Australian Government

Productivity Commission

Market mechanisms for recovering water in the Murray-Darling Basin

EAA Submission

EASTERN AUSTRALIA AGRICULTURE

Productivity Commission Submission September 2009

Eastern Australia Agriculture Pty Ltd A.B.N. 96 126 388 163

Eastern Australia Agriculture

Contents

1. Executive Summary

- This summary provides an overview of the submission by Eastern Australia Agriculture (EAA) to the Australian Government Productivity Commission's study on *Market mechanisms for recovering water in the Murray-Darling Basin*
- EAA owns water entitlements at two properties in the lower Balonne area of the Condamine-Balonne region
  - The Kia-Ora property is situated approximately 7km south of St. George, Queensland, along the Balonne River. The Clyde property is located 10km south-west of Dirranbandi, Queensland .
  - Together in 2008/09 they produced over 35,000 tonnes of wheat, 1,000 tonnes of chickpeas, 10,000 tonnes of sorghum and 11,000 bales of cotton while also selling 10,433 ML of temporary water to the Murray-Darling Basin Commission (MDBC) for environmental use in the Narran Lakes
- EAA has to date made tenders under the *Restoring the Balance to the Murray-Darling Basin* program, involving unsupplemented water entitlements at both Kia-Ora and Clyde
- This document outlines our submission to the Productivity Commission, namely:
  - All licences should be valued by their Annual Average Diversion
  - Water available during periods of low flow is not necessarily more valuable than water only available during periods of high flow
  - Increased value per AAD is associated with proximity to environmental targets and sometimes the flexibility to control the release of water to maximise environmental impact
  - Tenders should be specific to environmental targets, rather than basin specific
  - Vendors should be allowed latitude to design innovative tenders which increase the value of water to the environmental target

2. Objectives of water purchasing

2.A. The fundamental objective of the Water Purchasing Program is to restore water availability to key environmental assets

The objectives of the water purchasing process have been clearly stated in the recent Memorandum of Understanding in relation to water for the environment between the Commonwealth and New South Wales Governments. This document states:

- The scarcity of water arising from prolonged drought and the emerging impacts of climate change have highlighted the importance of water to our communities, the environment and the economy. In recognising these challenges, the Commonwealth and New South Wales Governments have committed to actions that will secure additional water for the environment to restore the health of rivers and wetlands and secure a sustainable future for irrigated agriculture
- The parties support the purchase of water entitlements for the environment as a means to secure the sustainability of the Murray-Darling Basin (MDB)
- Water acquired by the Commonwealth will be used to water key environmental assets in the Basin. In New South Wales these assets may include but are not limited to the Darling River, Culgoa Floodplain, Narran Lakes, the Wakool River System, the Macquarie Marshes, the Gwydir wetlands, Booligal Swamp, the Lowbidgee wetlands, the Millewa and Pericoota-Koondrook forests. Significant volumes of water will be required to protect and restore environmental assets, giving effect to relevant international agreements

3. A more effective methodology for valuing water entitlements

3.A. All licences should be valued by their Annual Average Diversion, as a common currency which takes into account the long term average water returned to the environment

The value of water entitlements across the MDB is reflected in the combination of the size of the entitlement and its reliability.

Figure 1

PRICES PAID FOR PERMANENT LICENCES IN THE RESTORING THE BALANCE PROGRAM BY BASIN, 2008-09

Basin	Entitlement type	Average price paid $/ML of entitlement	Long term average allocation percentage	AAD $/ML
QLD Border Rivers	Medium Security	$2,371	40%	$5,928
Gwydir	General security	$2,256	38%	$6,008
Namoi	General security	$2,033	77%	$2,640
Macquarie	General security	$1,248	43%	$2,923
Lachlan	General security	$685	46%	$1,482
Campaspe	High reliability	$2,379	115%	$2,067
Goulburn	High reliability	$2,382	96%	$2,479
VIC: Murray below Choke	High reliability	$2,372	96%	$2,463
VIC: Murray above Choke	Low reliability	$191	25%	$762
VIC: Murray below Choke	Low reliability	$200	25%	$792
NSW: Murray above choke	General security	$1,318	84%	$1,571
NSW: Murray below choke	General security	$1,272	99%	$1,283
SA Murray	High security	$2,380	93%	$2,553

Source: DEHWA

Eastern Australia Agriculture

The prices paid for licences are often reported as $ paid per ML of entitlement. However, the entitlement itself does not reflect the amount of water that will be harvested from the river on average, only the volume that will be harvested in years when rainfall in the catchment has not been limiting (Figure 1). The extent to which rainfall is limiting is reflected in the long term average allocation percentage. This percentage when multiplied by the entitlement gives an estimate of "Expected average annual volume of water available for the environment", or Annual Average Diversion (AAD).

