

Technical Report

Investigations and
Monitoring Group

**Management Plan For
Wetlands On Council
Endowment Land At
Kaitorete Spit And Ahuriri
Reserves**

Report No. U04/38



**Environment
Canterbury**
Your regional council

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Wetlands On Council
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Reserves**

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This report represents advice to Environment Canterbury and any views, conclusions or recommendations do not represent Council policy.

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Executive summary

Environment Canterbury endowment lands at the Ahuriri Reserves, near Motukarara, and on the lakeshore side of Kaitorete Spit contain areas of wetland. Most of the 224 ha Ahuriri Reserves is developed farmland, but approximately 35 ha still supports indigenous vegetation. Since 1991, six discrete sites of predominantly native wetland vegetation within the Ahuriri Reserves have been managed to protect their natural values. This plan makes further recommendations for the protection, enhancement and restoration of wetland habitats and associated riparian areas in the Ahuriri Reserves.

Total area of the Kaitorete Spit reserves is 890 ha, of which approximately 32% is lakebed and lakeshore wetlands. These wetlands are themselves of regional significance, but are also an integral part of the wider Te Waihora/Lake Ellesmere ecosystem – an internationally important wildlife habitat. All of the Kaitorete Spit reserves are currently leased for grazing, by both sheep and cattle. This management plan recommends formal protection of the Kaitorete Spit wetlands. Initially this will involve removing cattle from all lake shore wetlands (i.e. sheep grazing only), removing all stock from three fenced paddocks containing different examples of wetland vegetation, and investigating the role of controlled sheep grazing in wetland conservation management. Options for animal pest control to help protect indigenous wildlife and facilitate re-introduction of fernbird should also be investigated.

The Ahuriri and Kaitorete reserves provide an opportunity for the Council to show environmental leadership by demonstrating the activities it promotes in wetland and riparian management and enhancing significant ecological areas.

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1 Introduction

1.1 Introduction

Environment Canterbury manages three distinct areas of endowment land in the Te Waihora/Lake Ellesmere catchment. The areas are the Ahuriri Reserves, the Halswell Canal and the Kaitorete Spit Reserves. The Ahuriri Reserves and Kaitorete Spit Reserves both contain significant wetland habitats that support regionally important populations of native plants and wildlife, while Te Waihora/Lake Ellesmere as a whole is an internationally significant wildlife habitat.

The Ahuriri Reserves cover the area that was once the Ahuriri Lagoon. They extend along both sides of the Halswell River for a distance of approximately 3.5 kilometres between Tai Tapu and Motukarara. Within the reserves are several remnant wetland sites adjacent to State Highway 75, an enduring indigenous element of the landscape along this stretch of road. While the total area of the Ahuriri Reserves is 224 ha, less than 35 ha still support any indigenous vegetation.

The Halswell Canal Reserves are adjacent to the Halswell River Canal constructed in 1889. The Canal has a length of 4.5 km in a southerly direction from the downstream end of the former Ahuriri Lagoon to Lake Ellesmere. There is approximately a 20m width of reserve land on each side of the canal, but this is almost devoid of native vegetation. However, the canal itself remains important fish and wildlife habitat.

The Kaitorete Spit Reserves lie on the Lake Ellesmere side of Kaitorete Spit, with a lake frontage of approximately 13km (Norton et al. 1985). A Department of Conservation reserve divides this land into two blocks. The total reserve area is 890 ha, of which approximately 290 ha (32%) is lakebed and lake-edge wetlands.

The values of wetlands as habitats for indigenous flora and fauna, as sediment traps and filters, as controls on water flows and for recreation, are recognised in the Canterbury Regional Policy Statement (RPS). The RPS also noted that since European settlement the total area of wetlands within Canterbury have been greatly reduced to about 10% of their former extent.

Objective 1 in Chapter 8 of the RPS is the:

“Protection or enhancement of wetlands, particularly the gross area of wetlands in the region, their ecological integrity and functioning, their cultural amenity and ecological values, and the preservation of their natural character.”

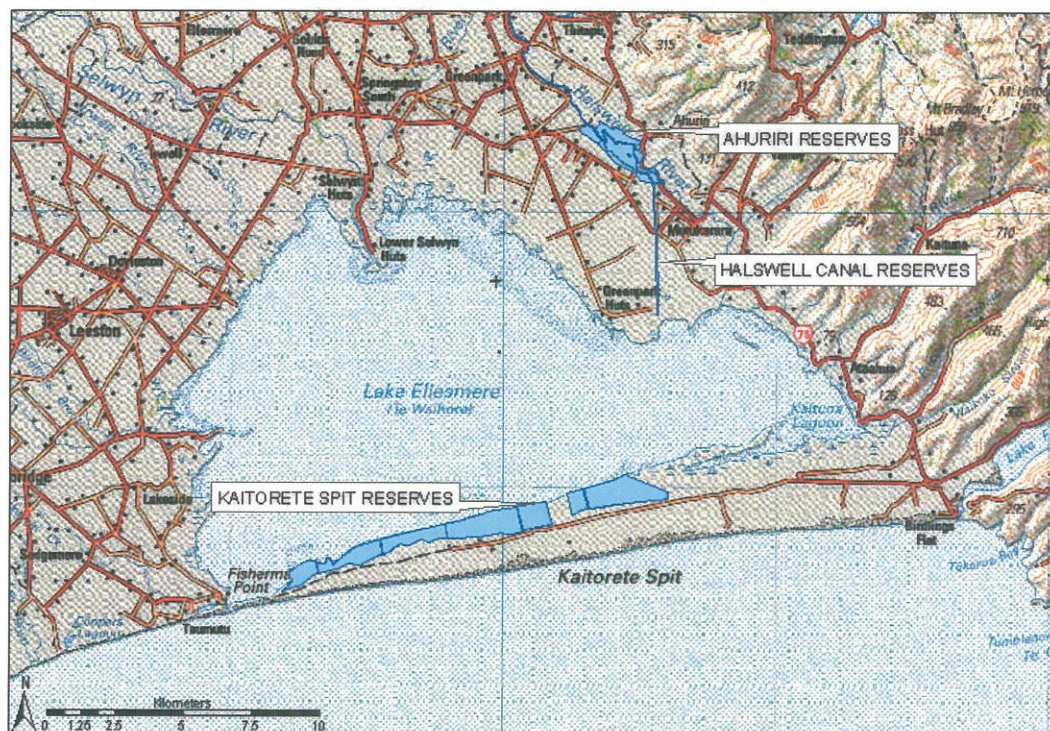
Policy 1(a) states that:

“Adverse effects on the ecological integrity, functioning, natural character, cultural, amenity and recreational values of wetlands (including the effects of drainage, reclamation, clearance of vegetation, burning, grazing, cultivation, dumping, subdivision or building) should be avoided, remedied or mitigated. Where practicable these wetland areas should be enhanced.”

