



Australian Government



## RIVER MURRAY SYSTEM

# Drought Update

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### In Brief

Autumn is a critical time for wetting of the catchment prior to winter rainfall and, similar to last year, this has not eventuated. For the Murray-Darling Basin this was the 9<sup>th</sup> consecutive autumn with below average rainfall.

Murray system inflows for May were only 90 GL which is slightly above the record low of 75 GL (in 1902) but well below the long term average of 390 GL.

In the northern Basin, there was only a small streamflow response from the rain in May, and very little water is expected to reach Menindee Lakes, unless there is significant follow-up rain.

For the 2008-09 water year (June 2008 to May 2009) Murray system inflows were the 3<sup>rd</sup> driest in 118 years of records. This follows the 7<sup>th</sup> driest year in 2007-08 and the driest on record in 2006-07. Murray system inflows have been below average for nine out of the last ten years.

MDBA active storage for the Murray system at the end of May 2009 was 980 GL (11 % of capacity), which is well below the May long term average of 4,670 GL. The total volume of water in all Basin storages managed by the MDBA or by State governments, is about 3,940 GL, or 17 % of capacity.

The prospects for irrigation allocations in 2009-10 will be highly dependent on future rainfall and system inflows. Overall, the outlook for the 2009-10 water year remains grim, and is similar to the previous two years.

In response to cooler water temperatures along the Murray, algal levels have been steadily decreasing and all red alerts have now been lifted.

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Murray-Darling Basin Authority

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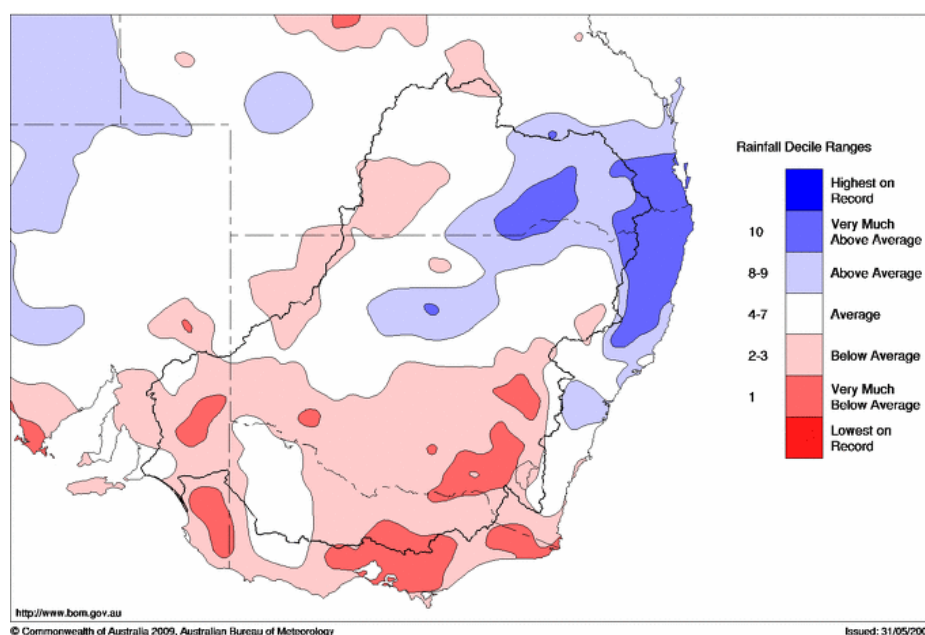
## Rainfall and System Inflows

After good falls of rain across the southern Murray-Darling Basin in late April, there was very little follow-up rain in May (Figure 1). The Bureau of Meteorology has reported that for the Murray-Darling Basin this was the 9<sup>th</sup> consecutive autumn with below average rainfall. As a result, Murray system inflows have remained close to record lows (see Table 1 and Figure 2). For the 2008-09 water year (June 2008 to May 2009) Murray system inflows were the 3<sup>rd</sup> driest in 118 years of records. This follows the 7<sup>th</sup> driest year in 2007-08 and the driest on record in 2006-07 (see Figure 3). The three yearly total for 2006-09 was 5,040 GL which is less than half the previous historic minimum of 11,180 GL in 1943-46. Murray system inflows have been below average for nine out of the last ten years. The severity of the current drought is unprecedented in the historic record. Severe rainfall deficits exist in the high yielding catchments of the Victorian Alps and Snowy Mountains, and it will take a sustained period of above average rainfall for Murray System inflows to recover towards the long term average.

