June 2010

BROOKLANDS LAGOON/TE RIU O TE AIKA KAWA AREA
PARKS MASTER PLAN

Christchurch City Council

Kia haere mai ki ahau
te wairua o te whenua
te hau o te whenua
te karaka o te takata whenua
hei whakaroko atu ki te taki
o taku kakau
ki ka mauka teitei
ki ka roto honu
ki ka awa tapu
tere haere ki te moana
here aiktaku taura
here ki ka whetu poroa
piata kanapa
mai i te pouri
kore kore
ki ahau e

Explanation:
This ancient tauparapara (invocation/chant) has been contributed by the Te Aika whanau to affirm the traditional and ancestral relationships of their whanau and the Urihia hapū to this area. It has been attributed to Tihema Te Aika (1841-1916) and remains a taoka tuku iho of Te Aika whanau. It is provided in the spirit of support for this Council plan which reflects the tangata whenua values of the area and contains goals that recognise these relationships.

The tauparapara is a call to the lands, waters and mountains that their wairua (spirit), and the prayers of the people, may envelope the caller to guide them to reach the highest places and to return this wisdom back.

Phormium tenax (Harakeke – a Ngāi Tahu Taonga species)

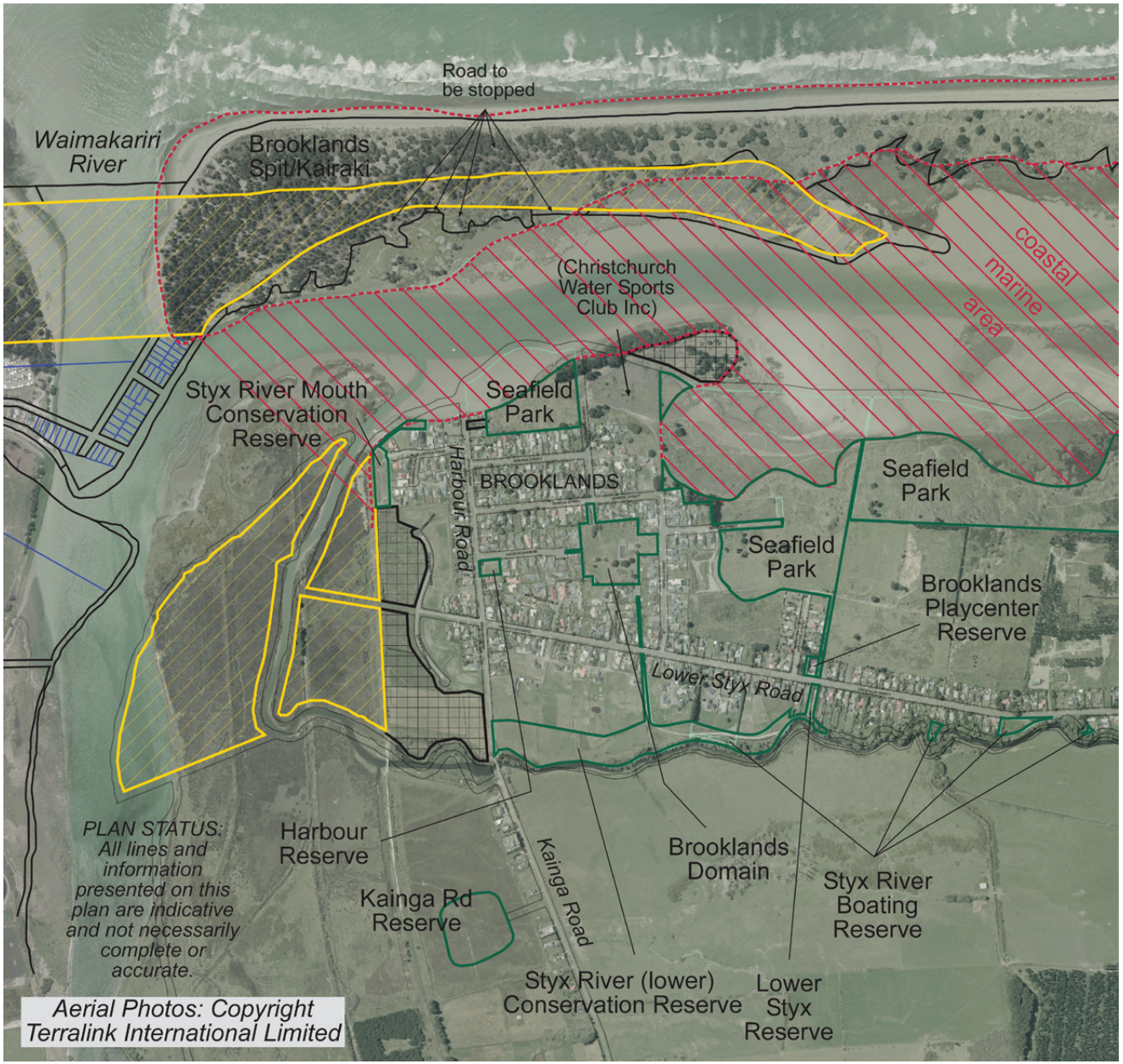
To be approved by the Christchurch City Council

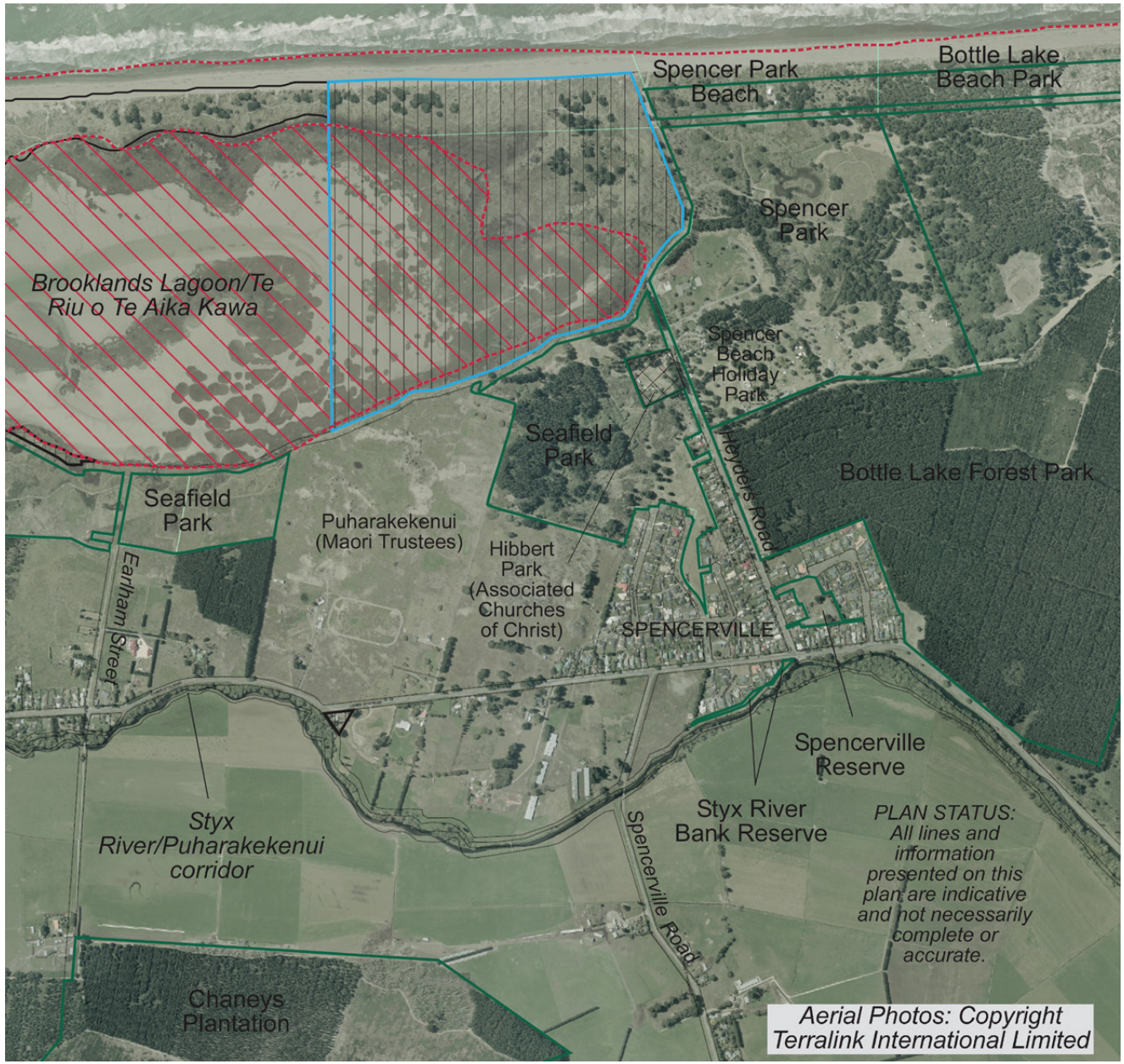
View north over the master plan planning area (see page 21 for a description of this and pages 4 and 5 for place names).

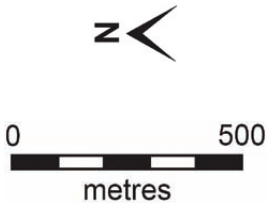
BROOKLANDS LAGOON/TE RIU O TE AIKA KAWA AREA RESERVES

Key

- Christchurch City Council (CCC) managed Parks
- Other CCC land (includes land accreted to legal road in Brooklands Lagoon/Te Riu o Te Aika Kawa)
- Canterbury Regional Council reserves for river protection purposes (similar areas west of the Styx River/Puharakekenui and north of the Waimakariri River are not shown)
- Other Crown Land (not administered by the Department of Conservation)
- Coastal Marine Area (only shown for the Brooklands Lagoon area) - see note on page 5
- Hibburt Park (reserve controlled and managed by the Associated Churches of Christ)







Note: The Coastal Marine Area (CMA) is defined as the area seaward of the average high tide mark (Mean High Water Springs or MHWS). Ownership and management of this area rests with the Crown.

Two government bodies have key roles with respect to the management of the CMA in the Canterbury area. These are the Department of Conservation and the Canterbury Regional Council, both of which promote the sustainable management of the natural and physical resources of the CMA through the New Zealand Coastal Policy Statement and the Regional Coastal Environment Plan, respectively.

The beach, which consists of the CMA that lies between MHWS and the average low tide mark (MLWS) and is described as the foreshore, is subject to the public road use rules where there is permitted vehicle access.

COPYRIGHT

ACKNOWLEDGEMENTS

A number of people have contributed in some way to the evolution of this master plan but the following particularly need to be noted (the contribution of all others, though, has been most valued):

Council:

Derek Roozen (Parks and Waterways Planner) – plan concept/preparation and overall planning coordination.

Antony Shadbolt (Landscape Architect) – landscape concepts.

Trevor Partridge (Botanist) – information on vegetation.

Andrew Crossland (Port Hills Ranger/Ornithologist) – information on birdlife.

Kay Holder (Regional Parks Team Manager) – overview and keeping the plan real.

Rodney Chambers (Coastal Park Area Head Ranger) – overview, keeping the plan real and advising on site specific issues.

Steve Leiataua (Spencer Park Ranger) – the 'man on the spot' providing site specific operational and asset information.

Mary Hay (Consultation Leader - Greenspace) – advice on, and facilitation of, public consultation meetings.

Mahaanui Kurataiao Ltd:

Andrea Lobb (General Manager) – facilitating the input from tangata whenua.

PLAN STATUS

This master plan has been prepared by the Christchurch City Council (the Council) with input on the Māori context from Ngāi Tahu, through Te Ngāi Tūāhuriri Rūnanga as tangata whenua of the area, and comment from staff of Environment Canterbury[1] and the Department of Conservation.

The purpose of the plan is to guide, influence and advocate for the ongoing integrated management of the open space in the Brooklands Lagoon/Te Riu o Te Aika Kawa area, providing direction with long term objectives developed from a visionary, conceptual and consultative planning approach.

This is not a statutory plan (that is, one that is required by, or prepared under, legislation, such as the Reserves Act 1977), nor is it a legal document committing the Council or any other organisation to any action proposed. It does, however, provide opportunities to highlight the many open space, natural and tangata whenua values of the area, touch on the issues affecting the area and propose actions to resolve some of these issues and enhance the values.

The Council's approval of the master plan will be about acknowledging these opportunities and supporting further consideration of proposed actions for potential implementation for those areas it has jurisdiction over.

The plan also serves to advocate to the other resource/land management bodies, namely Environment Canterbury and the Department of Conservation, possible actions these bodies may take with respect to the resources and land under their control. It is not intended for this plan to circumvent the powers of these bodies or usurp any private or public ownership rights.

This document is not a complete or scientific account of the values and issues of, and needs for, the open space and natural areas that are covered but serves to give an indication of, and be a starting point for, some of the key ones. Other more comprehensive references will need to be referred to for more detail.

PLACE NAMES

The following names in this master plan, either as part of a dual name or standing alone, are listed by the New Zealand Geographic Board Ngā Pou Taunaha o Aotearoa (NZGB) or are listed in another database referred to by the NZGB through the Land Information New Zealand website (http://www.linz.govt.nz):

"Brooklands Lagoon"	- an 'official name' included in the New Zealand Gazetteer of Official Geographic Names.
"Styx River"	- a 'recorded name' included in the New Zealand Place Names Database (Archived).
"Waimakariri River"	- an 'unofficial Māori name' included in the Waikato University Index of Māori Names, and a 'recorded name' in the New Zealand Place Names Database.

All other names, including dual names, in this master plan are names approved by the Council as part, and for the purposes, of the plan.

[1] This is the Canterbury Regional Council.

CONTENTS

SUMMARY OF PROPOSALS

The following list of proposals is a summary of the planning and/or management proposals associated with separate sections of this master plan (see Contents on the previous pages). The planning and management proposals are not a commitment on the Christchurch City Council (the Council) to implement with the Council's approval of the master plan. Approval of the plan will indicate the Council's willingness to progress further investigation into the planning and management proposals. Any costs stated are an indication of the potential level of costs of proposed development and are additional to any costs already budgeted for and included in an existing works programme. They constitute a rough order of capital (capex) and annual operational (opex) costs that can be raised for consideration for inclusion in a future Council Long Term Council Community Plan (LTCCP). There is no certainty, though, that they will be approved for the LTCCP and, if not, then they will not be funded.

Saltmarsh of sea rush and New Zealand primrose on the western margin of mid Brooklands Lagoon/Te Riu o Te Aika Kawa, looking towards Spencer Park at close to low tide.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
P1	Māori naming, and involvement of Ngāi Tahu in the development, of amenity features in public spaces in the Brooklands Lagoon/Te Riu o Te Aika Kawa planning area.	Use of Māori names in documents and information/publicity material, provision for tangata whenua to give advice on public space naming, and suggestion for the Council to consider a possible collaboration with tangata whenua to investigate establishing a river trail along the Styx River/ Puharakekenui with Ngāi Tahu stories/markers/artworks.	Tangata Whenua section, pages 56 to 60.	Not indicated.
P2	Protection, restoration and enhancement of natural values and Mahinga Kai values in the planning area.	Native species restoration, and the use of native species. Consider having planting days for riparian margin planting of native plants around Brooklands Lagoon/Te Riu o Te Aika Kawa. The Council, in its planning, to take into account Kī Uta Kī Tai (mountains to the sea) management principles and the significance of the planning area to Ngāi Tahu, including that there is good water quality for such activities as mahinga kai gathering.	As above.	Not indicated.
P3	Tangata whenua input to parks planning and management, and tangata whenua values taken into account.	Tangata whenua are involved in further planning and management relating to parks in the planning area, such as in the preparation of park management plans and representation on any park management committees. The Council gives consideration to tangata whenua values in decisions on parks, and seeks to actively protect those values if they are threatened.	As above.	Not indicated.
P4	Research and monitoring related to tangata whenua values.	That the Council considers research and monitoring proposals for the planning area, including: • Identifying and monitoring pollution sources, • Investigating the impacts of development proposals on water quality in the Styx/Puharakekenui River and Brooklands Lagoon/Te Riu o Te Aika Kawa, • Cultural health monitoring by Ngāi Tahu, using the State of the Takiwā tool of Te Rūnanga o Ngāi Tahu, • Investigating the state of the shell fishery in Brooklands Lagoon/Te Riu o Te Aika Kawa, • Investigating the effect of the Styx/Puharakekenui River control gates on the salt water/freshwater interface.	As above.	Not indicated.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
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/Brooklands Lagoon confluence area.	Management of the area as an important wildlife habitat. Discouragement of inappropriate activities, such as trail bike riding, and uncontrolled dogs that disturb or endanger birdlife. Ensuring that the prohibition of cattle within the saltmarsh areas and margins is enforced. Instigating control of weeds within the saltmarsh area, particularly in the drier western areas and along embankments. Investigating the feasibility and appropriateness of extending, deepening and widening the existing 'moat' system to stop cats entering the wetlands and keep people to formed access tracks. Working with community groups to instigate a predator control programme throughout the Styx River/Puharakekenui mouth area. Examining options for managing the empoldered (*separated from surrounding water by stopbanks*) and moribund (*inactive/obsolescent*) 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.	Waimakariri/Styx Rivers confluence section, pages 74 to 77.	Not indicated.
P6	Investigate constructing a public access board walk over the Brooklands Lagoon/ Te Riu o Te Aika Kawa mudflat between the end of Harbour Road and the Styx River/ Puharakekenui mouth.	This area of the estuary is vested in the Crown upon residential land subdivision and is within the Coastal Marine Area.	Styx River/ Puharakekenui corridor section, pages 78 to 80.	Not indicated.
P7	Implement required action in the City Plan to stop lengths of legal road alongside the lower Styx River/Puharakekenui.	Areas to vest with the Council as Local Purpose (Esplanade) Reserve and to be classified as such under the Reserves Act 1977.	As above.	Internalised.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
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.		Styx River/ Puharakekenui corridor section, pages 78 to 80.	Not indicated.
P9	Seek to protect the Styx Ponding Area from urban development and have it remain essentially as pasture.	Tall vegetation in this area will exclude the bird species reliant on it as habitat. Recommendation for 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. Also, advocate that drainage in the Styx Ponding Area not be improved, as this will reduce habitat value.	As above.	None.
P10	Change the classification of the recreation reserve in Mid Seafield Park to scenic reserve.	Reserves Act 1977 process.	Mid/North Seafield Park section, pages 81 to 83.	Internalised.
P11	Declare the parcel of land at the North Seafield Park entrance off Harbour Road as scenic reserve.	Reserves Act 1977 process.	As above.	Internalised.
P12	Survey the eastern boundary of Mid/North Seafield Park.		As above.	Not indicated.
P13	Stop legal road within Mid/North Seafield Park and add to the scenic reserve.	Also accretion added to legal road.	As above.	Internalised.
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 are located.		Brooklands Lagoon/ Te Riu o Te Aika Kawa section, pages 84 to 89.	None.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
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).		Brooklands Lagoon/ Te Riu o Te Aika Kawa section, pages 84 to 89.	None.
P16	Consider developing a new walkway from Heyders Road along the eastern side of the lower Brooklands Lagoon/Te Riu o Te Aika Kawa.		As above.	Not indicated.
P17	Consider erecting an observation platform/ bird hide on the possible walkway referred to above.		As above.	Not indicated.
P18	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 values.		As above.	None.
P19	Improve public awareness of the special values of the Brooklands Lagoon/Te Riu o Te Aika Kawa area.		As above.	Not indicated.
P20	Protect from damage the saltmarshes and salt meadows on the western edge of Brooklands Lagoon/Te Riu o Te Aika Kawa.	Restore and enhance destroyed or severely degraded saltmarsh and salt meadow habitats.	As above.	Not indicated.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
P21	Investigate excavating several shallow ponds within the dune areas alongside Brooklands Lagoon/Te Riu o Te Aika Kawa to provide additional bird habitat.		Brooklands Lagoon/ Te Riu o Te Aika Kawa section, pages 84 to 89.	Not indicated.
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.		As above.	Not indicated.
P23	Establish monitoring sites 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 area of saltmarsh vegetation is increasing, eroding or remaining stable.	As above.	Not indicated.
P24	Facilitate process to transfer administration of Brooklands Spit/Kairaki to the Council.	Transfer of Environment Canterbury administered river protection reserve, and stopped legal road, to the Council for addition to scenic reserve.	Coastal strip section, pages 90 to 94.	Internalised.
P25	Initiate procedures to have the part of the Crown land area at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa transferred to the Council.	Involves the part of the Crown land above the Mean High Water Springs mark, and for this to be added to scenic reserve.	As above.	Internalised.
P26	Protect and manage Brooklands Spit/ Kairaki as one landscape/ecological unit.		As above.	Internalised.
P27	Restore nesting and roosting habitat for coastal/wetland birds on Brooklands Spit/ Kairaki.	Removing invasive exotic vegetation in selected parts of the spit, recontouring sand dunes to provide the flatter dune crests and wider interdune basins that most ground nesting coastal/wetland bird species require, and replacing marram grass with native spinifex and pingao to help maintain these better dune shapes.	As above.	Not indicated.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
P28	Undertake protective measures for beach nesting birds.	Such as pest control, indication of safe vehicle routes and temporary beach reconstruction.	Coastal strip section, pages 90 to 94.	Not indicated.
P29	Remove invasive wilding pines near the inner tip of Brooklands Spit/Kairaki.	A complex of small tidal creeks, salt meadow and saltmarsh occurs here and the pines are limiting bird usage of the site.	As above.	Not indicated.
P30	Ensure more effective control of human recreation 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 the inter-dune basins and saltmarshes).	As above.	Not indicated.
P31	Improve public awareness of the special values of the Brooklands Spit/Kairaki area.	Also promote initiatives for ecological and landscape enhancement of the Spit.	As above.	Internalised.
P32	Include parts of adjacent Council administered areas as part of Spencer Park.	Expanding the area described as Spencer Park to include parts of Seafield Park, Spencer Beach Park and possibly Bottle Lake Forest Park, and consider re-naming these parts as Spencer Park.	Spencer Park/South Seafield Park section, pages 95 to 97.	Internalised[2].
P33	All parts of South Seafield Park are zoned Open Space 1 (O1) in the Christchurch City Plan.	Changing the City Plan zoning for the relatively recently acquired (in 2002) addition to Seafield Park extending into Spencerville from Living RS (Rural Settlement) (LRS) to Open Space 1 (Neighbourhood Recreation and Open Space) (O1) to appropriately reflect its development and use as local park space.	As above.	Internalised.
P34	Continue to evolve the play area at Spencer Park to retain its mantle as a key destination for family recreation in Christchurch.		As above.	Internalised.
P35	Beacon Street wetland restoration, Mid Seafield Park.	Restoration planting of 4.4 hectares of forest, wetland restoration planting, development of one kilometre of paths, installation of signage, vehicle gates, car park upgrade and a bird-watching hide.	Mid Seafield Park landscape concept, pages 106 to 110.	$377,100 capex, $30,000 annual opex.

[2] Business as usual – any costs are covered by existing operational budgets.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
P36	Earlham Street Dune Slack/Dune Ridge restoration, Mid Seafield Park.	One hectare of wetland restoration planting, wetland path development, road reserve (previous) path development, boardwalk, signage and interpretation, car parking bays, Earlham Street tree planting and restoration planting of 2.9 hectares of shrubland.	Mid Seafield Park landscape concept, pages 106 to 110.	$191,420 capex, $14,000 annual opex.
P37	Restoration and development south of Earlham Street, Mid Seafield Park.	Three hectares of wetland restoration planting, restoration planting of 4.4 hectares of forest, 500 metres of wetland path construction, signage and interpretation.	As above.	$186,550 capex, $17,000 annual opex.
P38	Restoration and development between Earlham and Beacon Streets, Mid Seafield Park.	Development for the WWII Home Guard Rifle Range area, restoration planting of 14.3 hectares of forest, three hectares of wetland restoration planting, toilet installation, 1,500 metres of path construction, signage and interpretation and reintroduction of the fern bird.	As above.	$827,800 capex, $56,000 annual opex.
P39	Development of the entrance area of the Spencer Park/South Seafield Park area.	Ranger's office upgrade, old shop and house removal, shop/house site restoration, new roading layout, signage and interpretation, road removal, car parking development and path development.	Spencer Park and South Seafield Park landscape concept, pages 111 to 117.	$651,800 capex, $15,000 annual opex.
P40	Playground extension, playground shade sails, paddling pool upgrade, planting of 100 specimen trees, ten electric barbeques, restoration of original shelter and path construction.		As above.	$237,000 capex, $12,000 annual opex.
P41	Development of the south-east picnic ground area (four hectares) of Spencer Park.	Pine removal, planting, paths, mountain bike track development.	As above.	$159,200 capex, $10,000 annual opex.

INDEX	PROPOSAL	INCLUDES	PLAN REFERENCE	POSSIBLE COSTS
P42	Re-development of the road access to beach areas in Spencer Park.	400 metres of new roading, 300 metres of paths, signage, car parking, and fencing.	Spencer Park and South Seafield Park landscape concept, pages 111 to 117.	$253,000 capex, $9,000 annual opex.
P43	Development of the central ponding area (10 hectares) in Spencer Park.	Road removal/excavation of ponds, planting, one kilometre of paths, 350 metres of mountain bike track, 300 metres of fencing and a pedestrian bridge.	As above.	$365,250 capex, $20,000 annual opex.
P44	Development of the southern Brooklands Lagoon/Te Riu o Te Aika Kawa margin (2.3 hectares) in Seafield Park.	Planting, 350 metres of paths, 350 metres of mountain bike track, pine tree removal and an estuary boardwalk.	As above.	$342,250 capex, $17,000 annual opex.
P45	Development of the horse park, and wider area, in Seafield Park.	Retrofit of Seafield Park Hall, planting and 1,250 metres of paths.	As above.	$345,000 capex, $25,000 annual opex.
P46	Development of the coastal forest strip (10 hectares) in Spencer Park and Spencer Park Beach.	Planting and 800 metres of mountain bike track.	As above.	$198,000 capex, $12,000 annual opex.
P47	Development of the wilderness area (20 hectares) in Spencer Park.	Planting and 700 metres of mountain bike track.	As above.	$164,100 capex, $12,000 annual opex.

Styx River/Puharakekenui just up stream of the tidal gates and showing native plantings and impounded freshwater.

RESOURCE SECTION

Dense stands of grassy club sedge (foreground), three-square and tall fescue grass close to the banks of the Styx River/Puharakekenui.

1 THE PLACE

The planning area addressed by this master plan covers a five kilometre long, one kilometre wide coastal landscape at the northeastern corner of the greater Christchurch urban/rural area.

It encompasses a variety of features, including public parks, a beach zone, a coastal estuary (Brooklands Lagoon/Te Riu o Te Aika Kawa), natural values, exotic forest and adjoining rural and expanding residential areas.

The key geographic components are:

Spencer and southern Seafield Parks – the popular family recreational hub located at the southern end of the area.

Brooklands Lagoon/Te Riu o Te Aika Kawa – a prominent coastal estuary, fringed with saltmarsh[3] and contained within sand dune ridges that run along the length of the area.

Lower Styx River/Puharakekenui corridor – the meandering waterway defining the western edge of the area.

Waimakariri River – the major river at the northern end of the area.

Sourced from Land Information New Zealand data. Crown Copyright Reserved.

Image (cropped) sourced from NASA.

Image (cropped) sourced from Image Science and Analysis Laboratory, NASA-Johnson Space Centre. "The Gateway to Astronaut Photography of Earth." ‹http://eol.jsc.nasa.gov/›.

[3] A saltmarsh is a special type of wetland ecosystem that naturally establishes in the upper tidal zone of sheltered estuarine mudflats.

2 INTRODUCTION AND CONTEXT

There has not previously been a truly integrated parks planning exercise undertaken for the planning area that is able to properly account for the wide range of natural area, open space and recreation issues and values. In addition, the area is of strong significance to Ngāi Tahu. Instead, planning in the past has focused on just part of the area and covered a limited set of values and uses. This resulted in a management plan for Spencer Park approved in 1982 and a draft management plan for Seafield Park prepared in 1995 but the latter was never approved for public consultation. In addition, a management plan for Bottle Lake Forest Park to the south was approved by the Council in 1997. This was all work that was undertaken by the Council's then Parks Unit. Also, at about the same time, work commenced on an area plan for wider community and infrastructure values such as roading and storm water treatment in the area by the then Environmental Policy and Planning Unit. That work continues today by the Strategic Planning Unit.

There is also a framework of strategic district/regional planning affecting the area that has been facilitated by the Council (Christchurch City Plan (the City Plan)) and the other resource management authorities, Environment Canterbury (Regional Coastal Environment Plan for the Canterbury Region) and the Department of Conservation (Canterbury Conservation Management Strategy).

Engagement by the community and community representatives, Ngāi Tahu, land and resource administrators and interest groups in planning for the open space and natural values for the area has been relatively sporadic, dis-jointed and site specific since 2003, when planning issues were first raised for discussion. There have been multi-agency/elected representative seminars and on-site meetings and a summer (2003/2004) user survey undertaken.

The way forward is for coordinated and integrated planning for this area, which is intended to be led through this master plan. The plan highlights the values of the area and the issues affecting these values, considers these in the context of community and environmental needs, and proposes actions to achieve the best development, management and care of the area in the future.

Achieving a sustainable balance between (1) the development/growth of the area and the consequent environmental pressures, access and recreational use and (2) the protection, enhancement and restoration of natural values and protection and enhancement of tangata whenua values is a challenge for the managers of this land and environment. This master plan plays a part in addressing this, in the context of public parks and open space, through identification of the values in, potential threats to, and options available to Council to manage such places in the planning area. The plan serves as a basis for consultation with local communities, tangata whenua and users of the area on matters relating to public parks and open spaces in the area and specifically for those parks and open space administered by the Council. For those parts of the area under the administration of other government bodies, it is a matter of Council advocating actions to those bodies, including feeding back the views of the local communities, tangata whenua and users.

The values, issues and uses vary over the planning area. The more critical parts are those which currently have a predominance of natural values. The Key Planning Area Elements section of the master plan considers the values, issues and uses for parts of the area.

3 PLANNING DRIVERS

- Dated and un-approved management plans.
- Increasing adjoining residential development and expanding population in the area.
- Increasing demand for and provision of new recreational facilities and opportunities.
- Consequent increasing intensity of public access to and use of the recreational/natural areas.
- Growing number of visitors to the public areas, thereby increasing the potential risk of damage to the natural values of the area.
- Need for rationalisation of the facilities provided (including roads, buildings and car parks) to ensure optimum and sustainable provision of these.
- The imperative to co-ordinate and integrate the multi-area, multi-value and multi-agency planning for the area's public open space resource.
- The need to protect and manage natural values and processes.
- To take into account, in significant decisions for the area, the relationship of Māori and their culture and traditions with their ancestral land, water, sites, waahi tapu, valued flora and fauna, and other taonga.

4 THE URBAN AND REGIONAL CONTEXT

The Brooklands Lagoon/Te Riu o Te Aika Kawa Area Parks Master Plan is just one of a suite of several overlapping plans, strategies, policies, regulations, bylaws and other planning and regulatory documents that cover the master plan planning area, as well as the wider Christchurch and Canterbury areas. These have been prepared by the Council, Environment Canterbury and the Department of Conservation. The main documents are listed on pages 139 to 141.

The master plan supports other operative planning and regulatory documents. It summarises some key elements of these documents that are relevant to the planning area, highlights key issues concerning public natural/recreational open space values, incorporates tangata whenua values and poses potential solutions, along with some initiatives for consideration.

As the planning area is largely in the coastal environment, planning and regulatory documents addressing the values and use of that zone hold particular sway, such as the Regional Coastal Environment Plan.

5 AREA ELEMENTS

The elements of the overall planning area include:

- Several public parks.
- Three public land/resource administrating bodies.
- Brooklands Lagoon/Te Riu o Te Aika Kawa coastal estuary.
- Waterway corridors – the lower Styx River/Puharakekenui and the mouth of the Waimakariri River.
- A long beach zone.
- Forested areas.
- A dynamic physical coastal environment.
- Expanding residential development.
- Values and sites of significance to tangata whenua (Māori Reserve, wāhi tapu, mahinga kai).

6 PLANNING PRINCIPLE

For promotion of a future regional park for the Brooklands Lagoon/Te Riu o Te Aika Kawa area of public parks and open space that is based on a natural coastal environment[4], protects the values[5] present, promotes restoration of habitat and other values, and provides for public access and recreational use that does not compromise these values and is appropriate for each distinct part of the area (these are identified as key planning area elements 22 to 27 on page 82).

To support this, it is important that there is:

- An integrated approach taken to the regulation and management of activities in, and uses of, the area, and in the protection and restoration of values.
- Recognition and management of existing uses of the area, and planning to protect and conserve values, in the context of future adjoining residential growth and development.
- Recognition of, and provision for, the tangata whenua's cultural and spiritual relationships with the area and its natural environment.

7 VISION

- The natural, landscape, cultural and recreational values of the Brooklands Lagoon/Te Riu o Te Aika Kawa area are protected and enhanced by the integrated management of parks and open spaces.

8 PLANNING OBJECTIVES

- Integrate the planning for a diversity of landforms, values and recreation.
- Address a number of outstanding parks and open space issues for the Brooklands Lagoon/Te Riu o Te Aika Kawa area.
- Establish an ongoing planning and research programme.
- Identify and develop linkages.
- Take into account environmental forces (flooding, sea level rise).

[4] Centred on a large natural estuary, which is flanked by vegetated dune ridges.

[5] There are significant ecological and landscape values here, such as the saltmarsh and coastal birdlife and habitat, as well as important cultural and spiritual associations and values for the tangata whenua.

Photos (left)
Saltmarsh vegetation of the lower marsh (top) and upper saltmarsh (bottom) zones of Brooklands Lagoon/Te Riu o Te Aika Kawa at high tide. The middle photo shows sand dunes in northern Seafield Park.

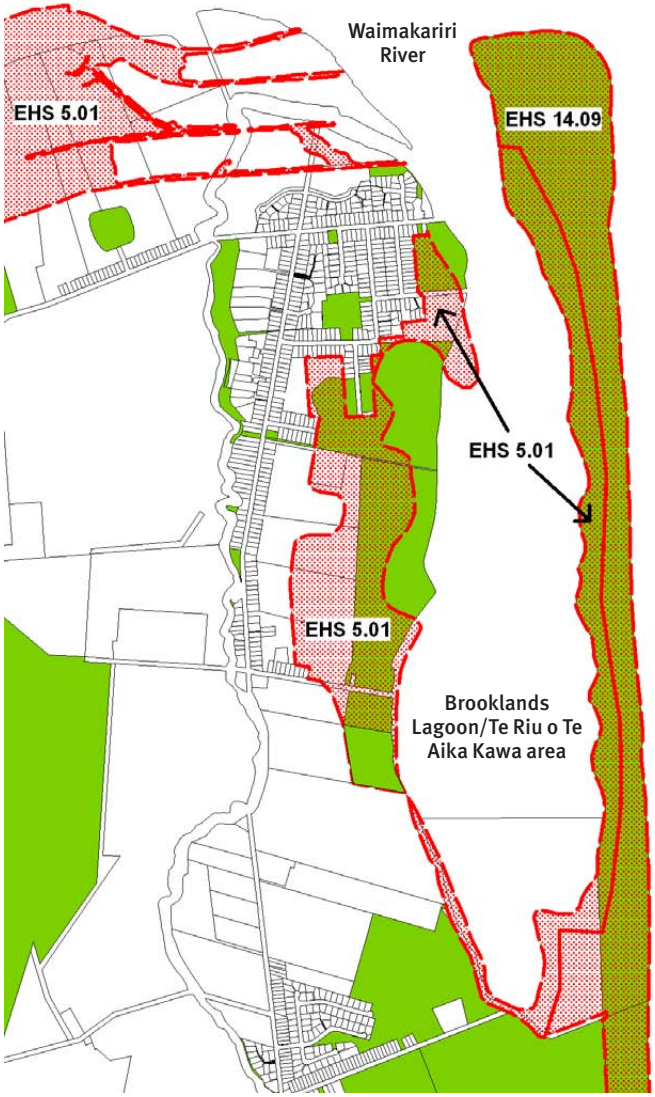
9 VALUES

- Important natural and wildlife areas (the coastal strip, Brooklands Spit/Kairaki and northern part of Seafield Park are in Ecological Heritage Sites (EHS)).
- Tangata whenua values.
- A scenic and varied coastal landscape.
- Opportunities for education.
- A range of places and opportunities for outdoor recreational experiences.

9.1 Ecological Heritage Sites

These are sites identified in the Christchurch City Plan to protect, and where appropriate restore, areas of ecological heritage, in order to sustain the flora and fauna dependent on them.

These sites represent the majority of the pre-European nature of Christchurch. They are given protection under the City Plan in order that a representative sample of Christchurch nature is maintained for future generations and for their own intrinsic worth.



Two ecological heritage sites are relevant for the area covered by this master plan:

EHS 5.01[6]

Wetland and riparian areas around Brooklands Lagoon/ Te Riu o Te Aika Kawa and in the confluence area of the Styx River/Puharakekenui and the Waimakariri River. The vegetation type is saltmarsh.

EHS 14.09

Covers the coastal dunes from the Waimakariri River south to the tip of the South Brighton spit. The vegetation type is coastal dune grassland.

[6] There are significant areas of saltmarsh not included in this ecological heritage site (EHS) because they lie in the Coastal Marine Area (below Mean High Water Springs) and are outside the jurisdiction of the Christchurch City Plan. These areas, though, have equivalent or even higher ecological value to those lying within the EHS and warrant a corresponding level of protection.

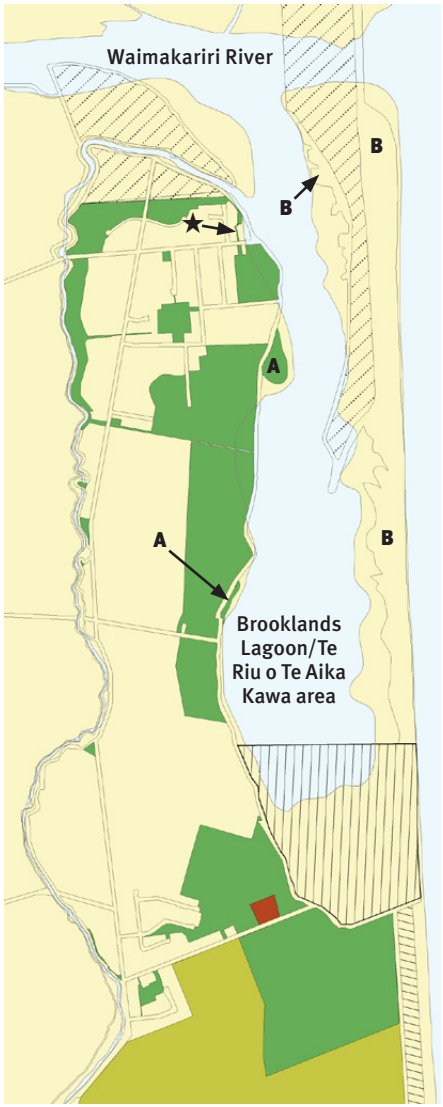
10 LAND TENURE

KEY

- Council parks, plus accretion to legal road.
- Public easement for foot access [see note on page 112].
- Environment Canterbury reserves for river protection purposes.
- Crown land not administered by the Department of Conservation.
- Recreation reserve administered and managed by the Christchurch City Council (land previously with the Department of Conservation).
- Hibburt Park, controlled and managed by the Associated Churches of Christ.
- Bottle Lake Forest - the land is administered and managed by the Christchurch City Council, the trees owned by the Selwyn Plantation Board Limited.
- Legal road (formed and unformed) administered by the Council.
- **A** Accretion to legal road.
- **B** Legal road to be stopped.

