

INSIDE THIS ISSUE

Managing the Coorong and the Lower Lakes **1**
David Paton

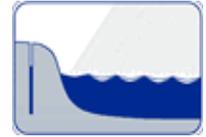
Challenges in Managing the Lower Murray during Periods of Extreme Drought **4**
Bob Newman

State Lodges Bid for Stormwater Projects **5**

Upcoming Events **6**

Media Watch **7**

Aqua Australis



NEWSLETTER OF THE HYDROLOGICAL SOCIETY OF SOUTH AUSTRALIA

MANAGING THE COORONG AND THE LOWER LAKES

David Paton

The Coorong and Lower Lakes are listed as a wetland of International Significance under the Ramsar Convention. Nominated because of the diversity of wetlands: fresh, estuarine and hypermarine; and because of the importance of the area to vast numbers of water birds: ducks, swans, pelicans, terns, grebes, and migratory sandpipers and endemic shorebirds. Importantly, the bird communities vary with changes in the type of wetland and so maintaining suitable fresh, estuarine and hypermarine systems is critical for maintaining the biodiversity values of the region. But the region has changed and is about to change again: a consequence of failing to allocate the necessary environmental flows and maintenance to the River.

The Coorong has not received freshwater flows for at least six years. In the last two years, the water levels in the Lakes have dropped to well below sea-level - unprecedented. These changes threaten to eliminate the key features that made this system of international significance.

But all is not lost. While today's politicians continue to squabble over a terribly flawed system that over allocates the water of the Murray Darling Basin to human uses and fails to secure a healthy river system, we can do things to salvage some of the essential natural elements of this internationally-recognised region.

Salinities in the southern Coorong are so high now that they far exceed the maximum levels that key fauna can tolerate. Small hardyhead fish and chironomid larvae abounded in the hypermarine salinities of the southern Coorong provided these salinities did not exceed about 100 ppt TDS or 3 times the salinity of seawater, as was the case throughout the 20th century. But in the last 5-6 years with no flows of freshwater over the barrages, the salinities have risen to levels of 180-200 ppt TDS during summer, far beyond their tolerance. The fish and chironomids have gone and with them the waders and the fish-eaters, the pelicans, terns and grebes. Worse, the lack of flows has led to water levels in the South Lagoon dropping in spring, instead of late summer, preventing the key annual aquatic plant *Ruppia tuberosa* from completing its life cycle. After 5-6 years of negligible reproduction, this plant has disappeared from the entire South Lagoon and so has its seed bank. Little wonder that swans and ducks no longer darken the skies.

The Coorong is unlikely to get an environmental allocation of water for several more years at least, as substantial quantities of freshwater are needed to first lift the water levels in the Lakes before any water can be released to the Coorong. Even if this water was available and put directly into the South Lagoon, it wouldn't dilute the salt levels to below the critical thresholds that would allow the fish and chironomids to return. Pumping seawater in just exacerbates the already accumulated salt load. A major flood (10,000 GL flowing over the barrages) would be needed to flush the accumulated salt out of the southern Coorong and return salinities to moderately hypermarine – such volumes of water are just not available and are extremely unlikely to be available in the foreseeable future.

The key to recovering the Coorong is to get the salt out, and a logical solution is to pump the highly saline water out to sea. Doing this can drop the salinities in the South Lagoon to below the threshold levels within 2-4 years depending on pumping rates. This scheme is now being assessed, and if feasible will be implemented.

However this engineering solution only resets the salinity levels in the southern Coorong. Without the return of environmental flows to the River Murray, salinities will rise again beyond the tolerances of the key hypermarine fauna, and pumping will need to be repeated.

