

## KEY PLANNING AREA ELEMENTS

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| Section 20 | <b>Waimakariri River/Styx River/Brooklands lagoon confluence:</b><br>A place of joining of several distinct ecosystems and under multiple government body administration. A site of high ecological values (saltmarsh habitat and wetlands) and historical development for river flood protection.               | pages 74 to 77 |
| Section 21 | <b>Styx River/Puharakekenui corridor:</b><br>River corridor enhanced/restored for natural values. Public access corridor for walking.  | pages 78 to 80 |
| Section 22 | <b>Mid and northern parts of Seafield Park:</b><br>High scenic/natural values protected in a scenic reserve on the western side of Brooklands Lagoon/Te Riu o Te Aika Kawa. Main facilities are tracks for walking, cycling. An undeveloped resource.  | pages 81 to 83 |
| Section 23 | <b>Brooklands Lagoon/Te Riu o Te Aika Kawa:</b><br>Dynamic environment with high ecological values, including bird nesting habitat. Accessed for recreation (duck shooting, boating) but actual/potential high level of management/use conflict. Requirements for access - high level of skill/effort, boat etc. | pages 84 to 89 |
| Section 24 | <b>Coastal strip (including Brooklands Spit/Kairaki):</b><br>Protected natural environment but public access for recreation - range of experience from easily accessible to remote.  | pages 90 to 94 |
| Section 25 | <b>Spencer Park and the southern part of Seafield Park:</b><br>Arrival hub/starting point to radiate out along 'spokes of opportunity'. Place focused on passive recreation with plenty of facilities and conveniences for the wider public, including roads, car parking and shop.                              | pages 95 to 97 |

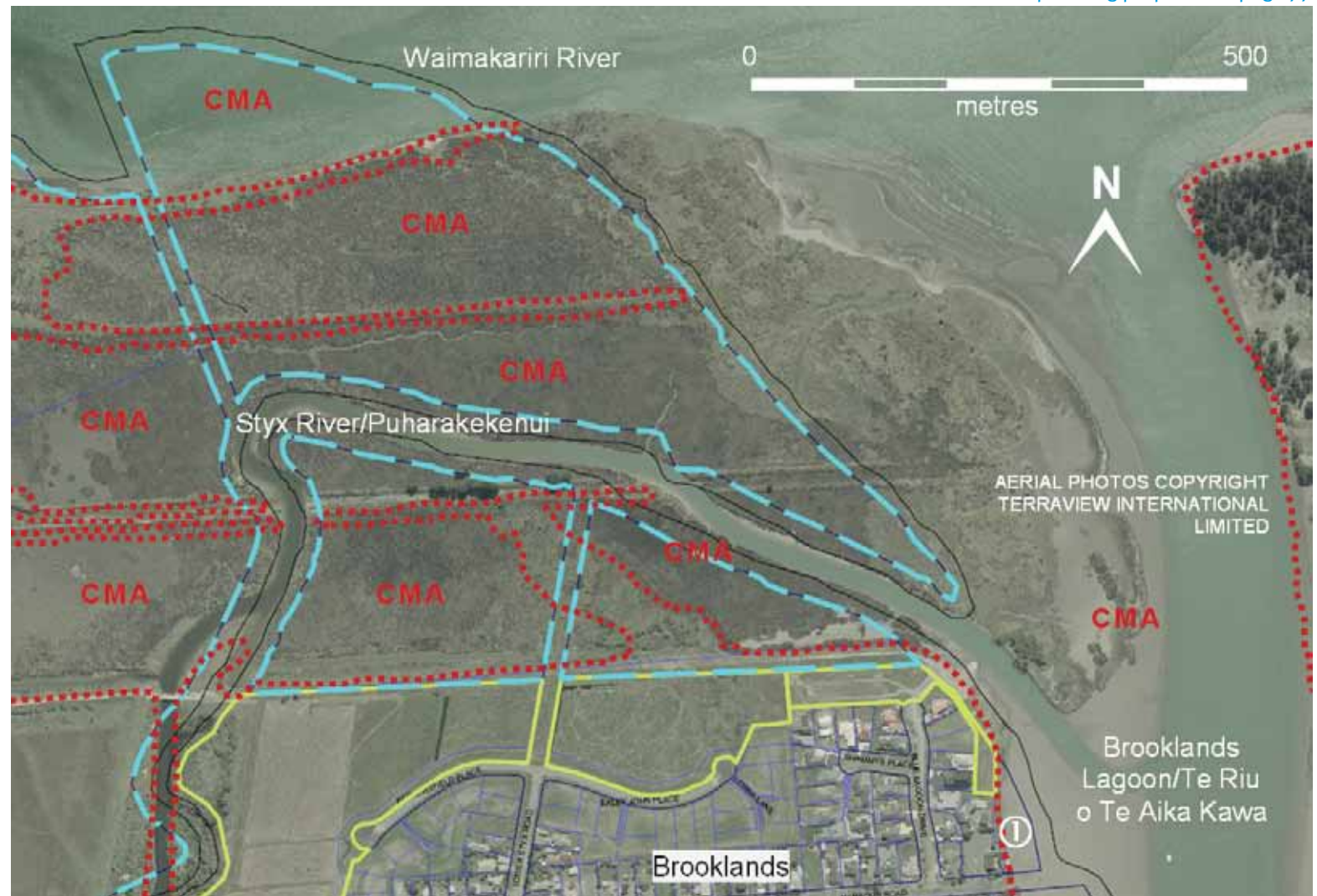


## 20 WAIMAKARIRI RIVER/STYX RIVER/BROOKLANDS LAGOON CONFLUENCE

This area, which is at the confluence of several distinct ecosystems, is of value for its intrinsic ecological values and strategic position.

### Map Key

-  Mean High Water Springs (MHWS) (approximate)
-  Reserve for River Protection Purposes administered by Environment Canterbury
- CMA** Coastal Marine Area (approximate)
-  Legal road
-  Christchurch City Council land held for reserve purposes



Circled number refers to planning proposal on page 77

## 20.1 Status

The main influence on the morphology of this confluence area is the incoming tide, especially as it goes up the Styx River/Puharakekenui.

The Waimakariri River on the northern side of this area has frequently changed course in the past. To protect the city and its smaller outlying settlements nearer the river from flooding, it has been necessary for the various responsible authorities over the years to establish a series of stopbanks and undertake regular riverbed gravel extraction to counteract the build-up of gravel in the lower reaches of the river where its slope flattens. This has been a role of Environment Canterbury. Since 2002, changes in legislation have also given the regional council the power to develop the lower reaches of the Waimakariri River and its riparian areas into a regional park.

Between 1929 and 1932 the land parcels making up the area around the lower reaches of the Styx River/Puharakekenui and adjoining the Waimakariri River were reserved for river protection purposes – to protect the settlement of Brooklands. These titles are under the administration of Environment Canterbury. A series of approximately west to east running stopbanks were constructed to give effect to this purpose.

Land immediately south of the southern-most stopbank and to the east of the Styx River/Puharakekenui rests with the Council and is to be restored to a natural planted wetland habitat (see the habitat restoration

concept on pages 104 to 105), with the part nearest the mouth of the Styx River/Puharakekenui being developed as a well landscaped public passive recreation area and access point to the river and Brooklands Lagoon/Te Riu o Te Aika Kawa.

The enactment of the Foreshore and Seabed Act 2004 transferred areas of land in public ownership that lie below the Mean High Water Springs mark (MHWS) to the Crown, which means that the part of the confluence area below MHWS (that is, all the area except the stopbanks) is now part of the Coastal Marine Area (CMA) - see the photo plan on page 74.

## 20.2 Values

This area at the confluence of the Waimakariri River and Styx River/Puharakekenui has a role in providing protection, through stopbanks, for the settlement of Brooklands from flooding of the Waimakariri River. It also has significant ecological value, namely in its saltmarsh habitat and wetlands. It is an inactive environment, as the stopbanks have halted any natural vegetation processes in the saltmarsh. Some very strange side-effects have also been produced, such as over-deepening of the channels in the marsh.

This area, along with adjacent and up-river riparian areas of the Waimakariri River, is an important feeding site for birds nesting in the Kaiapoi Oxidation Ponds and on the river margins.

The following information on birdlife and bird habitat is sourced and adapted from an unpublished report<sup>39</sup>.

The complex of tidal saltmarshes, salt meadows, ephemeral ponds and freshwater wetlands around the mouth of the Styx River/Puharakekenui comprise the largest, although discontinuous, area of wetland habitat remaining in Christchurch. This area is under the administration and management of more than one government body.

Wildlife values are high, with the area supporting notable populations of bittern, marsh crake and nesting waterfowl. In addition, waders and herons feed and roost along the saltmarsh fringed part of Brooklands Lagoon/Te Riu o Te Aika Kawa just north of the Styx River/Puharakekenui mouth, and cormorants feed along the Styx River/Puharakekenui channel.

In the future, these wetlands have potential to support reintroduced populations of locally extinct bird species, including fernbird, banded rail, spotless crake and brown teal. Many wetland birds are sensitive to disturbance and vulnerable to predation. They are unlikely to tolerate a substantial increase in domestic cat numbers, nor an increase in the numbers of dogs roaming the wetlands (brought in by, for example, white baiters, fishers and walkers).

Presently, most of the Styx River/Puharakekenui mouth marshes have water barrier protection ('moats') on three sides, provided by the rivers, estuary and the network of

<sup>39</sup> Crossland A. C. (2008).

ditches within the marshes but they remain unprotected to the west and vulnerable to the south at low tide. The block of saltmarsh on the true right of the Styx River/ Puharakekenui (just north of Brooklands village) is without any adequate protection. The potential moat system here is incomplete, leaving the marsh vulnerable to disturbance from humans, domestic animals and cattle.

Cattle, though, are prohibited within the saltmarsh.

### 20.3 Waimakariri River Regional Park

Due to the legal status of the original parcels of land, which make up most of the confluence area, as reserves and land for river protection, the mandate for the development and management of this area by Environment Canterbury, and its predecessors, obviously has focused on this purpose. This has resulted in the construction and maintenance of the stopbanks. Yet, Environment Canterbury is also able to plan and manage for other values in, and uses of, this area, including biodiversity conservation and recreational opportunities. It has initiated this by deciding in March 2005 to create its first regional park, the Waimakariri River Regional Park, which extends from the Waimakariri Gorge Bridge to the river mouth. Environment Canterbury is preparing the Waimakariri River Regional Park Concept Development Plan, which is being developed in stages. Stage Four, which is programmed to be completed by 2012, includes the confluence area.

