



Australian Government



MURRAY RIVER SYSTEM Drought Update

ISSUE 17: FEBRUARY 2009

This is the first drought update from the new Murray-Darling Basin Authority, and continues the previous updates provided by the former Murray-Darling Basin Commission.

In Brief

Rainfall: During November and December 2008, above average rainfall and below average temperatures were recorded across the southern half of the Murray-Darling Basin. However, January saw a return to very hot and dry conditions. The longer term rainfall deficits, particularly across the higher yielding catchments of the Victorian Alps and Snowy Mountains, continue to persist.

System inflows: During November and December, Murray system inflows remained well below average, but the wetter and cooler conditions ensured they were above historic minimums. However, the very hot and dry weather in January caused system inflows to fall to 70 GL which is approaching the January historic minimum of 50 GL (in 1983 and 2007). During the 2008-09 water year, there has not yet been any inflows to the Menindee Lakes from the Barwon-Darling system, although a small flow has now reached Wilcannia.

Storage: Total MDBA active storage is currently 1,470 GL or 16 % of capacity, which is slightly higher than at the end of January 2008 (1,325 GL) but well below the January long term average of 5,400 GL. There is also a small volume of water (about 100 GL) in Menindee Lakes, which remains under NSW control. Elsewhere in the Basin, storage levels remain low.

Water quality: The recent hot weather and lower than normal flows, has increased the risk of algal blooms and aquatic plant growth along the river. High water temperatures have also increased the stress on fish populations, and resulted in three fish kills in shallow anabranches and channels along the mid-Murray.

Outlook: The latest rainfall outlook issued by the Bureau of Meteorology shows neutral conditions across the Murray-Darling Basin for the next 3 months. However, with system inflows currently tracking close to the historic minimum, there would need to be a sustained period of above average rainfall during the autumn and winter months for inflows to recover towards the long term average. Similar to the last two years, the prospects for irrigation in 2009-10 will be substantially dependent on future rainfall and system inflows. All three States have planned to carry over sufficient volumes of water to meet critical human needs in 2009-10.

Murray-Darling Basin Authority

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Rainfall and System Inflows

During November and December 2008, above average rainfall and below average temperatures were recorded across the southern half of the Murray-Darling Basin. However, January saw a return to very hot and dry conditions (Figure 1). The longer term rainfall deficits, particularly across the Victorian Alps and Snowy Mountains also continue to persist (see Figure 2). This is the region from which a substantial proportion of the Murray system inflows are normally derived.