Continued focus on the volume of entitlements, rather than the AAD, is misleading when comparing the value of licences across basins and also when comparing the relative value of licences to the environment. The Department of Environment, Water, Heritage and the Arts (DEWHA) itself publishes both the volume of entitlement and the AAD when reporting the progress of its water

purchasing program. In order to return the focus of water buybacks towards improving the health of environmental assets, DEWHA and the Government should therefore measure all water purchased purely in terms of the price paid per ML of water returned to environment (the AAD), rather than by volume of entitlement. Greater transparency in pricing and focus on environmental impact will result.

When viewed in terms of AAD, it becomes clear that licences in some basins have been purchased at a significant premium to those in others (see Gwydir, Figure 1). In the largest water purchase to date, 239,770ML of water entitlements were purchased across NSW from the Twynam Group. These entitlements however supply only 110,422ML of AAD to the environment. The average price paid for over half of the water bought in 2008-09 was therefore $2,744/ML AAD.

Figure 2

VALUATION BREAKDOWN OF TWYNAM WATER SALE

Site	Licence Type	Entitlement (ML)	Long Term Reliability	Annual Average Diversion (ML)
Gwydir	GS	47,132	0.36	16,968
	Supp	16,324	0.18	2,938
Barwon	B	5,360	1.00	5,360
	C	7,407	1.00	7,407
	(B)	1,836	1.00	1,836
Macquarie	GS	39,114	0.42	16,428
	Supp	1,888	0.21	396
Lachlan	GS	52,283	0.42	21,959
Murrumbidgee	GS	47,606	0.64	30,468
	Supp	20,820	0.32	6,662
Total		**239,770**		**110,422**
Total price paid				**$303,000,000**
Price/ML AAD				**$2,744**

Eastern Australia Agriculture

3.B. Water available during periods of low flow is not necessarily more valuable than water only available during periods of high flow

There is a general belief that high security licences, where water is more likely to be available in periods of general scarcity, should be valued higher than other licences where water is only likely to be available in times of high flow. However, there is clear evidence that additional water in times of excess, i.e. flood events, is also significant environmentally.

This is evident in the lower Condamine-Balonne basin of the MDB, where 3 nationally (Lower Balonne Floodplain, Culgoa River Floodplain) or internationally significant (Narran Lakes) wetlands have been shown to require significant flood events to preserve biodiversity.

The CSIRO Sustainable Yields Report, commissioned by the MBDA, defines environmental indicators for comparing the health of environmental assets under different scenarios of climate and development. These indicate that the key driver of biodiversity in both the Balonne River Floodplain and Narran Lakes is the level and frequency of flood events (Figure 3).

Figure 3

ENVIRONMENTAL INDICATORS IN THE CONDAMINE-BALONNE

Indicators	Units	Modelling scenario* P	A	C	D
Narran Lakes breeding environment; Back and Clear Lakes				% change from A	
Number of years (out of 111 years) waterbird breeding habitat is flooded to at least 1m depth	Years	13.8	5.3	-11%	-11%
Maximum period in years between flooding of waterbird breeding habitat to at least 1m depth	Years	4.5	15.1	0%	-26%
Narran Lakes feeding environment; Narran Lake					
Number of years (out of 111 years) waterbird feeding habitat is flooded to at least 25cm depth	Years	90.4	42.1	-11%	-11%
Maximum period in years between flooding of waterbird feeding habitat to at least 25cm depth	Years	1.5	6.5	-8%	8%
Balonne River Floodplain					
Average period between flows in excess of 70 GL/day at St George gauge	Years	1.7	2.1	9%	11%
Maximum period between flows in excess of 70 GL/day at St George gauge	Years	7.7	11.0	7%	7%
Average event volume above 70 GL/day at St George gauge	GL	711	695	-14%	-12%
Average annual volume above 70 GL/day at St George gauge	GL	423	331	-20%	-21%

