide to dominant plant associations and weed breakouts, see the Fig. 11 overleaf.

Key roads ———
settlement L
lagoon/sea ———
——— valuable sand plain vegetation



Animals

During the day, at any time of year, there is often an Australasian harrier circling above the reserve. There are also usually skylarks soaring and calling. Grey warblers are often heard, and you will usually see at least one fantail.

The lagoon to seaward of the reserve always has pied stilts, black-backed gulls, red-billed gulls, banded dotterels and welcome swallows. Ducks and black swans are there in numbers at times, also smaller groups of Caspian terns, paradise shelducks, spur wing plovers, black shags, little shags, white-faced herons, black fronted dotterels and occasionally up to six spoonbills. A favourite place for these water birds is a group of small islands near a trackless part of the reserve close to the village.

Pheasants live in the dunes and, during the summer, insect life there seems intense. Cicadas chirr, migratory locusts fly out of your path, grasshoppers jump and little blue-grey-brown butterflies/moths flutter. Holes in the loose sand probably hide trapdoor spiders and, judging by the droppings, there are rabbits in the drier, more open areas.

Strangely for a habitat so hot and dry in summer, there are many shells of European garden snails (*Helix aspersa*) lying among the sand and grasses. Closer to the village there are also shells of another, smaller snail species.

Also flying in summer is a dainty reddish wasp, an occasional white cabbage butterfly and bumblebees (*Bombus terrestris*). Katipo and Australian redback spiders enjoy living under the driftwood of west coast beaches and are probably present on the edge of the lagoon.

There are also likely to be skinks among the dunes, most likely the common skink (*Leiopisma zelandica*). They are certainly seen in the village at times, and are caught by the residents' cats. Pat McCarthy said there were also a few green geckos.

how was sample area selected [During investigation of two square metres in the dunes (area pictured in Fig. 7), the following animals and evidence of animals was found during July: 20 rabbit droppings - fresh and old, 17 empty European garden snail shells, worm casts and one worm, one millipede, one slater, one tiny spider, a sprinkling of tiny jumping/flying/crawling invertebrates and, underground, one cicada nymph.

The environment at ground level on the flats is very different from that in the dunes. It is damp, dense with dead and living vegetation and sheltered from wind and sun.

There is at least one pukeko in the wettest area near the village. Sometimes heard among the reeds is the tchip, tchip of a fernbird.

In early September people walking stir up small clouds of weakly flying, delicate, soft-bodied insects, about 1cm long each. There are

blue damselflies and mayflies in summer, nest web spiders and back swimmers or water boatmen in the ponds.

Male European/green frogs (*Hyla aurea*) are heard in numbers during wet spells, and male Australian bell/whistling frogs (*Hyla ewingi*) are still heard, although they are getting fewer (Arnold Nation, pers. comm.).

Resident Bruce Attwell relates seeing eels dying on the metalled coastal track once years ago. He said they were floated inland by a flood and found themselves unable to return to the lagoon or river.

During an investigation of vegetation in a two square metre typical dune flat area (pictured at Fig.8), in July, the following animals or evidence of animals was found: one empty European garden snail shell and one live European garden snail, an old rabbit scrape (shallow hole, now covered by vegetation and probably no longer in use), many tiny jumping amphipods among the dead vegetation they feed on, one native bush cockroach, one medium sized spider and many tiny white crawling animals.

Animal Pests

Pet dogs and cats also traverse the entire reserve from the village, and there are also plenty of feral cats about (Pat McCarthy, pers. comm.). These are probably the result of people liberating their unwanted pets.

There is no sign of brushtail opossum presence. The Animal Health Board keeps these introduced Australian pests in low numbers. This is done because the area bounded by SH3, the Whangaehu and Rangitikei rivers and Tasman Sea is affected by bovine tuberculosis, which is spread to herds by possums.

Santoft forest manager Pat McCarthy said possum numbers were monitored, and were near zero.

Cattle occasionally get into the reserve from the dairy farm to the north, but are never there for longer than overnight (Arnold Nation, pers. comm.)

There are sambar deer, a large shaggy Asian species, in Santoft Forest. They are very shy but are sometimes seen grazing the reserve. Their numbers have increased to a level where they can do millions of dollars worth of damage to young trees in the forest. After extensive consultation the moratorium on killing them ended on May 14, 2007. Forest manager Pat McCarthy said many had been culled since then, and more would be shot during this year's hunting season, which began in mid August.

Rabbits and hares also eat young pine trees. They have been poisoned at times, and hunters have been given permits to shoot them. Koitiata conservationist Peter Fraser also shoots them (Arnold Nation, pers. comm.) because they especially like eating pingao. Mr Nation said rabbit grazing is the main reason why there is less pingao in the dunes than there would have been 200 years ago.

Natural values

According to land care authorities, unmodified dune/wetland is a scarce resource in New Zealand.

Horizons Regional Council's wetland inventory says eight percent of its large region was once wetland, and this has now reduced by 98 percent – presumably to 0.08 percent.

And natural sand land ecosystems are only 5 percent of their original area in New Zealand (Beautrais, 2002). Most of the 200km and 100,000ha of sand country between Patea and Paekakariki on the North Island's west coast has been converted to grazing or forestry (Molloy, 1988). Very little still hosts the plants and animals that were there 200 years ago.

The Conservation Department has identified that the reserve has hosted six rare plants in the past. Of these, the sebaea and the two pimeleas have not been seen there for some time. Pimelea 'Turakina' was first found in the reserve, but has since been found at Himatangi and Wanganui too.

Within the animal kingdom, black-fronted dotterels and fernbirds both need their habitats conserved.

The nearby lagoon, which has changed character several times in the last century due to the shifting mouth of the Turakina River, is an important stepping stone place for migratory birds (Ravine, 1989). Wrybills, banded dotterels, eastern bar-tailed godwits, Pacific golden plovers, turnstones, bar tailed godwits, New Zealand dabchicks and knots have all been seen there. Other birds can include Caspian terns, white-fronted terns, black-fronted dotterels and variable oystercatchers.

There may well be other plants and animals, as yet unknown, that are present and endangered, as well as species like the various skinks and the fernbird that are becoming increasingly rare.

For visitors, the wild end of the reserve offers a partial glimpse of how this coastline once was – a dimension missing from the remaining surroundings of forest, dunes planted with marram grass, and dairy farms.

On a fine day, with the sun reflecting off waving flax leaves and skylarks singing, the place can be quite stunning.

Human impacts

Five centuries of Maori occupation resulted in few geological changes to this area (Fleming, 1967). A century of European occupation had much more impact, he says, with grazing by introduced animals altering plant cover, accelerating erosion inland, muddying rivers and causing a fresh wave of dune formation on the coast.

Although most of the reserve has not been developed, vehicles and introduced plants and animals have had an impact. There have also been a certain amount of earthworks.

In his survey of areas recommended for protection, published in 1992, Don Ravine noted 1m to 2m drains on the sand flats. He wasn't sure how effective they were. Traces of some can still be found.

Three ponds, about 25m each in circumference, have been dug to provide water in case of fire in nearby Santoft Forest. Each is 3m to 4m deep.

Former rural fire crew members Peter Smith and Bruce Attwell remember a big fire in the reserve itself, about seven years ago. They said it started when a trail bike fell over and ignited. The area burned was near the former car turnaround where the metalled track nears the edge of the lagoon. Water from the ponds was used to quench the fire.

Rangitikei District Council's 40m by 40m sewage pond in the northern end of the reserve was put in sometime between 1988 and 1991 – before the Resource Management Act was in place. There was therefore no consultation with Ngati Apa or the Conservation Department – both would probably have objected.

The council's utilities engineer, Andrew van Bussel, says it serves 17 houses in the newest council subdivision at the south end of town, 350m away. Sewage is pumped from near the campground over to the pond. The pump is checked about twice a year, council worker Bill Harvey said.

The oxidation pond treats the effluent to secondary level, which removes most solids and bacteria. The pond is lined with black polythene and there is no outlet and therefore no discharge consent. Mr van Bussel said water would be lost from the system through evaporation.

Council asset services manager Claire Scrimgeour said in theory the pond was not discharging, so no discharge consent was needed. "It's been one of those issues that we have talked about with Horizons (Regional Council). We haven't been particularly proactive in it, because there are no environmental effects."

There are no plans to expand the treatment system at present, because the rest of the village is on septic tanks or long drop toilets. "The pressure will come on over time, to do something for Koitiata. Environmental requirements are getting more," Ms Scrimgeour said. "If people have to replace a tank now, they might have to get a resource consent."

Rubbish - mainly green waste - is dumped in a 25m x 12m area close the village with vehicle access. As a result, introduced garden plants and weeds are spreading into the reserve.

Resident Gay Hammond said Rangitikei District Council put up a no dumping sign but it was gone by the next day. There are other smaller dumpings of less benign waste elsewhere within reserve, including a big pile of agapanthus seedheads, with the seeds starting their own colony.

Mr Shenton said there were two older rubbish dumps further into the wetland. He remembered old car bodies and such there, 30 years ago.

The alternative to the illegal dumping for villagers is taking rubbish to Ratana Transfer Station, about 11km away by road. Charges there vary from \$6 to \$20, depending on the amount of waste. Resident Joyce Smith said the villagers wanted a proper facility for their green waste and had asked Rangitikei District Council for help. "In a village like this, we should have our own community compost. But it's got to be supervised. Rangitikei District Council will not come to the party."



Fig. 12. *Koitiata has its own illegal greenwaste tip.*

Probably the single greatest human-induced change to the place would be the invasion of weeds, especially pyp grass, pampas, boneseed, pink ragwort and introduced grasses on the dunes, and willow, silver poplar, Spanish heath and gorse in the wetlands.

Rabbits have also had their impacts on the dunes, with visible browse on *Coprosma acerosa*, and hoof prints and dung show that cattle are

present occasionally, trampling native plants and spreading the seeds of introduced grasses.

Possums and sambar deer are also present occasionally.

Probably as a result of vegetation removal by either vehicles or grazing animals, there is a dune blowout toward the southwestern end of the reserve. Loose sand is blowing inland, covering a sand plain area.

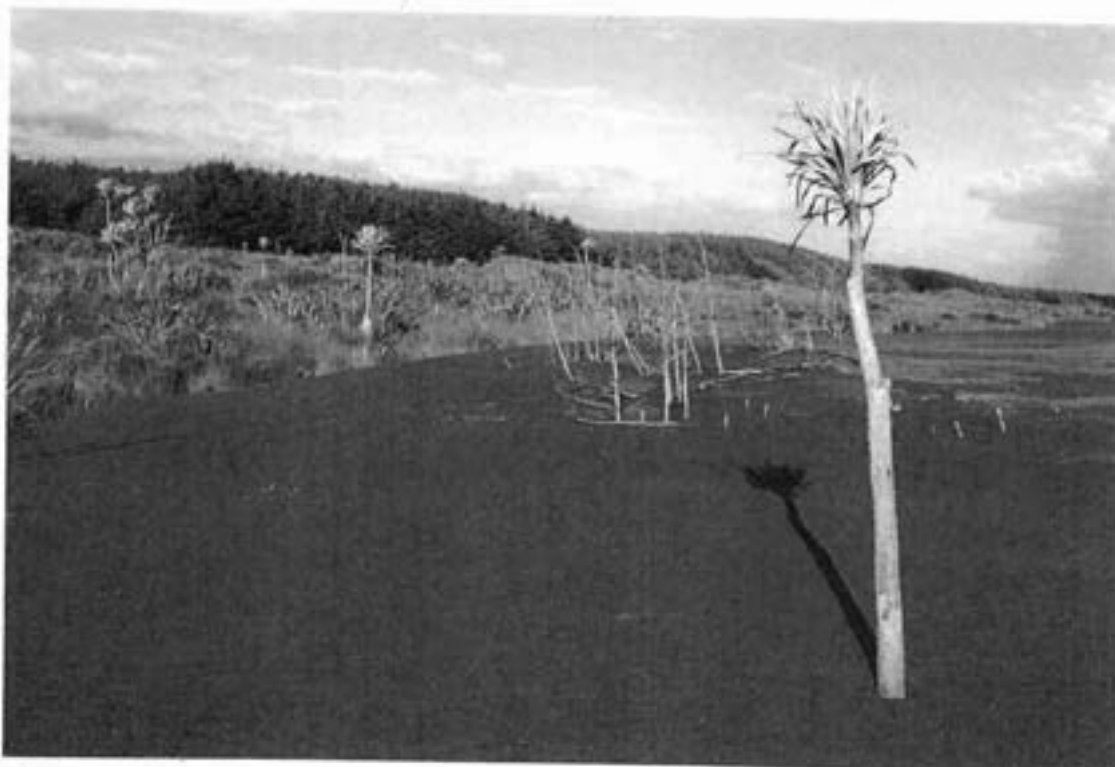


Fig. 13. Windblown sand is on the move across a low area.

The blowout can be attributed to human impact, but so too could the relative stability of the dunes edging the lagoon. People with long memories say they were very much on the move 50 years ago. Plantings of marram, spinifex and pingao have been made to keep the sand from moving.

Another possible future impact is flooding due to global warming. Big floods already saturate the area and reach right into the forest on occasion (Arnold Nation pers. comm.) Within the village, the houses in Te One St (closest to the lagoon) are in a flood hazard area and their lower storeys were flooded in 1998.

Horizons Regional Council's website cites Koitiata as one of the places in its patch that is vulnerable to coastal inundation, due to a combination of high tides, storm conditions and flooded rivers.

Despite all these changes, however, Ravine concluded in his survey published in 1992 that the forest, town and river protect the reserve from stock and that it has a big enough area to maintain diversity, in spite of weed invasions.

History

This coastal Rangitikei area was first settled by Maori arriving in the Kurahaupo and Aotea canoes, and perhaps other canoes, around 500 years ago. They formed themselves into the Ngati Apa tribe between 1820 and 1850, through geographic proximity, intermarriage and common interests (Ngati Apa website).

Maori used the coast and Turakina River as trails, Wilson says in his 1914 book *Early Rangitikei*. He gives no detailed descriptions of early vegetation but says tutu, koromiko, bracken, karamu and flax were likely on the coastal strip.

The Rev Richard Taylor, based in Wanganui, travelled the coast to preach to Maori. In 1862 he described the area as: "alternate swamp and grass with parallel ranges of ancient sand-hills, now covered with a growth of fern. Near the sea, and especially near the mouths of rivers, large quantities of sand are blown up from the shore and form drifting sand-hills".

Eels and upokororo (*Prototroctes oxyrhynchus* or grayling, a diadromous fish once common but now rare) would have been plentiful in streams and lakes, and there would also have been many ducks, pigeons and weka. Food from the sea would have included kahawai, shark and frostfish. The sea fishing in the area was renowned (Chris Shenton, pers. comm.).

There are no records of Maori settlement in the immediate area of the reserve, but there may have been a fishing kainga nearby for summer use, as there was on the northern side of the river. More permanent settlement was inland, where it was less windy (Chris Shenton, pers. comm.).

