



## Government of South Australia

### SUBMISSION TO THE SENATE STANDING COMMITTEE ON RURAL AND REGIONAL AFFAIRS AND TRANSPORT

19 SEPTEMBER 2008

#### *~ Inquiry into water management in the Coorong and Lower Lakes ~*

#### **Introduction**

On 27 August 2008, the Senate referred a number of matters concerning the water management in the Coorong and Lower Lakes for inquiry and report by 30 September 2008.

The South Australian Government welcomes the inquiry and submits the following comments for the Committee's consideration.

#### **Background**

Over the past 30 years, the Government of South Australia has been an exemplar in reducing the quantity of water diverted from the River Murray to provide for improved environmental management while providing for urban water supplies, stock and domestic needs, and maintaining or improving levels of irrigated crop production:

- Since 1968 no new irrigation diversion licences have been issued – effectively placing a cap on the total quantity of water diverted for irrigation in South Australia.
- Commencing in 1974, all irrigation licences in South Australia have been converted from being area-based to volume-based, and at end June 2008 all significant River Murray system extractions have been metered.
- In 1979, South Australia undertook a review based on historic usage and reduced irrigation entitlements. As a result of this process, many inactive licences were reduced or cancelled.
- A program to replace all open irrigation supply channels with pressurised pipeline systems commenced in 1969 and is now completed – greatly reducing system losses.
- In 1995, the Irrigation Crop Management Service was established to provide professional support for improving on-farm water use efficiency and productivity – freeing-up saved water for other uses, including improved environmental management.
- South Australia remains a strong advocate and supporter of the Living Murray Initiative to recover 500 GL of water as a first step by 2009 for environmental flows that will be used at six ecological “icon sites” across the southern connected Murray-Darling Basin. The Lower Lakes, Coorong and Murray Mouth is one of these icon sites.

- In October 2005, South Australia was the first state in Australia to put in place a strategy, *Environmental Flows for the River Murray*, to make best use of environmental water. The River Murray Environmental Manager function was also established to ensure that River Murray environmental water within South Australia is delivered, allocated and managed to maximise river health and improve the biological diversity of the River Murray, its floodplains and wetlands while recognising and respecting the needs of other river users.

These and other measures implemented by the Government of South Australia have the objective of increasing environmental flow volumes down the River Murray to improve the management of environmental assets; to keep the Murray Mouth open (currently dredged year-round); and to allow salt that is accumulated throughout the entire Murray-Darling Basin to be flushed-out to sea.

The South Australian Government recognises that the long-term ecological health of the River Murray relies on an effective and functioning Lower Lakes, Coorong and Murray Mouth.

The Lower Lakes are the main source of freshwater, nutrients and organic material for the ecosystems of the Murray Mouth and Coorong, and the Murray Mouth is the exit point for salt accumulated along the entire Murray-Darling system.

The Lower Lakes, Coorong and Murray Mouth are important for biodiversity and ecosystem services, agriculture, fisheries, water supply, Indigenous cultural health, recreation and tourism.

The region is an internationally important wetland system, and is the subject of various international agreements including Ramsar, the Japanese-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA), and is a Living Murray Icon Site. The health of the region's freshwater environmental assets is the shared responsibility of all Basin jurisdictions.

The region is finely balanced on the verge of ecological collapse as a direct result of years of over-allocation upstream of South Australia and exacerbated by the current severe drought - resulting in insufficient River Murray flows past Wellington over the past ten water years, and in particular the last two years.

With the exception of brief periods of seawater incursions during droughts, the Lower Lakes are considered to have been freshwater systems for thousands of years (see Appendix 1 - "A Fresh History of the Lakes: Wellington to the Murray Mouth, 1800s to 1935").

Large areas of acid sulphate soils are now becoming exposed within the Lower Lakes as water levels drop, generating sulphuric acid, which threatens to acidify the water bodies and fringing ecological assets.

Several options exist for the management of acid sulphate soils, including liming, sealing with a covering of earth, and addition of organic matter. However, given the scale of the Lower Lakes (900 km<sup>2</sup>), the only practical option is to keep the acid sulphate soils inundated with water.

## **Specific Responses to Terms of Reference**

### **(a) The volume of water which could be provided into the Murray-Darling system to replenish the Lower Lakes and Coorong;**

#### **Freshwater Option**

To completely refill both lakes from their current water levels would require approximately 750 GL to 800 GL of freshwater. At no stage during the current drought has the Government of South Australia proposed that the Lower Lakes be fully refilled with freshwater until River Murray system recovery is possible.

