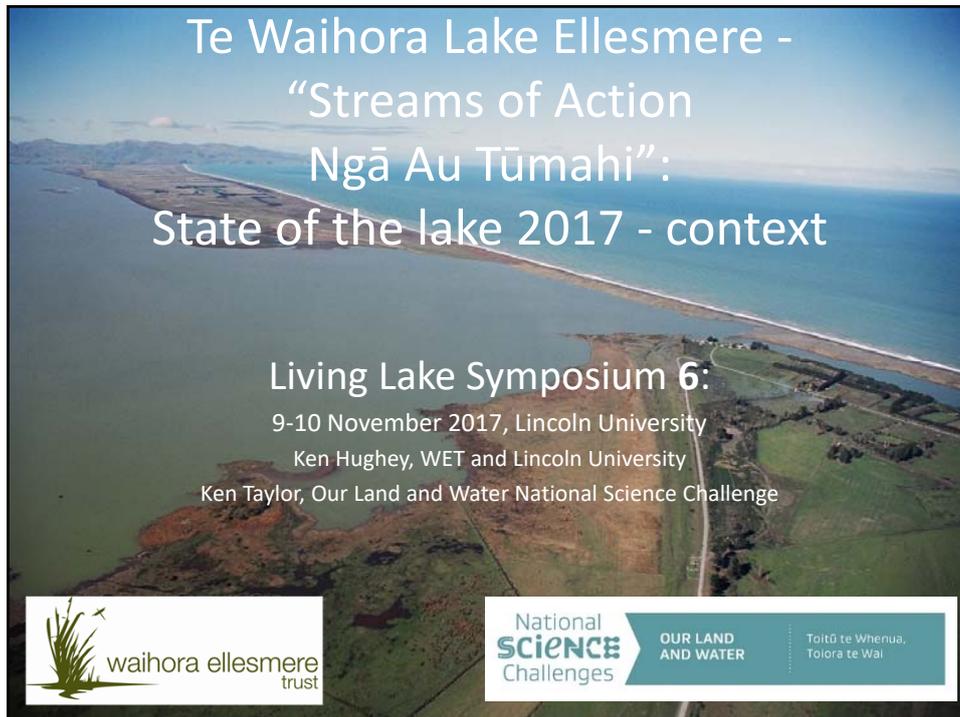


Te Waihora Lake Ellesmere -  
“Streams of Action  
Ngā Au Tūmahi”:  
State of the lake 2017 - context

Living Lake Symposium 6:  
9-10 November 2017, Lincoln University  
Ken Hughey, WET and Lincoln University  
Ken Taylor, Our Land and Water National Science Challenge



waihora ellesmere trust

National SCIENCE Challenges

OUR LAND AND WATER

Toitū te Whenua, Toiora te Wai

I'm sure we can celebrate 10 years in a better way than this. Is that you or me bottom right?



## Some of us go back a while ...

- How many of you can remember a particularly ground breaking controversy about the lake in 2005, around 12 years ago?
- A Judge and the media and politicians had a lot to say about Te Waihora/Lake Ellesmere – there were multiple judgements ...



## Judge Smith - 2005

- Judge Smith (Lynton Dairy Ltd v. The Canterbury Regional Council, Environment Court C108/2005: at paragraph 101) stated:
  - “Te Waihora (Lake Ellesmere) was a significant shock to the Court. The lake is eutrophic, green in colour and seems to be devoid of any riparian management. For example, stock seem to have free access to the water, the margins appear to be subject to chemical spraying regimes and lake levels manipulated for farming rather than the natural values. The lake water is in a serious ecological condition and is in urgent need of attention. Riparian management is required as an absolute minimum.”



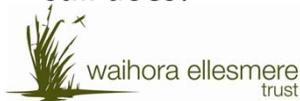
## The media and politicians 2005 ...