Environment Canterbury considers that by managing the area as a regional park more consideration can be given to improving recreational opportunities and environmental enhancement while still maintaining flood protection along the Waimakariri River.

With respect to the identified Stage 4 development of the regional park (Otukaikino Stream to Brooklands Lagoon/ Te Riu o Te Aika Kawa) Environment Canterbury plans to implement various biodiversity enhancement projects with special attention to the saltmarsh environment and further opportunities for family recreation, including tracks to link with other park areas.

To implement the plans for Stage Four in the confluence area, Environment Canterbury has established a Memorandum of Understanding with the Department of Conservation to provide for the appropriate development and use of the part that falls within the CMA (see Footnote 41).

### 20.4 Issues

An issue for the confluence area is whether or not all uses and values of this area can be accommodated in harmony with, and without impact on, each other. For example, is access for recreational activity compatible with protection of effective wildlife habitat? Do walkers on the stopbanks in the area unduly disturb wildlife in the adjacent lower wetland and saltmarsh areas? What impact are dogs, which are being allowed to run free by their walkers, having?

Yet, access for recreation to the Coastal Marine Area, including this confluence area, is a right for the public, embodied in a purpose of the Foreshore and Seabed Act 2004, which refers to “providing for general rights of public access and recreation in, on, over, and across the public foreshore and seabed and general rights of navigation within the foreshore and seabed” (Section 4(d) of that Act). The issue, therefore, is about ensuring such public access is appropriate and managed to be non-impacting on the values of the area.

## 20.5 Planning proposals

This master plan highlights a number of principles and potential actions raised by the Council for the confluence area, with respect to protecting this area's ecology. These principles and actions are not incompatible with:

- The administration of the land and resources in the area according to its legally established purpose, including for flood protection purposes.
- The ability of the government bodies to exercise their statutory powers to administer and manage the land, air, water, natural resources of the area each is responsible for (these are primarily Environment Canterbury and the Department of Conservation).
- Other officially prepared plans for the wider area, such as the Waimakariri River Regional Park Concept Development Plan and the Regional Coastal Environment Plan.

Proposals include (Numbers P5 and P6 relate to the summaries on page 12. The circled number refers to the reference on the photo plan on page 74) <sup>40</sup>:

- P5** Seek to achieve co-operation between Environment Canterbury, Department of Conservation and the Council, and integrate effort for the care and management of the Waimakariri River/Styx River/

<sup>40</sup> Any proposal that is raised does not constitute any commitment on the Christchurch City Council, or any other party, to implement but is raised for consideration only. For any proposal to be realised it would need to be prioritised and resourced through existing budgeted Council work programmes and/or included in the Long Term Council Community Plan.

Brooklands Lagoon confluence area<sup>41</sup>. This to cover, for example:

- Management of this area as an important wildlife habitat and to discourage inappropriate activities, such as trail bike riding, and uncontrolled dogs that disturb or endanger birdlife.
- Ensure that the prohibition of cattle within the saltmarsh areas and margins is enforced. Cattle have caused considerable damage to saltmarsh vegetation in the past and their trampling has opened up access into the heart of the wetland for predators such as cats.
- Instigate control of weeds within the saltmarsh area, particularly in the drier western areas and along embankments<sup>42</sup>.
- Investigate the feasibility and appropriateness of extending, deepening and widening the existing 'moat' system (that was, presumably, originally

<sup>41</sup> Environment Canterbury has established a Memorandum of Understanding with the Department of Conservation (as land owners or managers) to provide for the protection of the Waimakariri River salt marsh by incorporating its day to day management into the Waimakariri River Regional Park. This will allow for a consistent and collaborative approach to the management of the Waimakariri River biodiversity while ensuring Environment Canterbury and the Department of Conservation objectives and statutory responsibilities for the area are met.

The Memorandum of Understanding also provides for policy and plans for the management of the saltmarsh to be consulted with the wider community for inclusion into the Waimakariri River Regional Park Management Plan.

<sup>42</sup> The embankments carry scrub weeds, such as gorse.

created as an area of borrow pits used to supply material for stopbank creation), so to create an effective barrier to domestic cats attempting to enter the wetlands from the Brooklands township. This should also deter people from entering the wetlands away from formed access tracks.

- To work with community groups to instigate a predator control programme throughout the Styx River/Puharakekenui mouth area. Anticipated outcomes would be an increase in local populations of vulnerable bird species (such as Bittern and Marsh Crake) and the creation of a protected environment ready for reintroduction of locally extinct bird species.
- Examine options for managing the empoldered<sup>43</sup> moribund saltmarshes on the north side of the Styx River/Puharakekenui and for restoring tidal water to the declining area of saltmarsh closest to the Waimakariri River.

- P6** ① Investigate the feasibility and appropriateness of constructing a board walk for public access over the Brooklands Lagoon/Te Riu o Te Aika Kawa mudflat between the end of Harbour Road and the Styx River Mouth Conservation Reserve at the mouth of the Styx River/Puharakekenui. This area of the estuary is vested in the Crown upon residential land subdivision and is within the CMA.

<sup>43</sup> In this case, this means the saltmarshes are separated from surrounding water by stopbanks, are not readily or regularly replenished with water from the tides and therefore are becoming, or have become, dry.



## 21 STYX RIVER/PUHARAKEKENUI CORRIDOR

The Styx River/Puharakekenui is the seaward end of a spring-fed river system that originates in the suburb of Harewood in Christchurch and flows for about twenty five kilometres until it enters Brooklands Lagoon/Te Riu o Te Aika Kawa near the mouth of the estuary opening into the Waimakariri River. Before reaching that point, the Styx River/Puharakekenui meanders parallel to the coast and the estuary, between 600 and 1,200 metres west of the estuary, and mostly just a short distance west of the Lower Styx Road. This river is taken as the general western margin of the area covered by this master plan.

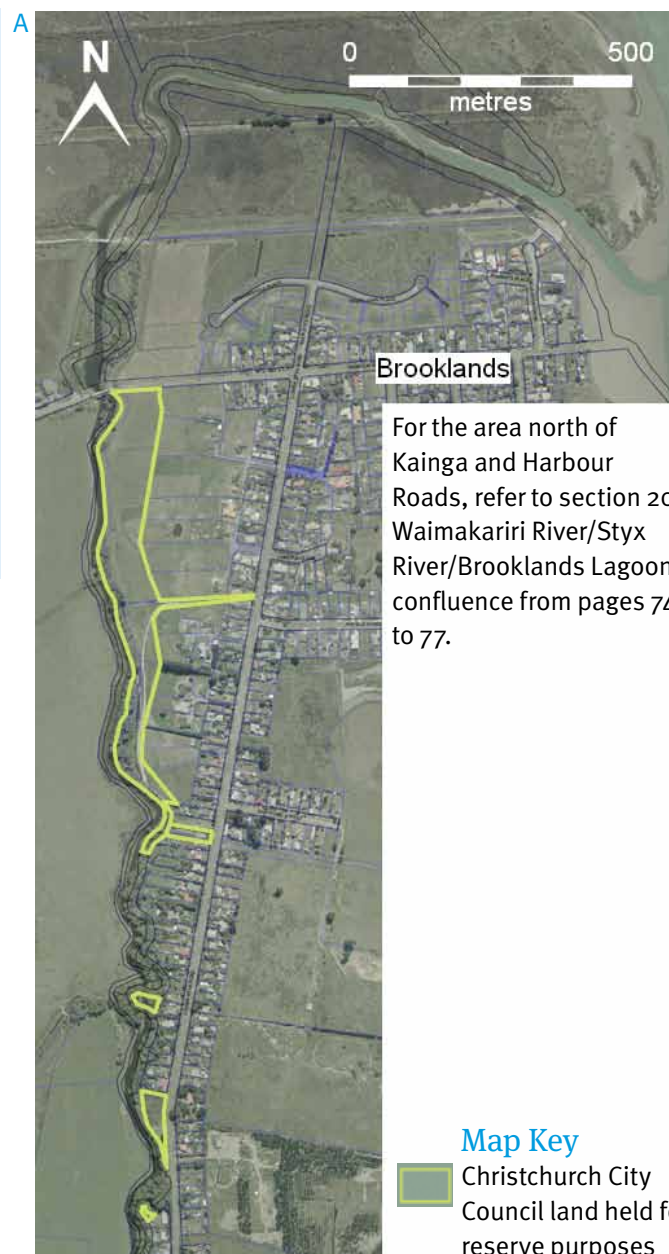
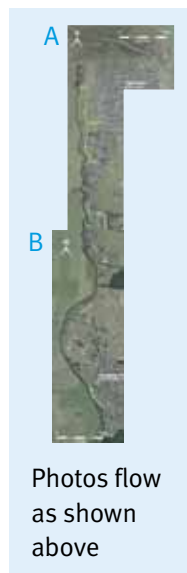
**Note:** The dual name is first utilised for the river in this master plan and, with the Council's approval of the plan, applied for the section of the river covered by the plan. The dual name is used, though, in description in the plan referring to the whole river catchment, although the Council will still need to formalise its useage for the whole catchment.

As indicated by the 'Black Map'<sup>44</sup> drawn in 1856, when early Europeans settled in the area, the Styx River/Puharakekenui and its tributaries were surrounded by extensive wetlands<sup>45</sup> and sand dunes.

Since then, the area has been extensively modified through farming and drainage practices and, in some cases, by residential development. Nevertheless, earlier

<sup>44</sup> A map of the District of Christchurch was compiled from 'Black Maps' approved by J. Thomas and Thomas Cass, Chief Surveyors in 1856.

<sup>45</sup> These wetlands may themselves have been induced by Polynesian fires.



### Map Key

Christchurch City  
Council land held for  
reserve purposes

natural values are still apparent. Native sedges and ferns are regenerating under the taller willow canopy along the river margins, and sand dunes and river terraces indicate the natural processes associated with earlier northward movement of the Waimakariri River and the changing coastline. The saltmarsh at the mouth of the Styx River/Puharakekenui has been attenuated by the construction of the tidal gates and has been constricted through the construction of flood banks. It remains in a predominantly moribund (meaning no longer active or effective) state.

Extensive consultation and research in the later part of the 1990s highlighted the concerns and opportunities associated with the Styx River/Puharakekenui ecosystem. From further discussion and consideration of the issues, a series of inter-related visions evolved. These visions gained acceptance both from various local government authorities and the wider community and are currently being implemented over the forty year period from 2000 to 2040.

Five visions (adopted by the Council) for the Styx River/Puharakekenui catchment for the period from 2000 to 2040 were developed in the late 1990s in conjunction with the community:

**Vision 1** To achieve a “Viable Spring-fed River Ecosystem” to complement the other representative protected ecosystems of Christchurch, such as the Port Hills, Travis Wetland and the coastline.

