

## APPENDIX 6. WETLAND MANAGEMENT STORIES

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## MALCOLM STARRITT - WOMBOOTA PASTORAL

Where	Benarca Creek, 30km south-west of Deniliquin, NSW (adjacent to the Murray River)
Enterprise	Sheep, prime lambs, wool & cropping
Size	2000 hectares
Wetland area	119 hectares

### What they did

- Erected 1.6km of fencing to provide control of stock access to the wetland
- Installed an off-dam stock watering system (to remove the reliance on dams within the wetland)
- Provided an allocation of 400ML of ‘environmental water’ to the wetland
- Developed a new grazing regime for their wetland
- Monitored the results.

### Why they did it

- To breathe new life into a wetland that had been dry for too long
- To reinvigorate wetland vegetation that was showing signs of stress.

### Cost

- The project infrastructure cost approximately \$45,000 (i.e. this figure does not including the price of the water used to flood the wetland).

### Assistance

- Environmental water provided by the NSW Government (managed by the Murray Wetlands Working Group - MWWG)
- The infrastructure costs were divided as follows: MWWG 53%, Murray Irrigation Ltd (Land & Water Management Plan funding) 13%, Womboota Pastoral 34%.

### Benefits

- Improved the health of wetland vegetation dramatically
- Increased water bird numbers
- Better ground cover vegetation within the wetland
- Reduced area of weedy plants
- Better management of stock access to the wetland.

### Monitoring & evaluation

- Bird and vegetation assessments carried out by MWWG
- Re-watering the wetland led to a significant increase in the number of native wetland plant species, and a parallel decline in weeds.

## Their story

Becoming involved with wetland rehabilitation was not the starting point on the environmental management journey for Womboota Pastoral (WP). Like many farming businesses, the 'landcare phenomenon' had led to a review of how the WP holdings were managed with respect to environmental issues. Through involvement with the local Green Gully Landcare Group, WP had been carrying out revegetation works on their land for over 10 years prior to the commencement of the Kooyong/Suncroft wetland project. By 2005 Malcolm remembers that: *'We were starting to think of fencing out larger areas [of remnant native vegetation] rather than just the small tree belts'*. Key to this expansion of the environmental management works by WP was recognition of the 'environmental service' that bush areas provide – not just to the farm but to the wider community as well. Malcolm contends the overall aim can be summarised quite simply: *'we want to be able to hand over the property to the next generation in better condition than when we started – both in terms of the environment and the business'*.

A wetland project was the obvious choice once the decision had been made to look closely at existing areas of remnant native vegetation – not only was there abundant vegetation associated with the main wetland on the property, but it was also clearly in need of help; *'... it was just starting to look sick!'* Malcolm remembers, *'... it had had no water since 1996 and the trees were obviously suffering. It had been too long between drinks'*.

Within the area locally known as the Benarca Water Holes, the Kooyong and Suncroft Wetlands (see page 42) are about 29 and 90 hectares respectively. The Kooyong wetland, which is the northern of the two and the subject of this case study, has been owned by WP since 2003. The Suncroft wetland was acquired by WP in 2007 and as a consequence the pair will be managed in a more holistic manner in the future.

These wetlands form part of Benarca Creek, which branches out from the Murray River between Pericoota forest and the Torrumbarry weir (approximately 30km south-west of Deniliquin). The wetland over-storey is dominated by river red gum (*Eucalyptus camaldulensis*), but also includes stands of black box (*Eucalyptus largiflorens*). Areas of lignum (*Muehlenbeckia florulenta*) and reed-dominated swamps are also common features of this wetland complex.

*[The key] was recognition of the 'environmental service' that bush areas provide – not just to the farm but to the wider community as well*



200 0 200 400 Meters



Map 3: Infra red enhanced aerial photograph of the Kooyong & Suncroft wetlands, 2001. (Courtesy of Murray Irrigation Ltd.)