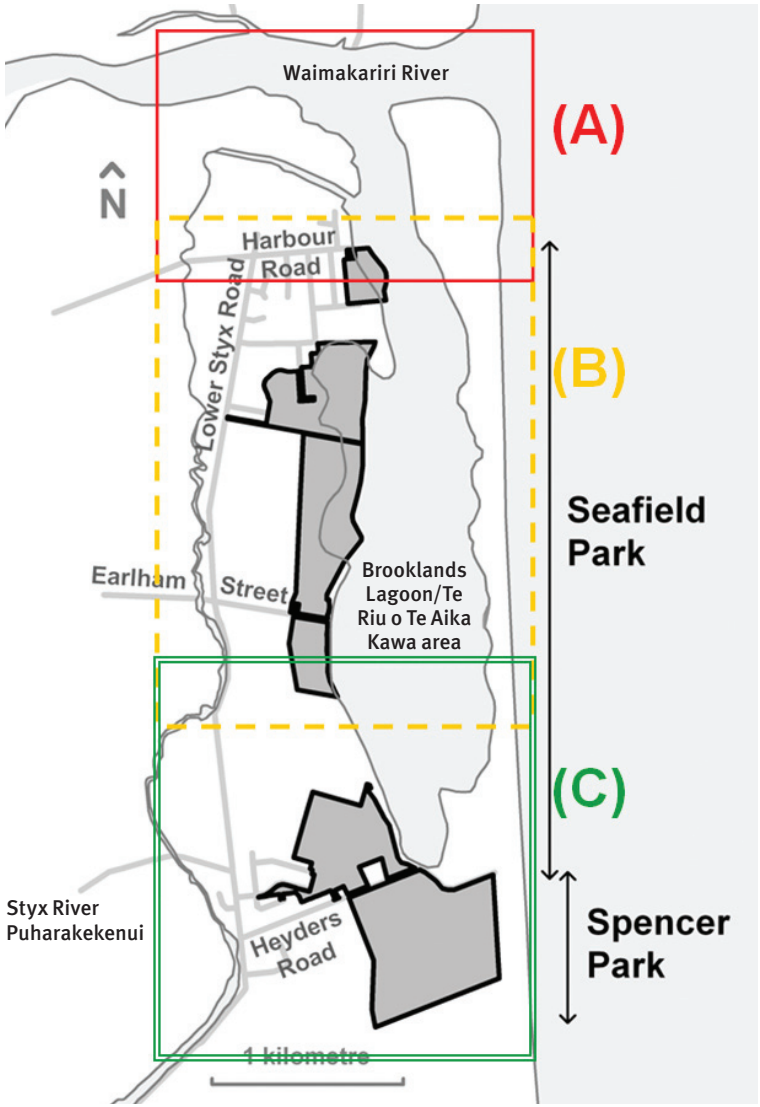
Waimakariri River Brooklands Lagoon/ Te Riu o Te Aika Kawa area

Diagrammatic representation of the boundaries of the rivers, lagoon and the sea only – does not represent the Mean High Water Springs (MHWS) line, which defines the Coastal Marine Area (CMA) – therefore, areas vested in the Crown pursuant to the Foreshore and Seabed Act 2004 are not shown.



Only public land is shown

Areas vested in the Crown pursuant to the Foreshore and Seabed Act 2004 are not shown.



11 LAND STATUS

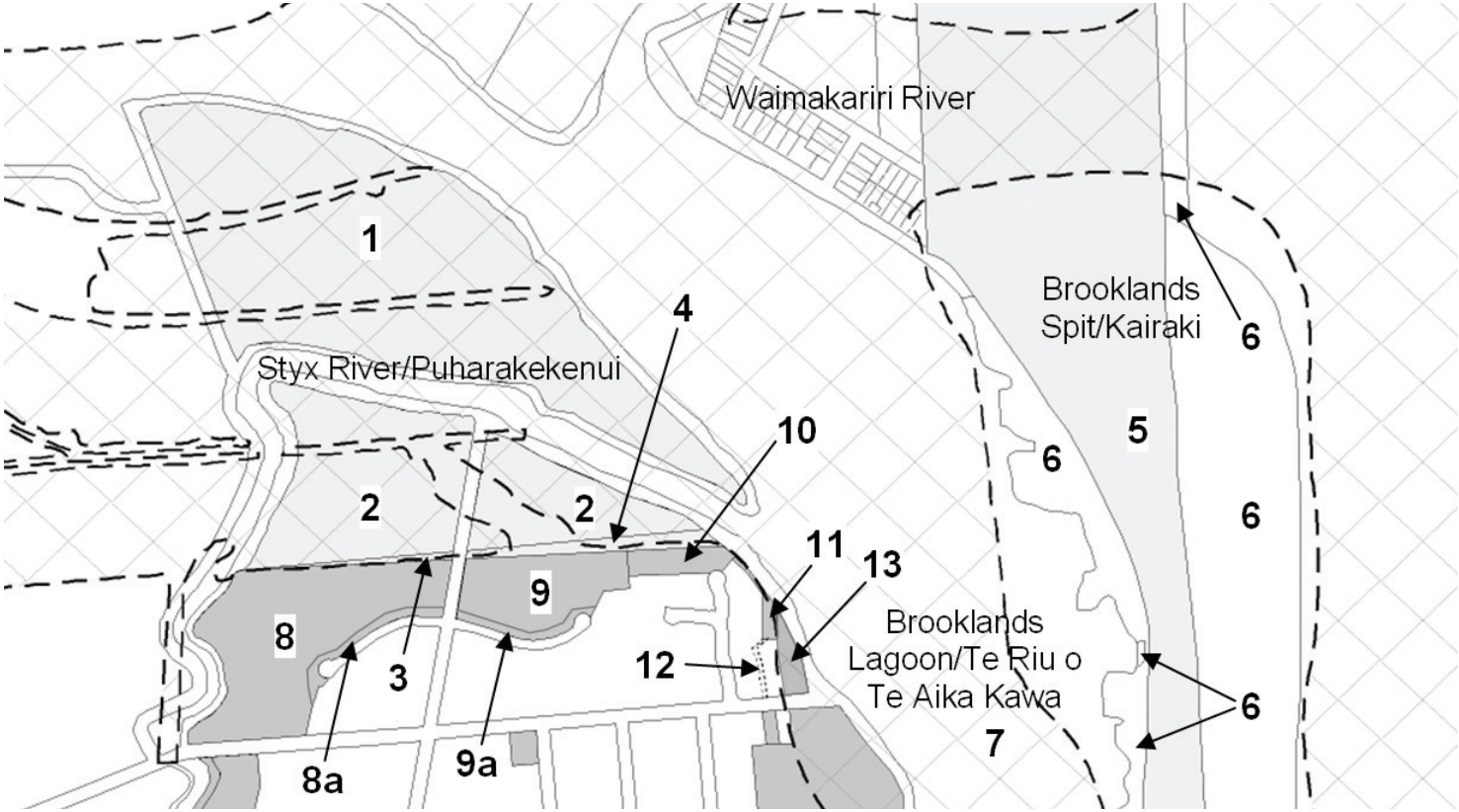
Solely to enable maps of cadastral information to be clearly shown in sufficient detail, the elongated planning area is split into three parts:

(A) River/lagoon confluence (go to page 28)

(B) Brooklands Lagoon/Te Riu o Te Aika Kawa margin (go to page 32)

(C) Spencer Park area (go to page 39)

11.1 River/lagoon confluence (A)



MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
1*	Reserve 4231	19.6272	Land set aside by the Governor-General of the Dominion of New Zealand on 14 May 1929 permanently as a reserve for river protection purposes (Gaz 1929 p1451[7]).	N/A	Part Waimakariri River Regional Park	Environment Canterbury, Department of Conservation
2*	Part Reserve 4234	9.6922				
3*	Part Rural Section 7428	0.1821	Land declared by the Governor-General of the Dominion of New Zealand on 4 August 1932 to be taken for the purposes of river conservation works generally, and for river works, and to be vested in the Waimakariri River Trust[8] (Gaz 1932 p1766).	N/A	Part Waimakariri River Regional Park	Environment Canterbury, Department of Conservation
4*	Part Rural Section 7428	0.6804				
5*	Part Reserve 4060	47.8287	Land set aside, under the Land Act 1924, by the Governor-General of the Dominion of New Zealand on 25 October 1932 permanently as a reserve for river protection purposes (Gaz 1932 p2167). Subsequently vested, under the Public Reserves, Domains and National Parks Act 1928, by the Governor-General on 15 December 1932 in the Waimakariri River Trust, in trust, for river protection purposes (Gaz 1932 p2786). **P35 Propose for the part of this reserve above MHWS to be transferred to the Council and classified as scenic or recreation reserve.**	N/A	Part Brooklands Spit/ Kairaki	Environment Canterbury, Department of Conservation
6	Sections 1 to 8 Survey Office Plan 340420	56.7807	Legal road to be stopped. **P35 Propose for this land to be classified as scenic or recreation reserve in conjunction with the rest of Brooklands Spit/Kairaki.**	N/A	Part Brooklands Spit/ Kairaki	
7	Coastal Marine Area		The Coastal Marine Area is the foreshore, seabed, and coastal water, and the air space above the water, between the outer limits of the territorial sea (twelve nautical miles) and the line of Mean High Water Springs (MHWS[9]). On the maps in the Regional Coastal Environment Plan for the Canterbury Region 2005, MHWS is shown as an indicative line only[10].	N/A	Part Brooklands Lagoon/Te Riu o Te Aika Kawa	Department of Conservation, Environment Canterbury

[7] New Zealand Gazette: Year – 1929, page 1451.
[8] Set up to deal with the with drainage and flooding in the Waimakariri River Trust District, which was established under the Waimakariri River Improvement Act 1922. The Trust was dissolved on 13 February 1947 and the powers and functions of the Trust transferred to the North Canterbury Catchment Board under the Soil Conservation and Rivers Control Amendment Act 1946.
[9] Generally, MHWS is the line of the average of the highest tides (known as spring tides).
[10] Description adapted from the Regional Coastal Environment Plan for the Canterbury Region 2005 (Section 1.3, page 1-2).

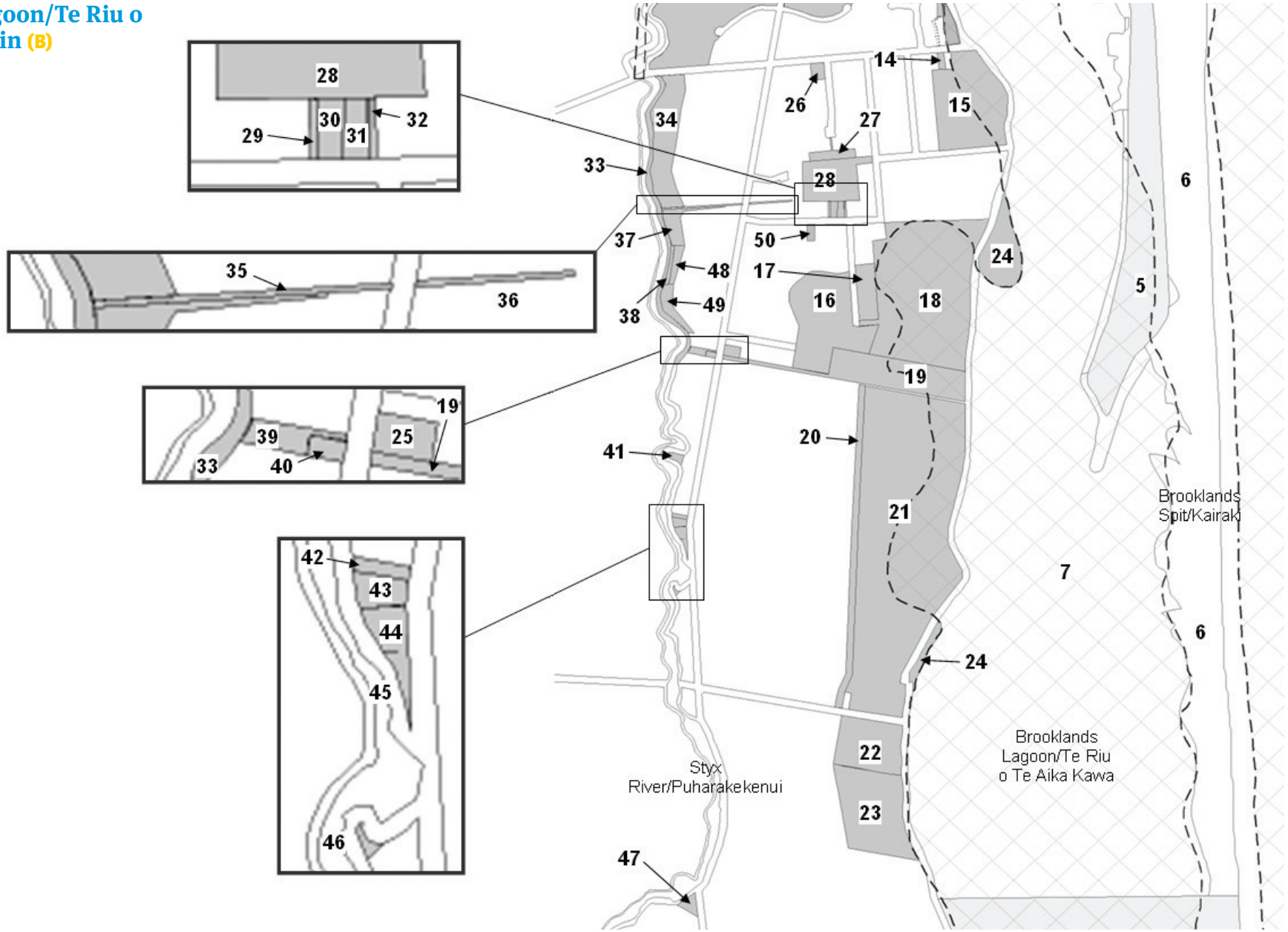
* With the enactment of the Foreshore and Seabed Act 2004 vesting ownership and management of land that is public foreshore and seabed (that is, land lying below Mean High Water Springs and contained within the Coastal Marine Area) in the Crown, part of this land parcel (cross-hatched on the accompanying plan) is now Crown land and not subject to classification under the Reserves Act 1977.

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
8	Lot 34 Deposited Plan 380529	5.5622	Land vested on deposit upon subdivision for Scenic Reserve, subject to Section 19(1)(b) of the Reserves Act 1977, in the Council on 23 May 2007.	Not classified	Part Styx River Mouth Conservation Reserve	Council
9	Lot 33 Deposited Plan 380529	2.2368				
8a	Lot 38 Deposited Plan 380529	0.3928	Land vested on deposit upon subdivision for Local Purpose (Utility) Reserves in the Council on 23 May 2007.	Not classified	Part Styx River Mouth Conservation Reserve	Council
9a	Lot 39 Deposited Plan 380529	0.3065				
10	Lot 28 Deposited Plan 311066	0.5937	Land vested on deposit upon subdivision for Recreation Reserve in the Council on 7 November 2002.	Not classified	Part Styx River Mouth Conservation Reserve	Council
11	Lot 30 Deposited Plan 311066	0.1621	Land vested on deposit upon subdivision for Local Purpose (Esplanade) Reserve in the Council on 7 November 2002.	Not classified	Part Styx River Mouth Conservation Reserve	Council
12	Easement A over Lot 27 Deposited Plan 311066		Right of way on foot in gross over privately owned land, granted to the Council on 7 November 2002 (Note: The Council on 14 May 2009 resolved to surrender this easement (see page 112 of this plan)).	N/A	Pedestrian access-way to the Styx River Mouth Conservation Reserve	
13*	Lot 29 Deposited Plan 311066	0.3760	Land vested on deposit upon subdivision in Her Majesty the Queen on 7 November 2002, pursuant to Section 237A of the Resource Management Act 1991. Certificate of title not issued.	N/A	Part Brooklands Lagoon/Te Riu o Te Aika Kawa area	Department of Conservation, Environment Canterbury

* With the enactment of the Foreshore and Seabed Act 2004 vesting ownership and management of land that is public foreshore and seabed (that is, land lying below Mean High Water Springs and contained within the Coastal Marine Area) in the Crown, part of this land parcel (cross-hatched on the accompanying plan) is now Crown land and not subject to classification under the Reserves Act 1977.

Sand dunes of Spencer Park Beach showing wilding pines and silver poplar invading in the foreground.

11.2 Brooklands Lagoon/Te Riu o Te Aika Kawa margin (B)



MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
14	Lot 14 Deposited Plan 7667	0.1012	Fee simple title, half transferred to the Council on 7 July 1993 and the remaining half on 22 November 2004. **P18 Propose for the Council to declare by resolution, under Section 14(1) of the Reserves Act 1977, that this land parcel is classified scenic reserve and added to Seafield Park.**	N/A	Northern entrance-way to Seafield Park (currently not part of the Park)	Council
15*	Lot 2 Deposited Plan 27026	5.4076	Classified as Scenic Reserve (Section 19(1)(a) of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple title, originally vested on deposit as a Reserve for Recreation in the Waimairi County Council, subject to the Reserves Act 1977, on 2 December 1969.	Scenic Reserve	Part Seafield Park	Council
16	Lot 10 Deposited Plan 342547	5.1840	Classified as Scenic Reserves (Section 19(1)(a) of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple titles, originally vested on deposit as Local Purpose (Environment and Habitat Protection) Reserves in the Council, subject to the Reserves Act 1977, on 15 March 2005.	Scenic Reserve	Part Seafield Park	Council
17	Lot 8 Deposited Plan 342547	0.9581				
18*	Lot 1 Deposited Plan 44685	12.5000	Classified as Scenic Reserve (Section 19(1)(a) of the Reserves Act 1977) by resolution of Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple title, originally vested on deposit as a Recreation Reserve in the Waimairi County Council on 16 January 1982.	Scenic Reserve	Part Seafield Park	Council

* With the enactment of the Foreshore and Seabed Act 2004 vesting ownership and management of land that is public foreshore and seabed (that is, land lying below Mean High Water Springs and contained within the Coastal Marine Area) in the Crown, part of this land parcel (cross-hatched on the accompanying plan) is now Crown land and not subject to classification under the Reserves Act 1977.

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
19*	Reserve 3748	4.0469	The earlier vesting of this land parcel in the Waimakariri District Council was cancelled and it was changed from being a reserve for a site for harbour board buildings to being a Recreation Reserve classified under the Reserves Act 1977 and vested in the Christchurch City Council, in trust, for the purpose of a recreation reserve on 8 January 1990 (Gaz 1990 p143). **Propose for the Council to declare by resolution, under Section 14(1) of the Reserves Act 1977, that the classification of this reserve is changed to scenic reserve.**	Recreation Reserve	Part Seafield Park	Council
20	Lot 9 Deposited Plan 44428	1.9500	Classified as Scenic Reserve (Section 19(1)(a) of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple title, originally vested on deposit as a Local Purpose (Road) Reserve in the Waimairi County Council on 18 September 1981.	Scenic Reserve	Part Seafield Park	Council
21*	Lot 1 Deposited Plan 44428	24.7960	Classified as Scenic Reserve (Section 19(1)(a) of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16 subsection (2A) of the Act. Fee simple title, originally vested on deposit as a Recreation Reserve in the Waimairi County Council on 18 September 1981.	Scenic Reserve	Part Seafield Park	Council
22	Lot 8 Deposited Plan 44428	2.9550	Classified as Scenic Reserves (Section 19(1)(a) of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple title, originally vested on deposit as Recreation Reserves in the Waimairi County Council (for Lot 8) on 18 September 1981 and Waimairi District Council (for Lot 2) on 29 July 1988 [11].	Scenic Reserve	Part Seafield Park	Council
23	Lot 2 Deposited Plan 52199	4.8413				

*With the enactment of the Foreshore and Seabed Act 2004 vesting ownership and management of land that is public foreshore and seabed (that is, land lying below Mean High Water Springs and contained within the Coastal Marine Area) in the Crown, part of this land parcel (cross-hatched on the accompanying plan) is now Crown land and not subject to classification under the Reserves Act 1977.

[11] On 1 April 1982, the Waimairi County Council became the Waimairi District Council, as provided for by a Local Government Act.

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
24	Legal road		These are areas of accretion alongside legal road. When land along the Mean High Water Springs (MHWS) of the sea adjoins a legal road the accretion is deemed to be legal road pursuant to Section 315(4)[12] of the Local Government Act 1974. The Foreshore and Seabed Act 2004 does not remove provisions under the Local Government Act 1974 for accretions of land in the Coastal Marine Area (CMA) (that is, below MHWS) to be added to land that is under control of the local authority.	N/A		Council
25	Res 4119 (DP 7061)	0.1517	Occupied and utilised wholly by the Brooklands Playcentre.	N/A	Brooklands Playcentre Reserve	Council
26	Reserve 4085 (Lot 41 Deposited Plan 6159, being part Rural section 6540)	0.2023	Vested originally in the Waimairi County Council, in trust, for public purposes by the Minister of Lands, pursuant to the Reserves and Domains Act 1953, on 15 December 1961 (Gaz 1961 p1980). **Propose for the Council to classify, by notice in the New Zealand Gazette, as recreation reserve under Section 16(1) of the Reserves Act 1977.**	Not classified	Harbour Reserve	Council
27	Lot 25 Deposited Plan 74992	0.3663	Fee simple title vested on deposit as a Recreation Reserve in the Council on 28 May 1997. **Propose for the Council to classify by resolution, under Section 16(2A) of the Reserves Act 1977, this land parcel as recreation reserve.**	Not classified	Part Brooklands Domain	Council
28	Lot 116 Deposited Plan 8957 and Part Lot 1 Deposited Plan 11734	2.1246	Fee simple title vested in the Waimairi County Council on 27 June 1967. **Propose for the Council to declare by resolution, under Section 14(1) of the Reserves Act 1977, that the land parcel is classified as recreation reserve.**	N/A	Part Brooklands Domain	Council

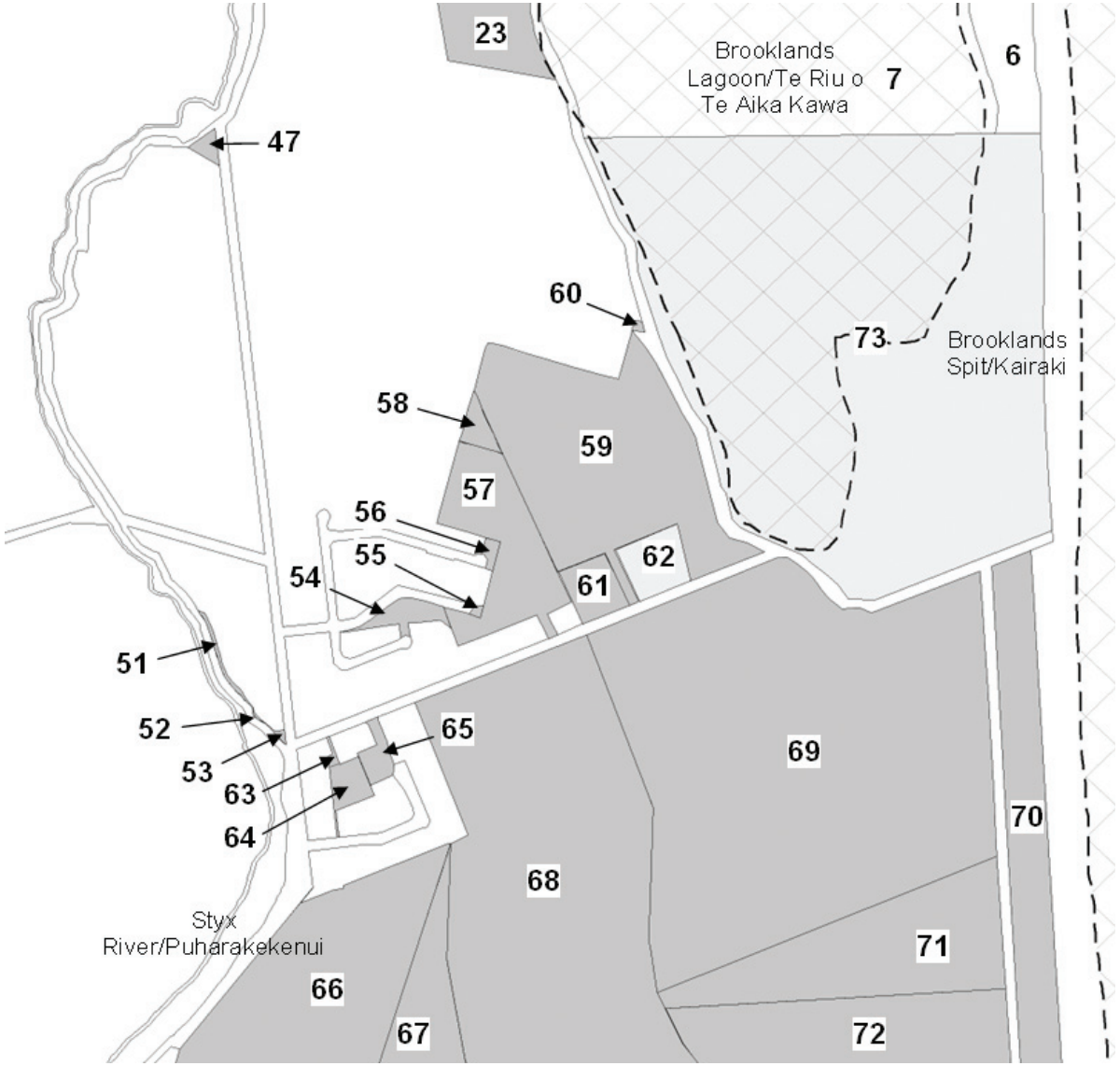
[12] Local Government Act 1974: Section 315 (Interpretation), Subsection (4) - Every accretion to any road along the bank of a river or stream or along the mean high-water mark of the sea or along the margin of any lake caused by the action of the river or stream or of the sea or lake shall form part of the road.

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION /MANAGEMENT
29	Lot 11 Deposited Plan 77045	0.0325	Fee simple titles vested on deposit as Recreation Reserves in the Council, subject to the Reserves Act 1977, on 31 March 2000. **Propose for the Council to classify by resolution, under Section 16(2A) of the Act, this land parcel as recreation reserve.**	Not classified	Part Brooklands Domain	Council
30	Lot 12 Deposited Plan 77045	0.1061				
31	Lot 156 Deposited Plan 8475	0.1059	Fee simple title vested on deposit as a Local Purpose Reserve (Road) in the Council, subject to the Reserves Act 1977, on 18 May 2000. **Propose for the Council to declare, by resolution, to change the classification, under Section 24(1)(b) of the Act, of this land parcel to recreation reserve.**	Not classified	Part Brooklands Domain	Council
32	Lot 13 Deposited Plan 77045	0.0325	Fee simple title vested on deposit as Recreation Reserve in the Council, subject to the Reserves Act 1977, on 31 March 2000. **Propose for the Council to classify by resolution, under Section 16(2A) of the Act, this land parcel as recreation reserve.**	Not classified	Part Brooklands Domain	Council
33	Sec 1 Survey Office Plan 19785	1.1937	Esplanade Reserve, subject to the Reserves Act 1977. Previously road, stopped in 1997, pursuant to the Local Government Act 1974.	Not classified	Part Styx River (lower) Conservation Reserve	Council
34	Lot 23 Deposited Plan 332031	2.8875	Fee simple title vested on deposit as Recreation Reserve in the Council on 30 March 2004.	Not classified	Part Styx River (lower) Conservation Reserve	Council
35	Lot 1 Deposited Plan 59863	0.0977	Fee simple title held by the Council for the purpose of a Drain Reserve.	N/A	Part Styx River (lower) Conservation Reserve	Council

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
36	Lot 2 Deposited Plan 59863	0.0513	Fee simple title held by the Council for the purpose of a Drain Reserve.	N/A		Council
37	Lot 22 Deposited Plan 326204	0.6366	Fee simple title vested on deposit as Recreation Reserve in the Council on 24 November 2003.	Not classified	Part Styx River (lower) Conservation Reserve	Council
38	Lot 3 Deposited Plan 301138	0.1077	Fee simple title vested on deposit as Local Purpose (Esplanade) Reserve in the Council on 24 April 2001.	Not classified	Part Styx River (lower) Conservation Reserve	Council
39	Sections 2 and 3 Survey Office Plan 20162	0.0953 and 0.0202	Classified under the Reserves Act 1977 as Recreation Reserves (Gaz 2000 p663) on 23 March 2000.	Recreation Reserve	Part Lower Styx Reserve	Council
40	Section 1 Survey Office Plan 20162	0.0500	Classified under the Reserves Act 1977 as a Local Purpose (Utility) Reserve (Gaz 2000 p663) on 23 March 2000.	Local Purpose (Utility) Reserve	Part Lower Styx Reserve	Council
41	Reserve 4302 (Deposited Plan 6164)	0.0759	Fee simple title held as a Local Purpose (Boating) Reserve (unclassified) by the Council. Originally vested as a Boating Reserve in the Waimairi County Council in 1921.	Not classified	Part Styx River Boating Reserve	Council

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
42	Part Lot 125 Deposited Plan 6164	0.0506	Fee simple titles held by the Council. **Propose for the Council to declare by resolution, under Section 14(1) of the Reserves Act 1977, that these land parcels are classified local purpose (esplanade) reserves.**	N/A	Part Styx River Boating Reserve	Council
43	Lot 126 Deposited Plan 6164	0.1012				
44	Lot 127 Deposited Plan 6164	0.1012				
45	Reserve 4303 (Deposited Plan 6164)	0.0481	Fee simple titles held as Local Purpose (Boating) Reserves (unclassified) by the Council. Originally vested as Boating Reserves in the Waimairi County Council in 1921.	Not classified.	Part Styx River Boating Reserve	Council
46	Reserve 4304 (Deposited Plan 6164)	0.0177				
47	Lot 1 Deposited Plan 5048	0.2023	Fee simple title held by the Council.	N/A		Council
48	Lot 6 Deposited Plan 367740	0.2921	Fee simple title vested on deposit as Recreation Reserve in the Council on 7 December 2006.	Not classified.	Part Styx River (lower) Conservation Reserve	Council
49	Lot 21 Deposited Plan 326280	0.4757	Fee simple title vested on deposit as Recreation Reserve in the Council on 24 November 2003.	Not classified.	Part Styx River (lower) Conservation Reserve	Council
50	Lot 180 Deposited Plan 8475	0.1021	Fee simple title vested on deposit as a Local Purpose (Road) Reserve in the Council, subject to the Reserves Act 1977, on 18 May 2000.	Not classified.		Council

11.3 Spencer Park area (C)



MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
51	Lot 17 Deposited Plan 83580	0.1332	Fee simple title vested on deposit as Recreation Reserve in the Council on 15 December 2000.	Not classified.	Part Styx River Bank Reserve	Council
52	Lot 16 Deposited Plan 82960	0.0122	Fee simple title vested on deposit as Recreation Reserve in the Council.	Not classified.	Part Styx River Bank Reserve	Council
53	Lot 18 Deposited Plan 82960	0.0415	Fee simple title vested on deposit as Recreation Reserve in the Council.	Not classified.	Part Styx River Bank Reserve	Council
54	Lot 78 Deposited Plan 311069	0.6780	Classified as Recreation Reserves (Section 17 of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple title, originally vested on deposit as Recreation Reserves in the Council, subject to the Reserves Act 1977, on 23 August 2002.	Recreation Reserve	Part Seafield Park	Council
55	Lot 79 Deposited Plan 311069	0.0384				
56	Lot 80 Deposited Plan 319911	0.1393	Classified as a Recreation Reserve (Section 17 of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16 (2A) of the Act. Fee simple title, originally vested on deposit as a Recreation Reserve in the Council, subject to the Reserves Act 1977, on 15 May 2003.			
57	Part Lot 15 Deposited Plan 11576	5.1764	Classified as a Recreation Reserve by resolution of the Waimairi District Council in October 1989. Fee simple title, previously transferred from private ownership to the Waimairi County Council as a reserve subject to the Reserves and Domains Act 1953 on 7 December 1977.	Recreation Reserve	Part Seafield Park	Council
58	Reserve 4414 Deposited Plan 11576	0.4666	Classified as a Recreation Reserve by resolution of the Waimairi District Council on 27 September 1989. Land originally vested on deposit as a reserve for recreation in the Waimairi County.	Recreation Reserve	Part Seafield Park	Council

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
59	Rural Section 40231	15.1605	Classified as a Recreation Reserve by resolution of the Waimairi District Council on 27 September 1989. Originally derived from the Crown and set aside as a reserve for recreation purposes under the Land Act 1948 and vested in the Waimairi County Council, in trust, for that purpose pursuant to the Reserves and Domains Act 1953 on 3 April 1973 (Gaz 1973 p742).	Recreation Reserve	Part Seafield Park	Council
60	Lot 3 Deposited Plan 305575	0.0378	Classified as Recreation Reserve (Section 17 of the Reserves Act 1977) by resolution of the Council on 10 July 2008, pursuant to Section 16(2A) of the Act. Fee simple title, originally vested on deposit as a Recreation Reserve in the Council, subject to the Reserves Act 1977, on 11 April 2002.	Recreation Reserve	Part Seafield Park	Council
61	Reserve 5253 Survey Office Plan 10973	1.1533	Classified as a Local Purpose (Youth Holiday and Recreation Camp) Reserve under the Reserves Act 1977 on 14 October 1980 (Gaz 1980 p3328). The Waimairi County Council was appointed to control and manage this reserve, subject to the provisions of the Reserves Act 1977, also on 14 October 1980 (Gaz 1980 p3332). **Propose for the Council to declare by resolution, under Section 24(1)(b) of the Reserves Act 1977, that the classification of this reserve is changed to recreation reserve.**	Local Purpose (Youth Holiday and Recreation Camp) Reserve	Part Seafield Park	Council
62	Reserve 5252 Survey Office Plan 10973	1.3931	Classified under the Reserves Act 1977 as a Local Purpose (Youth Holiday and Recreation Camp) Reserve on 26 June 1984 (Gaz 1984 p2430). The Associated Churches of Christ Church Extension and Property Trust Board was appointed to control and manage this reserve on 22 July 1969 (Gaz 1969 p1367).	Local Purpose (Youth Holiday and Recreation Camp) Reserve	Hibburt Park	Associated Churches of Christ Church Extension and Property Trust Board
63	Reserve 5011 (Deposited Plan 20364)	0.0693	Classified under the Reserves Act 1977 as a Local Purpose (Community Buildings) Reserve on 16 December 2004 (Gaz 2004 p4422).	Local Purpose (Community Buildings) Reserve	Part Spencerville Reserve	Council

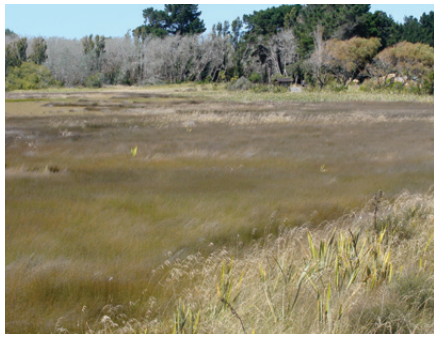
MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
64	Reserve 4518 (Vested Deposited Plan 13262)	0.6245	Classified under the Reserves Act 1977 as a Local Purpose (Community Buildings) Reserve on 16 December 2004 (Gaz 2004 p4422).	Local Purpose (Community Buildings) Reserve	Part Spencerville Reserve	Council
65	Lot 37 Deposited Plan 78706	0.4923	Classified under the Reserves Act 1977 as a Recreation Reserve on 16 December 2004 (Gaz 2004 p4422). Fee simple title, originally vested on the deposit as a Recreation Reserve in the Council, subject to the Reserves Act 1977, on 17 September 1998.	Recreation Reserve	Part Spencerville Reserve	Council
66	Part Rural Sections 20278 and 20279 Survey Office Plan 481	35.8121	Fee simple title held by the Council.	N/A	Part Bottle Lake Forest Park	Council/Selwyn Plantation Board Ltd[13]
67	Rural Section 35648 Survey Office Plan 4076	4.0367	Fee simple title held by the Council.	N/A	Part Bottle Lake Forest Park	Council/Selwyn Plantation Board Ltd
68	Part Reserve 1579 Survey Office Plan 3068	58.1735	Fee simple title held by the Council.	N/A	Part Bottle Lake Forest Park	Council/Selwyn Plantation Board Ltd
69	Lot 1 Deposited Plan 44484	46.9820	Previous Rural Section 40048 (redefined as Lot 1 Deposited Plan 44484 on 2 December 1993) classified as a recreation reserve by resolution of the Waimairi District Council on 27 September 1989. Fee simple title, originally derived from the Crown. Rural Section 40048 was a recreation reserve subject to Part II of the Reserves and Domains Act 1953 and vested with the County of Waimairi, in trust, for recreational purposes on 23 March 1972 (Gaz 1972 p674).	Recreation Reserve	Spencer Park	Council

[13] The Selwyn Plantation Board Ltd (SPBL) is a Council Controlled Trading Organisation (CCTO), with the shareholders being Selwyn Investment Holdings Limited (60.68%) and Christchurch City Holdings Limited (39.32%). The SPBL owns the trees and contracts out management and harvesting. The Council owns the land.