**Vision 2** To create a “Source to Sea Experience” through the development of an Urban National Reserve.

**Vision 3** To develop a “Living Laboratory” that focuses on both learning and research, as practiced by Dr Leonard Cockayne in 1885.

**Vision 4** To establish “The Styx” as a place to be, through maintaining and enhancing the special character and identity of the area.

**Vision 5** To foster “Partnerships” through raising the quality of relationships as we move forward together.

### 21.1 Habitat and Birdlife<sup>46</sup>

The lower Styx River/Puharakekenui corridor comprises the river itself and a riparian margin, two to fifty metres wide, vegetated mainly with willows, freshwater swamp species, long grass and scrub. For much of its length, the river and riparian margin are incised within a distinctive channel half to two metres below the level of the surrounding land.

Swamp bird habitat (utilised by marsh crake, pukeko, possibly bittern and potentially several reintroduced species) exists in the Zonta revegetation project area downstream of the Harbour Road bridge, as well as upstream for the first 200 metres on the true right bank. This upstream habitat comprises dense stands of rushes on top of the river bank and a mix of raupo, sedges, flax,

ferns and grasses, some under willows<sup>47</sup> on the water’s edge. Further upstream on the true right, the riparian habitat is less valuable and comprises occasional sedges, flax, ferns and shore ribbonwood, amongst a smothering of exotic grasses, blackberry, scrub and willow. Swamp bird habitat on the true left is limited as, for the most part, this bank is open and grazed by livestock down to the water’s edge.

The lower Styx River/Puharakekenui corridor supports five resident species of native waterfowl (paradise shelduck, grey duck, grey teal, New Zealand shoveler and New Zealand scaup), as well as cormorants, kingfisher, welcome swallow and pukeko.

Shy native species such as marsh crake, grey duck, grey teal, New Zealand shoveler, New Zealand scaup, New Zealand kingfisher and little cormorant either nest, roost or feed along the section of the Styx River/Puharakekenui closest to the Styx marshes - that is, from the Zonta area to a point upstream to about opposite Dartford Street. These species are likely to abandon the area if disturbance levels and predation by domestic animals become excessive. Upstream of Dartford Street, bird species richness is lower and fewer species presently nest. However, given ongoing enhancement work, there is real potential for most of the birds occupying the lower river to spread and colonise further upstream.

The present programme of thinning willows and clearing weed growth to facilitate regeneration of indigenous

<sup>46</sup> Adapted from Crossland A. C. (2008).

<sup>47</sup> A lot of willows have been removed.



wetland vegetation in the lower Styx River/Puharakekenui corridor has increased, considerably, the quality of nesting and feeding opportunities for waterfowl and other wetland birds.

During autumn and winter, surface water ponding forms in paddocks immediately adjacent to the true right side of the Styx River/Puharakekenui, just south of Earlham Street and opposite the stretch of the river which runs parallel to Lower Styx Road. This ponding area (termed the Styx Ponding Area), and associated wet grassland, host feeding and roosting flocks of white-faced heron (up to forty individuals), paradise shelduck, mallard, South Island pied oystercatcher (up to 200 plus), pied stilt (up to fifty), spur-winged plover (up to one hundred), southern black-backed gull and black-billed gull. This site is particularly important during adverse winter weathers, when birds are unable to feed or roost on the exposed mudflats of Brooklands Lagoon/Te Riu o Te Aika Kawa.



Brooklands Lagoon/Te Riu o Te Aika Kawa eastern margin with Seafield Park. Residences of Brooklands behind.

## 21.2 Planning and management proposals

The following actions are proposed to be considered to be taken. Numbers P7-P9 relate to the summaries on pages 12 and 13<sup>48</sup>:

- P7** Stop the lengths of unformed legal road that parallel, and lie on either side of, the lower Styx River/Puharakekenui, downstream of the Lower Styx Road/Heyders Road intersection (as indicated on Planning Maps 1, 4 and 11 in the Christchurch City Plan), and vest with the Council as Local Purpose (Esplanade) Reserve, and classify as such under the Reserves Act 1977. This action is required in the City Plan.
- P8** Expand the programme of thinning willows and clearing weed growth in the lower Styx River/Puharakekenui corridor to include the entire river downstream of the Marshlands Road bridge. Care should be taken, however, not to remove too much tree cover at once (especially before native specimens can replace exotics), because this wooded riparian habitat is well populated by native silvereye, fantail, grey warbler and shining cuckoo, as well as by introduced species such as California quail, pheasant and little owl. A percentage of large riparian trees should be left standing long term as they offer nest sites to little cormorant, white-faced

heron, paradise shelduck, grey duck, grey teal and New Zealand kingfisher. They should not be felled until replaced by natives of similar size.

- P9** Ideally, seek to protect the Styx Ponding Area from urban development and have it remain essentially as pasture. Tall swampland, long grass or other tall vegetation types will exclude the bird species reliant on this site.
- Recommend a minimum buffer zone of 100 metres, with a further building setback zone of fifty metres, for the northern, southern and western sides of this area. This is necessary to ensure that the site is not hemmed in by houses and continues to be accessible for birdlife. The Styx River/Puharakekenui constitutes a sufficient eastern buffer.
  - Advocate that drainage in the Styx Ponding Area not be improved, as this will reduce habitat value. The surface water ponds contain a wealth of invertebrate food, as do the surrounding saturated soils which are soft enough to enable birds to probe for earthworms and insect larvae. Any drying out of the area will reduce the availability and accessibility of these food sources.

<sup>48</sup> Any proposal that is raised does not constitute any commitment on the Christchurch City Council, or any other party, to implement but is raised for consideration only. For any proposal to be realised it would need to be prioritised and resourced through existing budgeted Council work programmes and/or included in the Long Term Council Community Plan.

Circled numbers refer to planning proposals on page 83

## 22 MID AND NORTHERN PARTS OF SEAFIELD PARK

The greater part of Seafield Park, which lies between Puharakekenui Māori Reserve (Separating it from the remainder of Seafield Park) in the south and Harbour Road in the north, and extending along the western margin of Brooklands Lagoon/Te Riu o Te Aika Kawa, is special for its ecological, scenic and public access values.

A significant part of the Park, involving four land parcels, is now part of the Coastal Marine Area, which includes Brooklands Lagoon/Te Riu o Te Aika Kawa under the administration of the Department of Conservation, with Environment Canterbury responsible for the activities that occur on the water covering this land. This was the result of the enactment of the Foreshore and Seabed Act 2004, which vested ownership and management of public foreshore and seabed in the Crown, involving the part of each of four Seafield Park reserve parcels that lies below Mean High Water Springs.

On 10 July 2008 the Council resolved to classify, pursuant to Section 16(2A)(a) of the Reserves Act 1977, the Seafield Park land parcels north of the Māori Reserve as Scenic Reserve subject to Section 19(1)(a) of this Act, with the exception of one of the four land parcels affected by the Foreshore and Seabed Act that is classified Recreation Reserve and not including the part of each of the remaining three land parcels that is now vested in the Crown.

This means that this part of Seafield Park is able to be protected for its natural values but still permit access by the public for recreational purposes - it is just that the recreation activities that are appropriate will be fewer and less developed facilities will be provided. The main emphasis is to protect and preserve in perpetuity the intrinsic worth of the land for the benefit and enjoyment of and use by the public.

The classification of the Seafield Park land parcels also allowed the Council to publicly advertise a management plan for the Park, and for that plan to be a legally binding document under the Reserves Act now that it has become operative.

### Map Key

-  Seafield Park Management Plan 2010 boundary
-  Mean High Water Springs (MHWS) (approximate)



## 22.1 Values and Issues

From approximately 1850 the land along the east coast between the Waimakariri and Avon Rivers was taken up in a major stock run called the 'The Sandhills Run (or Chisnall)' (Run No. 72). This was worked as a cattle and dairy station, except for the extreme eastern edge, which was grazed by sheep. The break-up of this run began in the early 1860s and was completed by the turn of the century. By the late 1870s the native scrubland had been cleared, and the pingao and spinifex grass that once carpeted the extensive dunes was stripped by rabbits, sheep and cattle, resulting in increased instability involving blowouts and wandering parabolic dunes.

In 1878 the dunes were invested with the Christchurch City Council under the Waste Lands Act 1858. Part of this grazed land was intended for sanitary and tree planting purposes and some was leased for grazing. The lease was later withdrawn and the land planted with trees. Because of the continuing instability, a foredune was constructed between 1932 and 1940. The technique of using parallel fences is still used to stabilise blowouts. The long periods of dune instability dating back to the 1860s ended with the widespread planting of marram grass and tree lupin on both coastal and migrating dunes.

Subdivision for the settlement of Brooklands began in 1921. The area was already a popular holiday resort and venue for picnics and excursions. Eighty quarter-acre sections were offered and a large portion of these were sold. A competition for the naming of the main street was held, with "Seafeld Ave" being chosen, followed

by "Seafeld Road" as a close second (interestingly, an annotated photo dating from 1950 shows this road as Brooklands Road, and also calls the estuary the "Waimakariri Tidal Lagoon"). Although the name of the main street was later changed to Lower Styx Road, the original name lived on in the unformed legal road along the western edge of the estuary - firstly, as Seafeld Esplanade and, now, in the name of the Park itself.

However, changes to the mouth of the Waimakariri River radically altered these plans. The site for the main esplanade road now lies in the centre of Brooklands Lagoon/Te Riu o Te Aika Kawa and several sections are mudflats.

Seafeld Park sits on an old coastal landform that consists of a former beach (now the western margin of Brooklands Lagoon/Te Riu o Te Aika Kawa), with a series of parallel fore and secondary dunes behind. Further behind is a mixture of undulating low dunes and dune slack wetlands, some of which have been converted to pasture or pine plantation.

Due to its siting on the old dune complex, the topography of the Park is one of low ridges and dune slacks (hollows), with different soils and different soil moisture and salinity regimes for each.

The Park is part of the underlying Kairaki sand complex, with very shallow one to two centimetre top soils on the ridges and deeper silt/organic soils in the hollows. Although stable, the taller seaward dunes have the

potential to become destabilised and even perhaps prone to 'blowouts' if impacted on too heavily.

The land adjacent to Brooklands Lagoon/Te Riu o Te Aika Kawa has been classed as Class VII and VIII under the Land Use Capability Classification. These classes cover land that is severely limited, with low productivity and high erosion risk.

Seafeld Park contains a number of different vegetation associations - dunes, hinterland and patches of wetland.