Elsewhere in Chapter 8 of the RPS are policies relating to the protection of areas of indigenous vegetation and fauna, in particular species, communities and habitats

that are threatened, unusual or characteristic of Canterbury. Under the NZ Coastal Policy Statement (NZCPS) it is a national priority to avoid or remedy adverse effects on wetlands in the coastal environment and estuaries, and to protect coastal wetlands. The Environment Canterbury land at the Ahuriri Reserves and on the inner side of Kaitorete Spit provides an opportunity to protect and enhance regionally-important examples of wetland habitat in a way that is consistent with the RPS and the NZCPS. Conservation management of these areas is consistent with the aims of the joint management plan being developed for Te Waihora/Lake Ellesmere by its major landowners – Ngai Tahu and the Department of Conservation. In addition, Environment Canterbury’s efforts to protect these wetlands could help lead a change in thinking about wetlands and their values throughout the region, and provide a good practical example of wetland management for private landowners.

Figure 1. Environment Canterbury endowment land in Te Waihora/Lake Ellesmere catchment.



1.2 Background

Prior to European settlement, Te Waihora/Lake Ellesmere covered a much greater area than it does now. Its maximum level was at least 2.7 metres above mean sea level (M.S.L.), covering an area of approximately 36,000 ha. It extended to the entrance of Gebbies and McQueens Valleys and beyond Motukarara, covering the area of the Ahuriri Lagoon. Since that time, the lake has been kept at much lower levels by periodically opening it to the sea across the Kaitorete Spit at Taumutu. Currently, Environment Canterbury has responsibility to open the lake when it reaches a level of 1.05 metres msl during the months August to March, or a level of 1.13 metres from April to July. Under this artificial opening regime the lake occupies approximately 20,000 ha (Taylor 1996).

The pre-human vegetation cover of the lake environs is believed to have comprised fairly continuous forest cover on Banks Peninsula and, for the most part, a mixture of dry forest and swamp forest on the plains. Scrub and short tussock grassland occupied stony, well-drained sites such as the Kaitorete Spit barrier and recent floodplains. Much of the forest was destroyed by fire following Maori settlement. Although some large stands of forest on Banks Peninsula and smaller patches of swamp forest on the plains adjoining Te Waihora escaped these early fires, most freshwater swamp areas surrounding the lake came to be dominated by raupo, flax and sedge vegetation. The small remaining areas of plains forest contained kahikatea, matai and totara. Salt tolerant plants fringed the brackish lakeshore, whilst Kaitorete Spit continued to support a specialised range of plant species able to withstand the harsh site conditions and poor soils. The natural resources of Te Waihora were very important to the Maori people, with many settlement sites, both temporary and permanent, around the lake. However no such sites have been recorded from the Environment Canterbury endowment land. Maori carried out regular openings of the lake to the sea every two or three years, generally in order to protect the permanent settlement at Taumutu from flooding. It has been estimated that without human intervention the lake level could rise as high as 4 m above msl before naturally breaching the Kaitorete barrier. Tangata Whenua for the lake are Ngai Tahu, for whom the lake still has great spiritual and physical significance (Taylor 1996).

European settlers began farming the lands around Lake Ellesmere in the 1850s. Repeated burning and grazing were features of early farm development, resulting in the further reduction of surviving forest and regenerating scrub, and the spread of fire and grazing tolerant grass species. Intensification of farming soon followed: ploughing the arable land and the establishment of introduced high-producing pasture species and crop rotations. Extensive drainage of wetlands and subsequent cultivation was carried out in the later decades of the nineteenth century. The European settlers also opened the lake to the sea every few years from 1850 to 1868, in order to protect new farmland from flooding. From 1868 to the present lake openings have been carried out at least annually, in most years (Taylor 1996).

In 1888 the Ellesmere Lake Land Act was passed. This Act made provision for the construction of works to protect the land surrounding the lake from lake overflow or flooding of the tributary rivers. Under the Act, the Halswell Canal was constructed in 1889. Although construction of the canal and associated works were funded from special rates, there was no provision for raising money to maintain the works. To remedy this, the Halswell River Drainage District Act was passed in 1893. This Act

provided for land to be endowed to the predecessor of the Selwyn District Council “to provide funds for the purpose of removing any obstruction to the flow of the Halswell River through Lake Ellesmere to the seas”. This land consisted of what are now the Kaitorete Spit Reserves. In 1905 the Ellesmere Lands Drainage Act transferred responsibility for the Halswell River Drainage District to the Ellesmere Lands Drainage Board. An additional 123 ha in the Ahuriri Lagoon area was also endowed to the Board, comprising most of the present Ahuriri Reserves. The balance of Ahuriri Reserve was endowed in the 1912 Amendment to the Act (Norton et al. 1985).

The powers and functions of the Ellesmere Lands Drainage Board, and the endowment lands, were transferred to the North Canterbury Catchment Board in 1947 and subsequently to the Canterbury Regional Council in 1989. Income from the endowment lands (principally from farm and grazing leases) helps to meet the costs of opening the lake and maintaining the Halswell River system and associated drains (Norton et al. 1985).

The biodiversity values of parts of the Ahuriri and Kaitorete Spit Reserves, and their role in the wider Lake Ellesmere ecosystem have been recognised for many years (e.g. Knox 1969, Clark and Partridge 1984, O’Donnell 1985). The wildlife habitat significance and their potential for enhancement were acknowledged in an earlier Council management plan for the Ellesmere reserves (Norton et al. 1985). This plan noted that the areas of native wetland vegetation important for bird life were of little agricultural value, and that management of these areas principally for their wildlife values would cause negligible loss of agricultural production (and therefore income from grazing leases). The botanical values of these same parts of the Kaitorete lakeshore and Ahuriri Reserves were described and assessed in reports by, respectively, Clark and Partridge (1984) and Meurk (1991).

The National Water Conservation (Lake Ellesmere) Order 1990 declared the lake to be “an outstanding wildlife habitat” and included provisions to preserve and protect this habitat. The basis of the application for the order was a change in the emphasis of lake level management from agricultural to ecological requirements. New provisions in the order allowed granting of consents for the artificial closure of the lake to the sea, and for openings in the spring at levels other than those set primarily to protect farmland from flooding.

