INQUIRY INTO WATER MANAGEMENT IN THE COORONG AND LOWER LAKES

Submission by Department of Environment, Water, Heritage and the Arts

Background

The Coorong and Lakes Alexandrina and Albert wetland system was recognised as a Wetland of International Importance under the Ramsar Convention in November 1985. It is also recognised as an Icon site under The Living Murray Initiative. In December 2006, the Department notified the Ramsar Secretariat of a change in the ecological character of this site.

The Murray-Darling Basin Ministerial Council (MDBMC) considered the emerging acidification issue in the lower reaches of the Murray River system at its 7 March 2008 meeting. Officials were tasked by Council with examining a range of short, medium and long term options for the management of the Coorong and Lower Lakes.

Work on developing the short, medium and long-term management options for the Coorong and Lower Lakes is ongoing, with an update being provided to the Murray-Darling Basin Ministerial Council on 5 August 2008 and another update about to be provided.

At the 3 July 2008 COAG meeting, the Commonwealth committed up to $610 million towards priority projects in South Australia, subject to due diligence. These include up to $120 million for an integrated network of pipelines to service townships, communities and irrigators currently reliant on the Lower Lakes for their water supplies, and up to $200 million is available to support an enduring response to the environmental problems facing the Lower Lakes and Coorong.

A number of options to manage the acidification issues in the Lower Lakes have been under active consideration since June or earlier. These are outlined in Attachment A with relevant developments since June indicated.

Summary of Issues and Options

Short-term management options

While there are a range of environmental concerns at the Coorong and Lower Lakes, the threat of most immediate concern is declining water levels and the resultant exposure of acid sulfate soils in the Lower Lakes, particularly Lake Albert.

The current management intervention (agreed by MDBMC in March 2008) is to pump water from Lake Alexandrina into Lake Albert, to stabilise acidification levels in Lake Albert. There are key threshold water levels for both lakes, below which acidification processes will accelerate. When the

MDBMC approved funding for this pumping ($6 million), advice was that the threshold level for Lake Alexandrina under this pumping regime would be reached in September 2008.

Latest advice from current modelling, based on the worst case scenario, is that pumping from Lake Alexandrina to Lake Albert can continue until February 2009 before Lake Alexandrina reaches its water level management trigger. The water level management trigger represents the level above which the risk of acidification is expected to be negligible. It is therefore the level at which management intervention is required to ensure the lake levels do not drop further and approach the critical acidification threshold.

Options for sourcing additional water for the Lower Lakes are discussed at Attachment A.

The Department's assessment in June 2008 was that the preferred management strategy, if low inflows continued was to endeavour to maintain the current intervention (ie pumping coupled with planning for other possible actions) until September 2009, recognising that this may only be possible if additional water could be sourced. The timing, need and volumes of additional water that may be required was not known.

Since that time there has been around 200 mm of local rain which has raised the levels of both lakes and potentially allowed more time for pumping to occur, and deferred the critical water level and management trigger date. Updated modelling of trigger levels and critical dates and consideration of options should the level of Lake Alexandrina continue to fall (including to allow seawater into the Lower Lakes through the barrages) is underway through the Murray Darling Basin Commission and advice to the Murray-Darling Basin Ministerial Council is expected to be provided during September 2008.

Contingency Planning
Contingency planning in the Southern Murray-Darling Basin is directed at ensuring critical human needs can be met if historical minimum inflows continue. If only minimum inflows are received in 2008-09, a number of contingency planning measures may be required. These include underwriting conveyancing flows from a number of sources including tributary flows, Menindee Lakes, Snowy Hydro and drawing on in-river storage. Tributary inflows (such as from Menindee) are currently earmarked as 'underwriting' for critical human needs, should they be needed.

EPBC Act considerations
On 4 June 2007, the South Australian (SA) Government referred the construction and removal of a temporary weir at Pomanda Island, downstream of Wellington, under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The initial purpose of the weir was to maintain River Murray water levels at a height which would ensure pumps that supply water to Adelaide and country towns could continue to operate. The SA Government began the Environmental Impact Statement on 30 August 2007 and it will be released for public comment once it is completed.