MAP REF	LAND PARCEL	AREA (HECTARES)	DESCRIPTION/HISTORY/INTENTION	RESERVES ACT CLASSIFICATION	PLACE NAME	ADMINISTRATION/ MANAGEMENT
70	Crown land; shown as Sections 4 and 10 on Survey Office Plan 17137	50.2200	80.47 metre wide strip of land extending south of Heyders Road in more than one parcel to Waimairi Beach, beyond Bottle Lake Forest Park. Classified, by New Zealand Gazette notice on 28 November 2008, as recreation reserve, subject to the provisions of the Reserves Act 1977, and vested in the Council in trust for that purpose (Gaz 2008 p4964) (Correction made on 15 December 2008 (Gaz 2008 p5178)). Previously administered by the Department of Conservation as conservation land, subject to the Conservation Act 1987. The Council resolved on 12 June 2008 to accept a free vesting of the area as recreation reserve under the Reserves Act 1977.	N/A	Spencer Park Beach	Council
71	Lot 2 Deposited Plan 44484	10.2230	Classified as a Local Purpose (Plantation) Reserve under the Reserves Act 1977 on 18 March 1982 (Gaz 1982 p1453). **P5 Propose for this reserve to be included as part of Spencer Park.**	Local Purpose (Plantation) Reserve	Part Bottle Lake Forest Park	Council/Selwyn Plantation Board Ltd
72	Rural Section 35995	12.1406	Fee simple title held by the Council. Area is part of land (possibly Reserve 2636 Survey Office Plan 3068) that was originally classified as Local Purpose Plantation Reserve on 12 August 1981 (Gaz 1981 p 2435). **P5 Propose for this reserve to be included as part of Spencer Park.**	Local Purpose (Plantation) Reserve	Part Bottle Lake Forest Park	Council/Selwyn Plantation Board Ltd
73	Rural Section 41137 Survey Office Plan 16630	63.3325	Crown land. Part is below MHWS and therefore in the CMA. **P36 Propose for the part of this land above MHWS to be surveyed off and transferred to the Council, and to be classified as a Recreation Reserve.**	N/A	The part below MHWS is part of Brooklands Lagoon/ Te Riu o Te Aika Kawa	Crown

12 KEY ISSUES

- Inter-relationship of recreational use and conservation of natural values.
- Inter-relationship of planning, development and recreational values with tangata whenua values in the area.
- Impact of surrounding development and increasing use of the area on natural values and tangata whenua values/practices, through:
  - People cutting wire off fences.
  - Trampling of vegetation by foot, hoof or vehicle.
  - Destruction of habitat.
  - Dumping of rubbish.
  - Hunting (duck shooting).
  - Dogs adversely affecting wildlife.
- Interaction with the local community.
- What facilities should be provided?
  - Camping ground.
  - Shop/food/cafe.
  - Seafield Park animal area.
  - Buildings, such as an information centre.
  - Structures for play and outdoor recreational pursuits.
  - Tracks - how to address conflict between different users - for example, horse riders and walkers.
- Linkage with other areas – roads and tracks - issues of:
  - Intersection safety.
  - Increased congestion.
  - Road status/condition.
- Public access - what is appropriate?
  - Vehicles on Brooklands Spit/Kairaki[14].
  - Whitebaiting and fishing at the Waimakariri River mouth - should these recreators be able to stay overnight?
  - Locked gates to beach – who should have keys?
  - Motorised craft, such as jet skis – need for speed of these to be controlled and to be kept out of excluded areas.
  - Dog areas – should there be further opportunities for dog exercise?
- Hazards
  - Flooding.
  - Much of the planning area is identified as a “Flood Management Area.”
  - Variation 48 to the City Plan sets rules affecting building and filling in the area.
  - Sea level rise/inundation/tsunami risk.
  - Fire - for example, started on the beach and spreading into the dune area.


Saltmarsh at the Brooklands (left) and Spencer Park (middle) ends of Brooklands Lagoon/Te Riu o Te Aika Kawa. Pied cormorants in the esturary (right).

[14] Includes vehicles (1) below the high tide line (that is, the Mean High Water Springs (MHWS)), (2) on and above the high tide line, (3) driven along the toe of the dunes, (4) driven on the dunes, and (5) driven along the estuary side of the spit. Each of these needs separate assessment as some may have minimal impacts while others have significant detrimental impacts in terms of damage to fragile physical environments, to plants and to wildlife.

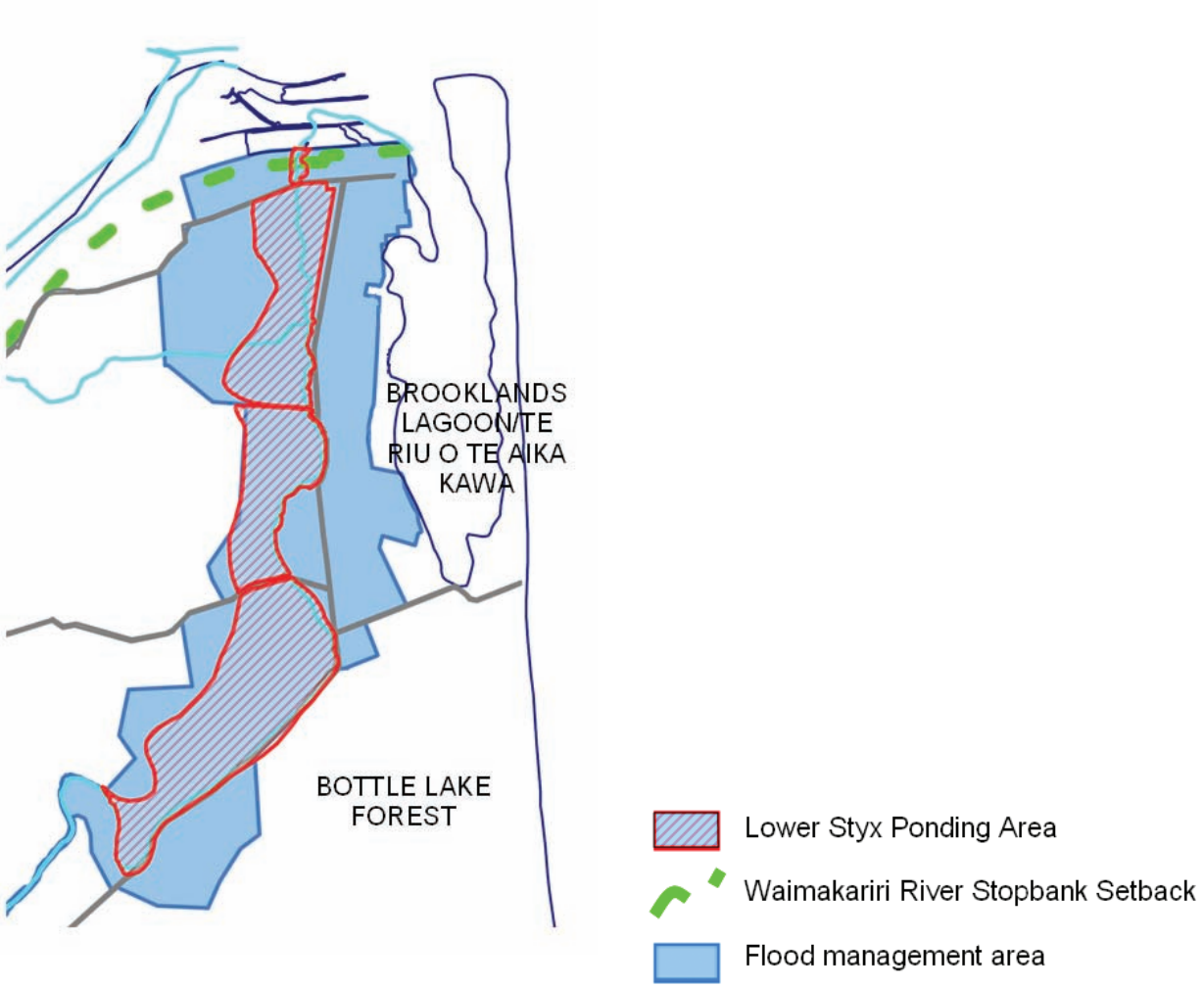
12.1 Flood Management Area – Variation 48 – a proposed variation to the City Plan[15]

The proposed variation relates to managing the potential effects of flooding and inundation in Christchurch. It is a statutory function of the Council under the Resource Management Act 1991 (RMA) to control land use for the purpose of avoiding or mitigating any adverse effects associated with natural hazards. The package of measures proposed within this variation has been developed to assist the Council to meet its statutory obligations with respect to floodplain management under the RMA.

The measures recommended in this variation have been developed following detailed investigations on the major river systems and coastal areas in Christchurch. These studies have analysed the level of flooding risk and potential floodplain mitigation measures in different areas of the City. In respect of the Styx River/Puharakekenui, detailed investigations have been undertaken. In terms of the Waimakariri River, the Environment Canterbury has undertaken detailed studies over a number of years that have resulted in the Proposed Waimakariri River Regional Plan. The Council and Environment Canterbury have also commissioned reports on the effects that climate change and sea level rise may have on coastal areas of Christchurch and Canterbury respectively.

[15] Information for this account is sourced from Council information, including the City Plan, about Variation 48. This information is freely accessible on the Council's website. It has been edited to cover information relevant to the Brooklands Lagoon/Te Riu o Te Aika Kawa Parks Area Master Plan only.

Flood Management Areas Map (Variation 48 City Plan)



The findings of these reports indicate that climate change, and in particular sea level rise, has the potential to have significant effects on the risk of flooding within Christchurch. The results of these studies indicate that it is neither effective nor efficient for the Council to rely on one mechanism. It is concluded that the most effective option is to adopt an approach that relies on a combination of measures.

Variation 48 to the Proposed City Plan relates to flooding issues in Christchurch. The variation, amongst other things:

- Amends the policies of the City Plan relating to natural hazards, flooding and the management of ponding areas.
- Identifies areas of the City subject to greater risk of flooding than the City generally as flood management areas and imposes controls on filling and floor levels for buildings within those areas.
- Introduces a building setback from the primary stopbank of the Waimakariri River.
- Amends the rules relating to the ponding area within the lower Styx River/Puharakekenui catchment.

The proposed variation was publicly notified on 13 December 2003. The Council issued its decision on submissions and the variation on 11 May 2006. This decision was subsequently appealed to the Environment Court. Appeals were held in July and August 2008 and an interim decision issued in May 2009. The Court essentially endorsed the variation, but required further mediation in respect of the permitted activities in ponding areas.

Flood Management Area explained

Areas of the city exposed to a flooding risk that is greater than the remainder of the city have been identified. These areas are generally located alongside the major river systems, within Landsdowne Valley and along the coast. They have been identified on the planning maps as 'flood management areas'. One of these covers the Lower Styx River/Puharakekenui.

Lower Styx Ponding Area

The Styx River/Puharakekenui is a small, but significant, river to the north of the Christchurch City urban area that plays an important role for flood control for the northern part of the city. Flooding from the Styx River/ Puharakekenui normally occurs throughout the catchment once or twice a year. It is usually caused by rapid runoff of stormwater. However, there are other factors, such as tidal influence and aquatic weed growth, which may influence frequency, intensity and duration of a flood event. The river and existing catchment, including areas already partially developed, are prone to an increase in flooding. New buildings and paved areas will increase the volume and rate of runoff.

In the lower Styx River/Puharakekenui, the discharge of floodwaters to the sea is restricted during high tides and an extensive low lying area of the floodplain acts as a ponding area for floodwaters. This ponding area acts as a natural detention basin reducing the extent of flooding down stream following storms events. The storage capacity of this area would be substantially reduced if filling and development were allowed to take place on a large scale in this area. Controls on filling and excavation are therefore required.

Exemptions from the rules have been provided for works that have minor effects. Essential utilities and floodbank protection works are also excluded.

Relevance to the Brooklands Lagoon/Te Riu o Te Aika Kawa area's parks and open space

Part of the planning area covered by this master plan that lies to the west of the Lower Styx Road, including the Styx River/Puharakekenui, is in a flood management area. The implications of this are that these places may be flooded at times and that development of facilities, such as tracks, need to be of a standard that reflect this. Also, if any buildings are proposed (other than exempted structures, such as accessory buildings with a footprint up to 25 square metres in area), they are subject to a restricted discretionary resource consent with respect to flooding issues and would require a minimum floor level.

13 DEVELOPMENT AND USE

13.1 City Plan zones for the area

The zonings of relevance to the public open space areas addressed by this master plan are:

C1A: Conservation 1A (Coastal margins) Zone

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. Much of the land in the zone is ecologically fragile. The aim is to recognise and protect areas of significant natural flora and fauna, and prevent these areas being subject to the adverse effects of inappropriate use or development, particularly disturbance of the land surface and of vegetation. The coastal environment is dynamic, with the seaward boundary subject to constant change. Any activities located within this area are at risk from the natural hazards associated with these changes.

The coastal margin is also becoming increasingly appreciated for recreation, which is usually informal and passive. Management of this area must take into account the potential effects of human activities on these easily damaged areas. In addition to recreational and ecological values, many sites in the coastal margin are also important for scenic, educational and heritage reasons. Activities within the coastal area must be sympathetic with its natural character. Land in the zone is, like that in the Conservation 1 Zone, of important heritage and resource value to the tangata whenua.

C1: Conservation 1 (Natural, ecological and scenic parks) Zone

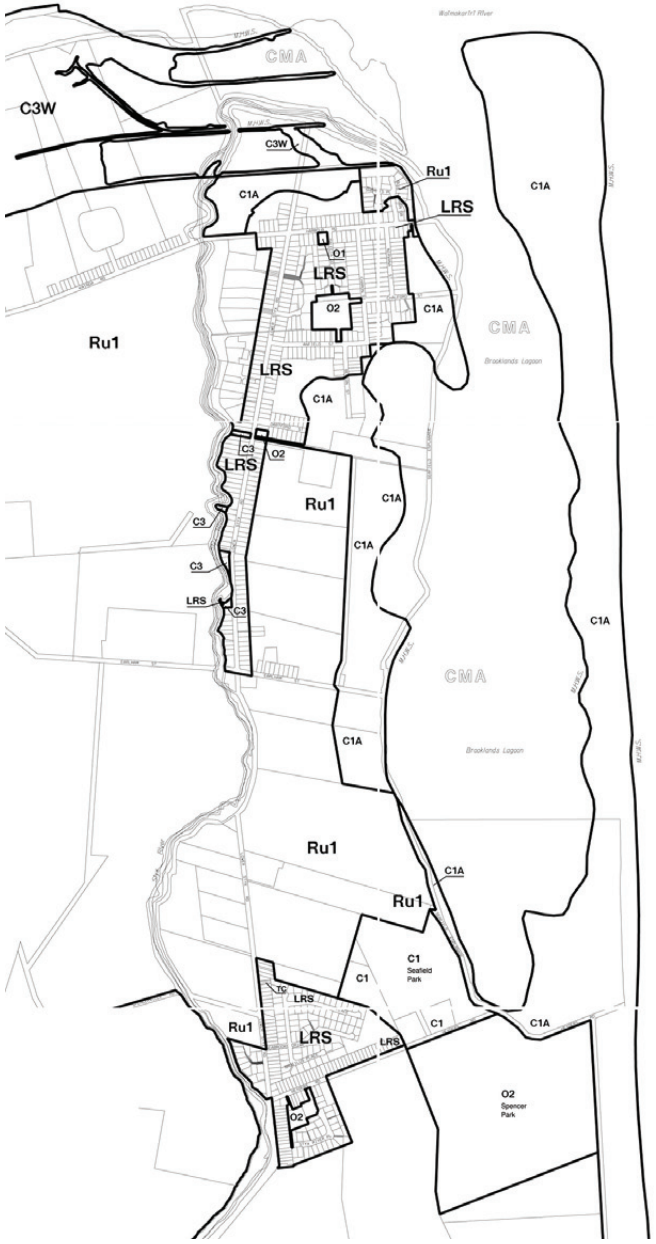
This zone comprises mostly public land of particular scenic, natural, habitat and ecological value. The zone includes freshwater wetlands, parts of the river system, native grasslands and natural forest areas.

Areas include habitats for birds, fish and invertebrate species. These areas also have significant scientific, educational, recreational and landscape values. In addition, a large number of these areas are important for tangata whenua, both in the past and present.

The importance of these areas for passive and generally informal recreation is becoming more appreciated and management of these sites must take into account the impacts of human activities on fragile ecological systems. Some sites may contain facilities associated with education, research, ecotourism, recreation or associated uses.

C3: Conservation 3 (Waterway conservation) Zone

This zone covers waterways and their margins (except the Waimakariri River and some minor waterways and areas within other conservation or open space zones), which have moderate to high ecological and/or cultural values and contribute significantly to the identity and character of the area they pass through. Some parts may contain important areas of historical and contemporary significance for Māori.



The protection of the natural and cultural values of the waterways and their margins, the surrounding land activities, the desirability or otherwise of public access to and along waterways and the varying levels of public use of the waterways are all taken into account.

The zone includes any land that is vested in the Council as esplanade reserve or strip.

C3W: Conservation 3W (Waterway conservation - Waimakariri) Zone

This zone includes the southern half of the surface and bed of the Waimakariri River and its margins up to the line of the primary stopbank. Excavation of aggregates from the river to lessen flooding risk is undertaken, but controlled with respect to impacts on wildlife and recreation. As well as having significant recreational values, the Waimakariri River margin also supports a range of regenerating indigenous vegetation, including a number of ecological heritage sites that require protection and enhancement.

O2: Open Space 2 (District Recreation and Open Space) Zone

This zone provides for parks that have substantial physical resources, such as sports fields, clubrooms, changing sheds and toilet facilities. A high level of open space is required to be maintained in this zoning, as parks in it will often serve both district and local functions. A high level of public use of open spaces and recreation areas within the zone is expected. Buildings and facilities necessary to facilitate both formal and informal recreation need to be consistent with the overall maintenance of an open space character that is not dominated by buildings and hard surfacing.

Photos (left)
Extensive saltmarshes of the Spencer Park end of Brooklands Lagoon/Te Riu o Te Aika Kawa (top and middle) and wind-shorn pines on sand dunes of Brooklands Spit/Kairaki (bottom).

O1: Open Space 1 (Neighbourhood Recreation and Open Space) Zone

Recreational uses of the smaller park areas that are found in this zone are mostly informal in nature, such as walking and playing, and therefore many contain or require seating, playground equipment or other small structures. It is important that the open space character of these areas is maintained and that they are not cluttered by facilities. At the same time, their important role as a recreational area and visual open space for local neighbourhoods needs to be maintained.

Adjacent zones to the public open space area zones are:

The zonings of land adjacent to the aforementioned conservation and open space zones are LRS (Living RS (Rural Settlement) Zone) and Ru1 (Rural 1 (Coastal) Zone).

13.2 Policy and Bylaws

New bylaws came into force on 1 July 2008 and apply in the whole of the Christchurch District. Those that are relevant to the Council controlled areas covered by this master plan include (but are not limited to):

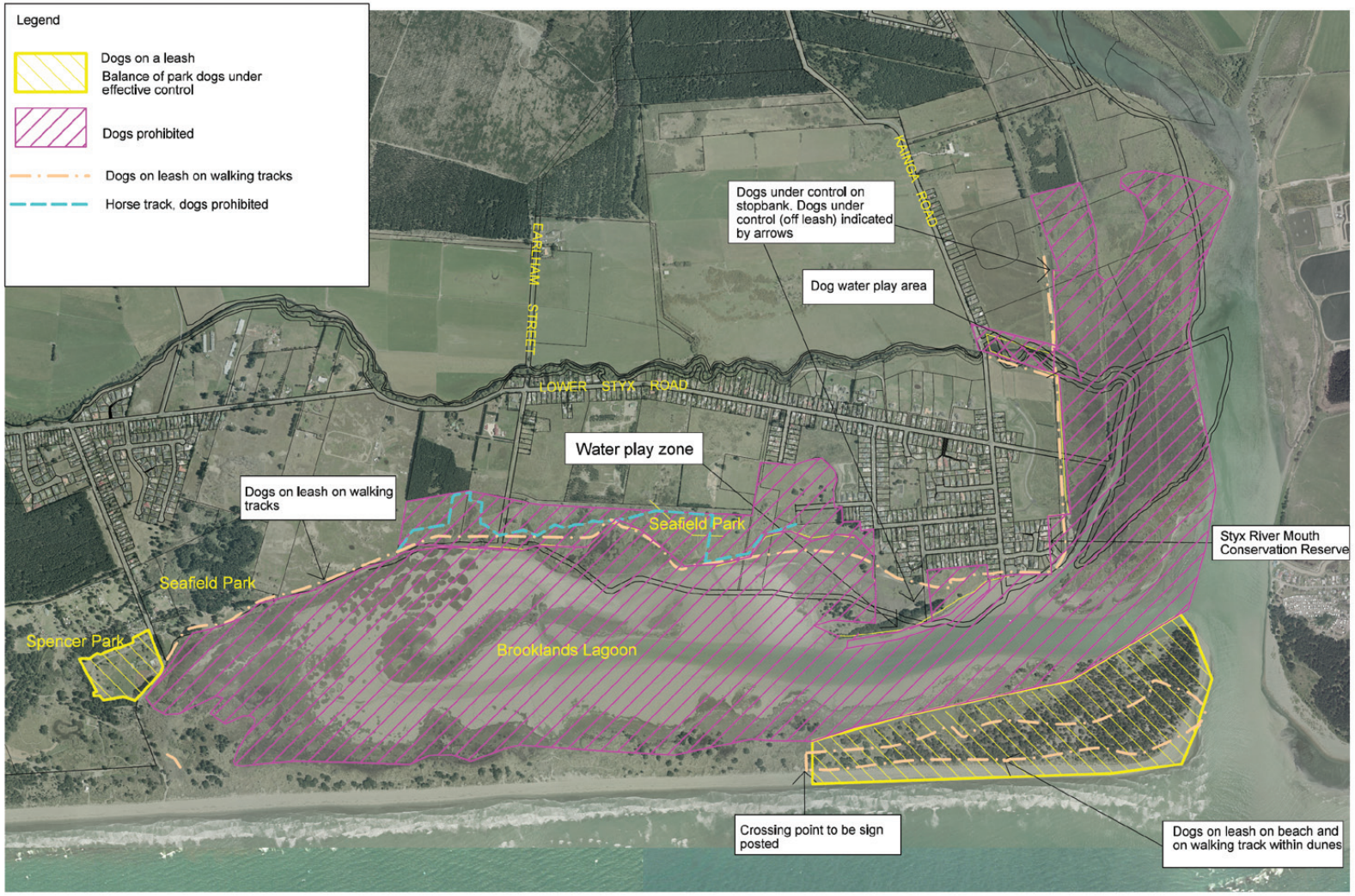
- Christchurch City Council Dog Control Bylaw 2008.
- Christchurch City Council Parks and Reserves Bylaw 2008.
- Christchurch City Council Marine and River Facilities Bylaw 2008.

Dog Control Policy 2008

Since 2006 there have been significant additions and changes to the areas of land under Council control, including parks and reserves and foreshore areas. There has also been an increase in knowledge and awareness of the significant values of some areas, such as mudflats. These areas all have specific amenity, recreation and wildlife values that need to be supported and/or protected.

An objective of this policy is to notify areas where specific dog control status has been designated for reasons such as public health, safety and hygiene and protection of wildlife, animals and stock. The table below specifies the areas within the master plan planning area where dogs are prohibited and/or required to be leashed. Map 05-Brooklands on the following page displays where dogs are prohibited or controlled. The policy can be viewed at: *http://www.ccc.govt.nz/Policy/DogControlPolicy/*.

PLACE	DOG CONTROL STATUS	COMMENT
Styx River Mouth Conservation Reserve	Prohibited/ Leashed	Dogs prohibited as this area is a very important wildlife reserve for threatened species such as bittern and other sensitive species including marsh crake and nesting waterfowl. It is also a conservation area. There are plans to re-introduce locally extinct species such as fern bird, spotless crake, banded rail and brown teal. Dogs must be on a leash on the walking track along the top of the stopbank through the reserve.
Styx River/ Puharakekenui mouth	Prohibited/ Leashed	Dogs prohibited due to wildlife habitat, tidal saltmarsh and many nesting native birds that include threatened species. Dogs must be on a leash on the walking track along the stopbank.
Brooklands Spit/ Kairakei and estuary	Prohibited/ Leashed	Prohibited, except for gun dogs during the game bird hunting season.
Waimakariri Walking Track (Spencer Park-Brookland Spit/Kairaki)	Leashed/Under effective control	Dogs are permitted under effective control on the walkway to the 'crossing point' and from there must be on a leash because of ecological values beside Brooklands Lagoon/Te Riu o Te Aika Kawa.
Seafield Park (western edge of Brooklands Lagoon/Te Riu o Te Aika Kawa)	Prohibited/ Leashed	Dogs prohibited due to wildlife habitat. Dogs permitted on a leash on the walking track. Dogs prohibited on the horse track.
Spencer Park	Leashed	This area is leashed for dogs, because it is used for families as a picnic area – necessary for health and hygiene reasons.
Spencer Park Beach	Prohibited/Under effective control	Bathing and recreation area - dogs prohibited from 1 Dec to 1 March, between 9am and 7pm, for public safety and hygiene reasons, except for the purposes of passing through, when dogs must be on a short leash. Outside these times dogs are permitted under effective control.



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MAP 05 - BROOKLANDS

LP223905

14 LANDFORM

The following account is largely adapted from a 1993 NIWA report to the Council and Environment Canterbury on sedimentation in the Styx River/Puharakekenui catchment and Brooklands Lagoon/Te Riu o Te Aika Kawa[16]. The intention for the inclusion of this account here is to generally indicate the geomorphic change that has taken place in this area over a particular period of time. It is not necessarily complete or up to date.

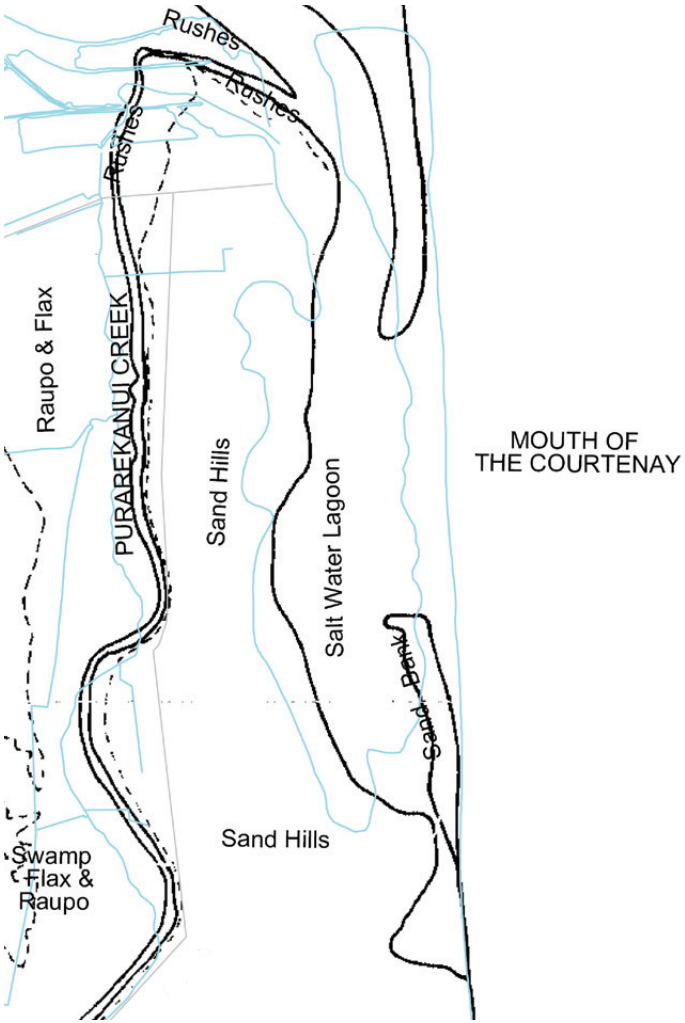
14.1 Evolution of Brooklands Lagoon/Te Riu o Te Aika Kawa

Brooklands Lagoon/Te Riu o Te Aika Kawa is at the centre of the coastal landform of the area covered by this master plan. This is a very elongated estuary[17], with the Styx River/Puharakekenui emptying into it and the Waimakariri River flowing past the entrance. It owes its origin principally to the interaction of the large, powerful and sediment-laden Waimakariri River and a predominantly southerly long-shore drift along the prograding[18] Pegasus Bay coast. In addition, the estuary is affected by sand blowouts in Brooklands Spit/Kairakei and by inflows from the Styx River/Puharakekenui. People have also had an influence, through stabilising the Waimakariri River mouth and the sand-dune blowouts and through the extraction of water from, and discharge of stormwater to, waterways.

The site where Brooklands Lagoon/Te Riu o Te Aika Kawa is today was occupied over the northern extent of the site by the main Waimakariri River channel earlier in the Twentieth Century. The river then showed great variability, with its mouth migrating southward along much of the site's length, with the river flowing behind a wave-built spit (the predecessor of Brooklands Spit/Kairakei today). Occasionally, usually during floods, the river would force a new mouth through the spit. Then, as with the current mouth situation, the site now occupied by an estuary would be temporarily abandoned by the river.

Maps and photographs show the dramatic changes to the lower reaches of the Waimakariri River[19] and the Brooklands Lagoon/Te Riu o Te Aika Kawa area over the last 150 years.

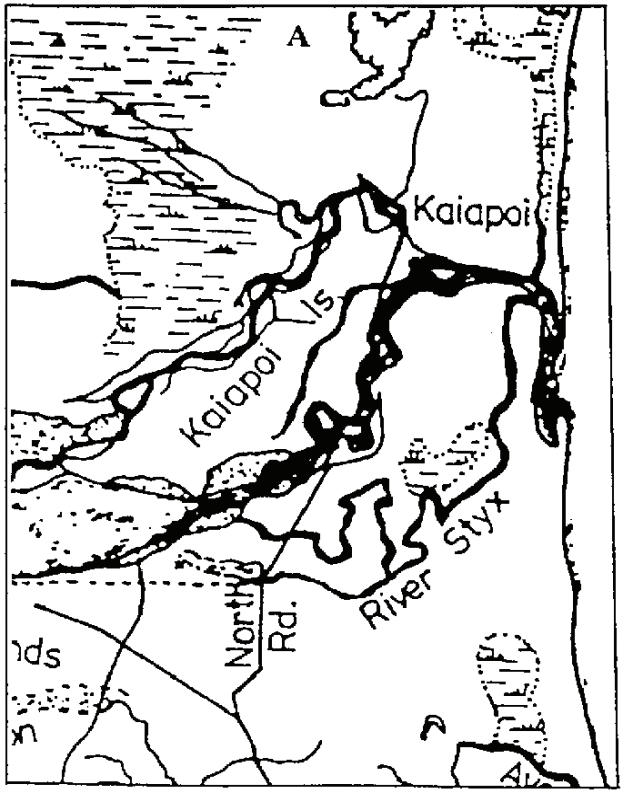
A Council map of the Christchurch area showing waterways, swamps and vegetation cover in 1856 was compiled in 2004 from the 'Black Maps' approved by J Thomas and Thomas Cass, Chief Surveyors, in 1856. This shows a configuration of the mouth of the River Courtenay (as the Waimakariri River was named then).



Part of compilation of the 1856 'Black Maps'.

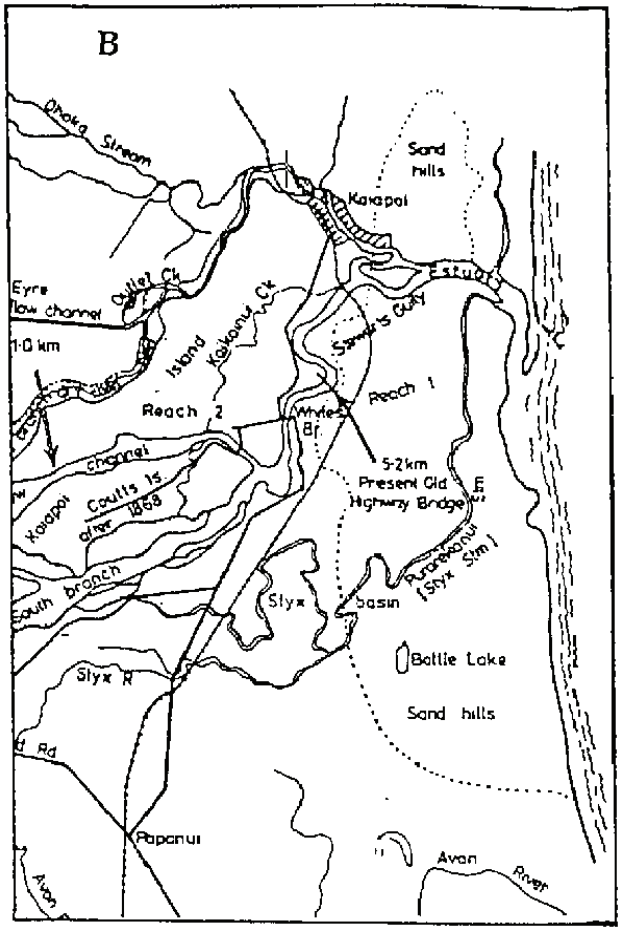
[16] Hicks, D. M. and Duncan, M. J. (1993).
[17] Estuaries have twice daily tidal flow, lagoons do not.
[18] A coast where sediment is deposited, such that the shoreline is shifting seaward.
[19] The Waimakariri River itself was realigned through a cut created to bypass Kaiapoi.

Another 1865 map[20] shows the estuary with a very wide mouth between spits built from north and south (see A below).



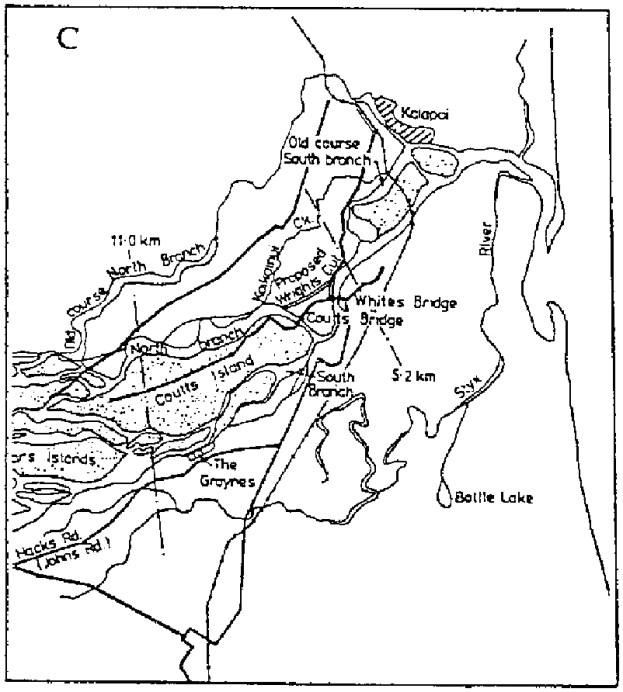
1865 map attributed to Doyne.

A map dated 1880[21] (see B below) shows only a short spit attached at the north.



1880 map.

A 1928 map[22] (see C below) shows a configuration similar to that of 1865.



1928 map.

[20] Part of Figure 3.1 in Hicks and Duncan (1993), with the content for this figure sourced from Blakely and Mosley (1987).

[21] Part of Figure 3.1 in Hicks and Duncan (1993), with the content for this figure sourced from Blakely and Mosley (1987).

[22] Part of Figure 3.1 in Hicks and Duncan (1993), with the content for this figure sourced from Blakely and Mosley (1987).

In 1930, in an attempt to lessen the risk of flooding, engineers made a cut in the sand hills to create a new direct course to the sea to the south of the current opening. However, the river continued to use the natural mouth until 1940, when it shifted three kilometres north to its current position during a flood. Rock bank protection on the north bank of the river opposite Brooklands Lagoon/Te Riu o Te Aika Kawa probably encourages the river to maintain its present position.

The position of the Waimakariri River mouth has been stable since the 1940s and Brooklands Lagoon/Te Riu o Te Aika Kawa has been a quiet tidal backwater, trapping sediment from the Waimakariri River and Styx River/ Puharakekenui floodwaters and sand that has been blown and washed over the spit from the coast.

Photographs from 1940 show the current spit area as a broad expanse of water and shifting sand bars with little vegetation, and estuary openings at the centre and north end.

Sedimentation rates in the estuary were high soon after the change in the position of the Waimakariri River mouth in 1940, but these have waned in recent years. Gradual infilling has progressed from the southern end of the estuary, while, towards the estuary mouth, localised erosion and deposition has accompanied shifts of tidal channels and bars, resulting in some flushing of sediment. Overall, the recent net changes have been relatively minor and future average sedimentation rates are inferred to be of the order of a few milimetres a year[23].

Although Owen in 1992[24] reports that the southern end of the lagoon was silting up even in the 1930s, the lagoon appears to have filled substantially since the 1940's, both with silt and sand from the Waimakariri River and sand blown and washed from the open coast.

In 1978 storms widened a narrow low point in the spit at the site of the old (1930s) river mouth and, 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 with the prevailing north-easterly wind. The foredune here was then rebuilt with the help of fencing (Owen, 1992).

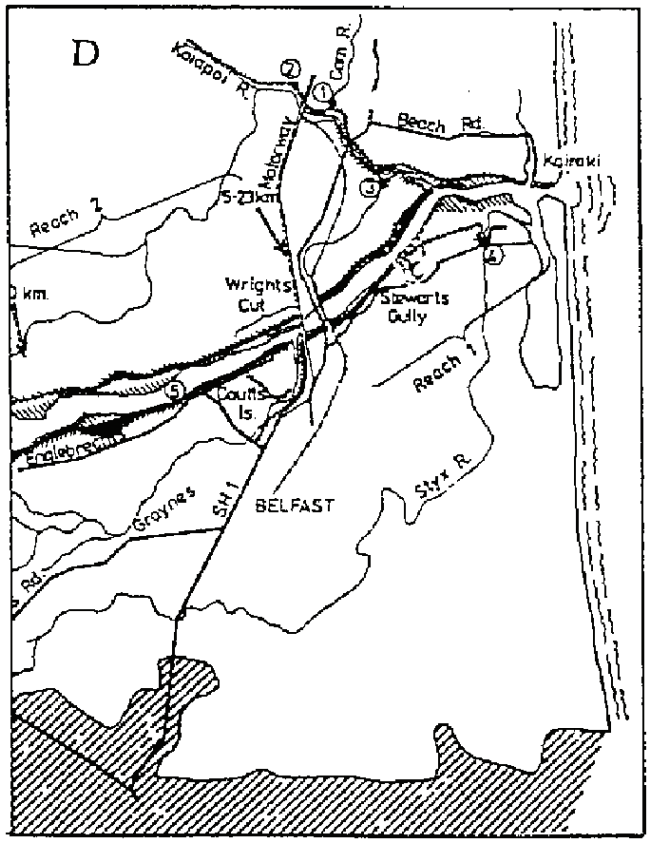
A 1983 aerial photograph shows dramatic changes, with vegetation on the spit and north bank of the Waimakariri River (Blakely and Mosley, 1987). The present vegetation coverage is more extensive still, with large trees covering more of the spit than is evident in the 1983 photo (Owen, 1992). Thus, what was a desolate area of shifting sand bars and estuary mouths before 1940 has now been transformed into a relatively stable, vegetated environment, with large areas of self-established pine forest.