Why will the salinities rise again? Prior to extraction of water from the Murray-Darling system for human uses, freshwater flowed to the Murray Mouth 99% of the time. With the increased extraction, the volume of water dropped but there were still seasonal flows and often substantial flows reaching the Mouth from late winter to summer (at least) annually. In fact, in the 1930s around 80% of the water entering the Murray reached the sea, but by late 20th century this had dropped to around 25%. For the first decade of the 21st century, less than 4% of the flow has reached the Mouth, none for the last 4-5 years. Although the vast majority of the freshwater reaching the Mouth flowed out to sea, some was drawn into the Coorong as evaporation increased during late spring and summer. This relatively freshwater carries little salt and so the quantity of salt entering the Coorong increases very slowly if at all. However,

(Continued on page 2)

MANAGING THE COORONG AND THE LOWER LAKES

David Paton

(Continued from page 1)

if there is no freshwater sitting near the Mouth (which is the current situation) then marine water is drawn into the Coorong to offset evaporative water losses during summer, bringing salt with it, gradually increasing the salt load. Although some promote re-instating possible flows of water from the South-East into the southern Coorong, the likely volumes (around 15GL) are not sufficient to offset any more than about 10% of the annual evaporative losses. Ultimately the salinity regimes of the Coorong can only be maintained by re-instating adequate environmental flows to the River.

Ironically, the problems of high salt levels in the southern Coorong need to be addressed before environmental flows over the Barrages are returned to the northern Coorong. The migratory waders for which the Coorong is globally important need productive mudflats covered by no more than a few centimetres of water. At present the only productive mudflats are in the northern Coorong. Dredging of the Murray Mouth has maintained the productivity of these northern mudflats to some extent. The northern most of these are tidally-influenced and as the tide retreats the birds can access invertebrates from the mudflats. However, if an environmental flow was provided, water levels in the northern sections of the Coorong would rise (due in part because the Mouth restricts the rate at which water can leave the Coorong) and deprive the birds of access to the productive mudflats. Historically birds displaced from these mudflats during freshwater flows would have shifted southwards and joined birds foraging on the productive mudflats of the southern Coorong. These do not exist at present, so providing an environmental flow before the southern Coorong is recovered might be the last nail in the coffin for these migratory birds, with which Australia has international agreements with China, Japan and Korea to protect.

Like the Coorong, the modern ecological changes to the Lakes commenced with the installation of the Barrages in the late 1930s. These

prevented marine water entering the lakes during periods of low River flow but also allowed water levels to be elevated within the Lakes. We have become accustomed to having freshwater lakes. Historically they were not fresh all the time. There were periods when the southern reaches of the lakes would have been extensively estuarine having salinities between those of freshwater and marine water. Usually the duration and frequency of estuarine conditions would have been short-lived except in severe droughts, and estimates suggest the lakes were fresh 95% of the time.

With the lack of flows over the last 2-3 years, the water in the Lakes have dropped to unprecedented levels and may continue to do so, exposing mudflats with acid sulfate soils. Following exposure to the air and then re-inundation, there is a high risk that the water bodies of the lakes will become acidic with heavy metals being released into the water column. One solution to this impending disaster is to keep these acid sulphate soils covered with water. At present this is done by pumping water from Lake Alexandrina to Lake Albert, but come summer when evaporation rates are higher this may prove inadequate. The suggestion is to return marine water to the system and there are some risks in doing this. Although marine waters historically entered the Lakes, these waters mixed with freshwater, and after short periods of incursion were flushed out. Remember in the 1930s, around 80% of the water entering the River Murray went out to sea. By the 1990s it was around 25%, and now: none. So, if we open the barrages and let in the sea, the lakes will rapidly become marine or hypermarine, without the prospect of a freshwater influx. We do not know what this will do to the ecology of a system that has been effectively fresh for over 65 years. Importantly we now know that any marine water that enters the lakes is likely to travel upstream and contaminate freshwater, and so reduce the quality of the water extracted for human use from Taillem Bend upwards. Even at present with the Barrages closed some marine water has seeped under the Barrages and reached Wellington. As salty water is denser than freshwater and because the

channel floor of Lake Alexandrina and the River are below sea level, this incursion can be gravity driven. So prior to the release of any marine water, this incursion of salty water upstream must be prevented. One of the important functions that the Wellington Weir might provide is a barrier to prevent incursions of marine water upstream. The Weir, if built, will not be in place until June of next year and will serve other functions such as maintaining water levels within the upstream river channel, in part to keep acid sulfate soils further upstream covered with Murray water. The construction of weirs, however, can introduce a suite of other environmental problems, associated with changing water movement, causing siltation and preventing biotic connectivity. The ecological impacts of weirs need to be carefully considered before embarking on construction.

