



The importance of Te Waihora/Lake Ellesmere

Te Waihora/Lake Ellesmere is one of New Zealand's most important wetland systems. The lake, New Zealand's fifth largest by area, is a brackish, shallow lagoon with an average depth of 1.4 metres. The lake bed covers around 20,000 hectares. The lake's catchment drains 276,000 hectares, and reaches from the foothills of the Southern Alps, to the Rakaia River, the hills of Banks Peninsula and the plains in between. The Waimakariri River has discharged to the sea several times through this area, possibly as recently as 5 – 600 years ago. Over many millennia, the area that is currently lake bed has switched back and forth between a lake and an estuary.

Since the second half of the 19th century, the lake has been situated in a predominantly agricultural catchment. The soils around Te Waihora/Lake Ellesmere are extremely fertile and from the 1880s the level of the lake was reduced and the wetlands surrounding the lake were drained and reclaimed for agriculture. The lake level has been managed since by cutting channels through the Kaitorete Spit – a gravel barrier that separates the lake from the sea.

To Ngāi Tahu, as Kaitiaki, Te Waihora represents a major mahinga kai and an important source of mana. Te Waihora is a descriptive name, meaning spreading out waters. Under the Ngāi Tahu Claims Settlement Act 1998, ownership of the crown-owned lake bed was returned to Te Rūnanga o Ngāi Tahu.

Te Waihora/Lake Ellesmere is an area of cultural, natural, historic, recreational and commercial importance to many people. The outstanding values of the lake are recognised in a National Water Conservation Order as: habitat for wildlife, indigenous wetland vegetation and fish; and as being of significance in accordance with tikanga Māori in respect of Ngāi Tahu history, mahinga kai and customary fisheries. Internationally Te Waihora/Lake Ellesmere is significant for its birdlife abundance and diversity.

Different people hold different values for the lake and its environs. This brings challenges for the lake system and its resilience as an ecosystem, and for managing the important values people hold.

What is this report about?

This report presents a 'health report card' for Te Waihora/Lake Ellesmere as it is in 2013, and information about the area surrounding the lake, including what influences the lake's health.

It is widely acknowledged that water quality, both in the lake and the surrounding tributaries, has declined over past decades due to increasing

inflows of nutrients and sediment. A turning point in the health of the lake occurred in 1968 with the 'Wahine' storm which resulted in the loss of the lake weed beds which had created sheltered areas around the lake margins. This event helped cause the lake to 'flip', changing the ecology of the lake and further impacting on water quality and appearance.

In 2005 Judge Smith, in an Environment Court case, talked about the concerns over water quality in the lake. The media reinterpreted this as declaring the lake 'technically dead', which is very far from the truth given the lake's productivity and the range of species that make it their home.

In 2007, Waihora Ellesmere Trust held the first of the 'Living Lake' symposia at Lincoln University – an opportunity to set the record straight and look at the state of the lake and catchment and its management. A 'State of the Lake' report was published following the first symposium. A 'Living Lake' symposium has been held every two years since and this report, prepared for the 2013 symposium, provides an update to the 2008 report.

This report is for anyone with an interest in the lake – people who work and play in the area, decision makers and managers, industry and interest groups, and the wider community. The intention is, for organisations involved, to collaborate, improve where necessary, and repeat the health report card every two years, identifying trends and reporting on the many Te Waihora/Lake Ellesmere restoration initiatives underway.

Why do we need this report?

This report aims to show how the lake is changing, raising awareness of lake management issues and what is being done in response, including whether or not restoration actions are working. Importantly, we are aiming to strengthen links between science, monitoring and management.

How has this report been compiled?

Topics - Nine topics have been included in the report as sections based on topics identified, and reported on, in Te Waihora/Lake Ellesmere State of the Lake and Future Management, 2008.

Outcomes - There are many plans and policies (both statutory and non-statutory) which guide the management of Te Waihora/Lake Ellesmere. Outcomes have been included for each topic to summarise these. First we asked "how will we know when we have achieved success?" Then we expressed an outcome relative to plan and policy goals.