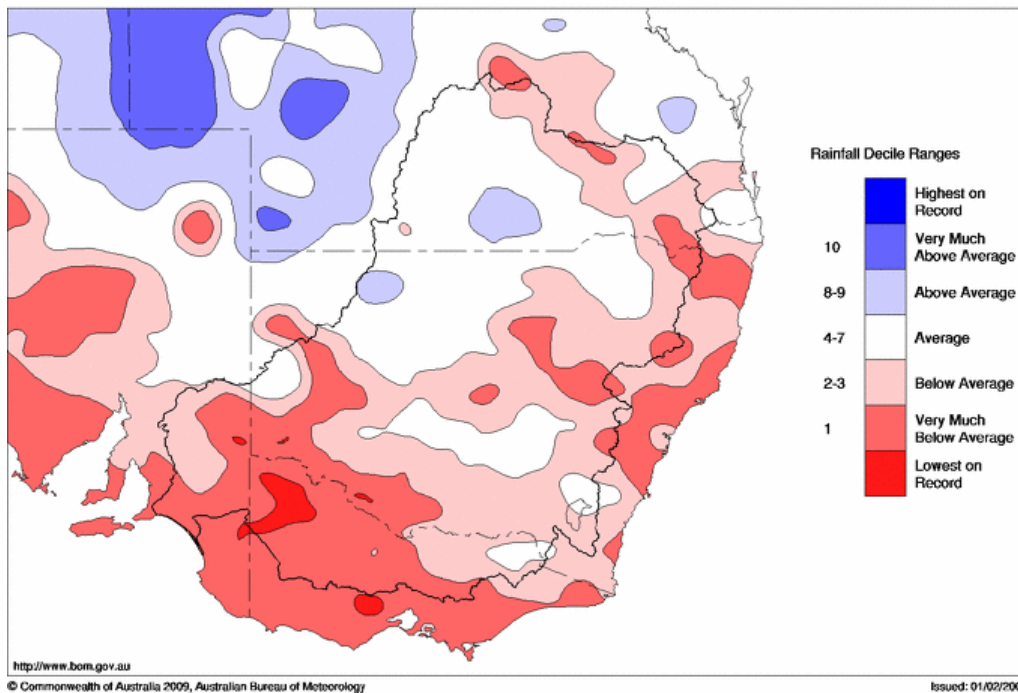


Figure 1. Murray-Darling Basin rainfall deciles for January 2009. (source: Bureau of Meteorology)

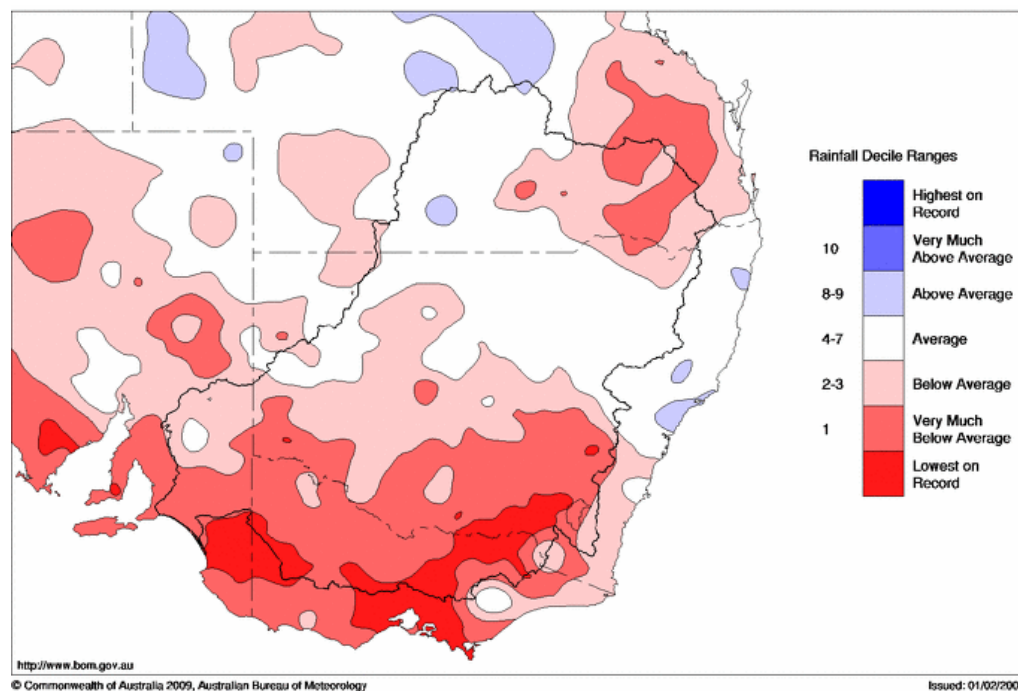


Figure 2. Murray-Darling Basin rainfall deciles for the last 3 years (Feb 2006 - Jan 2009). (source: Bureau of Meteorology)

During November and December, Murray system inflows remained well below average, but the wetter and cooler conditions ensured they were marginally above historic minimums (see Figure 3 and Table 1). It also had a beneficial effect on evaporative losses and reduced the demand for irrigation water. However, as a result of the hot and dry conditions in January, system inflows fell to 70 GL which is approaching the January historic minimum of 50 GL in 1983 and 2007. The hot weather also caused a very significant increase in both water usage and losses along the river.