Given that there is unlikely to be an immediate allocation of water to the Lakes, the exposure of additional acid sulfate soils to the air seems imminent. Even if water was provided immediately, the Lakes will be faced with the same dilemma in the near future during the next drought period. Alternative solutions must be found to minimize the impact of these soils and we should be focussing our attention on implementing these actions now – whether that is spreading lime, planting these areas with plants and/or adding mulch may still need to be determined – but we should be trying to mitigate the potential damage that could be caused by whatever means available. Once solved then the risks of these issues recurring during the next dry period are diminished.

We are still left with managing the Lakes in some sustainable manner that keeps some of the core values of this wetland system (like some freshwater habitats for threatened species Yarra Pygmy Perch, and Murray Hardyhead). There is clearly an obligation under the Ramsar Convention to maintain at least some freshwater habitat. It is unlikely that the Lakes as a whole can be maintained as a permanent freshwater system, at least for the next few years. This is certainly not possible

(Continued on page 3)

MANAGING THE COORONG AND THE LOWER LAKES

David Paton

(Continued from page 2)

if over-extraction continues once the drought breaks. Climate change is also likely to lead to reduced inflows into the River and this may further conspire to prevent the Lakes from being returned to freshwater systems. A sentiment that often arises, particularly from interstate, is that around 800GL of freshwater evaporates off the Lakes every year and South Australia needs to significantly reduce this loss.

What compromises and changes can we make if the environmental flows needed to maintain the Lakes are not forthcoming?

(Note that recent modelling of sustainable yields of water across the Murray-Darling Basin by CSIRO suggests that adequate environmental flows could still be delivered in the future to provide the lakes with a fresh future.)

Here are some suggestions that were put forward in 2008. First if we were to conserve and manage a representative freshwater system with limited River flow then the section between Goolwa Barrage and Clayton should be selected with a regulator or weir built from near Clayton to Hindmarsh Island. Inflows of freshwater from Currency Creek and the Finniss River would flow into this section and be contained, and those flows on their own would be more than sufficient to sustain this section as a permanent freshwater system given current median flows from these catchments. In years of drought or very low water levels some consideration could be given to piping some freshwater sourced upstream from the Murray into this wetland if required. A pipeline from above Wellington to Clayton is likely to be built to service the water needs of this community and so the added infrastructure costs are not great to do this. The area of the Lakes between Goolwa and Clayton, in particular has the best habitat for the small and highly threatened freshwater fish. Sectioning off this section also reduces the risks of salt-water incursions into the Finniss and Currency systems. Water levels might fluctuate a little but the majority of people living in and around Goolwa will still be able to boat and recreate.

This proposal has sparked some controversy in that a bund across the Goolwa channel will restrict water movement and have other ecological consequences.

Unfortunately water levels continued to drop since the winter of 2008 and rapidly, such that the previously permanently inundated wetlands of the lower Finniss and Currency were de-watered this summer and acid sulfate soils exposed to the air. Recent autumn rains have now re-wetted these soils and managing the potentially highly acidic conditions that may result will be challenging. The current plan is to build additional temporary structures across Finniss River and Currency Creek, as well as the Clayton Weir. These structures, however, are now too late to secure a freshwater refuge within the Lake system, and more intervention works may be required to eventually allow this region to function as a refuge.

Second, if the flows down the River are inadequate to sustain water levels across both lakes then decommission Lake Albert as a permanent lake – and convert this to an ephemeral wetland or swamp, perhaps with areas of Swamp Paperbark (*Melaleuca halmaturorum*), reeds and/or samphires established within the lake's footprint. This can be done by simply raising a barrier at the junction of the two lakes near Narrung. These swampy systems have largely disappeared from the region, perhaps because the elevated lake levels permanently inundated them and they drowned. Each winter and spring rainfall and local runoff would accumulate in the 'lake' as it does now and then the system would dry out during summer. This new vegetated system provides an environmental benefit but importantly if significant flows return to the river then the area could be inundated for longer. Under those conditions it is likely to be a significant breeding area for waterbirds and possibly fish.