The vegetation of Seafeld Park (that is, the non-tidal area) is primarily comprised of introduced species, with most of the native vegetation of the area having been destroyed during the first years of European settlement. However, there are still significant areas of indigenous vegetation worthy of preservation, including in the adjacent tidal areas (that are now not part of the Park but merge with the areas within the Park) and in the dune slack wetlands to the west.

The hinterland (that is, the area behind the dunes) is dominated by introduced agricultural species and associated exotic species.

The main value in Seafeld Park lies in it being part of an important coastal environment centred on Brooklands Lagoon/Te Riu o Te Aika Kawa, and the potential for the restoration of the lost parts of the wider ecosystem that the Park area can provide.



All of this part of Seafield Park is in the Conservation 1A Zone identified in the Christchurch City Plan. This zone comprises the coastal dune system, and parts of the margins of the Avon-Heathcote Estuary and Brooklands Lagoon/Te Riu o Te Aika Kawa, including saline wetlands. In the Brooklands Lagoon/Te Riu o Te Aika Kawa area, it also covers Brooklands Spit/Kairaki.

This part of Seafield Park is also part of Ecological Heritage Site 5.01, which covers wetland and riparian areas that contain saltmarsh vegetation.

## 22.2 Planning proposals

In order to rationalise the status of all of the parts of this part of Seafield Park, it is proposed to raise for consideration the following (circled numbers refer to references on the photo plan on page 81. The numbering, P10-P13 relates to the summarised proposals on page 13.)<sup>49</sup>:

- P10** ② Change the classification of the recreation reserve to scenic reserve (requires public notification and the Minister of Conservation's consent).
- P11** ③ Declare the parcel of land at the Park entrance off Harbour Road as scenic reserve.
- P12** ④ Survey the eastern boundary of the Park.
- P13** ⑤ Stop legal road within, and adjacent to, the Park and add to the Scenic Reserve, including accretion added to legal road pursuant to Section 315 (4) of the Local Government Act 1974. Remove from cadastral plans the sections of previous legal road extending into the Coastal Marine Area (CMA) (area below MHWS).

- Improve and develop tracks, signage, entrances and other visitor facilities consistent with the status of the area as a Scenic Reserve under Section 19(1)(a) of the Reserves Act 1977 (see the Mid Seafield Park landscape concept (pages 106 to 110)).
- Explore options to create and restore natural habitats and landscapes consistent with the status of the area as a Scenic Reserve under Section 19(1)(a) of the Reserves Act 1977 (see the Mid Seafield Park landscape concept).

<sup>49</sup> Any proposal that is raised does not constitute any commitment on the Christchurch City Council, or any other party, to implement but is raised for consideration only. For any proposal to be realised it would need to be prioritised and resourced through existing budgeted Council work programmes and/or included in the Long Term Council Community Plan.

## 23 BROOKLANDS LAGOON/ TE RIU O TE AIKA KAWA

Brooklands Lagoon/Te Riu o Te Aika Kawa, south of the Waimakariri River, is separated from the sea by Brooklands Spit/Kairaki and coastal sand dunes. Despite being called a lagoon it is an estuary, with diurnal tidal cycles of sea water that mixes with the freshwater of the Waimakariri River and Styx River/Puharakekenui. It is an important wildlife area with many insects, invertebrates, fish, native plants and over seventy species of birds recorded. The biodiversity values of these species and their habitats are considerable.

Brooklands Lagoon/Te Riu o Te Aika Kawa and the Waimakariri River mouth were an important Māori food-gathering site until the mid-1880s when game fishing legislation was introduced. The legislation banned everyone, including Māori, from taking fish from the river.

In the 1850s early European settlers divided the land surrounding the lower Waimakariri River into large pastoral runs. George Leach, a Scottish ex-bank manager, owned the area including what is now known as Brooklands Lagoon/Te Riu o Te Aika Kawa. The vegetation was soon stripped away by over-grazing and the light sandy soils were blown inland. Farming was later abandoned in the area adjacent to Brooklands Lagoon/Te Riu o Te Aika Kawa. In the 1950s the Waimakariri River mouth was shifted 300 metres north from its natural course because of frequent flooding of the surrounding land.







Brooklands Lagoon/Te Riu o Te Aika Kawa is an important link in a chain of wetlands that runs along the central Canterbury coast. These wetlands are used by migrating birds. The estuary provides a breeding habitat, wintering site and a feeding stop for birds migrating between the North and South Islands. The estuary covers 270 hectares, is 4.5 km long and 0.8 km at its widest point.

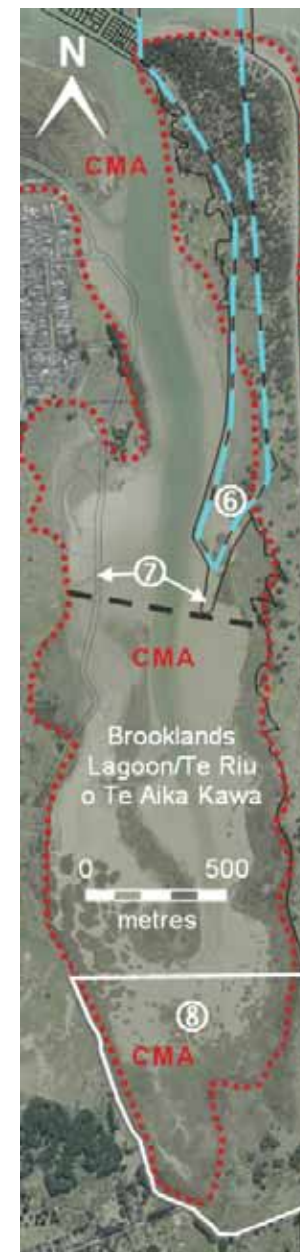
Common resident birds include oystercatcher, red-billed gull, spotted shag, white-faced heron, banded dotterel and pied cormorant.

Shellfish, such as pipi and cockles can be found in sandy patches close to the estuary mouth and elsewhere. Eels (tuna), brown trout and yellow-eyed mullet feed around the mouth of the Styx River/Puharakekenui.

Circled numbers refer to planning proposals on page 89

### Map Key

-  Mean High Water Springs (MHWS) (approximate)
-  Reserve for River Protection Purposes administered by Environment Canterbury (similar areas on either side of the Styx River/Puharakekenui are not shown)
-  Coastal Marine Area (approximate)
-  Legal road to be stopped (Brooklands Spit/Kairaki only)
-  Crown land (not administered by the Dept. of Conservation)
-  No motorised craft south of this line (line is approximate)



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### 23.1 Morphology

Brooklands sands underlie Brooklands Lagoon/Te Riu o Te Aika Kawa and the surrounding coastal areas, and are on average twenty metres deep, beneath which are water-bearing gravels providing artesian water.

### 23.2 Values

The Waimakariri River mouth and Brooklands Lagoon/Te Riu o Te Aika Kawa area is listed in the Regional Coastal Environment Plan for the Canterbury Region (2005) as an Area of Significant Natural Value<sup>50</sup>. It is also identified as an Area of High Natural, Physical, Heritage or Cultural Value. The estuary can be described in three parts:

#### Northern Brooklands Lagoon/Te Riu o Te Aika Kawa

The main channel forms the northern part of Brooklands Lagoon/Te Riu o Te Aika Kawa, which includes the mouths of Styx and Waimakariri Rivers. Saltmarsh, characterised by species of coarse sediments, lines the margin. The Styx River/Puharakekenui mouth is an important location for white-baiting and inanga spawning.

Shy and reclusive birds, such as the Australasian bittern and marsh crake, live in the wetland areas near the mouth of the Styx River/Puharakekenui. They are rarely seen due to their excellent camouflage colouring.

#### Mid-Brooklands Lagoon/Te Riu o Te Aika Kawa

The mid-Brooklands Lagoon/Te Riu o Te Aika Kawa area contains a mixture of saltmarsh and open mudflats that, at low tide, form the main feeding ground for birds such as godwits, South Island pied oystercatcher (torea) and the banded dotterel (tuturiwhatu).

#### Southern Brooklands Lagoon/Te Riu o Te Aika Kawa

The southern Brooklands Lagoon/Te Riu o Te Aika Kawa area is a wildlife refuge, where the high tide only covers the mudflats between two and four hours a day. Extensive areas of saltmarsh, consisting of rushes, sedges and salt tolerant grasses, surround shallow ponds. Two threatened plant species are found in relative abundance there. The salt concentration in the water is usually very low offering suitable conditions for invertebrates, such as tunneling mud crabs and mudflat snails. An observation platform, at the southern end of the estuary, provides a place for observing birdlife, including Canadian geese, shoveler, grey teal and white-faced heron. Infilling of this southern part has resulted in a freshwater wetland with raupo close to Heyders Road.

### 23.3 Status

Brooklands Lagoon/Te Riu o Te Aika Kawa is within the Coastal Marine Area<sup>51</sup>. This area is under the administration of the Department of Conservation, which has legislative responsibility for the natural values occurring within it, with Environment Canterbury having responsibility for control of activities and developments taking place on it.

### 23.4 Birdlife habitat<sup>52</sup>

Mudflat habitats found within Brooklands Lagoon/Te Riu o Te Aika Kawa, and along the banks of the lower Waimakariri River, are important feeding grounds and low tide loafing areas for herons, spoonbills, waders, gulls and waterfowl.

The western shoreline of Brooklands Lagoon/Te Riu o Te Aika Kawa comprises two zones of saltmarsh – firstly, the “shoreline zone” adjacent to the estuary mudflats, which is mostly relatively recent in its formation, developing since Waimakariri River mouth and spit realignment in

<sup>51</sup> This is defined in Section 2 (Interpretation) of the Resource Management Act 1991 as:

“Coastal marine area means the foreshore, seabed, and coastal water, and the air space above the water—

(a) Of which the seaward boundary is the outer limits of the territorial sea:

(b) Of which the landward boundary is the line of mean high water springs, except that where that line crosses a river, the landward boundary at that point shall be whichever is the lesser of—

(i) One kilometre upstream from the mouth of the river; or

(ii) The point upstream that is calculated by multiplying the width of the river mouth by a factor of five.”

<sup>52</sup> From Crossland A. C. (2008).

<sup>50</sup> Site No. 12-006.



the 1950s. Secondly, there is a 'landward zone' of areas formerly connected with the tide that have become stranded over the last fifty years as the sand dune belt formed and was colonized by exotic vegetation, including grasses and pines.

Although currently degraded by invasive weed growth and lack of surface water, the landward zone has high potential as bird nesting and roosting habitat. Vegetation here is more diverse than in the shoreline zone and not exposed to the hazards of spring tide inundation.