- Media refined the Judge's statement to "... the heavily degraded lake was declared technically dead this year after Environment Court Judge Jeff Smith found it was in a serious ecological condition and virtually unable to sustain animal life".
- Jeanette Fitzsimons, the Green Party Co-leader, used the phrase "Lake Ellesmere is biologically dead" in the Address in Reply Debate in Parliament, 15th November 2005 (Source: [http://www.waternz.co.nz/archives/2005\\_09\\_01\\_nzwaternews\\_archive.html](http://www.waternz.co.nz/archives/2005_09_01_nzwaternews_archive.html) Accessed 24 October 2007)



So we responded to these concerns – the Waihora Ellesmere Trust decided to assess 'how dead the lake was'

- 2007 'Living Lake' symposium (LLS1) focused on determining the state or health of the lake
- Asked (and contracted) experts to report on the state of the lake and its resources as at 2007, compared for earlier, typically against the regional council's 1995 report.
- And what did we find?
- Overall, the lake is 'alive', with lots of values rated highly but others in a poor and sometimes worsening state of health – the brown trout fishery was worst of all
- Soon after, KH began referring to it as 'the lucky lake' and still does!



Is the lake dead, and if not how alive is it?	
'Value'	Range of states
<b>Catchment Hydrology</b>	Upper: 'very good' Lower: 'very bad'
<b>Water quality of tributaries</b>	'good' to 'very bad'
<b>Water quality of lake</b>	'fair' to 'bad'
<b>Vegetation</b>	Vegetation (incl. macrophytes): 'very good' to 'poor' Rare plants: 'very good' to 'very bad' Woody weeds: 'very bad'
<b>Brown trout recreational fishery</b>	'very bad'
<b>Commercial fisheries</b>	'good' to 'bad'
<b>Wildlife</b>	'very good' to 'bad'
<b>Recreation</b>	'very good' to 'very bad'
<b>The Ngai Tahu Values</b>	'bad'

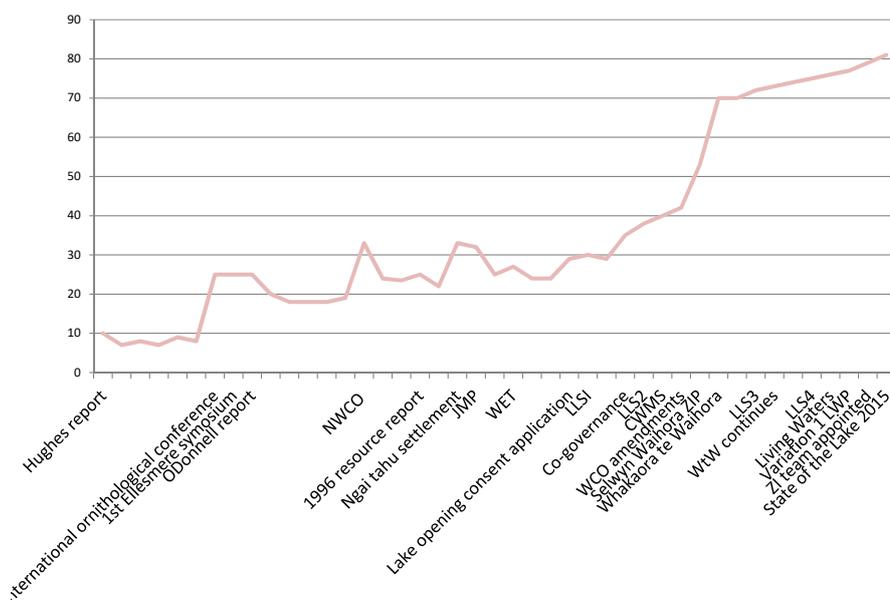
### A brief summary of 10 years and 6 Living Lake Symposia

