“Measuring to manage”: State of the lake 2013

Retrospective on day 1 & introduction to day 2

LLS IV

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A “health” report card for Te Waihora 2013

- Yesterday
  - We looked back 6+ years
  - We asked questions about the state of the lake in relation to 9 topic areas, using the PSR framework for indicator reporting
- Today
  - We look forward to the future state …
  - In the context of what’s been happening over the last few years – “instruments and interventions”

A "health" report card for Te Waihora 2013 - Day 1 lessons/insights:

- The set of **institutional arrangements** associated with the lake is a 'spaghetti junction' – what ties all this together and makes sure we are all moving in the same direction? – David O'Connell
- Huge **land use** changes – forest (pine) clearance on the plains for dairying matched by plantings in the hills – huge complementary efforts to deal with environmental issues at source, surely the way to go? But still legacy issues for the lake. Kirsty and Ian
- **Economy** – all SDC indicators point to a thriving economy, even those linked to the lake seem positive: can the benefits from this growth be turned into benefits for the lake? – Ross Cullen
- **Recreational** use levels at the lake hugely reduced over former 'glory' days, but still very significant for some activities, e.g., trout angling, duck shooting, rail trail and bird watching. Huge question though – while user levels high what about satisfaction/quality levels? Ken Hughey noted we need more quantity and quality of experience monitoring

Insights? – water quality

- Tim Davies said TLI seems to have improved in recent times but more interestingly significant declines in total N and total P since the mid 1990s, but WQ of the lake and tribs still poor to very poor.
- But other insights around what we might be able to learn from recent long openings, summer 2013 & present, e.g.,
  - Long summer openings flush the lake, but …
  - It stays at very low levels – likely terribly for macrophytes and perhaps some of the terrestrial wetland vegetation?
  - Higher levels of salinity during/after long lake openings probably effects entire food chain of lake (lake flies replaced by …)?
  - Long spring openings also flush the lake and …
  - Great for white baiting, and other fish access
  - Bad for grebes

Now to our native animals and plants

- **Native vegetation** is a key feature of the lake and environs - the 10 year surveys reinforce this fact. Philip Grove noted the ongoing willow control should benefit key native communities but then cautioned us on the reed canary grass and that 'we had better keep a watch on that' – hmmm, **alarm bells** – do we watch it take over the lake shore?
- The lake is rich in **native fisheries** – Hamish Rennie was able to tell us that we have no indicator species (why???, given all the ongoing research into the lake) and no real monitoring of native fish or their habitats (why???): **alarm bells**!!!
- And Ken Hughey talked to us about **wildlife** – birds, lizards and terrestrial and aquatic inverts. We know a lot about the first and the current state is generally really good but then amazingly we seem to know very little about the last, and perhaps most essential given key food chain etc requirements: more **alarm bells**!!!
- Anita and Fraser talked about grebes, lizards etc in relation to **predator control** – a lot of seemingly good work but what are demonstrable benefits?
- Which left Graham Fenwick to enthral us on endemic **groundwater fauna** – wow! Out of sight, out of mind? The fact we can learn from the Australians says something here – can we develop a QMCI for this ecosystem and management guidelines? Of course we can so lets do it!

Tangata whenua and mahinga kai

- Craig Pauling reminded us of the past but was incredibly positive about long forward with caution!
- Then Gail Tipa gave us her **score card**. She reminded me/us of Ken saying he can go and catch enormous trout in the lower Halswell River but that it stinks, so why do it. Mahinga kai is much, much more than just having the fish there – its about mana, quality, feelings, trust, health and much more! And those much, much mores are not there currently.
- So, huge progress in terms of process (e.g., joined up decision making re lake opening consent), but in terms of outcomes, they will take time and the tangata whenua are here for the long term! Ultimately much is about resilience and about persistence.

