

MURRAY DARLING BASIN

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POLICY PROPOSAL:

THAT THE COMMONWEALTH UNDERTAKE (AND ACT ON)

AN OBJECTIVE EVALUATION OF

LONG TERM RELATIVE ENVIRONMENTAL MERITS OF:

1. RETAINING OR 2. REMOVING

THE BARRAGES WHICH PREVENT

**THE TIDES OF THE SOUTHERN OCEAN FROM REFRESHING
SOUTH AUSTRALIA'S LAKE ALEXANDRINA AND LAKE ALBERT**

Lay of the Land

Map Credit: L. Burge

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Explanatory Notes

- ‘Brookes et al 2009’ (cited in Basin Plan legislation) reviewed options for Coorong/Lower Lakes. It did not address SA’s barrages. Only 1 of its 34 authors was from NSW/Vic/Qld.
- The current Murray Darling Plan is sub-optimal for Australia’s environment. A mix of modification and removal of the 5 barrages below Lakes Alexandrina and Albert:
 - (1) is the only way to enable effective opening of the Ocean Mouth to both the Lakes and the Coorong and to prevent acidification of the Lakes’ soils in major droughts;
 - (2) would provide a superior natural (estuarine) habitat, for fish and waterbirds including at-risk migratory wading birds, in South Australia’s Lakes;
 - (3) would restore water for environmental uses throughout the inland Murray-Darling river basin (off and on farm) in South Australia, as well as in NSW, VIC and QLD.
- In 2000 SA’s Department for Water Resources produced a report for the Murray-Darling Basin Commissions entitled “*RIVER MURRAY BARRAGES ENVIRONMENTAL FLOWS An evaluation of environmental needs in the Lower Lakes and Coorong*”. That report ‘pointed the finger’ for Coorong and Lower Lakes environmental problems at SA’s man-made infrastructure. Its proposals (eg relocate barrages to Wellington) would go a long way to fixing environmental and economic issues bedevilling the Murray-Darling Basin.

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VOTER PERCEPTIONS

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City Voter Perceptions

- MDBP improves rivers and billabongs 'inland'
- Murray does not reach Ocean, due to irrigation
- Environment benefit justifies the social costs

Regional Realities

- Majority of water is for SA lakes next to ocean
- Murray does not reach Ocean, due to barrages
- Benefit less than social and opportunity costs

ENVIRONMENTAL MERITS

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Artificial fresh water lakes

- Evaporates 750-950ML
- Acidification remains a risk in long droughts
- No transitional waters; dominated by carp
- Reedbeds for waterfowl
- Reliance on fresh water to scour Murray mouth

Historical estuarine lakes

- Evaporates sea water
- Acidification risk does not arise in sea water
- Rich transitional waters; fish diversity
- Mudflats for wading birds
- More water for upriver wildlife / environments

'PLAYING WITH NUMBERS'

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Fresh water lakes

- Evaporation 750 GL to 950 GL of fresh water
- Basin Plan is 2,750 GL
- 2,000 GL of this for Lake Alexandrina (flow over barrages - 3 year roll. av.)
- 450 GL added by politics in 2012; target 3,200 GL
- 3,200 GL > Hume Dam!

Estuarine (seawater) lakes

- 90% of tidal prism lost as a result of barrages
- Tides (up to twice daily) flush the lakes, with southern ocean waters
- Fresh water required?

Lakes Alexandrina and Albert

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Characteristic

- Length of 5 barrages
- Lakes surface (altitude)
- Alexandrina's depth
- Implied estuary depth
- Regional tide variation

Approximate Figures

- 7.6 kilometres (total)
- 0.75 metres above sea
- Average of 2.80 metres
- Average of 2.05 metres
- Up to 1.50 metres

Engineering Environmental Change

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Challenge

- Water for Adelaide?
- Seawater up Murray?
- Inland salinity?
- Will tides fill the lakes?
- What about balance?
- Can tidal water help unblock ocean mouth?

Response

- Off-take is 'up-river'
- New weir on Murray
- Issue largely resolved
- 90% estuary envelope
- Fresh/brackish water
- Yes - eg, 5 barrages open for inflow; 2 for outflow

WHAT ABOUT THE COORONG?

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Perception

- Same lakes, same issue
- Coorong's fresh water only flowed from the Murray
- Little water from the Murray is now available for the Coorong
- Fixable by the Murray Darling Basin Plan?