The reserve is not among the places the tribe has asked for during its ongoing Treaty of Waitangi negotiations, which probably indicates it was less valued than other places (Fiona Wilson, pers. comm.).

However the swampy area associated with the mouth of the river would have had all its available resources used by Ngati Apa, its treaty settlement researcher Chris Shenton said. Flax and pingao would have been taken for weaving and there may have been freshwater fishing. The streams were probably freer flowing in those days. "Our people used every resource that was going. That's survival, isn't it?" he said.

Donald McLean bought the Rangitikei-Turakina Block (26,000 acres/10,522ha) on behalf of the Crown in a sale that took place about 22km south of Koitiata, at Parewanui, in 1849. All of the reserves left for Maori were further inland than Koitiata, or northward across the Turakina River.

The Crown believed it now owned the land. Maori people expected the deal would begin an ongoing relationship with the settlers. They expected to get benefits from the relationship and did not expect to lose their land and be thrust into poverty (Adrian Rurawhe, speaking at nearby Tini Waitara Marae, 2007).

European settlers started arriving in 1850. They reached Rangitikei by walking north from Wellington up the beach. They didn't walk all the way to the mouth of the Turakina, however, because there was a notorious patch of quicksand in the vicinity. Instead they turned inland at Koitiata Stream, which is still known by some as Turning In Creek.

The land south of the river mouth was divided into runs and leased for farming from 1888 onward. Koitiata was part of Run 17 and was leased for 21 years to Mary Ann Moorehouse, of England, records held at the Conservation Department's Wanganui office show. See 1909 map at **Appendix 6**.

In 1906 the run was divided and shared with two other people. When it came up to be leased again, in 1909, the successful applicant was Duncan Simpson. But by 1913 the then Rangitikei County Council had decided the river mouth would make a good place for the area's residents to go for rest and recreation.

The leaseholder was asked to relinquish some land for recreational purposes. This he did willingly, and his rent on the remaining run was reduced. So, in 1916, 165 acres (67ha) was surveyed off and vested in the Crown. See 1915 map at **Appendix 7**, also notice in the 1916 New Zealand Gazette, an official government record of land transfers and other changes, at **Appendix 8**.

A coastal road was also surveyed, but this was never developed and was later abandoned and the land instead became a coastal marginal strip. In 1917 another gazettal brought the new reserve under the 1908 Public Reserves and Domains Act (**Appendix 9**) and a third made Rangitikei County Council its controlling body (**Appendix 10**).

Because it has been Crown land since 1916, Koitiata Recreation Reserve has never had a legal title. It's legally known as Part Section 5, Block I, in Koitiata Survey District and is on survey plan number S017005. Its status is based on gazettals. A summary of gazettals is at **Appendix 11**.

After 1917 some of the land nearest the river mouth was subdivided into the first 41 sections (in Rapaki St), which were made available for people to lease and build seaside cottages on. Not more than one tenth of the land was to be leased for houses and squatters built cottages on land they were not leasing.

During the 1920s the Ratana movement grew, centred at a settlement just 4km northeast and on top of a hill. The prophet Tahupotiki Wiremu Ratana, and others, used to walk down the hill and cross the Turakina River to visit Tini Waitara Marae, 3km inland from the coast (Bill Maremare, speech at that marae, 2007).

Ratana's followers often arrived by walking the coast, just as early European settlers had done, although there were roads and a railway by this time.

In the 1950s all the occupied sections were surveyed and in the early 1960s there was another subdivision, and more after that. Land was surveyed off for roads at different times.

In 1982 all the leaseholders got the opportunity to freehold their sections and the reserve status of that land was removed, see gazette notice at **Appendix 12**.

In 1987 the Conservation Department took over from the former Department of Lands and Survey as the body in charge of Crown land not controlled by local authorities. By then the Department of Lands and Survey had "classified" most reserves according to their dominant uses, but Koitiata Recreation Reserve had missed out on this process (Fiona Wilson, pers. comm.).

Sometime between 1988 and 1991, 17 houses in the latest and southernmost council subdivision were connected to a sewage treatment pond within the reserve. Rangitikei District Council community facilities officer Judy Klue says no further subdivisions are planned, and the council has empty sections it can sell if there is demand for more housing.

Present ownership and management

Maori input

The former owners, Ngati Apa, would like to be involved in the reserve's management, and to be able to take plant material for weaving. But the tribe's treaty claim researcher Chris Shenton says his people do not want to own the reserve. His people probably wouldn't have agreed to having a sewage pond there either.

Maori may have more input into the area in future though, in the role of neighbours. It is likely that the tribe's Treaty of Waitangi settlement will allow it to buy the land under the northern end of Santoft Forest. Details are not yet final, but ownership could begin as early as 2008 (Pat McCarthy, pers. comm.).

Input from neighbouring forest manager

Santoft, as a forest on leased Crown land, is currently open to walkers and provides kilometres of trails which are well used. This could change if it comes under private ownership.

A change in ownership of the forest could impact on the reserve in other ways, too. For example, the control of sambar deer in the forest limits the amount of grazing they do on the reserve.

And forestry company Ernslaw 1 currently stabilises 30km of coastal dunes on the seaward side of the forest, to prevent sand blowing inland and engulfing the trees. Manager Pat McCarthy said dunes were stabilised by bulldozing them to gentle contours and planting and fertilising marram grass mingled with, during the last five years, native spinifex.

Ernslaw also keeps the track between the forest and reserve open, by bulldozing, because it serves as a firebreak. It is on the flattened damp sand beside the track that the rare *Isolepis basilaris*, *Ranunculus acaulis* and *Selliera rotundifolia* have been rediscovered. These minute plants have probably been out-competed elsewhere in the reserve and the freshly graded track provided them with an opportunity to survive.

Rangitikei District Council

Since 1917 Koitiata Recreation Reserve (then known as Koitiata Domain) has officially been controlled by Rangitikei County Council. The council has no management plan for it, though asset services manager Claire Scrimgeour says it is in the process of doing plans for all its reserves.

However community facilities officer Judy Klue is adamant that the council only looks after the mowed areas. The rest is Crown land and therefore managed by the Conservation Department, she says.

But the Conservation Department says the council should be responsible. Community relations officer (statutory) Fiona Wilson cited the gazettals and a section in the 1977 Reserves Act, which states that a local authority appointed to control and manage a reserve is "authorised to expend and apply money in controlling and

managing the reserve in accordance with the particular purpose for which the reserve is classified."

Though not formally classified, presumably the purpose of Koitiata Recreation Reserve is for recreation. Another passage from the act states that a recreation reserve should allow free entry to the public and have its special features protected, including its indigenous flora and fauna.

In any case, Ms Klue said council did attempt a limited management. For example, it erected a barrier to vehicle access on the metalled coastal track. Mr Mason said this was done because muddy holes on the track had become a trap for stray vehicles, and the residents who own tractors got tired of pulling them out.



Fig. 14. Rangitikei District Council closed the coastal track.

The council also helped out with the children's playground, barbecue, basketball hoop and petanque court, though the impetus and much of the labour and money was provided by the Koitiata Committee, which tended to work through councilors rather than council officers, Ms Klue said.

The council didn't want vehicles "tearing around" on the reserve either. It was unable to prevent this and left it to locals to police.

A proposed next development by the council, a \$70,000 floating pedestrian walkway across the lagoon to the beach, is on hold until it becomes clear what the river is going to do next. There would be little point in bridging it now if the river creates a new lagoon to seaward. Residents Joyce and Peter Smith and Bruce Attwell say there is little enthusiasm in the village for this project anyway.

Koitiata residents

These people have a real sense of community. They have an active Koitiata Committee that meets monthly, a regular newsletter, a volunteer fire force, monthly potluck dinners in their hall and other social events. They talk to each other in the street, and wave when vehicles go by.

Most of them have made a positive choice to live in this isolated place, because they like it. Many are retired or semi-retired, with skills to offer and time on their hands. They have a major input into management.

They have provided the impetus for amenities in the mown area, and for the settlement's hall and volunteer firefighters. Many are keen on fishing and whitebaiting, and want vehicle access to the beach and the mouths of rivers and streams along the coast. They went through a lengthy and frustrating process to get resource consent to form a vehicle track and ford across the reserve and lagoon to the beach.

Once they had consent they got road metal and formed a track from the playground to the ford, digging and clearing ditches on either side to keep it dry. They also created the ford, using plastic sacks filled with sand, and more metal. These sacks are now disintegrating but the ford is still usable. Its depth varies from almost a metre at high rainfall times to barely a centimetre when the weather has been dry. See Fig. 15.

Mr Nation said having a designated vehicle track to the beach was essential because people were determined to drive.

"If it hadn't been put in they would've gone anywhere, and they wreck anything."

He and other residents of the same opinion are reluctant to voice their concerns to the drivers.

"If you start making enemies, you're not here for very long," he said.

In the early 2000s the Conservation Department encouraged the formation of a three-member Coast Care group in the village. The three were Peter Smith, Peter Fraser and Arnold Nation.

In 2006 the group provided some of 3000 pingao and spinifex plants that were planted out at Koitiata and two other coastal reserves on Arbor Day (DOC website).

As a formal entity the Coast Care group was not long lasting, but two men have continued to collect seed and grow pingao and spinifex seedlings hydroponically. They then plant them in the dunes of the reserve, and elsewhere, and also donate them to school planting programmes further afield.

Ernslaw 1 has made donations to further this work, which is ongoing.

Fires are absolutely forbidden throughout the reserve, beach and village, because every part of it is within 1km of commercial pine forest or conservation land, or both. Koitiata's volunteer firefighters are zealous in enforcing this.



Fig. 15. The ford across the lagoon to the beach, September.



Fig. 16. Pingao planted on bare dune by Koitiata residents.

The Department of Conservation (DOC)

DOC sprays patches of pyp grass (*Ehrharta villosa*) at two places on the reserve, ranger Katrina Merrifield said. Biosecurity New Zealand and Horizons Regional Council fund this work.

The grass, native to South Africa, was planted experimentally at Koitiata by a government body in the early 1960s (Harrington, Hodder and Outred, 1998) or mid 1970s (Hilton, 2006). Patches were planted in Santoft Forest and in two places on the reserve. Koitiata is the only place on the west coast of New Zealand where this was done, although there is another patch on the east coast near Blackhead that was planted by a farmer.

It was thought the grass would help stabilise sand dunes, and it did. But it also grows to 2m tall, is adapted to dry temperate seaside climates and open ground and spreads copiously by rhizome. It has proved difficult to eradicate. In 1998 it covered 10ha at Koitiata, though not all of this was in the reserve (Hilton, 2006).

A June 2007 report from Ms Merrifield said it was "pretty much contained", but the infestation was not decreasing in size and some patches had missed being sprayed in previous years.

Next year the plan is to defoliate four or five times across the growing season, either by hand pulling or spraying herbicide. Glyphosate has been found to be the most effective spray.

A thorough search over a larger area is also needed, the report said. At the end of the growing season success or lack of it would be evaluated, and more work will probably be needed.



Fig. 17. Pyp grass emerges on empty dune at south end of reserve.

The department also has a sign near the ford (see Fig. 15), telling the public what action, if any, to take if seals come up on the beach, and listing some of the rules about catching whitebait. Wanganui DOC community relations officer (statutory) Fiona Wilson said this was done because it had legal responsibility for marine mammals and whitebait.

The department has also assisted with surveying the reserve for natural values and compiling a list of plants found there.

Wellington Fish & Game Council

has done nothing specific in the reserve. Peter Taylor, the senior officer for Wellington, said he referred questions from people who wanted to hunt there to DOC.

Horizons Regional Council

Koitiata Recreation Reserve is ranked 158 in the list of 320 Horizons Regional Council wetlands assessed so far (Horizons Regional Council, 2005). This puts it outside the top 100 that the council aims to protect by 2016.

Environmental manager (plants), Hilary Webb, said there was a lot less pyp grass at the reserve than there was, but dealing to what was left would be difficult.

"You're down to searching for a very cryptic grass amongst other grasses. The goal is eradication, so it's a challenge."

There had been a small amount of old man's beard at the south end of the reserve, but she believed she had got rid of it. Horizons had helped DOC control problem weeds there in the past, and her organisation was relaxed about this.

Ms Webb was planning to visit both Koitiata and Scott's Ferry in September and October, and talk to residents about benign ways of dealing with green waste.

She said dealing with the major weeds at the reserve would take quite an effort, but was not impossible. Top of her list was the sand wattle, which is mainly spreading from the south.

Anarchy Rules, OK?

This reserve is in the difficult (but perhaps not unusual) situation of having authorities in dispute with none wanting ultimate control. Neither the Conservation Department nor Rangitikei District Council is willing to take full responsibility for management.

Judging from news reports, both can honestly claim they don't have enough resources. In the relatively underpopulated Rangitikei district there are other conservation issues that seem more pressing – such as protecting inland reserves from rapidly spreading old man's beard (*Clematis vitalba*).

Ms Merrifield said DOC would like to do more. But the Wanganui Conservancy regularly asks for national funding to do conservation work – work such as goat control in Whanganui National Park that is arguably more important. Such is national competition that it doesn't always receive it.

All the local authorities are annoyed that locals continue to dump rubbish, and they are concerned by the spread of weeds.

Other than the above, there is no management and most of the reserve is effectively a "no man's land".

People are used to doing what they want, including driving into Santoft Forest to get pine cones and firewood, despite this being strictly forbidden. The forest managers have employed security patrols at times, to evict people from the forest, but still they come and go at will (Pat McCarthy, pers. comm.)

This sounds negative, but it is also positive. That very freedom makes Koitiata attractive. Some people enjoy its natural values and others simply appreciate the opportunities offered by a place with no rules.

Local perceptions

"It's fantastic that act of nature (the river changing course, leaving a large lagoon of brackish water) has brought so many birds back." Chris Shenton

The sandbar that forms and reforms at the mouth of the river is a kaitiaki (guardian). Bill Maremare, a kaumatua of Tini Waitara marae

Nearby resident Eddy Mason said it wasn't his idea of a reserve because it was overrun with weeds and nobody did anything. "It's not being protected and looked after. It's just a wasteland really."

"It's a wilderness there. I help look after it. We have always tried to protect it and look after it," Arnold Nation, resident.

"It's not exactly a great reserve because there are so many weeds. DOC has done something about the pampas and boxthorn, so it may eventually change.

"The other problem is the residents. They're dumping exotic weeds that are spreading into it." Pat McCarthy, manager of neighbouring Santoft Forest

"I used to go down there a fair bit. It used to be quite swampy. I haven't walked through it for a long time.

"I would like to see it kept as it is, as close to nature as it's meant to be," Brian Chambers, bach owner from Lower Hutt.

"I drive through it sometimes, on the way to the beach.

"When I was a kid I was down there all the time, playing.

"I would like to see it stay exactly the way it is. It's just a nice piece of wilderness," Chris Northover, family bach owner, from Wellington.

