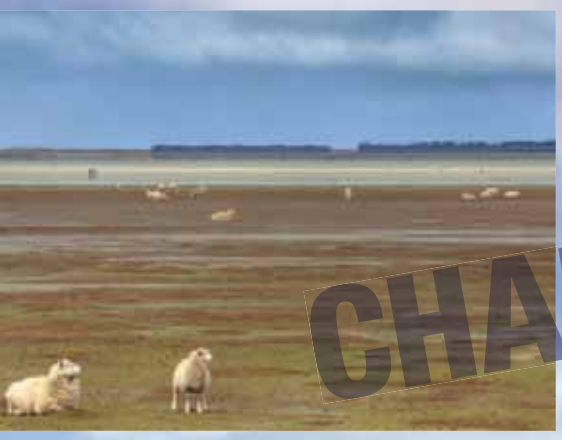
TE WAIHORA/LAKE ELLESMERE
State of the Lake and Future Management

Edited by **KENNETH F.D. HUGHEY** and **KENNETH J.W. TAYLOR**



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Edited by **KENNETH F.D. HUGHEY** and **KENNETH J.W. TAYLOR**
Lincoln University Environment Canterbury

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SHELLEY McMURTRIE

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SHELLEY McMURTRIE

SHUTTERSTOCK

01 INTRODUCTION

KENNETH F.D. HUGHEY Lincoln University **KENNETH J.W. TAYLOR** Environment Canterbury

Te Waihora/Lake Ellesmere[1] is a large coastal lake, intermittently open to the sea. It is highly regarded for its conservation and related values, some of which are of international significance. Its function as a sink for nutrients from its large predominantly agriculturally based catchment, currently undergoing accelerated intensification, is also recognised, at least implicitly. It is the resulting conflict from these value sets which is mainly responsible for the ongoing debate about the future of the lake, a debate long fuelled by rhetoric and informed by a body of science which highlights the lake's complexity as a biophysical system, but has many gaps. It is a debate that now has substantial statutory implications, arising from factors which include:

- the requirements of conservation, and indigenous needs and entitlements which are growing in prominence and statutory (including property rights based) legitimacy;
- public interest in legal processes associated with further major intensification of agriculture planned for the catchment;
- a recent Environment Court decision in which serious questions about the overall biological health of the lake were raised; and
- the consequences arising from the need for Environment Canterbury to obtain resource consents for the lake operating regime.

In addition, in recent times the Waihora Ellesmere Trust (WET), a community based group advocating for improved management of the lake, has been established. It is within these diverse contexts that this State of Te Waihora/Lake Ellesmere report has been prepared—it results from the 2007 Waihora/Ellesmere Living Lake Symposium, held from 31 October-3 November 2007 at Lincoln University, Canterbury. The symposium was initiated and organised by the WET (see www.wet.org.nz).

The Living Lake Symposium had several key objectives:

- To determine the overall state of the lake, by first defining the key value sets, and indicators that could be reported against;
- To suggest future management actions that would address key issues affecting the defined values;
- To provide a forum within which lay individuals, scientists and managers could openly debate issues; and
- To provide a launching pad for integrated and focused future management of the lake and its environs.

The programme incorporated three keynote speakers: Dr Larry Hildebrand from Environment Canada, Dr Hamish Rennie from Lincoln University, and Dr Bryan Jenkins from Environment Canterbury—their addresses made a major contribution to the symposium although none are included in this report, because it is focused primarily on the science and the management options associated with the lake.

The format of this report is designed to be readily updateable. Ten of the principal presentations in the main sessions of day two of the symposium are included in this report—two Power Point presentations (both regarding water quantity and related issues) are provided as appendices to improve completeness. Over time, however, topic areas not available as full papers for this report, e.g., surface water quantity, will be written up and included in detail. Similarly, the papers herein will themselves be updated as new and significant data become available. Each subject area will be reconsidered within the same structure and context as has been provided here. One paper, 'Te Waihora/Lake Ellesmere: An integrated view of the current state and possible futures', was presented on the final formal day of the symposium and it is included as the concluding chapter of this report.

Finally, the Waihora Ellesmere Trust and many of the others attending the symposium saw merit in reconvening the event around two years after the initial symposium, to report on progress with management, indicator monitoring, scientific understanding and other matters. We support that suggestion.

In terms of report format it is important that readers note the following:

- All authors were provided with 'briefs of work' and were requested to contextualise their work with that contained within the Taylor (1996) report on the lake—this was more easily achievable for some than others. Given some lack of consistency between symposium presentations and final papers it is our intention that a revised set of agreed indicators will be considered and included in any follow-up symposium and associated reports—some considerable work will be required in some areas to achieve this objective;
- Only the wildlife and integration papers included in this report have been formally peer reviewed; and
- All other papers have been standardised and style edited-some changes have been suggested by the report editors and made by the paper authors.

Finally, an attempt has been made to present the papers in a logical sequence of 11 chapters: chapter 1 sets the scene; chapters 2-7 cover the biophysical science dimensions (groundwater, water quality, native vegetation, native fisheries, trout, wildlife); chapters 8-10 deal with the human dimensions (Ngāi Tahu, recreation, economics); and chapter 11 deals with integration of the findings from the previous chapters and setting the scene for future management.

[1] Note that the Geographic Place Names Board has defined the name as Lake Ellesmere (Te Waihora). It is not our intention to debate the nomenclature, but rather to put the focus where we consider it should lie, within the lake's initial historical and cultural context for indigenous Maori.

09 RECREATION values

SHELLEY McMURTRIE

KAY L. BOOTH Lindis Consulting

This report presents findings from a study of recreation values, opportunities and issues associated with Te Waihora/Lake Ellesmere and its margins. The study collated existing information and contacted knowledgeable individuals. An assessment of the current recreational use of the lake and its margins identified a wide range of water- and land-based activities. The lake is nationally significant for waterfowl hunting, and regionally significant for fishing and cycling on the rail trail. It is rated as a nationally significant water body for recreation. Activities are reliant on a healthy natural ecosystem, especially fish and wildlife habitat. Land-based recreation infrastructure is run-down and needs refurbishment. There are various 'drivers' of recreational use of the lake and its management. They include the lake's environmental state, the lake level, public access, awareness and information, recreation facilities, the Little River rail trail, the existence of alternative recreation sites, the recreation 'catchment' for users, recreational trends and effects, and an inadequate database for decision-making. A recreation vision is proposed: A healthy recreation resource that is well used and valued. To achieve this vision, the resource needs to be enhanced so it better caters for existing uses and users, and entices people to visit so they may 'connect' with the lake.

9.1 Introduction

Purpose and objectives

This report presents findings from a study of recreation values, opportunities and issues associated with Te Waihora/Lake Ellesmere ('the lake') and its margins. The study was undertaken in preparation for the Living Lake Symposium (November 2007), the purpose of which was to bring together the current state of knowledge on the lake and its catchment; identify gaps, key indicators and key management issues; and to form the basis of a collaborative management approach for improving the ecological health of the lake and its catchment.