Photos (right)
Tidal channels from mudflats to saltmarsh in the estuary near Brooklands.

[23] Initial results from a survey in 2008 show that accretion rates at the Spencerville end of the estuary have, in fact, been as high as three millimetres per annum. However, this is offset by an equivalent sea level rise. At the Brooklands end of the estuary there is no sign of sediment accretion, although localised increases and decreases are occurring, mostly the result of shifting channels.

[24] Owen, S-J. (ed.) (1992).

A 1982 map[25] (see D below) shows the current day geomorphology.



1982 map.

Left to its own devices, the Waimakariri River mouth would likely migrate from somewhere just north of its current position to the south end of Brooklands Lagoon/ Te Riu o Te Aika Kawa. There would be a cycle of the river breaking through the spit near the location of the current river mouth during a large flood, with the mouth then moving southwards again under the influence of the long-shore drift and the estuary deepening to accommodate the flow as the mouth moved south. When a breakout occurred, the estuary would be left as a deep backwater which would quickly infill with sediment spilled from the river, blown over the sand spit by the prevailing north-easterly wind or washed over by storm waves.

There is evidence that Brooklands Lagoon/Te Riu o Te Aika Kawa is continuing to fill appreciably. Sediment laden water certainly does fill the estuary during flooding of the Waimakariri River and this drapes a covering of mud a few milimetres thick over the bed of the estuary. This sediment is, however, easily resuspended by wave action and much may be removed from the estuary with outgoing tides.

The chances of injection of coastal sand into the estuary from wind-blows and/or storm wash-over should lessen progressively as Brooklands Spit/Kairaki grows in width and height and is stabilised by vegetation, especially pine trees. The likelihood of another major migration of the Waimakariri River mouth should also diminish for the same reasons.

15.2 Stabilisation of Brooklands Spit/Kairaki

Brooklands Spit/Kairakei has experienced major change since the 1940s, when it was a low, largely unvegetated area of shifting sand. Now it is well vegetated with marram grass and pine forest[26] and is broadening and increasing in elevation. Its estuary shore, near the estuary mouth, appears to have been gradually eroding over the past thirty plus years, partly as a consequence of the much reduced supply of wind-blown sand across the spit[27] and partly due to shifts in the estuary channels[28].

[25] Part of Figure 3.1 in Hicks and Duncan (1993), with the content for this figure sourced from Blakely and Mosley (1987).

[26] Most of the pines have self-established from a very small plantation at the tip.

[27] A reason given for this is that the wide band of large *Pinus radiata* trees at the northern end of the spit filters out any wind blown sand, so there is no replacement of any sand eroded away.

[28] For example, the Styx River/Puharakekenui is building a shallow delta where it enters the estuary, which appears to have forced the tidal channel in this narrow part of the estuary eastwards against the spit.

15.3 Change in the Styx River/Puharakekenui

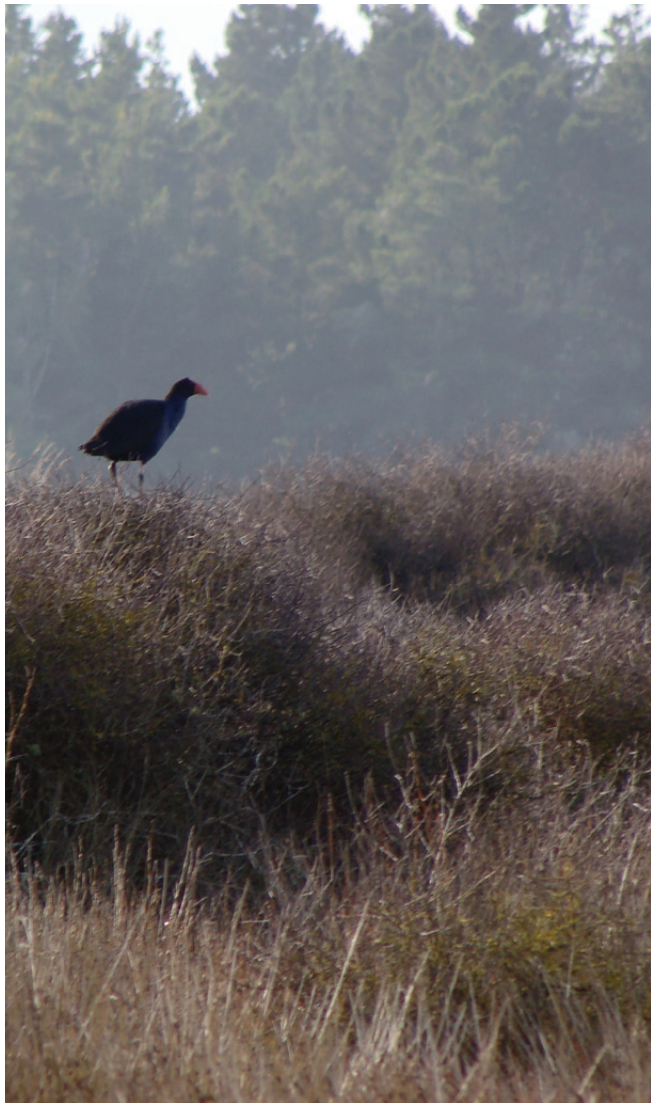
The mouth of the Styx River/Puharakekenui at the northern end of Brooklands Lagoon/Te Riu o Te Aika Kawa has been slowly but constantly shifting, at least in recent decades. Boyle (1984) reported that from 1971 to 1979 the true left bank was eroding as the Styx River/Puharakekenui channel migrated laterally towards the Waimakariri River. This trend reversed from 1979 to 1983. Presently, the Styx River/Puharakekenui is eroding its true left (north-east) bank again[29].

The Styx River/Puharakekenui likely exerts only a small influence on the sedimentation processes in the estuary, and this is mainly in reworking the estuary sediments towards the estuary mouth, but generally only when the tide is low. The supply of sediment to the estuary from the Styx River/Puharakekenui catchment is small compared to the amount that circulates in and out with Waimakariri River water.

Tidal influence on water levels in the Styx River/Puharakekenui extends upstream to Marshlands Road. Salt water penetration currently stops just upstream of tidal gates just north of Harbour Road. The tidal gates were installed in 1934 by the North Canterbury Catchment Board, mainly to keep out flood waters from the Waimakariri River. The gates were replaced in 1981. They currently open to drain Styx River/Puharakekenui runoff when the upstream water level is 100 milimetres higher than the downstream level.

These tidal or flood gates are designed to pass Styx River/Puharakekenui flood flows downstream, but to prevent high tides and flood waters from the Waimakariri River from passing upstream.

Note:
Since 1993 a different situation with respect to the patterns of accretion and ersosion in the estuary and surrounding areas is likely to have occurred. Other more recent reports or studies will need to be read to get a more current account. Furthermore, there is a range of popular opinion as to the present patterns of accretion and erosion in the area, although these are not necessarily backed by official scientific record.



Pukeko perched on coastal ribbonwood shrubs.

[29] There is little sign of accretion here, so such erosion is likely to result in channel widening.

15 TANGATA WHENUA

Note: This section has been provided by Ngāi Tahu.

Tangata whenua is the Māori name for 'people of the land'. In the area of the Brooklands Lagoon/Te Riu o Te Aika Kawa Area Parks Master Plan, the tangata whenua are Ngāi Tahu. The iwi of Ngāi Tahu comprises whānau who descend from both the northern ancestor Tahu and the peoples who were here before the Ngāi Tahu southward migration: Ngāti Mamoe and before them Waitaha. Ngāi Tahu rangatira (leaders/chiefs) gained control of the land and resources from Ngāti Mamoe through acquisition and intermarriage to become the rangatira of the area and to hold manawhenua (tribal authority) over the lands, waters and other taonga. Ngāi Tahu holds the ancestral and spiritual relationships within the Christchurch City area, and in the area of this plan.

The Te Runanga o Ngai Tahu Act 1996 established Te Rūnanga o Ngāi Tahu (TRONT) to give a legal identity to the tribe and to represent the tribal collective of Ngāi Tahu Whānui. Te Rūnanga o Ngāi Tahu is made up of eighteen Papatipu Rūnanga, who represent the whānau and hapū interests of particular areas. Under Section 15 of the Te Runanga o Ngai Tahu Act 1996, it is Te Rūnanga o Ngāi Tahu who is recognized for all purposes as the representative of Ngāi Tahu whānui, and where consultation is required, it is to be held with Te Rūnanga o Ngāi Tahu. In matters of local significance, Te Rūnanga o Ngāi Tahu requires engagement with the local Papatipu Rūnanga.

In the area of the master plan, there is one Rūnanga with interests associated with the area: Te Ngāi Tūāhuriri Rūnanga. In addition, the whānau of the Kāti Urihia hapū of the Rūnanga have some specific interests, including property rights in a Māori Reserve.

The Local Government Act 2002 sets requirements for Councils in relation to Māori. When the matters being addressed relate to areas of ancestral and spiritual connection, these requirements are directly relevant to the tangata whenua of a particular area. In this case, the area of the master plan holds significant historical and contemporary values for Ngāi Tūāhuriri Runanga and the hapū of Kāti Urihia.

15.1 Ngāi Tahu associations

Ngāi Tahu associations within the area covered by the master plan are both historical and contemporary. Waitaha stories tell of use of the area for settlement, use of flax, fishing, and spiritual practices. Whānau of Te Ngāi Tūāhuriri Rūnanga trace their whakapapa (ancestry) to tūpuna (ancestors) known to have associations with the area, primarily through Urihia, son of Tūrākautahi (a son of Tūāhuriri), and Hinekākai. Another tupuna and descendant of Urihia associated with the area is Te Aika. A strong relationship between the Te Aika tūpuna and the area is demonstrated through the traditional name given to Brooklands Lagoon – Te Riu o Te Aika Kawa – meaning "the area of Te Aika protocols/authorities". The location of a Māori Reserve (Puharakekenui MR892), between the lagoon and the river, is another important indicator of key ancestral associations to the area. The original owners of the reserve were those people who could demonstrate their whakapapa connection to original tūpuna who had established their traditional claim to the area. In the case of the Puharakekenui Reserve, the list of original owners is small, with the Te Aika whānau comprising around half of the original ownership, and four other whānau represented - Whitau Kahaki, Te Hua, Rehu and Tarapuhi.

The setting aside of Māori Reserves was a means taken by the government of the day to acknowledge the loss of land and access to resources suffered by ancestors. It demonstrates tūrangawaewa (place of the people on the land) of those ancestors and their traditional rights in the area, and it traces descendancy to those whānau with contemporary rights to the area.

The area, including the river and the estuary, was known to be used and was highly regarded for mahinga kai (food and resource gathering - including tuna, kanakana, kōura and harakeke), urupā (burial sites) and places of spiritual practice. Tangata whenua continue food gathering and spiritual practices in the area today, as well as having property rights in the Māori Reserve.

15.2 Ngāi Tahu policy, objectives and management plans

Two documents are of relevance to the area of the master plan: Te Whakatau Kaupapa (Tau et al, 1990) and Ngāi Tahu Freshwater Policy (Te Rūnanga o Ngāi Tahu, 1999).

Te Whakatau Kaupapa was prepared in 1990 to guide resource management decision-makers in Canterbury. It contains issues and policies in relation to protection and enhancement of sites, water and mahinga kai. These issues and policies are reflected in the matters listed below.

The Ngāi Tahu Freshwater Policy contains objectives relating to water quality, water quantity, protection of the mauri of freshwater, loss of species habitat and discharge of contaminants to freshwater. In particular, there is a policy that there be no discharges of stormwater to waterways.

15.3 Ngāi Tahu values

Ngāi Tahu values are strongly embedded in natural environmental values, spiritual values, whakapapa (genealogical relationships) and historical associations with the environment and particular areas. The relationships were, and are, expressed through occupation, use and naming of areas. This parks master plan is significant for Ngāi Tahu as it addresses an important area from the perspective of its historic associations, intrinsic natural values and contemporary associations.

A broader planning approach to management of areas with high natural values is supported by Ngāi Tahu for the opportunity it presents to address potential impacts on tangata whenua values from management, use and development of the area.

The values held by Te Ngāi Tūāhuriri Rūnanga and the hapū of Kāti Urihia for this area are:

- Wāhi tapu/wāhi taonga sites.
- Māori Reserve.
- Water quality, mahinga kai and ecological values for the Styx/Puharakekenui River and Brooklands Lagoon/ Riu o Te Aika Kawa.
- Mauri.
- Spiritual values.
- Ancestral and contemporary associations with and practices around the whenua (land), awa (rivers) and moana (sea) in the area.

15.4 Ngāi Tahu issues

There are several key matters that arise for tangata whenua in relation to use, planning and management for this area:

- Particular uses that can adversely affect tangata whenua values, for example, stormwater discharges to waterways, motorised craft use in the estuary, dogs in sensitive areas and abuse of the area.
- Prior Council decisions affecting sites and matters of cultural significance undertaken without consideration of Ngāi Tahu values, without consultation with Te Ngāi Tūāhuriri Rūnanga or using consultation with people who did not have the mandate.
- Inconsistent application of the Treaty Principle of "Active Protection of tangata whenua values" in the past.
- Exclusion of Ngāi Tahu in planning and management for the area.
- Kī Uta Kī Tai (mountains to the sea) management not always utilised in Council planning.
- Need for protection of mauri, wāhi tapu and wāhi taonga sites.
- Need for protection and enhancement of water quality.
- Loss of habitat, degradation of water quality, and availability and accessibility and quality of mahinga kai.
- Reclamation and infill of wetlands.
- Need for monitoring of impacts on tangata whenua values.
- Multi-agency demarcations and boundaries not effectively addressing issues of concern for tangata whenua.

15.5 Ngāi Tahu objectives for area planning

The mana of Ngāi Tūāhuriri and Kāti Urihia is maintained by Council:

- Informing of planning and decision processes for the area, for example, in planned land acquisition, walkway or information planning, reserves designations and management planning, city plan zoning, subdivision and stormwater management.
- Having process timeframes reflecting the need for consultation by providing sufficient time.
- Using good information on tangata whenua interests and values in decision making.
- Being aware of wāhi tapu and cultural heritage sites that may be affected by planned earthworks and other development, and taking advice from Ngāi Tahu on avoiding adverse effects on such sites.
- Designing and managing development and infrastructure to achieve Ngāi Tahu objectives for land, water and taonga.
- Decisions to acquire, designate or zone land including consideration of potential impacts on, and potential benefits for, tangata whenua and which do not restrict the carrying out of cultural practices.
- Involving Ngāi Tūāhuriri Rūnanga and Kāti Urihia (through Te Hapū o Kāti Urihia Ahu Whenua Trust) where matters are relevant to sites or matters of cultural significance.
- Using names in signage and information that reflect tangata whenua associations.
- Adopting a culturally sensitive approach for any management and operations in areas of wāhi tapu.

The mana of Ngāi Tūāhuriri and Kāti Urihia as kaitiaki is supported by Council:

- Addressing protection of mauri of waters.
- Addressing protection of water quality, wetlands and ecological values in resource management, reserves management and infrastructure planning.
- Recognising, protecting and providing for mahinga kai values through ecological protection and restoration programmes.
- Protection and enhancement of areas for taonga species.
- Containing impacts of recreation on natural and tangata whenua values of the area through restrictions on access, timing of uses and emphasis on passive recreation activities.
- Integrating planning and management between geographic areas and functional departments of Council.
- Using a Kī Uta Kī Tai (mountains to sea) approach to Council-wide planning and management and providing consistency in objectives across planning areas.
- Monitoring the cultural health of waterways using the Ngāi Tahu State of the Takiwā cultural health monitoring tool.

17.6 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 progress further investigation in the case of projects needing to be considered for funding in the Long Term Council Community Plan. The numbering P1-4 relates to the summarised proposals starting on page 11.

To ensure the tangata whenua values and relationships are addressed and processes are in place for involvement of Ngāi Tahu in the ongoing planning, development and management of the Brooklands Lagoon/Te Riu o Te Aika Kawa area arising from implementation of this master plan and with respect to matters of relevance and importance to Māori and for areas under the control of the Council only[30], the following planning proposals are proposed for all areas covered by this master plan - Brooklands Lagoon/Te Riu o Te Aika Kawa, Spencer Park, Seafield Park, Brooklands Spit/Kairaki and the Styx River/ Puharakekenui.

[30] This master plan is a Council document. For those areas not under the control of the Council, advocacy only is made to the government bodies controlling those areas, including with respect to matters of interest to Māori. This plan confers no obligations on these government bodies.

P1 Naming, and involvement of Ngāi Tahu in the development of amenity features in public spaces in the Brooklands Lagoon/Te Riu o Te Aika Kawa planning area

Recognition of Ngāi Tahu through identification in planning documents and through use of appropriate names in location and directional signage, management plans, maps, information tools and publicity materials, particularly for the Brooklands Lagoon/Te Riu o Te Aika Kawa, Styx River/Puharakekenui and Seafield Park.

Involvement of Te Ngāi Tūāhuriri Rūnanga and Te Hapū o Kāti Urihia Ahu Whenua Trust in public space naming and through advice on constructions in public spaces.

Dual place names to be used, in the first instance, for Brooklands Lagoon/Te Riu o Te Aika Kawa and the Styx River/Puharakekenui in the master plan, and this to be advocated for wider use.

Cultural sensitivity to construction in public spaces can be maintained through:

- Involvement of Te Ngāi Tūāhuriri Rūnanga and/or Te Hapū o Kāti Urihia Ahu Whenua Trust in design and construction phases of public space enhancement and structures.
- The land management bodies not including Māori elements in public space information/structures or in public domain information without agreement of Te Ngāi Tūāhuriri Rūnanga and/or Te Hapū o Kāti Urihia Ahu Whenua Trust.
- Involvement of representatives of the Rūnanga and/or Trust being sought for such above-mentioned projects.

That the Council considers establishing a collaborative project with Ngāi Tūāhuriri Rūnanga and/or Te Hapū o Kāti Urihia Ahu Whenua Trust to investigate the ability to establish Te Ara Toi, Te Awa Whakairo - a river trail along the Styx River/Puharakekenui with interspersed Ngāi Tahu stories/markers/artworks.

P2 Protection, restoration and enhancement of natural values and Mahinga Kai values

For the Council to consider development of a native species restoration programme for the planning area, with the margins of the Styx River/Puharakekenui and Brooklands Lagoon/Te Riu o Te Aika Kawa being the initial focus, followed by Kairaki (Brooklands) Spit, for the purposes of habitat restoration and/or enhancement, in consultation with Te Ngāi Tūāhuriri Rūnanga and/or Te Hapū o Kāti Urihia Ahu Whenua Trust.

That, with existing planting programmes, native species are used in the marginal plantings of the Styx River/Puharakekenui, Brooklands Lagoon/Te Riu o Te Aika Kawa and on Brooklands Spit/Kairaki.

The Council to consider undertaking annual planting days for riparian margin planting of native plants around Brooklands Lagoon/Te Riu o Te Aika Kawa, including considering supporting Ngāi Tahu-led planting events.

In preparing strategies and plans for areas of this catchment, upstream of the master plan planning area, the Council to take into account Kī Uta Kī Tai management principles, and, within its jurisdiction and powers, influence and advocate for upstream land use and management that ensures water quality in this area of the catchment is not degraded further.

In its planning, consent and regulatory roles with respect to development activities in the planning area, that the Council takes into account the significance of the area to Ngāi Tahu, including the value of there being good water quality for such activities as mahinga kai gathering.

That the Council, where appropriate, advocates for improved agency collaboration in the management of the area, and in enhanced Ngāi Tahu involvement in the planning and management for the area.

The Council to support investigating the development and implementation of an Exotic Plant and Pest Eradication Strategy.

The Council to consider its role in seaward coastal erosion protection, where appropriate, and where it falls under the Council's jurisdiction. The Council to advocate, as necessary, to those government bodies with responsibility in coastal erosion protection in the planning area.

The Council to consider, if a request is made by Ngāi Tahu, its role in, and potential support for, the creation of a Mahinga Kai Cultural Park in the area.

The Council to investigate the possibility of restricting vehicle access to the beach/foreshore north of the Spencer Park access gate to the fishing season only.

Protection of cultural heritage sites

The Council consult with the Te Ngāi Tūāhuriri Rūnanga and Te Hapū o Kāti Urihia Ahu Whenua Trust about proposed development activities in parks and reserves to avoid adverse affects on cultural heritage sites.

The Council adopt an Accidental Discovery Protocol (ADP) for development and maintenance activities involving earthworks (including planting) in parks and reserves so that in the event cultural materials or kōiwi (human remains) are discovered, work is stopped immediately and Te Ngāi Tūāhuriri Rūnanga, Te Hapū o Kāti Urihia Ahu Whenua Trust, and New Zealand Historic Places Trust, are contacted for advice.

P3 Reserves planning and management

That the Council recognises Ngāi Tūāhuriri Rūnanga (and Kāti Urihia Hapū) as tangata whenua and, when appropriate, seeks their involvement in further planning and management of the planning area such as in the preparation of reserves management plans and representation on reserve management committees.

The Council to ensure it gives consideration to tangata whenua values in its decisions related to reserve acquisition, designation and management and to actively protect those values if they are threatened.

P4 Research and monitoring

That the Council considers the following research and monitoring proposals for the planning area.

- The identification and monitoring of pollution sources.
- Investigation of the impacts of development proposals within, and upstream of, the planning area on water quality in the Styx River/Puharakekenui and Brooklands Lagoon/Te Riu o Te Aika Kawa.
- Identification of wastewater infrastructure options that avoid degradation of water quality in the Styx River/ Puharakekenui and Brooklands Lagoon/Te Riu o Te Aika Kawa.
- Cultural health monitoring by Ngāi Tahu, using the State of the Takiwā tool of Te Rūnanga o Ngāi Tahu.
- Investigation of the state of the shell fishery in Brooklands Lagoon/Te Riu o Te Aika Kawa.
- Investigation of the effect of the operational regime of the Styx River/Puharakekenui control gates on the salt water/freshwater interface.

Photos (right)
Dense saltmarsh at the Spencer Park end of the Brooklands Lagoon/Te Riu o Te Aika Kawa estuary (top), view down the extensive saltmarshes, comprising oioi with shrubs of coastal ribbonwood, of the estuary towards Spencer Park and the Port Hills beyond (middle) and rounded patches of oioi amongst three-square (bottom).

16 VEGETATION [31]

16.1 Seafield Park and adjacent areas

The habitat types of the Seafield Park area are the product of modern coastal aggradation, which has produced a series of dune ridges running parallel to the coast, with hollows between these. The most recent of these ridges comprises the active dunes of Brooklands Spit/Kairaki, which extend southwards along the edge of Pegasus Bay. Inland is the embayment of Brooklands Lagoon/Te Riu o Te Aika Kawa and south of this the freshwater wetlands of Spencer Park. On the western side of Brooklands Lagoon/Te Riu o Te Aika Kawa there is a series of older low dunes, then a narrow inter-dune basin followed by an even older dune ridge close to Lower Styx Road. The next hollow to the west has the Styx River/Puharakekenui running along its length. The narrow gap between the two close dune ridges on the western side of Brooklands Lagoon/Te Riu o Te Aika Kawa is not continuous as sand from the more coastal ridge extends across to the next ridge in some areas. Thus, although there are two major alternating ecosystems - sand dune and wetlands, these change and become less distinctive inland.

16.2 Brooklands Spit/Kairaki sand dunes

The only active sand dunes in the area are those of Brooklands Spit/Kairaki. The seaward side of the Spit comprises an active foredune at the top of a wide beach. Marram grass (*Ammophila arenaria*) dominates this face, along with occasional iceplant (*Carpobrotus edulis*) and purple groundsel (*Senecio elegans*). There are signs here of alternating accretion and erosion phases, the latter probably occurring during storms. The back face of the foredune is sheltered from coastal processes and contains a greater variety of plants characteristic of non-active dunes below the high sand ridge. Most of these are exotic grasses and herbs, such as downy brome (*Bromus tectorum*), but others are exotic shrubs such as gorse (*Ulex europaeus*) and small trees such as elder (*Sambucus nigra*). Right near the base of the dunes, on the western side, there are some native plants, such as flax (*Phormium tenax* (Harakeke – a Ngāi Tahu Taonga species)) and cabbage tree (*Cordyline australis* (Ti Kōuka/Ti Rākau –another Ngāi Tahu Taonga species)). Plants of tauhinau (*Ozothamnus leptophylla*) found half way down the Spit are all that remain from an attempt to establish native vegetation on the dunes. Experience elsewhere has shown that, when planted, such plants need to be watered, and no supply of water is available here.

At the northern tip of Brooklands Lagoon/Te Riu o Te Aika Kawa there is a plantation of radiata pine (*Pinus radiata*). Mixed with it are occasional trees of macrocarpa (*Cupressus macrocarpa*) and maritime pine (*Pinus pinaster*). The radiata pines have produced an invasion of wilding trees on both the sand dunes and the edges of the saltmarshes of Brooklands Lagoon/Te Riu o Te Aika Kawa. Beneath these pines the dune plants disappear, and the pines' establishment on the saltmarsh edge threatens the viability of that ecosystem. A recent notable discovery at the edge of the pines has been the native dune annual herb glaucus goosefoot (*Chenopodium glaucum*), a species that is extremely rare around Christchurch.

16.3 Brooklands Lagoon/Te Riu o Te Aika Kawa

The hollow of Brooklands Lagoon/Te Riu o Te Aika Kawa comprises an estuary that fills and drains of sea water to the north. This was not always the case, as there were previously one, or at some stages, two wide openings in the centre of what is now Brooklands Spit/Kairaki. The shifting of the opening to the north has resulted in major changes to the estuary. A recent study has shown that there are now effectively two ecosystems in the estuary - a southern 'Spencerville' system and a northern 'Brooklands' system. The two are quite distinct and change fairly abruptly from one to the other. On the western side of the estuary, the channel between the two halves of a long island of saltmarsh marks the boundary.

The saltmarshes of the southern end are characterised by the deposition of large amounts of fine sediment ever since the time the mouth to the estuary shifted north. This deposition has resulted in an increase in vegetated cover, especially of the native sedge three-square (*Schenoplectus pungens*). Three-square occupies vast areas of continuous vegetation that is blue-green in colour in summer, but appears bare in winter when this plant dies down. The spread of the plant is not all one way

[31] Adjusted from information provided by Dr. Trevor Partridge, Christchurch City Council.

though, as patches where it was previously present are now bare mud. Other species occur along the dendritic channels, including two threatened species, the sedge *Carex litorosa*, and the creeping native musk (*Mimulus repens*). Around the edges, three-square grades into sea rush (*Juncus krausii*), oioi (*Apodasmia similis*) and coastal ribbonwood (*Plagianthus divaricatus*). The only remaining occurrence in Christchurch of four square (*Lepidosperma australe*) is at the edge, and there are two small areas here containing some of the last patches of manuka (*Leptospermum scoparium*) in the city.

In contrast, the saltmarsh at the Brooklands end of the estuary is typical of coarser sandy sediments. It covers a much smaller portion of the mudflats and is relatively stable. The lower-most zones have sea rush or herbfield of New Zealand primrose (*Samolus repens*) and the succulent glasswort (*Sarcocornia quinqueflora*). At higher elevations, they are joined by remuremu (*Selliera radicans*) and the sedge *Schoenus concinnus*, a plant that is common here, but rare elsewhere in Canterbury. Above that, and at the land margin, are the characteristic circles of oioi and scattered shrubs of coastal ribbonwood. The succulent sub-shrub *Suaeda novae-zelandiae* can be found on sand ridges in the saltmarsh, but increasing amounts of exotic sand couch (*Thinopyrum junceiforme*) threaten this microhabitat. A few tiny patches of the semi-marine eelgrass (*Zostera capricorni*), once probably common at Brooklands Lagoon/Te Riu o Te Aika Kawa, can be found in channels.

16.4 Teacher research projects

Research work was undertaken by two teachers over 2008 at Brooklands Lagoon/Te Riu o Te Aika Kawa as part of a New Zealand Science, Mathematics and Technology Teacher Fellowship that each teacher had received. These fellowships are funded by the New Zealand Government and administered by The Royal Society of New Zealand.

One of the teachers involved undertook an extensive vegetation survey of all the saltmarsh wetlands at Brooklands Lagoon/Te Riu o Te Aika Kawa. The results of this survey is covered in a comprehensive report [32]. Further information is provided in an identification guide on the saltmarsh plants of the estuary[33].

This project was hosted by the Styx Living Laboratory Trust, Environment Canterbury and the Council.

The other teacher collected data from extensive sediment sampling along thirteen previously monitored transect lines across Brooklands Lagoon/Te Riu o Te Aika Kawa.

In 2007, another teacher fellow had completed a survey of aquatic plants in the Styx, Avon and Heathcote Rivers[34].

To view the detail of the saltmarsh species identification guide prepared following this work go to Appendix 1 starting on page 120.

[32] Worner, G.; Partridge, T. (2008).
[33] Worner, G. (2008).
[34] van den Ende, B. (2007).

16.5 Spencer Park

To the south of the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa, the hollow between the dunes continues as a series of freshwater depressions. These, and their margins, once contained some notable native species, which have mostly disappeared under a canopy of pines and poplar. The threatened species *Gunnera arenaria* has disappeared from this last site in Christchurch (it has been rescued into cultivation), as has a once large patch of the native creeping silverweed (*Potentilla anserinoides*). Other creeping herbs once recorded from this area can no longer be found there. The native freshwater rushes (*Juncus edgariae*), sedges (*Carex secta*), flax, cabbage tree, pohuehue (*Muehlenbeckia complexa*) and shrubs of *Coprosma propinqua* remain, because they are either in openings where the exotic trees cannot invade or are shade tolerant.

16.6 Western dune ridge

On the western side of Brooklands Lagoon/Te Riu o Te Aika Kawa there is a low ridge of older inactive sand dunes. Parts of these dunes ceased being active at different times, so carry different vegetation along their ridge. The youngest ones are opposite the previous estuary mouth and still carry marram grass and associated species. On the older dunes to the north and south, the dune plants have been replaced. Until recently, shrubweeds such as gorse and broom (*Cytisus scoparius*), along with trees of elder, dominated much of those dunes, but these have been mostly cleared and pasture now occupies most of the area. Some large stands of white poplar (*Populus alba*) occur in some areas and at Brooklands the dune ridge now supports houses.

16.7 Interdune slacks

Between the two close ridges to the west of Brooklands Lagoon/Te Riu o Te Aika Kawa are a series of dune hollows, termed slacks. These are interrupted, because in the past sand has blown inland from the eastern dune ridge to the inland one, along which Lower Styx Road and its accompanying housing is located. The hollows have been highly modified through farming and forestry. Just to the south of Brooklands, a highly degraded dune slack has recently been deliberately connected to the estuary, and a series of channels and islands constructed as bird habitat. This area will be colonised by saltmarsh plants as the tidal regime is established, and other species will be planted. North of Earlham Street, the dune slack hollow is well developed, but only one area, comprising about twenty five percent of the original slack, still contains good native dune slack vegetation. This comprises a low herbfield of mostly remuremu, with glasswort, New Zealand primrose, *Schoenus concinus* and other herbs. Near Earlham Street, there are patches of sea rush and three-square in the deepest hollows. Unfortunately, in addition to the human impacts, many of the smaller slack hollows have been invaded by couch grass (*Elymus repens*), which has displaced the native plants. The even older dune ridge that occurs to the east of the Styx River/ Puharakekenui has lost all its dune vegetation and most of its structure to housing and farmland. The Styx River/ Puharakekenui, and its associated wetlands, occupies the next hollow to the west.

16.8 Waimakariri River and Styx River/ Puharakekenui mouths

The well defined series of ridges running north to south are interrupted by the channels of the Styx and Waimakariri Rivers. Originally, the Waimakariri River flowed down the bed of the Kaiapoi River, but repeated flooding resulted in a 'cut' being made to the south of Kaiapoi and much closer to the mouth of the Styx River/ Puharakekenui. There are extensive saltmarshes around the mouth of the Styx River/Puharakekenui, but these have been highly modified by the changes in both rivers. The construction of tidal gates on the Styx River/ Puharakekenui, and the floodbank ridges constructed to protect Brooklands, have confined the southern areas of this saltmarsh. A series of floodbanks constructed to stop the Waimakariri River cutting through to the Styx River/Puharakekenui have partially or completely empoldered the former areas of saltmarsh. There is also evidence of attempts to drain some of these marsh areas. This has resulted in the saltmarsh in this area becoming confined and thus, ecologically, it is unable to progress as would a normal saltmarsh. The part closest to the Waimakariri River has even lost its tidal regime and now comprises remnant coastal ribbonwood and oioi that is being gradually invaded by land plants, especially tall fescue (*Schedonorus arundinaceus*) and freshwater species. To the south, the lower reaches of the Styx River/ Puharakekenui still allow salt water to enter and exit, but the marshes are held in the later stages of succession, comprising sea rush, oioi and coastal ribbonwood, with increasing amounts of tall fescue. These marshes can be said to be 'moribund'. The only active area is immediately around the mouth of the Styx River/Puharakekenui and opposite the opening to the Waimakariri River. Here, a very active zone comprising patches of saltmarsh species, such as three-square, New Zealand primrose and glasswort, that come and go. The aggressive pest plant cord grass (*Spartina anglica*) has recently been discovered here.

16.9 Weeds

From the report of McCoombs (1999), the saltmarsh on the Brooklands Lagoon/Te Riu o Te Aika Kawa margins was being invaded by weeds, including gorse, Spanish heath and pines. Most of the extensive areas of scrub weeds have been brought under control and no longer pose such a threat. Spanish heath is the subject of an intensive eradication project on the one remaining site on Brooklands Spit/Kairaki. Pines have, despite some effort at removing individuals, become a major pest plant, especially on Brooklands Spit/Kairaki. These kind of species threaten the high ecological values of the estuary by significantly altering the habitat. McCombs (1999) considered that the increase in weeds may be related to the hot summers encouraging growth, and also to the infilling and consequent drying out that is occurring in parts of the estuary. Areas that were previously saltmarsh are now marsh fringe and therefore more prone to weed invasions[35].

The main weed species present in 1999 in the Brooklands Lagoon/Te Riu o Te Aika Kawa and wider area are listed in the following table. These particular species are a problem because of the effect they have on other vegetation, such as changing the composition or structure of the habitat, and suppressing regeneration of other species. They also tend to reproduce and/or spread quite rapidly. In addition, they can be difficult (and/or expensive) to control. All are considered serious environmental weeds.

Since that time, two new weeds have been recorded in the saltmarsh; sea couch and cord grass, the later being a 'pest plant' in the Environment Canterbury Regional Pest Management Strategy. The area is being monitored for other potential weed pests such as sea lavender (*Limonium companyonis*), which may invade from the Avon/Heathcote Estuary.

[35] Unlike many natural New Zealand habitats saltmarshes can generally resist invasion by exotic weeds because of the need for salt tolerance.

	BLACK BERRY	BROOM	COAST WATTLE	GORSE	GREY WILLOW	NODDING THISTLE	PINE	SILVER POPLAR	SPANISH HEATH	SWEET BRIAR
Brooklands Spit/Kairaki end							√			
Brooklands Lagoon/Spit margin				√			√			
South Brooklands Lagoon margin	√	√	√	√	√		√		√	√
Seafield Park	√	√		√	√	√		√		
Spencer Park wetlands	√			√	√		√			
Rest of Spencer Park	√	√		√	√			√		
Foreshore				√			√	√		

17 WILDLIFE

17.1 Birdlife

Most of the following birdlife information is taken from an unpublished Council report on what is referred to as the Brooklands Lagoon/Te Riu o Te Aika Kawa wetland complex, prepared in August 2008[36]. Information on taonga species for Ngāi Tahu was provided by Mahaanui Kurataiao Ltd on behalf of the tangata whenua for the area.

The Brooklands Lagoon/Te Riu o Te Aika Kawa wetland complex comprises Brooklands Lagoon/Te Riu o Te Aika Kawa, Brooklands Spit/Kairaki, inland saltmarsh and dune environments on the estuary's western margin, the lower Styx River/Puharakekenui ponding area, the Styx River/Puharakekenui mouth marshes, Kainga Road salt meadow, the Waimakariri River mouth and the Kaiapoi Oxidation Ponds. It is considered one of the largest coastal wetland complexes in Canterbury.

Since the 1850s, some 100 species of bird have been recorded using Brooklands Lagoon/Te Riu o Te Aika Kawa and its immediate environs. This avifauna comprises 43 resident species, 23 seasonal visitors, 26 vagrants and eight species now locally extinct.

Forty-four bird species occur year round in the estuary and on its environs, with 37 species breeding locally. Many of the other species are migrants, coming from other parts of New Zealand, or as far away as the arctic regions of Siberia and Alaska.

Sixty nine species (69% of the total) are classified as wetland/coastal birds and numbers of these peak at over 6000 in late summer/autumn.

The following table lists 26 wetland/coastal bird species that use Brooklands Lagoon/Te Riu o Te Aika Kawa and its environs in numbers of national (N), regional (R) or local (L) significance (defined as greater than five percent of local or regional, or greater than one percent of national, populations; based on estuary bird monitoring data and best estimates for local/regional/national populations).

The table also identifies those species that are defined in the Ngāi Tahu Claims Settlement Act 1998 as taonga species for Ngāi Tahu (T), defined in this way to recognize the special relationship Ngāi Tahu hold with these species.

Many rare species are also recorded in the estuary, including sightings in the last few years of such species as Hudsonian godwit, Asiatic whimbrel, ruff, black stilt/kakii, little tern/tara, Arctic skua, chestnut-breasted shelduck, long-tailed cuckoo/koekoeaa and Australasian crested grebe/kaamana.

The Brooklands Lagoon/Te Riu o Te Aika Kawa complex is the second largest wetland area within the 'urban' part of Christchurch City (excluding Banks Peninsula) and, in terms of bird abundance and species richness, is the second most important local site for wetland/coastal birdlife (Innes et al. 1991). In both rankings, Brooklands is second only to the Avon-Heathcote Estuary/Bromley Oxidation Ponds and ahead of such other sites as Travis Wetland, Styx Mill Basin, Horseshoe Lake and Peacock Springs.

Table of wetland/coastal bird species that use Brooklands Lagoon/Te Riu o Te Aika Kawa and its environs:

New Zealand shoveler/kuruwhengu	NT
Grey teal/tete	NT
New Zealand scaup	N
South Island pied oystercatcher	R
Bar-tailed godwit/kuuaka	RT
Pied stilt/poaka	RT
Paradise shelduck/puutakitaki	RT
Pied cormorant	R
White-faced heron	R
Royal spoonbill	R
Caspian tern	R
White-fronted tern/tara	RT
Black-fronted tern/tara	RT
Black-billed gull/tarāpunga	RT
New Zealand kingfisher	R
Variable oystercatcher	L
Banded dotterel	L
Black swan	L
Canada goose	L
Mallard	L
Black cormorant/kooau	LT

[36] Crossland A. C. (2008).