"It's nature, isn't it? It's what it should be. It's wetland I suppose, in a way.

"It's good to see that some of it can be left as it should be," Steve McKnight, resident.

"When my husband was ill, we just used to sit there and look at the river.

"I don't have very much to do with that now. I would like it left like that because it lets the children fly kites away from power poles, and they could run up and down the sandhills," Joan Shadbolt, resident.

"I used to do a daily walk from here down to Turning In Creek and back. I liked its untrafficked condition, and the fact that it changed so much, too. The sand dunes moved, and there were lots of little wild flowers that grew. The bird life down there is marvelous. I would like to see it left as a wilderness area, and the gorse taken away from amongst the flax.

"I would like to see more protection along the seaward dunes, to prevent them encroaching in over the wetlands," Bruce Attwell, resident.

"I have gone there in the past, for the peace and beauty of the countryside.

"I suppose it's just a wetland area. It's got the birds and the frogs.

"I would prefer it not to be developed, but I wouldn't be that upset," Peter Smith, resident.

"I walk down there sometimes. It's a nice natural area for wildlife, not just flora. The frogs are deafening in summer.

"I like the flax, and the cabbage trees. When you see the long stretches of pingao and spinifex from the air, they look absolutely beautiful.

"I would like to see it made a nature reserve and stop people driving in it and shooting in it," Joyce Smith, resident.



Fig. 18. Koitiata village, viewed from midpoint of reserve.

Ethical Considerations

Without more intensive management, the wilderness part of the reserve will inevitably become more and more modified, mainly by weed invasions - willow and poplar in the wetlands and boneseed, pampas, pink ragwort, sand wattle and introduced grasses in the dunes. Also, at least one dune will continue to blow inland onto wetland.

But does this matter? Would it be wrong?

It could be, because:

- it will hasten the extinction of rare species that could be of use to humans and arguably have intrinsic value
- it will obliterate a tiny trace of the past, for those who want to know what it was like
- on both the previous counts, it will reduce diversity and increase homogeneity
- which potentially makes the world poorer, in economic, cultural and environmental ways, and perhaps in spiritual ways as well.

On the other hand, retaining it as it is or restoring it will take resources of time and money. Under New Zealand law, a central or local government body is obliged to do this. Rangitikei District Council, the Conservation Department and Horizons Regional Council all arguably have responsibilities but also arguably have more pressing environmental problems to address.

The Conservation Department is already looking after two similar dune/wetland areas: to the north, Whitiua Scientific Reserve and to the south, near Tangimoana, Tawhiriho.

Ironically, New Zealand conservation might be better off if the country had a higher population - more people to look after the place and more taxes to pay for it.

The west coast of the lower North Island is a case in point. Censuses show it is losing population steadily, even in the towns.

Those who live there tend to have a "pioneer" mentality: that they have plenty of space and so many resources that there's no danger of running out.

Recommendations for management

First, the reserve needs one body to assume control, and put together a management plan that protects and restores remaining natural values. That body could then enlist help from other local bodies, volunteers and government departments for defined tasks.

Second, as the coastline extends, it would be good to have an understanding that, apart from the coastal strip, the evolving new land/lagoon is part of the reserve.

Any plan would have to take into consideration that some parts of the reserve, especially the north end nearest the informal dump and south end nearest the forest, are so modified that though there are patches of native vegetation there is little point in attempting to restore them.

Unfortunately some of the best *Libertia peregrinans* patches are toward the north end of the reserve.

In the middle, and focusing initially on a wetland area and adjoining dune with high natural values, conservation volunteers assisted by local authorities could have quite an impact.

Weeds would be the first focus, and the area chosen should be toward the west to escape windblown pampas seed. Weeds could be either removed manually or sprayed, and if removed should either be disposed of to landfill, buried or put through a hot compost to kill any seed.

Probably the worst weed of this area is a big patch of silver poplar on the damp sand plain. The best way to kill large plants such as boneseed and silver poplar may be to cut them close to the ground and paint the cut stem with herbicide. This would be relatively quick for volunteers to do, and the process of mobilising community support would also help educate residents. Horizons Regional Council may be able to supply the herbicide.

It would also be prudent to plant the dunes that are being blown inland in this area. This could be done with an intensive mixture of pingao and spinifex. Admittedly a dune blowout is a natural process, but this one was probably started by vehicle damage, and sand is progressively covering a choice area of *Olearia solandri* sand plain.

An education campaign would be needed in the village, to avoid further dumping of problem weeds. Possibly this could be prevented by a community composting system, as suggested by resident Joyce Smith and aided by Horizons Regional Council. It seems likely that the community would have to supervise it, but Rangitikei District Council could free up one of its unsold sections for the purpose.

If energy is sustained and weed control is successful, the restored area could be extended.

Another education campaign would be necessary to discourage vehicles from driving off-track in the reserve. They are doing this less with

time, but there would still be a lot of resistance to it. It seems likely that many people will see vehicles as essential to their recreation, and tracks would have to be provided for them.

The amount of will in the village to undertake such a restoration project is unknown. It may be low. The few conservation volunteers are already stretched, and they are ageing. But there are also new residents who are younger and may be interested.

Prognosis for the future

- Human management of this area has always been informal, but sheer population growth is likely to put an end to this some time.

The wild area is likely to be overrun by weeds before its value is fully recognised, unless there is some intervention by volunteers or a local body.

Perhaps it is best to enjoy and study its remaining values, and observe how it changes, without expecting all those values to survive intact.

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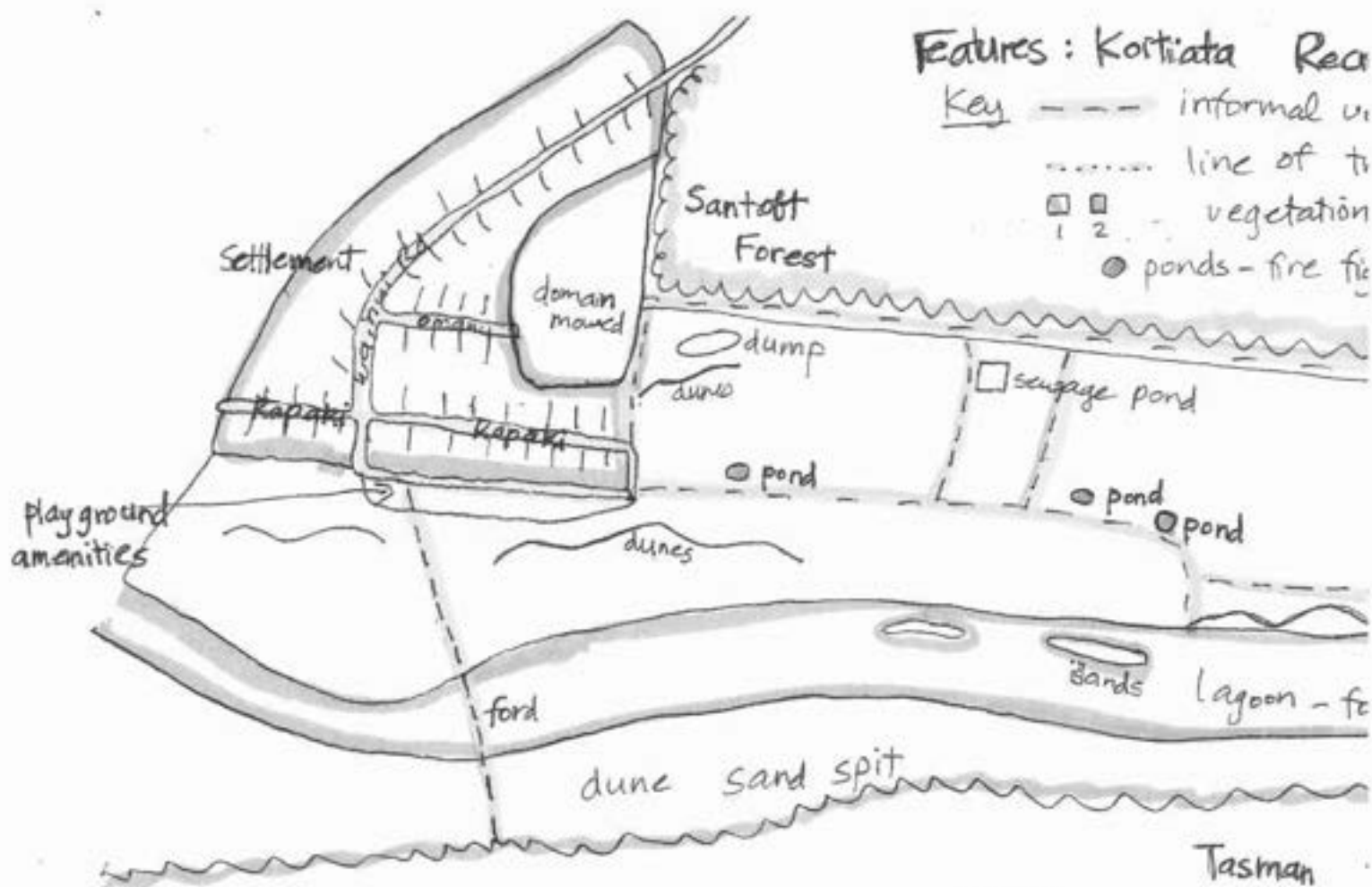


Fig.3

Fig. 3. Features within and surrounding the reserve

Kaitiata settlement consists of 106 houses, 57 of which are occupied by 114 full-time residents. Residents tend to be older and on lower incomes than the New Zealand average (Statistics New Zealand, 2001 Census). About half of the houses are used only at weekends and holidays.

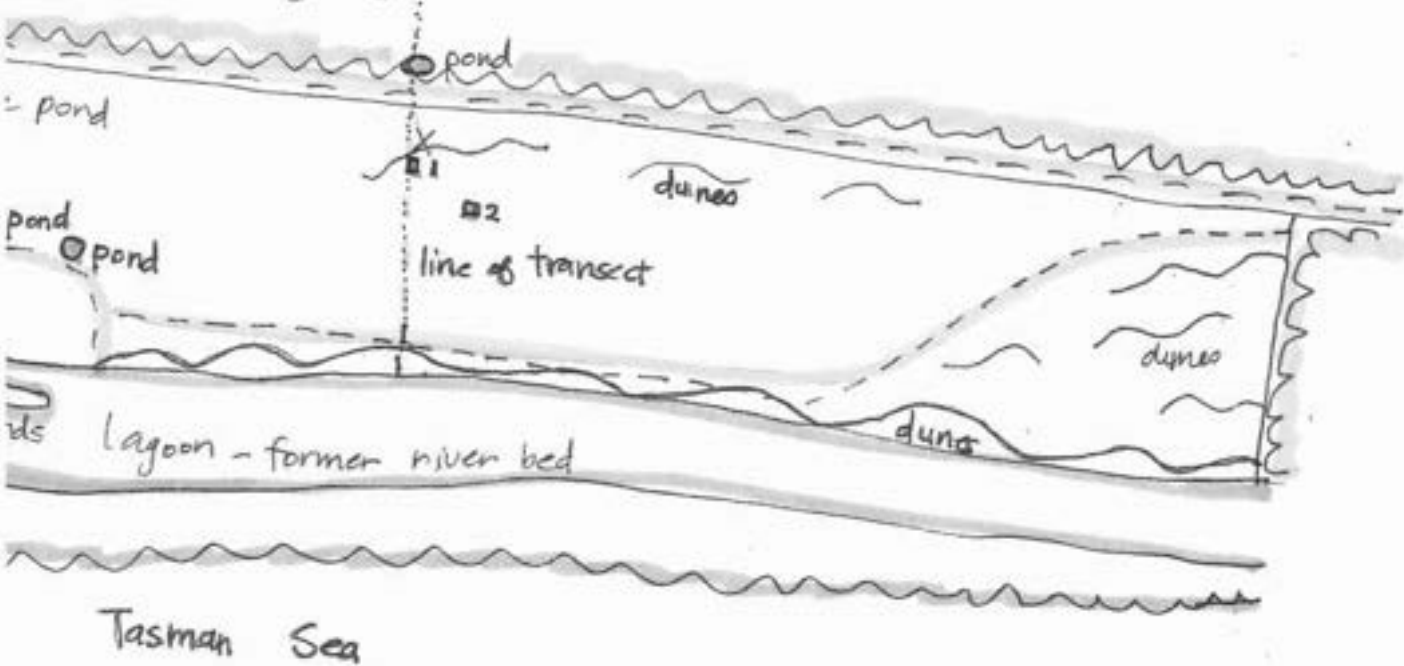
Kaitiata Domain, an open mowed area of 3.171ha, adjoins the northeastern end of the reserve. To the north and east of the village is land farmed for dairying by Bob Major, and to the southeast the 5000ha Santoft Forest stretches along the coast.

A peculiar feature of the west coast sand country is the shifting nature of river mouths. The dominant longshore drift is southeastward, and beach sand tends to form bars northwest of the mouths of rivers (Fleming 1953).

In 1998 the Turakina River had such a sandbar, about 3km long. Then, while in flood, the river suddenly cut directly through to the coast. The old river channel formed a shallow, brackish coastal lagoon for much of its length.