In May, there was very heavy rainfall (up to 400 mm) along the coast of south-east Queensland and northern NSW. This caused major flooding in coastal rivers. Further inland the rainfall was less intense, but some areas in the northern Murray-Darling Basin received over 100 mm. The only significant streamflow responses were in the Moonie River in southern QLD and the upper tributaries of the Borders Rivers, and the total volume of water was small. River transmission losses are also expected to be high as water dissipates along complex anabranch systems, and very little is expected to reach Menindee Lakes, up to 1,500 km further downstream.

	2008-09	Historic Minimum	Long term average
<b>April</b>	50 GL	40 GL (2007)	230 GL
<b>May</b>	90 GL	75 GL (1902)	390 GL
<b>January - May</b>	280 GL	Previously 295 GL (2007)	1,200 GL
<b>Water year (June - May)</b>	1,860 GL	970 GL (2006-07)	8,840 GL
<b>3 year total</b>	5,040 GL	Previously 11,180 GL (1943-46)	26,700 GL

**Table 1. Murray System Inflows (excluding Snowy and Menindee inflows)**



**Figure 1. Rainfall deciles for the Murray-Darling Basin, May 2009  
(source: Bureau of Meteorology)**

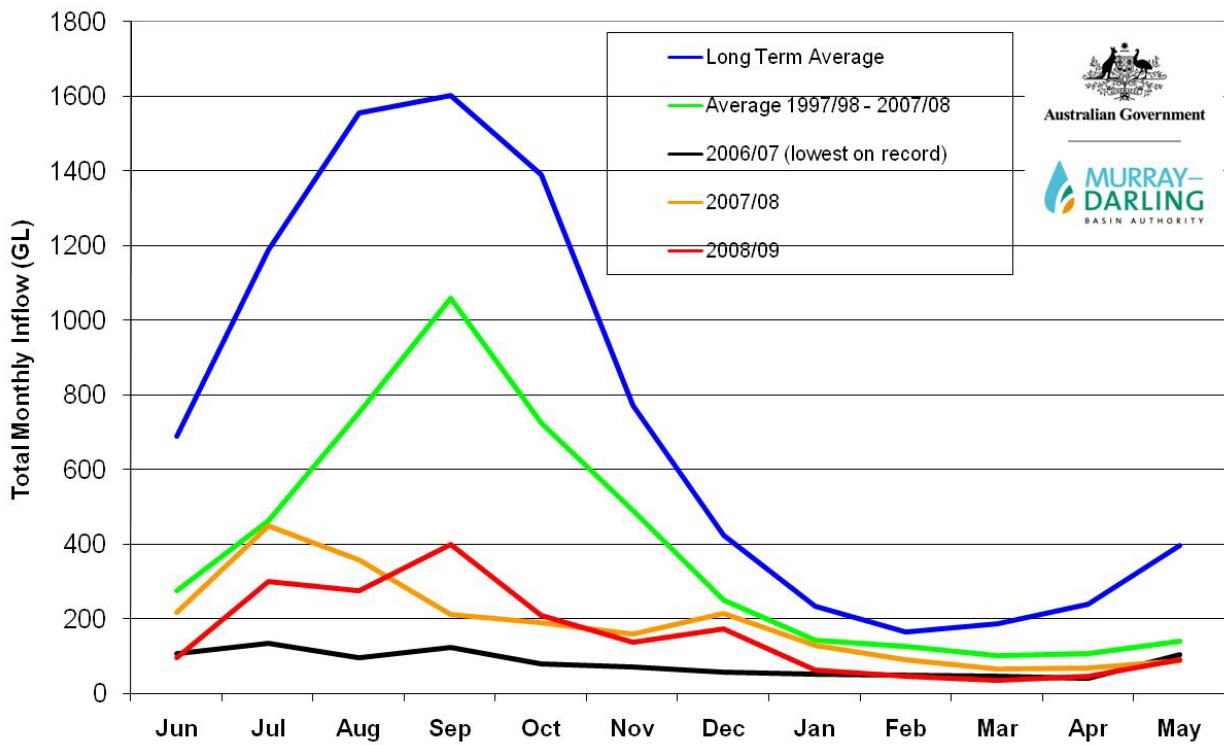


Figure 2. Murray System inflows (excluding Snowy and Menindee inflows)