Any new action associated with the Lower Lakes that has the potential to significantly impact on matters of national environmental significance will need referral under the EPBC Act.

Options for short-term management interventions to improve the health of the Coorong and Lower Lakes

1. Continued freshwater pumping from Lake Alexandrina to Lake Albert, but not to the point that Lake Alexandrina is at imminent risk of acidification

- This is a viable immediate option. Pumping commenced in May 2008 and has been successful at maintaining water levels in Lake Albert.
- In June, modelled assessments were indicating that the critical threshold for acidification in Lake Alexandrina, with continued pumping, may not be reached until February/March 2009 or possibly later (earlier assessments were that the critical point may have been reached as early as September 2008).
- In June it was considered that rainfall over winter and spring 2008 could assist with extending the duration of pumping before critical thresholds are reached. This has occurred as lake levels have risen as a result of local rainfall in August. Lake Albert was at -0.18m AHD (Australian Height Datum – broadly equivalent to sea level) and Lake Alexandrina was at -0.27m AHD on the 25 August 2008.
- Pumping has continued since May and was originally planned to continue to October 2008. Recent rain has raised lake levels meaning that pumping can now continue for longer.

2. Delivering Coorong water (marine/estuarine) to Lake Albert by either pumping or constructing a channel(s), while maintaining Lake Alexandrina as fresh water

- Pumping could be achieved more rapidly than channel construction.
- This would increase the salinity of water in Lake Albert. The extent of this and the consequential environmental impacts on a freshwater system would depend on the amount of salt water involved and would need to be assessed. The salt water would be diluted with the remaining fresh water in Lake Albert and could be further diluted through some pumping of fresh water from Lake Alexandrina.
- Redirecting water from the Coorong may generate flushing of the Coorong with sea water through the Murray Mouth. The impact of this on the estuary system would need to be assessed.
- As this action may have a significant impact on matters of national environmental significance, it would require consideration under the EPBC Act.
- Depending on the volume of water involved and the resultant water levels in Lake Albert, a regulating structure may be needed to prevent the flow of salt water into Lake Alexandrina.
- An alternative supply of fresh water to any communities currently reliant on Lake Albert would need to be addressed.
- Consideration of this option has been part of the assessment conducted by the Murray-Darling Basin Commission. A report is expected to be provided to the Ministerial Council in September.

3. Opening barrages (with some channel dredging) to introduce sea water into Lake Alexandrina and re-establish connectivity with Lake Albert

- This action would stabilise water levels in Lake Alexandrina, with the intention of reducing acidification risks in Lake Alexandrina and allowing for continued pumping into Lake Albert.
- This may result in a viable estuarine system in Lake Alexandrina, depending on the volumes and release patterns of the flows. Historical modelling indicates that saline water would have likely flowed into Lake Alexandrina in past times of very low Murray River flows.

- It may require a weir or other measure to protect upstream water off-takes, depending on the ability to maintain a positive driving fresh water head in the River Murray.
- Modelling is being done to gain a better understanding of how any salt water introduced through the barrages would mix with lake water and the extent that it may travel upstream.
- Dredging would likely be required to ensure flows upstream into Lake Alexandrina.
- Any decision to allow sea water through the barrages would be subject to South Australia obtaining the necessary EPBC Act and other approvals.
- Consideration of this option has been part of the assessment conducted by the Murray-Darling Basin Commission. A report is expected to be provided to the Ministerial Council in September.