The saltmarsh, salt meadow and flax swamp habitats around the fringes of Brooklands Lagoon/Te Riu o Te Aika Kawa are known to have formerly supported a range of native swamp birds, including Australasian bittern, marsh crake, buff weka, banded rail, fernbird and probably also spotless crake. All, except for the first two species listed, have been locally extinct since the late nineteenth to early twentieth centuries.

The shoreline zone today is used by a range of wetland birds for feeding and roosting. Its use as a nesting area is currently constrained by the sparseness of rush cover in some areas, by spring tide inundation and, to some degree, by disturbance from people, motorbikes and dogs.

Currently, the landward zone supports only a few wetland bird species, including white-faced heron, pied stilt, spur-winged plover, mallard, paradise shelduck, New Zealand

kingfisher, pukeko, harrier, welcome swallow and the globally threatened Australasian bittern.

Restoration of degraded wetland habitats within the landward zone would attract many additional bird species, including royal spoonbill, white heron, South Island pied oystercatcher, bar-tailed godwit, caspian tern, black-fronted tern, black-backed gull, red-billed gull, black-billed gull, grey teal, New Zealand shoveler and several species of cormorant. Most of these species are expected to occupy the new wetland development in the Dartford Street/Beacon Street area.

### 23.5 Aquatic fauna

Species of mahinga kai (food gathering) sites are important to Māori. Management regimes applied to waters can impact on these.

### 23.6 Activities

Brooklands Lagoon/Te Riu o Te Aika Kawa is adjacent to a growing local residential area and is in close proximity to the large urban area of Christchurch. Therefore, there is pressure for vehicle and vessel access, and potential for disturbance of the estuary's high natural values, particularly wildlife. There is also potential for conflict between vehicle or vessel operators and other recreational users of the estuary and adjoining areas. This necessitates restrictions<sup>53</sup>.

Policy 8.10 in the Regional Coastal Environment Plan for the Canterbury Region (2005) states that motorised vehicles should not be used on the beach south of Spencer Park or on the eastern shore of Brooklands Lagoon/Te Riu o Te Aika Kawa, and that motorised vessels or motorised vehicles should not be used within the southern part of Brooklands Lagoon/Te Riu o Te Aika Kawa<sup>54</sup>.

The Regional Coastal Environment Plan has regional rules in place to control such activities in the Coastal Marine Area. Rule 8.21 specifies as prohibited activities, for which

<sup>53</sup> Section 12(3) of the Resource Management Act 1991 allows control of any activity in, on, under, or over any Coastal Marine Area in relation to adverse effects. Exemptions need to be made for rescue organisations, to allow direct access to authorised launching places, to enable regulatory functions to be undertaken, and to allow some authorised construction and other activities (From: the Regional Coastal Environment Plan for the Canterbury Region 2005, page 8-122).

<sup>54</sup> Exceptions are where the vehicles or vessels operated are for official or authorised purposes, including, for example, by the controlling agencies and by the emergency services involved in fire fighting, civil defence and rescue.

no resource consent will be granted (with exceptions<sup>55</sup>), the operation of any motorised vehicle or vessel at any state of the tide:

- (a) on the Brooklands Lagoon/Te Riu o Te Aika Kawa eastern shoreline and on the beach south of Spencer Park, and
- (b) within the Coastal Marine Area of Brooklands Lagoon/Te Riu o Te Aika Kawa, south of a line extending across the estuary two hundred metres south of, and on the same bearing as, the middle line of Dartford Street.

Vessels operating in Brooklands Lagoon/Te Riu o Te Aika Kawa are controlled for safety and navigation purposes by bylaws made under the Local Government Act 1974. These are Environment Canterbury Navigation Safety Bylaws 2005, which apply to particular parts of the Coastal Marine Area, including that referred to as the Waimakariri Harbour<sup>56</sup>.

<sup>55</sup> Including, but not limited to, Area of Significant Natural Value Site No. 12-006, listed in the Regional Coastal Environment Plan for the Canterbury Region (2005).

<sup>56</sup> The part of this area relevant to this master plan includes all the area of sea and tidal waters of:

- (a) the Estuary of the Waimakariri River (also known as Brooklands Lagoon/Te Riu o Te Aika Kawa);
- (b) the Waimakariri River downstream of a line at Stewarts Gully on a bearing of 334 degrees through Map Reference NZMS M35-830550; and
- (c) the Styx River/Puharakekenui downstream of the tide gates at or near Map Reference NZMS M35-850563.

Special provisions of these bylaws for access lanes and reserves areas in the coastal marine area apply to Brooklands Lagoon/Te Riu o Te Aika Kawa:

### Water ski area

The area of Brooklands Lagoon/Te Riu o Te Aika Kawa extending from a line at the mouth of Brooklands Lagoon/Te Riu o Te Aika Kawa to a line extending across the Brooklands Lagoon/Te Riu o Te Aika Kawa 200 metres south of and parallel to a bearing along the middle line of Dartford Street is reserved as a water ski area (see the photo plan on page 84). This area provides for a water ski circuit (for which navigation is only permitted in a clockwise rotation or on the port side of the circuit), slalom courses and a water ski jump.

### Non-powered craft area

No powered vessel is permitted within Brooklands Lagoon/Te Riu o Te Aika Kawa south of the line referred to in the above paragraph, with the exception of motorised vessels operated for official purposes.

### Speed limit

Vessel speed limit in the powered craft area is five knots if not water skiing.

Maritime New Zealand, whose Director has independent statutory powers under the Maritime Transport Act 1994, is responsible for developing maritime safety and marine environment protection rules, educating the maritime community on safety and environmental issues and educating and communicating with the recreational boating sector about safe boating behaviour.

## 23.7 Issues

Brooklands Lagoon/Te Riu o Te Aika Kawa is a dynamic landform in the ever-changing coastal environment of Pegasus Bay - its form has changed considerably since the days of European colonization of the Canterbury region, as a result of both natural processes and human influence. This has had a significant effect on the ecology of the estuary and its surrounds. Change continues today.

Significant matters that have affected, or have continued to affect, Brooklands Lagoon/Te Riu o Te Aika Kawa in recent years include:

- The estuary margins<sup>57</sup> are defined by the line of Mean High Water Springs (MHWS), below which is the Coastal Marine Area. With the enactment of the Foreshore and Seabed Act 2004, which vested ownership and management of public foreshore and seabed in the Crown, parts of the adjacent Seafield Park became part of the estuary area under the administration of the Department of Conservation. Alternatively, accretion in the estuary area that lies above the MHWS is now part of adjacent legal road under this Act.
- The estuary is becoming increasingly silted up, mostly in its southern third. This has been an on-going consequence of the Waimakariri River mouth being shifted north to Kairaki, resulting in the estuary being cut off from the scouring effect of both strong tides and the main river channel and thus gradually filling in. As the estuary becomes shallower, clumps of rushes trap

<sup>57</sup> Yet, the estuary ecosystem is in effect entwined/inter-related with the surrounding dune ecosystems so, realistically, there is more of a merging of these adjoining areas than there are static and clearly-defined physical boundaries between them.

the sediment and spread outward, further reducing the amount of open water. The main plant to colonise these areas is the sedge, three-square (*Schenoplectus pungens*). Establishment occurs both along the margin and in patches on the mudflats. As they grow, the patches coalesce to form continuous swards. Aerial photos have shown that some patches do disappear. This is a natural process but impacts upon the extent recreational (non-motorised) boaters will be able to access the southern reaches of the estuary.

- The impact of recreational boats and duck shooting during the duck shooting season.
- Outside the shooting season, the further north one goes along the estuary, the greater the level of disturbance to birds as access via the water becomes easier. Water skiing and jet skiers from the estuary mouth cause a disturbance when they venture into the middle reaches of the estuary. Noise and bow waves washing over the low lying high tide roost at Barkers Brook are problems. Previously, at high tides jet skiers were known to travel down Brooklands Lagoon/Te Riu o Te Aika Kawa almost all the way to Heyders Road, to the detriment of the birds. This is now controlled with the introduction of the no-pass line for powered craft (see the photo plan on page 84).
- Around the mouth of Brooklands Lagoon/Te Riu o Te Aika Kawa and along the Waimakariri River human disturbance consists of various kinds of watercraft, vehicles and fishing. A level of protection of wildlife has been provided with the powered boating restriction, but more needs to be done.

- Reductions in the populations of several bird species, particularly waders, in the estuary over the last eighty years are probably the result of a number of causes. These include local causes, such as the loss of bare mudflat habitat, changes to vegetation (for example, the natural invasion of mudflats by three-square) and increased disturbance. The change in bird numbers for some species may reflect national trends.
- Horse grazing in the landward part of the western shoreline of Brooklands Lagoon/Te Riu o Te Aika Kawa has caused habitat degradation<sup>58</sup> and facilitated rapid colonization by weeds and grasses.<sup>59</sup>
- The area at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa has been variously referred to as a wildlife management reserve or wildlife refuge in previous documents. There has never been any formalisation of such status for this area. The area above MHWS is Crown land that is not administered by the Department of Conservation. See the note on page 94 for the changing situation at the time of publication of this plan.

<sup>58</sup> Further to that resulting from the saltmarsh and salt meadow communities becoming 'stranded' from the tides over the last fifty plus years as the sand dune belt formed and was colonized by exotic vegetation, such as marram, grasses and pines.

<sup>59</sup> Another agent of change has been the surface ponding and soakage of fresh water derived from rainfall and runoff. This has facilitated the spread of freshwater loving introduced weeds and grasses at the expense of salt tolerant native plants, which are no longer exposed to saline groundwater. It is a moot point if anything can be done about this.

- In 1968 the Commissioner of Crown Lands prohibited shooting or the possession of firearms in the lower part of Brooklands Lagoon/Te Riu o Te Aika Kawa extending from Heyders Road to just over half-way along the Māori Reserve land (in the proposed Brooklands Lagoon/Te Riu o Te Aika Kawa Wildlife Refuge area). The Spencer Park Ranger was empowered, on the Commissioner's behalf, to apprehend and prosecute any person contravening the prohibition, under Section 176 of the Land Act 1948. Despite this protection, the area has not been formally gazetted as a wildlife management reserve, even though it is treated as such. It was suggested by Butters and Alexander in 1976 that the area set aside for this purpose be extended north as far as Earlham Street and designated a wildlife management reserve. The current no-shooting area would remain but game shooting permitted in the extended area.