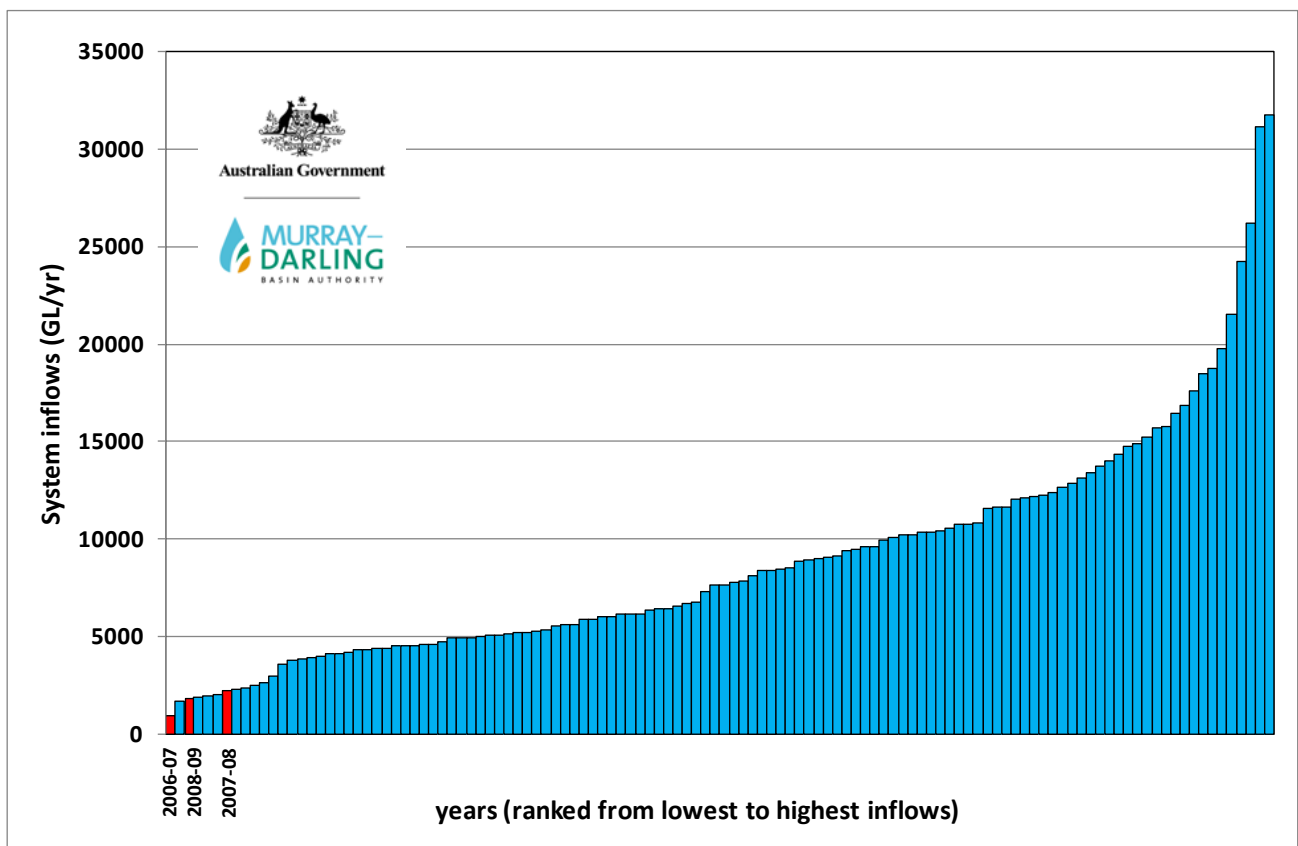


Figure 3. Murray System inflows sorted in ascending order for all years 1892-93 to 2008-09 (excluding Snowy and Menindee inflows)

## Murray System Storage

MDBA active storage at the end of May was 980 GL or 11 % of capacity (Figure 4). This is higher than the historic minimum (post Dartmouth) for the end of May (730 GL in 2007) but well below the May long term average of 4,670 GL. There was also about 220 GL in Menindee Lakes, which remains under NSW control.

Elsewhere in the Basin, storage levels also remain low. The total volume of water in all Basin storages managed by the MDBA or by State governments, was 3,904 GL, or 17 % of capacity. Total storage in the Snowy Mountains reservoirs (which are managed by Snowy Hydro) also remains low, with Lake Eucumbene at 18 % capacity.