Over recent decades, Tangata Whenua and sections of the general public have expressed concern about the deteriorating quality of the lake water and consequent adverse effects on the lake ecology. In response to this concern, Canterbury Regional Council in 1996 prepared a major report on the physical, biological and cultural resources of Lake Ellesmere and its catchment as a preliminary step in the development of resource management objectives and policies for their management (Taylor 1996).

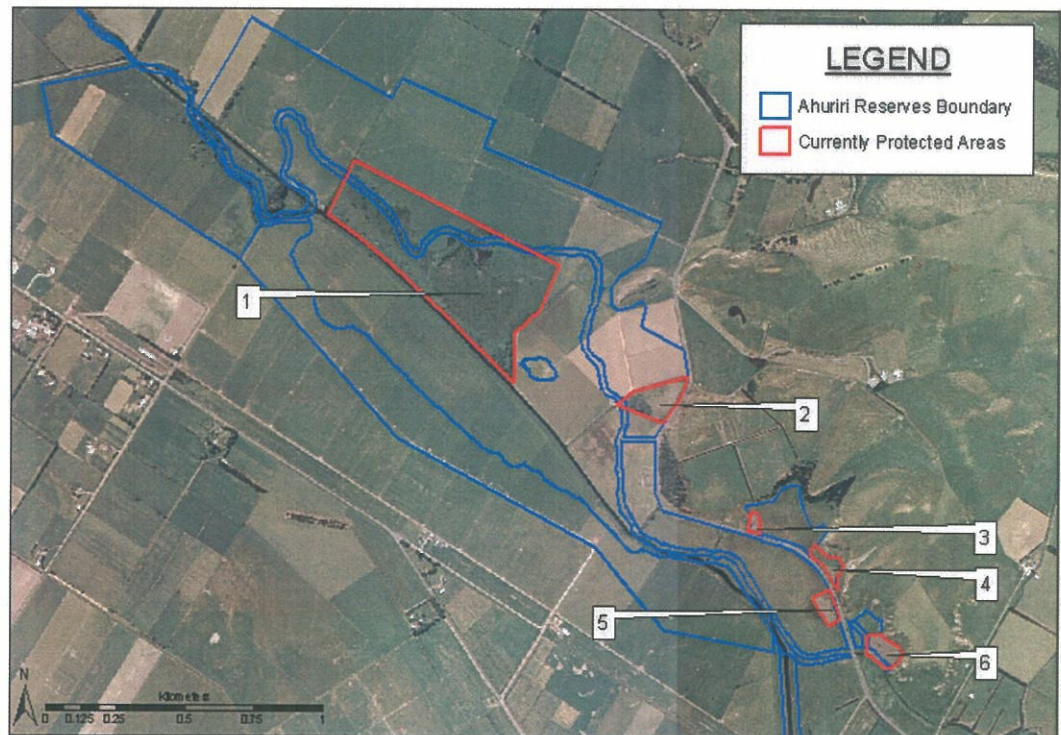
The Ngai Tahu Claims Settlement Act 1998 saw the return of the lakebed to the tribe. The Act provided for the development of a statutory joint management plan between the Department of Conservation and Ngai Tahu, with respect to those lands around the lake administered by the Department and the Ngai Tahu lakebed. A draft of the joint DOC-Ngai Tahu management plan was prepared and released for consultation in 2003. It forms the basis for the process of co-operative management between DOC and Ngai Tahu, and also provides a platform for joint advocacy, and informed management with other agencies and landholders.

Wider community interest in the protection and restoration of Lake Ellesmere and its environs culminated in the launch of the Waihora Ellesmere Trust in March 2004. The Department of Conservation, Ngai Tahu and the Waihora Ellesmere Trust all recognise the significant existing and potential role of Environment Canterbury's endowment land at Ahuriri and Kaitorete Spit in maintaining and enhancing the ecological health of Te Waihora.

2 The Ahuriri Reserves

Although most of the Ahuriri Reserves are now improved pasture, a 26 ha area supporting native rush vegetation has been protected from cultivation. There are also a series of small remnant wetlands that also support native vegetation within the reserves. These occur along the Akaroa highway, fed by springs and seepages at the base of the Port Hills. Description, ecological assessment and management suggestions for these hitherto largely overlooked sites were documented in a report to Council by the DSIR (Meurk 1991). Since 1991, six discrete sites of predominantly native vegetation within the Ahuriri Reserves have been managed with protection/enhancement objectives. Site descriptions are from Meurk (1991) with additional information from more recent visits.

Figure 2. Areas within the Ahuriri Reserves currently managed for protection of indigenous vegetation and wildlife habitat.



2.1 Site descriptions and present management

1. Ahuriri Rushland

25.8 ha

Tall native rushland (*Juncus sarophorus* and *J. gregiflorus*) occupy two paddocks on the north side of the Halswell Canal, visually distinct from the surrounding improved pasture. The paddocks containing the rushes are depressed relative to the surroundings and poorly drained. They act as a ponding area to buffer the runoff into the river in times of flood, and as such water can lie here for extended periods. However the area can also remain dry for extended periods. Tussock sedges of *Carex virgata* (pukio) are scattered through the rushland but few other native plant species are present. The ground cover is mostly a dense sward of the exotic grass creeping bent (*Agrostis stolonifera*). Dense rushland vegetation is interspersed with areas of rough pasture, with stands of crack willow trees present near the Halswell River/canal.

The rushland lies within a closed game area that also includes the adjacent section of the Halswell Canal. The terms of the grazing lease prohibit cultivation of the rushland. Historically, within the Ahuriri Lagoon rushland area there were also shallow ponds of open water that provided valuable habitat for waterfowl, though it now appears that these ponds have been in-filled with rushes and other vegetation. There has been long-standing interest in restoration or enhancement of the area for wildlife habitat by excavating a permanent pond, expressed by the old Wildlife Service (Norton et al. 1985), and more latterly North Canterbury Fish and Game Council. Although cattle have grazed the area for many years, grazing intensity has generally been low enough to preserve the rushland habitat, at least within the core area. Meurk (1991) suggested that cattle grazing could probably continue as long as there was no further cultivation, and to date this has been the case.

2. Lake clubrush and adjacent grey willow stand (M36 748221)

2.2 ha

A triangular fenced block of about 2 ha, retired from grazing since 1991. The water table is at or slightly above the ground surface. The block is bounded along the south side by a row of lombardy poplars, some of which have fallen over in recent years.