Little cormorant/kooau	LT
Spotted shag	L
Puukeko	LT
Red-billed gull	L
Black-backed gull/karoro	LT

The Brooklands Lagoon/Te Riu o Te Aika Kawa wetland complex is an important wintering site and migration stop for wetland/coastal birdlife that breed on the Waimakariri River bed, as well as in other parts of Canterbury and the eastern South Island. It is also an important breeding ground in its own right. Important bird nesting areas include Brooklands Spit/Kairaki, the saltmarsh margins and the Kaiapoi Oxidation Ponds.

In the regional context ...

Brooklands Lagoon/Te Riu o Te Aika Kawa contains the second most extensive area of saltmarsh habitat in Canterbury, after Lake Ellesmere.

The estuary represents the fourth most extensive area of nesting ground for wetland/coastal birds in coastal Canterbury, after Lake Ellesmere, the Ashley-Saltwater Creek Estuary and Lake Ki-Wainono.

In terms of species richness, the Brooklands area probably has the fifth highest ranking in Canterbury, behind Lake Ellesmere, the Avon-Heathcote Estuary and Bromley Oxidation Ponds, Lake Ki-Wainono and the Ashley-Saltwater Creek Estuary. The number of bird species recorded at Brooklands Lagoon/Te Riu o Te Aika Kawa (100) is comparable with, or higher than, most other New Zealand estuarine systems.

As for total wetland/coastal bird abundance, the recent creation of a large extent of shallow pond/mudflat/marsh habitat at the Kaiapoi Oxidation Ponds (on the north bank of the Waimakariri River), and new saltmarsh development in the Dartford/Beacon Street area, has boosted the regional ranking of the Brooklands Lagoon/Te Riu o Te Aika Kawa complex. It now probably ranks fifth within the Canterbury Region, behind Lake Ellesmere, the Avon-Heathcote Estuary and Bromley Oxidation Ponds, Lake Ki-Wainono and Lake Forsyth.

Further, detailed information on birds specific to each major landform in the planning area is given in the section dedicated to that landform component.

18 RECREATION

The Brooklands Lagoon/Te Riu o Te Aika Kawa area was a popular holiday resort and picnic area for day trippers in the 1800s, and the area was used for surf/river fishing, boating, yachting and whitebaiting. During the 1920s and 1930s it became a haven for yachties and water skiers.

In recent times, to the present day, the greatest number of people visiting has been casual visitors, with informal picnicking and walking, sometimes in conjunction with other activities such as bird watching, becoming increasingly popular. Fishing takes place at the end of Brooklands Spit/Kairaki at the mouth of the Waimakariri River, south along the ocean beach and in the Styx River/Puharakekenui. Trout, salmon and whitebait fishing is most popular, with two seasons for trout and salmon (1 October to the end of April, and from the first Saturday after Queens Birthday weekend to the end of August). The whitebaiting season runs from 1 August to the end of November each year.

Vehicle access to the beach is by permit only, via a locked gate at the end of Heyders Road in Spencer Park Beach. Vehicles may only be driven on the beach north of this point. Horses also have entry here and can be ridden up to the Spit tip or south to Bottle Lake Forest Park.

In Brooklands Lagoon/Te Riu o Te Aika Kawa itself, activities that take place include recreational shooting and motorised/non-motorised water sports. Game bird shooting is only permitted, during season (varies between species) in the mid-reaches of the estuary. Motorised watersports, such as power boating and water skiing,

are restricted to north of a line that extends across the Lagoon just south of Dartford Street, with the exception of motorised vessels operated for official purposes (see the photo plan on page 90).

The area centred on Spencer Park and the southern end of Seafield Park is a well developed public recreational area, with facilities provided such as information, toilets, picnicking, play and camping. The focus for this area is on it being a relatively un-commercial, family/group based passive recreational experience with good track connections between amenity and natural sub-areas. It is also seen as a core or hub for the wider area Brooklands Lagoon/ Te Riu o Te Aika Kawa area, providing the primary arrival/departure point for a spectrum of recreational experience radiating out from this centre-point.

There are other more typical metropolitan local parks nearby in the townships of Spencerville and Brooklands that are clearly developed spaces for play or sporting activity and contain little or no natural or wild element. They are valuable areas for the local community, despite the large natural areas nearby around Brooklands Lagoon/Te Riu o Te Aika Kawa, because they provide the community opportunities for play relatively near their homes. They provide the space and facilities for organised sports activities. These include Harbour Reserve, Brooklands Domain and Spencerville Reserve.

Overall, the focus for the publicly accessible open space in the Brooklands Lagoon/Te Riu o Te Aika Kawa area, and particularly in the case of the Council parks, is to provide for access for recreation that is primarily non-motorised and non-impacting on the natural coastal environment. This includes recreational activities, such as picnicking, walking, dog walking, horse riding, mountain biking, orienteering and beach play, to name some. Each activity has its own place, sometimes shared, in the area where it is appropriate and desirable for the activity to be undertaken.

18.1 Summer User Survey 2003/2004[37]

Survey Details

- On 108 days from mid December 2003 to mid March 2004.
- Undertaken at 5 sites (see below).
- 474 questionnaires were completed.

Survey Area Zones

A: Spencer Park (including the holiday park and surf life saving club).

B: Seafield Park (including the animal area, Seafield Park horse area and the south end of the estuary area).

C: Brooklands Lagoon/Te Riu o Te Aika Kawa and north Seafield Park.

D: Brooklands Spit/Kairaki and beach.

E: Lower Styx River/Puharakekenui.

Respondent Demographics

- 52% were female.
- Those in full-time employment were over-represented.
- Most live in Christchurch.
- Most visitors came from the northern and north-eastern suburbs of Christchurch.

Main Recreational Activities Indicated By Respondents:

- Walking
- Family outings
- Picnicking
- Camping
- Visiting the animal area
- Visiting the beach
- Mountain biking

[37] Contracted to Rob Greenaway & Associates (RG&A). Note: there have been developments to the Spencer Park picnic ground play facilities since the survey.

Entry and Exit Sites

SURVEY AREA ZONE	ACTUAL ENTRY/ EXIT POINTS	% OF RESPONDENTS THAT USE THESE
A	Including Spencer Park, the holiday park, surf life saving club	78%
B	Including the animal area, Seafield Park horse area, south end Brooklands Lagoon/Te Riu o Te Aika Kawa area	11%
E	Styx River mouth jetty, Kainga Road	7%
D	Brooklands Spit/ Kairaki and beach	2%
C	Including Brooklands Lagoon/Te Riu o Te Aika Kawa	1%

Respondent Interactions

- 53% had interactions with other visitors.
- Of these, 87% considered their interaction positive, 7% felt neutral and 7% were negative about it.

Level of Satisfaction

RESPONDENT	NO	YES
Dis-satisfied with experience	64%	30%

Main reasons given for dissatisfaction:

- Weather 14%
- Rubbish 12%
- Condition of barbeque facilities and overcrowding 7%

Perceptions of the Area

Respondent's view of the area's naturalness / degree of modification:

- Moderately natural/partially modified 14%
- Highly natural 12%

Top Features Indicated

- Beach environment 67%
- Peacefulness 52%
- Range of possible activities 50%

Choice of Area

- 35% ranked it as the top area in the city for their chosen activity.
- 45% ranked it as their second choice of location.

Reasons for choice:

- Accessibility 14%
- Range of activities available 9%
- Good for children 6%
- Closeness to home and access to the beach 5%

Commercial Activities

- 62% of 312 respondents objected to activities with an aspect of development/commercialisation.
- Most reasons given related to the risk of spoiling the nature of the area.

Improvements

- Half the respondents had no suggestion.
- Main requests were for:
  - More rubbish bins[38].
  - Better signage and maps.
  - More toilets.
  - Improved track maintenance.

Photo (right)
White-faced heron on the mudflats of Brooklands Lagoon/Te Riu o Te Aika Kawa.

[38] The Council's policy of "Rubbish-Free Parks" applies here, and has been, and continues to be, successful. Therefore, rubbish bins will not be provided.

19 LINKS

Extending south from Heyders Road, the Pegasus Bay walkway links Seafield and Spencer Parks with Waimairi Beach approximately five kilometres down the coastline.

Bottle Lake Forest Park, which adjoins Spencer Park, also provides walking and riding links with Seafield and Spencer Parks. Accesses to these tracks are located at various points along Heyders Road.

A walkway from Seafield Park to The Groynes in the west, via the Waimakariri River bank, has been proposed in the past. While this extended walkway may be some years from being realised, such a track would likely extend along Environment Canterbury administered flood protection stopbanks on the southern side of the Waimakariri River. It is thought that with sensitive development and use of the track though this ecologically significant area, appropriate recreational use could be successfully integrated.

More recently, Environment Canterbury's commencement of development of the Waimakariri River Regional Park has initiated more consideration being given to improving recreational opportunities and environmental enhancement in addition to maintaining flood protection along the Waimakariri River. This regional park is to extend down river from The Waimakariri Gorge Bridge to the river mouth, and include Kaiapoi Island on the northern side of the river.

Sections of the Styx River/Puharakekenui corridor are linked to the open space areas on the western side of Brooklands Lagoon/Te Riu o Te Aika Kawa by existing roads and accessways. The potential is, in the future, for walking access along the length of the river corridor, with good access at several points to the public reserves in the east. This can be achieved through the stopping of the unformed legal road along the river length and its promotion and development as local purpose (esplanade) reserve, catering for both riparian protection and public walking access.

Image (cropped) sourced from Image Science and Analysis Laboratory,
NASA- Johnson Space Centre. "The Gateway to Astronaut Photography of Earth. "
‹http://eol.jsc.nasa.gov/›.

KEY PLANNING AREA ELEMENTS

20 Waimakariri River/Styx River/Brooklands lagoon confluence:

A place of joining of several distinct ecosystems and under multiple government agency administration. A site of high ecological values (saltmarsh habitat and wetlands) and historical development for river flood protection.

21 Styx River/Puharakekenui corridor:

River corridor enhanced/restored for natural values. Public access corridor for walking.

22 Mid and northern part Seafield Park:

High scenic/natural values protected in a proposed 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.

23 Brooklands Lagoon/Te Riu o Te Aika Kawa:

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.

24 Coastal strip (including Brooklands Spit/Kairaki):

Protected natural environment but public access for recreation - range of experience from easily accessible to remote.

25 Spencer Park and southern part Seafield Park:

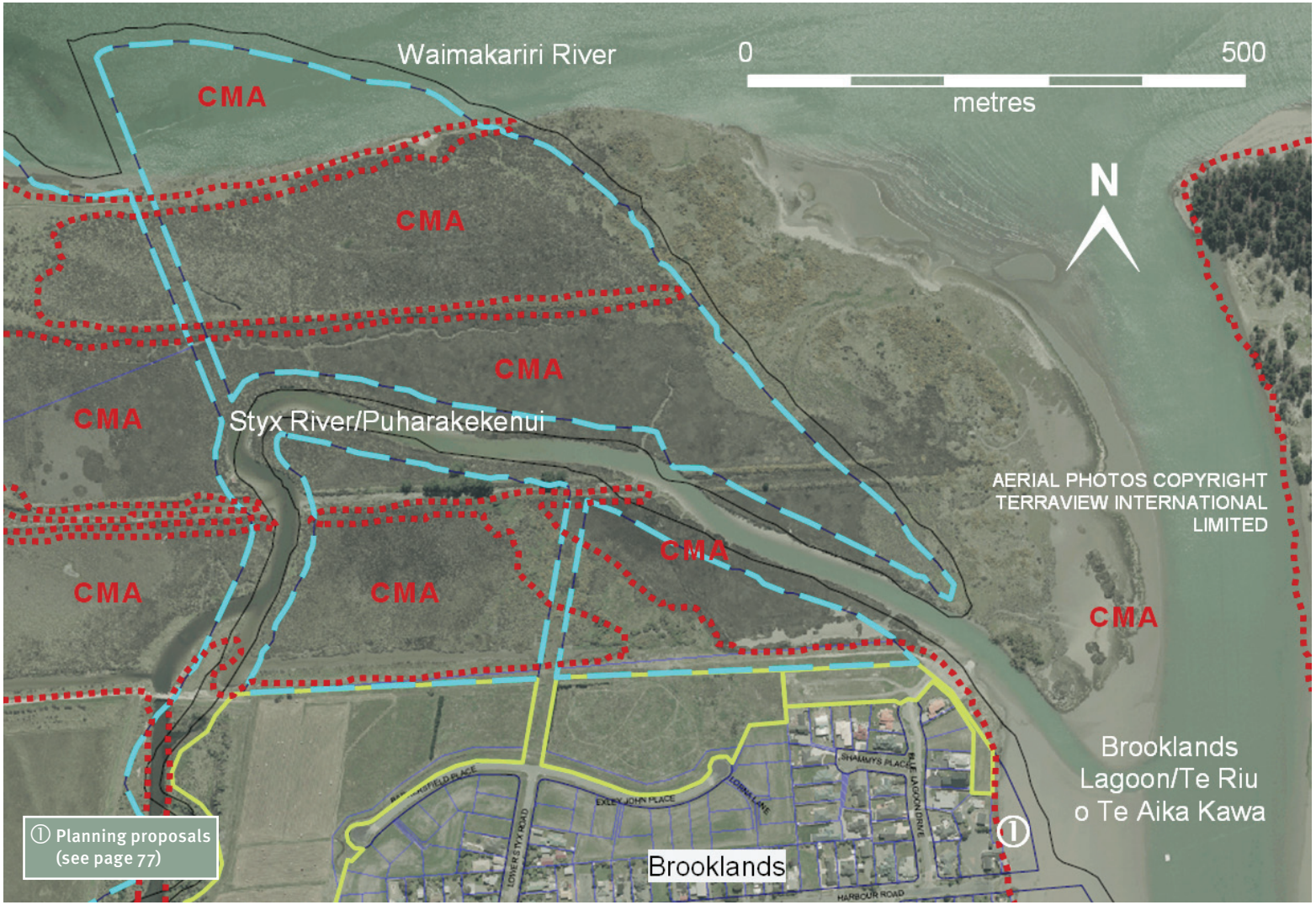
Arrival hub/starting point to radiate out along 'spokes of opportunity'. Place focused on passive recreation, with plenty of facilities and conveniences for the wider public, including roads, car parking and shop.

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



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 Crown land, 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 104.

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[39].

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 agency.

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

[39] 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 66).

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) [40]:

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/ Brooklands Lagoon confluence area[41]. 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[42].
- Investigate the feasibility and appropriateness of extending, deepening and widening the existing 'moat' system (that was, presumably, originally 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[43] 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/Puharakekenui mouth. This area of the estuary is vested in the Crown upon residential land subdivision and is within the CMA.

[40] 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.

[41] 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.

[42] The embankments carry scrub weeds, such as gorse.

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

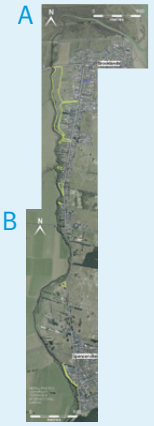
21 STYX/PUHARAKEKENUI RIVER CORRIDOR

The Styx River/Puharakekenui is 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.

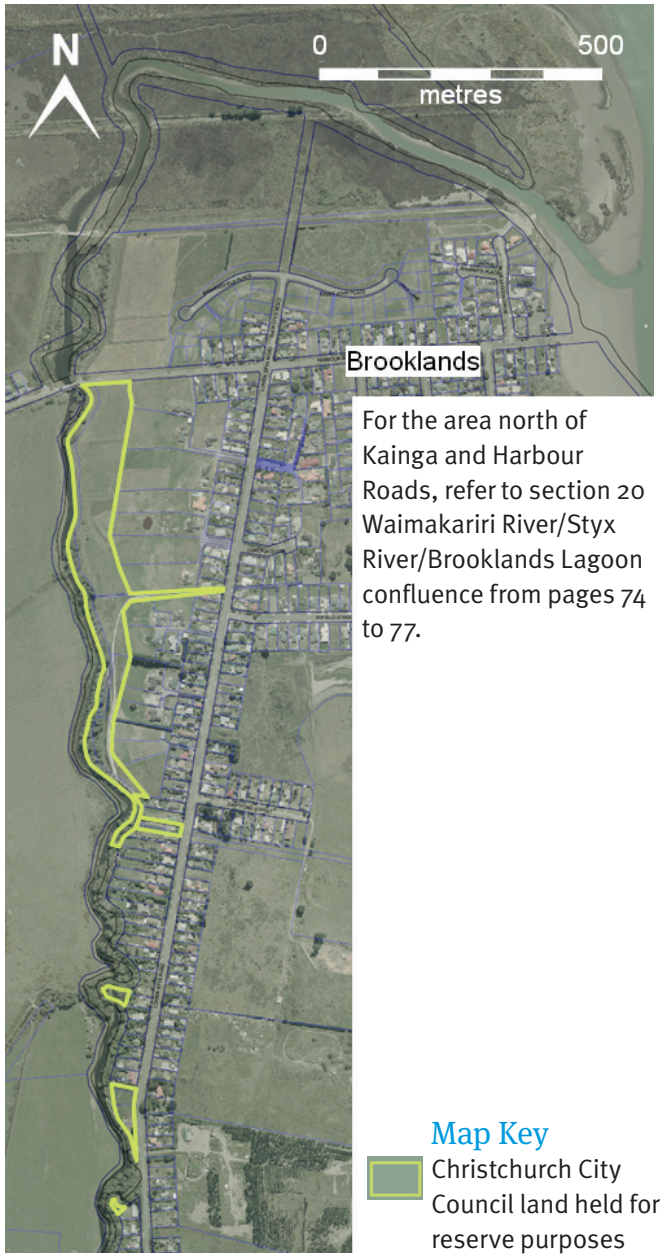
As indicated by the 'Black Map'[44] drawn in 1856, when early Europeans settled in the area, the Styx River/Puharakekenui and its tributaries were surrounded by extensive wetlands[45] and sand dunes.

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

[44] A map of the District of Christchurch was compiled from 'Black Maps' approved by J. Thomas and Thomas Cass, Chief Surveyors in 1856.
[45] These wetlands may themselves have been induced by Polynesian fires.



Photos flow as shown above



For the area north of Kainga and Harbour Roads, refer to section 20 Waimakariri River/Styx River/Brooklands Lagoon confluence from pages 74 to 77.

Map Key

Christchurch City Council land held for reserve purposes

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 1990's 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[46]
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[47] 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

[46] Adapted from Crossland A. C. (2008).

[47] 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[48]:

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.

[48] 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.

22 MID AND NORTHERN PART 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 and is 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 Crown land.

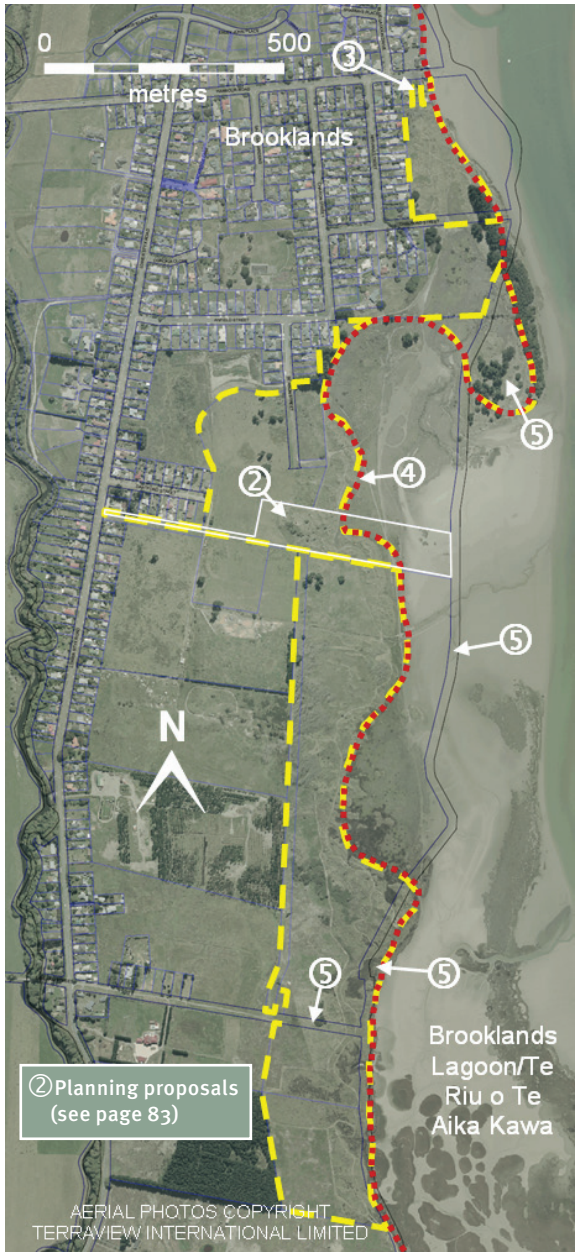
This means that this part of Seafield Park is able to be protected for its natural values, but still permit access by the public for recreational purposes - it is just that the recreation activities that are appropriate will be fewer and fewer developed facilities will be provided. The main emphasis being 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 when the plan becomes 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 "Seafield Ave" being chosen, followed by "Seafield 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 Seafield 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.

Seafield 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 destablised 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 c1assed 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.

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

The vegetation of Seafield 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 Seafield 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. It 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.)[49]:

P10 ②Change the classification of the recreation reserve to scenic reserve (requires public notification and the Minister of Conservation's consent).

P11 ③Declare the parcel of land at the Park entrance off Harbour Road as scenic reserve.

P12 ④Survey the eastern boundary of the Park.

P13 ⑤Stop 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).

[49] 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 instead 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 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.

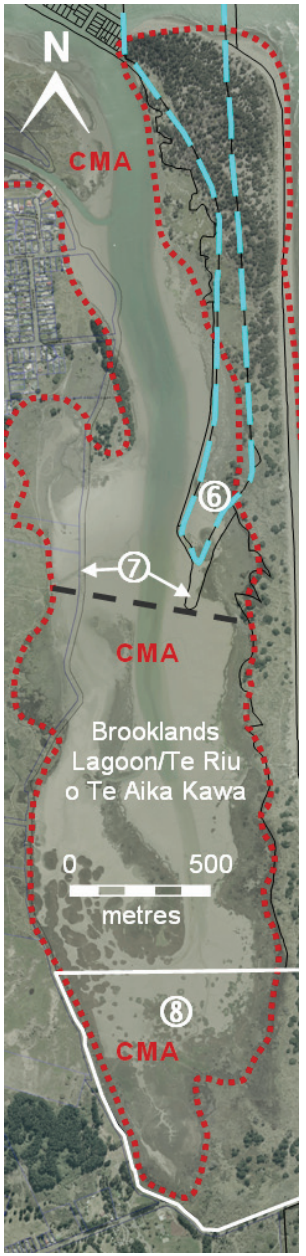
Brooklands Lagoon/Te Riu o Te Aika Kawa is an important link in a chain of wetlands that runs along the central Canterbury coast. These wetlands are used by migrating birds. The estuary provides a breeding habitat, wintering site and a feeding stop for birds migrating between the North and South Islands. The lagoon 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.

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)
- CMA — 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)



⑥Planning proposals (see page 89)

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[50]. 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.

[50] Site No. 12-006.

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[51]. 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[52]

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

[51] 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."

[52] From Crossland A. C. (2008).

the 1950s. Secondly, there is a 'landward zone' of areas formerly connected with the tide, which 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, but 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 once construction work is completed.

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, and for conflict between vehicle or vessel operators and other recreational users of this, and adjoining, areas. This necessitates restrictions[53].

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[54].

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

[53] 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).

[54] 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[55]), 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 lagoon 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[56].

[55] 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).

[56] 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 to 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[57] 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 at 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

[57] 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 being 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 along the estuary, the level of disturbance to birds increases 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 lagoon. 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 Brooklands Lagoon's populations of several bird species, particularly waders, 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[58] and facilitated rapid colonization by weeds and grasses.[59]
- The Crown land area at the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa has been variously referred to as wildlife management reserve or wildlife refuge in previous documents, there has never been any formalisation of such status for this area. In addition, the area, with the exception of the part below MHWS, is Crown land that is not administered by the Department of Conservation.
- 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.

[58] 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.
[59] 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.

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, 14 and 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[60].

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[61].

⑧ Remove from cadastral plans the boundaries defining the 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[62].

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 Seafield 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 Brooklands Lagoon's 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.

[60] 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.
[61] Also see P24 on page 94.
[62] Also see P25 on page 94.

24 COASTAL STRIP (INCLUDING BROOKLANDS SPIT/KAIRAKI)

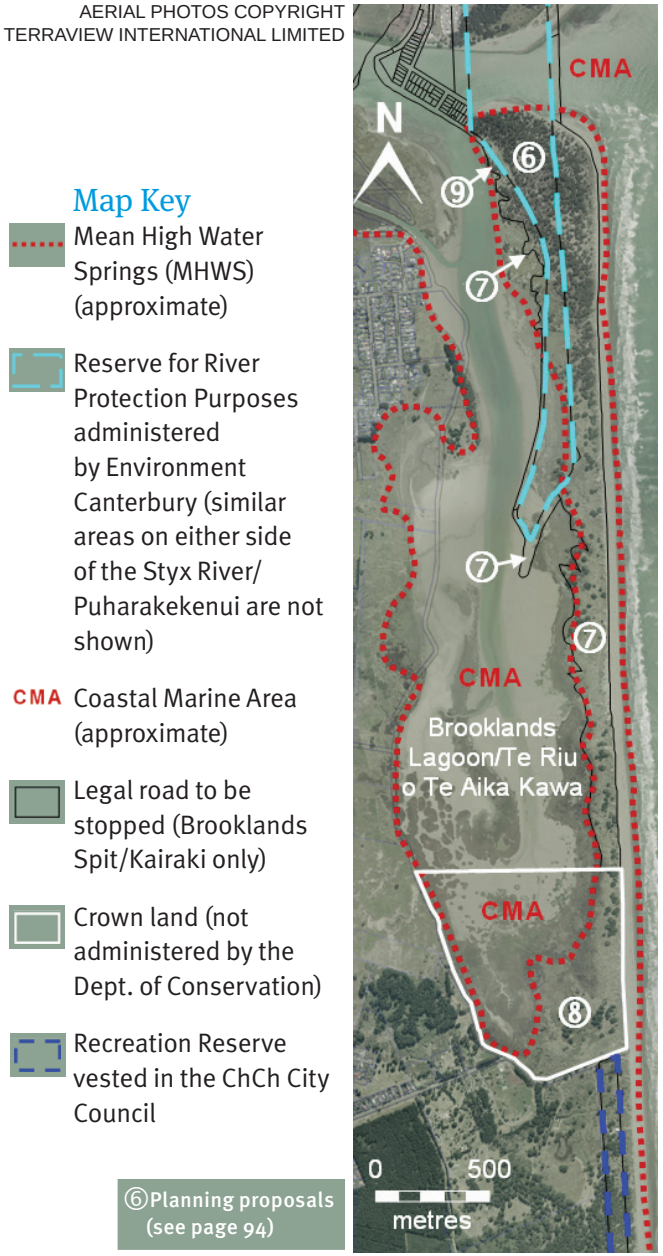
The linear coastal landform, consisting of an east to west sequence of broad sandy beach and tall vegetated parallel dunes, separates the hinterland occupied by Brooklands Lagoon/Te Riu o Te Aika Kawa and Spencer and Seafield Parks from Pegasus Bay. It extends south of the mouth of the Waimakariri River. 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).



24.1 A changing environment

Four factors have been instrumental in creating the Brooklands Spit/Kairaki of today[63]:

- 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 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

[63] 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[64]

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[65] 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-flippered penguins along the Spit is poorly known. There is tremendous potential for penguin nesting/moulting, and this may indeed already be occurring.

[64] Adapted from Crossland A. C. (2008).

[65] 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 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 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)[66]:

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.

P24 ⑦Initiate process to declare this stopped legal road and accretion scenic reserve.

P25 ⑧Initiate procedures to have the part of 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.

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-flippered 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.

[66] 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.

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 Seafield 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.

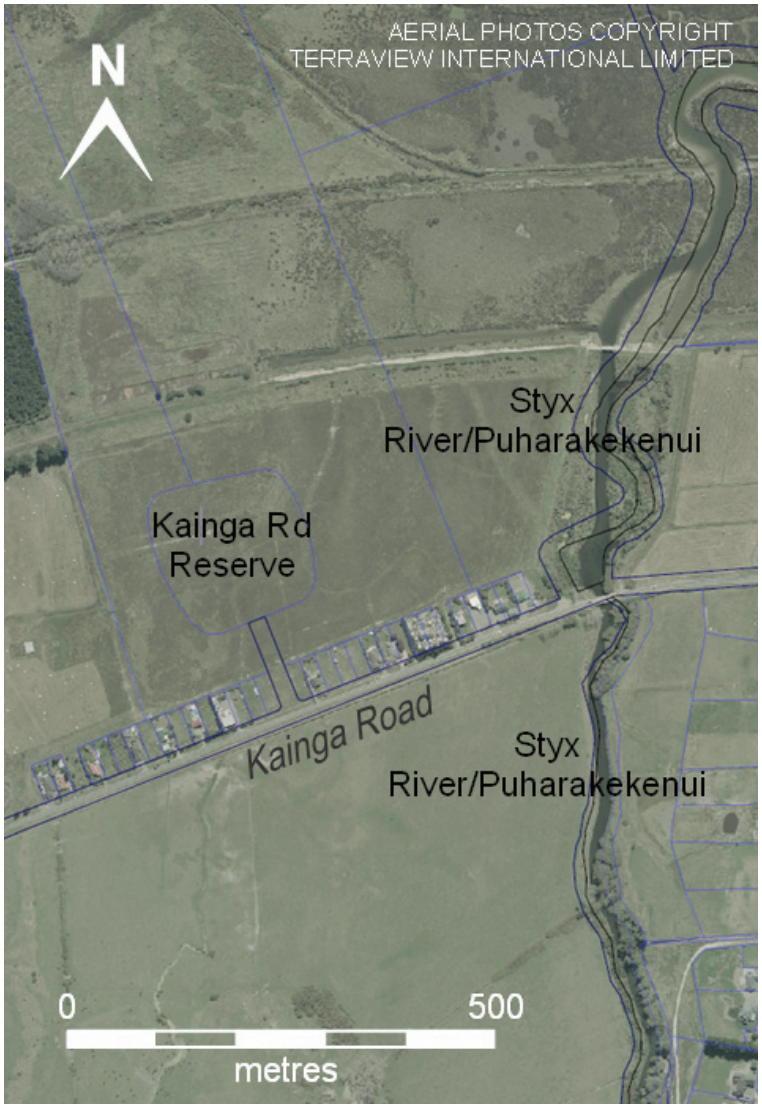
Planning proposals for Spencer Park include to (see photo plan on page 95 for location of the numbered proposals in circles):

P32 ⑩Expand 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 ⑪ 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[67].

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[68]. 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.

[67] It would be important, though, that no flooding of properties along Kainga Road could result.
[68] 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.

Mouth of the Styx River/Puharakekenui.

CONCEPTS / PROPOSED PROJECTS

27 STYX RIVER LANDSCAPE DEVELOPMENT CONCEPT

27.1 Styx River Mouth/Brooklands Boat Ramp Landscape Plan

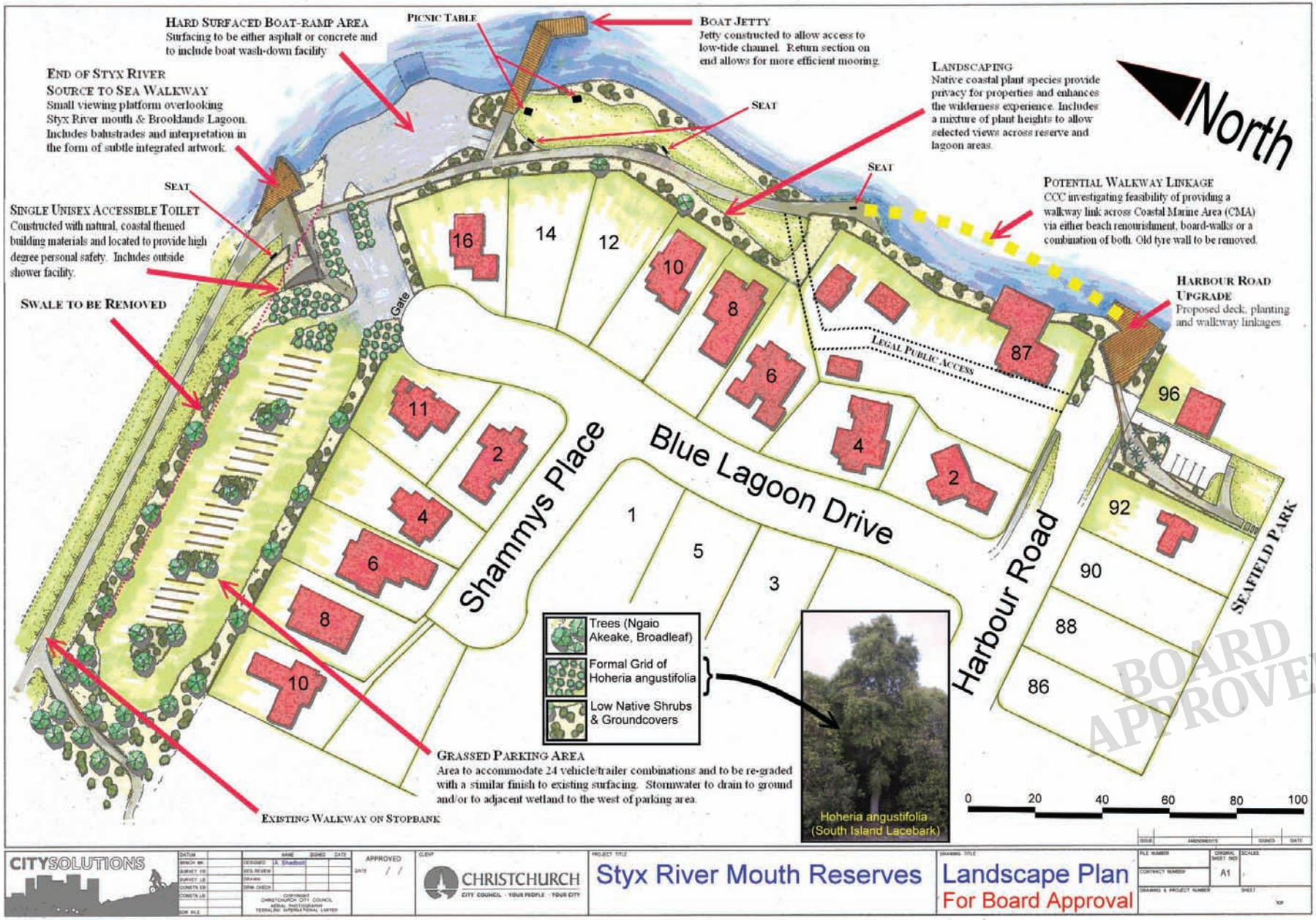
A draft landscape development plan for the Council administered public reserve on the south side of the Styx River/Puharakekenui mouth was advertised for public comment at the beginning of 2008. Proposed developments included a viewing platform, jetty, toilet block and an upgrade to the existing carpark. The public response, through written submissions and at a public meeting, raised a number of issues, including the siting and design of the toilet block.

The Shirley/Papanui Community Board, on 20 August 2008, approved the landscape plan presented on page 111, and a concept design for new toilet and changing facilities, in order to proceed to detailed design and construction/implementation.

The priority for the current financial year is to construct the toilet/change facilities, trailer car park and associated plantings. Following a detailed design phase, which includes attaining all appropriate consents, work is likely to begin on site in 2009.

The Board also resolved to advocate to the Council for removal of the right of way for public foot access between the reserve and Harbour Road that runs through the private property at 87 Harbour Road.

The Council resolved on 16 October 2008 to receive the report of the Board from the Board's 20 August 2008 meeting, which included the clause of the report dealing with the Styx River Mouth/Brooklands Boat Ramp Landscape Plan.


HARD SURFACED BOAT-RAMP AREA
Surfacing to be either asphalt or concrete and to include boat wash-down facility
PICNIC TABLE
BOAT JETTY
Jetty constructed to allow access to low-tide channel. Return section on end allows for more efficient mooring.
END OF STYX RIVER SOURCE TO SEA WALKWAY
Small viewing platform overlooking Styx River mouth & Brooklands Lagoon. Includes balustrades and interpretation in the form of subtle integrated artwork.
SEAT
LANDSCAPING
Native coastal plant species provide privacy for properties and enhances the wilderness experience. Includes a mixture of plant heights to allow selected views across reserve and lagoon areas.
North
SEAT
SEAT
POTENTIAL WALKWAY LINKAGE
CCC investigating feasibility of providing a walkway link across Coastal Marine Area (CMA) via either beach renourishment, board-walks or a combination of both. Old tyre wall to be removed.
SINGLE UNISEX ACCESSIBLE TOILET
Constructed with natural, coastal themed building materials and located to provide high degree personal safety. Includes outside shower facility.
HARBOUR ROAD UPGRADE
Proposed deck, planting and walkway linkages.
SWALE TO BE REMOVED
Gate
LEGAL PUBLIC ACCESS
Shammys Place
Blue Lagoon Drive
Harbour Road
SEAFIELD PARK
16
14
12
10
8
6
4
2
11
2
4
6
8
10
1
5
3
87
96
92
90
88
86
Trees (Ngaio Akeake, Broadleaf)
Formal Grid of Hoheria angustifolia
Low Native Shrubs & Groundcovers
GRASSED PARKING AREA
Area to accommodate 24 vehicle/trailer combinations and to be re-graded with a similar finish to existing surfacing. Stormwater to drain to ground and/or to adjacent wetland to the west of parking area.
EXISTING WALKWAY ON STOPBANK
Hoheria angustifolia (South Island Lacebark)
0 20 40 60 80 100
BOARD APPROVED
CITYSOLUTIONS
CHRISTCHURCH CITY COUNCIL · YOUR PEOPLE · YOUR CITY
Styx River Mouth Reserves
Landscape Plan
For Board Approval
A1

27.2 Proposed boardwalk

As part of the proposed developments for the Council administered public reserve area on the southern side of the Styx River/Puharakekenui mouth, for which the draft landscape plan was consulted on and approved in 2008, it is proposed to investigate the construction of a boardwalk over part of the inter-tidal area of Brooklands Lagoon/Te Riu o Te Aika Kawa and on adjacent land above the Mean High Water Springs (MHWS) mark. This will run from the estuary end of Harbour Road to the reserve area at the mouth of the Styx River/Puharakekenui.