Some features of the past management of the wetland include:

- the excavation of a number of dams within the wetland for stock watering purposes
- logging within the wetland
- using water couch (*Paspalum distichum*), *Cumbungi* (*Typha spp.*) and the other wetland plants as drought fodder in dry times.
- With the development of irrigation infrastructure, the water regime within the wetland was changed. At one point in the past the wetland was used to store water, and the more or less permanent high water levels led to the death of many mature trees. In more recent times changes to the way irrigation water is managed has seen the removal of permanent inundation and its replacement with a flow regime under which the wetland was rarely inundated.

In summary, Malcolm felt that over the years the wetland *‘was grazed in conjunction with large paddocks and as a result was not managed to its specific needs’*.

The WP wetland project was designed in consultation with the Murray Wetlands Working Group (MWWG). Established in 1992, the MWWG is a community based wetland rehabilitation organisation that brings together landholders, government agencies and researchers to plan and deliver projects within the NSW Murray River and lower Murray-Darling catchments. Importantly for WP, the Working Group manages an allocation of ‘environmental water’ on behalf of the NSW government that, with irrigation infrastructure and appropriate seasonal conditions, can be used to provide a flood to long dry wetlands. Malcolm suspected that ‘a good drink’ was just what the wetland at WP needed.

With an allocation of environmental water Malcolm expected to see an improvement in the health of the native vegetation within the wetland, not just the red gums but also better groundcover of native wetlands plants. In addition to this, Malcolm thought that re-wetting the wetland would bring back some of the waterbirds that had been missing since the substantial reduction in irrigation allocations to farmers. *‘What many people don’t realise is that irrigation does not only water crops and pastures, but also supports many species of waterbirds. We hoped that by improving the health of the wetland we would attract back some of the waterbirds that were common when there was a greater water allocation in the area’*.

## 1. Fencing

In order to gain control over stock access to the wetland 1.6km of new fencing was erected. A permanent sheep-proof fence of seven plain wires with concrete posts and red gum droppers was used. Gates were included in the design to allow stock access when required (see section 4 on page 44).

## 2. Off-dam watering

In common with many wetland rehabilitation projects where the provision of alternative stock water is required, this component of the project was the most difficult and costly. For WP, a solar powered pump was installed to pump water from an existing irrigation channel into a purpose built dam from where the water was piped to new stock watering points. In all, 3.5km of 2” poly pipe was laid in a project that took considerably longer than had been initially estimated. Estimating the time, and hence the cost, that will be required to implement on-ground environmental rehabilitation works is notoriously difficult. Cost over-runs are common but very few funding assistance schemes have the flexibility to cater for this.

## 3. Delivering the environmental water

Delivering water to the wetlands was a relatively easy task as an existing Murray Irrigation ‘escape’ channel connected to the southern end of the wetland was used. Approximately 300ML of the 670 ML allocation was used when the wetland was watered in September 2005. This quantity of water took two weeks to flood the wetland to its maximum extent given the rate of delivery that was possible at the time. Further water inputs would merely have flown through the system without wetting additional ground. The wetland was ‘topped up’ with a further 100 ML in November to extend the plant growing period and maintain waterbird habitat.

*“ ... it was like turning the lights on in a dark empty building!*

The response from the wetland vegetation to the applied water seemed almost immediate to Malcolm; *'it was like turning the lights on in a dark empty building!'* The response from native groundcover plants was particularly impressive, with many species seeming to reappear from nowhere. The tree canopy layer also showed a rapid improvement, with both the river red gum and the black box trees putting on new growth within a period of weeks.

Bird life also returned quickly to the wetland, with many species, including Brolgas, appearing within weeks of the re-wetting of the wetland.