Kortiatia Recreation Reserve

- informal uchiu track
- line of transect for vegetation sample
- vegetation/soil sample spots
- ponds - fire fighting



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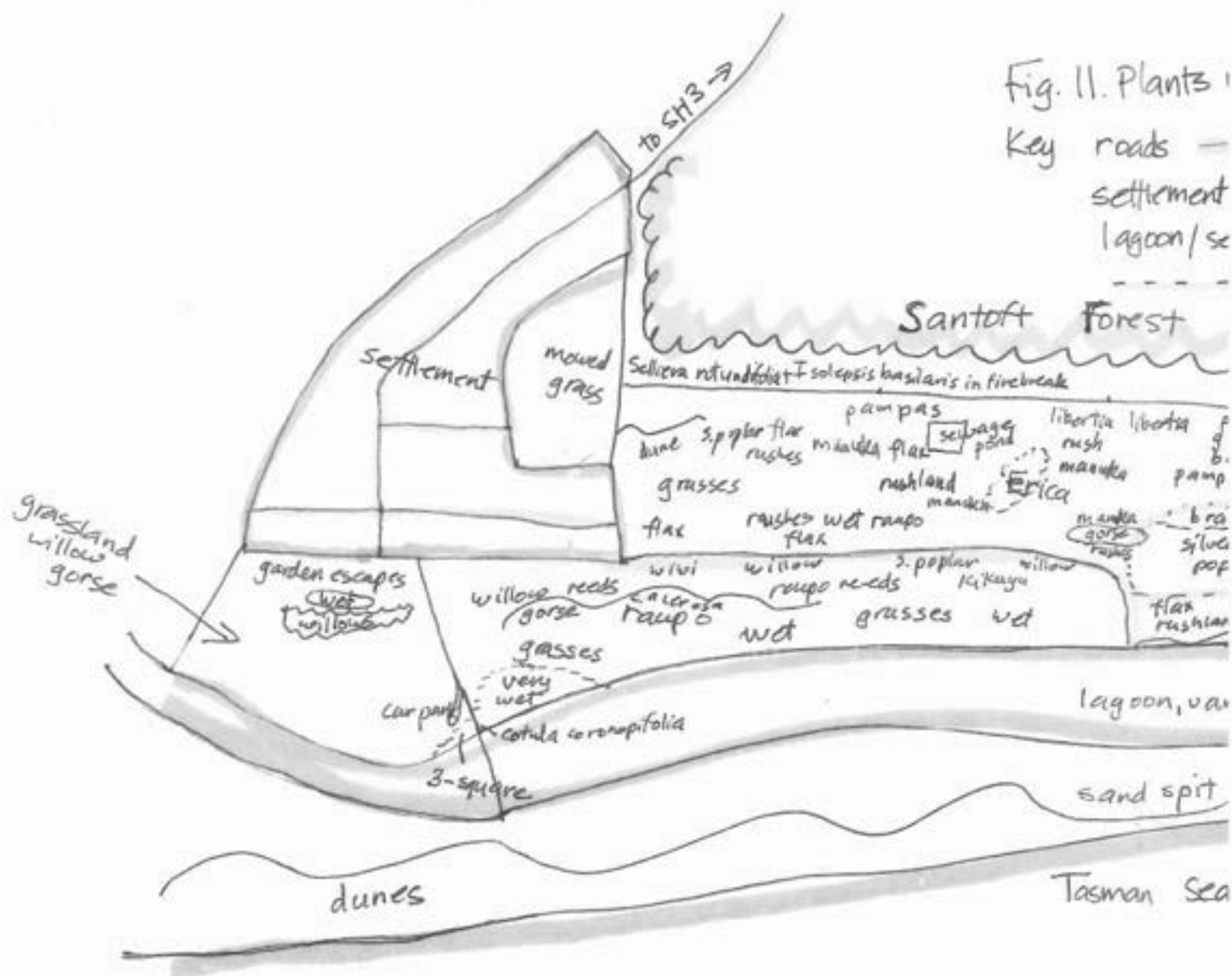
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Fig. 11. Plants

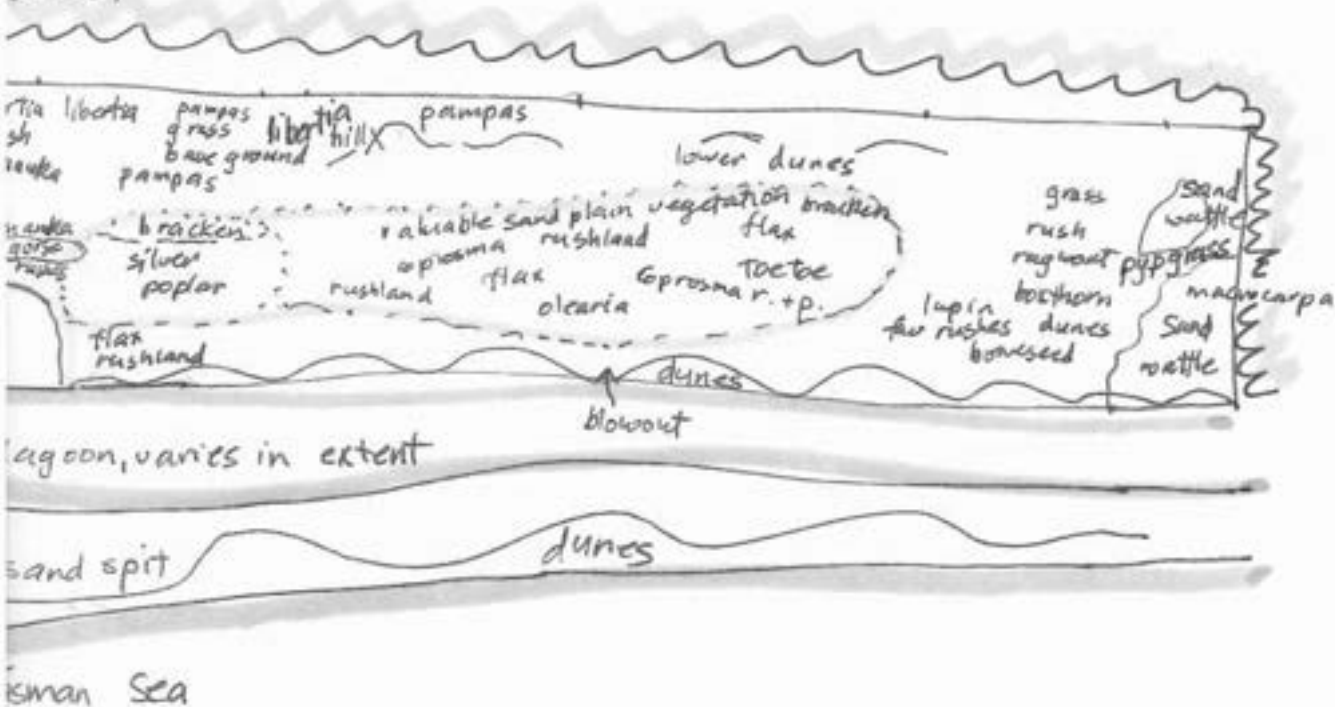
Key roads —
settlement
lagoon/se



1. Plants within reserve

roads ———
 settlement L
 lagoon/sea ———
 - - - - - valuable sand plain vegetation

Forest

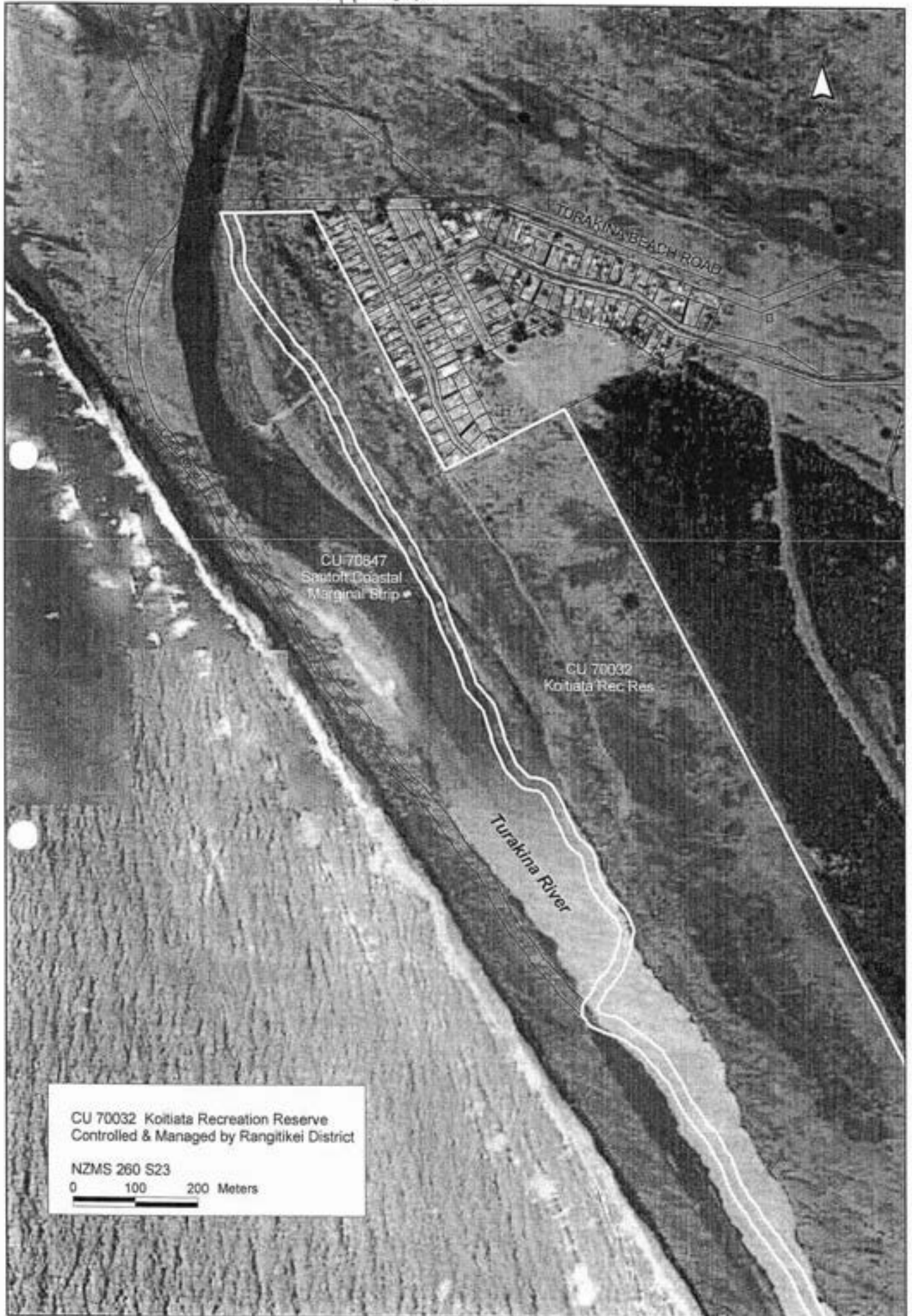


Appendices

- 1 Aerial photograph of reserve
- 2 Geological Map of New Zealand, sheet 10.
- 3 Physiographic map of west coast sand country. (Cowie 1967)
- 4 DOC land inventory form
- 5 Whanganui Plant List No. 25
- 6 1909 survey map
- 7 1915 survey map
- 8 Gazettal, 1916
- 9 Gazettal, 1917
- 10 Gazettal, 1917
- 11 Summary of gazettals
- 12 Gazettal, 1984

This is bank as filler for Page 2 which is missing.

Appendix 1



Appendix 3

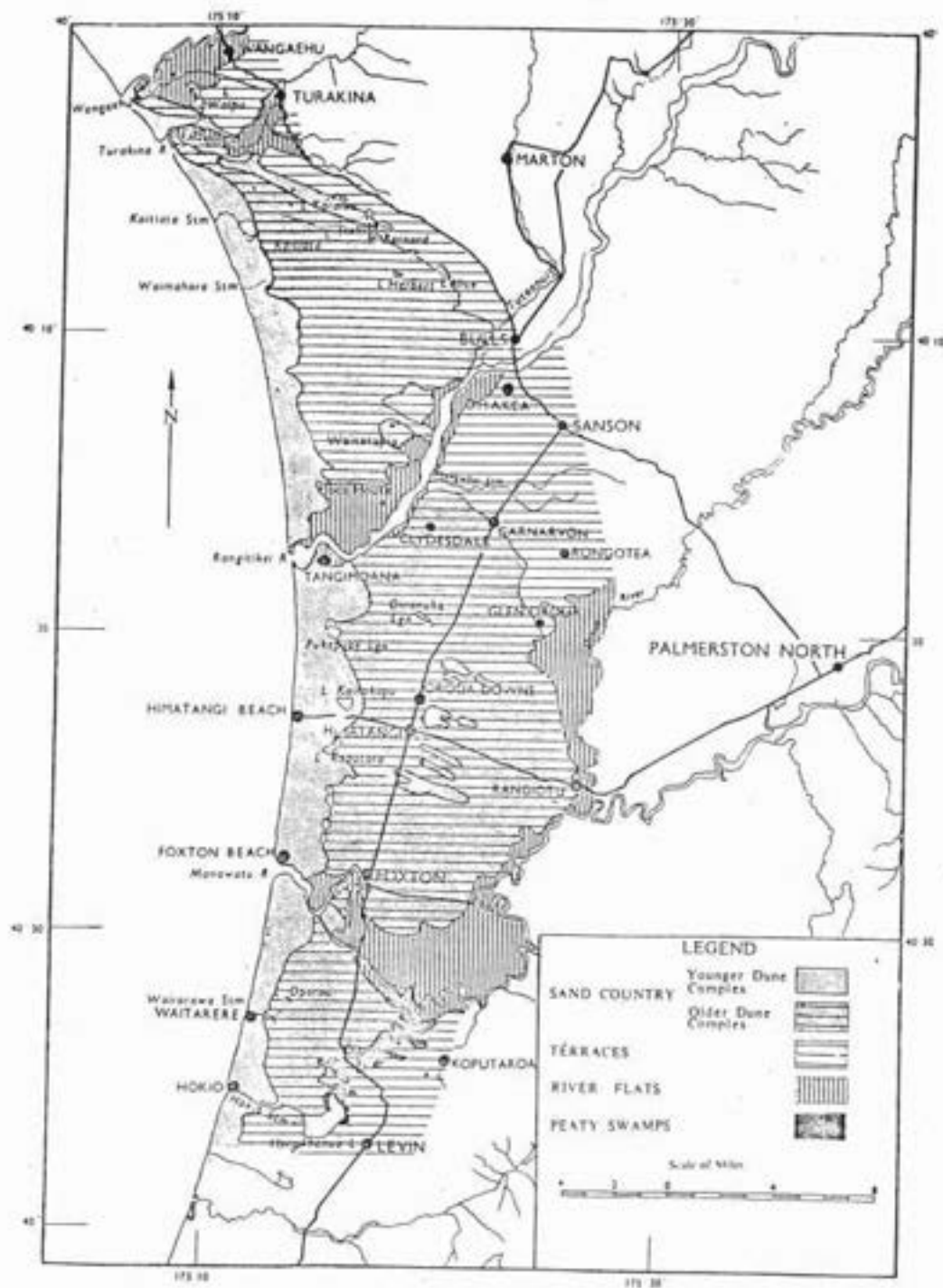


FIG. 2. Physiographic map of surveyed area showing boundaries of sand country, river flats, peaty swamps and terraces.

