

Estuary management in New Zealand – insights from a study tour

January 2018



During January 2018, I visited New Zealand as part of a self-directed study tour funded via a Department of Environment, Land, Water and Planning (DELWP) Leadership Development Grant. The focus of my visit was to explore different management approaches that seek to achieve good outcomes for both the environment and private landholders in estuarine and floodplain environments. This paper presents some of the approaches I encountered that may application for the management of Victorian estuaries.

INDUSTRY PARTNERSHIPS

One of the main reasons I was attracted to New Zealand was the Living Water project – a 10-year partnership between Fonterra and the Department of Conservation (DOC) focussed on finding solutions to enable farming and healthy waterways to coexist. The initiative commenced in 2015, largely in response to negative public perceptions surrounding the impact the dairy industry was having on waterways.

The program is focussed on five regions across NZ, of which I visited three – the Wairua River and the Pukorokoro – Miranda catchments on the North Island, and the Waituna Catchment on the South Island. It is envisaged that the program will expand beyond these five catchments over time. Fonterra have provided significant investment (in the order of \$20 million) over the 10-year period, which supports the employment of 1 FTE DOC staff member at each site and provides funds for project planning and implementation. Each site is trialling different approaches, with the intention that these can be scaled-up and implemented elsewhere.

In discussions with stakeholders, the general sentiment was that partnering with Fonterra has been positive, with some of the benefits including:

- The significant investment of time and money has provided the opportunity to trial innovative solutions at scale and over a longer timeframe. This would not be possible without the security of longer term investment.
- The longer timeframe has also enabled the formation of genuine working partnerships between agencies, scientists, industry, traditional owners, farmers and the wider community.
- The complimentary skills of Fonterra and the DOC staff is a real strength, and is central in bridging the gap between farming and the environment so the two are not considered in isolation.
- Fonterra's involvement has helped provide DOC with direct access to landholders.
- Fonterra's involvement has led to some “creative” investments that align with their marketing objectives. For example, the Pukorokoro – Miranda project site is focussed on protecting and expanding habitat for migratory shorebirds on the Asia – Pacific flyway, offering Fonterra an opportunity to market this to the Chinese export market.
- Industry and corporate investment can allow for more creative solutions to be trialled, without being tied to Government investment objectives.

Rather than being on the other side of the fence, partnerships with industry (and corporate organisations) can be mutually beneficial. In the case of Fonterra, there is direct marketing benefits and for DOC it provides the security of time and money to engage landholders and trial innovative, longer term solutions.

More information about the Living Water program: <https://www.livingwater.net.nz>

AIRBNB FOR BIRDS

This was my favourite initiative, and a concept that was introduced by Helen Kettles, National Estuaries Advisor at DOC. She is keen to see such a program implemented at some of the Living Water sites in NZ.

The initiative draws on AirBnB's sharing economic model to provide “pop up nature reserves”, whereby landholders are payed to temporarily provide habitat on their land at certain times of the year. For example, the model can come into effect when demand for particular habitats is high – such as a floodplain for migratory birds.

The Nature Conservancy in the United States has been pioneering the integration of the AirBnB model into conservation in California's Sacramento Valley since 2014. Here, they have been paying rice farmers to

flood their fields for a few weeks each fall and spring, to provide wetland habitat for migratory birds in a program called BirdReturns. This means that flooding is occurring at a time when the fields would usually be dry, thus a team of ecologists and economists determined how much compensation was required to support farmers for this change. They ran a “reverse auction” in which landholders specified the lowest payment that would entice them to flood their fields for a four to eight-week period.

This market based approach has parallels with tender programs already delivered by agencies such as Catchment Management Authorities, however it provides a more temporary and flexible compensation mechanism that can be scaled up or down. For example, in Sacramento Valley flooding during the end of the spring migration season is trickier to fit into an annual rice-growing schedule, so bids — and payments — are higher than. The auction model is also flexible when the weather fluctuates. The early years of the program occurred during California’s prolonged drought, but abundant rainfall in 2017 meant that BirdReturns could dial back the amount of pop-up wetland it procured this year¹.