4. Release water from Menindee Lakes

- In June there was 550 GL of active storage in the Menindee lakes storage. At 27 August 2008 this storage was around 512 GL of this:
  - 20 GL is required for 2 years supply for Broken Hill, 11 GL for high security use around the lakes and in the Lower Darling, and to ensure the supply of that commitment, around 200 GL of the current storages volume is required to allow for evaporation and losses over that two years, 200 GL for underpinning critical human needs and 34 GL of dead storage and at least 50 GL of transmission losses were it all to be sent to the lower lakes.
  - The MDBC advise that there would be 10-50% transmission losses in transferring water from Menindee to the Lower Lakes, depending on antecedent and current conditions.
- To ensure there is sufficient water available to meet critical human needs if historical minimum monthly inflows are not received in 2008-09, a number of contingency planning measures will be implemented. One of these is to underwrite flows in the River Murray with inflows from tributaries, including the Darling River.
  - NSW is reserving the water currently stored in Menindee Lakes for this purpose.
  - June inflows were a new record low and July inflows were only around 25 per cent of the historical average. While the probability that critical human needs water for 2008-09 can be met is improving, this outcome is still uncertain.
  - Attention is now turning to contingency planning to provide critical human needs water in 2009-10, should current climate patterns continue. Water stored in Menindee Lakes is likely to have a role particularly early in 09-10 if inflows remain low.
- Water available in the southern part of the Basin is limited and there are a number of demands on the water in storage (see table below).

Southern Basin water balance as at 19 August 2008

Volume in storage (GL)	Commitment	Volume committed (GL)
	Critical human needs	479
	Irrigation Carryover	940
	Irrigation allocations[#]	297
	System losses	2226*
	Dilution flow past Murray Bridge (into Lower lakes)	350*
3949		**4292**

* estimates based on modelling.

[#] Includes allocations made by NSW 1 September 2008

- The discrepancy between the volume in storage and commitments demonstrates that further inflows will be required to make up the difference. If these do not occur, then further contingency measures will be needed.

- Since June, inflows to the River Murray have tracked at about the same levels as in 2007-08. At this stage, whether inflows improve or deteriorate is unknown and will depend on rainfall and inflows in the coming months.

5. Purchase temporary and permanent water from private storages on the Darling River System

- A preliminary audit undertaken by the Murray-Darling Basin Commission and released on 7 August 2008 estimated that there was 810 GL of water held in northern Basin storages some 600 GL of which is privately owned water.
- NSW water sharing plans would need to be suspended so that water could be traded from the Barwon-Darling Water management area to the Lower Murray-Darling Regulated Rivers. (Trade is not permitted between areas managed under the NSW *Water Act 1912* and areas managed under the *Water Management Act 2000,* while the water sharing plans are in force).
- Transmission losses are likely to be very high in accessing water from the northern Basin. In June these losses were thought to be in the vicinity of 70-80% and the MDBC and CSIRO have since advised that losses from the Condamine-Balonne system to the Lower Lakes would probably be of this magnitude.
- Assuming all water held in private storages can be both (i) purchased from willing sellers, and (ii) recovered from storage, maximum availability for Lower Lakes would expected to be around 160 to 240 GL.
- There are likely to be a number of other difficulties:
  - Water rights down the Darling River would need to be adjusted so downstream irrigators were not entitled to take the water.
  - Purchases would need to be made outside of the traditional trading system. The purchases for Narran Lakes set a precedent for this type of purchase and the prices that would be expected by irrigators. Releases would need to be coordinated and the Darling would need to be monitored for water theft. Multiple purchases would be required and the transaction costs would be high.
  - Purchasing water from smaller storages (eg "turkey nest dams") would be a large logistical challenge – 500 GL held in 2000 dams is an average of <0.5 GL a purchase. Much of the water would likely have to be pumped to return it to river systems.

6. Purchase allocations and carryover water from irrigators

- In June, opening allocations in the 2008-09 season to irrigators in the Southern Connected Basin were expected to be very low or zero. This has proven to be the case, with allocations and estimated water available in the table below

Allocation Announcements and Water (As at 28 August 2008)

		Allocation	Water
NSW Murray	High Security	25%	45 GL
	General Security	0	0
NSW Murrumbidgee	High Security	60%	207 GL
	General Security	0	0
NSW Darling	High Security	100%	11 GL
	General Security	0	0
Vic Murray	High Reliability	0	0
	Sales Water	0	0
Vic Goulburn	High Reliability	0	0
	Sales Water	0	0
SA Murray	All	6%	34 GL
Total Water			297 GL