The freshwater saved from Lake Albert (up to 200GL) can then be used for environmental purposes elsewhere within the river or in maintaining or raising water levels in Lake

Alexandrina to increase the likelihood of releasing water into the Coorong and to the Murray Mouth. At times it may be necessary to let some marine water into Lake Alexandrina and to provide an estuarine component to the system. No estuarine conditions currently exist within the region because there is no flow of freshwater to the Murray Mouth. This has been the case for nigh on six years now. Prior to the barrages, estuarine areas were extensive, particularly across the northern Coorong and out into the Southern Ocean, and back into the Lakes when the flows diminished or ceased.

If marine water was to be released into Lake Alexandrina to provide some estuarine conditions, then the releases should be through Tauwitherie Barrage away from the freshwater areas established near Goolwa. Such releases may not result in marine water incursions moving as rapidly upstream as releases from the Goolwa Barrage would have done. Even so, water authorities may not wish to risk this and a weir at Wellington might provide opportunities to do this without risking potable water supplies. Ideally any seawater releases into the Lakes should only be considered when there is likely to be a freshwater flow capable of flushing that salt out of the lakes, and without that prospect, allowing seawater incursions to enter Lake Alexandrina is likely to cause ecological damage.

All of the above solutions are engineering solutions to symptoms: dredging the mouth; pumping out the South Lagoon and from one Lake to another Lake; plus weirs and regulators strategically placed within the lakes and Coorong. None of them diminish the need to address the underlying cause of these systems collapsing, the over allocation and extraction of water for human uses across the Murray-Darling Basin – but they provide a safety net - an ability to manage and keep essential elements of a fantastic wetland system for short periods during malevolent times while still allowing the system to return and recover if ever we return to providing the River with a truly sustainable environmental flow.

CHALLENGES IN MANAGING THE LOWER MURRAY DURING PERIODS OF EXTREME DROUGHT

Bob Newman

Paul Harvey, (now with Leda Consulting Pty Ltd) is a long time policy advisor to the SA Government. Paul provided a briefing to a well attended HydSoc SA meeting on 28th May generating a robust discussion. This is a brief summary of the presentation; Paul's presentation will be published on the HydSoc SA web-site.

Rivers are expected to flow to the sea. With the over allocation of the Basin's rivers and the current severe drought, the Lower Lakes and the River Murray back to Lock 1 at Blanchetown (250km from the mouth) are now one metre below sea level. The barrages, which normally hold the lakes above sea level, are now holding back the sea; albeit with some seepage past the barrages.

South Australia is strongly advocating a freshwater solution for the Lower Lakes. Nevertheless a decision to allow the sea to flow must be contemplated. A temporary weir below Wellington at Pomanda Island is being deferred as long as practical. This would allow separation of the Lower Murray reach from the Lakes providing temporary reprieve for urban water supplies under the critical human needs provisions. In the meantime a detailed contingency plan is being pursued to maintain a freshwater system for as long as possible but also to avert acid sulfate mobilisation risks.

Naturally, the Lower Lakes were substantially a freshwater estuarine system. These lakes (Alexandrina and Albert) at the downstream end of the Murray and Darling river Basins were fed by regular spring flows. Only very rarely would sea water intrude through the narrow river mouth. Paleoecological studies have confirmed a predominately freshwater regime.

The Murray-Darling Basin is Australia's food bowl covering 14% of the land mass but delivering only 6% of Australian run-off. The Basin is characterised as arid and flat and the rivers are very slow with a gradient of just 150 m over almost 2200 km from Albury to the sea. Water can take many months to travel through this arid

landscape. The Basin is now highly regulated and overallocated.

The minor floods have been harvested robbing the floodplain of its regular waterings. The natural variability has been lost. The apparent 'wide river' is an artefact of the numerous weir pools. Salinity is an issue, albeit less of an issue during this prolonged drought. Algal blooms are a threat.