In addition, foreshore enhancement on the land lying above Mean High Water Springs would entail removal of the old car tyre retaining wall and recontouring of the ground so that it grades naturally into the estuary area.

The three route options for the proposed boardwalk (see the plan on page 103), will cross an allotment of Crown land. This land (Lot 29 Deposited Plan 311066) was vested to the Crown, pursuant to Section 237A of the Resource Management Act 1991, following subdivision of the previous lot/section in 2002. Section 13 of the Foreshore and Seabed Act 2004 and Section 27 of the Resource Management (Foreshore and Seabed) Amendment Act 2004 subsequently replaced this vesting, in respect of that part of the allotment lying in the Coastal Marine Area (CMA). In effect, though, there is no change in ownership, which remains with the Crown.

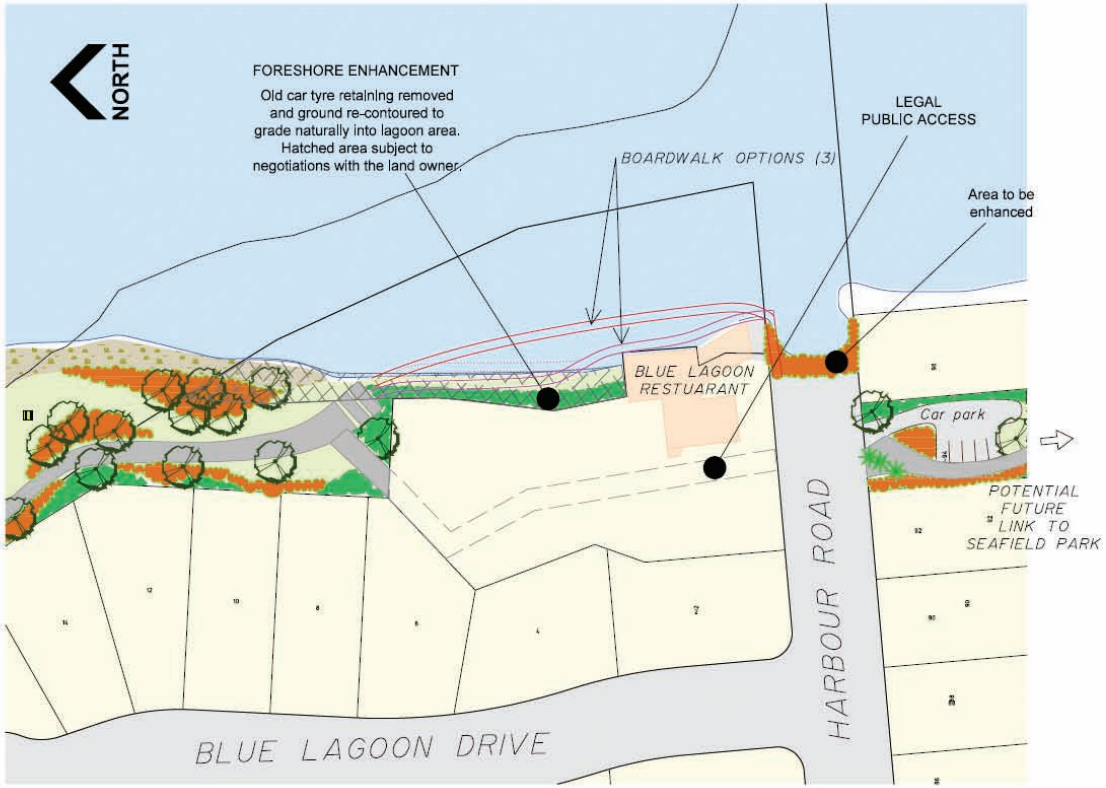
In this case, the administration of the whole of Lot 29 is with the Department of Conservation, with Environment Canterbury having responsibility for activities in the part that is in the CMA (that is, the part below MHWS). Although a Certificate of Title number (43544) was allocated for Lot 29 at the time of subdivision, it has never been issued.

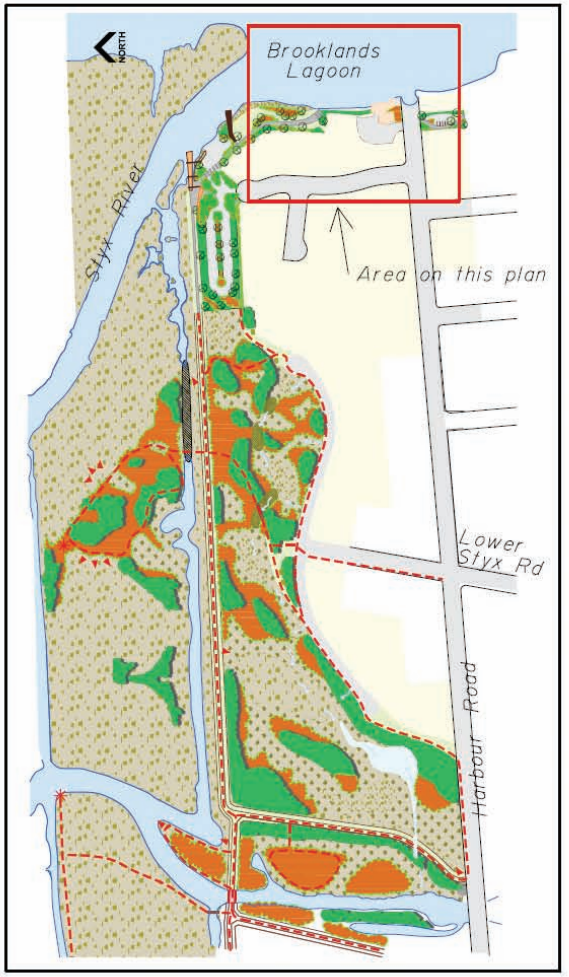
As the area over which the proposed boardwalk will cross is entirely outside any area that the Council controls, landowner consent will be required to be sought from the Department of Conservation and an application for a coastal permit to erect the structure in the part that is in the CMA will need to be lodged with Environment Canterbury.

The rationale for the proposed boardwalk is that it will improve and enhance the public access from Harbour Road to the Styx River/Puharakekenui mouth, in associated with the much needed improvement of amenity at the end of the road. The proposed development will also provide the opportunity for the public to experience the Brooklands Lagoon/Te Riu o Te Aika Kawa environment.

Although there is an existing legal public access in the form of an easement (right of way on foot in gross) over the adjacent private property, this access is not clear to the public. It passes around privately owned dwellings, which are part of a restaurant/motor camp complex.

Note: At its meeting on 14 May 2009, following its resolution to approve the Brooklands Lagoon/Te Riu o Te Aika Kawa area draft parks master and management plans to be notified for public submissions, the Council resolved to immediately surrender the easement on the above-mentioned private property, and further resolved for a memorandum of encumbrance to be attached to the property's title, restricting opposition to the proposed boardwalk on the coastal marine area.





LOCALITY PLAN

KEY

- TALL SEDGELAND
- LOW SHRUB AND GROUNDCOVER (height ranging from 0.5m - 1m)
- COASTAL TREE AND SHRUBLAND (height ranging from 1m - 2m)
- GRASS
- TREES (eg Ngaio, Akeake 3-4m)
- CHIP PATHS
- CABBAGE TREES
- PICNIC TABLES

CITYSOLUTIONS

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PROJECT TITLE: STYX RIVER MOUTH CONSERVATION RESERVE AND SURROUNDS
Consultation Plan

DRAWING TITLE: LANDSCAPE DEVELOPMENT -CROWN LAND PLAN

CONTRACT NUMBER
PROJECT NUMBER 562/717/1
DRAWING NUMBER LP184202
ORIGINAL SHEET SIZE A1
SCALES 1:500
SHEET L01 OF 01

28 LANDSCAPE CONCEPT FOR HABITAT RESTORATION NORTH OF HARBOUR ROAD

Consent was given in 2005 for a residential subdivision at the end of Lower Styx Road. On 23 May 2007, to meet the requirements of reserve contribution for this subdivision, two parcels (Lots 33 and 34, Deposited Plan 380529) were created as part of this subdivision, totalling 7.799 hectares in area. These were vested on deposit with the Council as Scenic Reserve under Section 19(1)(b) of the Reserves Act 1977.

A concept for landscape restoration of the site is described and illustrated below and on the next page.

Note: Any future development of these reserves will be dependent upon proposals being considered in the relevant Long Term Council Community Plan and implemented through the capital works programme. Any works that eventuate will be consistent with the relevant provisions of the Reserves Act 1977.

VISION

The new Conservation Reserve land will be restored to a self sustaining mosaic of predominantly native plant and animal communities based on underlying soils, topography, groundwater and landscape values.

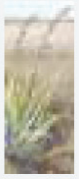
The vegetation patterns will contribute to a network of restored patches and corridors linking significant habitat areas around the Brooklands area, through which native birds, reptiles and invertebrates will be able to move freely from site to site.

This new reserve also will provide effective storm-water runoff treatment and retention from the new residential development before discharging to ground, or into the Styx River/Brooklands Lagoon system. Walkways will be located strategically to cause minimum disturbance to wildlife and the natural ecosystem processes. They will link into a wider system of walkways in and around the area including those along the Styx River. This will allow local residents, the wider public of Christchurch and visitors from further afield to interact with nature, and experience a unique environment that is arguably one of the city's best kept secrets.

KEY

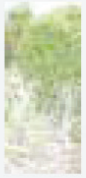
TALL SEDGELAND

Restoration of areas of tall sedge-land (14.6 ha) will be achieved primarily through controlled grazing and weed control over a number of years. This may be hastened by low-density planting of nursery grown stock to act as a seed-source in areas where these species are absent. Methods of direct seeding of these species needs to also be investigated, and this should be carried out in partnership with the Styx Living Laboratory.



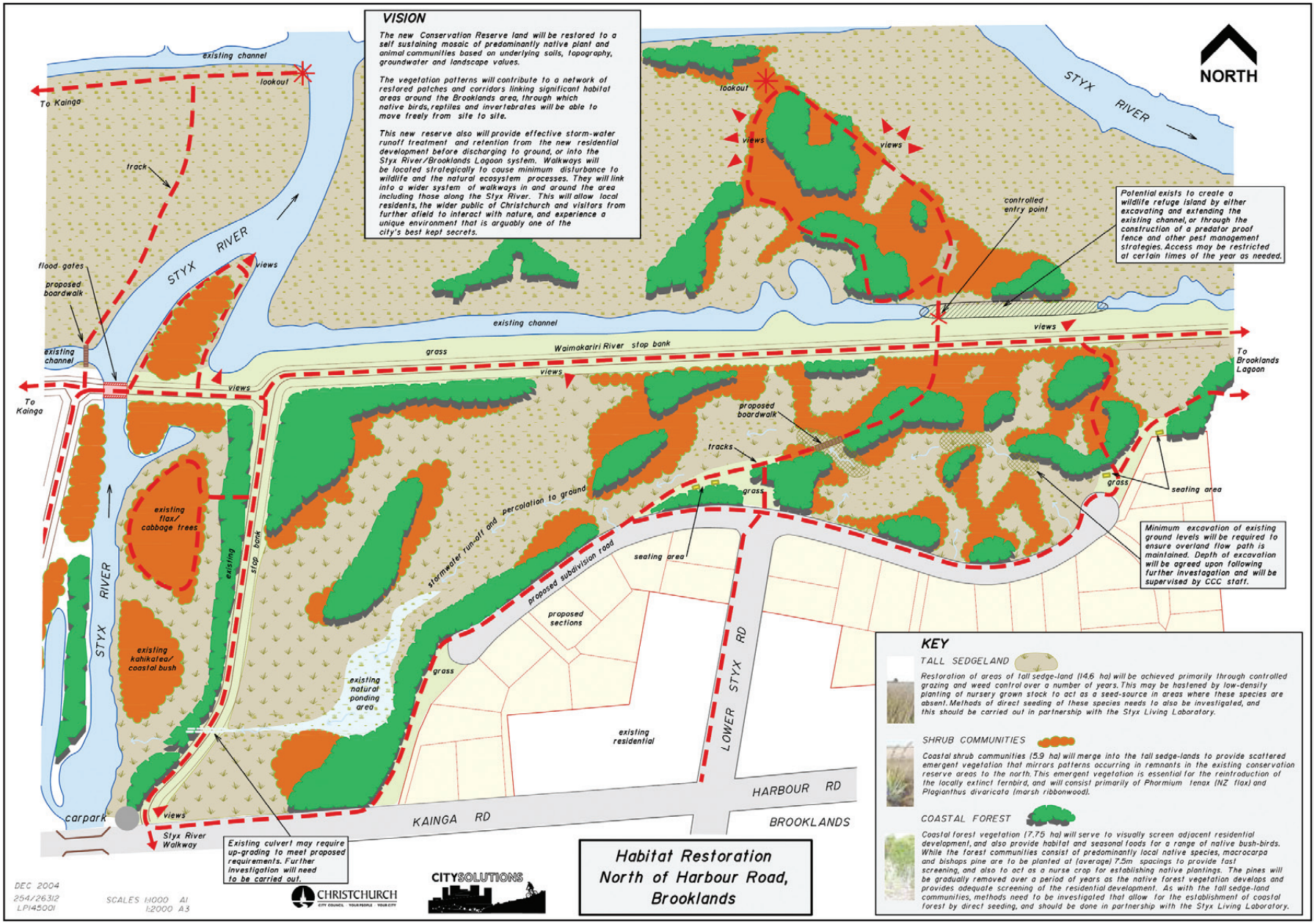
SHRUB COMMUNITIES

Coastal shrub communities (5.9 ha) will merge into the tall sedge-lands to provide scattered emergent vegetation that mirrors patterns occurring in remnants in the existing conservation reserve areas to the north. This emergent vegetation is essential for the reintroduction of the locally extinct fernbird, and will consist primarily of Phormium tenax (NZ flax) and Plagianthus divaricata (marsh ribbonwood).



COASTAL FOREST

Coastal forest vegetation (7.75 ha) will serve to visually screen adjacent residential development, and also provide habitat and seasonal foods for a range of native bush-birds. While the forest communities consist of predominantly local native species, macrocarpa and bishops pine are to be planted at (average) 7.5m spacings to provide fast screening, and also to act as a nurse crop for establishing native plantings. The pines will be gradually removed over a period of years as the native forest vegetation develops and provides adequate screening of the residential development. As with the tall sedge-land communities, methods need to be investigated that allow for the establishment of coastal forest by direct seeding, and should be done in partnership with the Styx Living Laboratory.


VISION
The new Conservation Reserve land will be restored to a self sustaining mosaic of predominantly native plant and animal communities based on underlying soils, topography, groundwater and landscape values.
The vegetation patterns will contribute to a network of restored patches and corridors linking significant habitat areas around the Brooklands area, through which native birds, reptiles and invertebrates will be able to move freely from site to site.
This new reserve also will provide effective storm-water runoff treatment and retention from the new residential development before discharging to ground, or into the Styx River/Brooklands Lagoon system. Walkways will be located strategically to cause minimum disturbance to wildlife and the natural ecosystem processes. They will link into a wider system of walkways in and around the area including those along the Styx River. This will allow local residents, the wider public of Christchurch and visitors from further afield to interact with nature, and experience a unique environment that is arguably one of the city's best kept secrets.
NORTH
STYX RIVER
existing channel
lookout
To Kainga
track
flood gates
proposed boardwalk
existing channel
views
grass
Waimakariri River stop bank
To Brooklands Lagoon
controlled entry point
Potential exists to create a wildlife refuge island by either excavating and extending the existing channel, or through the construction of a predator proof fence and other pest management strategies. Access may be restricted at certain times of the year as needed.
proposed boardwalk
tracks
seating area
Minimum excavation of existing ground levels will be required to ensure overland flow path is maintained. Depth of excavation will be agreed upon following further investagation and will be supervised by CCC staff.
existing flax/ cabbage trees
existing stop bank
stormwater run-off and percolation to ground
proposed subdivision road
proposed sections
existing natural ponding area
existing residential
existing kahikatea/ coastal bush
LOWER STYX RD
HARBOUR RD
KAINGA RD
BROOKLANDS
carpark
Styx River Walkway
Existing culvert may require up-grading to meet proposed requirements. Further investigation will need to be carried out.
KEY
TALL SEDGELAND
Restoration of areas of tall sedge-land (14.6 ha) will be achieved primarily through controlled grazing and weed control over a number of years. This may be hastened by low-density planting of nursery grown stock to act as a seed-source in areas where these species are absent. Methods of direct seeding of these species needs to also be investigated, and this should be carried out in partnership with the Styx Living Laboratory.
SHRUB COMMUNITIES
Coastal shrub communities (5.9 ha) will merge into the tall sedge-lands to provide scattered emergent vegetation that mirrors patterns occurring in remnants in the existing conservation reserve areas to the north. This emergent vegetation is essential for the reintroduction of the locally extinct fernbird, and will consist primarily of Phormium tenax (NZ flax) and Plagianthus divaricata (marsh ribbonwood).
COASTAL FOREST
Coastal forest vegetation (7.75 ha) will serve to visually screen adjacent residential development, and also provide habitat and seasonal foods for a range of native bush-birds. While the forest communities consist of predominantly local native species, macrocarpa and bishops pine are to be planted at (average) 7.5m spacings to provide fast screening, and also to act as a nurse crop for establishing native plantings. The pines will be gradually removed over a period of years as the native forest vegetation develops and provides adequate screening of the residential development. As with the tall sedge-land communities, methods need to be investigated that allow for the establishment of coastal forest by direct seeding, and should be done in partnership with the Styx Living Laboratory.
Habitat Restoration North of Harbour Road, Brooklands
CITYSOLUTIONS
CHRISTCHURCH
DEC 2004
254/26312
LP14500I
SCALES 1:1000 A1
1:2000 A3

29 MID SEAFIELD PARK LANDSCAPE CONCEPT

29.1 Enhancement of Mid Seafield Park

Mid Seafield Park, which extends from the Māori reserve land (Puharakekenui) in the south to Anfield Street and the Christchurch Water Sports Club land in the north, has been, and is being, subjected to change. This change is both physical and legal, the latter including the transfer of significant portions of the land parcels that make up North (lying between the Water Sports Club land and Harbour Road) and Mid Seafield Parks to Crown land with the enactment of the Foreshore and Seabed Act 2004. There is a history of human modification of this part of the existing Seafield Park area, including damage to the saltmarsh vegetation by motor vehicles. Recently (at the time of writing of this plan in 2008), the residential subdivisional development between Beacon Street and Lower Styx Road, and the associated wetland development in the Park, has brought about change to the Park environment at this end. This is largely the enhancement of the Park environment through creation of a wetland habitat that is consistent with the Park's original and existing natural values.

With classification as scenic reserve, under Section 19(1)(b) of the Reserves Act 1977[69], of the parcels of land making up North and Mid Seafield Park, there is the opportunity to recreate, restore, enhance or preserve the scenic, natural, historical, amenity and recreational values of these areas. This is also consistent with the areas' zoning as Conservation 1A and status as an ecological heritage site. Such opportunity mostly applies to Mid Seafield Park. To this end, proposed developments are raised in the following subsection and mapped in the following landscape concept, with potential costs listed in the following table.

[69] This means that areas that are classified as such are protected and preserved in perpetuity for their intrinsic worth and for the benefit, enjoyment, and use of the public, because they possess such qualities of scenic interest, beauty, or natural features or landscape that their protection and preservation are desirable in the public interest. It also means that the indigenous flora and fauna that is present shall, as far as possible, be preserved, and exotic flora and fauna, as far as possible, be exterminated. The implication of this for landscape design is to plant only natives. They should also be of local genetic stock.

29.2 Proposed Developments

Refer to the landscape concept on page 108.

Note: The proposed developments are raised here for consideration only. They would need to be included in a future Long Term Council Community Plan, and budgeted for in an annual works programme, before they could be progressed. None are included in the Long Term Council Community Plan 2009-19. Also, tracks and trails shown may include, in part, existing alignments. See map on page 50 for existing tracks and trails.

(A) Beacon Street entrance

The entrance to Seafield Park via Beacon Street is upgraded to provide safe access and parking for vehicles and horse floats. Recreation information and directional signage for Seafield Park is sited where it is visible to, and accessible by, all.

(B) Beacon Street wetland

Creation of an estuarine lagoon sub-system and restoration of an historic tidal channel to Brooklands Lagoon/Te Riu o Te Aika Kawa. The site is managed to encourage native saltmarsh species to naturally re-colonise disturbed surfaces and areas currently occupied by exotic grasses. Active restoration, through forest and shrubland plantings, is undertaken on adjacent dunes and in areas not likely to be re-colonised naturally.

The wetland area ultimately provides feeding, breeding and high tide roosting space for birdlife, which is not available in, or around, Brooklands Lagoon/Te Riu o Te Aika Kawa. Moats of permanent water are designed and located to provide a degree of separation from the adjacent residential areas, and deter cats, dogs and people from disturbing birds using the wetland.

(C) Harbourmaster's house site

Development of the ex-Waimakariri Harbour Board's harbourmaster's house site. Used in the days when the Waimakariri River entered the sea opposite, and prominent today by being on the tallest dune in Seafield Park, and with some remaining exotic fruit and flowering trees and shrubs. Development as a picnic area, with panoramic views to be had across Brooklands Lagoon/Te Riu o Te Aika Kawa, Seafield Park and the adjacent Beacon Street wetland. Information signs describe the site's historical significance.

(D) Barkers Brook

Restoration of Barkers Brook, currently existing as an artificial drain, to a 'natural' condition, with bank profiles and direction of flow mirroring natural Canterbury coastline waterways. This restoration is able to establish a natural gradient from freshwater wetland through to saline, due to a good base flow of freshwater from the waterway's upper reaches.

(E) Home Guard live firing range

Restoration of the 'butts' portion of a Second World War live firing range, used by the Home Guard and Territorial Forces, to as near as possible its original war years condition, with historic information provided. Only the eastern-most 'butts' portion is in Seafield Park, with the remainder, and the majority, of the range area located on adjacent private land.

(F) Earlham Street entrance

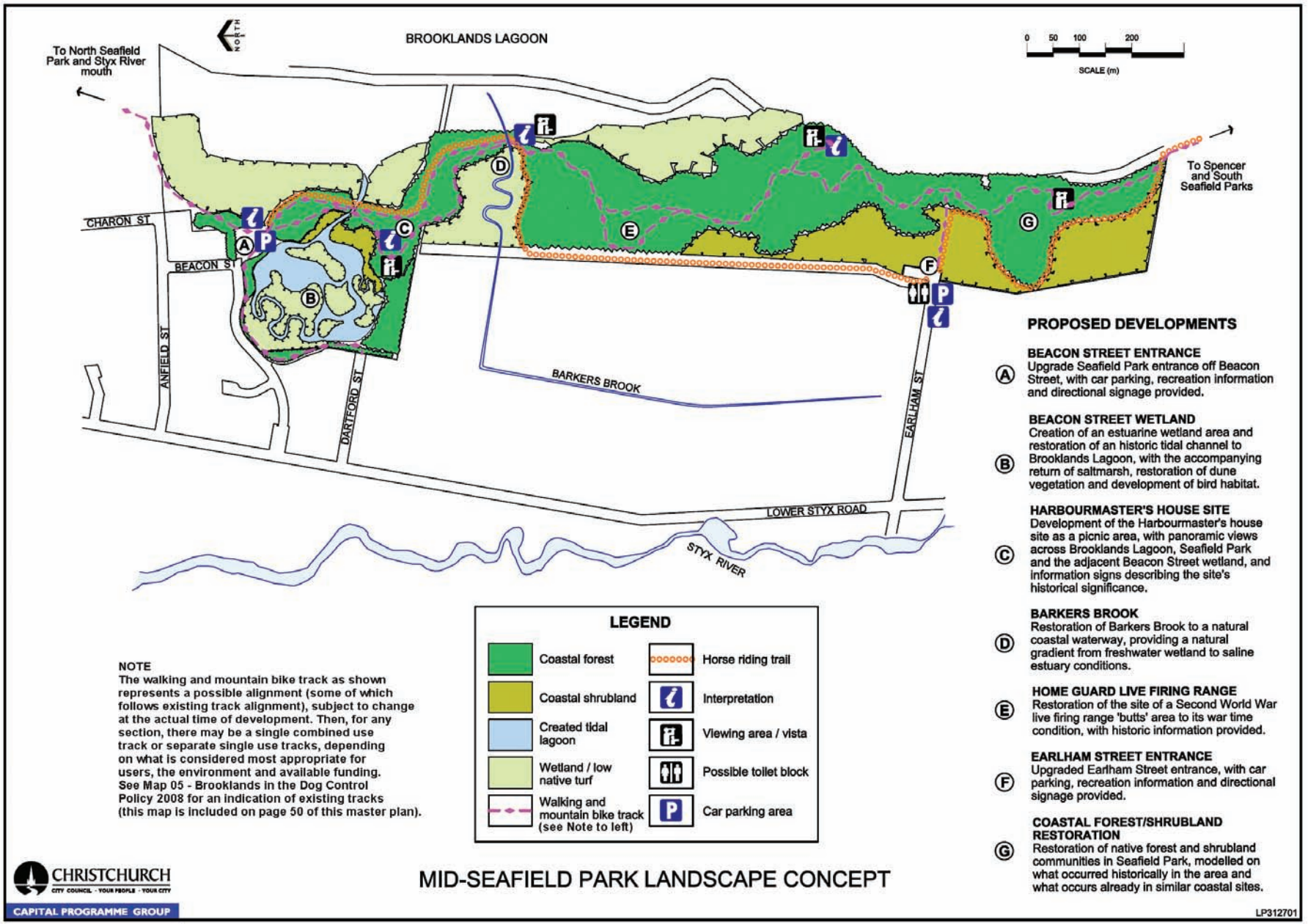
The Earlham Street entrance to Seafield Park is upgraded to accommodate expected future increased visitation to the Park at this point for walking, horse riding and mountain biking, with provision of a semi-formal car parking area and information signs.

(G) Coastal forest restoration

Forest restoration in Seafield Park is modeled on what is known about the historic vegetation sequences and plant communities in the area, and what may be potential forest cover, because it occurs already in similar coastal sites.

The main forest communities will include species such as manuka and kanuka, ngaio and akeake. Secondary species will include cabbage tree, broadleaf, South Island kowhai, karamu, small leaved *Coprosma* species, tree daisy, golden akeake, lemonwood, kohuhu, five finger, lancewood and, where conditions allow, totara and matai. As initial plantings mature, and offer a good degree of frost protection, niche and frost tender species will be established, including, for example, *Clematis paniculata*, whiteywood/mahoe and karaka, the latter being a non-local species that was widely cultivated in coastal areas by early Māori.

Native shrubland communities will include many of the smaller growing species that will occur in the restored forest communities, with the addition of New Zealand flax (harakeke), toe toe, koromiko, shrubby pohuehue, korokio, matagouri, prostrate kowhai, tauhinu, poroporo and marsh ribbonwood.


BROOKLANDS LAGOON
To North Seafield Park and Styx River mouth
To Spencer and South Seafield Parks
SCALE (m)
0 50 100 200
CHARON ST
BEACON ST
ANFIELD ST
DARTFORD ST
BARKERS BROOK
EARLHAM ST
LOWER STYX ROAD
STYX RIVER
A
B
C
D
E
F
G
PROPOSED DEVELOPMENTS
BEACON STREET ENTRANCE
Upgrade Seafield Park entrance off Beacon Street, with car parking, recreation information and directional signage provided.
BEACON STREET WETLAND
Creation of an estuarine wetland area and restoration of an historic tidal channel to Brooklands Lagoon, with the accompanying return of saltmarsh, restoration of dune vegetation and development of bird habitat.
HARBOURMASTER'S HOUSE SITE
Development of the Harbourmaster's house site as a picnic area, with panoramic views across Brooklands Lagoon, Seafield Park and the adjacent Beacon Street wetland, and information signs describing the site's historical significance.
BARKERS BROOK
Restoration of Barkers Brook to a natural coastal waterway, providing a natural gradient from freshwater wetland to saline estuary conditions.
HOME GUARD LIVE FIRING RANGE
Restoration of the site of a Second World War live firing range 'butts' area to its war time condition, with historic information provided.
EARLHAM STREET ENTRANCE
Upgraded Earlham Street entrance, with car parking, recreation information and directional signage provided.
COASTAL FOREST/SHRUBLAND RESTORATION
Restoration of native forest and shrubland communities in Seafield Park, modelled on what occurred historically in the area and what occurs already in similar coastal sites.
LEGEND
Coastal forest
Coastal shrubland
Created tidal lagoon
Wetland / low native turf
Walking and mountain bike track (see Note to left)
Horse riding trail
Interpretation
Viewing area / vista
Possible toilet block
Car parking area
NOTE
The walking and mountain bike track as shown represents a possible alignment (some of which follows existing track alignment), subject to change at the actual time of development. Then, for any section, there may be a single combined use track or separate single use tracks, depending on what is considered most appropriate for users, the environment and available funding. See Map 05 - Brooklands in the Dog Control Policy 2008 for an indication of existing tracks (this map is included on page 50 of this master plan).
CHRISTCHURCH
CITY COUNCIL · YOUR PEOPLE · YOUR CITY
CAPITAL PROGRAMME GROUP
MID-SEAFIELD PARK LANDSCAPE CONCEPT
LP312701

29.3 Indicative possible costs to implement planning proposals as part of the Mid Seafield Park landscape concept

PLANNING PROPOSAL [70]	DESCRIPTION / ROUGH ORDER OF CAPITAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19[71] / POSSIBLE DATE(S) TO BE IMPLEMENTED	ROUGH ORDER OF OPERATIONAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19
P35 Beacon Street Wetland Restoration.	Includes: • Restoration planting of 4.4 hectares of forest ($134,600, Year 1). • Wetland restoration planting ($34,000, Year 1). • Development of 1 kilometre of paths ($75,000, Year 2). • Installation of signage ($21,000, Year 2). • Vehicle gates ($7,500, Year 2). • Car park upgrade ($30,000, Year 2). • Bird-watching hide ($75,000, Year 4). Total = $377,100 capital expenditure	Includes: • Restoration planting of 4.4 hectares of forest ($10,000). • Wetland restoration planting ($3,000). • 1 kilometre of paths ($5,000). • Installation of signage ($2,000). • Vehicle gates and car park upgrade ($3,000). • Bird-watching hide ($7,000). Total = $30,000 annual operating expenditure
P36 Earlham Street Dune Slack/ Dune Ridge Restoration.	Includes: • 1 hectare of wetland restoration planting ($30,000, Year 3). • Wetland path development ($28,500, Year 3). • Road reserve (previous) path development ($28,500, Year 3). • Boardwalk ($36,000, Year 3). • Signage and interpretation ($10,000, Year 3). • Car parking bays ($10,000, Year 3). • Earlham Street tree planting ($2,700, Year 3). • Restoration planting of 2.9 hectares of shrubland ($45,720, Year 4). **Total =** $191,420 capital expenditure	Includes: • 1 hectare of wetland restoration planting ($3,000). • Wetland path development ($1,000). • Road reserve (previous) path development ($1,000). • Boardwalk ($3,000). • Signage and interpretation ($1,000). • Car parking bays ($1,000). • Restoration planting of 2.9 hectares of shrubland ($4,000). **Total =** $14,000 annual operating expenditure

[70] Numbers P35-P36 relate to summaries on pages 16 and 17.

[71] IMPORTANT NOTE: Each of these costs has been raised for consideration for inclusion in a future Christchurch City Council Long Term Council Community Plan, but there is no certainty that they will be approved for inclusion in the plan. If not, they will not be funded. None are included in the Long Term Council Community Plan 2009-19. They are included here to give an indication of the potential level of costs of proposed development.

PLANNING PROPOSAL [72]	DESCRIPTION / ROUGH ORDER OF CAPITAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19[73] / POSSIBLE DATE(S) TO BE IMPLEMENTED	ROUGH ORDER OF OPERATIONAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19
P37 Restoration and development south of Earlham Street.	Includes: • 3 hectares of wetland restoration planting ($38,000, Year 5). • Restoration planting of 4.4 hectares of forest ($103,550, Year 6). • 500 metres of wetland path construction ($37,500, Year 6). • Signage and interpretation ($7,500, Year 6). Total = $186,550 capital expenditure	Includes: • 3 hectares of wetland restoration planting ($3,000). • 4.4 hectares of forest restoration planting ($10,000). • 500 metres of wetland path construction ($3,000). • Signage and interpretation ($1,000). Total = $17,000 annual operating expenditure
P38 Restoration and development between Earlham and Beacon Streets.	Includes: • Development for the WWII Home Guard Rifle Range area ($42,500, Year 4). • Restoration planting of 14.3 hectares of forest ($312,600, half Year 7, half Year 8). • 3 hectares of wetland restoration planting ($38,000, half Year 9, half Year 10). • Toilet installation ($250,000, half Year 9, half Year 10). • 1,500 metres of path construction ($112,500, half Year 9, half Year 10). • Signage and interpretation ($30,000, half Year 9, half Year 10). • Reintroduction of the fern bird ($22,000, half Year 9, half Year 10). Total = $827,800 capital expenditure	Includes: • Development for the WWII Home Guard Rifle Range area ($4,000). • Restoration planting of 14.3 hectares of forest ($15,000). • 3 hectares of wetland restoration planting ($3,000). • Toilet installation ($20,000). • 1,500 metres of path construction ($10,000). • Signage and interpretation ($3,000). • Reintroduction of the fern bird ($1,000). Total = $56,000 annual operating expenditure

[72] Numbers P37-P38 relate to summaries on page 17.
[73] IMPORTANT NOTE: Each of these costs has been raised for consideration for inclusion in a future Christchurch City Council Long Term Council Community Plan, but there is no certainty that they will be approved for inclusion in the plan. If not, they will not be funded. None are included in the Long Term Council Community Plan 2009-19. They are included here to give an indication of the potential level of costs of proposed development.

30 SPENCER PARK AND SOUTH SEAFIELD PARK LANDSCAPE CONCEPT

30.1 Improvement of public access and facilities in the Spencer Park area

Spencer Park has been, and will continue to be, a popular outdoor recreation destination for locals, Christchurch residents and visitors alike. It is also an important starting point for those wishing to access areas adjacent, and beyond, for recreation purposes, such as Seafield Park, Brooklands Lagoon/Te Riu o Te Aika Kawa viewing points, Spencer Park Beach and Bottle Lake Forest Park.

With increasing use of the Spencer Park area by the public, has come greater pressure on Park facilities, and vehicle congestion on the Park roads, particularly during the busiest times, such as public holidays and weekends over the summer months. There are issues with the roads, in addition to the vehicle congestion occurring at times, including vehicle speeds, safety for other users, parking, road maintenance and the non-functioning of the existing one way ring road. There is also the desire to shift the focus of access for the main Park road, from being just an extension of Heyders Road to the four wheeled drive vehicle and horse entrances to the beach, to one that is more of a Park road that leads traffic, which passes the turn-off to the picnic ground, to parking areas near the surf life saving club building and further along towards Bottle Lake Forest Park, making these the main arrival points for those using the road.

In 2005 there was a major redevelopment of the play facilities in the picnic ground area of the Park. This has proven to be a success, with the space being very popular with families and groups with young people.

A new playground is being installed as part of the development of the newer part of South Seafield Park extending west into the Spencerville residential subdivision.

For other facilities in the Park there are several issues. Some facilities do not meet the needs of visitors and some are surplus to requirements. In the case of buildings in the Park, there is the need to rationalise these, in terms of renovation, re-utilisation or even removal, if unused and un-needed. Signage and information boards throughout the Park and adjoining areas must be improved, be consistent, conform with the Council's policies for signage and serve to promote the Park and its values.

Examples of the specific issues pertaining to facilities in Spencer and South Seafield Parks include:

- The Park Rangers office, which is sited at the end of the camping ground shop building, is cramped and hard for the public to find.
- The building, comprising a house and attached shop, at the south-west corner of the picnic ground is empty and unused.
- The house, beside the South Seafield Park entrance, is not required to accommodate the Park Ranger.
- Seafield Park Hall, beside the entrance to the South Seafield Park horse park area, is relatively unused and hidden.

All parcels of land making up Spencer Park and South Seafield Park, with the exception of the one containing Seafield Park Hall (this is a classified Local Purpose (Youth Holiday and Recreation Camp) Reserve) are now classified as Recreation Reserve under the Reserves Act 1977 and any development and use of the Parks is subject to the provisions of this Act. Primarily, this development and use, including the provision of facilities, is to enable and assist the public to access and enjoy the Parks for the purpose of outdoor recreation.

30.2Proposed Developments

Refer to the landscape concept on page 114.

Note: The proposed developments are raised here for consideration only. They would need to be included in a future Long Term Council Community Plan and budgeted for an annual works programme before they could be progressed. None are included in the Long Term Council Community Plan 2009-19. Also, tracks and routes shown largely include existing alignments.

(A) Upgrade of the Seafield Park Hall

Identify potential uses of this building and then restore/upgrade accordingly. Would require landscaping around the building, and measures to raise its profile and attractiveness for use, including, for example, provision of signage and removal of fences and trees to make it more accessible, visible and safe to use.

(B) Construction of a new section of Park road and closure of sections of existing Park road

In order to shift the focus of destination from the existing Heyders Road beach vehicle access to the surf life saving club beach pedestrian access (because it is safer for swimmers to enter the sea at this point), as well as to walking and mountain bike track entrance points to Bottle Lake Forest Park, it is proposed to construct a 300 metre section of new road (see the landscape concept map). Associated with this would be, firstly, closure of the adjoining section of Heyders Road (which is legal road) to public vehicle access, but retention of the road alignment and surface for access by pedestrians, cyclists, horse riders and other non-motorised use. It is proposed for there to be consideration of the stopping of all legal road that runs through South Seafield and Spencer Parks and instead provide vehicle access, as required, on 'Park roads' as opposed to 'public roads'. In all cases, free public vehicle access will be maintained to the car park at the controlled vehicle entrance to the beach.

Secondly, the road returning from the Bottle Lake Forest Park entrance point to the northern side of the lakes area will be closed to traffic, and the part along the western side of the lakes area reinstated to natural surface.

All Park roads will become two-way and, although will provide for free public vehicle access, will be developed and managed as part of a Park resource for the benefit of all Park users.