**Image 7: Malcolm Starritt of Womboota Pastoral was impressed with the response when an allocation of environmental water was put into the Kooyong wetland on Benarca Creek south-west of Deniliquin. *'It was like turning the lights on in a dark empty building'* Malcolm remembers, with the response from the native vegetation being almost immediate as the wetland, which had not been flooded since 1996, finally *'had a good drink!'***

#### 4. A new grazing regime

With the new fencing in place the question now arose: what, if any, future grazing should there be in the wetlands? With close to 120 hectares 'locked up' in the new wetland paddock WP were keen to strike a balance between some productive use and environmental protection. While noting that the actual grazing regime has to be flexible to reflect the conditions encountered in each season, the general strategy adopted is as follows:

- from April – August: lambing ewes have access to the wetlands to make the most of the available shelter and feed
- from September – November: the wetlands are 'locked up' as this is the ideal time for natural or artificial flooding. Wetland plants are allowed to grow, flower and set seed
- during summer: some very light grazing may be undertaken (e.g. 40 ewes on the entire 120 hectares) but even this will be avoided during wet periods. The body of vegetation built up over spring – summer will then be available for lambing ewes the following winter.

#### 5. Monitoring and evaluation

This site was included in the MWWG's 2005/06 monitoring and evaluation programme during which both bird and vegetation surveys were carried out. The results were presented in the MWWG publication *Watering of Private Property Wetlands – Final Report 2005/06*. Some of the main conclusions from this work were:

- many native plants that were not recorded prior to watering appeared soon after the re-wetting, indicating the presence of a seed bank, e.g. water ribbons (*Triglochin spp.*)
- data collected from all 11 sites assessed during the 2005-06 round showed that the percentage cover of weeds was reduced considerably by flooding the wetlands (from >60% cover to 2%)
- the migratory waterbird Latham's snipe and the threatened woodland bird the brown treecreeper were recorded at the Suncroft wetland.

Photographs taken at regular intervals from fixed photo-points often provide the best visual picture of vegetation changes over time. The pictures taken at the Kooyong/Suncroft wetland clearly demonstrate the value of this monitoring and evaluation technique (see page 45).

From the WP perspective, monitoring and evaluation is an ongoing process that is mainly achieved through observation, rather than any process of formal assessment. Apart from the obvious and very satisfying initial results in terms of vegetation response and the increased birdlife, day to day observations have led to some interesting and unexpected results.

Malcolm remembers that the wetland was looking in great condition as it started to dry out over the following summer until *'about 300 kangaroos and 40 emus turned up and trashed the place!'* This was a frustrating, but in a way understandable, turn of events. The 'oasis' created by the artificial watering, along with stock exclusion during the draw-down phase, had proved irresistible to the native wildlife. *'It looked as though I'd had a couple of hundred sheep in there which was disappointing because, of course, I hadn't.'*



**Image 8: Nardoo (*Marsilea* spp.) growing in the Suncroft wetland, June 2007.** These native wetland plants are actually ferns, the spores of which grow in pea-like structures that were often harvested by Aboriginal people and ground into a form of flour.



## Challenges

When asked the question: ‘Would you do it again, and if so, is there anything you would do differently?’ Malcolm responded that yes, it was a very worthwhile project that he would undertake again. However, there were some things he’d either do differently or would like further help with, including:

- seeing some similar projects that had already been completed would have been a big help – particularly with respect to identifying all the ‘hidden’ costs

Malcolm also felt that this ‘artificial’ watering would have been improved if a small levee had been constructed across the wetland first with a suitable regulator. *‘With such a structure we could have used less water to flood a wider area’*

- having installed the infrastructure and provided an initial quantity of environmental water, Malcolm was also concerned about the long-term management of the area. Ongoing monitoring assistance to help guide management decisions would be helpful. In addition to this, infrastructure will require maintenance and replacement over time and the cost of this may become prohibitive without some long-term joint funding arrangement.

## Summary

Providing the Kooyong wetland with a good soaking, courtesy of an environmental water allocation, yielded almost immediate results in terms of the growth of native plants. This was followed by a response from the fauna, the most obvious of which were the wetland birds. However, the project also highlighted the relatively high cost associated with providing alternative watering points for stock, with this activity accounting for over 80% of the total infrastructure costs.

**Image 9: pictures taken at the Kooyong/Suncroft wetland clearly demonstrating the value of this monitoring and evaluation technique.**

**From top to bottom:**

- Before wetland flooding**
- week 6**
- week 12**
- week 15**