A dense grey willow (*Salix cinerea*) stand (about 8 m tall) occupies approximately a third of the site, furthest from the road. The outstanding feature of this otherwise unremarkable vegetation is the regeneration of native forest species including seedlings and saplings of kahikatea, lancewood, five-finger, coprosmas, broadleaf, mahoe and kaikomako. Birds have presumably dispersed seeds of these plants from native forest areas on the Port Hills nearby. However, there is also a considerable amount of elderberry establishing under the willow canopy. The remainder of the site supports a stand of open tussocky sedges, rushes and reeds dominated by lake clubrush (*Schoenoplectus vallidus*) and pukio (*Carex secta*, *C. virgata*). Surrounding this tall reedland is various turfy rushes, grasses and herbs – both native and introduced species. Shrubby grey willow is spreading into this open vegetation and scattered throughout.

Approximately 170 locally-sourced native trees, shrubs and flax were planted, by Waioara Trust, in the southeast corner of the site during Autumn 2000. However,

survival rates have been low, probably due to competition from exotic grasses and frequent summer droughts. As of May 2004, less than 50 plants remain, with flax, manuka and lowland ribbonwood surviving best. Grey willow control, intermittent over previous years, was re-commenced by contractors in summer 2003 and continued in 2004. The control programme has involved poisoning (by direct drilling) mature female grey willow trees within the core stand, and progressive removal of shrubby grey willow from the surrounding area, as funds permit. The aim is to retain a canopy of male grey willow where it currently exists, as a bird roost and nursery for native forest regeneration underneath, while preventing further spread of willow into the surrounding wetlands. There has also been some control of elderberry and other weeds carried out under the willow canopy.

3. Lake clubrush stand (M36 753217) 0.2 ha

About 2000 sq. m of lake clubrush with associated silver weed (*Potentilla anserinoides*) was fenced and de-stocked in 1991. Several patches of giant umbrella sedge or toetoe upoko-tangata (*Cyperus ustulatus*) occur along the road verge fenceline. These plants are rare in Canterbury.

4. Spring with lake clubrush-tussock sedge swamp (M36 756215) 0.7ha

A spring arising from the base of the hills supports diverse native wetland vegetation. In addition to small areas of lake clubrush and raupo there is quite an extensive stand of short tussock sedge, rushes and turf plants. A total of 970 native trees, shrubs, flax and toetoe were planted here in Autumn 2000. Survival rates have been similar to Site 2, with about 180 plants still alive, despite occasional damage by cattle straying from the adjoining paddocks. However plants have generally grown faster at this site, particularly the lowland ribbonwood, flax, toetoe and cabbage trees.

5. Raupo-lake clubrush-tussock sedge-turf swamp (M36 755213) 0.7 ha

A perched raupo stand on a peaty dome, surrounded by some lake clubrush and smaller sedges, rushes and turfy species was fenced and de-stocked in 1991. This is perhaps a more acid bog than that usually associated with raupo around the lakeshore or along watercourses. A line of crack willow trees grows along the road edge of this wetland. 65 young native trees were planted under the crack willow canopy in 2000, but only 6 remain. A number of smaller grey willows that had been spreading into the raupo stand were removed in summer 2004.

6. Raupo-lake clubrush swamp (M36 758212) 1.1 ha

Extensive perched raupo stand fed by a spring at the base of the hills and bounded by the entrenched old Halswell River. Tussocks of giant umbrella sedge and stands of lake clubrush also occur here. A rocky spur at the southern end of the swamp supports tussocks of knobby clubrush (*Isolepis nodosa*), and a few shrubs of matagouri and five-finger. Several willows present within this site were treated with herbicide in summer 2004. Although the wetland was fenced off from adjoining grazed endowment land in 1991, the site's southern boundary remains unfenced and cattle from the neighbouring freehold paddock still have access.

In addition, there are a number of sites within this area that support smaller aggregations of native plants including stream margins, drains and boggy parts of paddocks. Some of these also have restoration potential and are described below in the section on future management recommendations.

2.2 Future management recommendations

1. Restoration of wetland hydrology to the Ahuriri Rushland (Site 1)

Last year, Fish and Game North Canterbury, gained some funding for a wetland restoration project at this site. They have \$5000 available and asked that the Council match this. Their initial proposal was to excavate a shallow pond alongside the native rush vegetation so as to improve waterfowl habitat within this closed game area. However subsequent investigations have showed that the water table is more than 1.5 m below ground level most of the time so pond excavation would be a major undertaking. Discussion between Resource Care and River Engineering staff has resulted in an alternative proposal for wetland restoration in which a series of drains would be cut to lead water from the Halswell Canal into the site during times of high flow. At this stage the work proposal is:

- Survey of the area to determine feasibility of the re-hydration proposal
- Excavation work (depending on results of the survey)
- Enhancement work including fencing and planting.

Enhancement work also needs to include riparian protection and planting for the network of drains running through the developed paddocks adjoining Site 1.

2. Control and monitor grazing at Site 1 to promote recovery of native rush and sedge vegetation

The lessee's cattle grazing regime of the last 14 years has, overall, preserved the rush vegetation at this site. Observations over the last few years indicate that while occasional episodes of relatively heavy grazing cause some localised browse and trampling damage to the rushes, the plants recover when the stock are removed. However, cattle preferentially browse the native tussock sedge *Carex virgata*, which is scattered throughout the rushland. All *Carex virgata* at this site show moderate to severe browse damage, even though the surrounding rushes are mostly undamaged.

A reduction in grazing intensity at this site would therefore be desirable to promote regeneration of native sedges and would probably also result in an increase in cover and density of the rushes. This in turn would increase the site's value as habitat for swamp birds and nesting waterfowl. Some stock grazing may be desirable to control exotic grasses. A period of experimental grazing at different intensities will be necessary to determine what level of grazing best allows growth and regeneration of the native rush and sedge vegetation while controlling exotic grasses. The rushland area (subdivided into two paddocks) is already fenced off from adjoining developed paddocks.

3. Accelerate programme of grey willow and other weed control at Site 2

Weeds, in particular grey willow, now constitute the main threat to the fenced wetlands within the Ahuriri Reserves (Sites 2-6). Grey willow have now been effectively controlled at all except Site 2, although surveillance and follow-up control will still be necessary. Within Site 2, the stand of mature grey willow trees, while acting as a nursery for regeneration of native trees and shrubs, has also been dispersing seed into surrounding areas of native herbaceous wetland.