(C) Development of an informal car parking area for access to walking and mountain bike track entrances into Bottle Lake Forest Park

Links to adjoining areas from Spencer Park and Seafield Park for further outdoor recreational experience, in particular Bottle Lake Forest Park for walking and mountain biking, means parking space for vehicles must be provided for those who wish to use the crossing points as the start and/or end of their activity. Parking is already provided in Seafield Park for those who wish to access the rest of this Park further to the north, but is necessary develop some parking space at the end of the Park road for people to access Bottle Lake Forest park for walking and mountain biking. It need only be informal (that is, unsealed and un-marked) as the main Spencer Park parking area on the road is near the surf club building.

(D) Improved/tidied four wheel drive vehicle (controlled) and horse beach access points

Although the proposed road layout is designed to encourage drivers to head to the parking areas by the surf life saving club and at a road end in Bottle Lake Forest Park, the existing parking area at the end of the Heyders Road legal road will remain a valid destination for vehicles authorised to access the beach and for horse riders to access the dedicated horse track leading to the beach. The access tracks, though, need to be of a standard that is appropriate for providing such access, but also have minimal impact upon the local environment and, as much as possible, blend in with the dune landform and vegetation.

(E) Improved/tidied informal horse float parking area at the horse beach access point

As with Proposal 4 above, the existing parking area at the end of the Heyders Road legal road will remain a valid destination for visitors traveling by vehicles, including those with horse floats. The parking area, though, needs to be enhanced. It needs to retain its informal, relatively undeveloped layout, which is consistent with the natural/wild character of the area. Specifically, suitable parking needs to be provided for vehicles with horse floats that also meets the above requirements.

(F) Relocated Park Ranger office and information centre

As part of the necessary assessment and rationalisation of the buildings in Spencer Park and South Seafield Park, one proposal is to relocate the Park Ranger's office from its existing site at the end of the camping ground shop to the ex-Rangers house on the northern side of Heyders Road. Reasons for doing this include – a cramped existing facility and is hard for the public to find to obtain Park information (although fine for an office). Utilisation of the ex-rangers house will allow these issues to be addressed. The building is available, and although there is a Bottle Lake Forest Park ranger living there currently, there is no requirement now for rangers to be living on site.

(G) Possible camp shop extension

The lessees of the camping ground have earlier had discussions with the Council over the possibility of expanding the existing camp office/shop facility to include a café on the site. This would involve an increase in the building footprint, plus additional space for outdoor seating. Alternatively, if the ranger's office is vacated, that space could be utilised.

Consideration needs to be made as to whether or not a café is necessary to meet the needs of campers. A further matter for Council to take note of is that the camping ground lease expires in 2014 and, although such a development may be able to be included under the existing lease, it is debatable if it would be financially viable for any party to establish such a commercial enterprise until there is a longer term security of tenure. With respect to the alternative option of using the rangers office space (if vacated), as this part of the building is outside the existing camping ground leased area, a new lease would be required, and likely need to be open for public tender.

(H) Removal of old shop/house at the south-west corner of the Picnic Ground

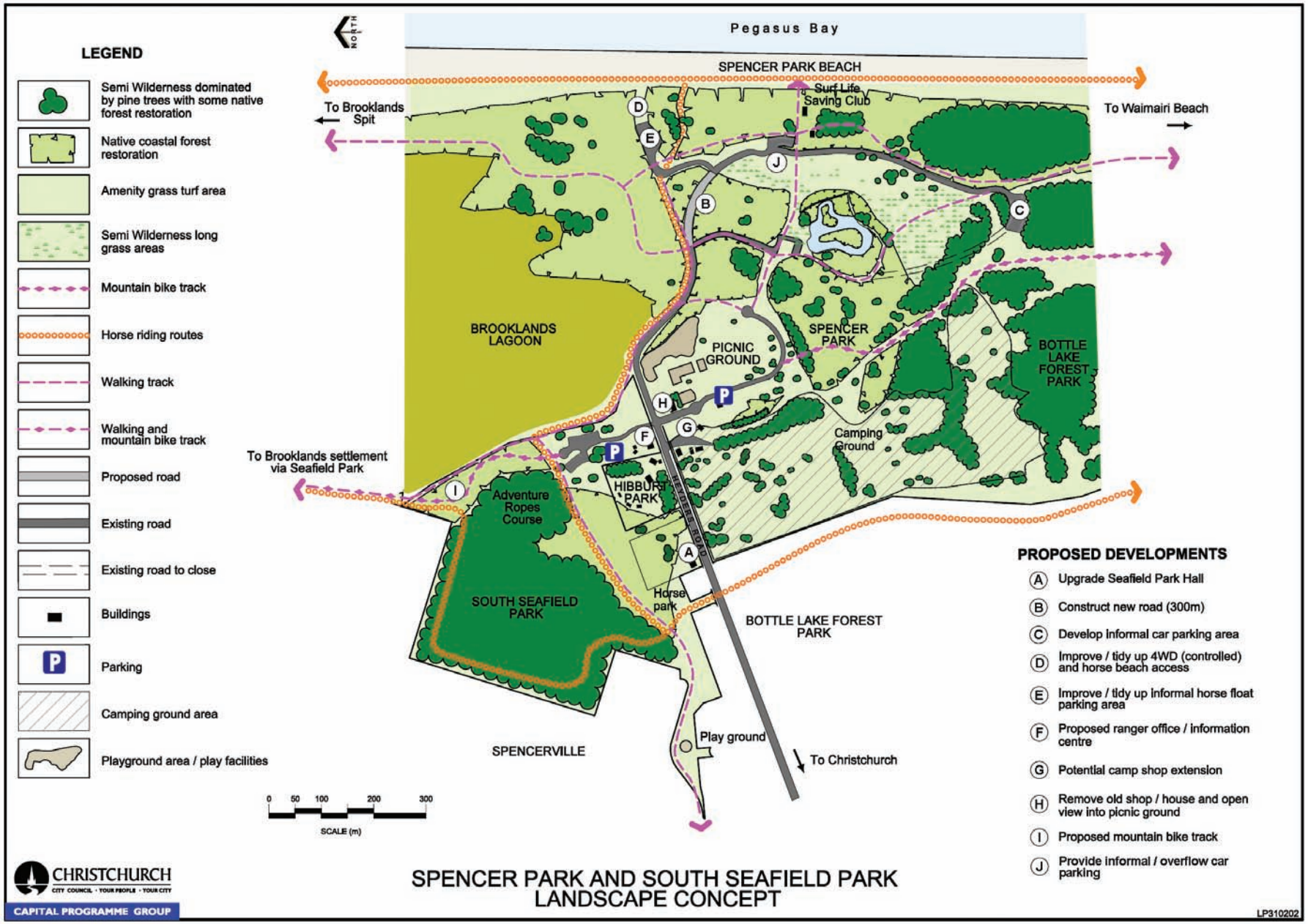
This building complex is not being used and, although there have previously been suggestions for its use, these have not been considered to be appropriate or necessary. The building will require significant expenditure to bring it up to standard and to maintain. It is not required for any Park purpose. The option to remove this building is attractive, as this will serve to open up the view into the Picnic Ground, with benefits, including improved safety arising from better visibility and the site being able to be landscaped as additional green open space.

(I) Mountain bike track/route development and promotion

Extension of the existing mountain biking opportunities in Bottle Lake Forest Park northward through Spencer Park and South Seafield Park to the Brooklands Lagoon/Te Riu o Te Aika Kawa edge legal road link to Mid Seafield Park. This will be along a route that is clearly identifiable and compatible with other Park uses. It will be part of the proposed mountain bike route between the Waimakariri Regional Park and Bottle Lake Forest Park.

(J) Informal/overflow car parking near the surf life saving club building

Provide informal/overflow parking across the road from the car park by the surf life saving club building.


LEGEND
Semi Wilderness dominated by pine trees with some native forest restoration
Native coastal forest restoration
Amenity grass turf area
Semi Wilderness long grass areas
Mountain bike track
Horse riding routes
Walking track
Walking and mountain bike track
Proposed road
Existing road
Existing road to close
Buildings
Parking
Camping ground area
Playground area / play facilities
NORTH
Pegasus Bay
SPENCER PARK BEACH
To Brooklands Spit
Surf Life Saving Club
To Waimairi Beach
BROOKLANDS LAGOON
PICNIC GROUND
SPENCER PARK
BOTTLE LAKE FOREST PARK
Camping Ground
To Brooklands settlement via Seafield Park
HIBBURT PARK
Adventure Ropes Course
SOUTH SEAFIELD PARK
Horse park
BOTTLE LAKE FOREST PARK
Play ground
To Christchurch
SPENCERVILLE
0 50 100 200 300
SCALE (m)
PROPOSED DEVELOPMENTS
A Upgrade Seafield Park Hall
B Construct new road (300m)
C Develop informal car parking area
D Improve / tidy up 4WD (controlled) and horse beach access
E Improve / tidy up informal horse float parking area
F Proposed ranger office / information centre
G Potential camp shop extension
H Remove old shop / house and open view into picnic ground
I Proposed mountain bike track
J Provide informal / overflow car parking
CHRISTCHURCH
CITY COUNCIL · YOUR PEOPLE · YOUR CITY
CAPITAL PROGRAMME GROUP
SPENCER PARK AND SOUTH SEAFIELD PARK
LANDSCAPE CONCEPT
LP310202

30.3 Indicative possible costs to implement planning proposals as part of the Spencer Park and South Seafield Park landscape concept

SITE OF PLANNING PROPOSAL [74]	DESCRIPTION / ROUGH ORDER OF CAPITAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19[75] / POSSIBLE DATE(S) TO BE IMPLEMENTED	ROUGH ORDER OF ANNUAL OPERATIONAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19
P39 Entrance Area of the Spencer Park/ Seafield Park area.	Includes: • Ranger's office upgrade ($250,000, Year 1). • Old shop and house removal ($50,000, Year 1). • Shop/house site restoration ($16,800, Year 1). • New roading layout ($120,000, Year 3). • Signage and interpretation ($75,000, 2011). • Road removal (380 metres) ($15,000, 2013). • Car parking development (50 bays) ($85,000, 2013). • Path development ($40,000, 2013). Total = $651, 800 capital expenditure	Includes for: • Ranger's office ($2,000). • New road ($2,000). • Signage and interpretation ($2,000). • Car parks ($5,000). • Paths ($4,000). Total = $15, 000 annual operating expenditure
P40 Picnic Ground area of Spencer Park.	Includes: • Playground extension ($50,000, Year 2). • Playground shade sails ($35,000, Year 2). • Paddling pool upgrade ($20,000, Year 2). • Planting of 100 specimen trees ($28,500, Year 2). • Ten electric barbeques ($50,000, Year 2). • Restoration of original shelter ($15,000, Year 2). • Path construction (550 metres) ($38,500, Year 2). Total = $237,000 capital expenditure	Includes for: • Playground extension ($5,000). • Planting of 100 specimen trees ($3,000). • Path construction (550 metres) ($4,000). Total = $12,000 annual operating expenditure
P41 South-east Picnic Ground area (four hectares) of Spencer Park.	Includes: • Pine removal ($30,000, Year 1). • Planting[76] ($97,000, Year 2). • Paths ($17,500, Year 2). • Mountain bike track development ($14,700, Year 2). Total = $159,200 capital expenditure	Includes for: • Planting ($6,000). • Paths ($2,000). • Mountain bike track development ($2,000). Total = $10,000 annual operating expenditure

[74] Numbers P39-P41 relate to summaries on page 17.
[75] IMPORTANT NOTE: Each of these costs has been raised for consideration for inclusion in a future Christchurch City Council Long Term Council Community Plan, but there is no certainty that they will be approved for inclusion in the plan. If not, they will not be funded. None are included in the Long Term Council Community Plan 2009-19. They are included here to give an indication of the potential level of costs of proposed development.
[76] Comprises cost of site preparation, the plants and establishment of them.

SITE OF PLANNING PROPOSAL [77]	DESCRIPTION / ROUGH ORDER OF CAPITAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19[78] / POSSIBLE DATE(S) TO BE IMPLEMENTED	ROUGH ORDER OF ANNUAL OPERATIONAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19
P42 Road access to beach areas in Spencer Park.	Includes: • New roading (400 metres) ($120,000, Year 3). • Paths (300 metres) ($21,000, Year 4). • Signage ($20,000, Year 4). • Car parking ($85,000, Year 5). • Fencing (700 metres) ($7,000, Year 5). Total = $253,000 capital expenditure	Includes for: • New roading (400 metres) ($2,000). • Paths (300 metres) ($1,000). • Signage ($20,000, 2012). • Car parking ($85,000, 2013). • Fencing (700 metres) ($7,000, 2013). Total = $9,000 annual operating expenditure
P43 Central ponding area (ten hectares) in Spencer Park.	Includes: • Road removal/excavation of ponds ($50,000, Year 4). • Planting ($170,000, Year 4). • Paths (one kilometre) ($70,000, Year 4). • Mountain bike track (350 metres) ($12,250, Year 4). • Fencing (300 metres) ($3,000, Year 4). • Pedestrian bridge (700 metres) ($60,000, Year 7). Total = $365,250 capital expenditure	Includes for: • Planting ($10,000). • Paths (one kilometre) ($3,000). • Mountain bike track (350 metres) ($1,000). • Pedestrian bridge (700 metres) ($6,000). Total = $20,000 annual operating expenditure
P44 Southern Brooklands Lagoon/ Te Riu o Te Aika Kawa margin (2.3 hectares) in Seafield Park.	Includes: • Planting ($60,000, Year 5). • Paths (350 metres) ($25,000, Year 5). • Mountain bike track (350 metres) ($12,250, Year 5). • Pine tree removal ($20,000, Year 5). • Lagoon boardwalk ($225,000, Year 10). Total = $342,250 capital expenditure	Includes for: • Planting ($5,000). • Paths (350 metres) ($2,000). • Mountain bike track (350 metres) ($5,000). • Lagoon boardwalk ($5,000). Total = $17,000 annual operating expenditure

[77] Numbers P42-P44 relate to summaries on page 18.
[78] IMPORTANT NOTE: Each of these costs has been raised for consideration for inclusion in a future Christchurch City Council Long Term Council Community Plan, but there is no certainty that they will be approved for inclusion in the plan. If not, they will not be funded. None are included in the Long Term Council Community Plan 2009-19. They are included here to give an indication of the potential level of costs of proposed development.

SITE OF PLANNING PROPOSAL [79]	DESCRIPTION / ROUGH ORDER OF CAPITAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19[80] / POSSIBLE DATE(S) TO BE IMPLEMENTED	ROUGH ORDER OF ANNUAL OPERATIONAL COSTS ADDITIONAL TO ANY FUNDING IN THE LONG TERM COUNCIL COMMUNITY PLAN 2009-19
P45 Horse park and wider area in Seafield Park.	Includes: • Retrofit of Seafield Park Hall ($100,000, Year 6). • Planting ($170,000, Year 6). • Paths (1,250 metres) ($75,000, Year 6). Total = $345,000 capital expenditure	Includes for: • Retrofit of Seafield Park Hall ($10,000). • Planting ($10,000). • Paths (1,250 metres) ($5,000). Total = $25,000 annual operating expenditure
P46 Coastal forest strip (ten hectares) in Spencer Park and Spencer Park Beach.	Includes: • Planting ($170,000, Year 7). • Mountain bike track (800 metres) ($28,000, Year 7). Total = $198,000 capital expenditure	Includes for: • Planting ($10,000). • Mountain bike track (800 metres) ($2,000). Total = $12,000 annual operating expenditure
P47 Wilderness area (20 hectares) in Spencer Park.	Includes: • Planting ($139,600, Year 8). • Mountain bike track (700 metres) ($24,500, Year 8). Total = $164,100 capital expenditure	Includes for: • Planting ($10,000). • Mountain bike track (700 metres) ($2,000). Total = $12,000 annual operating expenditure
Spencer Park Surf Life Saving Club building, Spencer Park Beach.	Includes: • New occupation licence for a further term of 21 years (the club has a right of renewal). • The club has requested the building (owned by the Council) be upgraded to meet existing and future needs. Note – These are covered by separate Council processes.	

[79] Numbers P45-P47 relate to summaries on page 18.
[80] IMPORTANT NOTE: Each of these costs has been raised for consideration for inclusion in a future Christchurch City Council Long Term Council Community Plan, but there is no certainty that they will be approved for inclusion in the plan. If not, they will not be funded. None are included in the Long Term Council Community Plan 2009-19. They are included here to give an indication of the potential level of costs of proposed development.

31 SPENCER PARK CAMPING GROUND

A lease to Christchurch Holiday Parks Limited to operate the camping ground[81] at Spencer Park commenced on 3 April 1995 to run for a term of 19 years, with no right of renewal. It is, therefore, due to expire on 2 April 2014. Prior to that time, the Council will review the public benefit arising from this use of the Spencer Park recreation reserve. The Council will seek to continue this use if it is satisfied that there is sufficient need for the facilities and amenities, and that some other use should not have priority in the public interest[82].

A new lease to operate a camping ground will be issued in the standard format used by the Council, following the necessary processes and procedures required for the establishment of all new leases. Any public comment on the future of the camping ground arising from the consultation on this master plan, and the Spencer Park Management Plan, will be considered in the leasing process.

As part of the master planning, the Council will look at the interface of the camping ground with the rest of Spencer Park, including entrances and shared facilities. In addition, consideration can be made of the level of facilities that are required/beneficial for the users of the camping ground, including the appropriateness of advanced facilities, such as a restaurant/café.

See the photo plan on page 95 for the approximate camping ground lease area.

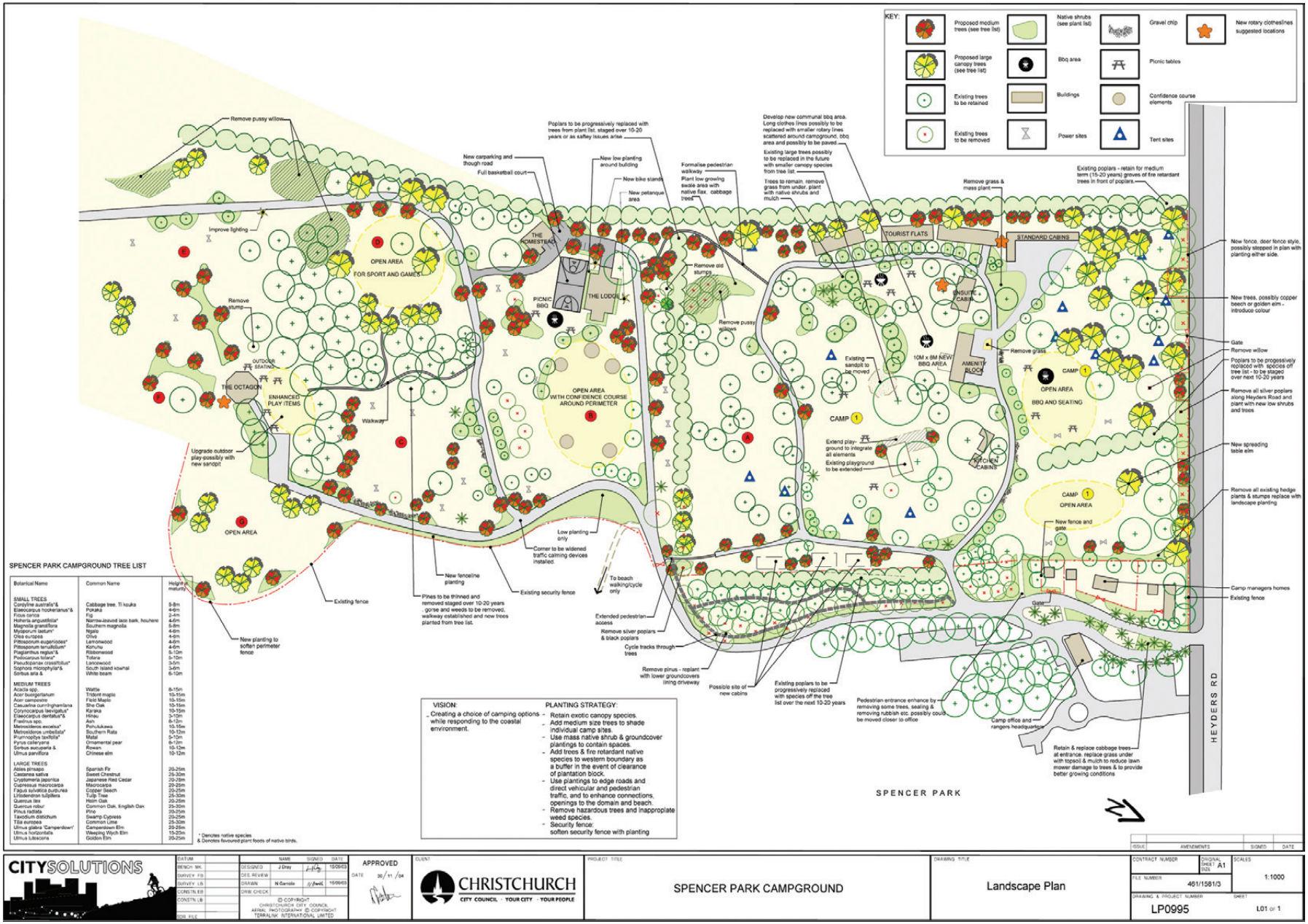
A proposed landscape and planting plan for the camping ground was prepared by the Council in December 2004 to guide planting in that area. This was put out for public comment early in 2005.

The Shirley/Papanui Community Board resolved on 19 April 2006 to approve the landscape plan to become part of this master plan, and that implementation of the landscape plan be undertaken as programmed.

The staff report to the Board and the attached tree list and landscape improvements programme are included in the Spencer Park Management Plan 2010. The landscape plan is on the following page.

Photo (left)
View across the Spencer Park carpark to the camping ground.

[81] Marketed as the Spencer Beach Holiday Park (http://www.spencerbeachholidaypark.co.nz/).
[82] At this point in time, the intention is for this part of Spencer Park to be continued to be used for camping ground purposes from April 2014.



SPENCER PARK CAMPGROUND TREE LIST

Botanical Name	Common Name	Height at maturity
SMALL TREES		
Cordyline australis*&	Cabbage tree. Ti kouka	5-8m
Elaeocarpus hookerianus*&	Pokaka	4-6m
Ficus carica	Fig	3-4m
Hoheria angustifolia*	Narrow-leaved lace bark, houhere	4-6m
Magnolia grandiflora	Southern magnolia	5-8m
Myrsine australis*	Ngaio	4-6m
Olea europea	Olive	4-6m
Pittosporum eugenioides*	Lemonwood	4-6m
Pittosporum tenuifolium*	Kohuhu	4-6m
Plagianthus regius*&	Ribbonwood	5-10m
Podocarpus totara*	Totara	5-10m
Pseudopanax crassifolius*	Lancewood	3-5m
Sophora microphylla*&	South Island kowhai	3-8m
Sorbus aria &	White beam	6-10m
MEDIUM TREES		
Acacia spp.	Wattle	8-15m
Acer buergerianum	Trident maple	10-15m
Acer campestre	Field Maple	10-15m
Casuarina cunninghamiana	She Oak	10-15m
Corynocarpus laevigatus*	Karaka	10-15m
Eleocarpus dentatus*&	Hinau	3-10m
Fraxinus spp.	Ash	8-12m
Metrosideros excelsa*	Pohutukawa	10-15m
Metrosideros umbellata*	Southern Rata	10-12m
Prunnopitys taxifolia*	Matai	5-10m
Pyrus calleryana	Ornamental pear	8-12m
Sorbus aucuparia &	Rowan	10-12m
Ulmus parvifiora	Chinese elm	10-12m
LARGE TREES		
Abies pinsapo	Spanish Fir	20-25m
Castanea sativa	Sweet Chestnut	25-30m
Cryptomeria japonica	Japanese Red Cedar	20-28m
Cupressus macrocarpa	Macrocarpa	20-25m
Fagus sylvatica purpurea	Copper Beech	20-25m
Liriodendron tulipifera	Tulip Tree	25-30m
Quercus ilex	Holm Oak	20-28m
Quercus robur	Common Oak, English Oak	25-30m
Pinus radiata	Pine	20-25m
Taxodium distichum	Swamp Cypress	20-25m
Tilia europea	Common Lime	25-30m
Ulmus glabra 'Camperdown'	Camperdown Elm	20-25m
Ulmus hortzontalis	Weeping Wych Elm	15-20m
Ulmus lobscona	Golden Elm	20-25m

* Denotes native species
& Denotes favoured plant foods of native birds.

CITYSOLUTIONS

	NAME	SIGNED	DATE
DESIGNED	J Dray		15/09/03
DES. REVIEW			
DRAWN	N Garside		15/09/03
DRW. CHECK			

APPROVED DATE 30/11/04

CLIENT: CHRISTCHURCH CITY COUNCIL · YOUR CITY · YOUR PEOPLE

PROJECT TITLE: SPENCER PARK CAMPGROUND

DRAWING TITLE: Landscape Plan

CONTRACT NUMBER | ORIGINAL SHEET SIZE: A1 | SCALES: 1:1000
FILE NUMBER: 461/1581/3
DRAWING & PROJECT NUMBER: LP0995 | SHEET: L01 of 1

ISSUE | AMENDMENTS | SIGNED | DATE

APPENDICES

APPENDIX 1

VEGETATION AT SALTMARSH BROOKLANDS LAGOON/TE RIU O TE AIKA KAWA

The following information is taken and adjusted from the publication by Worner G. and Partridge, T. (2008). Saltmarsh vegetation at Brooklands Lagoon. CCCECO Report 08/14.

The vegetation of the saltmarshes of Brooklands Lagoon/Te Riu o Te Aika Kawa, including those at the mouth of Styx River/Puharakekenui, were surveyed and twenty four vegetation types or communities identified (making up these are twenty four common saltmarsh species, with nineteen of these being native and five exotic – see the list of these on page 124 and a species list on pages 125 to 126. In addition, analysis indicated these are grouped into three distinct saltmarsh ecosystems, comprising the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa, the northern end of Brooklands Lagoon/Te Riu o Te Aika Kawa, and the areas around the mouth of the Styx River/Puharakekenui:

(A) Southern ecosystem

- Very fine, water-logged sediments.
- Reduced salinity.
- Vegetation dominated by three-square and oioi, with other species indicative of brackish water conditions.

These southernmost saltmarshes, in the vicinity of Spencerville, contain fine, muddy sediment colonised by a rapidly expanding three-square marsh. The rapid buildup of fine sediment, possibly exacerbated by the vegetation, has led, at the southern extremity, to some freshwater ponded areas, populated by vegetation types found exclusively in this part of the estuary. Comparison of recent and earlier aerial photographs indicates that this colonisation by three-square is recent and still taking place. Therefore, much of the vegetation there is young.

(B) Central/northern ecosystem

- Coarser, sandy, free-draining sediments.
- Greater range of salinities over the four seasons.
- Vegetation dominated by sea rush and herbaceous species indicative of salt water.

The saltmarshes of the northern half of Brooklands Lagoon/Te Riu o Te Aika Kawa extend from a natural division in the mid-channel island northwards to the Styx River/Puharakekenui mouth, although the transition from three-square dominated vegetation to other communities occurs further north on the eastern (Brooklands Spit/Kairaki) side of the estuary than on the western side. This area has a much coarser sediment, probably due to a combination of wind blown sand prior to the stabilisation of the spit, and the greater tidal flow that prevents the fine sediment being deposited. This system shows the more typical zonation pattern of an estuarine saltmarsh. It shows a gradual gradation from lower to upper marsh, with diverse pockets of middle marsh, and drier and potentially more saline habitats.

(C) Styx/Waimakariri ecosystem

- Stable, not affected by human activity, but now moribund[83] and impounded by stopbanks.
- Reduced salinity.
- Vegetation represents a final stage of successional change, dominated by oioi, and with marsh ribbonwood present.

The Styx River/Puharakekenui saltmarsh system has been impounded by the construction of stopbanks. It lacks a lower marsh, having stabilised with a vegetation characteristic of middle to upper marsh, and upper marsh fringe vegetation types of the main part of Brooklands Lagoon/Te Riu o Te Aika Kawa. The Styx River/Puharakekenui has tidal floodgates to prevent salt water flowing upstream with the tide. As the tide comes up the short tidal length of the Styx River/Puharakekenui, it doesn't mix with freshwater from the river, resulting in the inundation of the marshes being of water that is more saline than would be expected.

Therefore, there appears to be a distinct age/sediment relationship between the three parts of Brooklands Lagoon/Te Riu o Te Aika Kawa. The southern part (Ecosystem A) is young, expanding and characterised by fine sediment. The central and northern Brooklands Lagoon/Te Riu o Te Aika Kawa marshes (Ecosystem B)

[83] Being in a state of inactivity or obsolescence (Definition from Merriam-Webster Online Dictionary (2009) ‹http://www.merriam-webster.com/dictionary/moribund›).

are stable and mostly mature, with little signs of expansion, and are characterised by coarser sediment. The Styx River/Puharakekenui marshes (Ecosystem C) are mature and moribund, have nowhere to expand and have little sign of sediment being deposited – instead, there is evidence that these marshes are cutting down through the formation of new channels.

Despite the apparent cyclic nature of recent events, over a longer timescale there is evidence that the southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa is infilling, as shown on older aerial photographs. There does not appear to be anything like the same level of infilling at the Brooklands end near the estuary mouth, as the vegetation there is remarkably stable. This suggests that Brooklands Lagoon/Te Riu o Te Aika Kawa is a typical tidal estuary, with a stable saltmarsh system at the northern/middle end, and a rapidly sedimenting, slightly impounded southern end. The southern end of Brooklands Lagoon/Te Riu o Te Aika Kawa even has some freshwater communities, such as stands of raupo, and the presence of freshwater plants, such as *Eleocharis acuta*. The brackish water species, New Zealand musk, on the channel margins, is strongly suggestive of a brackish water system, rather than a true saltmarsh.

Although Owen (1992) reports that the southern end of the estuary was silting up even in the 1930s, it appears to have filled substantially since the 1940s, both with silt and sand from the Waimakiriri River and sand blown and washed from the open coast (Hicks and Duncan, 1993).

The stabilisation of the four kilometre long sand spit with plantings of marram grass and pine trees, and the subsequent spread of these, along with the construction of fences along the dunes to trap sand, has reduced the impact of wind blown sand. Upstream developments, though, both urban and rural, have increased the sediment load of the Waimakiriri River (Owen 1992, Bolton-Ritchie, 2007). The finest of this sediment has been deposited at the southern end. Hicks and Duncan (1993) reported that despite the significant amount of sediment accumulation since the shift in the Waimakariri River mouth, the rate of infilling of the estuary is reducing, with the present and future rates liable to be no more than a few milimetres per year. They suggested that the main net deposition would build north as the shallow flats at the Spencerville end are gradually transformed from mudflat to marsh.

Cross-section profiles of Brooklands Lagoon/Te Riu o Te Aika Kawa have been created with surveys along thirteen transect lines intermittently carried out between 1932 and 2007. Bolton-Ritchie (2007), in a detailed survey of five of these cross sections, concluded that, from 1977 to 2005, the percentage of sand sediment has decreased, while the percentage of finer mud has increased, and that there is a significant gradation of sediment from coarser grained sandy sediment to silty mud with distance from the estuary mouth.

In March 2008 further data was collected by one of the teacher fellows from sediment sampling along the transect lines. Together with recent data collected by the Geography Department of the University of Canterbury surveying the estuary depth, and surveys carried out between 1930 and 1988, it was intended to chart the sediment build up in the estuary and relate that to the increase in three-square vegetation.

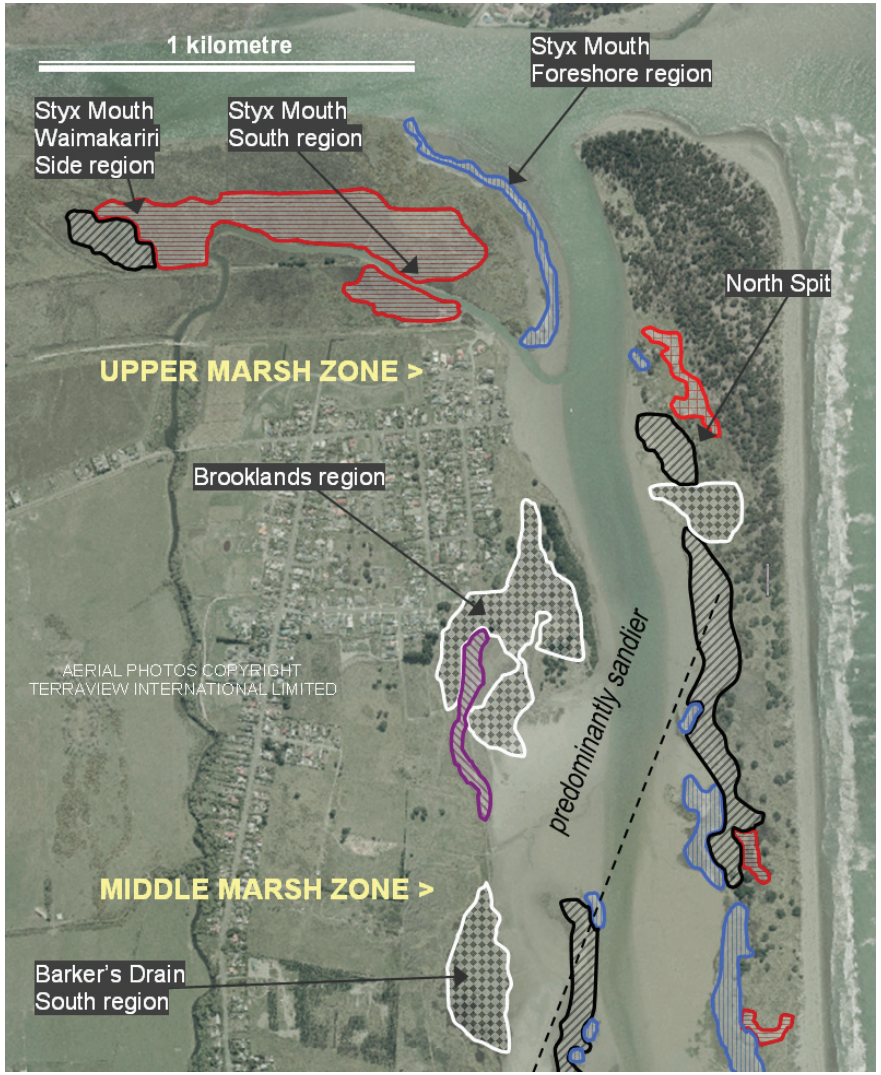
Analysis indicates that the pattern of fine sediment deposition in Brooklands Lagoon/Te Riu o Te Aika Kawa closely matches the distribution of the three-square vegetation type (Type 3a). In the southern part of the estuary, where three-square dominates, there are low levels of sand (less than five percent) and high levels of fine silt. The proportion of sand jumps abruptly to greater than fifty five percent just north of a line angling SSW-NNE across the central part of the estuary (see the photo plans on pages 122 and 123). At the same point, the dominance of three-square vegetation ceases, and sea rush and sea primrose dominate. In the northern reaches of the estuary, the only area containing less than five percent of sand supports a small area of three-square.