Unlike current tenders in Victoria, the AirBnB model is not so focussed on areas of existing remnant habitat, but rather areas of that can provide short-term habitat at critical times of the year. The potential for this model to provide win/wins for conservation and landholders in highly dynamic environments, such as estuarine floodplains is significant, where it’s desirable for agricultural land to be inundated at particular times to support bird and fish communities.

The beauty for landholders is that it provides an in between alternative to a more permanent land use change, such as a buy-back or transition to a nature reserve. It works on a “rent, rather than buy, model”. And it remains more cost-effective than an outright buy-back and enables farmers to remain on their land and farm at other times.

There is also opportunity to engage non-government agencies (such as the Nature Conservancy), corporates and industry to help finance such an initiative. Potential eco-tourism opportunities could also be considered, such as engaging community in bird watching opportunities or eco-tourism stays. This could be particularly effective in high tourist areas, such as the Great Ocean Road.

More information:

<https://www.nytimes.com/2017/12/29/business/economy/airbnb-protect-environment.html>

<http://birdreturns.org>

¹ <https://www.nytimes.com/2017/12/29/business/economy/airbnb-protect-environment.html>



Figure 1. Private farmland adjacent to the Firth of Thames Ramsar site at Miranda, NZ provides significant habitat for migratory shorebirds on the Asia – Pacific flyway. AirBnB for Birds may provide an incentive for landholders to allow inundation of farmland for habitat at certain times of the year.

BLUE CARBON

Early investigations into blue carbon ecosystems (sea grass, mangroves and saltmarsh) is being undertaken in New Zealand.

In 2017, the Ramsar Convention joined the International Partnership for Blue Carbon. The Australian Government also signed on as a partner. The partnership aims to protect and restore coastal blue carbon ecosystems by: building awareness, exchanging knowledge, and accelerating practical action. Future actions will include catalysing project development at larger scales in priority regional ‘hotspots’ and linking blue carbon projects with climate finance.

With blue carbon habitats increasingly becoming part of the international climate change dialogue, and the Ramsar Convention now focussing on the value of blue carbon habitats, there is likely to be growing interest and investment in this area. This may also present significant opportunity for private landholders farming marginal coastal and estuarine areas.

Preliminary discussions with NZ DOC staff revealed some opportunities for blue carbon in farming landscapes. This could include running a blue carbon tender program or incentive scheme to encourage landholders to participate in blue carbon demonstration sites, in conjunction with research institutions. There may also be potential for corporate partnerships, particularly intensive carbon “generators” such as airlines and transport companies to contribute funding for blue carbon demonstration sites.

C O V E N A N T S

The Queen Elizabeth II (QEII) National Trust covenants are well established in New Zealand. They are similar to conservation covenants in Australia, whereby a landholder can voluntarily elect to protect a part, or all of, a property in perpetuity.

The QEII National Trust has partnered with the Living Water program to assist dairy farmers to protect significant species on their land. There are already examples where this is happening, including a 12ha native remnant forest on a dairy farm in the Wairua River catchment.

Most of the DOC staff I met with referred to the QEII covenants, and it appears that the partnership has led to covenanting being a more prominent tool in the mix and is part of the discourse with landholders. The QEII National Trust also provide wetland covenants.

L A N D P U R C H A S E S

Government buy-backs of private land is being implemented at one Living Water site, and considered at another. These are discussed in more detail beneath.

Coxhead land acquisition

The most progressed land purchase project is the “Coxhead land acquisition” in the Pukorokoro – Miranda catchment, located on the Firth of Thames/Tikapa Moana approximately 80km south east of Auckland. The catchment flows into an 8,500ha Ramsar listed coastal wetland and provides significant habitat for migratory shorebirds, including a Chenier plain – a rare coastal landform consisting of a series of ridges comprising marine shells.

The shorebird area and habitat has been significantly degraded and reduced in size, largely due to dairy, beef and sheep farming in the catchment. A focus of the Living Water project at this site has been the protection and expansion of shorebird habitat. At the commencement of the project, modelling was undertaken to identify where the best habitat gains could be achieved. The Coxhead family farm was identified as a site that would provide high habitat value if it were to return to a more natural hydrological regime. Since 2015, DOC has been working towards purchasing 23ha of the total 60ha property to reinstate as a conservation reserve.