## 23.8 Planning proposals

Proposals for the Council to advocate to Environment Canterbury and the Department of Conservation include (circled numbers refer to references on the photo plan on page 84 and the numbers P14-23 relate to the proposed summaries on pages 13 to 15):

- ⑥ Remove from cadastral plans the boundaries defining the Reserve for River Protection Purposes where it extends into the Coastal Marine Area (CMA) following (the proposed) transfer of this reserve to the Department of Conservation<sup>60</sup>.
- ⑦ Remove from cadastral plans the sections of previous legal road extending into the Coastal Marine Area (CMA) (area below MHWS) in conjunction with any proposed stopping of legal road above the MHWS<sup>61</sup>.
- ⑧ Remove from cadastral plans the boundaries defining the previous Crown land area at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa where it extends into the CMA, following (the proposed) transfer of the part of this area above MHWS to the Council for the purpose of adding to a proposed future scenic reserve covering Brooklands Spit/Kairaki<sup>62</sup>.

<sup>60</sup> This is proposed as a first step to the transfer of the part of this reserve above MHWS and on Brooklands Spit/Kairaki to the Christchurch City Council for the purpose of adding to a proposed future scenic reserve covering Brooklands Spit/Kairaki. Also see P24 on page 94.

<sup>61</sup> Also see P24 on page 94.

<sup>62</sup> Also see P25 on page 94.

**P14** To investigate potential methods, such as controlled seasonal shooting, to control exotic water fowl populations that compete with rarer native and exotic birds in the central area of Brooklands Lagoon/Te Riu o Te Aika Kawa, where the majority of the mai-mais (duck shooting blind) are located.

**P15** Ban all motorised wheeled/normally land-based recreational vehicles from Brooklands Lagoon/Te Riu o Te Aika Kawa and its marginal areas (not including such vehicles used for official or authorised purposes). The sensitive wetland areas of Seaford Park, and parts of Brooklands Lagoon/Te Riu o Te Aika Kawa, have been severely damaged in the past by recreational vehicles. The banning of motorised wheeled/normally land-based recreational vehicles will promote the recovery of vegetation.

**P16** Consider developing a new walkway from Heyders Road along the eastern side of the lower Brooklands Lagoon/Te Riu o Te Aika Kawa, which will provide an alternative to the lower section of the Brooklands Lagoon/Te Riu o Te Aika Kawa Walkway.

**P17** Consider erecting an observation platform/bird hide on the above-mentioned possible walkway. There is risk of increasing the impact on a sensitive area, which will need to be overcome with appropriate design. The proposed platform/hide could incorporate a boardwalk over part of the estuary marginal area to provide better observation of the vegetation.

**P18** For the Council to advocate that the Brooklands Lagoon/Te Riu o Te Aika Kawa and Lower Waimakariri

River mudflats are managed in ways consistent with protection of wildlife and wider ecological and tangata whenua values.

**P19** Improve public awareness of the special values of the Brooklands Lagoon/Te Riu o Te Aika Kawa area.

**P20** Protect from degradation and negative impacts the Brooklands Lagoon/Te Riu o Te Aika Kawa western shoreline zone saltmarshes, which are a regionally important habitat feature.

Protect and enhance as much as possible the existing patches of saltmarsh and salt meadow vegetation within the landward zone of the Brooklands Lagoon/Te Riu o Te Aika Kawa western shoreline.

Restore and enhance destroyed or severely degraded saltmarsh and salt meadow habitats by establishing an appropriate landform and water regime that leads to a natural restoration of saltmarsh without the need for planting.

**P21** Investigate the feasibility of excavating several shallow ponds within the dune areas to provide additional habitat for waterfowl, waders and herons.

**P22** Establish predator control lines along the Brooklands Lagoon/Te Riu o Te Aika Kawa margin and within the new Dartford Street/Beacon Street wetland area.

**P23** Monitoring sites could be established in Brooklands Lagoon/Te Riu o Te Aika Kawa to indicate when significant changes in sediment level and salinity are occurring, and to find out if the saltmarsh vegetation is increasing, eroding or remaining stable in extent.

## 24 COASTAL STRIP (INCLUDING BROOKLANDS SPIT/KAIRAKI)

The linear coastal landform, consisting of an east to west sequence of broad sandy beach and tall vegetated parallel dunes, separates the hinterland occupied by Brooklands Lagoon/Te Riu o Te Aika Kawa and Spencer and Seafeld Parks from Pegasus Bay. It extends south of the mouth of the Waimakariri River. Beyond the planning area addressed by this master plan, the landform continues all the way to the mouth of the Avon-Heathcote Estuary, with increasing levels of modification to its environment.

Brooklands Spit/Kairaki itself, which is approximately four and a half kilometres long, is a largely remote and undeveloped part of the Brooklands Lagoon/Te Riu o Te Aika Kawa area environment and has significant natural values in association with the estuary and beach environment.







It is one of only three large sand spits in Canterbury, the other two being the South New Brighton Spit (containing the Avon-Heathcote Estuary) and Ashworth's Spit (containing the Ashley River/Saltwater Creek Estuary).

The vegetation on Brooklands Spit/Kairaki contains some remnants of the original native duneland vegetation in the form of flax, manuka, cabbage tree, sand convolvulus and a couple of huge akeake and ngaio trees (with canopies nearly ten metres across).

The Brooklands Spit/Kairaki landform is described as being of very recent origin. Until the 1950s, the area of sea-bed now occupied by the Spit was the site of shifting sandbars with two sand spits located at both ends (Brooklands Spit/Kairaki from the south and Kairaki Spit (also known as the Kaiapoi Bar) from the north).

Circled numbers refer to planning proposals on page 94

### Map Key

-  Mean High Water Springs (MHWS) (approximate)
-  Reserve for River Protection Purposes administered by Environment Canterbury (similar areas on either side of the Styx River/ Puharakekenui are not shown)
-  Coastal Marine Area (approximate)
-  Legal road to be stopped (Brooklands Spit/Kairaki only)
-  Crown land (not administered by the Dept. of Conservation)
-  Recreation Reserve vested in the ChCh City Council



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## 24.1 A changing environment

Four factors have been instrumental in creating the Brooklands Spit/Kairaki of today<sup>63</sup>:

- The creation of a new mouth for the Waimakariri River at Kairaki, which delivered the full force of the river to the ocean and obliterated the former Kairaki Spit.
- The cessation in river flow through Brooklands Lagoon/Te Riu o Te Aika Kawa and a cessation in the process of sandbar/sandspit formation within the estuary that had occurred as a consequence of a shifting Waimakariri River mouth.
- The formation of the Brooklands Spit/Kairaki landform of today, with its long, narrow neck and wider distal tip.
- The planting of exotic marram grass and pines along the Spit, converting it from a sparsely vegetated environment to a densely vegetated one. This has led to dramatic changes in the Spit's morphology and the disappearance of mobile dunes, low washout basins, inter-dune slack, salt meadow habitats and tidal creeks.

The form of the spit today is very different to what it was prior to 1940, when the Waimakariri River flowed through what is Brooklands Lagoon/Te Riu o Te Aika Kawa today and flowed out to sea two-thirds of the way down (moving southward) the Spit. Some local residents remember tying their boats up at the river mouth close to the northern end of Spencer Park. Following engineering works and flooding by the river, its mouth eventually shifted to the present position (see the account and maps in Section 14 Landform starting on page 51).

The dunes of Brooklands Spit/Kairaki are vulnerable to storms, erosion and blowouts. When the land was first cleared, the wind rapidly eroded the exposed thin, sandy soils. Over the years, various councils, boards and government departments planted European marram grass and pine trees to try and stabilise the area, but the dunes are still easily damaged by vehicles, overgrazing and recreational users.

Each year, wind and wave action shifts one million cubic metres of sand north and south along the beaches between the Waimakariri River mouth and Banks Peninsula. On average, about 49,000 cubic metres a year is fixed into the dunes along this stretch of coast but during storms each kilometre of beach temporarily loses up to 100,000 cubic metres of sand. High tides and strong winds can rapidly widen small gullies and cut-outs in the dunes.

Twenty years ago the spit at Brooklands Lagoon/Te Riu o Te Aika Kawa consisted of three rows of tall dunes. Pine trees, which are now growing just above high tide, were then sheltered by these dunes. Between 1973 and 1977 a series of storms and high seas washed away a fifteen to eighteen metre wide strip of the Spit's dune system. In 1978 storms widened a narrow gully in the site of the old river mouth, which is a natural weak area of the Spit. Over the space of a few weeks, a 250 metre wide gap appeared in the dunes. Sand flooded into the estuary on the high tides and prevailing north-easterly wind.

Spencer Park rangers built two fences two metres apart across the gap to try to plug the blow-out. The mesh of the fences slowed the wind, causing it to drop its sand and within about three weeks the fences were almost buried. Repeating the process twice more produced three metre high dunes, which the rangers then stabilised by planting marram grass. So far, about two kilometres of fencing have been laced into the dunes in this area.

## 24.2 Status

The legal land status of the parts that make up Brooklands Spit/Kairaki and the coastal strip extending southwards is complex, with changes brought about over recent years by legislation, such as the Foreshore and Seabed Act 2004, and physical boundaries changed as the result of natural processes of erosion and accretion. Administration, to date, of parts of the Spit area and the coastal strip to the south has rested with Environment Canterbury and the Department of Conservation, and previously legal road extending across the Waimakariri River was technically under the administration of the Kaiapoi/Waimakariri District Council, but the day to day management of the Spit has been as a regional park by the Christchurch City Council.

For the purposes of this planning, the area described as Brooklands Spit/Kairaki is defined as that area above the Mean High Water Springs mark. It needs to be acknowledged that the Spit, as defined above, cannot be treated in isolation because its physical

<sup>63</sup> From Crossland A. C. (2008).



environment merges with adjoining environments – that is, Brooklands Lagoon/Te Riu o Te Aika Kawa and the foreshore, in particular.

### 24.3 Birdlife<sup>64</sup>

In the mid-nineteenth century, before the introduction of pines and other exotic vegetation and prior to excessive human disturbance and the inroads of mammalian predators, Brooklands Spit/Kairaki and the former Kairaki Spit were the focus of considerable bird nesting and bird roosting activity. Species likely to have nested in these places include variable oystercatcher, banded dotterel, black-backed gull, black-billed gull, white-fronted tern, caspian tern, New Zealand fairy tern, New Zealand dotterel, red-billed gull, black-fronted tern and possibly New Zealand shore plover.

Until the early twentieth century large breeding colonies of gulls and terns were a feature of the Brooklands Spit/Kairaki. A newspaper article in January 1935 reported a large colony of white-fronted terns nesting on the Kairaki side of the Waimakariri River mouth but also noted that it had been many years since these birds had last nested there.