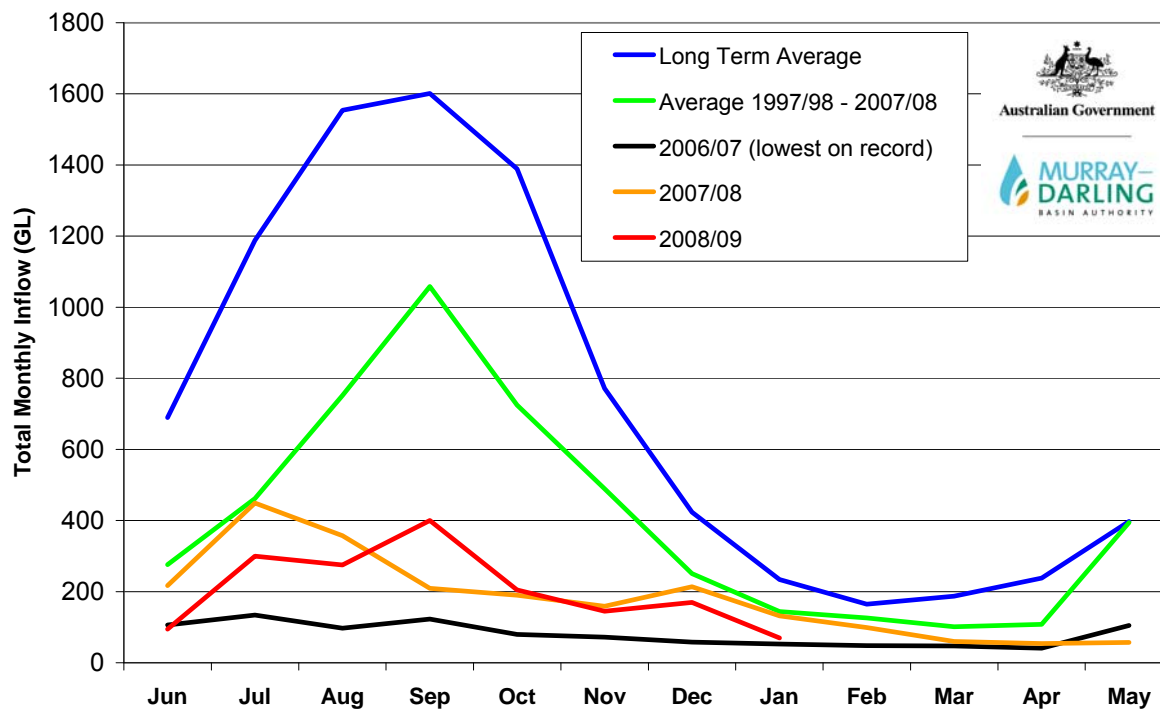


Figure 3. Murray system inflows (excluding Snowy and Darling inflows).

November	2008	140
	long term average	780
	Historic minimum (1914)	57
December	2008	170
	long term average	420
	Historic minimum (1982 & 2006)	60
January	2009	70
	long term average	230
	Historic minimum (1983 & 2007)	50
Year to date	June 2008 to Jan 2009	1,660
	June 2007 to Jan 2008	1930
	Historic minimum (June 2006 to Jan 2007)	720
	Long term average (June to Jan)	7,860

Table 1. Murray system inflows (excluding Snowy and Darling inflows)

For the water year to date (June 2008 to end of January 2009) system inflows have been 1,660 GL, and the year is tracking as the 7th driest year on record (Figure 4).

The northern half of the Basin also received good falls of rain in November and December and this caused some flooding along sections of the Peel and Namoi Rivers. However, the total volume of water was relatively small, and after dissipating across the lower Namoi floodplain, only about 40 GL reached the Barwon River. An additional 50 GL flowed into the Barwon River from the MacIntyre River. As a result, a flow

of about 500 to 1500 ML/day has been passing Bourke on the Darling River since mid-December, and this water eventually started to pass Wilcannia on the 19th January. However, unless there are further inflows to the system, the final volume of water reaching Menindee Lakes is likely to be small (current estimate is less than 30 GL).