Appendix 4

WANGANUI CONSERVANCY LAND INVENTORY FORM		
NAME : Kaitiaki Domain Recreation Reserve		
CONSERVATION UNIT NO : 70032	AREA (HA) : 62.5848	
LEGAL DESCRIPTION : Secs 375,376,377,378 Rangitikei District, Pt Sec 5 Blk I Kaitiaki SD		
ECOLOGICAL DISTRICT : Foxton		
MAP REF (NZMS260) : S23 925235		
MANAGEMENT PLAN (Y/N) : No	DATE APPROVED :	EXPIRES :
ADMIN BODY : Rangitikei D C	LOCAL AUTHORITY : Rangitikei D C	
IWI/HAPU : Ngati Apa		
FIELD CENTRE : Palmerston North		
GENERAL DESCRIPTION : Sand dunes and sand plain beside Turakina River, damp hollows and dry low ridges. Was once a very important natural area but now deteriorating, largely through weeds.		
VEGETATION TYPE : Dune vegetation - marram, spinifex, pingao; dune plain vegetation - Leptocarpus, plagianthus, toetoe etc. Refs 85 and 78. Open sand plain areas being colonised by weeds and Leptocarpus.		
NOTABLE FLORA/FAUNA : Black fronted dotterels, poss record of fernbird, six listed plants recorded. Ref 85 and 78. Foxton ED RAP, (dwarf mazus, sand iris present 1994; prob extinct are Sebarea, Pimelea 'Turakina', P. arenaria, Isoplepis basilaris).		
HISTORICAL/CULTURAL RESOURCES : Not known.		
ANIMAL/PLANT PESTS : Rabbits. Some recreational vehicle damage. Silver poplar, pampas, gorse, Eriharta villosa (introduced pyp grass), tall fescue, holly-leaved senecio.		
FENCING : None.		
INTERPRETATION : None.		
RECREATION FACILITIES/VISITOR USE : Vehicle track into area. Popular beach estuary access.		
RECREATION OPPORTUNITY SPECTRUM CLASS(ES) : Rural.		
ACCESS : Car, through Kaitiaki settlement, four wheel drive, foot along beach. Adequate.		
LEASES, LICENCES, EASEMENTS AND CONCESSIONS : None.		
KEY MANAGEMENT NEEDS : Weed control - Eriharta villosa and pampas especially. Restriction of recreational vehicle damage. Rabbit control. Interpretation.		
IS CURRENT MANAGEMENT ADEQUATE (YES/NO/NOT KNOWN) IN TERMS OF :		
(A) PROTECTION	- No	
(B) RECREATION/INTERPRETATION	- No	
DATE FORM COMPLETED/AMENDED : 28/04/97		

Appendix 5:

WHANGANUI PLANT LIST NO. 25

Vascular Plants of Koitiata (Turakina Beach), including Koitiata Recreation Reserve, Manawatu Coast

Grid Ref: NZMS 260/S23/920245 to 930230 (approx)

A P Druce, Botany Division, DSIR
June 1975 (last revised July 1988)
(based on visits 1967, 1975, 1993)

C C Ogle (22 Forres St Wanganui), G La Cock (Department of Conservation, Wanganui)
(additions: 5 Dec 1991, 19 April 1993, 28 June 1993, 22 Oct 1996; 1 March 2000); Wanganui Botanical Group (30 January 1993, 5 March 1995; 2 Sep 2006); CCO, GLC, V McGlynn & Laurel Stowell (14 Sep 2007)

Last revised 2 March 2000; 23 Jan 2002; 31 Aug. 2006; 4 Sep. 2006; 24 March 07; 14 Sep 2007

(unc) uncommon; local (in small area but may be quite common there)

(+) = seen between 1988-96 ; ! = addition 2.9.06; (+!) = recorded by Druce and not seen again until 2.9.06; # = addition 14.9.07; (+#) = recorded by Druce and not seen again until 14.9.07

(A) INDIGENOUS SPECIES

Monocot Trees

Cordyline australis	(+)	cabbage tree
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Dicot Shrubs

Coprosma acerosa s.s.	(+)	sand coprosma
Coprosma propinqua ssp. propinqua (incl. C. p. var. latiuscula)		
Coprosma repens	(+)	taupata
Coprosma robusta	(+)	karamu
Coprosma propinqua x C. robusta	(+)	
Leptospermum scoparium	(+)	manuka
Olearia solandri	(+)	
Ozothamnus leptophyllus	(+)	tauhinu
Pimelea arenaria		sand daphne
Pimelea sp. unnamed (P. 'Turakina')		

Dicot Lianes

Calystegia sepium ssp. roseum	(+)	convolvulus
Calystegia soldanella	(+)	sand convolvulus
Muehlenbeckia complexa	(+)	pohuehue
Parsonsia heterophylla	(#) (unc)	NZ jasmine

Ferns

<i>Adiantum cunninghamii</i>	(+)	maidenhair fern
<i>Asplenium flabellifolium</i>	(#)	necklace fern
<i>Asplenium flaccidum</i>	(!) (unc)	hanging spleenwort
<i>Asplenium oblongifolium</i>	(+!)	shining spleenwort
<i>Asplenium polyodon</i>	(+)	sickle spleenwort
<i>Azolla filiculoides</i> ssp. <i>rubra</i>	(+)	floating red waterfern
<i>Blechnum fluviatile</i>	(!) (1 plant)	
<i>Blechnum minus</i> (auct. NZ)	(+)	swamp kiokio
<i>Blechnum novae-zelandiae</i>	(+)	kiokio
<i>Blechnum triangularifolium</i>	(+!)	cliff kiokio
<i>Cyathea medullaris</i>	(!) (5 seen)	mamaku
<i>Dicksonia fibrosa</i>	(+) (unc)	whkiponga
<i>Hypolepis ambigua</i>	(+!) (unc)	
<i>Microsorium pustulatum</i>	(#) (unc)	hound's tongue
<i>Paesia scaberula</i>	(#) (unc)	ring fern
<i>Pellaea rotundifolia</i>	(#) (2 plants)	button fern
<i>Pneumatopteris pennigera</i>		
<i>Polystichum neozelandicum</i>	(#) (1 plant)	shield fern
<i>Pteridium esculentum</i>	(+ #)	bracken
<i>Pteris macilenta</i> (auct. NZ)	(!) (unc)	
<i>Pteris tremula</i>	(!) (unc)	shaking brake
<i>Pyrrosia eleagnifolia</i>	(+) (unc)	leatherleaf fern
<i>Rumohra adiantiformis</i>	(#) (unc)	

Orchids

<i>Corybas</i> sp. (unidentified; <i>C. rivularis</i> agg.)		spider orchid
<i>Microtis unifolia</i>	(+)	onion-leaved orchid
<i>Thelymitra longifolia</i>	(+)	sun orchid
<i>Thelymitra</i> sp. (unidentified; erect channelled leaf)	(!)	sun orchid

Grasses

<i>Cortaderia toetoe</i>	(+)	toetoe
<i>Lachnagrostis billardierei</i>	(+)	sand bent
<i>Lachnagrostis filiformis</i> s.s.		
<i>Spinifex sericeus</i>	(+)	spinifex
<i>Zoysia minima</i>	(+)	

Sedges

<i>Baumea juncea</i>	(+)	
<i>Carex buechananii</i>		
<i>Carex pumila</i>	(+)	sand carex
<i>Carex virgata</i>	(+)	
<i>Cyperus ustulatus</i>	(+)	
<i>Desmoschoenus spiralis</i>	(+)	pingao

<i>Eleocharis acuta</i>	(+)	sharp spike sedge
<i>Eleocharis gracilis</i>		slender spike sedge
<i>Isolepis basilaris</i>	(+!) ¹	
<i>Isolepis cernua</i>	(+!)	
<i>Isolepis nodosa</i>	(+)	club sedge
<i>Isolepis prolifer</i>	(!) (1 patch)	
<i>Schoenoplectus pungens</i>	(+)	3-square
<i>Schoenoplectus tabernae-montani</i>	(+)	kapungawha
<i>Schoenus nitens</i>	(+)	

Rushes

<i>Apodasmia</i> (<i>Leptocarpus</i>) <i>similis</i>	(+)	jointed rush
<i>Juncus caespiticius</i> s.s.	(+!) (unc)	
<i>Juncus kraussii</i> var. <i>australiensis</i>	(+) (unc)	sea rush
<i>Juncus edgariae</i>	(!) (unc)	

Monocot Herbs Other Than Orchids, Grasses, Sedges, Rushes

<i>Libertia peregrinans</i>	(+)(unc) ²	sand iris
<i>Phormium cookianum</i>	(+)	wharariki, mountain flax
<i>Phormium tenax</i>	(+)	harakeke, flax
<i>Potamogeton ochreatus</i> [(Cockayne 1908)]		
<i>Potamogeton pectinatus</i> [Aston 1910]	(+) ³	
<i>Triglochin striatum</i>	(+)	arrow-grass
<i>Typha orientalis</i>	(+)	raupo

Composite Herbs

<i>Centipeda minima</i> (?) ⁴	(+) (unc)	sneezeweed
<i>Cotula coronopifolia</i>	(+)	bachelor's button
<i>Euchiton</i> (<i>Gnaphalium</i>) <i>audax</i>		cudweed
<i>Lagenifera pumila</i>	(+!) (local)	
<i>Pseudognaphalium</i> sp. (<i>P. luteoalbum</i> agg.)	(+)	cudweed
<i>Senecio glomeratus</i> ? (only juv. seen)	(!) (unc)	native fireweed
<i>Senecio hispidulus</i>	(+) (unc)	native fireweed
<i>Senecio quadridentatus</i>		silver fireweed

¹ Scattered along 100 m or so of damp sand beside vehicle track on sea-ward side of pines on 2.9.06

² Recorded by Druce; 1 plant found by A King in 1993 or 1995; many dozens of tillers found 2.9.06 among *Apodasmia* and along vehicle track near pines – perhaps area 200 m diameter or more. Not (unc); better described as 'local'.

³ Rediscovered in water supply pond in pine forest, Jan. 1993 (pond beside forestry road behind village)

⁴ As recorded by Druce. Needs re-finding to check which of the 3 indigenous species it is, as defined by Walsh (2001)

Dicot herbs (other than composites)

Acaena sp.) A. anserinifolia or A. nz.)	(#)	bidibid/piripiri
Apium sp (A. filiforme auct NZ)	(+) (unc)	slender sea celery
Chenopodium glaucum var. ambiguum		
Crassula sieberiana (incl. C. tetramera)	(+) (unc)	
Epilobium billardiianum s.s.	(+!)	willow-herb
Epilobium nerteroides		"
Epilobium pallidiflorum		"
Gunnera dentata var. (G. arenaria)		sand gunnera
Haloragis erecta	(#) (1 plant)	
Hydrocotyle novae-zeelandiae s.s.	(+)	swamp pennywort
Lilaeopsis novae-zeelandiae	(+)	tape-measure plant
Limosella lineata	(+)	
Lobelia anceps	(+)	NZ lobelia
Mazus novaezeelandiae ssp. impolitus.	(+) (unc)	
Mentha cunninghamii	(+!) (unc)	NZ mint
Myriophyllum pedunculatum ssp. novae-zeelandiae		
M. votschii		
Oxalis rubens	(+)	wiry oxalis
Polygonum salicifolium	(+)	NZ willow-weed
Potentilla anserinoides	(+)	silverweed
Pratia perpusilla [between Rangitikei & Turakina Rivers; Aston 1910: 236] ⁵		
Ranunculus acaulis	(+)	sand buttercup
Samolus repens var. repens		sea primrose
Sarcocornia quinqueflora	(+)	glasswort
Sebaea ovata		
Selliera rotundifolia ⁶	(+)(unc)	half-star
Viola cunninghamii [Cockayne 1908]		

Number of Species

98 species (+ 1 hybrid)

References

Aston B C, 1910. Trans NZ Inst. 43: 225-47

Cockayne L, 1908: Trans. NZ Inst. 41:309

Walsh, N.G. (2001). A revision of *Centipeda* (Asteraceae). *Muelleria* 15: 33-65.

⁵ This sp. was found & vouchered on 5 March 1995 in damp pasture beside dune lake/swamp in "Tunnel Hill" farm - may have been Aston's location?

⁶ Druce recorded *Selliera radicans*, but the publication since of *S. rotundifolia*, characteristic of dune flats between about Patea and Levin, suggests that it was the latter species. On 2.9.06 we found a small patch of *S. rotundifolia*

(B) ADVENTIVE SPECIES (all seen on or after 21 November 1990)

Gymnosperms

<i>Pinus pinaster</i>	(!) (unc)	maritime pine
<i>Pinus radiata</i>	(!)	

Dicot shrubs and lianes

<i>Acacia sophorae</i>		sand wattle
<i>Artemisia arborescens</i>	(unc)	hedge artemisia
<i>Chrysanthemoides monilifera</i>		boneseed
<i>Cotoneaster lacteus</i>	(! -seen but no ID earlier)	
<i>Crataegus monogyna</i>	(unc)	hawthorn
<i>Echium candicans</i>	(!) (local)	pride of Madeira
<i>Erica lusitanica</i>		Spanish heath
<i>Euonymus japonicus</i>	(#) (1 plant)	spindle tree
<i>Juglans ailantifolia</i> [seedlings]	(unc)	Japanese walnut
<i>Lavandula dentata</i>	lavender	
<i>Lavatera arborea</i>		tree mallow
<i>Lupinus arboreus</i>		tree lupin
<i>Lycium ferocissimum</i>		boxthorn
<i>Pelargonium X asperum?</i>	(#) (1)	
<i>Pelargonium X hortorum</i>	(!) (2)	zonal pelargonium
<i>Pelargonium vitifolium?</i>	(#) (1)	
<i>Pittosporum crassifolium</i>	(unc)	karo
<i>Populus alba</i>		silver poplar
<i>Prunus seracifera</i> (cv. <i>atropurpurea</i>)	(!) (1 seen)	cherry plum
<i>Rosa rubiginosa</i>		sweet brier
<i>Rumex sagittatus</i>	(#)	climbing dock
<i>Salix cinerea</i>		grey willow
<i>Salix fragilis</i>		crack willow
<i>Salix matsudana</i> CHR	(unc; 2)	tortured willow
<i>Senecio angulatus</i>		Cape ivy
<i>Senecio mikanioides</i>	(!) (local)	German ivy
<i>Senna multiglandulosa</i>	(! 1 plant)	cassia
<i>Teline monspessulana</i>	(#) (3-4 plants)	Montpellier broom
<i>Ulex europaeus</i>		gorse

Monocot 'shrubs'

<i>Aloe arborescens</i>	(!) (1 patch)	
<i>Yucca gloriosa</i>		yucca

Dicot herbs

<i>Acanthus mollis</i> (seedlings only)	(#) (1 patch)	bear's breeches
<i>Aeonium</i> (arboreum?)	(#) (3 plants)	
<i>Apium nodiflorum</i>		water celery
<i>Anagallis arvensis</i>		scarlet pimpernel
<i>Aptenia cordifolia</i>	(#) (1 plant)	