The two Waimakariri River mouth sand spits and Brooklands Lagoon/Te Riu o Te Aika Kawa were well-known as a site for native and migratory waders in the nineteenth and early-twentieth centuries. Early New Zealand records made here included red-necked avocet

(1859-1860), eastern curlew (1876 and 1927), Pacific golden plover (1909), turnstone (1924), Asiatic whimbrel (1928) and sanderling (1934 and 1938).

Monitoring<sup>65</sup> of birdlife on Brooklands Spit/Kairaki between the late 1950s and early 1960s indicated that, over this period, and prior to the invasion of exotic vegetation and when spring tides still washed over parts of the spit, a sizeable population of banded dotterel nested on Brooklands Spit/Kairaki, with smaller numbers of several other species also present. Subsequently, these birds disappeared, probably due to a combination of habitat loss (vegetation invading areas of open sand and low salt meadow), human disturbance and predation.

Brooklands Spit/Kairaki today comprises a marginal habitat for the estuarine and coastal birds that formerly bred there.

For most species suitable breeding habitat is now reduced to a small area of ocean beach near the Spit tip. This is wider than the rest of the beach and contains an area of backshore sand which remains exposed at high tide. Over the last ten years small numbers of banded dotterel (four to seven pairs between 2003 and 2007) have attempted to recolonise this stretch of beach. Their spread however has been limited by the extent of habitat and their breeding success has been limited by predation, disturbance and nest destruction by vehicles, walkers and spring tides.

Other birds which typically nest on sand spits are currently not able to gain a foothold on Brooklands Spit/Kairaki. The lack of a sandy backshore area located safely above spring tide level, and disturbance pressure, means that birds are unable to nest along most of the beach. The steep sand dunes formed by dense marram grass cover are unsuitable for birds such as variable oystercatcher, white-fronted tern, caspian tern, black-backed gull and red-billed gull, which all favour bare or sparsely vegetated parabolic dunes. The forest of pines at the distal tip of the Spit, and along parts of the inner shoreline, preclude nesting by any coastal/wetland bird species, except herons, kingfisher and potentially cormorants.

Some species such as the white-fronted tern and black-backed gull nest well upstream on the Waimakariri River, transiting between the river bed and waters about the river mouth to feed. The white-fronted tern colony changes location every year but in some years, such as in 1999, the colony has been found up to 26 kilometres inland, necessitating a minimal 52 kilometre round trip for parent birds catching fish at sea and returning upstream to the colony to feed their young. This is one of only a very few sites in New Zealand where this otherwise exclusively marine and estuarine bird flies inland to breed, as no suitable nesting site is available on the coast.

The exact status of white-flipped penguins along the Spit is poorly known. There is tremendous potential for penguin nesting/moulting and this may indeed already be occurring.

<sup>64</sup> Adapted from Crossland A. C. (2008).

<sup>65</sup> By Dr Dave Dawson, previously the Biodiversity Manager for the Mayor of Greater London, United Kingdom.

The saltmarshes along the inside of the Spit comprise good breeding habitat, especially for swamp birds (pukeko, bittern, marsh crake) and waterfowl (black swan, mallard, grey duck, New Zealand shoveler), harrier and pied stilt.

Besides nesting coastal/wetland birds, Brooklands Spit/Kairaki has an important role as a high tide roosting site for birds that forage along the adjacent coast line and within Brooklands Lagoon/Te Riu o Te Aika Kawa. At the Waimakariri River mouth, and on the ocean beach, the foreshore is utilised as an important roosting area by many species, including pied cormorant, spotted shag, South Island pied oystercatcher, variable oystercatcher, banded dotterel, bar-tailed godwit, black-backed gull, red-billed gull, black-billed gull, caspian tern, white-fronted tern and black-fronted tern.

Pine trees on the Spit's tip are used as roosting sites by pied cormorant, black cormorant and little cormorant. There is a high chance that pied cormorants will eventually establish a breeding colony in this area, as they have done at several sites in coastal Canterbury.

Mudflat and saltmarsh habitats along the inner (western) side of Brooklands Spit/Kairaki comprise important feeding habitats for white-faced heron, Australasian bittern, royal spoonbill, pied stilt, South Island pied oystercatcher, bar-tailed godwit, black-backed gull, caspian tern, black swan, canada goose, paradise shelduck, mallard, grey teal, New Zealand shoveler, pukeko, marsh crake and New Zealand kingfisher. Several of these species nest within the cover of the saltmarshes.

## 24.4 Recreation

On the western side of Brooklands Spit/Kairaki, and alongside Brooklands Lagoon/Te Riu o Te Aika Kawa, the Waimakariri Walkway extends from Heyders Road to the tip of the Spit, passing through the sand dunes. As with the Brooklands Lagoon Walkway (on the other side of the estuary), this track is provided for walkers only, because motorbikes and dune buggies damage the saltmarsh and erode the remaining dunes. At several locations along the walkway, walkers can wander down to the beach and then back up through the sand dunes to the estuary. A round-trip, returning via the beach, takes three to four hours to walk.

## 24.5 Issues

Brooklands Spit/Kairaki, though, has been, and is, subjected to impacts from human activity that arises from vehicles accessing along the beach from Spencer Park to the tip of the Spit, primarily for fishing purposes. The Waimakariri River mouth is an important white baiting area and is popular for salmon fishing. Unfortunately, this access has also resulted in excursions into the sensitive Spit environment, with damage to important bird habitat and the dumping of rubbish.

The introduction of trees, and the presence of people and vehicles on the foreshore, means the Spit tip area cannot be used by birdlife as a breeding site anymore. Furthermore, the estuary side of the Spit tip is one of the few areas of Brooklands Lagoon/Te Riu o Te Aika Kawa saltmarshes dominated by turf vegetation. The trees threaten the viability of that vegetation type.

## 24.6 Planning and management proposals

To ensure the optimum level of protection of the values of Brooklands Spit/Kairaki and the coastal strip continuing south to Bottle Lake Forest Park, whilst providing for appropriate public access and reflecting the current management of this area as a regional park by the Council, it is proposed to rationalise the land areas involved into one integrated entity (as classified scenic reserve under Section 19(1)(a) of the Reserves Act 1977) that is managed by the Council into the future for these purposes. To achieve this, the following actions are proposed to be considered to be taken (the circled number relates to an area on the map on page 90 and the numbers P24-P31 relate to the summary of proposals on pages 15 and 16)<sup>66</sup>:

- P24** ⑥Facilitate the process for this reserve for river protection purposes, which is administered by Environment Canterbury, being transferred to the Department of Conservation as Crown land, then for the part that is above MHWS to be transferred to the Council for addition to scenic reserve.
- ⑦Initiate process to declare this stopped legal road and accretion scenic reserve.
- P25** ⑧Initiate procedures to have the Crown land area at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa that is above the MHWS to be transferred to the Council for the purpose of adding to a

proposed future scenic reserve covering Brooklands Spit/Kairaki. Consult with Te Ngāi Tūāhuriri Rūnanga and Te Hapū o Kāti Urihia Ahu Whenua Trust prior to initiating the process of transfer of the Crown land area at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa to identify options to achieve tangata whenua objectives in relation to this area.

*Note: At its meeting on 8 July 2010 the Council resolved to accept the offer by Land Information New Zealand to vest in the Council as scenic reserve the part of this area of Crown land above MHWS. Following survey and classification as reserve, this land will first be transferred to the Department of Conservation, which will implement all advertisement requirements, including notification to Māori, before vesting the reserve in the Council.*

- P26** Protect and manage Brooklands Spit/Kairaki as one landscape and ecological unit.
- P27** Restore nesting and roosting habitat for coastal/wetland birds by removing invasive exotic vegetation in selected parts of the Spit, as well as through recontouring sand dunes to provide the flatter dune crests and wider interdune basins that most ground nesting coastal/wetland bird species require. A programme of replacing marram grass with native spinifex and pingao will help maintain these better dune shapes.

- P28** Undertake protective measures (such as pest control, indication of safe vehicle routes and temporary beach reconstruction) for the benefit of banded dotterels, white-flipped penguins and other beach nesting birds.
- P29** ⑨Remove invasive wilding pines near the inner tip of Brooklands Spit/Kairaki where a complex of small tidal creeks, salt meadow and saltmarsh exists (a habitat type that is rare in Canterbury). Bird usage of this site is limited due to the enclosure by pines.
- P30** Ensure more effective control of human recreational activity, dogs and vehicles on Brooklands Spit/Kairaki, particularly near bird roosting and nesting areas, on the sand dunes and within areas where damage to native vegetation may occur (such as inter-dune basins and saltmarshes).
- P31** Improve public awareness (particularly amongst Spit users) of the special values of the area and promote initiatives for ecological and landscape enhancement.

<sup>66</sup> Any proposal that is raised does not constitute any commitment on the Christchurch City Council, or any other party, to implement, but is raised for consideration only. For any proposal to be realised it would need to be prioritised and resourced through existing budgeted Council work programmes and/or included in the Long Term Council Community Plan.

## 25 Spencer Park and the southern part of Seafield Park

Spencer Park has traditionally been a popular destination for family day trippers and campers. It has sheltered picnic areas, wetland walks, an animal area, children's playground, paddling pool, bird lookout platforms and the starting point for many short and long walks.

Visitors can wander alongside the bird habitat of Brooklands Lagoon/Te Riu o Te Aika Kawa, explore the sand dune coastal area on horseback or on foot, go fishing, or cycle the mountain bike tracks which link up with Bottle Lake Forest Park.

Spencer Park became a public domain in 1933 and was named after the first Domain Board chairman, W.P. Spencer. Due to increasing use and maintenance needs, the Park was taken over by the Waimairi County Council in 1955 as a recreation reserve subject to Part III of the Reserves and Domains Act 1953.

The Park, which was part of Rural Section 40048, was deemed to be a recreation reserve subject to Part II of the Reserves and Domains Act 1953, and vested with the Council, in trust, for recreational purposes in 1972 (New Zealand Gazette 1972 p674). In 1989, at its final meeting prior to amalgamation with the Christchurch City Council, the then Waimairi District Council resolved to classify the main land parcels of Spencer Park, and the southern part of Seafield Park, as recreation reserve under the Reserves Act 1977. This means that the Christchurch City Council is obligated, by statute, to manage the classified

land parcels of Spencer Park for the primary purpose of outdoor recreation, and to have in place an up-to-date management plan.