Selective control of mature female grey willows within this stand has been carried out over the last two years. However there has already been considerable spread of willow into the raupo, rush and sedgeland vegetation at Site 2, with many of these

younger willows now also at seeding age. An ongoing programme of seedling and sapling willow control is required if the values of this wetland are to be retained. Other weeds present that will affect native regeneration within the willow forest understorey are elder (*Sambucus nigra*) and ivy (*Hedera helix*). Control effort for these species will need to increase as more light reaches the forest floor as a result of poisoning female willow trees.

4. Riparian fencing and planting at M36 752216

A small stream runs from the Akaroa highway across a cattle paddock to the Halswell Canal. The stream source is a spring on neighbouring private land immediately north of the highway. Resource Care staff have negotiated with the neighbouring landowners and lessee to arrange fencing of both the spring source and the stream itself. Contractors have begun work on stream fencing (May 2004). It is expected that there will be regeneration of native rush and sedge species along the stream banks and margins following exclusion of cattle. The Waihora Ellesmere Trust is interested in assisting with riparian planting at this site (contribution of plants and labour).

5. Wetland restoration in paddock between Sites 3 and 4 (M36 754217)

Remove stock and block the drain running through the centre of this paddock in order to raise the water table at the southern (highway) end. Native sedges and rushes, already present within the paddock and in adjoining areas, should quickly re-colonise when wetland conditions are restored and stock grazing ended. This restored wetland will connect the existing wetland Sites 3 and 4. After two years, when the new hydrology is established, carry out enhancement planting of native shrubs and trees at the margins of the wetland. Survey of the area to determine how best to re-hydrate the site is underway (June 2004).

Water from the paddock drain flows through a piped culvert under SH 73 and continues south to the Halswell Canal, across endowment land that is leased for grazing (cattle). Riparian fencing and planting should also be carried out for this 200 m section of drain downstream of the state highway (one side is already fenced).

6. Extend fence around site 5 (M36 756212)

Raupo, sedges and rushes are extending into a small area of boggy paddock at the southern margin of this site. Approximately 50 m of new fence would be sufficient to exclude stock from an area of low value for grazing and facilitate re-growth of wetland plants.

7. Complete fencing of Site 6 southern boundary (M36 758211)

The raupo swamp and associated vegetation at Site 6 forms the southeast corner of the Council's endowment land at Ahuriri. The site's southern boundary needs to be fenced to exclude cattle wandering in from the neighbouring freehold land. Approximately 150 m of fencing is required.

8. Retire stock from paddock adjoining Site 6 (M36 757212)

The lessee of this small (0.3 ha) paddock considers it has limited value for grazing, because of the difficulty in moving stock to and from the area (cut off from the rest of the lease by SH 75) and the small amount of feed it produces. The current occasional light grazing regime is already allowing the spread of native wetland plants back into this naturally boggy paddock. The paddock could be retired from grazing and enhancement planting carried out around the wetland margins.

Figure 3a. Recommendations for biodiversity protection/enhancement at Ahuriri Reserves.

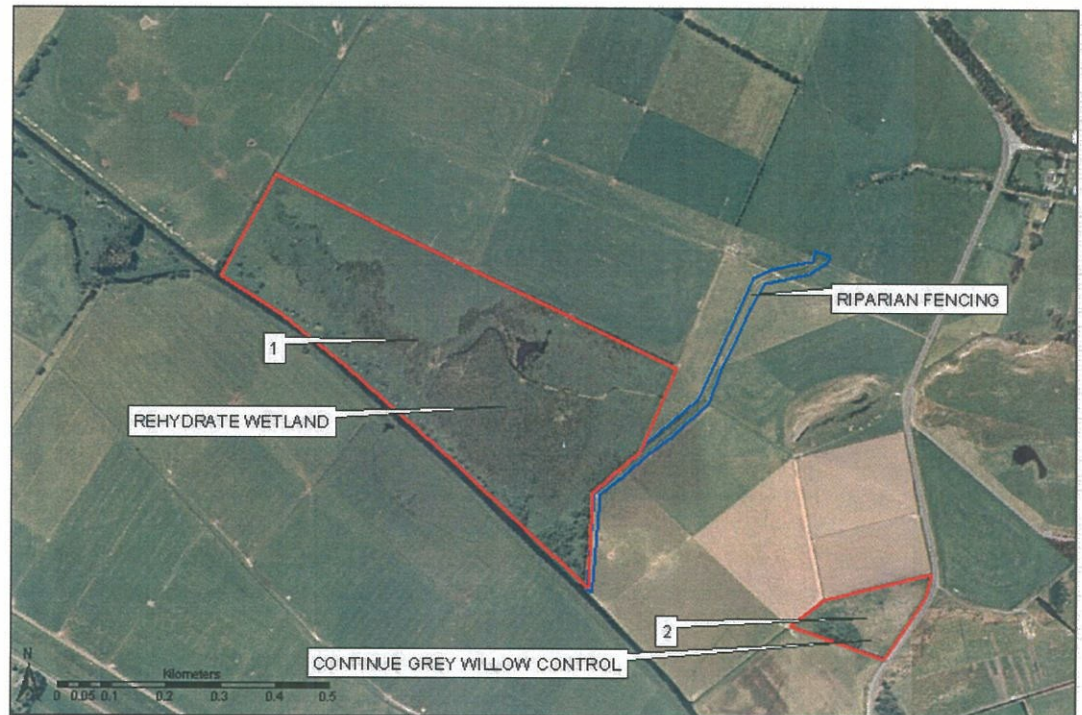
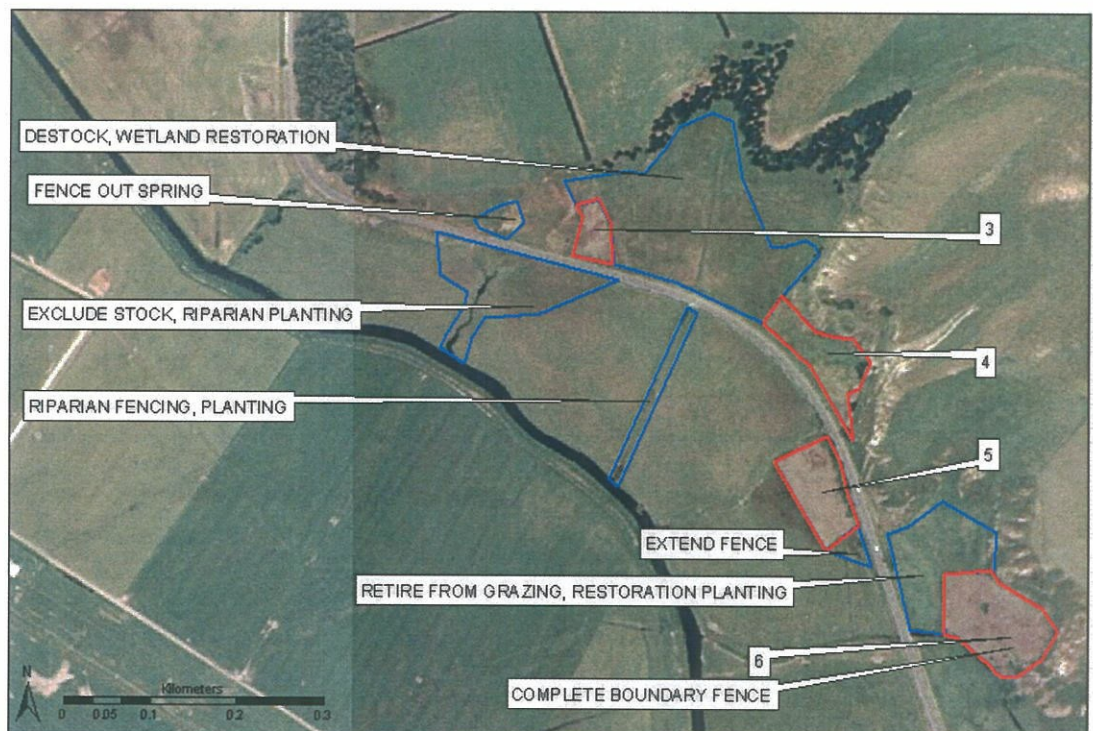