The study had six objectives:

- To describe current recreational use of the lake and its margins
- To compare current use with the assessment of recreational use provided by Blackford and Law in 1996
- To highlight potential opportunities for recreation
- To identify resource characteristics upon which lake-related recreation relies, including infrastructure requirements
- To discuss issues for lake recreation, including the influence of lake management on recreational activities
- To identify long-term goals for lake-related recreation, and indicators that would reflect progress toward those goals.

Study approach

The study collated existing information about recreation associated with the lake and its margins. Key sources were the 'Inventory of Recreation Values for Rivers and Lakes of Canterbury, New Zealand' (Sutherland-Downing and Elley, 2004), the Joint Management Plan for the lake (TRONT and DOC, 2005), draft reserve management plans for Lakeside Domain and Coes Ford (Lucas Associates, 2007a, 2007b) and fishing evidence by Millichamp (2005). Primary data were not collected, beyond informal participant observation during field visits, because of the winter/spring study period. Owing to a dearth of existing research material, individuals identified as knowledgeable about the Lake were contacted for information. Appendix A lists these individuals, who are referred to as 'key informants' in this report.

Existing information about Lake-related recreation

There is a lack of empirical data about the recreational use of the lake and its margins. The only quantitative data identified during this study were angler statistics from the national anglers survey (Unwin and Brown, 1998; Unwin and Image, 2003) and counts of registered mai mais (Fish & Game New Zealand records). As a result, Lake-related decision-making has an inadequate information base for recreation.

Previous work has focused upon describing recreational opportunities, use and issues. This report updates this work for 2007 (with particular reference to changes since a 1996 study by Blackford and Law) but also examines the underlying causes of recreational change. It examines the style of, and context for, lake-related recreational activity, identifies factors that influence lake-related use, presents ideas for future recreation opportunities, and specifies recreation outcomes and indicators for future management.

Photo ***The Lake is nationally significant for waterfowl hunting.*** *Photography* ***Shelley McMurtrie.***

Definitions

Lake-related recreation pertains to all recreational opportunities associated with the waters of the lake and land margins surrounding the lake. This encompasses all types of leisure pursuits, both commercial and non-commercial activities. The report does not encompass customary activity or cultural harvest.

The study area is delimited by the roadside boundaries that circumscribe the lake: Lower Lake Road, Lake Road, Pannetts Road, Davidsons Road, Ridge Road, Seabridge Road, State Highway 75 (SH75) and Bayleys Road (Figure 1).

Report outline

This report first describes the nature of existing lake-related recreation (Section 9.2), including comparison with information from the mid-1990s (Blackford and Law, 1996). Factors influencing lake-related recreation and characteristics of the resource important for recreation are discussed in Section 9.3, together with issues related to lake management. Section 9.4 discusses five opportunities that would enhance recreational values of the lake. A recreation vision and outcomes are presented in Section 5, matched with indicators which will identify progress towards their achievement. Section 9.6 contains recommendations for future management and research actions.

9.2 Current state of recreational use

This section presents a description of the current (2007) recreational use of Te Waihora/Lake Ellesmere and its margins. The discussion is structured by activity type. It compares current information with the 1996 statement of lake-related recreation, provided by Blackford and Law, and identifies issues associated with activities, where relevant. Key information from this section is summarised first.

Key points

- A wide range of water- and land-based activities, including fishing, waterfowl hunting, bird-watching, water sports (waterskiing, kayaking, etc), picnicking, camping, cycling, trail biking, volunteerism (conservation and recreation projects) and scenic driving
- National significance for waterfowl hunting; regional significance for fishing and cycling on the rail trail; local significance for other activities. Rated as a nationally significant water body for recreation (MfE, 2004)
- Lake attractions are the availability of a specific resource (e.g. waterfowl; rail trail) and/or convenience (close to home)
- Participation increases since 1996: Cycling on the rail trail and volunteerism. Decrease: Trout fishing. Participation in other activities appears stable or declining. Most of the recreation issues documented in 1996 by Blackford and Law continue to be relevant in 2007, despite some change in the mix of activities undertaken
- Activities are reliant on a healthy natural ecosystem, especially fish and wildlife habitat
- Land-based recreation infrastructure is run-down and needs refurbishment.

Photo ***The Lake has the potential to be an internationally significant bird-watching site.*** *Photography* ***Shelley McMurtrie.***

Wildlife-dependent recreation

Fishing

The lake and lower reaches of its tributaries are regionally significant[1] for trout fishing and whitebaiting, and locally significant for other styles of fishing (including coarse fish, flounder and eels). Angling has declined dramatically since the mid-1990s (Table 1). No data are available for whitebaiting, but anecdotal evidence suggests the Lake and lower tributaries are intensely fished when the lake is open to the sea. Recreational fishing for other species appears mainly to be pursued by local residents. No guided fishing was identified, although it may occur in small numbers.

Areas fished recreationally include (TRONT and DOC, 2005):

- Lower reaches of the Selwyn
- LII adjacent to Yarrs Flat
- Harts Creek mouth
- Halswell River and canal mouth
- Irwell River
- Lake opening area
- Kaituna River lower reaches and mouth
- Various lake areas for eel, flounder, mullet and whitebait.

The data from Table 1 and the summary presented in Table 2 suggest that:

- Both the lake and its tributaries are important for fishing
- Key types of fishing are trout angling and whitebaiting
- There has been a dramatic decline in trout angling
- Overall, access for fishing is good.

Whitebaiting occurs on both sides of the lake outlet after the lake is opened and on lower reaches of lake tributaries. The activity attracts people from around Canterbury and the season is dictated by the lake opening (when whitebait can enter the lake). It appears that very little recreational eeling and floundering takes place (Table 2 appears to over-state these types of fishing), however, the opportunity to do so is important to local residents.

The 1996 report (by Blackford and Law) noted access issues for fishing, and the Joint Management Plan for the Lake (TRONT and DOC, 1995) notes that unformed legal roads are sometimes difficult to identify or navigate. Access for fishing has improved since the Fish & Game New Zealand signage programme was implemented in the mid-1990s (access is discussed in Section 9.3: Access). The 1996 report also noted that poor water quality and timing of the lake opening were significant factors affecting the quality of fishing. Both these points remain valid in 2007, as well as the documented decrease in trout numbers (Ross, 2004 cited in Millichamp, 2005).