- It would be expected that water available would be used to prevent loss of permanent plantings.
- Any increase in allocations will depend on inflows over the remainder of the winter/ spring inflow period.
- While allocations are low or zero, there will be some water available to entitlement holders from allocations carried over from 2007-08, which is currently in storage. This may be able to be purchased. States advise that there is around 940 GL of carryover water for non critical human need from the Murray, Murrumbidgee, Goulburn, Loddon and Ovens. While some voluntary trading may occur, we anticipate that much of this water would be used to keep permanent plantings alive. Purchase of carryover water is likely to be expensive. This situation has not changed materially since June.
- There are lower transmission losses with this option than accessing water from the northern Basin. Its delivery would be subject to having conveyance flows in the river and would require careful management to minimise losses and ensure that the delivery of critical human needs water was not compromised.
- Any significant entry into the market will put upward pressure on water prices. The extent to which prices rise depends on many factors which are impossible to predict at this time, such as final 2008-09 allocations, prospects for allocations in 2009-10, and the volume of carryover water held by irrigators.

- Market prices have risen to very high levels in the past when water is scarce. For example, prices on the temporary water market spiked at around $1200/ML in the middle of 2007-08 when seasonal allocations were low and the prospects of allocation increases were slim. Any Government entry to the market which reduced water availability to very low levels would be expected to have a similar impact on price.
- It is likely that the impacts on the irrigation sector would be high. Preliminary calculations using data from the recent release by the ABS on water use in the Murray-Darling Basin in 2005-06 indicate that diverting water to the Lower Lakes would reduce production of horticulture products in the southern Basin by $775 million-$1 billion. This does not include the cost of tree and vine death which could also be substantial. Previous estimates by ABARE indicate that the capital value of permanent plantings at risk in the southern Murray-Darling Basin is around $5 billion.
- The Australian Government is in the process of finalising the 2007-08 water entitlement purchases. The Government has announced that the purchasing program will be accelerated. Purchasing in the Northern Basin will commence later this month, following the report of the Independent Assessment of the 2007-08 Water Purchases.

7. Purchase water from the Snowy

- Snowy Hydro Ltd manages its water use, central to meeting its electricity generation commitments and operation in the energy market, under a NSW licence. The licence requires annual releases (RAR) into the Murray and Murrumbidgee systems. RAR in the Murray system in a normal year is 1062 GL.
- When inflows to the Snowy storages are low, a dry inflow sequence volume (DISV) can be triggered. The DISV was triggered in October 2006, which modified the RAR to 838 GL in 2006-07 and 596 GL in 2007-08. DISV circumstances will continue to apply in 2008-09 with consequences for the RAR volume.
- Water held in the Snowy Scheme is also recognised as able to underwrite critical human needs under contingency planning arrangements.
- The option of accessing additional water releases from Snowy Hydro Ltd remains under consideration.

8. Use water from the Living Murray and other Government (CEWH) purchased Water

- The 36 GL of entitlements recently purchased by the Australian Government and held by the Commonwealth Environmental Water Holder (CEWH) will be a source of water to the extent that allocations are made to it. Assuming allocations similar to 2007-08, in June it was expected that around 3-4 GL of water would be available from the entitlements (23.5 GL) held in the southern connected system. Updated figures are that in 2008-09, based on current allocations, 1 GL of environmental water will be available in the southern connected Basin from current Australian Government purchased entitlements. The second round of the purchasing program could also provide additional allocations for this coming season.
- Indications in June were that volumes of water available through The Living Murray (and allocated against TLM entitlements) in 2008-09 will be less than 1 GL if inflows remain low. The volume available has since risen to 1.2 GL.
- These are very small volumes in the context of the quantum needed for the Lower Lakes.
- While both the TLM and the CEWH are likely to have the Coorong as one of their priorities for watering, there are a number of other key icon sites upstream which also have critical watering needs.