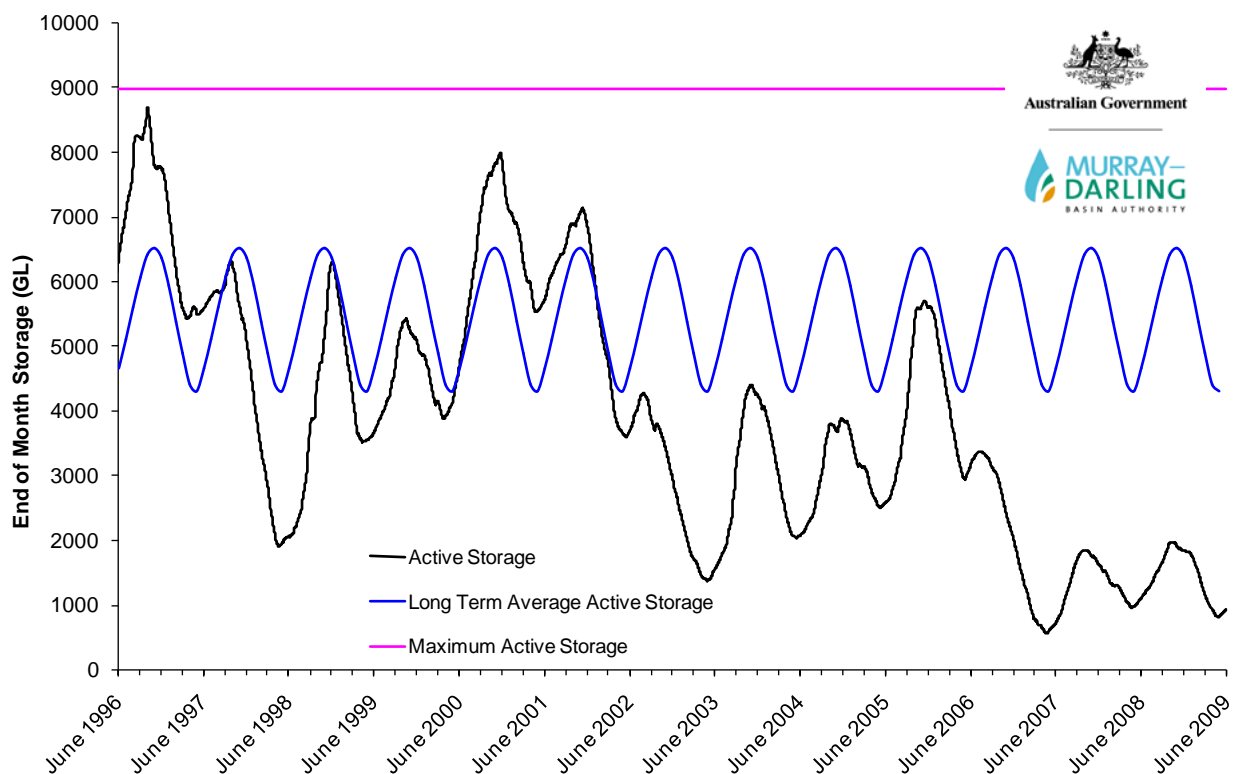


Figure 4. MDBA active storage, June 1996 to May 2009

## Murray Operations update

During summer and autumn, the overall goal of operations was to preferentially draw upon downstream storages and conserve water in upstream reservoirs, particularly in Dartmouth Reservoir, for as long as possible. This operation maximises water availability by minimising evaporative losses and increasing the potential to capture inflows during the winter months. As part of this operation, Hume Reservoir was steadily drawn down, and reached a minimum of 64 GL (2.1 % capacity) in late April. At the end of the irrigation season (mid May) the release from Hume Dam was reduced to its minimum and this, combined with inflows from the Snowy Scheme, allowed the storage level to slowly increase to about 200 GL (or 6.6 % capacity) by the end of May 2009. Storage in Dartmouth Reservoir has remained fairly steady since October 2008, and at the end of May was 825 GL (21 % capacity)

Typically, the filling phase for Hume and Dartmouth Reservoirs runs from the end of the irrigation season in mid May to late winter or spring, depending on seasonal conditions and downstream irrigation demands. During the filling phase, releases are reduced to maximise the capture of inflows, while maintaining sufficient flow downstream for riparian and instream environmental needs. The minimum release from Dartmouth Reservoir is 200 ML/day. Similar to the last two years, the release from Hume Reservoir might be reduced to 400 ML/day (compared to the normal minimum of 600 ML/day) and the target flow at Doctors Point (near

Albury) to 800 ML/day (compared to the normal minimum of 1,200 ML/day) depending on inflows from the Kiewa River. Further downstream, normal minimum flows downstream of Yarrowonga Weir (1,800 ML/day) and at Swan Hill (0.6 m local gauge height) might also not apply for short periods of time, depending on inflows from tributaries.