TABLE 1. **Angler days spent in Te Waihora/Lake Ellesmere and its tributaries in the 1994/95 and 2001/02 seasons (Unwin and Brown, 1998; Unwin and Image, 2003 cited in Millichamp, 2005).**

River	Angler Days 1994/95 season	Angler days 2001/02 season	% change
LII	2,132	681	-68%
Selwyn	6,702	2,177	-68%
Irwell	433	35	-92%
Harts Creek	1,008	483	-52%
Halswell	1,760	221	-87%
Hororata	160	0	-100%
Lake Ellesmere	424	152	-67%
Total	**12,619**	**3,749**	**-70%**

TABLE 2. **Recreation fishing summary (Sutherland-Downing and Elley, 2004).**

Waterway	Species	Accessibility	Recreation Frequency [2]	Recreation Intensity[2]
Lower Selwyn	Very common: eels; Common: coarse fish, trout	Limited along bank/bed; good from road; good from boat	High: trout; Medium: white-baiting, eeling, other fishing	High: trout; Medium: white-baiting, eeling, other fishing
LII	Very common: eels; Common: coarse fish, trout	Limited on bank, good for road and boat	Medium: trout, white-baiting, eeling, other fishing	Medium: trout, white-baiting; Low: eeling, other fishing
Halswell	Very common: eel; Common: coarse fish, trout	Good from bank, road and boat	Medium: eeling; Low: trout, white-baiting, other fishing	Medium: eeling; Low: trout, white-baiting, other fishing
Irwell	Common: trout	Good access from bank, road and boat	Low: trout, eeling	Low: trout, eeling
Harts Creek	Very common: eels, trout	Limited bank access, good road and boat access	High: trout; Medium: eeling; Low: white-baiting	Medium: trout, eeling; Low: white-baiting
Lake Ellesmere (Te Waihora)	Very common: whitebait, flounder, eels, mullet; Common: coarse fish; Uncommon: trout	Good for all three classes	High: white-baiting; Medium: trout, eeling, other fishing	High: white-baiting; Medium: trout, eeling, other fishing

[1] There is no accepted method to assess recreation significance. This assessment covers facets of use (estimated user numbers, user 'catchment') and the resource (availability of substitute sites, uniqueness and quality of resource characteristics). Because it has relied on secondary data, the assessment is indicative only.

[2] Recreation frequency is defined as how often a river or lake is used for recreation, while recreation intensity relates to the number of people who use the water body

Waterfowl hunting

The lake and its margins are nationally important for waterfowl hunting. The lake has been called "New Zealand's most popular recreational duck-shooting area"[3] and "one of the premier gamebird hunting areas in New Zealand" (Fish & Game New Zealand, 1998:11). More specifically, Fish & Game New Zealand state that their North Canterbury region offers the best Canada goose hunting in the country (Te Waihora/Lake Ellesmere hosts the largest Canada goose population in Canterbury)[4].

Hunting appears to have remained reasonably stable over the past 10 years. The 1996 report considered the lake to be the single most important waterfowl hunting area in the region, both in terms of hunter effort (hunting days/hunter) and total seasonal harvest per hunter. This remains true in 2007. Although the National Gamebird Harvest Survey does not separately specify Te Waihora/Lake Ellesmere, data indicate a static hunting situation in Canterbury (pers. comm. Steve Terry, Fish & Game New Zealand, 2007).

The lake supports in excess of 30,000 waterfowl (TRONT and DOC, 2005). Species hunted include mallard ducks (the most popular and abundant bird; May and June), Canada goose (May to November and February to April), black swan and shoveler duck (July to November). A small amount of guiding occurs.

Hunting occurs all around the lake. Key hunting areas are (TRONT and DOC, 2005): Adjoining Lower Selwyn Huts, Greenpark Sands, Yarrs Flat, Irwell River, Boggy Creek, Lakeside Reserve, adjoining Harts Creek Wildlife Refuge, Kaitorete Spit shoreline, Kaituna Lagoon. There are 398 registered usable mai mais (202 on Ngāi Tahu land, 74 on DOC-administered land, 122 on private land) (Fish & Game New Zealand records).

The 1996 report noted issues for hunting that were associated with waterfowl habitat loss and degradation, as well as access issues. Since 1996, Fish & Game New Zealand access signposting has assisted with access provision, although some specific sites remain contentious. Fluctuating lake levels affect mai mai access.

Bird watching

The lake is potentially an internationally important bird-watching site owing to the abundance, diversity and rarity of species present, however, the amount of current use appears to be small. No data exist to confirm numbers of bird-watchers. This non-extractive wildlife activity is undertaken as both organised and independent trips, usually the latter. Some commercial trips take place, but their frequency appears to be very low. Te Waihora/Lake Ellesmere bird-watchers include international 'birders'. The Canterbury branch of the Ornithological

FIGURE 1. Map of study area (source of base map: TRONT and DOC, 2005). Base Map sourced from ECan.

[3] http://www.doc.govt.nz/templates/ActivitiesSummary.aspx?id=35303, accessed 15 Oct 2007
[4] http://www.fishandgame.org.nz/Site/Regions/NorthCanterbury/hunting.aspx, accessed 15 Oct 2007

Society undertakes four trips to the Lake each year, including bird-counting trips, attracting about 12-20 people on each trip.

Popular locations for bird-watching are:

- Kaituna Lagoon: popular because of easy access but not ideal for bird spotting
- Sunset Point (Ataahua) near corner of lagoon: accessible from SH75, this site is popular with international bird-watchers
- Greenpark Sands (Embankment Road/ Jarvis Road): good viewing for wading birds but not good if the lake is too high or low
- Yarrs Flat: public access is not signposted
- Harts Creek: publicly-accessible bird-watching hide; the boardwalk is a popular spotting location
- Fisherman's Point/Taumutu: for views of birds at the tip of Kaitorete Spit
- Western end of Kaitorete Spit: access is difficult towards the end, as the road is not formed. Some access problems in the lambing season.

The preferred time for bird-watching is November to February, but the activity also occurs in March/April and September/ October (TRONT and DOC, 2005). These times mostly relate to the presence of migratory birds.

It was suggested by one bird-watcher that the internet has made bird-watching information more available, and this has increased the popularity of the lake for this activity. No data exist to verify this trend.

Despite its potential high value for bird-watching, the lake receives relatively little coverage on relevant websites (e.g. Royal Forest and Bird Protection Society 'Where to see birds in New Zealand' pages do not mention the lake[5]; few tourism companies that offer New Zealand birding tours mention the lake on their website[6]). However, the Ornithological Society website links to trips to the lake offered by the Canterbury branch[7], the Little River Rail Trail website notes the presence of prolific birdlife as a feature of the Rail Trail[8] and Harts Creek bird hide is noted on the DOC website[9].

Recreational conflict between birders and other recreationists appears to be relatively minor. The 1996 report noted some perceived conflict with waterfowl hunters but different seasons were thought to 'solve' this problem. Habitat and bird disturbance by motorised vehicles/boats was noted (1996). The vehicle issue is likely to be largely resolved by implementation of the Joint Management Plan (TRONT and DOC, 2005).

The key issue is threats to the birds (the recreation attraction) through habitat modification, an issue noted in 1996. Blackford and Law also noted disturbance by land-yachts on sand-flats (north-eastern margins of Lake), however this has been resolved since these vehicles can no longer access the area (see later). The Rail Trail has opened up access and, to date, cyclists do not appear to be a problem for bird-watcers.The Ornithological Society is working to improve access instructions for 'birders'.

Water sports

The area surrounding Lakeside Domain is the focal point for water sports, including sailing, water skiing, power boating, jet skiing (personal water craft), windsurfing, kitesurfing and kayaking. Kayaking also occurs at several other locations, including the lower reaches of the LII and Selwyn rivers. The Joint Management Plan (TRONT and DOC, 2005) suggests that these activities now occur at lower use levels than in past years. Information from key informants contacted for this study supports this view. Reasons for the decline appear to be an increase in alternative water bodies (e.g. Roto Kohatu for jetskiing) and downward participation trends (e.g. windsurfing).