Figure 3b. Recommendations for biodiversity protection/enhancement at Ahuriri Reserves.



3 Kaitorete Spit

The wetland vegetation along Te Waihora/Lake Ellesmere shoreline was comprehensively surveyed, mapped and described by Clark and Partridge (1984) in a report commissioned by the North Canterbury Catchment Board. In this report, the authors identified the inner side of Kaitorete Spit as a regionally important area of low-salinity native lagoon-edge vegetation, which is more continuous than elsewhere around the lakeshore. Most of this inland side of the spit is Environment Canterbury endowment land, and leased for grazing.

Recent inspections have shown that the botanical values documented in the earlier report are still present, but are probably now even more significant in view of the loss/degradation of other wetland vegetation both elsewhere around Lake Ellesmere and throughout the wider region. The lakeshore side of Kaitorete Spit, west of Kaituna lagoon, was described in the 1984 report as retaining an almost continuous margin of indigenous wetland vegetation. For the most part this comprised a 100-500 m wide strip dominated by sea rush (*Juncus maritimus*) and shrubs of marsh ribbonwood (*Plagianthus divaricatus*), that are otherwise fragmentary in their distribution around the lake margin. Above this was dry pasture, dominated by exotic grasses and herbs, but which also contained a range of native species (e.g. silver tussock (*Poa cita*), matagouri (*Discaria toumatou*), pohuehue (*Muehlenbeckia complexa*)); and at lower elevation mudflats (Clark and Partridge 1984). The Kaitorete Spit wetlands are an integral part of the wider Lake Ellesmere ecosystem that is considered to be a wildlife habitat of international importance. In particular, the area is of outstanding importance for waterfowl at its eastern end and for wading birds at its western end (O'Donnell 1985).

3.1 Description

The vegetation of this large area remains substantially as mapped and described in the earlier survey. Although sea rush and marsh ribbonwood is the predominant vegetation, within this matrix there is also a range of other native wetland species present, including oioi (*Leptocarpus similis*), lake clubrush (*Schoenoplectus validus*), sedges (*Carex* spp.) and flax (*Phormium tenax*). The small-leaved vine pohuehue is common and locally abundant in areas of marsh ribbonwood shrubland. A recent site visit revealed two previously unrecorded native trees, kowhai (*Sophora microphylla*) and juvenile lowland ribbonwood (*Plagianthus regius*), emergent above the marsh ribbonwood scrub. Although native to the area, these trees are now uncommon around the lakeshore. At some locations above the zone of dense rushland and shrubland vegetation, smaller stands of sea rush and marsh ribbonwood occur within the surrounding exotic pasture.

The flax swamp at the western end of Kaitorete Spit probably now constitutes the largest remaining area of this vegetation type at Lake Ellesmere; other flax swamps having succumbed to, or been reduced by, willow invasion. Also towards the western end of the spit, at lower elevations, there are good examples of saline herbfield and brackish mudflat plant communities. The herbfields have a dense cover of salt-tolerant species: native glasswort (*Sarcocornia quinqueflora*), purple mimulus (*Mimulus repens*), remuremu (*Selliera radicans*), slender clubrush (*Isolepis cernua*) and batchelor's button (*Cotula coronopifolia*), and exotic orache (*Atriplex prostrata*), buckshorn plantain (*Plantago coronopus*) and salt barley grass (*Hordeum marinum*). The brackish mudflats here are dominated by purple mimulus (*Mimulus repens*), with associated species such as batchelor's button (*Cotula coronopifolia*), arrow grass (*Triglochin striata*) and *Lilaeopsis novae-zelandiae*.

The Environment Canterbury land at Kaitorete Spit on the shore of Lake Ellesmere thus still supports an uninterrupted sequence of (predominantly) native wetland vegetation, spanning upper, middle and lower elevation zones, that extends for more than 12 km along the lake margin. These wetlands are also largely free of woody weeds such as gorse (*Ulex europaeus*), European broom (*Cytisus scoparius*) and willows (*Salix* spp.).

3.2 Present management

At present the native wetland vegetation continues to be grazed by both sheep and cattle, and stock have free access to the shore of the lake. Cattle have a particular liking for wetlands and will often congregate in the wettest parts where they can browse and trample the taller vegetation that is usually avoided by sheep. More concentrated sheep grazing occurs on the saline herbfields at the western end of the spit. Effects of grazing at Kaitorete include reduced vegetation stature and density, the spread of exotic plants through seeds in dung and on hooves, and opening of the indigenous vegetation to give exotic plants a competitive advantage. Dessication of the wetland is likely as vegetation stature and density decreases, due to an increase in air circulation and exposure to sunlight. Pugging and compaction of the soil surface, and the breaking up of herbfield vegetation exacerbates the dessication process. Another effect is an increase in nutrients from dung and urine, which favours plants and animals tolerant of higher nutrient levels.