<i>Arctotheca calendula</i>	(!)	Cape daisy
<i>Arctotis stoechadifolia</i>	(#)	arctotis
<i>Aster subulatus</i>	(!)	sea aster
<i>Atriplex prostrata</i>		orache
<i>Bellis perennis</i>	(!)	lawn daisy
<i>Beta vulgaris</i>	(unc)	silverbeet
<i>Bidens frondosa</i>	(unc)	beggar's ticks
<i>Carpobrotus</i> sp.		iceplant
<i>Centaureum erythraea</i>		centaury
<i>Cerastium glomeratum</i>	(#)	annual mouse-eared chickweed
<i>Cerastium tomentosum</i>	(#) (3 patches)	snow-in-summer
? <i>Cereus</i> sp.	(#) (1 plant)	a cactus
<i>Chrysanthemum segetem</i>	(! 1 plant)	corn marigold
<i>Cirsium arvense</i>	(unc)	Californian thistle
<i>Cirsium vulgare</i>		Scotch thistle
<i>Conyza sumatrensis</i> (syn. <i>C. albida</i>)		fleabane
<i>Coronopus didymus</i>		twin cress
<i>Cotyledon orbiculata</i>	(!) (unc)	
<i>Crassula multicava</i>	(#) (local)	fairy crassula
<i>Crepis capillaris</i>		hawkbit
<i>Fumaria muralis</i>	(!)	scrambling fumitory
<i>Galium aparine</i>	(#)	cleavers
<i>Galium palustre</i>	(#)	marsh bedstraw
<i>Gazania rigens</i>	(!)	
<i>Geranium molle</i>		soft dovesfoot
<i>Helleborus foetidus</i> ⁷ CHR	(!) (unc)	winter rose
<i>Helminthotheca (Picris) echioides</i>		ox-tongue
<i>Hypochoeris radicata</i>		catsear
<i>Lactuca</i> sp.		wild lettuce
<i>Leontodon saxatilis</i> (syn. <i>L. taraxacoides</i>)		hawkbit
<i>Linum bienne</i>		pale flax
<i>Lobularia maritima</i>	(unc)	alyssum
<i>Lotus pedunculatus</i>		lotus major
<i>Lotus tenuis</i> CHR		
<i>Lythrum hyssopifolia</i>	(!) (unc)	hyssop loosestrife
<i>Medicago lupulina</i>		black medick
<i>Medicago nigra</i>	(#)	burr medick
<i>Melanoselinum decipiens</i>	(!) (unc)	parsnip palm
<i>Melilotus indica</i>		King Island melilot
<i>Mentha pulegium</i>		pennyroyal
<i>Myosotis laxa</i>		water forget-me-not
<i>Myosotis sylvatica</i>	(#) (1 patch)	garden forget-me-not
<i>Myriophyllum aquaticum</i> CHR	(unc)	parrot's feather
<i>Oenothera stricta</i>		evening primrose
<i>Orobanche minor</i>		broom-rape
<i>Osteospermum jucundum</i>	(#) (local)	
<i>Oxalis articulata</i>	(!) (unc)	sourgrass
<i>Oxalis incarnata</i>	(#)	lilac oxalis

⁷ 1st NZ record of this plant in the wild (found by G La Cock; collected 4.9.06)

<i>Oxalis pes-caprae</i>	(!)	Bermuda buttercup
<i>Parentucellia viscosa</i>		tarweed
<i>Plantago australis?</i>		swamp plantain
<i>Plantago major</i>		broad-leaved plantain
<i>Polygonum hydropiper</i>		water pepper
<i>Ranunculus repens</i>		creeping buttercup
<i>Ranunculus sceleratus</i>		celery-leaved buttercup
<i>Ranunculus trichophyllus</i>		water buttercup
<i>Raphanus raphanistrum</i>		wild radish
<i>Rorippa nasturtium-aquaticum</i> (?)		watercress
<i>Rumex conglomeratus</i>		clustered dock
<i>Rumex crispus</i>		curled dock
<i>Rumex obtusifolius</i>		broad-leaved dock
<i>Salpichroa origanifolia</i>	(!)	lily of the valley vine
<i>Sedum praealtum</i>	(!) (unc)	shrubby stonecrop
<i>Sedum spectabile</i>	(#) (2)	
<i>Senecio elegans</i>		purple groundsel
<i>Senecio glastifolius</i>		pink ragwort (holly-leaved senecio)
<i>Senecio jacobaea</i>		ragwort
<i>Sisymbrium officinale</i>		hedge mustard
<i>Solanum chenopodioides</i>		velvety nightshade
<i>Solanum nigrum</i>		black nightshade
<i>Solanum tuberosum</i>	(!) (local)	potato
<i>Sonchus asper</i>		prickly sowthistle
<i>Sonchus oleraceus</i>		puwha
<i>Spergularia rubra</i>		sand spurrey
<i>Stachys palustris</i> ⁸ CHR		marsh woundwort
<i>Stellaria media</i>	(!)	chickweed
<i>Trifolium arvense</i>		haresfoot trefoil
<i>Trifolium dubium</i>		suckling clover
<i>Trifolium repens</i>		white clover
<i>Trifolium subterraneum</i>	(#)	subterranean clover
<i>Tropaeolum majus</i>	(!) (unc)	nasturtium
<i>Verbascum thapsus</i>	(#) (1)	woolly mullein
<i>Veronica persica</i>	(!) (unc)	scrambling speedwell
<i>Vicia sativa</i>		vetch
<i>Vicia</i> sp. (unidentified; maybe <i>V. tetrasperma</i>)	(!)	vetch
<i>Viola odorata</i>	(#) (1 patch)	

Monocot herbs

Grasses

<i>Agrostis stolonifera</i>	creeping bent
<i>Aira caryophylla</i>	silvery hair grass
<i>Ammophila arenaria</i>	marram grass
<i>Anthoxanthum odoratum</i>	sweet vernal
<i>Briza minor</i>	quaking grass

⁸ Marsh woundwort is recorded in NZ from only 2 locations, viz. "mainly near Turakina R" and "Hokoi estuary (near Levin)" (Flora of NZ Vol 4. P 796. 1988)

<i>Bromus diandrus</i>		ripgut brome
<i>Cortaderia selloana</i>		pampas grass
<i>Cynodon dactylon</i>		Indian doab
<i>Dactylis glomerata</i>		cocksfoot
<i>Ehrharta erecta</i>	(!) (local)	veld grass
<i>Ehrharta villosa</i> CHR (& other NZ herbaria)		pyp grass
<i>Elytrigia repens</i>	(!) (local)	couch
<i>Festuca rubra</i> ssp. <i>commutata</i>	(!)	Chewings fescue
<i>Glyceria declinata</i>		floating sweetgrass
<i>Holcus lanatus</i>		Yorkshire fog
<i>Lagurus ovatus</i>		haretail
<i>Lolium perenne</i>		
<i>Paspalum dilatatum</i>		paspalum
<i>Paspalum distichum</i>		Mercer grass
<i>Pennisetum clandestinum</i>		kikuyu grass
<i>Poa annua</i>	(#)	annual poa
<i>Polypogon monspeliensis</i>		beard grass
<i>Schedonorus phoenix</i> (= <i>Festuca arundinacea</i>)		tall fescue
<i>Sporobolus africanus</i>		ratstail
<i>Vulpia bromoides</i>		vulpia hair gras

Monocot herbs other than grasses

<i>Agapanthus orientalis</i>	(unc)	agapanthus
<i>Alisma lanceolatum</i>	(unc)	water plantain
<i>Allium cepa</i>	(!)	onion
<i>Allium triquetrum</i>	(!)	3-cornered garlic
<i>Alstroemeria</i> sp. [pink flowers]	(#)	Peruvian lily
<i>Canna</i> sp.	(!) (unc)	canna lily
<i>Chasmanthe floribunda</i>	(#) (1 patch)	
<i>Crocasmia x crocosmiiflora</i>		montbretia
<i>Cyperus albobristatus</i>	(!) (1 clump)	
<i>Cyperus eragrostis</i>	(unc)	
<i>Freesia refracta</i> cv. (pink fl.)	(!)	freesia
<i>Hyacinthus orientalis</i> (?) CHR	(!) (unc)	hyacinth
<i>Juncus articulatus</i>		jointed-leaved rush
<i>Juncus bufonius</i>		toad rush
<i>Juncus subnodulosus</i> ⁹	(unc)	
<i>Muscari armeniacum</i>	(#) (unc)	grape hyacinth
<i>Narcissus tazetta</i>	(!) (unc)	jonquil
<i>Potamogeton crispus</i>		curled pondweed
<i>Sparaxis</i> ¹⁰ (2 spp.?)	(#)	
<i>Tradescantia sillamontana</i> ?	(#) (1 patch)	
<i>Watsonia aletroides</i>	(#) (1 clump)	watsonia
<i>Watsonia bulbifera</i> (?)	(!)	watsonia
<i>Zantedeschia aethiopica</i>	(#) (1 patch)	arum

⁹ Recorded in Flora of NZ Vol.3 as being only in Canterbury and Otago

¹⁰ two flower colour forms on 14.9.07, one orange, one white inside with red outside

Species of Note

A Indigenous National Status¹¹

Centipeda minima ¹²	:	Nationally Critical
Pimelea 'Turakina'	:	Nationally Critical
Sebaea ovata	:	Nationally Critical
Mazus novaezeelandiae		
subsp. impolitus	:	Serious Decline
Isolepis basilaris	:	Serious Decline
Pimelea arenaria		
"southern"	:	Serious Decline
Selliera rotundifolia	:	Gradual Decline
Libertia peregrinans	:	Gradual Decline

B Adventive

Ehrharta villosa: the only location in NZ for this South African grass; spreading from plantings by Ministry of Works (Plant Materials section) in (?) 1960s.

Helleborus foetida: the first NZ record as an adventive plant

Juncus subnodulosus: first North Island record, 30 January 1993.

Stachys palustris: (see footnote, p. 5)

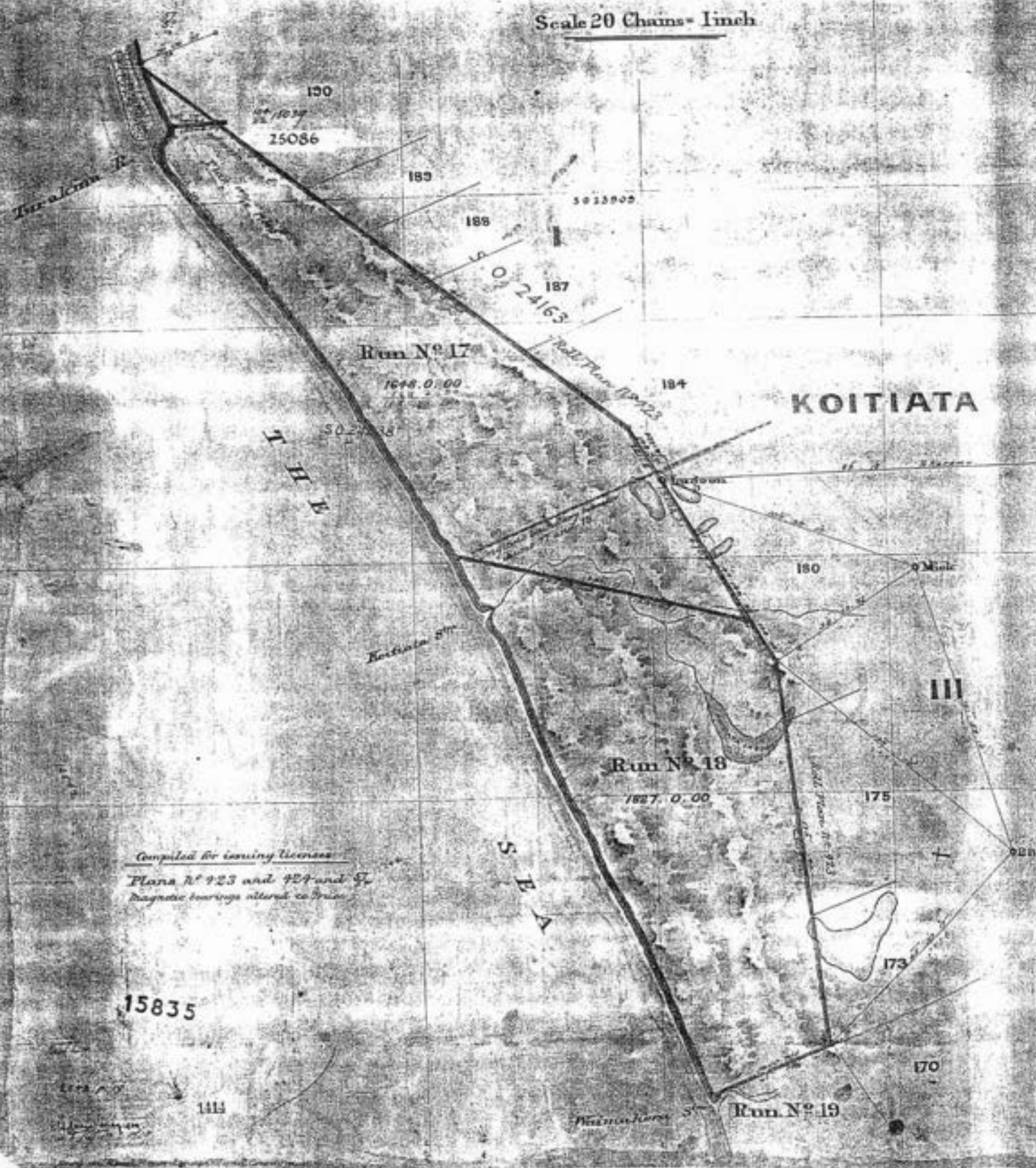
Lotus tenuis: only a few recorded sites in NZ (*Flora of NZ Vol. 4*)

¹¹ de Lange, P. J.; Norton, D. A.; Heenan, P. B.; Courtney, S. P.; Molloy, B. P. J.; Ogle, C. C.; Rance, B. D.; Johnson, P. N.; Hitchmough, R. (2004): Threatened and uncommon plants of New Zealand, *NZ Journal of Botany* 42: 45-76

¹² As recorded by Druce. Needs refinding to check which of the 3 indigenous species it is, as defined by Walsh (2001) (See footnote #3).