The Ellesmere Aquatic Club is based at Lakeside Domain, where its clubrooms are located. It has had a stable membership of around 30-35 families for 20-30 years. The club has kayaks and small yachts (optimists) available for use, but does not offer formal lessons. The club was formerly used by schools but this use has declined because a high lake level could not be guaranteed.

The New Zealand Jet Boat Association used to hold events on the lake ('many years ago') but no longer does so. A small amount of local power boat use occurs. The Windsurf New Zealand website provides access information for Lakeside Domain and information about the best wind conditions for sailing at that location. It notes that "Lake Ellesmere is a popular sailing spot for people who live on the southern edge of the city or small townships south of Christchurch"[10]. In the past, both windsurfing and kitesurfing events have been held at the lake. Key informants noted that the Avon/Heathcote Estuary is more convenient for Christchurch residents and they usually hold events there.

The area surrounding the Domain is zoned for watercraft activity. The Environment Canterbury navigation safety bro-

[5] http://www.forestandbird.org.nz/enjoy_nature/birds/information.asp, accessed 15 Oct 2007
[6] e.g., http://www.naturequest.co.nz, http://www.kiwi-wildlife.co.nz, accessed 20 Oct 2007
[7] http://osnz.org.nz, accessed 15 Oct 2007
[8] http://www.littleriverrailtrail.org.nz/rail-trail/wildlife, accessed 15 Oct 2007
[9] http://www.doc.govt.nz/templates/ActivitiesSummary.aspx?id=35303, accessed 15 Oct 2007
[10] http://www.windsurf.co.nz/windsurf_locations_canterbury.asp, accessed 15 Oct 2007

chure for the Lake includes a map of boat use lanes and access for the Lakeside Domain area. Multiple signage at the Domain is confusing and the water activity rules difficult to interpret. The Lakeside Domain Draft Management Plan (Lucas Associates, 2007a) identifies some recreation conflict between water users (e.g. fishing (nets) versus windsurfers). Boating is prohibited within Harts Creek Wildlife Refuge (TRONT and DOC, 2005).

The 1996 report noted multiple issues for water sports. Those that appear to remain valid in 2007 are:

- Lake levels - need to be high for boat use
- Low lake level creates access issues at Selwyn river mouth
- Lakeside Domain has some issues of craft conflict - noise levels and choppy wake of motorised craft
- Water quality a concern
- Lake not visually appealing for contact recreation
- Swimming in lake and rivers becoming less popular because of visual quality of water.

Photo **Trout fishing has declined dramatically since the mid-1990s.** *Photography* **Ross Millichamp.**

Land-based recreation

Motorised vehicles

The 1996 report discussed land-yachting (now called blokarts), trail-biking and other vehicular activities. Since 1996, land-yachting/blokarting has ceased in the study area. The Joint Management Plan (TRONT and DOC, 2005) identifies areas where vehicular activity is permitted; these areas exclude blokarting. Blokarts cannot use Ngāi Tahu land, and access to Gray's Farm (in the NE), which blokarters previously used, is prohibited across public conservation land. However, technological advances have seen the size of blokarts decrease and alternative sites suitable for blokarts correspondingly increase.

Trail biking and 4-wheel driving is a problem at Coes Ford and is discussed in the Draft Coes Ford Management Plan (Lucas Associates, 2007b). The Draft Plan notes increased vehicular activity in recent years, with 4-wheel driving activity at the edges of and in the riverbed. Some areas of the reserve are used by motorcycles, particularly trail bikes. Conflict exists between recreational vehicle drivers and most other users. This includes nuisance factors of noise and public safety, as well as environmental damage. The Draft Plan notes that speed restrictions are often not observed.

Similarly, the Lakeside Domain Draft Management Plan (Lucas Associates, 2007a) identifies that motorised bikes and trail bikes are used in the reserve. There is some conflict between users, invoking safety issues. Fences have been cut down to facilitate driving and the Draft Plan notes a lack of signage to deter speeding.

Cycling: Little River Rail Trail

The Little River Rail Trail dramatically increased cycling as a lake-related activity when it opened in 2006. The rail trail section from Motukarara to Birdlings Flat runs alongside the eastern end of Te Waihora/Lake Ellesmere and was the first section of the rail trail to open. The trail has become very popular, with an estimated 15,000 visits in its first year (pers. comm. Dave Milward, DOC, 2007). While open to cyclists, walkers and runners, it is most used by cyclists and has quickly become a significant regional recreation destination/activity.

The website for the rail trail notes significant natural, cultural and historical sites of interest along the Motukarara-Birdlings Flat section of the trail[11]. One part of the trail 'bridges' the lake, with water on both sides. A car park was built and landscaped at Ataahua Reserve (Kaituna Quarry) by the Hornby Rotary Club in 2007. A toilet has been recently constructed at the quarry.

Picnicking and related activities

Land-based 'passive' activities which occur around the lake include picnicking, photography and generally enjoying wide-open spaces (TRONT and DOC, 2005). The two primary land-based activity nodes are Lakeside Domain and Coes Ford. Other areas used for this type of activity are listed in the Joint Management Plan (TRONT and DOC, 2005) and include: Harts Creek walkway (provides access to part of western shore and bird hide), Selwyn delta, Kaituna Lagoon (access from SH75), Fishermans Point, Kaitorete Spit, and Greenpark Sands (especially from the end of Embankment Road).

The Selwyn District Council manages Coes Ford Recreation Reserve and Lakeside Domain Recreation Reserve. The Council acknowledges that "each of these picnic and paddling areas is in need of a makeover to improve safety, scenery and recreational opportunities"[12] and, for this reason, the Council has commissioned reserve management plans (Lucas Associates, 2007a, 2007b).

Anecdotal evidence indicates that Coes Ford, once a popular summer camping and picnic spot for Cantabrians, has experienced a substantial decline in this type of usage. The Draft Plan suggests that family camping has decreased in the reserve and semi-permanent campers have taken up residence. It recommends repositioning the reserve as a family camping area. Campers use Lakeside Domain during the summer, especially during the summer school

[11] http://www.littleriverrailtrail.org.nz/rail-trail/section5, accessed 15 Oct 2007
[12] 'Parks, reserves & open spaces', http://www.selwyn.govt.nz, accessed 20 October 2007

TABLE 3. **Frequency and intensity of land-based passive activities (Sutherland-Downing and Elley, 2004).**

Activity	Recreation Frequency / Intensity	Location
Sightseeing	Medium / medium	Lake
Walking	Low / low	Lake
	Medium / medium	Lower Selwyn, Irwell River, Harts Creek, Halswell River
	Medium / -	LII
Picnicking/barbecuing	Medium /medium	Lake, Lower Selwyn, Irwell River, Harts Creek, Halswell River
	Medium / -	LII
Camping	Medium / medium	Lake, Irwell River
	Low / high	Lower Selwyn, Halswell River
	Low / low	Harts Creek
	Low / -	LII
Swimming	High / high	Lower Selwyn, L11, Irwell River
	Low / low	Harts Creek, Halswell River
Paddling/wading	High / high	Lower Selwyn, L11, Irwell River
	Low / low	Harts Creek, Halswell River

holidays (Lucas Associates, 2007a). Mobile homes park in the reserve throughout the year.