However, South Australia's clear preference is for freshwater to be used to manage the risk of acidification of both lakes, with seawater to be used as a measure of last resort, only in the event that sufficient freshwater is not available. This is consistent with the management approach currently recommended by the Murray-Darling Basin Commission.

Based on water level projections under worst-case inflow and net loss conditions, and the currently adopted minimum water level management target for Lake Alexandrina of 1.0 metre below sea level (modelled acidification threshold of 1.25 metres below sea level), it is estimated that the additional quantity of freshwater required to manage the risk of acidification in the Lower Lakes until the end of September 2009 is up to 60 GL (assuming continued pumping to Lake Albert for the entire period). The 60 GL is in addition to the 350 GL that will flow into the Lower Lakes during 2008-09 from South Australia's guaranteed dilution flow of 696 GL.

This additional 60 GL of freshwater would "buy" another winter inflow season to inform future management options.

Under continuing worst-case conditions, approximately 350 GL to 400 GL of additional water would be required each subsequent year (October to September inclusive) to manage the risk of acidification in both lakes.

#### **Seawater Option**

The introduction of seawater into the Lower Lakes would convert the already stressed freshwater ecology of the water bodies and fringing ecological assets to a marine system.

The seawater option, if indeed feasible, is likely to significantly limit future management options to address the current decline in ecological values in the Lower Lakes and Coorong, and the ability to recover the lakes as a freshwater system. The Murray Darling Basin Commission recently acknowledged that no modelling had been done to determine how many years it would take for recovery from a marine condition. However, it is considered that successful recovery of the Lower Lakes system from an estuarine/marine condition is more likely to be feasible than recovery from an acid condition. There has been no experience, anywhere in the world, in recovering a lake system on this scale from an acid condition.

In the event that there is no other option and seawater inundation must be used to mitigate acidification, this will require a decision being made with enough lead-time to ensure the weir pool above Wellington and below Lock 1 (the location of drinking water off-takes for 90% of South Australia's population) is protected to ensure adequate water quality. This would require the construction of the proposed temporary weir at Pomanda Point, south of Wellington.

**(b) Options for sourcing and delivering this water, including:**

**i) Possible incentive and compensation schemes for current water holders who participate in a once-off voluntary contribution of water to this national emergency**

Water management decisions must take into account the prosperity and wellbeing of people and communities, including any flow-on economic and social impacts on communities as a result of water buybacks and once-off contributions.

Regional development should be viewed as an holistic process whereby the economic, social, and environmental resources of a region are harnessed for the sustainable development of communities. With this in mind, any government support (including incentive and compensation schemes and structural adjustment programs) should critically underpin the regional development process and assist in:

- maximising opportunities for those regional communities that are experiencing growth; and
- supporting those that are required to go through structural change.

Once-off or short-term incentive and compensation schemes should fit within a framework that delivers long-term solutions for the river system and regional communities. They should be complemented with other structural adjustment programs (such as training, job seeking and industry development programs) that create new sustainable economic bases for regional communities.

Acquisition of water for the Lower Lakes must also be looked at in the context of other potential water purchases for essential purposes, such as critical human needs. The minimum dilution flow to South Australia under the Murray-Darling Basin Agreement (i.e. 696 GL per annum) is insufficient to keep the salinity of the water below drinkable limits. A further 201 GL per annum is needed to achieve drinking-quality water for critical human needs.

South Australia is required to accumulate a strategic reserve equal to this amount and hold it as carry-over water in Murray-Darling Basin Commission storages, in order to guarantee that water extracted from the River Murray will be drinkable under worst-case inflows conditions. While South Australia has the 201 GL strategic reserve available for the current water year (2008-09), inflows are not yet sufficient to accumulate the reserve for 2009-10. In the absence of further improvements, water may need to be purchased to meet the target reserve.

**ii) Alternative options for the acquisition of sufficient water**

The Government of South Australia has investigated contingency options for sourcing alternative water supplies to secure the minimum quantity of potable quality water necessary (201 GL per annum) for human and livestock consumption during periods of drought.

These options, which are summarised below, involve high capital and operating costs, produce relatively small quantities of water, and are not viable to substitute for the freshwater needs of the Lower Lakes. They include:

- The recently approved construction of a permanent seawater desalination plant at Port Stanvac with the capacity to produce 50GL of potable water per annum;
- Extraction and treatment of groundwater from aquifers beneath Adelaide;
- Desalination of seawater using temporary ship-based desalination plants; and
- Construction of river water desalination plants at existing SA Water filtration plant sites in the event that the water quality at major pumping station extraction points ceases to be potable.

**iii) Likely transmission losses and the most efficient and effective strategies to manage the delivery of this water**

**Likely Transmission Losses**

Under the Murray-Darling Basin Agreement 1992, net River Murray losses in the upstream jurisdictions are fully provided for as a matter of course. Under this Agreement, net River Murray losses in South Australia are not fully provided for.