* P – Pre-human development values; A – Historical climate and current development; C – Future climate and current development (median climate scenario); D – Future climate and future development (median climate scenario)

Source: CSIRO Sustainable Yields Report

Eastern Australia Agriculture

Furthermore, an independent audit report on the Condamine-Balonne water resource plan[1] advised that due to current development –

- "Reduced flooding frequency would lead to further changes in the vegetation of the Lower Balonne floodplains. This includes putting at risk vegetation in two National Parks."
- "Narran Lakes would be expected to fill on average once in about seven years rather than once every two under pre development conditions and that this would lead to significant long term degradation of the Narran Lakes and.. an

[1] *'Audit Report on Draft Condamine-Balonne Water Resource Plan'*, Independent Audit Group, February, 2004

interim finding by the Review Panel is that Narran Lakes need to be flooded on average once every 3.5 years if its ecological values are to be maintained."

With respect to the Culgoa River Floodplains, under its listing in the Directory of Important Wetlands in Australia, "water and in particular the period of inundation appears to be the most significant factor affecting the distribution of vegetation communities".

In summary, there is significant documented research to suggest water that has a higher probability of being available to the environment in periods of low flow does not necessarily have a greater environmental impact than water only available in periods of high flow.

3.C. Value is higher with proximity to environmental assets

Two major criticisms of water buybacks are that the water purchased may not reach its intended target due to:

1. Diversions, whether natural or through downstream harvesting before the target asset
2. Transmission losses throughout the river system from evaporation and seepage

These points are correct, the closer the source of water to environmental assets, the higher its value. Following is an example of the importance of proximity of an on farm water source to its intended environmental target follows.

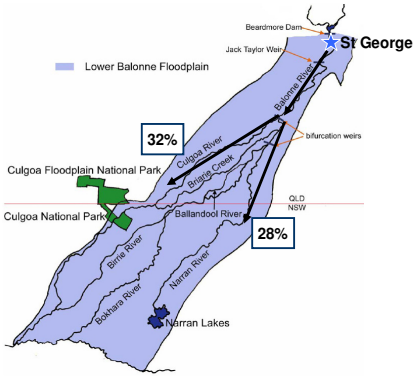
Case Study: Narran River licenses as a source of water to solve the Narran Lakes issue

Water entitlements in the Condamine-Balonne that are not on the Narran River are ineffective in solving the Narran Lakes environmental issue – on average only 28% of flows at St. George are conveyed into the Narran River (Figure 4). The licenses that are most effective on an AAD basis in delivering water to the Narran Lake asset are licenses that harvest water from the Narran River itself.

Figure 4

SIGNIFICANCE OF EAA FLOWS TO NARRAN LAKES

Conveyance of river flow downstream of St George
Percent of long term mean annual flow at St George



River licence holders
ML

Licence holder	Nominal volume	% of total
HC & RL Crothers	2,540	9.7%
EAA	**11,930**	**45.8%**
McIntyre Cotton	1,550	5.9%
DT, PE, DM & LK Crothers	4,185	16.1%
Pechelba	5,865	22.5%
Total	**26,070**	

Source: Department of Natural Resources (2000); '*The response of a terminal wetland system to variable wetting and drying*', Narran Ecosystem Project, Murray Darling Basin Commission;Queensland Draft ROP

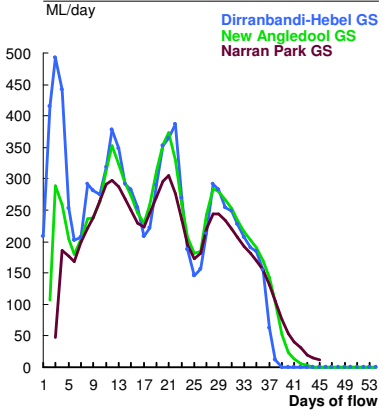
Eastern Australia Agriculture

In March 2008, the MDBC purchased temporary water from Clyde to facilitate waterbird breeding at Narran Lakes. EAA released 10,433 ML from its Clyde storages, of which 8,124 ML reached Narran Lakes (Figure 5). Transmission losses from Clyde to Narran Lakes were therefore minimal, at 22%.