A

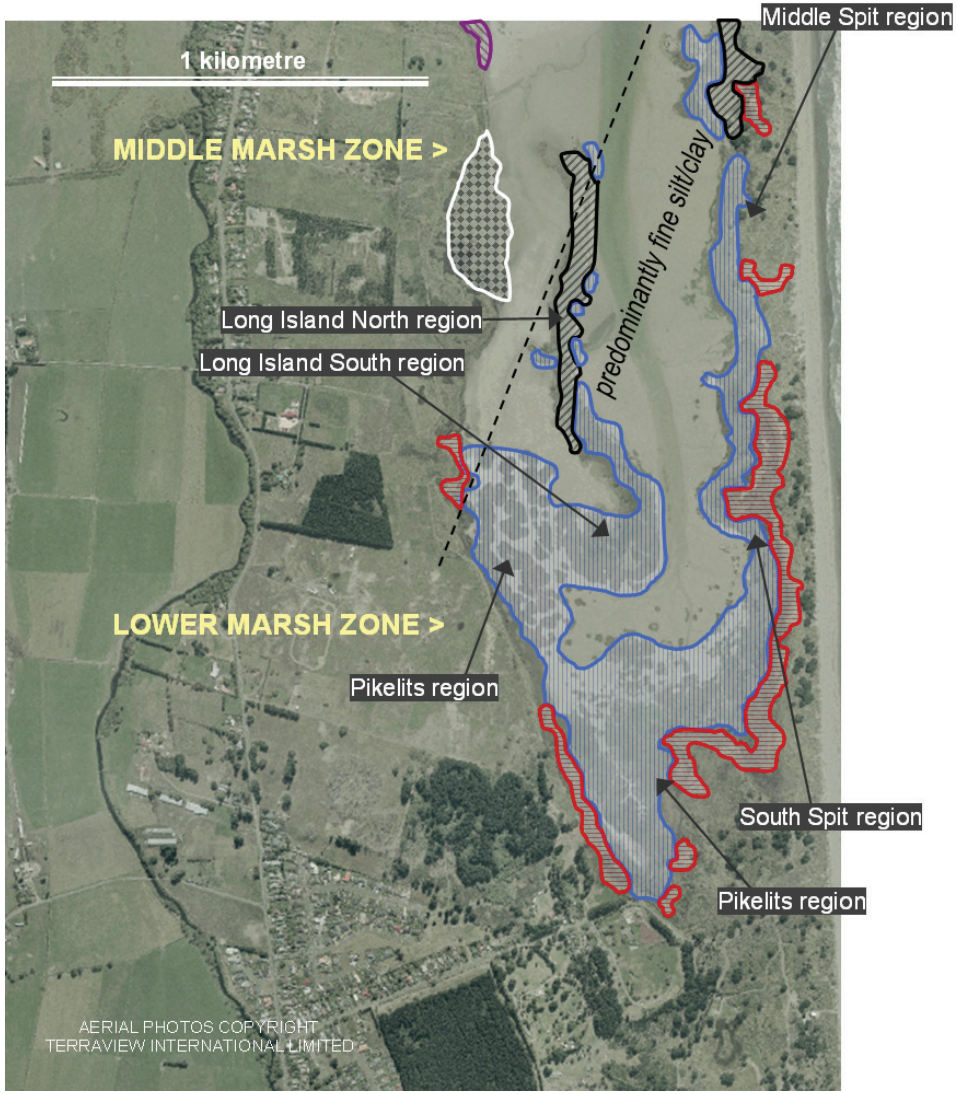
B

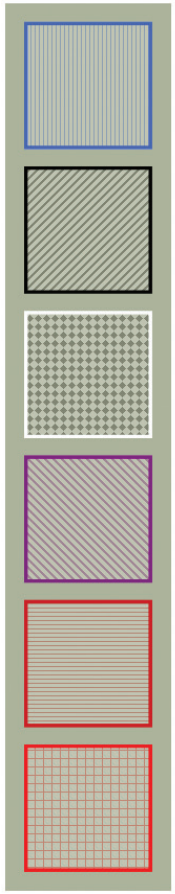
Photos flow as shown above

A



B





PREDOMINANT VEGETATION TYPES	FOUND MAINLY IN THE:
3a (*Schoenoplectus* reedland) 9 (*Juncus/Schoenoplectus* rushland)	Lower marsh zone
10 (*Juncus* rushland)	Lower marsh zone
14 (*Juncus/Selliera* rushland) 15 (*Juncus/Selliera-Samolus* rushland)	Middle marsh zone
19 (*Juncus/Selliera-Plantago -Sarcocornia* rushland) 18 (*Juncus/Selliera-Plantago* rushland)	Middle marsh zone
2 (*Apodasmia* restiad rushland) 7 (*Apodasmia/Schedonorus* restiad rushland) 1 (*Plagianthus/Apodasmia* shrubland)	Upper marsh zone
17 (*Juncus/Selliera-Schoenus* rushland) 3d (*Selliera-Schoenus-Samolus* herbfield)	Salt meadows in the middle to upper marsh zone

Vegetation types

The vegetation types associated with specific zones in the Brooklands Lagoon/Te Riu o Te Aika Kawa area (see pages 122 and 123) are:

(a) Lower marsh zone

- Type 3a *Schoenoplectus* reedland
- Type 9 *Juncus/Schoenoplectus* rushland
- Type 10 *Juncus* rushland
- Type 11 Mudflats
- Type 13 *Juncus/Samolus* rushland
- Type 16 *Samolus* herbfield

(b) Middle marsh zone

- Type 12 *Apodasmia/Juncus* restiad rushland
- Type 14 *Juncus/Selliera* rushland
- Type 15 *Juncus/Selliera-Samolus* rushland
- Type 18 *Juncus/Selliera-Plantago* rushland
- Type 19 *Juncus/Selliera-Plantago-Sarcocornia* rushland

(c) Upper marsh zone

- Type 1 *Plagianthus/Apodasmia* shrubland
- Type 2 *Apodasmia* restiad rushland
- Type 7 *Apodasmia/Schedonorus* restiad rushland
- Type 20 *Plagianthus/Schedonorus-Juncus* shrubland

(d) Salt meadows in the middle to upper marsh zone

- Type 3d *Selliera-Schoenus-Samolus* herbfield
- Type 3e *Sarcocornia-Selliera-Plantago* herbfield
- Type 17 *Juncus/Selliera-Schoenus* rushland

(e) Upper marsh fringe zone

- Type 3c *Schedonorus* grassland and mixed herbfield
- Type 6 *Schedonorus* grassland

(c) Brackish water hollows or ponded areas

- Type 3b *Typha* reedland
- Type 4 *Mimulus* herbfield
- Type 5 *Schoenoplectus/Mimulus* herbfield
- Type 8 *Schoenoplectus/Carex* reedland

Species list – Brooklands Lagoon/Te Riu o Te Aika Kawa area

Species	Family	Common name
INDIGENOUS PLANTS		
Woody plants		
Leptospermum scoparium	Myrtaceae	manuka
Plagianthus divaricatus	Malvaceae	saltmarsh ribbonwood
Herbaceous plants		
Apodasmia similis	Restionaceae	oioi
Bolboschoenus caldwellii	Cyperaceae	grassy club sedge
Carex litorosa	Cyperaceae	shore sedge
Eleocharis acuta	Cyperaceae	spike sedge
Juncus caespiticius	Juncaceae	grass-leaved rush
Juncus kraussii var. australiensis	Juncaceae	sea rush
Juncus pallidus	Juncaceae	giant rush
Phormium tenax	Phormiaceae	harakeke, swamp flax
Puccinellia stricta	Poaceae	salt grass
Schoenoplectus pungens	Cyperaceae	three-square
Schoenus concinnus	Cyperaceae	dwarf cushion sedge
Triglochin striatum	Jungcaginaceae	arrow grass
Typha orientalis	Typhaceae	raupo
Zostera capricorni	Zosteraceae	eel grass
Apium prostratum	Apiaceae	New Zealand celery
Chenopodium glaucum	Chenopodiaceae	glaucous goosefoot
Cotula coronopifolia	Asteraceae	bachelor's button
Leptinella dioica	Asteraceae	turf daisy
Mimulus repens	Scrophulariaceae	native musk
Samolus repens	Primulaceae	sea primrose
Sarcocornia quinqueflora	Chenopodiaceae	glasswort
Selliera radicans	Goodeniaceae	remuremu

Explanation of terms defining the origin of plant species in the Brooklands Lagoon/Te Riu o Te Aika Kawa area

Endemic: Covering species naturally occurring in New Zealand and only in New Zealand. Species which are endemic to New Zealand will not necessarily be endemic to this, or any other, area. This term is not used in this master plan for plants, but is used for birds, referring to species found only in the New Zealand geographical area (see Appendix 3).

Indigenous (Native): Naturally occurring in New Zealand and elsewhere in the world. Indigenous species have either originated in New Zealand and spread, including overseas, or have originated outside New Zealand and dispersed in New Zealand.

Exotic: Not naturally occurring in New Zealand. Exotic species have arrived as the direct result of human introduction, be that deliberate or accidental.

Native-Exotic: For New Zealand native species that have arrived in the Brooklands Lagoon/Te Riu o Te Aika Kawa area from elsewhere in New Zealand.

Species	Family	Common name
Senecio glomeratus	Asteraceae	fireweed
Spergularia media	Caryophyllaceae	sea spurrey
Suaeda novaezelandiae	Chenopodiaceae	sea blite
EXOTIC PLANTS		
Woody plants		
Ulex europeus	Fabaceae	gorse
Pinus radiata	Pinaceae	radiata pine
Herbaceous plants		
Agrostis capillaris	Poaceae	browntop
Agrostis stolonifera	Poaceae	creeping bent
Ammophila arenaria	Poaceae	marram grass
Elymus repens	Poaceae	couch grass
Holcus lanatus	Poaceae	Yorkshire fog
Parapholis incurva	Poaceae	sickle grass
Schedonorus arundinaceus	Poaceae	tall fescue
Spartina anglica	Poaceae	cord grass
Thinopyrum juneiforme	Poaceae	sand couch
Atriplex prostrata	Chenopodiaceae	orache
Crepis capillaris	Asteraceae	smooth hawksbeard
Lotus tenuis	Fabaceae	yellow lotus
Plantago coronopus	Plantaginaceae	buck's horn plantain
Vicia sativa	Fabaceae	vetch

Raupo (*Typha orientalis*) or bullrush - a significant coloniser of freshwater ponded areas at the southern end of Brooklands Lagoon/ Te Riu o Te Aika Kawa. It is also found on the edge of freshwater ponds close to the stopbanks of the Waimakariri River.

Implications for management

There have been calls for actions by groups concerned for the future of Brooklands Lagoon/Te Riu o Te Aika Kawa, especially in relation to changes that have occurred in sedimentation. These changes, and the response of saltmarsh vegetation to them, are, in many cases, the consequence of changing channels and the shifting of the mouth of the estuary northwards. Botanically, there is very little wrong with Brooklands Lagoon/Te Riu o Te Aika Kawa, other than the moribund nature of the marshes at the Styx River/Puharakekenui mouth. Therefore, any proposals for action would need to carefully consider the considerable values of these marshes and take into account the risks of undesirable outcomes. The saltmarshes of Brooklands Lagoon/Te Riu o Te Aika Kawa are a valuable ecological asset, and the system needs to be managed in such a way that these values are not compromised.

Options for the future management of Brooklands Lagoon/Te Riu o Te Aika Kawa, considering each of the three defined saltmarsh ecosystems separately, are (refer to the photo plans on pages 122 and 123 for location of described regions of the estuary):

Note: These options are raised only in the context of the teacher survey report, and any one or more of these are not necessarily a direction for management the Council advocates. They are included here for information, consideration and debate.

Option 1. Leave the saltmarshes of Brooklands Lagoon/Te Riu o Te Aika Kawa to expand, change in composition or decline as the natural controlling factors in the environment dictate.

(A) Southern ecosystem

In the future, fine sediment would be expected to continue to accumulate and the three-square (*Schoenoplectus pungens*) pikelets saltmarsh region (extending for one kilometre along the western margin of the estuary channel towards the southern end of the estuary - contains twenty to thirty islets of thriving three-square) would continue to expand. This would gradually link with the western and southern margins of Long Island South (the southern part of the one and a quarter kilometre island that has formed in the middle of the main estuary channel. A sizeable channel subdivides the island neatly into the southern part dominated by three-square, and the northern part (referred to as Long Island North), which is dominated by sea rush (*Juncus kraussii var. australiensis*)). This may reduce the tidal flow into the southern tip of the estuary, which would progressively become less brackish and more of a typical raupo/swamp flax wetland. Exotic grasses and weeds, normally controlled by the salt water inundation, may invade and dominate the open areas. The areas of higher ground may be invaded by neighbouring gorse and grey willow.

The saltmarsh associated with South Spit (this extends for 1.2 kilometres along the western margin of Brooklands Spit/Kairaki at the southern end of the Spit, and contains a large number of existing or partially eroded three-square pikelet islands, and an eroded margin of three square) is in a dynamic state at present, with extensive pikelet areas and lower marsh zones of three-square eroding. This situation may continue or abate and the infilling of that part of the estuary may continue again. The demise of the pikelets and the eroding of the channels in this area warrant further study. Birdlife may be implicated. These expansion and erosion phases may be cyclic.

(B) Central/northern ecosystem

The change in the future here would depend on how effective the outgoing tidal flow is at removing any sediment brought into the estuary. This part of the estuary may be quite static, with the saltmarsh reflecting any change in the composition or elevation of the substrate.

(C) Styx/Waimakariri ecosystem

Providing the status quo management continues as far up as the tidal flood control gates on the Styx River/Puharakekenui and the regular dredging programme continues (Hicks & Duncan, 1993), the undisturbed saltmarsh between the two stopbanks and on either side of the Styx River/Puharakekenui (up to the tidal flood gates) should remain relatively unchanged for a long time. A gradual succession from sea rush to oioi to marsh ribbonwood will occur, but slowly. Spread of the rampant gorse and broom from the tops of the stopbanks down into the saltmarsh should be carefully monitored, as it will signal that the saltmarsh is beginning to lose its controlling factor, the tidal influence. This area is large and a valuable wildlife refuge.

Option 2. Carefully manage Brooklands Lagoon/Te Riu o Te Aika Kawa to preserve the existing saltmarsh vegetation.

(A) Southern ecosystem

This option assumes that this transitional part of the estuary contains significant vegetation types and individual species that are possibly under threat if there is no management. The two plants listed as threatened species (shore sedge and native musk) are abundant in this part of the estuary and occupy distinctive zones visible from the viewing platforms around the upper marsh fringe. Shore sedge is found in two main zones. It occupies the tops of the main channel levees, and in amongst the broad expanse of native musk that has formed at the end of this channel as is flattens out to form a small mudflat. Native musk has relatively low salt tolerance, so any tinkering with the depth of channels and tidal flow would have to be carried out carefully. On the other hand, continued sediment buildup could increase the freshwater ponding and leave the area vulnerable to invasion by raupo and other freshwater species. Monitoring sites should indicate when significant change in sediment level and salinity is occurring, but care would be required to manage the area.

Native musk and shore sedge are also found in the Pikelets region. Again, monitoring should reveal whether the native musk is under threat by three-square, and if the abundance of shore sedge will increase on the pikelets of three-square.

Shore sedge also occupies a relatively bare middle marsh zone in the South Spit and Middle Spit (the middle one kilometre of saltmarsh along Brooklands Spit/Kairaki, also with an eroded margin of three-square) regions, between isolated clumps of three-square, sea rush, oioi and marsh ribbonwood. It is uncertain what factors control its distribution, and more information from monitoring sites in this area would be required in order to find out if it is increasing or stable, and so manage this species in these locations. It does not appear under threat in the near future.

(B) Central/northern ecosystem

The eastern (Brooklands Spit/Kairaki) margin to the estuary, as well as the western margin, contain typical well zoned saltmarsh, with some regionally distinct vegetation types that could be under threat in four ways:

i. The same erosion of three-square zones that is occurring at South Spit, also occurs at Middle Spit and, to a lesser extent, at North Spit. The final 1.2 kilometres of saltmarsh along Brooklands Spit/Kairaki, ending at the extensive wilding pine ‘plantations’, and directly opposite the Styx River/Puharakekenui mouth, has a significant number of four wheel drive tracks running through it. It would be valuable to determine the cause.

ii. The gorse, tree lupin and broom present on secondary sand dunes adjacent to the upper marsh fringe have the potential to invade the saltmarsh, as organic matter accumulates and wind blown sand is trapped by marsh ribbonwood. Swamp flax bushes have started to appear in this upper marsh fringe, but these remain relatively small in size, probably due to the salt content of the soils.

iii. The expanses of salt turf or salt meadow, which are relatively uncommon, both regionally and nationally, have been, and probably still are, accessible to motor vehicles. Significant, possibly irreparable, damage has already been done. Such activity needs to cease.

iv. The pines from the estuary mouth end of Brooklands Spit/Kairaki are already invading the salt meadow areas of North Spit. Control of the largest of these has already occurred, but, at present there are a huge number of small wilding pines that should be removed.

It is recognised that the tall stand of pines at the northern tip of the spit are valuable as a bird refuge, and that protecting the open expanses of salt meadow would also maintain existing bird habitat.

The management required to meet, firstly, the aim of removing wilding pines and, secondly, protecting bird habitat is different. A level and type of management that is compatible with both aims may be impossible to achieve. What is achievable in the short term:

- Limiting unauthorised vehicle access to any part of the saltmarsh. This would require barriers, fences and locked gates.

- Retaining the pines at the northern tip of the spit, but progressively removing all pines from where the saltmarsh margin begins, all the way to the end of the South Spit region. The pines are not needed for shelter by walkers, as the height of the dunes provide this, but do prevent excess sand from blowing into the saltmarsh.
- Removing as much gorse as possible from near the edge of the saltmarsh on both sides of the estuary.

(C) Styx/Waimakariri ecosystem

Providing the tidal influence on the two large saltmarsh regions that comprise this ecosystem is monitored regularly and maintained and so little action is required. The two saltmarsh regions are:

- **Styx Mouth South** – this covers both sides of the Styx River/Puharakekenui near its mouth between the stopbanks on each side. The natural western boundary is a gorse area and the eastern boundary comprises extensive gorse (*Ulex europaeus*) covered sand dunes.

- **Styx Mouth Waimakariri Side** - another 'between the stopbanks' area extending from the eastern gorse covered dune system for 1.4 kilometres westwards to again end in gorse. Despite the stopbanks, this large area of oioi (*Apodasmia similis*) and marsh ribbonwood (*Plagianthus divaricatus*) dominated saltmarsh vegetation is well supplied by deep dendritic channels extending throughout and some ponded areas contain raupo and swamp flax.

Control of the gorse on the stopbanks would help preserve this area, should a reduction in the tidal influence occur.

Option 3. Restore Brooklands Lagoon/Te Riu o Te Aika Kawa to be a well flushed estuarine system.

(A, B) Southern and Central/northern ecosystems

These areas could be considered together, as a shift in the flow of the Waimakiriri River will impact on the whole estuary. Should the Waimaikiriri River ever be re-directed through the estuary again it would probably:

- Destabilise Brooklands Spit/Kairaki at the northern end, and around the position of the new outlet to the sea. This would change the sediment on surrounding mudflats to a sandier grade.
- Scour out a deep central channel and create unpredictable effects on the existing saltmarsh in the Brooklands region. Bordering the residential area of Brooklands, this 19.4 hectare area is unusual in having a wilding pine tree stand (*Pinus radiata*) along half of its estuary margin, a constructed ridge with planted conifers bisecting it, an odd array of tidal channels, and several well-used vehicle and walking tracks.
- Erode the mid-channel Long Island.
- Flood the southern part of the estuary at high tide and change the vegetation type.
- Remove the native musk, and a lot of the three-square, replacing it with sea rush and sea primrose.

Such a shift of the Waimakariri River may unify the saltmarsh vegetation of the estuary, but in doing so, reduce the biodiversity.

(C) Styx/Waimakariri ecosystem

Changing the course of the Waimakiriri River would have implications for the position of the mouth of the Styx River/Puharakekenui, but may not substantially affect the existing saltmarsh vegetation. It may reduce the salinity of the tidal inundation.

An earlier study[84] indicated that once the appropriate conditions are present, saltmarsh communities frequently establish well by themselves and thus several areas surrounding the Brooklands Lagoon/Te Riu o Te Aika Kawa estuary lend themselves to restoration. This has successfully taken place at Bexley Wetland, Charlesworth Wetland and elsewhere.

Such restoration may also apply to the re-establishment of saline connections with the stranded areas of weedy saltmarsh in the landward zone near the Brooklands settlement, thereby enabling the extension of bird habitat[85].

[84] McCombs and Partridge (1992).
[85] Supported by Crossland A. C. (2008).

Other saltmarsh regions

Other saltmarsh regions in the Brooklands Lagoon/Te Riu o Te Aika Kawa estuary area described by Worner and Partridge (2008) are:

- **Spencerville region** - the heart-shaped southern tip of the estuary, close to Spencer Park, with two large channels that carry tidal flow to inundate the saltmarsh vegetation. It is partially impounded and colonised by raupo (*Typha orientalis*) and swamp flax (*Phormium tenax*) at the southern end.
- **Barker's Drain South** - a small (seven and a half hectare) area of saltmarsh vegetation surrounded on the western side by a series of parabolic sand dune mounds and narrowing towards Barkers Drain.
- **Styx Mouth Foreshore** - a very dynamic area containing an unusual diverse mix of plant communities covering the thin sliver of mudflats from the Styx River/ Puharakekenui mouth north to the true right bank of the Waimakariri River at the entrance to the estuary.

Photo (right)
Saltmarsh in the estuary viewed from Mid Seafield Park.

APPENDIX 2

CLUBHOUSE/PATROL FACILITIES – SPENCER PARK SURF LIFE SAVING CLUB

The Spencer Park Surf Life Saving Club Incorporated has raised a number of issues regarding the surf patrol building it maintains and operates, but which the Council owns. The Club has requested that the Council upgrade the building in order to adequately meet existing and future needs.

Photo (left)
Spencer Park Surf Life Saving Club site, Spencer Park Beach.

Land/asset status

The Club has a licence issued by the Waimairi District Council for 21 years from 1 October 1987 to occupy the building for its surf lifesaving activities. This does not cover the adjacent public toilet/changing facilities. The licence requires the Club to maintain the interior and exterior of the building, with the prior written consent of the Council before any work is done. The Council supplies materials required for the maintenance of the building exterior and public area. The licence expired at the end of September 2008, but is being carried over until such time a new licence document is prepared. The Club has the right of renewal for a further term of 21 years, if the Council is satisfied the terms and conditions have been complied with, there is sufficient need for a surf life saving club, and that no other recreational use of the site has priority in the public interest.

The building and toilet/change facilities were previously sited on Crown land administered by the Department of Conservation, although on 12 June 2008 the Council resolved to accept an offer from the Department to vest in the Council this land as recreation reserve under the Reserves Act 1977. The land was classified as such, through gazette notice, on 28 November 2008 (with a correction made on 15 December).

Club provided information

The Spencer Park Surf Life Saving Club has approached the Council, with respect to its facility. The following account is derived from information the Club has provided.

Background

Lifeguard patrols were established at Spencer Park Beach in 1969, providing for the safety of the general public. This volunteer service has remained year by year under the administration of the Spencer Park Surf Life Saving Club and, today, is as strong as ever with an enthusiastic group of lifeguards, many of whom live in the local community.

During the initial patrolling years, a temporary shed type arrangement was used on the beach to give the lifeguards shelter from the elements. The building that exists today was never purposely built for the role it serves, but evolved over time, with periodic additions.

The building originally started as a single level structure, consisting of two identical buildings, built parallel and approximately three metres apart, designed as separate public male and female changing and toilet facilities. These were unroofed and open to the weather.

The space between these buildings was subsequently covered and made secure. This was used by the lifeguards to store equipment for beach patrols. Alterations were later made by constructing a first floor watch tower, with an internal access ladder (still existing today) and enclosed with a roof, walls and windows.

Many more changes to the building were to follow over the years. The first floor centre room, that included a small kitchen bench, was built. With the covering of the roofless changing areas, this created a west-facing first floor balcony area. Two thirds of the change areas were also roofed to make secure areas for the storage of increasing amounts of patrolling equipment. Further changes saw a small balcony formed on the north-east corner to allow an outside view from the first floor, and a first aid room was established on the south-east corner of the first floor.

Some years later, an extension was made to the south end of the building in order to house inflatable rescue boats (IRBs) and associated equipment.

All these changes to the building at different times, although making small improvements, were done without a logical plan and vision for the future.

The present day situation

The Club advises that today (in 2008) the demands of the service it provides are far different to those when the building was merely a public toilet and changing sheds.

Over the years, there has been an increase in the public use of Spencer Park Beach and the Club says that this has placed more pressure on the volunteer patrol services that it provides. Its membership has similarly grown (now in excess of 110 members), which has enabled it to manage the increased needs for beach patrols. However, the Club says the building does not now meet its requirements. It is concerned that the limitations of the building means that it is constrained in carrying out an effective service for the benefit of the public.

The service the Club provides

There has been a considerable growth in the Club's junior membership (that is, of those under 14 years of age), which the Club believes is very promising in terms of providing for future lifeguards.

The Club became a registered incorporated society in 1970. Its operating practices gained it Silver Club Mark status in 2006, a status only one other surf club in Canterbury has. The Club made application for, and has been awarded, Charitable Entity Status with the Charities Commission in June 2008. The Club is currently developing a long term strategic plan, which has identified the upgrade of the clubhouse as a priority to facilitate the future needs of the Club.

Facility issues

The Club indicates that it currently has the following issues with its facilities:

- The first aid room is located upstairs, only accessible by either a nearly vertical internal stairway, or a steep external stairway at the rear of the building. This is totally impractical, particularly in the event of a patient requiring serious medical assistance.
- The actual clubhouse area is very small. It is not suitable to hold club gatherings and functions, and the Club is forced to hire larger facilities for events, such as end of season prize giving.
- Space to store patrol and surf equipment is limited, necessitating the use now of a shipping container (put in place in September 2008) to make the downstairs gear areas more useable.
- The elevated 'patrol lookout' on the first floor is not ideal. Field of view to the beach is limited and this post is not in a very comfortable environment for lifeguards, as a cramped small wooden bench provides the only means of seating for observing the beach from.
- The entire upstairs area is dark and cold, as there are no windows on the north face of the building.
- The small kitchen facilities are less than ideal when lifeguards are patrolling for an entire day and need to prepare food and refreshments.
- The internal stairs are narrow, and almost vertical, making them hazardous. Children are not allowed to use them, but it remains the quickest access to the beach from the patrol lookout.
- The only warm water showers fitted are located within the gear bay, which, being hindered by board racks, has them in an impractical location and taking up much needed space. In addition, there are only two shower heads and the communal location in the gear bay does not provide the privacy many children need.

- Due to the adhoc construction over the years, the building is subject to leaks, which has degraded the building materials.
- The long term stability of the structure is questionable, and it is now far from meeting any current regulations for both building standards and health and safety.
- Power supply to the building is insufficient.
- Doors are locked with padlocks, which are often difficult to use and hard to maintain.

Club proposal

The Spencer Park Surf Life Saving Club proposes that the existing building be rebuilt to address the issues identified and to future proof the service that it provides to the public for many years to come.

The Club believes, following its assessment of the current layout of its facilities, that an increase in the overall ground footprint will be the only way to achieve a practical and useable amount of storage and workspace necessary to undertake its activities. The Club considers that potentially this could be achieved by adding to the existing structure along the southern boundary, but this would be dependant on the current structure being sound and feasible to accommodate an altered layout. Its preference would be to start afresh to enable an entirely purpose-built facility to be constructed.

One of the aims is to relocate the first aid room on the ground floor to facilitate easier access by lifeguards and any emergency services. The first floor area required would need to significantly larger than it is at present to allow sufficient space to configure a main lounge/ clubhouse area, separate kitchen and toilet. A further elevated and separate patrol observation station would be required, and outside decking areas facing the beach to supplement patrols.

The Club has provided an initial draft concept plan to illustrate some proposed changes to the existing building. The Club advises that this does not constitute a final design, but demonstrates what it believes is a starting point for discussion with the Council. Following initial consultation with the Council, the Club would commit resources into having more accurate designs and details presented.

Linkage with Spencer Park circulation

The Spencer Park Surf Life Saving Club sees that their proposed redevelopment of the Surf Life Guard building now is timely to ensure that this is integrated with the consideration of potential improvements of road and path circulation in the Spencer Park area as part of the wider planning for open space in the Brooklands Lagoon area. Any facility redevelopment will need to be assessed in conjunction with addressing issues over the accessways around Spencer Park and with swimmers using unpatrolled areas of the beach.

Future occupation agreement

Any future occupation agreement between the Club and the Council for the Club's continued use of the facility, and particularly so if changes are made to the facility, is likely to need to be in the form of a lease prepared under the Reserves Act 1977.

The proposal will be considered as part of the process for preparation of a new occupation agreement. There is no funding in the LTCCP 2009-19 for any developments of the site.

Vegetated coastal sand dunes in Spencer Park Beach.

APPENDIX 3

CHECKLIST TO THE BIRDS OF BROOKLANDS LAGOON/TE RIU O TE AIKA KAWA AND ENVIRONS[86]

Including: Brooklands Lagoon/Te Riu o Te Aika Kawa, Brooklands Spit/Kairaki, Lower Styx Ponding Area, Styx River/Puharakekenui mouth, Kainga Road Salt meadow, Waimakariri River mouth, Kairaki Paddocks and Kaiapoi Oxidation Ponds.

(Tenth update to July 2008)

Compiled by Andrew Crossland, Park Ranger Services, Transport and Greenspace Unit, City Environment Group, Christchurch City Council

Key

Origin:

o	= oceanic species
w	= wetland/coastal species
t	= terrestrial/non wetland species
bold	= native or endemic sp. or sub.sp.
italics	= Australian visitor
std font	= human-introduced (exotic)
underlined	= northern hemisphere migrant

Maximum numbers:

*****	over 2000 (abundant)
****	over 500 (abundant)
***	over 200 (very common)
**	over 50 (common)
*	10 - 50 (less common)
#	< 10 (uncommon)

Status:

R	= resident all year round
Rb	= resident and breeding
RS	= resident with seasonal population influxes
V	= vagrant or irregular visitor
S	= seasonal or regular visitor
Ex	= extinct

[86] Source: Appendix 2 in Crossland A. C. (2008).

SPECIES RECORDED 1850 to 2004

Grebes:

1.	**Australasian Crested Grebe** (Podiceps cristatus)	w	V	#
2.	**New Zealand Dabchick** (Poliocephalus rufopectus)	w	Ex	

Petrels and allies:

3.	**Northern Giant Petrel** (Macronectes halli)	o	V	#
4.	**Sooty Shearwater** (Puffinus griseus)	o	V	#
5.	**Broad-billed Prion** (Pachyptila vittata)	o	V	#
6.	**Fairy Prion** (Pachyptila turtur)	o	V	#

Penguins:

7.	**Yellow-eyed Penguin** (Megadyptes antipodes)	w	V	#
8.	**White-flippered Penguin** (Eudyptula minor albosignata)	w	S	#
9.	**Little Blue Penguin** (Eudyptula minor)	w	V	#

Gannets:

10.	**Australasian Gannet** (Morus serrator)	w	S	#

Cormorants and Shags:

11.	**Black Cormorant** (Phalacrocorax carbo)	w	RS	*
12.	**Pied Cormorant** (Phalacrocorax varius)	w	RS	**
13.	**Little Cormorant** (Phalacrocorax melanoleucos)	w	RS	*
14.	**Little Black Cormorant** (Phalacrocorax sulcirostris)	w	S	#
15.	**Spotted Shag** (Stictocarbo punctatus)	w	RS	

****

Herons and Allies:

16.	**White-faced Heron** (Ardea novahollandiae)	w	RbS	*
17.	**White Heron** (Egretta alba)	w	S	#
18.	**Reef Heron** (Egretta sacra)	w	Ex	
19.	*Cattle Egret* (Bubulcus ibis)	w	V	#
20.	**Australasian Bittern** (Botarus poiciloptilus)	w	RbS	# ?
21.	**Royal Spoonbill** (Platalea regia)	w	S	#
22.	*Australian White Ibis* (Threkiornis molucca)	w	V	#

Waterfowl:

23.	Mute Swan (Cygnus olor)	w	V	#
24.	**Black Swan** (Cygnus atratus)	w	RbS	**
25.	Canada Goose (Branta canadensis)	w	RbS	****
26.	Greylag (feral) Goose (Anser anser)	w	Rb	*
27.	Cape Barren Goose (Cereopsis novaehollandiae)	w	V	#
28.	**Paradise Shelduck** (Tadorna variegata)	w	RbS	****
29.	*Chestnut-breasted Shelduck* (Tadorna tadornoides)	w	V	#
30.	Mallard (Anas platyrhynchos)	w	RbS	****
31.	**Grey Duck** (Anas superciliosa)	w	RbS	**
32.	**Grey Teal** (Anas gracilis)	w	RbS	*****
33.	**New Zealand Shoveler** (Anas rhynchotis)	w	RbS	*****
34.	**New Zealand Scaup** (Aythya novaseelandiae)	w	RbS	***

Raptors (Birds of Prey):

35.	**Australasian Harrier** (Circus approximans)	w	RbS	*

Gamebirds:

36.	California Quail (Callipepla californica)	t	Rb	***
37.	Pheasant (Phasianus colchicus)	t	Rb	*

Rails/Gallinules:

38.	**Buff Weka** (Gallirallus australis hectori)	w	Ex	
39.	**Banded Rail** (Rallus philippensis)	w	Ex	
40.	**Marsh Crake** (Porzana pusilla)	w	RbS	* ?
41.	**Pukeko** (Porphyrio porphyrio)	w	Rb	*
42.	**Australasian Coot** (Fulica atra australis)	w	S	#

Waders:

43.	**South Island Pied Oystercatcher** (Haematopus ostralegus)	w	S	***
44.	**Variable Oystercatcher** (Haematopus unicolor)	w	V	#
45.	**Pied Stilt** (Himantopus himantopus)	w	RbS	***
46.	**Black Stilt** (Himantopus novaezelandiae)	w	V	#
47.	**Red-necked Avocet** (Recurvirostra novaehollandiae)	w	Ex	
48.	**Spur-winged Plover** (Vanellus miles)	w	RbS	***
49.	**New Zealand Dotterel** (Charadrius obscurus)	w	Ex	
50.	**Banded Dotterel** (Charadrius bicinctus)	w	RbS	**
51.	**Wrybill** (Anarhynchus frontalis)	w	S	*
52.	Pacific Golden Plover (Pluvialis fulva)	w	V	#
53.	Turnstone (Arenaria interpres)	w	V	#
54.	Ruff (Philomachus pugnax)	w	V	#
55.	Red Knot (Calidris canutus canutus)	w	S	#
56.	Sanderling (Calidris alba)	w	V	#
57.	Sharp-tailed Sandpiper (Calidris acuminata)	w	V	#
58.	Eastern Curlew (Numenius madagascariensis)	w	V	#
59.	Asiatic Whimbrel (Numenius phaeopus variegatus)	w	S	#
60.	American Whimbrel (Numenius phaeopus hudsonicus)	w	V	#
61.	Eastern Bar-tailed Godwit (Limosa lapponica baueri)	w	S	**
62.	Hudsonian Godwit (Limosa haemastica)	w	V	#
63	Terek Sandpiper (Tringa terek)	w	V	#
64.	Alaskan Tattler (Tringa incana)	w	V	#

Skuas, Gulls and Terns:

65.	Arctic Skua (Stercorarius parasiticus)	w	S	#
66.	Pomarine Skua (Stercorarius pomarinus)	w	S	#
67.	**Black-backed Gull** (Larus dominicanus)	w	RS	****
68.	**Red-billed Gull** (Larus novahollandiae)	w	R	***
69.	**Black-billed Gull** (Larus bulleri)	w	S	***
70	**Black-fronted Tern** (Sterna albostriata)	w	S	**
71.	**Caspian Tern** (Sterna caspia)	w	S	*
72.	**White-fronted Tern** (Sterna striata)	w	S	****
73.	Eastern Little Tern (Sterna albifrons sinensis)	w	V	#

Pigeons and Doves:

74.	Rock Pigeon (Columba livia)	t	S	**
75.	**New Zealand Pigeon** (Hemiphaga novaeseelandiae)	t	S	#
76.	Barbary Dove (Streptopelia chinensis)	t	R	#

Cuckoos:

77.	**Shining Cuckoo** (Chrysococcyx lucidus)	t	Sb	*
78.	**Long-tailed Cuckoo** (Eudynamys taitensis)	t	V	*

Owls:

79.	Little Owl (Athene noctua)	t	Rb	*

Kingfishers:

80.	**New Zealand Kingfisher** (Halcyon sancta)	w	RbS	**

Swallows

81.	**Welcome Swallow** (Hirundo tahitica)	w	RbS	****

Passerines:

82.	Skylark (Alaudu arvensis)	t	RbS	***
83.	**New Zealand Pipit** (Anthus novaseelandiae)	t	S	*
84.	Dunnock (Prunella modularis)	t	RbS	
85.	Blackbird (Turdus merula)	t	RbS	
86.	Song Thrush (Turdus philomelos)	t	RbS	
87.	**South Island Fernbird** (Bowdleria punctata punctata)	t	Ex	
88.	**Grey Warbler** (Gerygone igata)	t	RbS	**
89.	**South Island Fantail** (Rhipidura fuliginosa)	t	RbS	**
90.	**Silvereye** (Zosterops lateralis)	t	RbS	*****
91.	**Bellbird** (Anthornis melanura)	t	S	#
92.	Yellowhammer (Emberiza citrinella)	t	RbS	
93.	Cirl Bunting (Emberiza cirlus)	t	S	
94.	Chaffinch (Fringilla coelebs)	t	RbS	
95.	Greenfinch (Carduelis chloris)	t	RbS	
96.	Goldfinch (Carduelis carduelis)	t	RbS	
97.	Redpoll (Carduelis flammea)	t	RbS	*****
98.	House Sparrow (Passer domesticus)	t	RbS	
99.	Starling (Sturnus vulgaris)	t	RbS	
100.	White-backed Magpie (Gymnorphina tibicen)	t	RbS	**

100 species were recorded 1850 – 2008, including 43 resident species, 23 seasonal visitors, 26 vagrants and 8 species now locally extinct.

APPENDIX 4

LINKED PLANNING AND REGULATORY DOCUMENTS

The following table presents, not in any particular order, some key documents that have particular relevance to the planning for public parks and open space in the Brooklands Lagoon/Te Riu o Te Aika Kawa area and/or were referred to in this master plan. It does not necessarily include all published planning and regulatory documents that apply to this general area.

TITLE	DATE ADOPTED (DATE OPERATIVE)	PREPARED BY	APPLICABLE LEGISLATION	APPLICABLE PAGES	INTERNET LINK
Environment Canterbury Navigation Safety Bylaws 2005	(1 December 2005)	Environment Canterbury	Local Government Act 2002		http://ecan.govt.nz/services/environmental-planning/pages/boating-navigation-safety.aspx
Christchurch City Council Bylaws	Various	Council	Various		http://www.ccc.govt.nz/thecouncil/policiesreportsstrategies/bylaws/index.aspx
Regional Coastal Environment Plan for the Canterbury Region 2005 (Proposed Plan Changes 1 and 2 notified on 31 May 2007)	24 June 2004 (30 November 2005)	Environment Canterbury	Resource Management Act 1991		http://ecan.govt.nz/publications/pages/regional-coastal-environment-plan.aspx
New Zealand Coastal Policy Statement 1994	15 May 1994 (by Gazette notice)	Department of Conservation	Resource Management Act 1991		http://www.doc.govt.nz/publications/conservation/marine-and-coastal/new-zealand-coastal-policy-statement/

TITLE	DATE ADOPTED (DATE OPERATIVE)	PREPARED BY	APPLICABLE LEGISLATION	APPLICABLE PAGES	INTERNET LINK
Proposed New Zealand Coastal Policy Statement 2008		Department of Conservation	Resource Management Act 1991		http://www.doc.govt.nz/templates/summary.aspx?id=56250
Canterbury Conservation Management Strategy	14 June 2000	Department of Conservation	Conservation Act 1987		http://www.doc.govt.nz/templates/MultipageDocumentTOC.aspx?id=41496
Canterbury Conservation Management Strategy review		Department of Conservation	Conservation Act 1987		http://www.doc.govt.nz/templates/page.aspx?id=46394
Waimakariri River Regional Park		Environment Canterbury			http://ecan.govt.nz/advice/recreation-and-parks/waimakariri-park/pages/Default.aspx
Waimakariri River Regional Plan (Proposed Plan Change 1 notified 8 August 2009)	23 October 2004	Environment Canterbury	Resource Management Act 1991		http://ecan.govt.nz/our-responsibilities/regional-plans/pages/waimakariri-river-regional-plan.aspx
Christchurch City Plan	Operative in part from 21 November 2005	Council	Resource Management Act 1991		http://www.ccc.govt.nz/thecouncil/policiesreportsstrategies/districtplanning/cityplan/index.aspx
Christchurch Biodiversity Strategy		Council	Resource Management Act 1991		http://www.ccc.govt.nz/thecouncil/policiesreportsstrategies/strategies/biodiversity.aspx

TITLE	DATE ADOPTED (DATE OPERATIVE)	PREPARED BY	APPLICABLE LEGISLATION	APPLICABLE PAGES	INTERNET LINK
Canterbury Region Biodiversity Strategy	February 2008	Biodiversity Strategy Advisory Group	Resource Management Act 1991		http://www.canterburybiodiversity.org.nz/canterbury-region-biodiversity-strategy.html
Styx Vision 2000-2040	26 July 2001	Council			http://www.thestyx.co.nz/new-zealand/main/
Coastal Parks Strategy 2000-2010		Council			
Christchurch Beaches and Coastal Parks Management Plan 1995		Council			
Spencer Park Management Plan 2010		Council	Reserves Act 1977		
Seafield Park Management Plan 2010		Council	Reserves Act 1977		
Draft Public Open Space Strategy 2010-2040		Council			

APPENDIX 5 - REPORTS

Reports used or referred to directly in this master plan

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Brooklands Spit/Kairaki (on the horizon), Brooklands Lagoon/Te Riu o Te Aika Kawa (middle distance) and Seafield Park (right and foreground middle and left).

Panoramic view of Mid Seafield Park with Brooklands Lagoon/Te Riu o Te Aika Kawa beyond.

Christchurch City Council