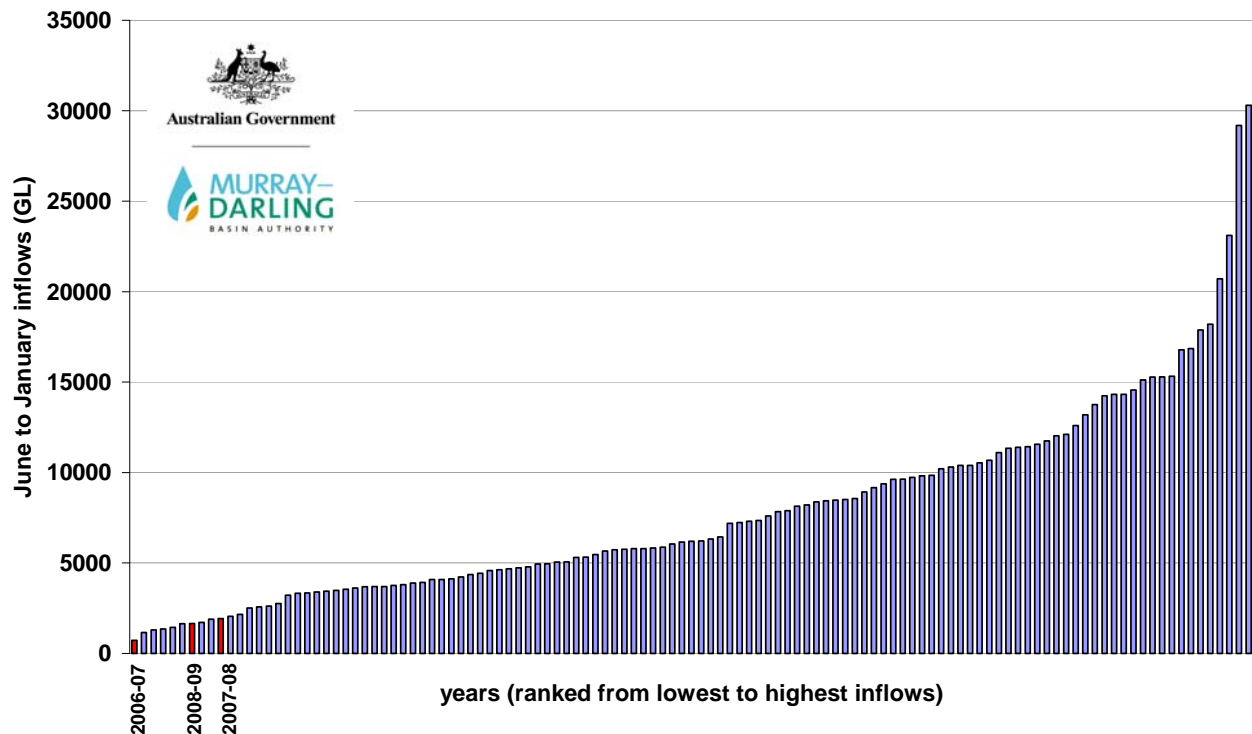


Figure 4 Murray system inflows (excl. Snowy & Darling inflows) for the 8 months of June to January, sorted in ascending order for all years from 1892-93 to 2008-09. The last 3 years are highlighted.

System Storage

Over the last 3 months there has been a small decrease in the volume of water stored under MDBA control in Hume Reservoir, Dartmouth Reservoir and Lake Victoria. Total active storage is currently 1,470 GL or 16 % of capacity (Figure 5), which is slightly higher than the storage level of 1,325 GL at the end of January 2008 but well below the January long term average of 5,400 GL. There is also a small volume of water (about 100 GL) in Menindee Lakes, which remains under NSW control, and is needed to supply drinking water to Broken Hill and other nearby towns for the next 18 months.

Elsewhere in the Basin, storage levels remain low. The total volume of water in all Basin storages managed by the MDBA or by State governments, has remained fairly steady at about 5,300 GL, or 23 % of capacity. Storage in the Snowy Mountains reservoirs (which is managed by Snowy Hydro) also remains low, with Lake Eucumbene at only 24 % capacity.

Murray Operations Update

The overall goal of operations has been to preferentially draw upon downstream storages and conserve water in upstream reservoirs, particularly in Dartmouth Reservoir, for as long as possible. This operation will minimise evaporative losses and maximise the ability of the system to capture potential inflows in the coming autumn and winter months.