Water quality at Coes Ford is an issue for swimming. The Selwyn River at the ford has consistently received a 'poor' water quality grade since 2003 (Lucas Associates, 2007b), as measured by Environment Canterbury using a 5-point scale from very good to very poor, with fair as the mid-point.[13] 'Poor' status indicates the river is "Generally not suitable for swimming ... Swimming should be avoided..." [14] and signage should be posted to alert users. This has been done in the past - however, despite a 'poor' grade at the time of this study (October 2007), no signs were evident. Lakeside Domain maintained a 'fair' water quality grade over the 2005/06 summer (Lucas Associates, 2007a), and at the time of this study (October 2007). This indicates that the water is "Generally satisfactory for swimming, though there are many potential sources of faecal material. Caution should be taken during periods of high rainfall, and swimming avoided if water is discoloured".[14]

Educational activities take place at Ngati Moki Marae (Taumutu) and around the lake generally, especially school and university field trips. The Waihora Ellesmere Trust runs lake field trips, as do other organisations

An eco-tourism business operated for approximately 5 years in the mid-1990s and took around 3,000-4,000 people to the lake during this time period. Trips mainly attracted local Christchurch people, many of whom were repeat clients. Trips visited local attractions, including Harts Creek bird hide, the eel farm, Lakeside Domain, Coes Ford and Selwyn Huts. Tours ceased when the sole operator chose to discontinue them.

The inventory of recreation values for Canterbury rivers and lakes (Sutherland-Downing and Elley, 2004) summarises information about land-based passive activities, and relevant information has been compiled as Table 3.

Low patronage is likely to be related to the perceived poor water quality, lack of aesthetic attractiveness and lack of knowledge about the area (see Section 9.3). These issues compare with the major concern identified in the 1996 report, which was access.

Volunteerism

This activity relates to individuals spending their leisure time undertaking voluntary 'work' on projects associated with nature/historic conservation (such as ecological restoration) or recreation infrastructure (such as the Little River Rail Trail). Not mentioned as an activity in the 1996 recreation study, the global growth in volunteerism over the past ten years is evident in the study area. There are various community groups involved in ecological restoration projects around the lake, such as Green Footprint Project[15] planting days and the Harts Creek Streamcare Group project to clean up and facilitate recreational use at Harts Creek. In addition, lakeside recreation facilities have been constructed by community groups, such as the Ellesmere Lions Club (Harts Creek bird hide and walkway) and the Hornby Rotary Club (Kaituna Quarry car park).

The New Zealand Ecological Restoration Network lists the following restoration sites on their website[16]:

- Harts Creek: Community involvement: private, Fish & Game New Zealand
- Kaitorete Spit: Community involvement: Taumutu Rūnanga, DOC, Landcare Research, Habitat Restoration Services
- Halswell River and Selwyn River: Listed but pages not available.

[13] http://www.ecan.govt.nz/Our+Environment/Water/SwimmingWaterQuality/Sites/Central-Canterbury-Plains.htm, accessed 20 Oct 2007
[14] http://www.ecan.govt.nz/Our+Environment/Water/SwimmingWaterQuality/FAQ/swimming-water-gradings.htm, accessed 20 Oct 2007
[15] The Green Footprint Project is a collaboration between the Youth Hostel Association, Selwyn District Council, the Waihora Ellesmere Trust and Landcare Research
[16] http://www.bush.org.nz/site/canterbury.html#100000109, accessed 15 Oct 2007

Photo ***The Little River Rail Trail provides a connection with the Lake.*** *Photography* ***Shelley McMurtrie.***

Scenic driving

This activity is associated with 'Sunday drivers' who are sightseeing. Most recreationists on car-outings near the Lake drive along SH75 and view the lake 'by default' - they are not intending to visit the lake. SH75 users represent the group with the greatest potential to enhance their 'lake connection'. The idea of a lakeside visitor centre is discussed in Section 9.4: Lake visitors centre.

National significance assessments

The Ministry for the Environment's (2004) report on freshwater bodies of national importance for recreation lists Te Waihora/Lake Ellesmere as one of the 105 nationally important water bodies. The lake was included owing to its Water Conservation Order and status as a 'wetland of national importance', not because of usage (although whitebaiters and hunters, including duck shooters, were under-represented in the use surveys and so lake recreation will be under-estimated). The lake is not listed as a water body of national importance for tourism (Ministry of Tourism, 2004)[17]. This conclusion is based on the absence of existing tourist activity in/around the lake. Te Waihora/Lake Ellesmere is not a tourism 'destination' (see Section 9.3: Awareness and infomation).

9.3 Factors influencing lake-related recreation

This section discusses factors that influence or 'drive' recreational use of the lake. These include:

- Resource characteristics which are important features of the recreation setting (Sections 9.3: Enviromental state-Little River Rail Trail). These factors can be influenced by lake managers and are discussed first.
- Parameters which influence lake-related recreation but are 'external' to the lake (Sections 9.3: Alternative recreation sites-Recreational trends). Lake managers cannot directly influence these factors
- Other factors (Sections 9.3: Recreational effects and Lack of data).

Environmental state

The recreation pursued around Te Waihora/Lake Ellesmere is resource-based, that is, it is dependent upon the natural environment. If the quality of the natural resource declines, so too does the quality of the recreational experience. This is the most important factor influencing lake-related recreation.

A dominant theme from discussions with key informants was the poor water quality of the lake and tributaries. This is verified by Environment Canterbury's water quality monitor for swimming sites, which includes Lakeside and the Selwyn River (Upper Huts and Coes Ford), as discussed earlier.

Two points are notable:

- Existing recreational use is occurring irrespective of the current environmental state. However, the only trends data available for any recreational activity (angling) indicates decreasing use levels. Activities which have increased do not involve water contact (i.e. cycling, volunteerism)
- An improvement in environmental quality will enhance the quality of the recreational experience but it cannot be assumed this will result in increased recreational use (i.e. the quantity or number of users).

The riparian margins are an important

[17] Canterbury waterbodies identified as nationally important for tourism: Avon, Waimakariri, Rangitata and Rakaia Rivers. Importance attributes are the tourism activities that they support (punting, jet boating, fishing, rafting, etc). Freshwater bodies that were important solely for their scenic value were excluded.

