

## TE WAIHORA LAKE ELLESMERE – THE 2009 LIVING LAKE SYMPOSIUM

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Worldwide, lowland lakes are considered to be huge and ongoing challenges for management. They suffer because they are sinks for all upstream runoff, they frequently contain fisheries in decline, their marginal lands are often under pressure for development purposes, they often have indigenous peoples rights requirements, they contain multiple other values and they are debated over by multiple stakeholders. Te Waihora Lake Ellesmere has all these characteristics and more – it indeed typifies the enormous challenges faced by all such lakes. It is appropriate therefore that New Zealand's fifth largest lake by area, Te Waihora Lake Ellesmere, should be subject to much ongoing management attention.

This management attention was realised at the 2007 Living Lake Symposium. At that symposium scientists debated the current health of the lake – it was far from 'dead', indeed many values were thriving, some were at risk, some declining and one, the brown trout fishery<sup>1</sup> was hugely reduced (see Hughey and Taylor 2009). The challenge posed at that symposium was to look forward to future management prospects and to report on these at a future symposium planned by the Waihora Ellesmere Trust and held over one day in November 2009.

At that symposium the focus was on future management. To that end Environment Canterbury had commissioned, via Lincoln University, John Raffensperger, from University of Canterbury, to produce a computer model of the lake. Changes in the performance of selected values of the lake were related to the lake's opening regime<sup>1</sup>. As part of the model building process much dialogue occurred between the model development team and those with knowledge of a series of the lake's key values, e.g. native birdlife, commercial eel and flounder fisheries, farming, recreational duck hunting, salinity, water level, and risk of algal blooms.

The model was thus presented and validated by the scientists and other experts with relevant expertise. The general view was that the model is a useful first step in understanding some of the key relationships between the lake's values and the way the lake is being managed now and how it might be managed in the future. In particular, the model provided insight into benefits or costs that might occur if a higher lake level operating regime was to be envisaged. Such a regime would likely impose a large range of costs without commensurate benefits. This insight led to further debate about the current regime and how it might be varied to produce a more sustainable set of outcomes – more work is necessary to get to this point.

So, where to from here? It is clear that the lake's future is tied to much more than the lake level management regime. Riparian (willow control, stream edge planting, and stream side fencing) management is clearly necessary now and has started, albeit in a very limited way. More fundamentally the catchment as a whole needs careful management within defined emissions targets, especially associated with nitrogen and phosphorus and with regard to water quantity from the multiple mainly spring fed tributaries. All-in-all these are huge challenges and a suggestion for the next symposium in 2011 was to broaden the discussion to total catchment management – such will indeed be a challenge.

### REFERENCE:

Hughey, K.F.D., Taylor, K.J.W. (eds). 2009. Te Waihora/Lake Ellesmere: State of the Lake and Future Management. EOS Ecology, Christchurch. 150pp.

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<sup>1</sup> The lake is opened mechanically to the sea when it reaches trigger levels in winter and summer. The length of time of an opening may vary from hours, typically to weeks, but occasionally to months.