There are however some constraints and competing objectives in this operation; for instance the need to draw down Lake Victoria, while at the same time retaining enough water in the lake to supply South Australia's water share during the summer months. Since September 2008, NSW has delivered about 230 GL from

Menindee Lakes to the Murray, and this has been used to maintain the storage level in Lake Victoria, and help supply water to South Australia.

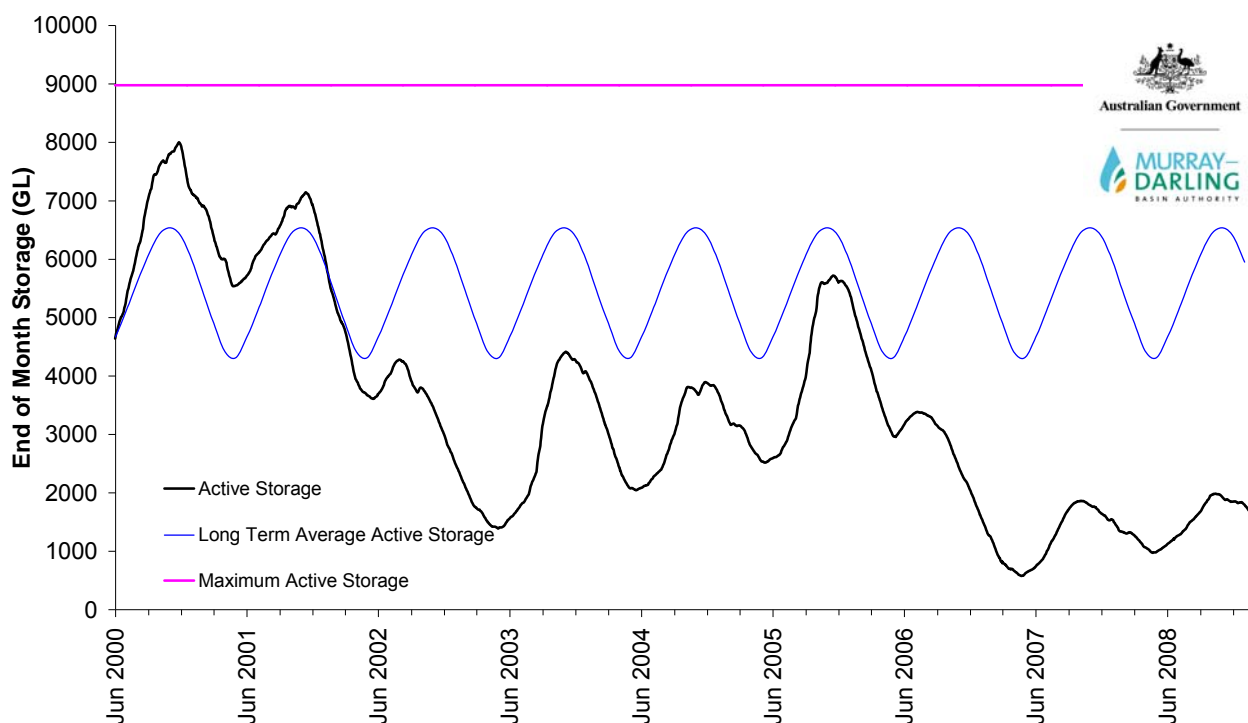


Figure 5. MDBA active storage, June 2000 to January 2009.

Hume Reservoir has been steadily drawn down, and if it remains dry, the storage level is likely to fall to about 300 GL (10 %) in autumn. During the last few months, small volumes of water were released from Dartmouth Reservoir to supplement the storage in Hume Reservoir and to sustain the Mitta Mitta River. The water that now remains in Dartmouth Reservoir will provide a reserve for critical human needs and also meet individual carryover requirements of irrigators for 2009-10.

As part of the strategy of conserving as much water as possible, the 'water in transit' along the Murray was minimised as much as possible while still meeting all downstream demands. The effect of this strategy was that when transmission losses and irrigation demand suddenly increased during the hot dry spell in January, it was necessary to temporarily draw upon weir pools to meet downstream flow and diversion requirements, until higher flows from headwater storages arrived. This strategy will continue through the autumn months and, if another hot spell occurs, weir pools might again be drawn down temporarily.