15835

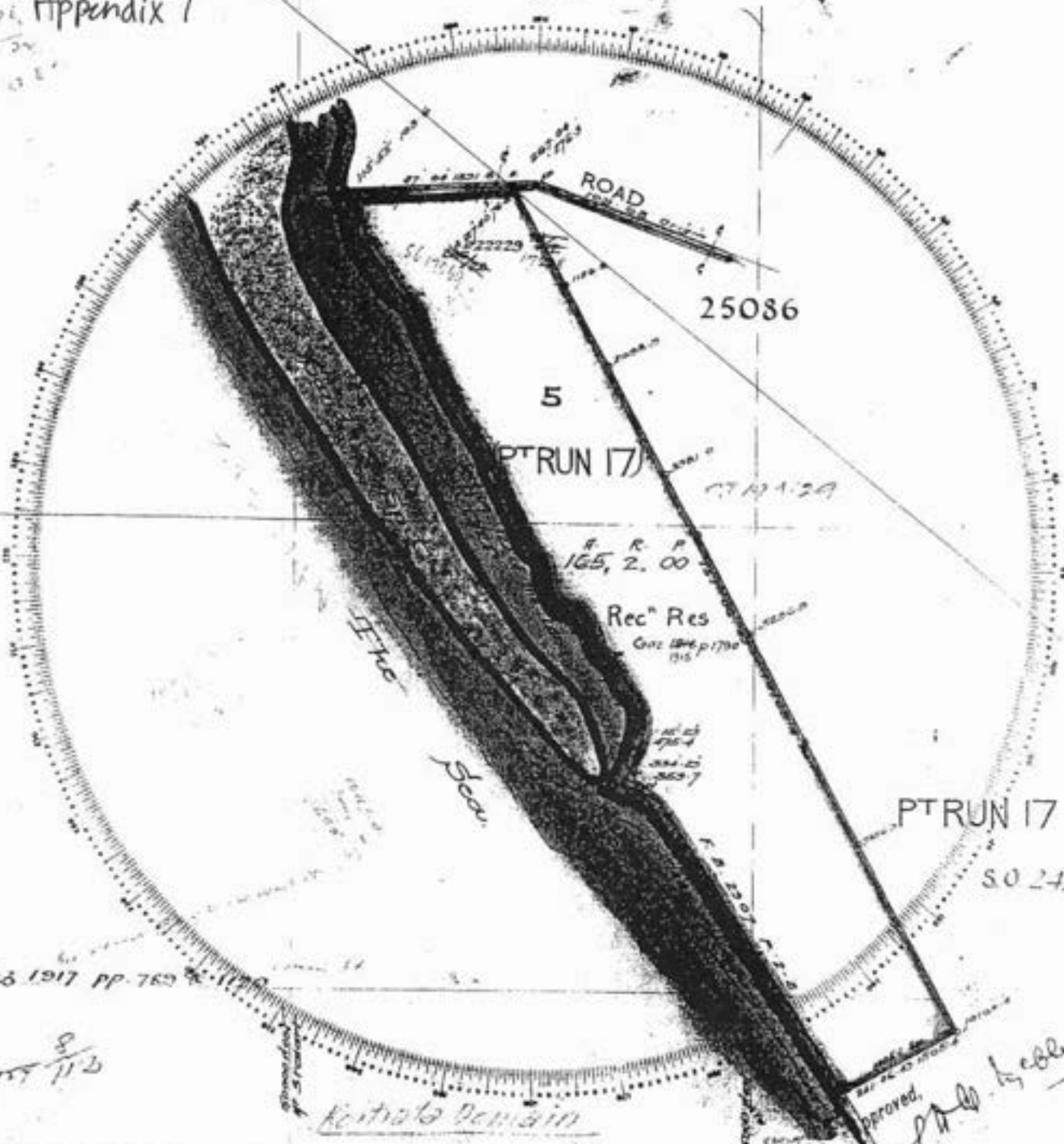
Scale 20 Chains = 1 inch



DIST. OFFICE, STATE FIRE BLDG.
WELLINGTON (P.O. BOX 5003)

RANGITIKEI COUNTY

Appendix 7



Plan of Seaside Resort, Sec 5 (part of Run 17)
Surveyed for Block I Koitiata S.D.
By A. M. Roberts
Date: 1915

Licensed Surveyor.

17005

Instructions No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

CERTIFICATE.

3731

I warrant hereby that this plan has been made from surveys executed by me (or under my supervision) and that the same are correct, and that all the rules and regulations with reference to the survey of Crown or Native lands have been strictly complied with.

Witness my hand and seal at Wellington this 11th day of August 1915.

marked L. and S. 6/6/43, deposited in the Head Office, Department of Lands and Survey, at Wellington, and thereon edged purple. (Auckland Plan 64252, blue.)

As witness the hand of His Excellency the Governor, this twenty-third day of May, one thousand nine hundred and sixteen.

W. F. MASSEY,
Minister of Lands.

Land temporarily reserved for a Site for a Public School in Block I, Mangamuka Survey District, Auckland Land District.

LIVERPOOL, Governor.

WHEREAS by the three-hundred-and-twenty-first section of the Land Act, 1908, it is enacted that the Governor may from time to time, either by general or particular description, and whether the same has been surveyed or not, reserve from sale temporarily, notwithstanding that the same may be then held under pastoral license, any Crown lands which in his opinion are required for any of the purposes in the said section mentioned:

Now, therefore, I, Arthur William de Brio Savile, Earl of Liverpool, the Governor of the Dominion of New Zealand, in pursuance and exercise of the powers and authorities conferred upon me by the said Act, do hereby temporarily reserve from sale the land in the Auckland Land District described in the Schedule hereunder written, for a site for a public school.

SCHEDULE.

ALL that area in the Auckland Land District, being Section 72, Block X, Mangamuka Survey District, containing by admeasurement 2 acres, more or less. Bounded towards

the north-west and north-east by Section 38, Block X aforesaid, 485-9 links and 397-6 links respectively; towards the south-east by Section 38a of the same block, 503-4 links; and towards the south-west by a road along the Waitapu Stream, 249-9 links and 177 links; be all the aforesaid linkages more or less. As the same is more particularly delineated on the plan marked L. and S. 1910/1671, deposited in the Head Office, Department of Lands and Survey, at Wellington, and thereon edged red. (Auckland Plan 19421.)

As witness the hand of His Excellency the Governor, this twentieth day of May, one thousand nine hundred and sixteen.

W. F. MASSEY,
Minister of Lands.

Trustees for the Huirangi Public Cemetery appointed.

LIVERPOOL, Governor.

IN pursuance and exercise of the powers and authorities vested in me by the fourth section of the Cemeteries Act, 1908, I, Arthur William de Brio Savile, Earl of Liverpool, the Governor of the Dominion of New Zealand, do hereby appoint

SERGEANT EDGAR EASTON

to be a Trustee, in the place of Robert Wells, deceased, to provide for the maintenance and care of the Huirangi Public Cemetery, in conjunction with Louis George Andrews and Percy Harold Edward Surrey, previously appointed.

As witness the hand of His Excellency the Governor, this twenty-third day of May, one thousand nine hundred and sixteen.

W. F. MASSEY,
Minister of Lands.

Lands permanently reserved.

LIVERPOOL, Governor.

WHEREAS by the three-hundred-and-twenty-first section of the Land Act, 1908, it is enacted that the Governor may from time to time, either by general or particular description, and whether the same has been surveyed or not, reserve from sale temporarily, notwithstanding that the same may be then held under pastoral license, any Crown lands which in his opinion are required for any of the purposes in the said section mentioned:

And whereas by the three-hundred-and-twenty-second section of the said Act it is provided that land temporarily reserved under the said three-hundred-and-twenty-first section may, at the expiration of one month but not later than six months after the publication in the Gazette of notice of such temporary reservation, be permanently reserved, and that notice of such permanent reservation shall be published in the Gazette:

And whereas by the sixty-ninth section of the Land for Settlements Act, 1908, it is further provided that the Governor may from time to time, as he thinks fit, set aside reserves for any specified public purpose out of land acquired under the last-mentioned Act, provided that no land so acquired shall be set aside for endowments:

And whereas the lands specified in the first column of the Schedule hereto were, by the Warrants the dates of which are specified in the third column of the said Schedule, and the notifications of which were published in the Gazette specified in the fourth column, temporarily reserved under the authority of the said Acts for the purposes specified in the second column of the said Schedule:

Now, therefore, I, Arthur William de Brio Savile, Earl of Liverpool, the Governor of the Dominion of New Zealand, in pursuance and exercise of the powers and authorities conferred upon me by the said Acts, do hereby permanently reserve the lands so temporarily reserved as aforesaid, and enumerated in the first column of the Schedule hereto, for the purposes specified in the second column of the said Schedule, being the same purposes for which the said lands were so temporarily reserved as aforesaid.

SCHEDULE.

First Column. DESCRIPTION OF RESERVE.					Second Column. Purpose for which Land reserved.	Third Column. Date of Warrant.	Fourth Column. Gazette.
Land District.	Locality.	Section.	Block.	Area.			
				A. R. P.		1915.	1916.
Auckland ..	Waipareira Parish ..	286	..	5 0 0	Public cemetery ..	16 Feb.	No. 20, 24 Feb.
" ..	Hobson East S.D.* ..	14	V	2 0 0	Site for a public school	14 Mar.	No. 22, 15 Mar.
" ..	Cambridge S.D.* ..	16	X	2 0 0	" ..	14 "	" ..
Hawke's Bay	Pohiri S.D.* ..	1	III	5 0 0	Site for a Native school	8 "	" ..
Wellington	Kaitake S.D.* ..	5	I	165 2 6	Public recreation-ground	24 Feb.	No. 25, 2 Mar.
Otago ..	Kaitake S.D.* ..	15	IV	0 3 39 9	Site for a public pound	11 Mar.	No. 22, 16 Mar.
" ..	Conical Hills Settlement	67A	..	3 0 0	Site for a public school	27 Jan.	No. 12, 3 Feb.
" ..	Town of Banbury ..	4 and 5	XII	0 2 0	Site for a post-office ..	24 Feb.	No. 25, 2 Mar.
" ..	Greenfield Settlement	16A	..	10 0 0	Site for a public school	11 Mar.	No. 22, 16 Mar.

* Survey district.

As witness the hand of His Excellency the Governor, this twentieth day of May, one thousand nine hundred and sixteen.

W. F. MASSEY,
Minister of Lands.

Recreation Reserve in Wellington Land District brought under Part II of the Public Reserves and Domains Act, 1908.

LIVERPOOL, Governor.
ORDER IN COUNCIL.

At the Government Buildings at Wellington, this twenty-sixth day of February, 1917.

Present:

THE HONOURABLE SIR JAMES ALLEN, K.C.B., PRESIDING IN COUNCIL.

BY virtue of the powers and authorities vested in me by the twenty-sixth section of the Public Reserves and Domains Act, 1908, I, Arthur William de Brio Savile, Earl of Liverpool, the Governor of the Dominion of New Zealand, by and with the advice and consent of the Executive Council of the said Dominion, do hereby order and declare that the reserves for recreation in the Wellington Land District described in the Schedule hereto shall be and the same is hereby brought under the operation of and declared to be subject to the provisions of Part II of the said Act; and such reserves shall hereafter be known as the Kaitiaki Domain, and be managed, administered, and dealt with as a public domain.

SCHEDULE.

ALL that area in the Wellington Land District, containing by admeasurement 165 acres 2 roads, more or less, being Section No. 5, Block 1, Kaitiaki Survey District. Bounded towards the north by a public road, 1858-4 links; towards the north-east by Run No. 17, Block 1 aforesaid, 10103-4 links; towards the south-east by Run No. 17 aforesaid, 1405-1 links; and towards the south-west generally by a road reserve one chain wide from mean high-water mark along the sea-beach to the mouth of the Turakina River; thence by a road reserve one chain wide along the eastern bank of the Turakina River; be all the aforesaid linkages more or less. As the same is delineated on the plan marked L. and S. 1/193A, deposited in the Head Office, Department of Lands and Survey, at Wellington, and thereon edged red.

F. W. FURBY,
Acting Clerk of the Executive Council.

Revolving the Vesting in the Corporation of the City of Auckland of Portion of a Cemetery Reserve, Part of Allotment 248A, Parish of Waitomiti

LIVERPOOL, Governor.
ORDER IN COUNCIL.

At the Government Buildings at Wellington, this twenty-sixth day of February, 1917.

Present:

THE HONOURABLE SIR JAMES ALLEN, K.C.B., PRESIDING IN COUNCIL.

WHEREAS the land described in the Schedule hereto forms portion of a reserve duly vested in the Corporation of the City of Auckland, in trust, for public cemetery purposes, by an Order in Council dated the third day of December, one thousand nine hundred and six, and published in *Gazette* of the sixth day of that month, in pursuance of section four of the Public Reserves Act, 1891, but a certificate of title has not issued in respect of the said reserve:

And whereas it is expedient that the said Order in Council should be revoked in so far as it relates to the land described in the Schedule hereto, and the Auckland City Council has duly consented to such revocation:

Now, therefore, His Excellency the Governor of the Dominion of New Zealand, acting by and with the advice and consent of the Executive Council of the said Dominion, and in pursuance and exercise of the powers and authorities conferred upon him by subsection two of section three of the Public Reserves and Domains Amendment Act, 1914, doth hereby revoke the Order in Council hereinbefore referred to so far as it relates to the land described in the Schedule hereto.

SCHEDULE.

ALL that area in the Auckland Land District, containing by admeasurement 1 road 22-4 perches, more or less, being portion of Allotment 248A (a cemetery reserve), Parish of Waitomiti. Bounded towards the south-east by a public road, 407-4 links; towards the south-west by a public road, 133 links; and towards the north-west by a right line, 516-2 links; be all the aforesaid linkages more or less. As the same is delineated on plan marked L. and S. 2/34A,

deposited in the Head Office, Department of Lands and Survey, at Wellington, and thereon enclosed red (Auckland Plan No. 18288.)

F. W. FURBY,
Acting Clerk of the Executive Council.

Revolving the Vesting in the Chairman, Councillors, and Inhabitants of the Southland County of a Gravel-pit Reserve, Section 4a, Block V, Mabel Hundred, Southland Land District.

LIVERPOOL, Governor.
ORDER IN COUNCIL.

At the Government Buildings at Wellington, this twenty-sixth day of February, 1917.

Present:

THE HONOURABLE SIR JAMES ALLEN, K.C.B., PRESIDING IN COUNCIL.

WHEREAS the land described in the Schedule hereto was vested in the Chairman, Councillors, and Inhabitants of the County of Southland, in trust, as a reserve for a gravel-pit, by an Order in Council dated the twenty-sixth day of October, one thousand eight hundred and eighty-six, and published in *Gazette* of the twenty-eighth day of that month, in pursuance of section four of the Public Reserves Act, 1891, but a certificate of title has not issued in respect of the said reserve:

And whereas it is expedient that the said Order in Council should be revoked in so far as it relates to the said land, and the Southland County Council has duly consented to such revocation:

Now, therefore, His Excellency the Governor of the Dominion of New Zealand, acting by and with the advice and consent of the Executive Council of the said Dominion, and in pursuance and exercise of the powers and authorities conferred upon him by subsection two of section three of the Public Reserves and Domains Amendment Act, 1914, doth hereby revoke the Order in Council hereinbefore referred to so far as it relates to the land described in the Schedule hereto.

SCHEDULE.

ALL that parcel of land in the Southland Land District, containing 10 acres, more or less, being Section 4a, Block V, Mabel Hundred. Bounded towards the north-east by a public road, 236 and 892-2 links; towards the south-east by Section 4 of aforesaid block, 1274-3 links; towards the south-west by Section 4 aforesaid, 1000 links; and towards the north-west by Section 3 of aforesaid block, 756-2 links.

F. W. FURBY,
Acting Clerk of the Executive Council.

Time for Preparation of Westland County Roll under Section 46 of the Rating Act, 1908, extended.

LIVERPOOL, Governor.
ORDER IN COUNCIL.

At the Government Buildings at Wellington, this twenty-sixth day of February, 1917.

Present:

THE HONOURABLE SIR JAMES ALLEN, K.C.B., PRESIDING IN COUNCIL.