While these effects are common to grazing by sheep and cattle, there are differences reflecting their behaviour and body weights. Because of their weight, cattle can cause severe soil pugging and compaction. They also produce substantial quantities of dung and urine and a corresponding increase in nutrients. Sheep, despite their smaller size, can also cause considerable damage to wetlands in certain circumstances. Under a rotational grazing regime their numbers can be high, and impacts on wetlands severe, particularly in dry periods. For example, sheep can break the surface of fragile saline herbfield vegetation, also causing soil compaction (Davis 1999).

There does not appear to have been any obvious decline in botanical values along this part of Kaitorete Spit in the 20 or so years since the survey of Clark and Partridge. However, a shift to deliberate conservation management, with a more conservative grazing regime that controlled adventive plants where necessary but avoided excessive stock damage to the main elements of the vegetation, would lead to a general improvement in its condition. This in turn would improve wildlife habitat and enhance the ecological value of the lake margins (Taylor 1996).

The Department of Conservation-Ngai Tahu joint management plan for Te Waihora/Lake Ellesmere states that for DOC and Ngai Tahu holdings on the lakeshore, grazing licences will be granted for sheep only, unless management purposes specifically require the grazing of cattle. The DOC-Ngai Tahu plan requires as a condition of grazing licences, the erection and maintenance of fences to exclude all stock from areas of significant value. Their plan also identifies the need for research into the impact of different grazing regimes on wetlands.

3.3 Future management recommendations

It is intended that management of Environment Canterbury's reserve land at Lake Ellesmere should be consistent with the aims of the joint management plan for DOC lakeshore reserves and the Ngai Tahu lakebed (Brian Dimpleby, Council reserves manager, pers. comm. 2002).

1. Exclude cattle from all lake shore wetlands

Cattle should be removed as soon as possible. This can easily be achieved at the western end of the Kaitorete Spit endowment land, where farm paddocks are smaller and more closely subdivided. Here, there is a series of discrete fenced paddocks that contain mostly wetland vegetation. For cattle grazing to continue in the larger paddocks at the central and eastern end of the endowment land, approximately 7km of new fencing will be required to exclude cattle from lakeshore wetland areas.

2. Remove all stock from three paddocks that are mostly in wetland vegetation

Remove stock from paddocks containing examples of marsh ribbonwood shrubland (M37 669084), flax swamp (M37 640073) and saline herffield (M37 635070). Continue sheep grazing in other paddocks with wetland vegetation.

3. Monitor lakeshore wetland vegetation under different grazing regimes

A period of experimental monitored grazing will be necessary to determine the best grazing regime for conservation management purposes. This will initially involve comparison between grazed and ungrazed sites, but could be extended to compare various grazing treatments. Results from such a study, while necessarily site-specific, could still be useful for informing wetland management elsewhere around Lake Ellesmere and in the wider region.

4. Maintain the area's woody weed-free status

Conduct regular weed surveillance and prompt control of any infestations of woody weed species.

5. Investigate options for animal pest control and fernbird re-introduction

A predator control programme for some or all of this area, preferably working in co-ordination with DOC on its Kaitorete lakeshore reserves, would benefit native wildlife: lizards, nesting waterfowl, swampbirds and wading birds. If predator control can be implemented, the Kaitorete lakeshore would provide prime habitat in which to attempt re-introduction of fernbird (*Bowdleria punctata*) to Canterbury.

Figure 4a. Management recommendations for lake shore wetlands at the eastern end of Kaitorete Spit.

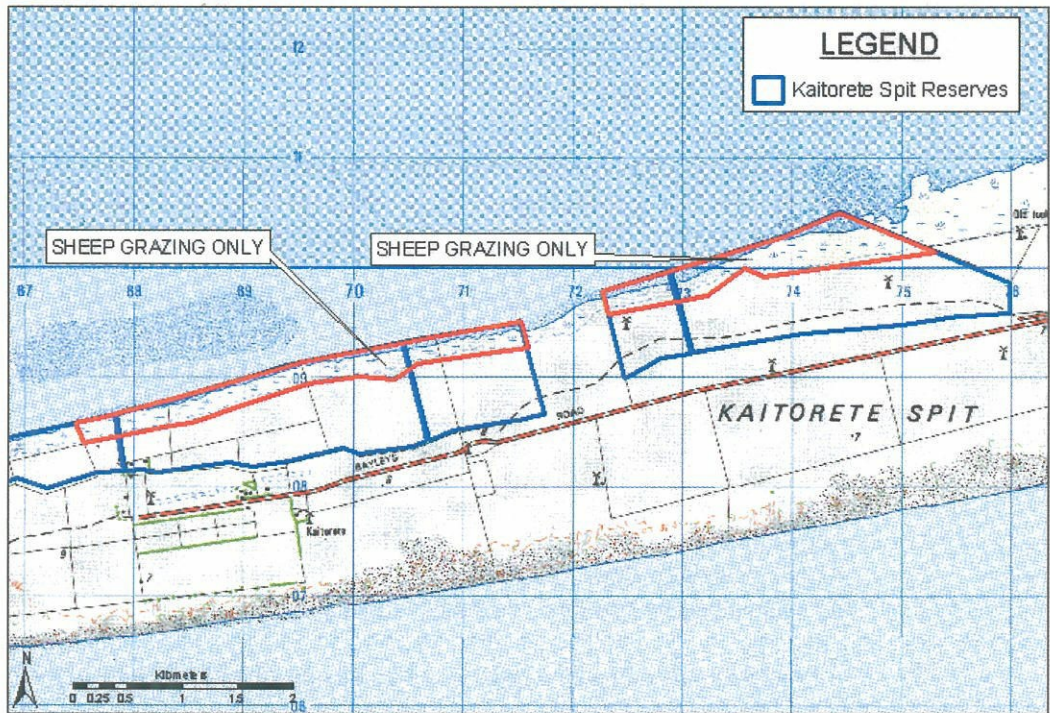
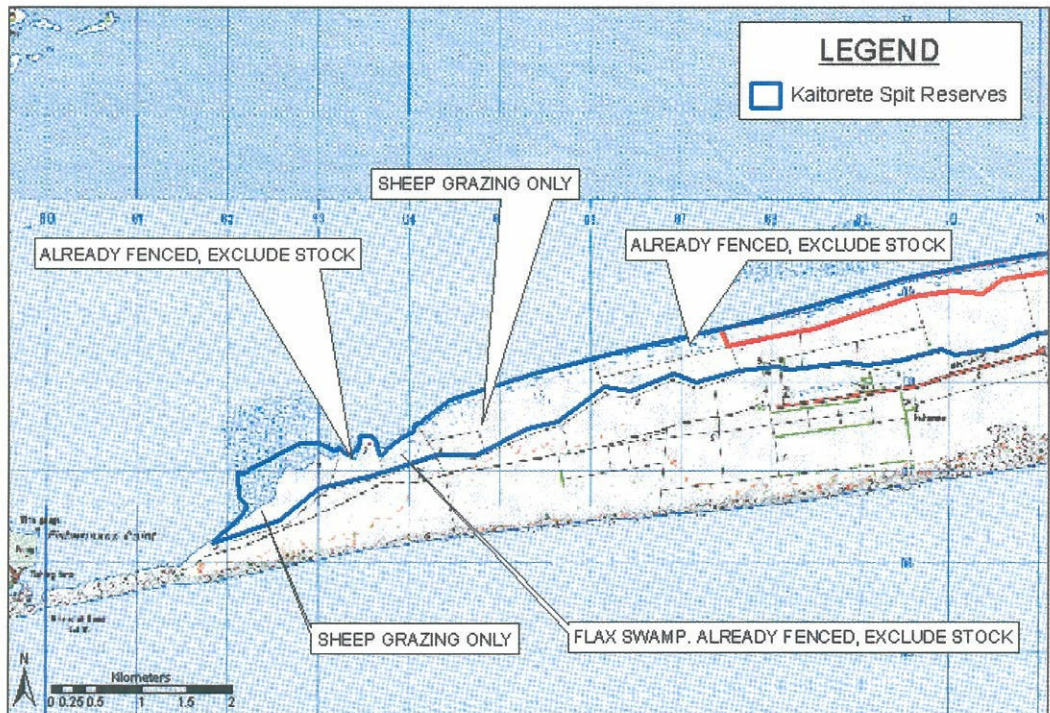