Reality

- Different lakes & issues
- Much of Coorong's fresh water flowed from South East SA
- Barrages block water from the Murray flowing into the Coorong
- No - new infrastructure could deliver fresh or sea water solutions within SA

Commentators

- Professor Tim Flannery in The Australian in 2008 (c/ www.lakesneedwater.org):
"I think it's time for quite heroic measures that will be somewhat risky and probably unpopular," he said. "One of the things that could be done is a barrage built higher up the system and for the Lower Lakes to be flooded by the sea."
- Darren de Bortoli on Facebook:
"How to fix the Murray Darling Basin in 3 easy steps without being a rocket scientist" (1. fix SE drainage; 2. return estuary; 3. new weir above lakes)
- Birdlife Australia *"Birds of the Murray-Darling Basin"* (May 2014)
- Louise Burge (farmer), multiple submissions to Federal Government/MDBA
- Jennifer Marohasy (scientist), multiple submissions to Federal Government/MDBA
- TopherField's Unpopular View #5 – The Murray Darling Debacle.mpg
<https://www.youtube.com/watch?v=NrzTfLmbrJ4> (16 minutes)

“A” www.lakesneedwater.org

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“Restoring the Lower Lakes to an estuary reduces an unnatural demand on the River Murray to always keep the lakes full of exclusively fresh water.

This frees up precious freshwater during drought for other wetlands of the Murray-Darling system that lack a natural estuarine history.

The Lower Lakes when full hold 2200 GL of water and evaporate approximately 950 GL of freshwater each year.”

“B” www.myhandthemurray.org

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“Water reform in the Murray Darling Basin has been repeatedly justified on the basis that taking thousands of gicalitres of water – about 1/3 of all the water used to produce food in Australia – is necessary to keep the mouth of the Murray River open 90 per cent of the time.

In fact the tides of the Southern Ocean could scour the mouth of the Murray, at no expense to Australian tax payers, if only the Murray River’s estuary were restored and the evolution of the Lower Murray allowed to follow it’s natural course.

But instead of working with nature, Australian and South Australian governments have worked to stop the tides of the Southern Ocean and block the five channels that converge on the Murray’s sea mouth.”

“C” Department for Water Resources (SA)

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RIVER MURRAY BARRAGES ENVIRONMENTAL FLOWS

An evaluation of environmental needs in the Lower Lakes and Coorong
A report for the Murray-Darling Basin Commission (June 2000):

“The scientific panel identified six key issues driving the degradation of the Lower Lakes and Coorong. These were:

- (1) the reduced area of estuary*
- (2) changed water regimes of the lakes and rivers*
- (3) freshening of brackish and saline habitats*
- (4) reduced habitat for aquatic plants*
- (5) increased algal bloom*
- (6) dryland salinity*

The first two issues are the most significant in terms of the scale of their impact and because they are driving some of the other key issues”