WHEREAS the County Council of the Westland County having failed, through misadventure, to prepare the valuation roll of mining property in the Westland County in the month of January, one thousand nine hundred and seventeen, as required by section forty-six of the Rating Act, 1908, it is expedient to extend the time for preparing the said roll as hereinbefore mentioned:

Now, therefore, His Excellency the Governor of the Dominion of New Zealand, in order that the purpose and intent of the said Rating Act, 1908, may have effect, and in pursuance and exercise of the powers vested in him by the said Act, and acting by and with the advice and consent of the Executive Council of the said Dominion, doth hereby extend the time for the preparation of the valuation roll for the Westland County under the Rating Act, 1908, until the first day of March, one thousand nine hundred and seventeen; and doth also hereby extend the time within which the valuers shall give notice of the rateable value determined by them to each occupier, so that such notices may be given on or before the third day of March, one thousand nine hundred and seventeen, and that objections to such valuations may be made on or before the fifteenth day of March, one thousand nine hundred and seventeen.

F. W. FURBY,
Acting Clerk of the Executive Council.

and thirteen, regulations were made under the authority of the Post and Telegraph Act, 1908 (hereinafter termed "the said Act"), for the transmission of messages by wireless telegraphy: And whereas it is desirable to add to such regulations in the manner hereinafter set forth:

Now, therefore, His Excellency the Governor of the Dominion of New Zealand, in pursuance and exercise of the powers and authorities conferred upon him by the said Act, and all other powers and authorities in that behalf enabling him, and acting by and with the advice and consent of the Executive Council of the said Dominion, doth hereby make the regulation set forth in the Schedule hereto; and doth declare that the regulation hereby made shall come into force on the date of the publication of this Order in Council in the New Zealand Gazette, and shall form part of and be read together with the regulations above recited.

SCHEDULE.

4A. A RADIO-TELEGRAM in the address of which a telephone number is included shall be telephoned to the addressee without further cost during any time that the exchange is open.

F. W. FURBY,
Acting Clerk of the Executive Council.

Domain Board appointed to have Control of the Kaitiaki Domain.

LIVERPOOL, Governor.

ORDER IN COUNCIL.

At the Government House at Wellington, this twenty-sixth day of March, 1917.

Present:

HIS EXCELLENCY THE GOVERNOR IN COUNCIL.

WHEREAS by section forty-seven of the Public Reserves and Domains Act, 1908 (hereinafter termed "the said Act"), it is enacted that the Governor may from time to time, by Order in Council gazetted, appoint any local authority to be the Domain Board having, subject to the said Act, control of any public domain:

And whereas by an Order in Council made on the twenty-sixth day of February, one thousand nine hundred and seventeen, and published in the New Zealand Gazette of the first day of March, one thousand nine hundred and seventeen, Kaitiaki Domain, described in the Schedule hereto, was brought under the operation of and declared to be subject to the provisions of Part II of the said Act:

And whereas it appears expedient to appoint a Domain Board to control the said domain:

Now, therefore, His Excellency the Governor of the Dominion of New Zealand, in exercise of the powers conferred by the said Act, and acting by and with the advice and consent of the Executive Council of the said Dominion, doth hereby appoint

THE RANGITIKEI COUNTY COUNCIL

to be the Kaitiaki Domain Board, having the control of the land described in the Schedule hereto for the purposes of and subject to the provisions of Part II of the said Act; and doth hereby appoint Saturday, the fifth day of May, one thousand nine hundred and seventeen, at eleven o'clock a.m., as the time when, and the Rangitikei County Council Chambers, Marton, as the place where, the first meeting of the said Board shall be held.

SCHEDULE.

KAITIAKI DOMAIN.

ALL that area in the Wellington Land District, containing by admeasurement 155 acres 2 roods, more or less, being Section No. 5, Block I, Kaitiaki Survey District. Bounded towards the north by a public road, 1858-4 links; towards the north-east by Run No. 17, Block I aforesaid, 10103-4 links; towards the south-east by Run No. 17 aforesaid, 1405-1 links; and towards the south-west generally by a road reserve one chain wide from mean high-water mark along the sea-beach to the mouth of the Turakina River; thence by a road reserve one chain wide along the eastern bank of the Turakina River: be all the aforesaid linkages more or less. As the same is delineated on the plan marked L. and S. 1/191A, deposited in the Head Office, Department of Lands and Survey, at Wellington, and thereon edged red.

F. W. FURBY,
Acting Clerk of the Executive Council.

Elstow Drainage District extended.

LIVERPOOL, Governor.

ORDER IN COUNCIL.

At the Government House at Wellington, this twenty-sixth day of March, 1917.

Present:

HIS EXCELLENCY THE GOVERNOR IN COUNCIL.

WHEREAS, in accordance with the provisions of section three of the Land Drainage Act, 1908, a majority of the ratepayers in the area described in the First Schedule hereto, situated in the County of Ohinemuri, have presented a petition to His Excellency the Governor of the Dominion of New Zealand, praying that the land comprised in the said area be included in the Elstow Drainage District as constituted under the provisions of the said Act:

And whereas it is expedient to alter the boundaries of such drainage district in manner hereinafter appearing:

Now, therefore, in pursuance and exercise of the power and authority contained in section three of the Land Drainage Act, 1908, His Excellency the Governor of the Dominion of New Zealand, acting by and with the advice and consent of the Executive Council of the said Dominion, doth hereby alter the boundaries of the said Elstow Drainage District by including in such district the area of land described in the said petition and in the First Schedule hereto; and doth hereby declare that the boundaries of the said drainage district, with such addition as herein provided for, shall be those described in the Second Schedule hereto.

FIRST SCHEDULE.

AREA INCLUDED IN ELSTOW DRAINAGE DISTRICT.

ALL that area in the Auckland Land District bounded by a line along the northern side of the Paeroa-Tahuna Road from the Waitoa River to the Ngutunanga Road, along the north-eastern side of that road to a point opposite the northern-most corner of part Koromaitua No. 1 Block, across the road and along the western boundary of the said block to the Waitoa River, and along the right bank of that river to the northern side of the Paeroa-Tahuna Road, the place of commencement.

SECOND SCHEDULE.

ELSTOW DRAINAGE DISTRICT.

ALL that area in the Auckland Land District bounded by a line commencing at a point on the left bank of the Waitoa River at the crossing of the Paeroa-Tahuna Road; thence along the left bank of that river to a point in line with the north-western boundary of Section 111 in Block IX, Archa Survey District; thence to and along the north-western boundary of that section and Section 116 to Stanley Road; across and along the south-western side of that road to the road from Te Archa to Waitoa immediately south-east of the railway; along the north-western side of that road and the road forming the south-eastern boundary of Section 9, Suburbs of Waitoa, in Block XVI, Waitoa Survey District, to the southernmost corner of that section, along the eastern side of the road forming the western boundaries of Sections 9 and 8, across the railway, and along the north-eastern side of the road forming the north-eastern boundaries of Sections 18, 24, and 25 to the north-eastern boundary of the Hungahunga Drainage District as described in the New Zealand Gazette of the 12th December, 1912, page 3451, and along the north-eastern and north-western boundaries of that drainage district to the Waitoa River; along the right bank of that river to the Paeroa-Tahuna Road in Rangatahi Block, and along the south-eastern side of that road to the Waitoa River, the place of commencement.

F. W. FURBY,
Acting Clerk of the Executive Council.

Exchanging a Reserve in Block F, Mabel Hundred, Southland Land District, for other Land.

LIVERPOOL, Governor.

ORDER IN COUNCIL.

At the Government House at Wellington, this twenty-sixth day of March, 1917.

Present:

HIS EXCELLENCY THE GOVERNOR IN COUNCIL.

WHEREAS the land described in the First Schedule hereto is a reserve heretofore duly set apart for a gravel-pit, being a reserve within Class I of the Second Schedule

Appendix II

Description (cont'd)

ACQUISITION: GAZ:		DOC:								
File	DETAILS OF LEASE OR LICENCE									
Selector	Regd No	Date of Disposal	Term Years/from	R.V. Price	Ann. Rent Instalment	Det. Exp.				
4/3/32	C2/989		1	\$	\$					
			1	\$	\$					
			1	\$	\$					
			1	\$	\$					

RESERVATIONS

PURPOSE	Gazette		ADMINISTERING BODY	Vested		Control & Manage	
	Year	Page		Year	Page	Year	Page
Recreation	1916	1790	Koitia Domain Bd = Rangitikei CC			1917	1120
Koitia Domain	1917	789	= Rangitikei District Council				
Proclaimed road	1918	3915					
3.1001 off-res' road	1984	276					

Comments: For leases see D.P. 26092 & 26255 DP 26092 = 4.2608 ha DP 26255 = 1.4467 ha

ADDRESS				LOCALITY:			
Turakina Beach Road				Rangitikei			
M.L.	17005	25269	AREA	56.8773	Balance	Ha	COUNTY
S.O. PLAN	17269	25086		56.8768		m ²	CITY
	22229	33541					BOROUGH
LOT	TOWN OF			DISTRICT			
	D.P.			SURVEY			
SEC. 5	BLK. 1			DISTRICT			
KOITIATA							

Please note balance area does not include lease areas.

4.2608 ha
1.4467 ha

Dated at Wellington this 26th day of January 1984.

J. R. BATTERSBY,
for Minister of Works and Development.
(P.W. 31/1560; Ak. D.O. 50/23/71/0)

16/1

*Declaring Land in Rangiora District to be Acquired for the
Purposes of the Transport Act 1962*

PURSUANT to section 20 of the Public Works Act 1981, the Minister of Works and Development declares that an agreement to that effect having been entered into, the land described in the Schedule hereto is hereby acquired for the purposes of the Transport Act 1962 and shall vest in the Crown on the 2nd day of January 1984.

SCHEDULE

CANTERBURY LAND DISTRICT

ALL that piece of land containing 9257 square metres, situated in Block X, Rangiora Survey District; being part Rural Section 709. All certificate of title 6B/883. (Limited as to parcels).

Dated at Wellington this 26th day of January 1984.

J. R. BATTERSBY,
for Minister of Works and Development.
(P.W. 90/26/4; Ch. D.O. 40/6/386)

16/1

Reservation of Land

PURSUANT to the Land Act 1948, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby sets apart the land, described in the Schedule hereto, as a reserve for scenic purposes.

SCHEDULE

CANTERBURY LAND DISTRICT—AKAROA COUNTY

2,2800 hectares, more or less, being part Rural Section 41588, situated in Block XII, Akaroa and Block VI, Goughs Survey Districts. Crown land. S.O. Plan 15950.

Dated at Christchurch this 23rd day of January 1984.

B. K. SLY,
Assistant Commissioner of Crown Lands.
(L. and S. H.O. Res. 11/3/75; D.O. 8/5/471)

3/1

Classification of Reserve

PURSUANT to the Reserves Act 1977, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby classifies the reserve, described in the Schedule hereto, as a local purpose (site for pest destruction board buildings) reserve, subject to the provisions of the said Act.

SCHEDULE

OTAGO LAND DISTRICT—VINCENT COUNTY

1416 square metres, more or less, being Section 94, Block XII, Lower Hawea Survey District. Shown marked "A" on S.O. Plan 20285. Part *New Zealand Gazette*, 1983, page 3169.

2065 square metres, more or less, being part Section 68, Block XII, Lower Hawea Survey District. Shown marked "B" on S.O. Plan 20285. Part certificate of title B1/131.

Dated at Dunedin this 23rd day of January 1984.

J. R. GLEAVE,
Assistant Commissioner of Crown Lands.
(L. and S. H.O. Res. 12/44/9; D.O. 8/5/27/11)

3/1

Revocation of Reservation Over Part of a Reserve

PURSUANT to the Reserves Act 1977, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby revokes the reservation over that part of the scenic reserve described in the Schedule hereto.

SCHEDULE

**WELLINGTON LAND DISTRICT—MANAWATU COUNTY—PART
MOUNT LEES RESERVE**

4,2178 hectares, more or less, being Section 374 (formerly part Lot 2, D.P. 33752), Block XII, Rangitoto Survey District. Part *Gazette* notice 459930.1. S.O. Plan 33501.

Dated at Wellington this 20th day of January 1984.

J. STEWART,
Assistant Commissioner of Crown Lands.
(L. and S. H.O. Res. 7/3/178; D.O. 8/3/236)

3/1

Revocation of the Reservation Over Part of a Reserve

PURSUANT to the Reserves Act 1977, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby revokes the reservation over that part of the reserve for recreation purposes, described in the Schedule hereto.

SCHEDULE

WELLINGTON LAND DISTRICT—RANGITIKEI COUNTY

4,6858 hectares, more or less, being part Section 377 and part Section 378, Rangitikei District, situated in Block I, Kaitiaki Survey District and part Section 5, Block I, Kaitiaki Survey District. Part certificate of title C2/989. S.O. Plan 33541.

Dated at Wellington this 20th day of January 1984.

J. STEWART,
Assistant Commissioner of Crown Lands.
(L. and S. H.O. Res. 7/2/71; D.O. 8/3/32)

3/1

Classification and Naming of a Reserve

PURSUANT to the Reserves Act 1977, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby classifies the reserve, described in the Schedule hereto, as a recreation reserve, and further, declares that the said reserve shall hereafter be known as the Culverden Recreation Reserve.

SCHEDULE

**CANTERBURY LAND DISTRICT—AMURI COUNTY—CULVERDEN
RECREATION RESERVE**

7,3068 hectares, more or less, being Section 76, Culverden Settlement (formerly part Reserve 3758), situated in Blocks VI and X, Culverden Survey District.

Dated at Christchurch this 23rd day of January 1984.

B. K. SLY,
Assistant Commissioner of Crown Lands.
(L. and S. H.O. 1/135; D.O. 8/3/6)

3/1

Vesting a Reserve in the Strathallan County Council

PURSUANT to the Reserves Act 1977, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby vests the reserve, described in the Schedule hereto, in the Strathallan County Council in trust for recreation purposes.

SCHEDULE

CANTERBURY LAND DISTRICT—STRATHALLAN COUNTY

3,9850 hectares, more or less, being Rural Section 40175 (formerly parts of Reserve 1803) situated in Block IV, Orari Survey District. All *Gazette* notice 822438 (*New Zealand Gazette*, 1971, page 146) and balance *Gazette* notice 822439 (*New Zealand Gazette*, 1971, page 152). S.O. Plan 13004.

Dated at Christchurch this 23rd day of January 1984.

B. K. SLY,
Assistant Commissioner of Crown Lands.
(L. and S. H.O. Res. 11/2/267; D.O. 8/5/469/2)

3/1

Classification of Reserve

PURSUANT to the Reserves Act 1977, and to a delegation from the Minister of Lands, the Assistant Commissioner of Crown Lands hereby classifies the reserve, described in the Schedule hereto, as a recreation reserve, subject to the provisions of the said Act.

SCHEDULE

**CANTERBURY LAND DISTRICT—MACKENZIE COUNTY—LAKE
TEKAPO RECREATION RESERVE**

6,3775 hectares, more or less, being Reserve 5182, situated in Block XIII, Tekapo Survey District. *New Zealand Gazette*, 1964, page 812. S.O. Plan 10289.

6,6230 hectares, more or less, being Rural Section 40370 (formerly part Reserve 5028), situated in Block XIII, Tekapo Survey District.