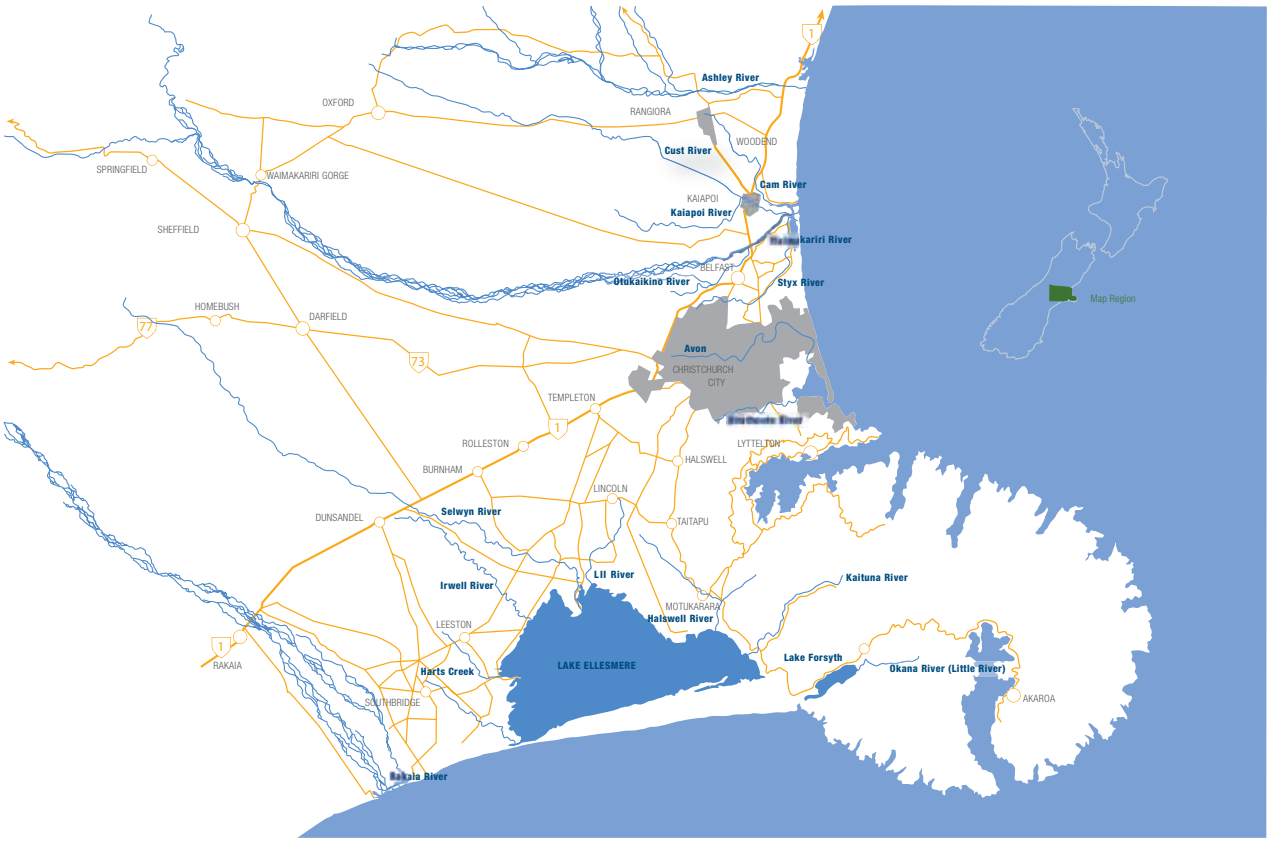

FIGURE 2. Fish & Game 'Close to Christchurch' access map.

FIGURE 3. Access sign at Harts Creek.

facet of the recreational setting. A holistic approach to management of the lake environment (the recreation setting) is required for recreational purposes.

Lake level

Key informants expressed concern about the timing of the lake opening and the extent of lake fluctuation. There appears to be no 'ideal' lake level for recreation, owing to the diversity of activities and their differing requirements. For example, whitebaiters are concerned about maintenance of the fishery, while bird-watchers prefer more frequent lake openings with less fluctuation. A higher lake is not ideal for bird watchers as the Greenpark Sands are under water, although Kaitorete Spit remains accessible for the activity.

This study has found that:

- Lake level dictates the ability to pursue certain recreational activities, or suitable places for the activity
- A constant Lake level appears to be desirable for most recreation purposes
- Users' uncertainty about the level of the Lake is an issue, although Environment Canterbury offers a user-pays Lake level telephone information service (a co-ordinated web-based information portal is proposed in Section 9.4: Education and interpretation)
- It is desirable that the needs of recreationists are taken into account with respect to Lake level management. This would require input from the range of recreational interests.

People need reliable access points to the lake and a fluctuating lake level can interrupt this reliability, as areas get boggy and unpassable. Similarly, where boardwalks and bridges become 'wet' with high lake levels, this can be a problem.

Access

Access provision to the Lake is adequate, although some site-specific issues exist (usually concerning landholders' rights and needs). The Joint Management Plan (TRONT and DOC, 2005) maps legal public access areas/routes and identifies ten key foot lake access points and seven key boat access points. The plan has policies to provide, enhance and maintain these access points, as well as provide public information about them.

Since the 1996 study, Fish & Game New Zealand has improved lake access provision with their nation-wide programme of access negotiation and signage. The organisation provides an access map 'Close to Christchurch' which gives instructions on access and a map showing access points

around the lake (Figure 2). Designated access points correspond with on-site signage (Figure 3), although some has yet to be put in. These accessways signal public access and provide access for all recreationists (not just fishers and hunters). Informal access exists where locals and those 'in the know' have arrangements with private landholders to cross their land, or know public accessways that are not signposted.

Little road signage exists, with the exception of road signs for Lakeside Domain and Coes Ford, the two primary land-based recreation sites. This contrasts with other recreation areas, for example popular beaches, where road signage indicates roads which provide beach access. If recreationists cannot find the lake or river access point, they will not be able to undertake their recreational activity.

Awareness and information

An overarching factor influencing lake recreation is awareness of the recreation resource. The lake has a low profile on visitor related web sites and in guidebooks (see, for example, Bain *et al.*, 2006). Most of the general information and specific access information provided appears to assume some prior knowledge of the lake. A key informant who used to run guided tours noted that few Christchurch people had been to the lake before coming on the tour.

A corollary is that the lake is not a recognised visitor destination. It lacks identifiable places for the public to go and things to do, with a few exceptions (e.g. Coes Ford for picnicking). This compares with recreation sites such as Bottle Lake Forest Park or Sumner, which are known 'destinations' with known recreation opportunities. Suggestions for over-coming this 'problem' are presented in Section 9.4.

Recreation facilities

Recreation facilities around the lake take the form of basic infrastructure, including signage, toilets, picnic tables, camping areas, boat ramps and jetties. Some facilities are in a poor state of repair and require replacement or maintenance (see Figure 4). In sum, a 'tidy up' is required.

The 'simple' nature of the facility provision is appropriate for the current mix of activities. Indeed, some key informants expressed an interest in keeping the lake infrastructure basic they didn't want 'flash' facilities. However, these are existing users, for whom existing conditions suit. An exception to this recommendation is the proposed lake visitor centre (see Section 9.4: Lake visitor centre).

Sites around the Lake are not connected. Some walking/cycling tracks between recreation nodes (e.g. Lakeside Domain and Harts Creek) would be beneficial. See Section 9.4: Kayaking, for discussion of the proposed Lake cycle trail.