### **Lake Mulwala drawdown**

Lake Mulwala (at Yarrowonga Weir) is currently being fully lowered to the original river channel, to control the spread of *Egeria densa*, an invasive aquatic weed. Excessive growth of the weed was affecting recreational and tourism activities, and also interrupting normal operation of the power station and fishway at the Weir. It is planned to hold the lake level down until mid-July when refilling will commence. Winter drawdowns have occurred periodically ever since Yarrowonga Weir was completed in 1939, the most recent being in 1984, 1989, 1993, 2002 and a partial drawdown in 2008. The lowering of the lake level is the only method that provides viable weed control over the whole of the lake, and aims to provide recreational and tourism benefits for a number of years into the future.

### **Menindee Lakes**

A small volume of water originating from the Moonie and Macintyre Rivers in the northern Basin is slowly making its way towards Menindee Lakes, up to 1,500 km further downstream. It will take a number of weeks before any of this water reaches the Lakes and river transmission losses are expected to be high. Storage in Menindee Lakes is currently 220 GL (or 13 % capacity) and, if there is no follow up rain, is expected to only increase by a few percent. The Lakes will remain under NSW control until the storage level reaches 640 GL, and there will need to be further significant rainfall events in the north before the MDBA regains control.

### **Flow to South Australia**

During May, the flow to South Australia averaged 1,900 ML/day compared with a normal entitlement rate of 3,000 ML/day. Under the drought water sharing arrangements, the flow to South Australia has been below normal entitlement rates for more than 2 ½ years. This will continue until there is a significant improvement in water resource availability. Monthly flow patterns are provided by South Australia and are continually adjusted to account for any changes in diversions or losses within South Australia, and also to manage river salinity.