A generalised health report card

Value/topic area	Key finding	Sufficient data to compare state?	Has state changed? (~= no change, + = enhanced/improved value, -= degraded value)
Governance and management	"This co-governance agreement establishes a dedicated framework for the active management of Te Waihora and its catchment. Te Waihora co-governance concerns the range of decision-making that directly relates to Te Waihora and its management and include joint oversight of Whakaora Te Waihora, co-drafting of statutory management plans for the lake and catchment, and the review of regional and Selwyn-Waihora Zone implementation programmes, as well as the appointment of commissioners"	yes	+
Land cover and land use	"Notable changes in land use between 2003 and 2013 can be summarised as follows: drystock farming (sheep and beef, beef, deer) decreased; cropping and horticulture decreased; forestry decreased; contract grazing increased; lifestyle blocks increased; dairy farming increased"	no	~
Economy	"Economic activity in Selwyn is buoyant, driven by population increase, new businesses commencing, enterprise conversions to dairy farming, business expansions"	yes	+
Water	"Te Waihora continues to be a lake under considerable pressure from surrounding land use, both near and far from the lake edge. The state of ecological health (as measured by invertebrate monitoring) continues to be poor in streams across the catchment and although the lake TLI has improved slightly, it would be difficult to say this is a significant improvement."	yes	Overall ~
Vegetation and wetland habitats	"In the years since 2007 there have been higher inflows and more frequent lake openings than in the early 2000s. These will likely have reversed the trend of reduced lake salinity recorded in the years leading up to the 2007 survey…Effects of these recent events on lake shore vegetation are yet to be assessed"	no	~
Wildlife	"Overall, the state of the bird indicator species (apart from bittern where we do not have appropriate data) which represents the range of guilds present at the lake, seems to be good, but with a high degree of variability present. Three of four lizard species on Kaitorete Spit appear in good health…"	Yes (for birds)	+
Fish	"Although there are a good deal of data available on different aspects of the fish populations and their habitats, there is a clear need for a coherent, consistent and integrated monitoring programme which gathers data on the size, distribution and abundance of key species"	No (with possible exception of short-finned eels)	~ + for short-finned eels?
Recreation	"Te Waihora/Lake Ellesmere remains an important recreational resource in Canterbury, and for bird-watching is of international significance. However, most activities declined in the 1970s/80s and have remained roughly static since- the main exception being the increase in cycling (because of the Rail Trail)"	No (except for cycling)	+ for cycling only
Assessment of cultural health	Abundance of taonga species (including mahinga kai) is the ultimate indicator of cultural health. Populations of the indigenous fish species (eel, flounder, mullet and whitebait) may not be adversely affected currently as these species are tolerant of the current enriched state in the lake and appear to form productive populations if there is the opportunity for successful recruitment from the sea,."	No	~

Do we have the basic knowledge & Do we have the right sort of indicators?

Basic knowledge questions?

- Food chain questions and relationships to lake opening (and closing – please consider this!)
- Terrestrial and aquatic inverts

Indicators?

- Yes (tangata whenua, economy, vegetation, water quality and quantity, land use)
- No (native fish, aquatic inverts (including g/w))
- Somewhat (recreation)

So too early to say... (Clive HW)

But do we have any reason to be optimistic?

Programmes and other initiatives since 2007

- Amendments to WCO
- Whakaora te Waihora
- CWMS
  - "immediate steps"
  - ZIP & Selwyn-Waihora sub-regional plan
- Other interventions (Ngāi Tahu, DOC, WET, Te Ara Kākāriki, SDC…)
- This ongoing series of biennial symposia

Back to the future…

- In 2007 we postulated 3 possible futures for the lake:

1. "An improved status quo incorporating on-going management initiatives and their maintenance
2. A realistic and resilient environmentally enhanced future which is …based on a compromise between the enhancement of "natural" values and technical and economic feasibility
3. An idealised future based on strict conservation principles."

Current/proposed programmes & policies = "*resilient, environmentally enhanced future*"

Challenge = measuring the right indicators (state, pressure and response) so that improvements can be recognised and quantified