Extremely low inflows have predominated for more than a decade. Dredging has been necessary at the Murray Mouth since 2002 to provide some reprieve to the Coorong and also allow small boat access. These past 7 years have produced the lowest flows on record, but our record is barely more than 100 years; clearly the basin experiences extraordinary cyclic

(Continued on page 5)

SA Government Lower Murray Drought Contingency Plan

| Trigger level (mAHD) | ACTION |
|----------------------|---|
| +0.75 Sept 06 | Full Supply Level (last seen Sept 06) |
| +0.3 Feb 07 | Augmented water level & water quality monitoring and modelling |
| ↓ | Early pumping to Mount Lofty Ranges storages; stand-pipes around Lower Lakes |
| ↓ | Implementation of urban water restrictions to minimise draw on River Murray |
| ↓ | Started modification to SA Water major urban supply intakes to cope with lower water levels |
| ↓ | Facilitated emergency dredging to provide continued access for private S&D and irrigation supplies |
| ↓ | Sealed barrages to prevent seawater ingress with reverse head |
| 0.0 Dec 08 | Initiated program to provide alternative urban supply for Clayton |
| ↓ | Implemented enhanced modelling project to investigate acidification potential – identification of acidification trigger levels for each lake |
| ↓ | Commenced investigations into acidification risk for wetlands between Wellington and Lock 1 and engaged CSIRO to undertake remediation trials |
| -0.4 | Implemented Lake Albert water level management project to prevent acidification |
| -0.5 | Commenced installation of Taillem Bend to Meningie S&D pipeline |
| -0.6 | Commenced bioremediation trials in Lake Albert |
| -1.0 May 09 | CURRENT WATER LEVEL May 2009 |
| -1.0 | Commence Goolwa Channel water level management project to prevent acidification of key wetlands and the Goolwa Channel |
| -1.0 | Commence construction of Pomanda Island weir |
| ↓ | Commence construction of Jervois to Currency Creek irrigation pipeline |
| ↓ | Commence bioremediation in key areas around lakes |
| -1.5 | Introduce seawater to prevent acidification of Lake Alexandrina if freshwater not available |

STATE LODGES BID FOR STORMWATER PROJECTS

The State Government has submit a bid to the Commonwealth for projects that will more than double our capacity to capture and reuse stormwater by 2014.

Minister for Water Security Karlene Maywald says the State Government has put forward a bid valued at \$145.1 million for seven stormwater projects across the metropolitan area.

"These projects will harvest up to 8090 million litres of stormwater for treatment through aquifer storage and recovery schemes.

"This will reduce our draw on mains water supplies and provide an alternative source for non-drinking uses such as watering parks and gardens and industrial and commercial uses.

"Our submission today is in response to the Federal Government's call earlier this year for stormwater harvesting and reuse projects.

"The State Government has committed about \$45m to these projects and the local governments of Charles Sturt, Onkaparinga, Salisbury and Playford, along with other partners, will also commit substantial funding."

The projects are:

- **Water Proofing the West, \$58.6m.** Harvesting 2500 million litres through wetland and aquifer storage and recovery projects at Cheltenham, Riverside Golf Club and Old Port Road. Partners include the City of Charles Sturt, Adelaide and Mt Lofty Ranges NRM Board, Land Management Corporation and the Stormwater Management Authority.
- **Adelaide Airport Stormwater Scheme, \$9.7m.** Harvesting up to 1000 ML of stormwater to reduce the draw on mains and groundwater supplies in partnership with the Adelaide Airport Ltd.
- **Unity Park Biofiltration, \$14m.** Expanding the existing scheme at Pooraka to harvest an extra 1300 ML to supply local industry and school and sport facilities, in partnership with the City of Salisbury.
- **Water for the Future, \$19.2m.** Building on the success of Water Proofing Northern Adelaide to harvest an additional 640 ML for irrigation of sports reserves and gardens, in partnership with the City of Playford.
- **Water Proofing the South Stage 2, \$30m.** Using sites at Reynella East, Pedler Creek Reserve and Pt Willunga to harvest 2200 ML,

improving water security in partnership with the City of Onkaparinga.

- **Adelaide Botanic Gardens ASR Scheme, \$5.8m.** Harvesting and treating 100 ML of stormwater to replace drinking water used to irrigate the gardens.
- **Barker Inlet Stormwater Reuse Scheme, \$7.8m.** An SA Water project using existing wetlands to harvest 350 ML to supply industrial and commercial customers in the Regency Park area.