Little River Rail Trail

The development of the rail trail has been a success story for the lake because it provides a 'connection' with the lake for the public. This positive outcome has occurred by default, in that the rail trail is centred upon the rail route, not the lake. However, it illustrates the potential for greater 'connection' of the public through recreational activities. This idea is pursued in Section 9.4 via a range of potential opportunities.

Alternative recreation sites

Te Waihora/Lake Ellesmere is a unique recreation resource for some activities, while other lake-related activities can be satisfied elsewhere. Water sports have declined at the lake, in part owing to the provision of alternative sites. Activities for which the lake offers a unique or special resource, with few substitute sites, are the wildlife-related activities (discussed in Section 9.2: Wildlife-dependent recreation) and cycling on the rail trail.Potential opportunities discussed in Section 9.4 build upon these special resource characteristics for bird-watching and cycling. Similarly, the opportunity for culture-based activities is discussed later, as yet, an untapped 'resource' (although included within some educational field trips).

Recreational 'catchment'

At a local and regional level, Te Waihora/Lake Ellesmere is in close proximity to a growing population base or recreational catchment. Population figures suggest growing numbers of potential recreationists in the immediate area. Table 4 shows the census night 'usually resident population'

FIGURE 4. Entry sign at Coes Ford.

Photo ***Harts Creek is a popular bird-watching site.***
Photography ***Kay Booth.***

TABLE 4. **Population statistics for Christchurch City and Selwyn District (Statistics New Zealand, 2007).**

	1996	2001	2006
Territorial Authority			
Christchurch City	316,608	324,060	348,435
Selwyn District	24,783	27,312	33,666
Ward			
Ellesmere[18]	6948	8304	11379
Springs[19]	5040	5478	5925
Selwyn Central[20]	7302	7509	9780
Banks Peninsula[21]	7581	7833	8166

for Selwyn District and Christchurch City since 1996 (Statistics New Zealand, 2007). Christchurch City recorded a 10% population increase between 2001 and 2006, while Selwyn District showed a 23% increase. The national figure is an 8% increase. Wards of Christchurch City and Selwyn District that are close to the lake are also shown in Table 4. All wards show population increases, especially Ellesmere.

Population projections indicate that the Christchurch City and Selwyn District populations will increase by a projected 14%[22] and 57%, respectively, between 2001 (base figure) and 2026 (medium projection series) (Statistics New Zealand, 2007). This compares with a 22% projected national increase.

Several communities are located near the lake edge: Birdlings Flat, Greenpark Huts, Upper and Lower Selwyn Huts, Lakeside and Taumutu. These residential communities provide a distinct cultural setting for visitors, owing to their rural- and bach-like appearance.

The residents of these neighbouring communities spoken to as part of this study indicated a strong place attachment - in part they lived there because they liked the environment and the recreational opportunities it provided. The ability to recreate around the lake (to go floundering, for example) was very important to them. Recreational values for local residents should not be overlooked.

At the national level, 79% of New Zealanders identify themselves as recreational users of fresh water (BRC, 2004 cited in MfE, 2004). Similarly, New Zealand lakes and rivers feature prominently as tourism attractions (Ministry of Tourism, 2004). In other words, there is strong interest in activities associated with fresh water from both New Zealanders and international visitors. A current study will provide more information about the needs and values of New Zealand river users (Galloway, in prep); its funding by several national agencies indicates the importance of river recreation in New Zealand.

Recreational trends

Recreation is strongly affected by technological change and shifts in user preferences (Devlin and Booth, 1998). Relevant changes were noted in Section 9.2.

Recreational effects

Adverse effects from recreationists upon the environment, and upon other users, appear to be relatively minor at present, with the exception of motorised use of specific sites (especially trail bikes). Sites mentioned by key informants were Coes Ford (conflict with other users), and Taumutu and Kaitorete Spit (environmental effects upon sensitive natural and historic heritage sites). Adverse effects are likely to increase if use levels increase, and may require active management. This is a factor that should be considered as part of the development of lakeside recreation in the future.

Lack of data

While the dearth of research data does not influence recreation per se, it does affect sound decision-making about recreation on and near the lake. Difficulties encountered during this study include:

- Variations in research parameters (across studies) make it difficult to understand/measure use trends
- Different study areas makes comparison difficult
- Because there are many recreational groups involved, it is difficult to comprehensively cover all aspects of recreation.

Inadequate or inefficient recreational planning is a risk, in that many decisions are being made with an inadequate information base, as studies (including this one) have relied on key informants, rather than empirical data. Establishing a meaningful research monitoring programme is challenging, given the large area of interest (multiple sites) and the low use levels of many sites. Cost-effective means of data gathering would require careful planning. Section 9.5 outlines the rudiments of a proposed recreation monitoring programme.

9.4 Potential recreation opportunities

This section discusses five future opportunities which would enhance recreational values of the lake and its margins. These opportunities are at the 'ideas' stage - they require investigation of their feasibility.

Lake visitor centre

A Te Waihora/Lake Ellesmere visitor centre is proposed, to be located beside the lake, possibly at the Kaituna Quarry. A lakeside visitor centre would provide many benefits, including:

[18] Ellesmere Ward includes Leeston, Southbridge, Dunsandel, Selwyn-Rakaia
[19] Springs Ward includes Lincoln, Springston, Tai Tapu
[20] Selwyn Central Ward includes Rolleston, Springston
[21] Banks Peninsula Ward includes Little River and the eastern side of the Lake
[22] http://www.ccc.govt.nz/christchurch/factsstatsandfigures/population/projections-christchurch.pdf, accessed 20 Oct 2007

- A visitor 'destination'
- A visitor hub for the lake to 'connect' people with the environment
- The opportunity for public education about lake values
- An attraction for cyclists on the rail trail (if sited along the route)
- An opportunity for commercial ventures, such as a café or guided walks/ cycle rides
- A centre for community projects to engage with potential volunteers.

As noted earlier, despite its high natural and cultural values, the lake has a low profile within the visitor/tourist information literature - it is not a recognised visitor destination. A visitor centre could address this issue, in part. The primary market for the visitor centre would be SH75 traffic (a stop-over en route to Akaroa), rail trail users, bird-watchers (who may have different needs from other groups) and people who are attracted to the visitor centre as a 'destination'.

An ideal location for the visitor centre is the Kaituna Quarry. It provides a location where the land and lake intersect, offers a scenic vista across the lake to the Alps, has easy access via SH75, has sites of historic interest, provides a connection with the rail trail and is public conservation land.

Education and interpretation

In addition to the visitor centre, and irrespective of whether it is built, the rich Maori and Pakeha history and values of the lake warrant 'story-telling' via on-site interpretation (interpretation panels, etc). Interpretation plans are already under development and should be encouraged.

In contrast with inland alpine lakes, Te Waihora/Lake Ellesmere is not a 'scenic' attraction, although the vista across the lake to the Alps is spectacular, especially on sunset. Its 'pull factor' is educational - public understanding of the lake's outstanding natural and cultural heritage. On-site interpretation is a key means to achieve this educational role.

Off-site information is also required, to alert people to lake-related recreation opportunities. A 'one-stop shop' lake visitor website would be ideal.