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](http://www.mdba.gov.au)

## **Environment**

### **Algal blooms**

In early March, high levels of blue-green algae were first reported in Hume Reservoir and by mid April had extended as far downstream as Euston Weir (a distance of over 1,000 km by river). The Murray was not the only river to suffer from algal blooms, with red alerts issued for other sites across the Basin, including on the lower Darling, Murrumbidgee and Lachlan Rivers, and also for Copeton, Keepit, Pindari, Split Rock and Chaffey Dams. Historically, algal growth is most prevalent in the summer and autumn months when water temperatures are higher, and both storage levels and river flows are relatively low. This year was no exception, and as water temperatures decreased with the onset of cooler weather, the algal levels started to decline. By mid May all red alerts along the Murray had been lifted.

### **Environmental flows**

The prolonged and severe dry period continues to severely impact on wetlands and floodplain ecosystems across the southern half of the Basin. The situation is not expected to improve until there is a very significant and sustained improvement in rainfall, system inflows and water storage levels.

Small amounts of environmental water have been made available during autumn to avoid critical loss of threatened species, reduce the risks of irretrievable damage and provide drought refuges. Sites that have

received Living Murray Environmental water include Koondrook Forest, Hattah Lakes, Lindsay-Wallpolla Islands, Chowilla Floodplain and the Lower Lakes. Several of these waterings have been supplemented with water provided by the Commonwealth Environmental Water Holder and also by the States.

### Salinity

Salinity along the Murray, upstream of Lock 1, remains relatively low. This is due to the successful operation of salt interception schemes, a gradual reduction in saline groundwater levels during the prolonged drought, and a predominance of river flows originating from the fresher headwater storages in the Murray. At Swan Hill for instance, the average salinity in May 2009 was only 40 EC, which is well below the twenty year average of 210 EC (Figure 5). At Morgan, upstream of Lock 1 in South Australia, the May 2009 average was 480 EC which was slightly below the 20 year average of 515 EC. Downstream of Lock 1, however, salinities have been steadily rising over the past 3 years due to the lower flows past Lock 1. At Murray Bridge the May 2009 average of 780 EC was higher than 20 year average of 560 EC and significantly higher than the May 2006 average of 320 EC.