"I acknowledge the key role the local government has played in compilation of this bid, with the majority of projects having council proponents," Minister Maywald said.

Local Government Association of South Australia president Felicity-ann Lewis said she was delighted to see the success of bids from four local councils incorporated into the State bid.

"Successful stormwater harvesting is about partnerships between local government, state government, commonwealth government and the private sector," Ms Lewis said. "South Australia continues to be a leader in stormwater harvesting and I congratulate local government for the key role that they play."

CHALLENGES IN MANAGING THE LOWER MURRAY DURING PERIODS OF EXTREME DROUGHT

Bob Newman

(Continued from page 4)

variations in flow compared with other world-wide basins. Climate change modelling scenarios suggest that whilst overall flows might be less; the river and lakes will regularly discharge to the sea. A freshwater regime is a reasonable expectation and should not be prejudiced by unnecessarily rash decisions at the height of this drought.

Accordingly, the SA Government is pursuing a contingency plan. The Federal Government is supportive. Since 2006, a series of decisions is being triggered by the level in the Lakes and the recorded inflows in the Basin storages. Detailed real time

hydrologic modelling is informing these decisions on a month by month basis. Unfortunately, finding freshwater from further upstream is proving elusive. The table overleaf sets out the decision points and key triggers.

Pipelines to supplement stock and domestic water supplies around the Lakes have been built in rapid time. A block bank across the Narrung Narrows allows Lake Albert to remain wet, albeit highly saline, by pumping from Lake Alexandrina. This is preventing a major acid sulfate outbreak. A temporary weir below Wellington at Pomanda Island would cost \$160M with another \$50M to remove it. The SA Government has deferred a decision, but it is imminent.

Without a weir Adelaide's water supplies will be threatened. Freshwater from the modest inflows from the Finniss River and Currency Creek could maintain water cover over the acid sulfate soils in the narrow Goolwa Channel. Elsewhere lime dosing and bioremediation are being trialled.

This contingency plan is under continuous review and Government has to face up to some very tough decisions. Needless to say the options are very contentious; however extensive community consultation is providing increasing recognition of the reality of the situation and support for the solutions.

UPCOMING EVENTS



7th IWA World Congress on Water Reclamation and Reuse
September 25, 2009

<http://www.reuse09.org/>

IWA International Water Association Specialist Conferences AWA Australian Water Association

In recent times, the coalescence of many different pressures - population growth, increasing urbanisation, drought, reduced runoff - has put a major strain on water supply infrastructure globally. The level of water abstraction is reaching its natural limits and this calls for a dramatic shift in our water utilisation concepts. The traditional "linear society" is not a sustainable solution and the "circular society" has to become the new standard. Themes of the conference will include:

Potable reuse

Public health and environmental impacts
Emerging pollutants
Managed Aquifer Recharge (Water recycling via Aquifers)
Novel technology developments
Demand/supply management
Closing the water and nutrient loops
Public perceptions and community engagement
Water and energy efficiencies
Environmental flows

To discuss these issues and more we invite you to Brisbane in 2009. This conference will offer you a high-

quality oral and poster program, and to achieve this we need a strong input from you. The organising and program committees are eager to receive your papers. The program will have a strong focus on the interaction between practice and research and will present excellent opportunities to share and exchange knowledge and expertise. You will also see first hand one of the largest water recycling schemes worldwide. So join us in a stunning location to discuss the latest issues affecting water reclamation and reuse worldwide

Environmental Water Managers Workshop

Designing a Community of Practice

22-23 July, 2009
Novotel on Collins
270 Collins Street, Melbourne
Cost: FREE



Do you have stories to share? Do you want to collaborate with other environmental water managers nationwide? Are you struggling to define your role or have an influence? Do you lack the data you need and would like to find a way to get it?

Achieving effective management of environmental water is a huge challenge. The National Water Commission's 2007 biennial review of the National Water Initiative found that too often, environmental water managers have insufficient authority and inadequate resources to do their work.

To support environmental water managers, the NWC is facilitating development of a Community of Practice (CoP) as a way for those working in the field to network, collaborate, collectively problem-solve and enhance the standing and recognition of the profession.