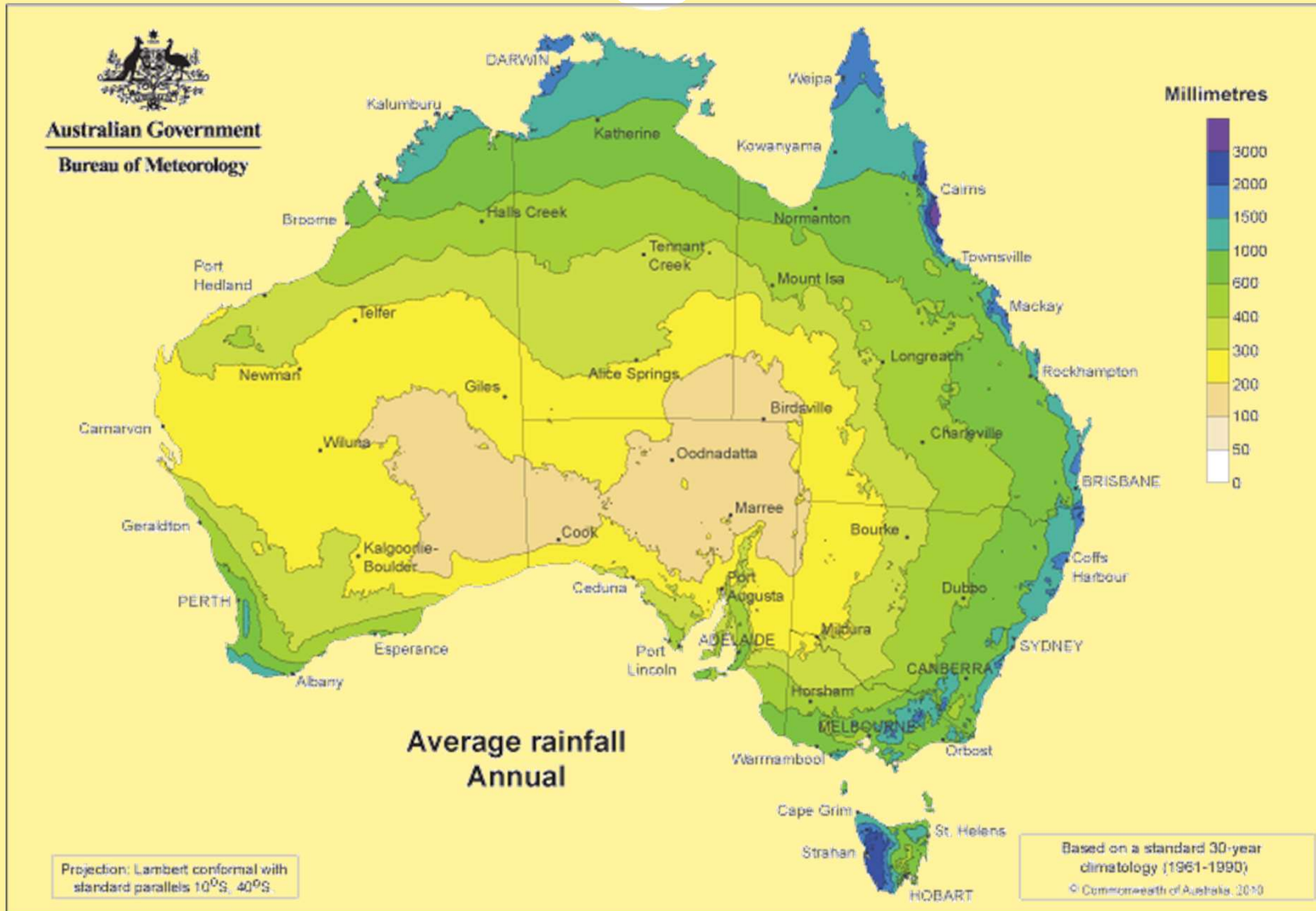
SouthEast SA: Blackford Drain at Kingston Beach

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South East SA: Rainfall

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Federal Parliament: Basin Plan 2012 Sched. 1

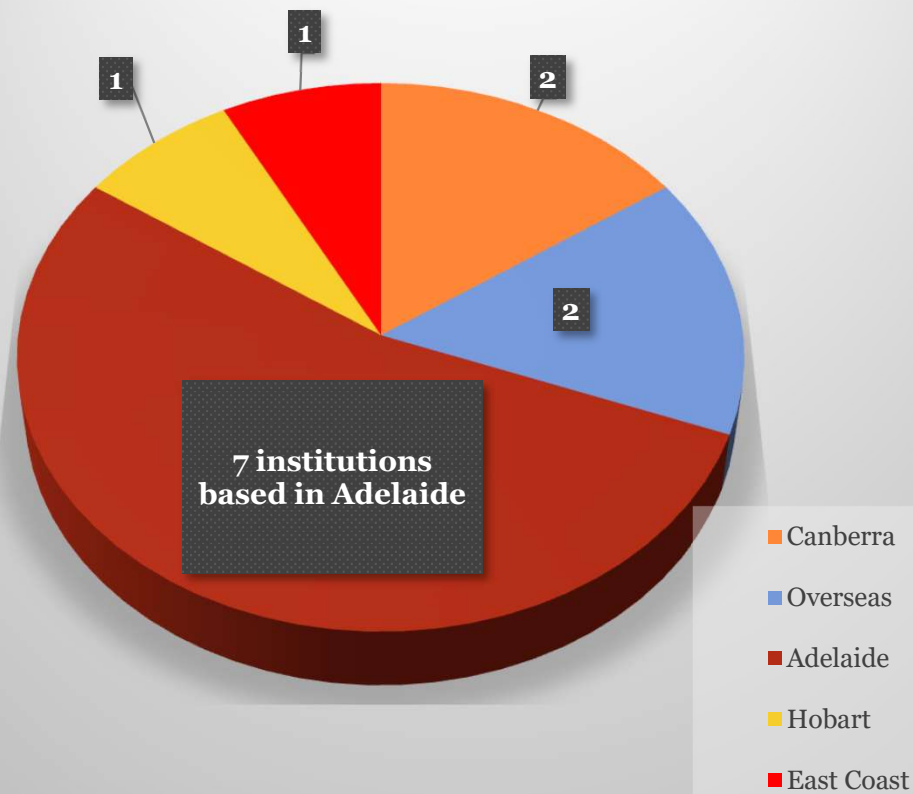
“22. Through the widespread drought conditions over the decade to 2010 the average annual stream flow at the Murray Mouth was particularly low. This resulted in the siltation of the Murray Mouth channel and the extreme hypersalinisation of the South Lagoon, where salinity reached more than four times that of seawater. Changes to the water regime of the River Murray have also been linked to a decline in abundance of a number of fish and waterbird species in the Coorong (Brookes et al. 2009).”