Indicators - indicators have been selected to enable regular reporting on progress towards achieving outcomes. We acknowledge some need further refinement.

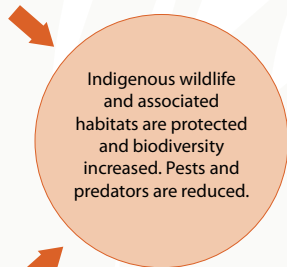


Topic	How will we know when we have achieved success? - main themes from a variety of planning documents
- Governance and management	The role of Ngāi Tahu and kaitiakitanga is recognised in governance of the lake and catchment; there is integrated management of land and water use, with all activities operating at good practice or better, and the wider community included in decision making.
- Economy	Sustainable water use supports economic development and lake/water related tourism opportunities increase.
- Land use and land cover	Land use and development is integrated with water management; natural and cultural values are respected; all land use activities operate at good practice or better; communities are viable and growing.
- Water quantity and water quality	Water quantity: Ecosystem and cultural health is restored and safeguarded; over allocation is reduced; water users have reliable water supplies, including for customary use, and recreational activities. Water quality: Water quality is improved to sustain cultural values; indigenous and wildlife species are supported; drinking water is safe and water quality suitable for recreation.
- Vegetation	Significant indigenous vegetation of the lake margin and tributaries streams is protected and restored, including wetland restoration and planting of riparian margins; pests are controlled.
- Wildlife	Indigenous wildlife and associated habitats are protected and biodiversity increased. Pests and predators are reduced.
- Fish	Native fish populations and associated habitats are protected and restored.
- Recreation	Compatible recreation needs are provided for, including good access, water quality, and habitat for wildlife, including for sports fisheries.
- Cultural health	Customary rights and use are recognised and mahinga kai species abundance and diversity is restored to a level to enable customary use. Note: For the purpose of this report, the selection of indicators is specifically linked to the objectives for Te Waihora articulated in the Mahaanui Iwi Management Plan 2013.

Framework - State of Environment Reporting takes a variety of forms, many of which are built around variations of the OECD's Pressure-State-Response framework. We have adapted this framework and will report on the state for each topic, and also consider the pressures (and, as appropriate, driving forces) and the range of responses in place. For state, pressure, and response we have identified indicators and, where possible, how those are being measured and any apparent trends over time.

Indicators are simply recognised as time-bound measures of change that are relevant to the topic being considered and which relate to desired outcomes. Indicators should be specific, measureable, attainable, relevant, time-bound and, if possible, already being measured. For this report we are including the relevant national and regional indicators already in use. Our focus is the lake, so the indicators selected relate to impacts on the lake or, in some cases, to the people using the lake.

State - abundance and distribution of wetland birds and other wildlife



Pressure - indicators include loss of habitat

Response indicators will include the number and success of habitat restoration programmes and the lake level management regime

To illustrate with a wildlife example, an agreed outcome is to protect indigenous wildlife and associated habitats.

Consistent with this desired outcome, an indicator of state is abundance and distribution of wetland birds (one species we have focused on is wrybill, which is a national indicator species). The measure of this will be data collected by surveying bird populations. Pressure indicators include loss of habitat, which can be measured by area of different habitat types. The response indicators will include the number and success of habitat restoration programmes and the lake level management regime.

In many instances the state indicators for one topic will be linked to the pressure and response indicators for another. For example, the topic of vegetation includes, as a state indicator, area of different habitat types. The loss of preferred habitats is a pressure indicator for wildlife.

Individual authors, with expertise in the different topics, have produced the report cards, integrated here into one report to give an overview of the current state of the lake and its environs and, where possible, trends in selected indicators. Each report card has been reviewed.

Each report card draws on a more detailed report or set of reports, some of which have been produced in conjunction with the report card and others which are already available elsewhere. These more detailed sources are all listed on the Waihora Ellesmere Trust website (www.wet.org.nz).

Recommendations are made in relation to the indicators – are we measuring the right things? Where are the gaps? What information is needed for good management? Leading up to the next symposium in 2015 the indicators will be reviewed and we will continue to report on the progress being achieved towards the desired outcomes.