During the summer months, the River Murray has continued to provide extensive opportunity for recreational activities such as fishing, swimming, camping and boating, and provides a very welcome boost to local tourism. Notwithstanding the drought, the Murray remains a large and usable river for recreational boating.

The Murray-Darling Basin Authority will continue to review its operational plans over the coming months and more details will be provided via media releases and weekly reports which can be found at www.mdba.gov.au

Allocations and Water Trade

Similar to last year, the combined effect of low storage levels and inflows, has resulted in low water allocations across the Murray system so far this season. Table 2 compares the State allocations to date (early February 2009) with this time last year. Further details of water allocations within States can be obtained from the relevant State Government authorities.

Table 2. State Irrigation allocations (as of 3rd February 2009)

	February 2008	February 2009
NSW Murray High Security	0 %	95 %
NSW Murray General Security	0 %	9 %
Victoria Murray High Reliability	36 %	35 %
Victoria Murray Low Reliability	0 %	0 %
South Australia Murray High Security	32 %	18 %

Notes:

1. In February 2008, NSW Murray irrigators had access to 90% of the water suspended from their accounts in 2006-07.
2. In the NSW Murray valley, most irrigation entitlements are general security and only a small fraction are high security.
3. In 2008-09 some South Australian irrigators were eligible for additional water from their State Government.

State allocations are one component of available water. Total water availability will also include carry over from the previous year and water obtained through trading.

Temporary water trading has again been an important management tool for both buyers and sellers. It has provided irrigators with access to additional water, particularly those who have permanent plantings or a crop that is close to completion. The price for temporary water trades is currently in the range \$250 to \$300 per megalitre, which is significantly lower than last year when prices peaked at about \$1,000 per megalitre. Trade has predominantly been from NSW (particularly the Murrumbidgee) to Victoria and South Australia. To facilitate delivery of traded water from the Murrumbidgee to the Murray, a special arrangement was agreed with Snowy Hydro to deliver 100 GL of Murrumbidgee water via the Snowy Scheme to the upper Murray.

Environment and Water Quality

The prolonged water shortage across the Murray system continues to cause severe environmental impacts to riverine and floodplain ecosystems. The last significant flooding downstream of Euston was over 12 years ago. Low river levels have also meant that many wetlands and billabongs normally connected to the river have been disconnected for up to two years. The latest Living Murray Icon Site Condition Report, released late last year, reported that; waterbird communities are limited by the low availability of wetland habitats, river red gum and black box trees continue to decline in health and, dryland species are becoming more prevalent in understorey vegetation.

These conditions highlight the importance of providing environmental water (even small volumes) to maintain some drought refuges along the river system. Living Murray water (up to 500 ML) has been delivered to Barmah Forest to replenish the last remaining freshwater pools in the Gulf Creek. Environmental monitoring is underway and initial results indicate that native fish, woodland birds, waterbirds, frogs and turtles have moved into the area. Living Murray water is also being delivered to a small area of Chowilla floodplain to prevent permanent damage to flood dependent vegetation, and to provide critical drought refuge habitat for a number of rare and threatened species such as the southern bell frog. The States are also providing small volumes of water for the environment.

As expected, the recent hot weather and lower than normal flows, has increased the risk of algal blooms and aquatic plant growth along the river. High water temperatures, particularly in shallow anabranches, have also reduced dissolved oxygen concentrations. This has increased the stress on some fish populations, and resulted in three fish kills in anabranches and channels along the mid-Murray.

Salinity along the Murray, upstream of Lock 1, remains relatively low. For instance, at Morgan in South Australia, the salinity is currently 500 EC which is similar to this time last year and also similar to the ten year average of 460 EC.