Figure 5

COMPARISON OF NARRAN RIVER HYDROGRAPHS – LAG TIMES REMOVED

Mean daily flow
ML/day



Total volume losses at Narran Lakes
ML

Location	Volume
Released from Clyde	10,433
Gate Station Dirranbandi – Hebel	9,915
Losses to Dirranbandi – Hebel	*5%*
Gate Station New Angledool	9,212
Losses to New Angledool	*7%*
Gate Station Narran Park	8,124
Losses to Narran Park	*12%*
Total Losses	***22%***

Source: NSW DECC, 2008

Eastern Australia Agriculture

3.D. The flexibility to control the timing of delivery of water to environmental assets can also have a significant effect on the environmental impact of water

While the volume of environmental flows can contribute to environmental impact, there are also circumstances under which timing of these flows can amplify the environmental impact.

Case Study: Timely release of water from Clyde critical to the survival of fledgling waterbirds

In January 2008, a flood event filled Narran Lake's breeding environment to over 28cm in depth (Figure 6). The waterbird population proceeded to nest, with an estimated 10,000 nests counted in mid January. As such, this level was deemed to be the conservative/precautionary level at which nest desertion could occur. Two subsequent major events continued to further flood the breeding environment, leading to a total of 74,000 nests observed at the end of February.

By late March however, water levels had fallen back to the precautionary level, with only 30,000 chicks fledged. Timely release of water from the on farm storages maintained water levels at Narran Lakes at the precautionary level for a further five weeks, by which time an additional 50,000 chicks had fledged. The significant impact of the water was widely acknowledged by the environmental community (Figure 7).

Figure 6

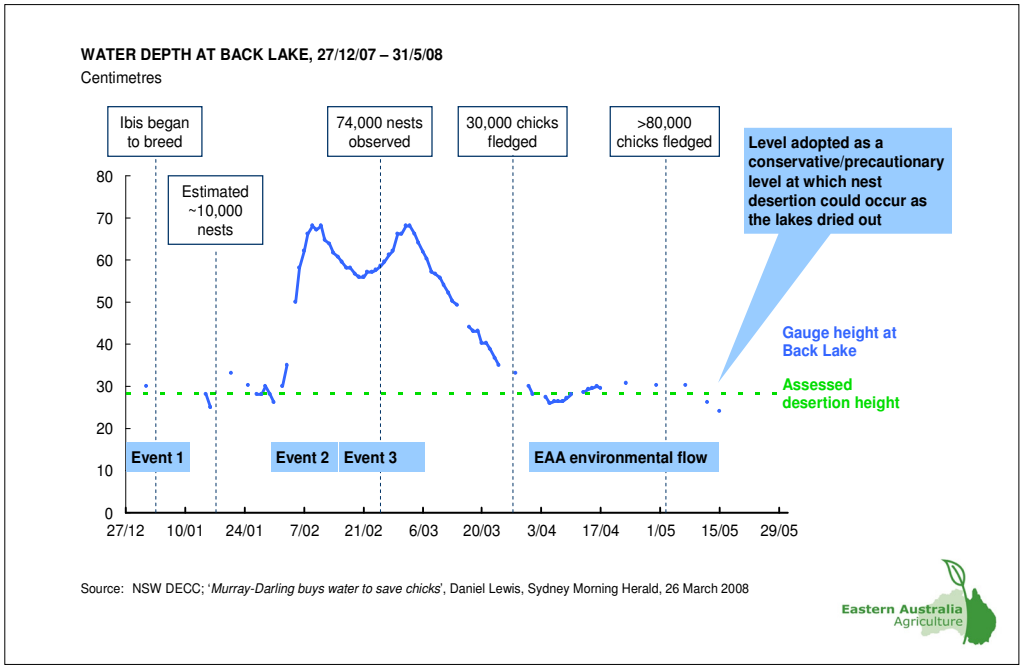


Figure 7

PRESS COVERAGE OF EAA'S WATER RELEASE IN MARCH 2008

- In March 2008, EAA released 10,433ML of temporary water into the Narran Lakes from storages on our Clyde property
- These flows were widely credited with allowing the local waterbird population to complete their breeding cycles
  - "*The water will bring strong environmental benefits and we hope it will ensure the success of a colonial water bird breeding event that is happening there now – the first major breeding event in the Narran Lakes in nine years*", Dr. Wendy Craik AM, Chief Executive MDBC
  - "*This strategy has provided extra time for most of the Straw-necked Ibis as well as many other species to complete their breeding cycles... about 80-90,000 young Straw-necked Ibis have joined the population*", NSW DECC
  - "*This water has basically been a saviour for them... There was a real spectre that nearly half of the colony could have been abandoned*", Dr. Richard Kingston, School of Biological, Earth and Environmental Sciences, UNSW