The potential exists for a Maori eco-tourism venture based around interpreting relevant 'stories' (such as mahinga kai). However, recent research by Landcare Research (Wilson *et al.* 2006) does not suggest a positive outcome from this opportunity. The study examined potential interest in Maori eco-tourism products in the nearby Banks Peninsula area, by surveying international and domestic tourists[23]. They found that:

- Tourists wish to experience Maori culture in recognisable ways, which often means engaging with the traditional marketed aspects of culture rather than with contemporary culture
- Maori cultural components appear to add some value to the visitor experience and there was value in engagement on a personal level with Maori culture
- There is no real Maori cultural tourism ;market in the South Island, but there is potential to capture those international tourists who choose the South Island as their gateway or who never intend visiting the North Island
- The inclusion of Maori culture in tourism experiences did not appeal to most domestic visitors.

Bird-watching

Globally, bird-watching is a popular pursuit, attracting a dedicated cadre of participants who are willing to travel internationally to observe birds. The lake is an (inter)nationally significant bird site and already attracts international 'birders'. This opportunity could be developed further. This would require access to good viewing areas. Few facilities are needed, beyond those required to facilitate access, both on-site and off-site, such as web-based information. The potential market is birders, the public and eco tourism operators.

There is the potential to make the lake an outstanding bird-watching location on an international scale. A booming bird-watching 'industry' could support tourism operations such as guided tours and accommodation.

Lake cycle route

The success of the Little River Rail Trail suggests the potential to extend the route around the lake, or part of the lake. A circular route could extend from the rail trail at Birdlings Flat, along the public road that traverses Kaitorete Spit, across Ngāi Tahu land near the lake outlet and back along existing roads or embankments to complete the full circuit. Potential issues with the full circuit include:

- Requires the ability to cross the Lake outlet reliably. This could be overcome via web-based information provision about Lake opening times
- May not be of interest to cyclists given the mix of sealed roads and unsealed roads (i.e. riding mountain bikes on a sealed road is not attractive)
- Some stretches are long and straight (potentially boring)
- Some areas would require walking (e.g. end of Spit).

A partial route could be facilitated around the north east portion of the lake, from the existing rail trail, along the embankments to the Halswell Canal. With bridges, the route could be extended westward. As with the existing rail trail, walkers would be able to use the same trail.

Opportunities for commercial services exist if a critical mass of cyclists was concentrated in the area (in connection with the existing rail trail). This might include hospitality (food/drink provision); guiding; mechanical assistance.

Kayaking

Lake tributaries provide an ideal flat-water kayaking setting, however many areas currently lack aesthetic appeal. Riparian planting and improved water quality would enhance the setting for kayakers, especially on the Lower Selwyn, LII and the Halswell riv-

[23] Tourist interest in three product scenarios was surveyed: A one-day guided boat trip (on the sea), a half-day guided walk (of Peninsula food trails) and an evening cultural performance and hang;

ers. This opportunity would suit most kayaker abilities, including family recreation. It would provide a convenient training area for local competitive kayakers who live or work in the area. Off-site information about get-in and get-out places would be required, along with on-site signage (similar to the Fish & Game New Zealand access system).

9.5 Recreation vision, outcomes and indicators

A vision statement for lake-related recreation is proposed as: A healthy recreation resource that is well used and valued. The reference to 'health' refers to the natural environment base on which Lake-related recreation depends.

There are two keys to the realisation of this vision. First, is to enhance the resource so it better caters for existing uses - activity-based pursuits and land-based activities. This largely rests upon improving the quality of the natural environment, upon which existing use relies. This includes fish and wildlife habitat.

Second, is to unlock the potential for more people to connect with the lake via recreation. To achieve this, people need to identify the lake as a recreational destination. They need to know about it and have an identifiable destination(s) - where to go and what to do. This report suggests one 'solution' to this challenge - a lakeside visitor centre. This would become the visitor hub for the lake-see Section 9.4: Lake visitor centre.

Table 5 presents three long-term outcomes sought for lake-related recreation, and indicators that would reflect progress toward those outcomes (a monitoring programme).

TABLE 5. **Recreation vision, outcomes and performance indicators for recreation.**

Recreation vision: A healthy recreation resource that is well used and valued	
Outcome	**Performance indicator**
Lake-related recreation opportunities are recognised and valued by the public	Number of 'hits' for the lake on recreation/ tourism web pages
Visitors and local residents obtain a high quality recreation experience	High level of satisfaction with recreation participation. Measured via on-site and off-site surveys
Recreational impacts are minimised	1. Low level of visitor annoyance with other users.
	2. Minimal disturbance to sensitive cultural and environmental sites. Measured via visitor survey and direct contact with management agencies

9.6 Recommendations

Managers can implement the following actions to enhance Lake-related recreation opportunities:

- Construct a lakeside visitor centre
- Provide an information package about the lake: 'One-stop shop' web-based information site emphasising lake values and what people can see and do
- Enhance on-site interpretation
- Consider recreational needs when defining the lake opening regime
- Improve water quality
- Enhance riparian areas on lower reaches of key tributaries
- Maintain (and improve) public access to the lake
- Tidy up and actively manage land-based activity areas (Lakeside Domain, Coes Ford)
- Develop a recreation monitoring system.

9.7 Acknowledgements

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9.9 Appendices

Appendix A List of key informants

- Jason Arnold, Te Rūnanga o Ngāi Tahu
- Fiona Musson, Te Taumutu Rūnanga
- Ross Millichamp, Fish & Game New Zealand
- Steve Terry, Fish & Game New Zealand
- Dave Milward, Department of Conservation
- Poma Palmer, Department of Conservation
- Wayne Beggs, Department of Conservation
- Don Jellyman, NIWA
- Nick Allen, Ornithological Society of New Zealand
- Mike Peters, New Zealand Ecological Restoration Network
- Chrissie Gargett, Ellesmere Aquatic Club
- Phil Kiesanowski, New Zealand Jet Boat Association
- Russell Matheson, Canterbury Windsports Association
- Graeme Gordon, Canterbreeze Blokart Club
- Committee member, Canterbury Jet Sports Club
- James McGillivray, Eastcoast Boardriding Co.
- Mike Gopperth, Mike's Fishing Shop
- David Bailey, local resident
- Vince Burke, local resident
- Jill Crossland, local resident
- Colin Hill, local resident
- Ray Smith, local resident
- Geoff Spearpoint, local resident

Te Waihora/Lake Ellesmere is a large coastal lake, intermittently open to the sea. It is highly regarded for its conservation and related values, some of which are of international significance. Its function as a sink for nutrients from its large predominantly agriculturally based catchment, currently undergoing accelerated intensification, is also recognised, at least implicitly. It is the resulting conflict from these value sets which is mainly responsible for the ongoing debate about the future of the lake.

This book serves to quantify the nature of this debate by documenting changes to lake values, both over time and spatially. It provides a standardised approach to reporting these changes, set against indicators that are value-specific. Ultimately, it provides a template for thinking about future management scenarios for the lake and its environs. Given this approach the book ultimately serves as a resource for helping understand the ever-changing and current and possible future states of the lake, under a variety of management requirements and implications.