Figure 4b. Management recommendations for lake shore wetlands at the western end of Kaitorete Spit.



4 Conclusion

Environment Canterbury, in its RPS and Natural Resources Regional Plan, promotes the protection and enhancement of wetlands on private land. Conservation management of the regionally significant Kaitorete Spit wetlands would be consistent with the Council's own policies. With a suitable monitoring programme in place, the Kaitorete Spit wetlands would be a valuable site for research on wetland conservation management. This should include investigating the role of controlled grazing.

The Environment Canterbury wetlands on the inner side of Kaitorete Spit adjoin smaller areas of similar habitat managed by the Department of Conservation. Te Waihora lake bed is owned by Ngai Tahu and the lake waters administered by the Department of Conservation. At the narrow western end of the spit, the Council's wetlands adjoin the nationally important coastal dune vegetation on Kaitorete Spit, also administered by the Department of Conservation. Enhanced protection of the Council's wetlands would be a significant addition, and ecologically complementary to, the existing network of protected natural areas on Kaitorete Spit, and consistent with the aims of Te Waihora management plan that is at present being developed by Ngai Tahu and the Department of Conservation.

Most wetland areas within the Ahuriri Reserves have been free of grazing for more than 10 years now, and the vegetation has recovered well. Some enhancement planting and weed control has already been carried out at these wetlands. However there are still excellent opportunities for further wetland restoration and enhancement in this area. The Ahuriri Reserves lie within the Halswell Catchment, one of Environment Canterbury's designated 'Living Streams' and offer opportunities to combine wetland enhancement with examples of good farm riparian management practices. Being situated on the road to Banks Peninsula, the Ahuriri Reserves have significant potential for Environment Canterbury to demonstrate and profile activities the Council undertakes and promotes in riparian and wetland management.

The recommendations in this management plan provide opportunities for Environment Canterbury to demonstrate environmental leadership on its lease land. Removal of stock from waterways that feed Te Waihora/Lake Ellesmere and enhancement of significant ecological sites around the lake will also provide important relationship building opportunities, especially with Ngai Tahu and the Waihora Ellesmere Trust.

5 Acknowledgments

Ideas and suggestions from Brian Dimbleby (Council reserves manager), Dave Lane (Resource Care Section) and Andrew Crossland (Christchurch City Council ornithologist) are a significant part of this management plan. Mirella Pompei (Land and Coastal Resources Section) edited an early draft of this report.

6 References

- Clark D.J., Partridge T.R. 1984. The shoreline vegetation of Lake Ellesmere, Canterbury, New Zealand. A report prepared for the North Canterbury Catchment Board and Regional Water Board. 71 pp.
- Davis M. 1999. Canterbury Region Wetlands. Report and Preliminary Inventory. Canterbury Regional Council report U99/64. 80 pp.
- Knox G. 1969. The natural history of Canterbury. A H and A W Reed, Wellington.
- Meurk C.D. 1991. Assessment and management options for several wetland patches along the Christchurch-Akaroa highway. DSIR Contract report No. 91/24
- Norton A.C., McIntyre S.J., Dimpleby B.R. 1985. Ellesmere Reserves resource assessment and draft management plan. North Canterbury Catchment Board and Regional Water Board.
- O'Donnell C.F.J. 1985. Lake Ellesmere: a wildlife habitat of international importance. New Zealand Wildlife Service Fauna Survey Report No. 40. 219 pp.
- Partridge T.R., Ward J., Meurk C.D. 1999. Te Waihora (Lake Ellesmere) Wetland. Landcare Research Contract Report LC9900/19. 17 pp.
- Taylor K.J.W. (ed.) 1996. The Natural Resources of Lake Ellesmere (Te Waihora) and its Catchment. Canterbury Regional Council report 96(7). 322 pp.

Appendix 1

Ahuriri Rushland (Site 1). Note cattle-browsed *Carex virgata* amongst the rushes.



Lake clubrush and short tussock sedge swamp (Ahuriri Reserves site 4). The flax and toetoe were planted in 2000 by Waiora Trust.



Proposed wetland restoration site at Ahuriri Reserves.



Marsh ribbonwood and sea rush wetland at eastern end of the Kaitorete Spit reserves.



Flax swamp at western end of Kaitorete Spit reserves.



Saline herbfield with clumps of sea rush and marsh ribbonwood at the western end of Kaitorete Spit reserves.





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