Landward buffers

“Landward buffers” are also being considered at the Waituna Lagoon site, 40km east of Invercargill on the South Island. The Waituna Lagoon and surrounding wetland (an area of 3,500ha) are Ramsar listed and provide significant ecological, cultural and social values. A focus of the project is increasing wetlands and low-lying habitat, which is currently threatened by extensive agriculture in the catchment and immediate surrounds.

This project is only at the inception stage however it's envisaged that landward buffers will be established on private land immediately adjacent to the wetland. This may involve some land purchases of low lying farmland, with the potential for them to be leased back for farming with caveats to support more regular inundation.



Figure 2. The Chenier plains at Miranda provide important habitat for migratory shorebirds on the Asian – Pacific flyway.



Figure 3. Looking north across Waituna Lagoon, where agricultural land directly abuts coastal wetlands.

Insights

- A considerable investment of time and money is required, but the gains are secured in perpetuity. The Coxhead land acquisition has been a three-year process to date and is yet to be finalised (expected to occur in Oct 2018).
- Securing investment can be tricky. For example, the Coxhead land acquisition relied heavily on the neighbouring farming family purchasing the 60ha farm and selling the 23ha to the DOC (due to limited Government funds being available to purchase the total farm).
- There's no "one-size-fits-all" approach and different mechanisms can be used to support a land purchase. For example, caveats to support some continued farming of leased land in the buffer at Waituna Lagoon are being considered.
- Having local "champion" landholders to back a land purchase will go a long way.
- Marginal farming land is much easier to purchase!
- The ongoing management of the purchased land needs to be established at the outset. The Coxhead project noted that they became so focussed on the purchase, that the ongoing management of the land has been overshadowed.
- Land buy-backs are not feasible everywhere. Therefore, a more strategic, landscape scale analysis would help identify where the greatest gains can be achieved. This was the case at the Miranda site, where the Coxhead farm was identified as one discrete property that if allowed to return to a more natural flooding regime, would provide significant habitat benefits.
- Land buy-backs in coastal areas should also be considered through the lens of climate change, in identifying areas to support the future landward migration of coastal and estuarine communities (e.g. saltmarsh and mangroves). Farming landscapes present much greater opportunities for this to occur than built up areas where infrastructure will limit landward migration.

LET THEM BE!

And then of course, there is the option of leaving estuaries to do their thing! Although there's not many places where this is a genuinely feasible option, the west coast of NZ's South Island is an exception.

In this part of the world, rainfall is measured in metres with up to 7m falling annually at sea level. Rainfall in the mountainous catchment can be up to 14m/year at some locations, and the very steep terrain shifts large

volumes of water and sediment giving rise to impressive river and estuarine systems. Within 600km of coastline, there are 340 estuaries!

The west coast of NZ is sparsely populated, with large tracts of the catchments secured in conservation land. This means that there are more opportunities in this part of NZ to allow the natural mobility and closure of estuaries to take place with little or no intervention. It's an enviable position for estuary managers elsewhere!

Historical images remind us of the highly dynamic nature of estuaries, with mouth openings moving up and down coastlines and river channels changing course.

Whilst development is scarce, some estuaries have been modified such as the Grey River at the portside township of Greymouth and at other estuaries to support agriculture. However, there is also a significant handful of other estuaries that are left to their own devices or are intentionally protected, such as the Mahinapua River where whitebaiting² is prohibited. The scale and number of estuaries on the west coast means that more of a "landscape scale approach" can be taken, where some intervention is permitted at some estuaries, but not at others.



Figure 4. Exploring west coast estuaries with Don Neale (DOC), where rainfall is measured in metres!



Figure 5. Low density development on the west coast of the South Island allows the natural mobility and closure of estuaries to occur with little or no intervention.

² Whitebaiting is the practice of catching immature fish, typically galaxiid species (collectively referred to as "whitebait"), that move into estuaries where they can be easily caught. The practice has a long history in New Zealand. Whitebaiting is a seasonal activity with a legally fixed and limited period coinciding with the annual migration of the species.