The Lower Lakes remain in a critical condition, with record low water levels, high salinity and the ongoing risk of acidification. The water level in Lake Alexandrina reached a low of -0.48m AHD in late May 2008 and improved to -0.24m AHD by early spring 2008. Since then, the water level has been gradually falling in response to warmer weather and increased evaporative losses, and is currently at -0.75 m AHD. If the weather remains hot and dry, it is forecast to fall to about -1.2 m AHD by the end of autumn. However, based on a worst case scenario, Lake Alexandrina is unlikely to reach the estimated acidification trigger of -1.5 m AHD prior to February 2010.

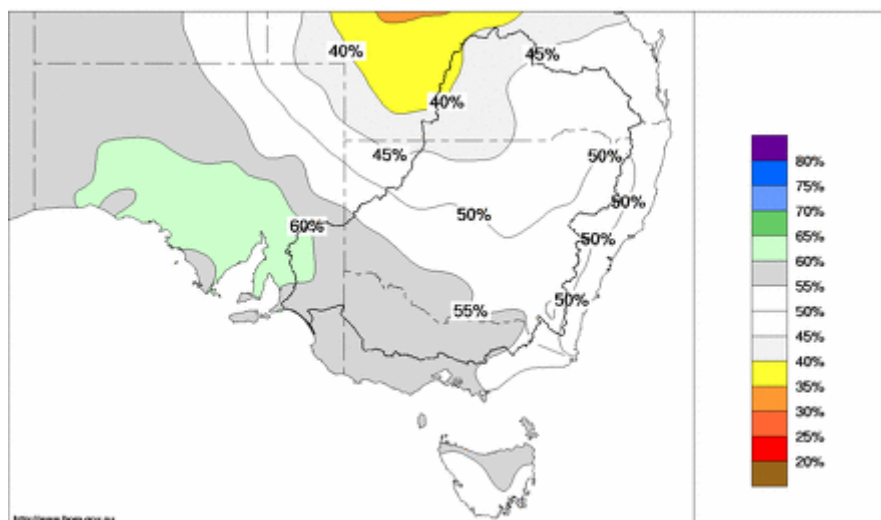
The pumping of water from Lake Alexandrina to Lake Albert continues to maintain the water level in Lake Albert above the estimated acidification trigger of -0.5m AHD. However, the salinity in Lake Albert continues to rise and is currently 8,500 EC compared with 3,500 EC twelve months ago, and a 10 year average of 1,800 EC.

Review of drought water accounts

The Murray-Darling Basin Authority (MDBA) has announced an independent review of the accounts for the special drought sharing arrangements for the River Murray. Special water sharing arrangements between New South Wales, Victoria and South Australia have been in place since June 2007 as the normal sharing arrangements did not provide for the extreme and prolonged drought conditions that the Basin has been enduring. While the special arrangements have served all parties well, they have created accounting complexities, and it is necessary to ensure that no state is disadvantaged. The review is being conducted by Peter Noonan, a former Chief Executive of SunWater in Queensland, and is expected to provide initial findings during February 2009.

Outlook

The latest rainfall outlook issued by the Bureau of Meteorology shows no strong bias towards either wetter or drier conditions across the Murray-Darling Basin for the next 3 months (see Figure 6). The Southern Oscillation index has weakened to +9, and most climate models are currently predicting that the El Nino - Southern Oscillation (ENSO) will remain neutral for the next few months. Further information can be obtained from www.bom.gov.au/climate/ahead



**Figure 6 Forecast chance of exceeding median rainfall; February to April 2009
(source; Bureau of Meteorology)**

The rainfall outlook, combined with the fact that only about 10 % of annual Murray system inflows normally occur between February and May, indicate that the chances of a significant improvement in Murray system

inflows during the next few months is low. It is also likely that storage levels will be low by the end of autumn, but slightly greater than May 2008 as a result of increased State and individual carry over. Therefore, similar to the last two years, the prospects for irrigation allocations in 2009-10 will be substantially dependent on future rainfall and system inflows.

All three States have planned to carry over sufficient volumes of water to meet critical human needs in 2009-10.

Additional Information

Additional information is available at www.mdba.gov.au and also from the relevant Australian and State Government Agencies. For media interviews with MDBA personnel, please contact Sam Leone, MDBA Media Liaison, telephone 0407 006 332.