- Following **LLS 1, 2007** with its focus on 'how alive the lake was' came ...
- **LLS 2 in 2009** - modelling and discussions about "Future sustainable management pathways for Te Waihora/Lake Ellesmere" – result, a modified Water Conservation Order, ...
- **LLS 3 in 2011** – 'Living Lake, Changing Catchment' – the beginning of involvement with the CWMS, co-governance: new ways of working, ...
- **LLS 4 in 2013** - 'A "health" report card for Te Waihora', a report card we now call the state of the lake report – you have the 2017 one in front of you, then ...
- **LLS 5 in 2015** - "*realising the vision – mountains to the sea ki uta ki tai*" – was/is the new mgt regime making a difference? Result: good for fisheries, mixed for other values
- So to **LLS 6, 2017** - 'Streams of Action' – we cover the range of work underway that will help us achieve our vision for improved health and biodiversity of Te Waihora/Lake Ellesmere and its catchment
- and so to a question for you to think about, a question informed by monitoring:

## A generalised health report card

Value/topic area	Sufficient data to compare state?	Has state changed? (~= no change, += enhanced/improved value, -= degraded value)
Governance and management	yes	+
Land cover and land use	no	~
Economy	yes	+
Water	yes	Overall ~
Vegetation and wetland habitats	no	~
Wildlife	Yes (for birds)	+
Fish	No (with possible exception of short-finned eels)	~ + for short-finned eels?
Recreation	No (except for cycling)	+ for cycling only
Assessment of cultural health	No	~

## "Public interest" in Te Waihora 1974-2017



### Setting the scene for the symposium – the day

- Setting the scene and The lake in context – historical, current, future
- Upstream**
  - Central Plains Water & Te Waihora - Derek Crombie (CEO – Central Plains Water)
  - Targeted Stream Augmentation including near-river recharge - Dr Brett Painter (Environment Canterbury)
  - Importance of mudfish re-establishing - Prof. Angus McIntosh (University of Canterbury)
- On Farm**
  - Cultural Values Landscape Management Area Mananui Ramsden (Environment Canterbury)
  - Key messages for lowland stream restoration in Canterbury - Prof. Angus McIntosh (University of Canterbury)
  - Tracking markers of contamination from cow pat runoff - Dr Meg Devane (Environmental Science & Research)
  - Applying the science research on the farm - Alastair Taylor (Ballance Agri-nutrients) & Arron Hutton (Ravensdown)
- In the Lake**
  - How nitrogen and phosphorus transformations within Te Waihora affect the amounts of nutrients available to phytoplankton: Measurements and modeling - Dr Marc Schallenberg (Otago University)
  - Update on the macrophyte trial in Te Waihora - Mary de Winton (National Institute of Water and Atmospheric Research (NIWA))
  - Latest lakeshore vegetation survey and an update on Willow control - Jodi Rees (Environment Canterbury)
  - Fisheries management – Kohanga area/mahinga kai - Dr Shannan Crow (NIWA)
  - Australian Bittern research update - Anita Spencer/Emma Williams (Department of Conservation)
- Out There**
  - Next generation solutions - Dr Robyn Dynes (AgResearch)
  - Land use suitability work - Dr Scott Larned (NIWA)
  - Reducing nitrogen losses from farms - Dr David Whitehead (Landcare Research)
  - Dealing with the tensions between the lake and land use in the catchment - Murray Washington (Selwyn District Council)
  - Report on state of the flows - Dr Tim Davie (Environment Canterbury)
- Selwyn Waikirikiri**
  - Bringing it all together to make a difference – The two of us

## A question

- In 2013 Dr Clive Howard-Williams from NIWA put the following to us – ‘it is too early to say whether we are being successful’
- Today we put the following to you – think about it as you listen and reflect on what you hear and learn
- The report cards, the state of the lake reports, are starting to show a pattern – there is little difference between the 2-yearly reports: is this because:
  - The lake is a ‘glass half full’ and is as good as its going to get?
  - Good things take a lot of time and we will need many reports before monitoring shows the really positive changes we hope for
  - We aren’t doing enough measuring or monitoring to be able to tell?