The annual transport and dilution flow allocation of 696 GL enables a flow past Wellington of approximately 350 GL, which represents approximately half the long-term average net losses of the Lower Lakes (800 GL).

Under the current drought, this shortfall effectively provides all River Murray jurisdictions with an equivalent amount of additional shared water resource, at the expense of the Lower Lakes.

During the current drought period, this has resulted in water levels in the Lower Lakes falling to unprecedented levels with Lake Albert currently at approximately 0.2 m below sea level, and Lake Alexandrina at approximately 0.25 m below sea level.

**Delivery of Water**

River Murray Water (the Murray-Darling Basin Commission's river operations arm) has responsibility for delivering flows to the South Australian border.

To minimise evaporative and seepage losses during transmission within South Australia, 33 wetlands have been disconnected from the River Murray channel and allowed to dry out. To date, in excess of 90 GL in water savings are estimated to have accrued through this course of action.

To further minimise transmission losses within South Australia, additional freshwater for managing the risk of acidification in the Lower Lakes could be delivered continuously, or in small incremental pulses, rather than large release volumes, which would raise pool levels significantly and incur greater losses.

**iv) Commonwealth powers to obtain and deliver water and possible legislative or regulative impediments**

Any solution for the Lower Lakes requires co-operation and goodwill between all Basin jurisdictions, recognising that healthy Lower Lakes are essential for a healthy river basin. South Australia has consistently raised this in the Council of Australian Governments (CoAG) Intergovernmental Agreement discussions, resulting in the proposal for an independent Authority.

The proposed (Authority) Basin Plan timeline of 2011 will deliver better environmental outcomes in the longer term, but it will not address the current, significant impacts of this extreme drought. It is therefore essential that Basin jurisdictions work together to find solutions to achieve short, medium and long-term solutions. Alternatively, the Commonwealth should use available Constitutional powers to provide leadership on this matter.

**v) Assessment of the potential contribution of bringing forward irrigation infrastructure spending under Council of Australian Governments agreement to deliver water to save the Coorong and Lower Lakes**

South Australia has already invested heavily in the modernisation of water supply infrastructure, including replacing all open channels with pressurised pipe systems, resulting in no open channels remaining in South Australia. As a consequence, only minimal water savings could now be made by additional spending on irrigation infrastructure within South

Australia. Savings can still be made through modernising on-farm production systems, such as high-density plantings, and adopting new technologies and farming systems.

It is understood that substantial water savings could be made by infrastructure spending on improving irrigation systems upstream of South Australia. These savings would have a longer-term benefit rather than addressing the immediate problems confronting the Coorong and Lower Lakes.

**(c) The impact of any water buybacks on rural and regional communities and Adelaide including compensation and structural adjustments; and**

The new national arrangements under the Commonwealth *Water Act 2007* will allow individual irrigators to permanently trade their water entitlement out of their district. There is concern among river communities that significant trading of water out of the State or district could have a negative impact on the viability and sustainability of communities.

Regional communities are already being strained economically and socially due to the drought and its flow-on effects. For example, as of mid 2008 many citrus packers in the Riverland had reduced the scale of their packing operations due to a severe shortage of fruit. One leading operator has reported a 25% reduction in throughput over the last three years, due mainly to growers bulldozing trees and turning off their water.

In addition, almost 75% of citrus fruit packed is exported - with quality issues that are undetectable at the point of packing (e.g. stem-end dehydration and other moisture stress related issues) showing up in transit due to growers reducing water application. This in turn impacts on the reputation of the product and packer and its ability to retain and grow markets.

Water buybacks need to be complemented with other structural adjustment programs (such as enterprise rationalisation, training, job seeking and industry development programs) that create new sustainable economic bases for regional communities. In South Australia for example, it has been identified that transition arrangements such as workable exit grants need to be tailored to the structure of the regional irrigation sector, to expedite both water buybacks and the complementary adjustment and industry renewal.

It is preferable that the Federal monies available for structural adjustment programs are accelerated as there is significant social distress and significant economic opportunity costs for farmers (and hence regional communities) having to remain on the land without an effective exit strategy.

**(d) Any other related matters.**

**Economic importance of the Coorong and Lower Lakes Region**

The Lower Lakes, Coorong and Murray Mouth region has a mix of primary industry (predominantly irrigated and dryland agriculture), manufacturing (wine, machinery and equipment) and tourism activity and also has a significant urban population with associated housing and service sectors. It is estimated that nearly 28,000 people live in the region.