Circled numbers refer to planning proposals on page 97

### Map Key

-  Spencer Park Management Plan 2010 boundary
-  Hibburt Park boundary
-  Camping ground lease boundary (approximate)





A management plan was prepared and adopted by the Waimairi District Council in 1982. The area covered by this 1982 plan included legal road, as well as areas of Crown land in the coastal strip paralleling Spencer Park Beach and at the southern end of Brooklands Spit/Kairaki. The plan area also covered the foreshore (the beach down to the low tide mark), control of which rested with the Council for twenty years from 1971 by a Grant of Control under the Harbours Act 1954.

The part of the plan area north of Heyders Road also included:

- (a) part of Rural Section 40231, which had, in 1973, been set aside as a reserve for recreation purposes and, subject to the Reserves and Domains Act 1953, vested in the County of Waimairi, in trust, for that purpose (New Zealand Gazette 1973 p742), and
- (b) Reserve 5253, which the Waimairi County Council had been appointed, in 1980, to control and manage, subject to the Reserves Act 1977, as a reserve for local purpose (youth holiday and recreation camp), on condition that the Council prepare a management plan for the reserve within five years of the date of notice in the New Zealand Gazette (New Zealand Gazette 1980 p3332), and
- (c) a further area of foreshore and a strip of Crown land at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa.

An 'enclave' in the Park area is Hibburt Park (Reserve 5252), which although also classified (under the Reserves Act 1977) as a reserve for local purpose (youth holiday and recreation camp) as (b) above, is controlled and managed by the Associated Churches of Christ Church Extension and Property Trust Board.

Also not part of the Park area now are the legal roads that run through it.

Additions to the original Park areas are land parcels that were more recently vested on deposit with the Council as recreation reserves through reserve contribution arising from the subdivision creating part of Spencerville township. These areas were classified as recreation reserve, subject to Section 17 of the Reserves Act 1977, by Council resolution on 10 July 2008, in accordance with Section 16(2A)(a) of this Act.

The Council on 12 June 2008 resolved to accept from the Department of Conservation the vesting in Council as recreation reserve of the strip of conservation land on the coast adjacent to Bottle Lake Forest Park and Spencer Park. This land lies between the foreshore and the legal road paralleling the coast, extends south from Heyders Road and comprises part of what is described as Spencer Park Beach and Bottle Lake Beach Park.

The land in question is now classified as recreation reserve, subject to the Reserves Act 1977, and vested in the Council, in trust, for that purpose.

The boundaries of the area covered by the Spencer Park Management Plan 2010 include all of the southern part of Seaford Park, exclude the portion of Crown land and foreshore north of Heyders Road (covered in the Brooklands Lagoon/Te Riu o Te Aika Kawa and Brooklands Spit/Kairaki chapters of this master plan) and incorporate two parcels of land currently part of Bottle Lake Forest Park (this is raised as a proposal on the next page).

## 25.1 Facilities

For this part of the Brooklands Lagoon/Te Riu o Te Aika Kawa parks planning area there is more of an emphasis, in comparison to the other parts of the area, on the provision of constructed facilities to enable visitors to better facilitate and enjoy their outdoor recreational experience in the coastal environment. Such facilities include picnic/play ground areas, toilet blocks, camping ground and shop, animal enclosure, a tree-based adventure ropes course and surf life saving facility/service.

Relatively recent planning and/or developments to improve facilities in this area include:

- From 2004 the playground facilities in the Spencer Park picnic ground have been redeveloped from being two separate and different play areas to being just one. This development has made the Spencer Park play area even more of a popular destination for families across Christchurch. The new play facilities now in place were the first of their kind in the Christchurch and Canterbury region. With the adoption of the European playground standards, features such as the double space net and the flying fox have been able to operate, whereas, under the previously used playground standards, there was a phasing out of such features.

The Shirley/Papanui Community Board on 18 May 2006 approved a landscape plan and accompanying implementation programme for the Spencer Beach Holiday Park, to become part of this master plan (see pages 118 to 119).

- As of late 2008 a new playground is being installed in the most recent addition to South Seafield Park, which is the part extending west into the Spencerville settlement.

## 25.2 Planning proposals

**Note:** The following planning proposals are not a commitment on the Council to implement, with the Council's approval of this master plan. Instead, approval of the plan will indicate the Council's willingness to, firstly, progress further investigation in the case of projects needing to be considered for funding in the Long Term Council Community Plan.

The numbering P32-P34 relates to the summarised proposals on page 16.

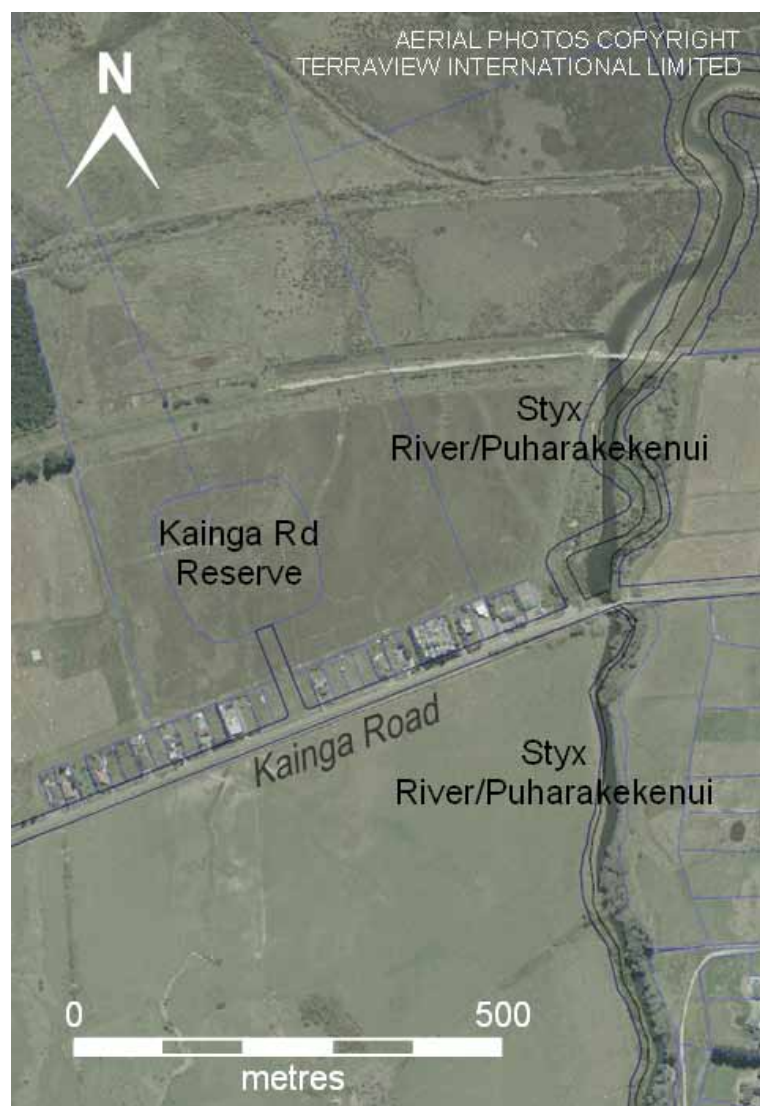
Planning proposals for Spencer Park include to (see photo plan on page 95 for location of the numbered proposals in circles):

**P32** ⑩ Expand the area that is described as Spencer Park to include parts of Seafield Park, Spencer Beach Park and possibly Bottle Lake Forest Park (most of these areas are included in the Spencer Park Management Plan 2010). Consider re-naming these parts as Spencer Park.

**P33** ⑩ Change the City Plan zoning for the relatively recently acquired (2002) addition to Seafield Park from Living RS (Rural Settlement) to Open Space 1 (Neighbourhood Recreation and Open Space) to appropriately reflect its development and use as local park space.

- Explore options to improve the roading circulation, and stop legal road (see the Spencer Park and South Seafield Park landscape concept (pages 111 to 117)).
- Rationalise buildings through redevelopment or removal (see above landscape concept reference).
- Improve information and interpretation signage.

**P34** Continue to evolve the play area at Spencer Park to retain its mantle as a key destination for family recreation in Christchurch.



## 26 OTHER AREAS (OUTSIDE THE PLANNING AREA)

### Public land north of Kainga Road and west of the Styx River/Puharakekenui

The paddocks adjacent to the true left of the Styx River/Puharakekenui, between Kainga Road and the southern Waimakariri River stopbank, are occupied by *Juncus* wetland. Wildlife values are limited here, because the tidal connection here has been lost and the marsh is largely dry. Ideally, on habitat conservation/restoration grounds, it would be best if urban development did not occur here. Creating ephemeral ponds on site, and/or partly restoring the tidal connection via a pipe under the stopbank, would go some way to enhance this area and upgrade bird habitat<sup>67</sup>.

This area is part of three parcels of land held by Environment Canterbury for river protection purposes, and includes an enclave of Council land that is managed as Kainga Road Reserve, vested upon subdivision in the Council as a reserve for recreation, although this is not developed.

### Kainga Road salt meadow (south of Kainga Road and west of the Styx River/Puharakekenui)

The area referred to as the Kainga Road salt meadow is located on private land on the southern side of Kainga Road, about 250 metres west of the Styx River/Puharakekenui bridge. The salt meadow straddles what was formerly a tidal stream that drained the low lying area between the Styx River/Puharakekenui and the dune country to the west. The salt meadow covers several hectares and is dominated by glasswort and other salt tolerant vegetation<sup>68</sup>. The area is used as a daily high tide roost and foraging area by banded dotterels (up to 150) and spur-winged plovers (up to 40). It is occasionally used as a roosting and feeding sites by other wetland birds, such as paradise shelduck, South Island pied oystercatcher and pukeko, and also has potential to attract uncommon migrant waders, particularly golden plover, Mongolian dotterel and several species of sandpiper.

The landowner should be encouraged, if not already doing so, to employ management practices in this area, such as controlling the level of stocking, that are compatible with the habitat needs of the birdlife present.

<sup>67</sup> It would be important, though, that no flooding of properties along Kainga Road could result.

<sup>68</sup> These must be supplied by saline groundwater as there is no tidal input here.

With the wildlife values present in this area, it would be ideal, on wildlife habitat conservation grounds, to have a buffer around the area to protect it from potential future surrounding development that would otherwise make the area unviable for banded dotterel. It is suggested a minimum buffer width would be 100 metres, along with a further fifty metre setback for buildings on adjacent properties.

The reason to make such advocacy for protection of this area is that there are few such areas of salt meadow now remaining in the Christchurch/Pegasus Bay area, and this is one where wildlife values remain high.



Brooklands Lagoon/Te Riu o Te Aika Kawa eastern margin with Seafield Park.