Source: *'Easter water 'gift' will boost Narran Lakes environment'*, Murray-Darling Basin Commision press release, 25 March 2008; *'Environmental water and riverbank news No.2'*, NSW Department of Environment and Climate Change, May 2008; *'Water commission acts to save Murray Darling birds'*, Transcript of ABC news report by Jane Cowan, 25 March 2008

Eastern Australia Agriculture

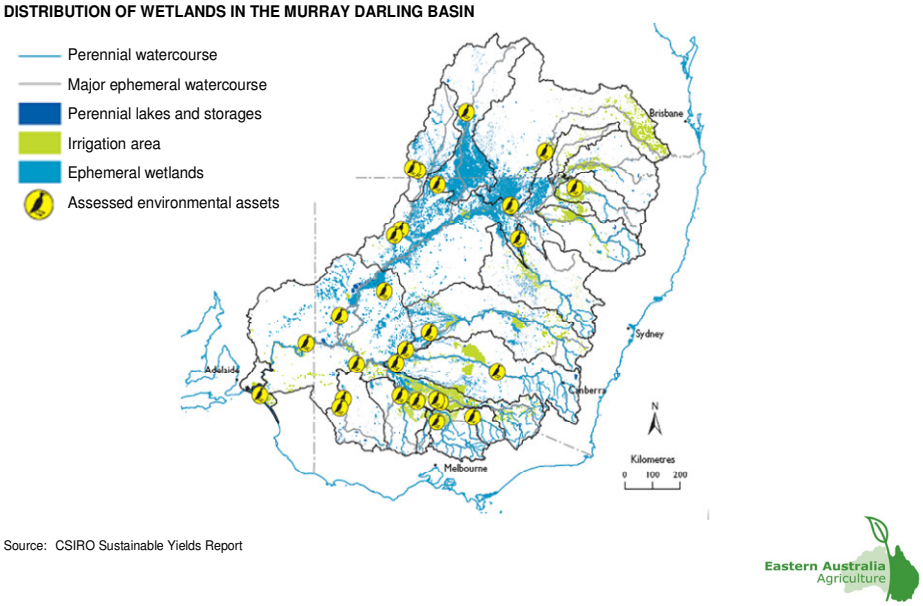
4. A more efficient mechanism for purchasing water entitlements

4.A. Tenders should be specific to prioritised environmental targets

As the ultimate objective of the water buyback is to return water to the MDB with maximum environmental impact, it makes sense that tenders should be targeted towards environmental targets, whether that is Narran Lakes, the Murray Mouth or general river health.

Prioritisation of the environmental targets needs to be in place. According to the CSIRO Sustainable Yields Report, there are some 30,000 wetlands in the MDB. Sixteen of these are listed as internationally important under the Ramsar Convention on Wetlands and around 220 are listed in the Directory of Important Wetlands in Australia.

Figure 8



4.B. Sellers should be allowed latitude to design innovative tenders which increase the value of water to the environmental target

Mechanisms for increasing the environmental impact of water entitlements should also be considered with priority given to tenders with a focused and effective solution to environmental targets.

The permanent water of EAA's Clyde farm could be allowed to flow naturally into the Narran River. Much of this water would normally be captured during flood events. It is likely that a large proportion of this water, if allowed to continue down stream, will be lost to overland flow with significant evaporation and seepage losses. Local hydrologists estimate that significantly less water released at Clyde during a flood event will make it to Narran Lakes, compared to the 80% observed when released under low flow conditions last year.

In the case of Clyde, we would suggest a water management plan where water harvested from the tendered licences is stored in our storages and released in a timely manner to achieve maximum environmental impact.

We believe that this solution would yield a substantial net gain in terms of water reaching the Narran Lakes. Use of these storages also allows strategic timing of release of the water, to optimise the environmental outcome for the water used, as was achieved last year.

Given the cost of development of these on farm storages was borne by the landowners, a reasonable economic outcome is for compensation for that cost to be paid when the storages form a key component of the most effective environmental solution.