The gross regional product of the regional economy was estimated to be around \$700 million in 2006-07. Primary industries directly contributed approximately 21% (\$145 million) to the gross regional product and directly employed around 2,000 people. Irrigated agriculture contributed over \$70 million (valued at the farm gate), employing around 1,000 people. There are 36 commercial licences in the local fishery, producing a combined gross value of output of around \$7 million a year.

The environmental condition of the Coorong and Lower Lakes impacts on the level of tourism activity in regional South Australia. It is estimated that, in a normal water year, tourism around the Coorong and Lower Lakes generates around \$55 million in gross regional product.

Falling water levels are causing significant reductions in these economic benefits. Declining water levels below Lock 1 have meant that 15 marinas can no longer operate and as a result, are experiencing financial losses. In an online survey of River Murray tourism operators, retail and hospitality providers undertaken for the South Australian Tourism Commission in May 2008, 66% of respondents indicated that they had experienced a loss of revenue as a result of the drought, the majority are indicating that the loss had been of the order of 30%, and up to 60%.

As there has not been any significant release of water from the Lower Lakes via the barrages since November 2005, both lakes are becoming increasingly saline. The salinity levels of the lakes currently range from 3,800 EC to 23,000 EC, which significantly exceeds the levels suitable for human use, and for irrigation of horticultural crops. With minor exceptions, the water quality of the Lower Lakes is now unsuitable for irrigation, or human or livestock consumption.

Environmental flows through the lower River Murray system drive the underlying ecology that supports the major targeted commercial fish species. Available fish habitat is declining and reproduction is being limited. Deteriorating water quality poses a high risk of major fish kills in the Lower Lakes, which would result in economic collapse of the fishery, and may take at least five to ten years for the fish community to re-establish.

As a result of low water levels due to the current drought conditions, many people are unable to extract water from much of the Lower Lakes for irrigation or stock and domestic use.

The pipelines planned under South Australia's Murray Futures Program will facilitate more secure water access for some communities to underpin critical activities like wine grape growing, and stock and domestic use in the longer term. However, the immediate situation remains serious.

### **National Drought Policy**

The National Drought Policy is currently being reviewed to assess the economic and social impacts of drought support, and a climatic assessment. The Senate inquiry should be informed by the outcomes of the review of the National Drought Policy.

## Conclusions

The Coorong and Lower Lakes region is an internationally important wetland system, and is the subject of various international agreements including RAMSAR, JAMBA, CAMBA, and is a Living Murray Icon Site. The health of the region's freshwater environmental assets is the shared responsibility of all Basin jurisdictions.

The region is finely balanced on the verge of ecological collapse as a direct result of years of over-allocation upstream of South Australia and exacerbated by the current severe drought - resulting in insufficient River Murray flows past Wellington over the past ten water years, and in particular the last two years.

With the exception of brief periods of marine incursions during severe drought conditions, the Lower Lakes have a predominately freshwater history.

Recent modelling by the CSIRO indicates that after the current drought period, the Lower Lakes are predicted to receive sufficient River Murray flows to remain fresh for the foreseeable future.

South Australia's clear objective is to maintain the Lower Lakes in a fresh condition.

The quantity of additional freshwater required to maintain the lakes in a fresh condition while managing the risk of acidification until end September 2009 is up to a maximum of 60 GL. This would "buy" another season of Winter and early-Spring inflows to reassess future management options.

The sourcing of up to 60 GL of additional freshwater to achieve this outcome is South Australia's preferred short-term position.

Taking into account the current outlook for River Murray inflows during the 2008/09 water year, South Australia's allocation of the shared water resource will not provide the capacity to accumulate 201 GL for the State's critical human needs for the 2009/10 water year, as well as the additional 60 GL for the lakes.

In the event that the drought continues beyond end September 2009, an additional amount of up to 350 GL to 400 GL of water (preferably freshwater) would be required each subsequent year to manage the risk of acidification.

The South Australian Government acknowledges that, under continued severe drought conditions, there will be a point at which the minimum quantities of freshwater required may not be available, and the introduction of seawater may be necessary as a measure of last resort.

In any event, the Government of South Australia acknowledges that future management of the Coorong and Lower Lakes will not return to "business as usual". South Australia's Murray Futures Program will address optimising the future management of the Coorong and Lower Lakes to provide long-term environmental, social and economic benefits.

Appendix 1 - "A Fresh History of the Lakes: Wellington to the Murray Mouth, 1800s to 1935"  
(Terry Sims and Kerri Muller)

Go to [http://riverlakescoorong.com.au/documents/Lakes\\_History.pdf](http://riverlakescoorong.com.au/documents/Lakes_History.pdf)