(Emboldened emphasis added)

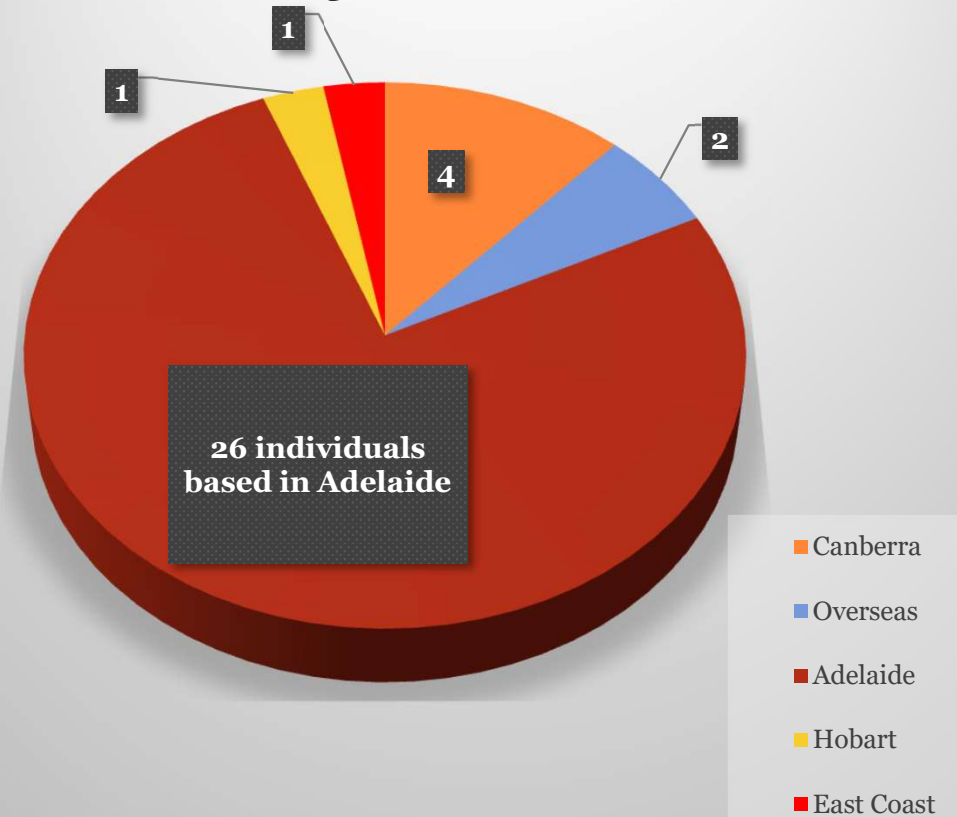
Environmental Report (Brookes et al. 2009)

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**Location of institutions
(NSW + QLD + VIC = 1 of 13)**



**Location of authors
(NSW + QLD + VIC = 1 of 34)**



THE LIVING MURRAY

2014-2015
Environmental
Watering Report

Reproduction of data in
Table 1 (figures = GL):

“Volume of water delivered to TLM icon sites by environmental water holders”

Lower Lakes received

78% of total 904.5
GL delivered by
LM/CWH.

Environmental Water Holders:	Living Murray	Comm'lth	VIC	NSW	Total
Barmah-Millewa Forest					n/a
Gunbower-Koondrook -Perricoota Forest	29.7		15.9	18.2	63.8
Hattah Lakes	27.3	34.2	14.7		76.2
Chowilla Floodplain and Islands	105.6	3.8	2.9		112.3
Lower Lakes, Coorong & Murray Mouth (GL)	122.9	581			703.9
River Murray Channel					n/a
TOTALS	285.5	619	33.5	18.2	956.2
Lower Lakes, Coorong & Murray Mouth (%)	43%	94%	n/a	n/a	74%