This workshop will be a way for practitioners to share stories, identify and solve problems and make new

contacts. It will include extensive discussion of the most pressing issues in environmental water management.

It is specifically for environmental water managers who have responsibility for making decisions with regard to environmental ground or surface water allocations, and those who set the broader policy directions. This definition may also include researchers working directly in the field. To find out if your role falls within the scope of the CoP you can express your interest on line at www.cop4ewm.com.au

The Workshop is free, but participants will need to meet their own travel and accommodation costs. If it is difficult for you to meet the cost of attendance some financial assistance may be available. If you want to be involved in the Community of Practice but are unable to attend the workshop you can register your interest online.

To register, or for further information please visit www.cop4ewm.com.au



<http://www.hydsoc.org>

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MEDIA WATCH

1.5 billion litres of extra water for South Australian wetlands

Two wetlands in South Australia are receiving a total of 1,531 million litres of environmental water this month under the Australian Government's Water for the Future plan.
<http://www.environment.gov.au/minister/wong/2009/mr20090626a.html>

Additional carry-over water available
Irrigators will begin the 2009-10 water year with a 2% opening allocation and 80% of their approved carry-over water volume. This is a 20% increase from the original carry-over percentage announced on June 15. Inflows to the Murray-Darling Basin for June 2009 are expected to be about 105 gegalitres, which is 25GL higher than the minimum of 80GL used for planning purposes. However 105GL is well below the long-term average for June of 690GL.

<http://www.dwlbc.sa.gov.au/murray/drought/index.html#Carryoverwater>

Google Brings Water Data to Life
With all the power of 21st century collaboration technology, nothing to date has tamed the massive amounts of disparate water information locked away in diverse database systems. But that may have changed last week when Google Labs launched Fusion Tables, a powerful new online research and data organizing tool that makes it much easier to share and navigate the world's digital science and technical archives.

<http://www.circleofblue.org/waternews/2009/world/google-brings-water-data-to-life/>

Strengthening Basin Communities
Local Government bodies in the Murray-Darling Basin can now apply for funding to assist in community-wide planning for a future with less water, under the Strengthening Basin Communities Program. Applications close 5pm (EST) Friday, 21 August 2009

<http://www.environment.gov.au/water/programs/basin-communities/index.html>

Currency Creek & Finniss River Water Quality Report Finalized
Samples have been taken fortnightly since August 2008 at 20 sites in Lake Alexandrina, Goolwa Channel, the Currency Creek and Finniss River tributaries. Currency Creek & Finniss River Water Quality Report 1 was finalized June 2009 and is available for download from

http://www.epa.sa.gov.au/lower_lakes.html

Making Murray-Darling Basin communities stronger

The Rudd Government is seeking proposals from local councils in the Murray-Darling Basin to help them better deal with the huge challenges posed by a future with less water.

<http://www.environment.gov.au/minister/wong/2009/mr20090626.html>

Denying recycling just won't hold water
In 2002 Melbourne Water found that recycling sewerage water from the eastern treatment plant at Carrum was cheaper than building a dam. It also reflected the growing policy of using where possible recycled water, which flows into 25 per cent of Melbourne's drinking water.

<http://www.theage.com.au/news/opinion/denying-recycling-just-wont-hold-water/2009/07/01/1246127578716.html>

Water trade made easier by legislative reform

South Australian River Murray water licence holders will be able to more efficiently trade water entitlements under new legislation to take effect.

<http://www.ministers.sa.gov.au/news.php?id=5008>

Virginia recycled water extension complete

An extra three billion litres of recycled water per year will be delivered to at least 40 market gardeners in the Virginia-Angle Vale area following completion of a \$6.6 million pipeline extension project.

<http://www.ministers.sa.gov.au/news.php?id=4820>

Government buys up water licences
MORE than \$77 million has been paid out by the State Government in 600 deals to buy up billions of litres of water to provide water security for South Australia.

<http://www.news.com.au/adelaidenow/story/0,,25722819-2682,00.html>

New plan to secure South Australia's water future

The State Government has outlined its comprehensive plan to guarantee South Australia's future water security to 2050 and beyond, diversify our water supplies and reduce reliance on the River Murray

<http://www.ministers.sa.gov.au/news.php?id=5001>