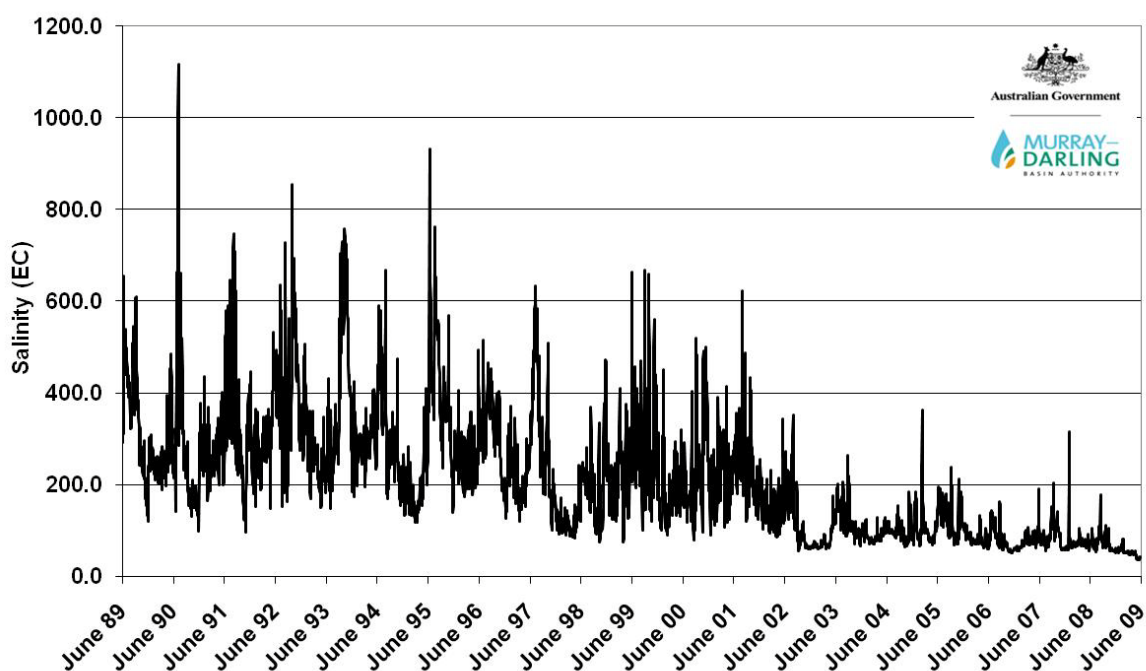
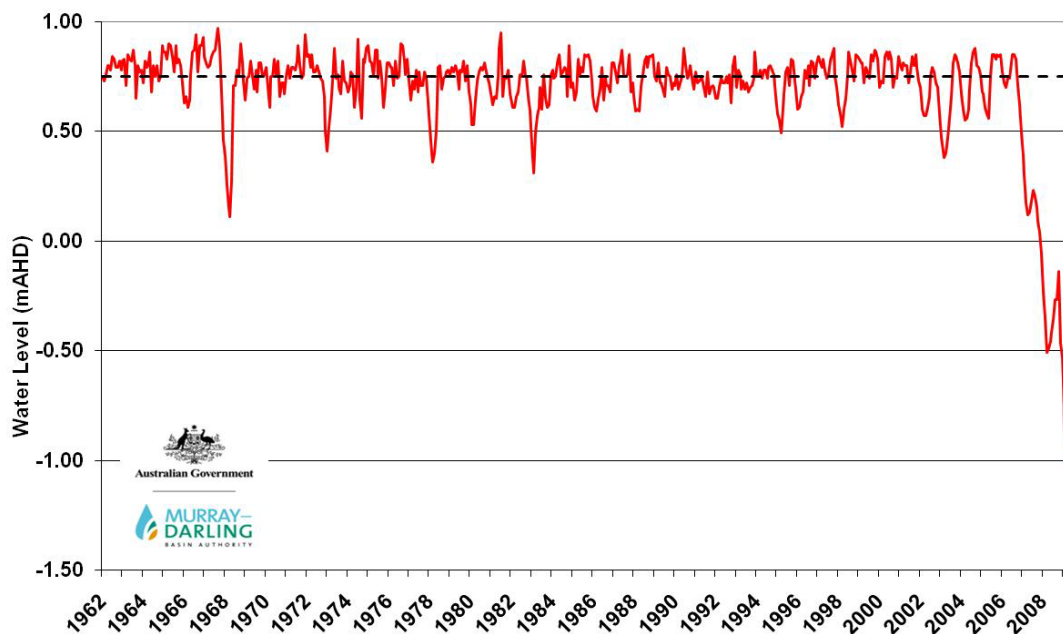


Figure 5. Salinity at Swan Hill, June 1989 to May 2009

### Lower Lakes

The water level in Lake Alexandrina reached a new record low of -1.04 m AHD in April 2009. (see Figure 6). During May, reduced evaporative losses and local rainfall have allowed the water level to rise very slightly to about -0.95 m AHD. This is about 0.5 metres lower than in May 2008 when it was -0.46 m AHD, and 1.7 m below Full Supply Level (+0.75 m AHD). Under a dry scenario, the lake level is likely to remain fairly constant or rise slightly during the cooler winter months.

The salinity in Lake Alexandrina is currently 5,800 EC at Milang and about 27,000 EC upstream of Goolwa Barrage (compared with seawater salinity of about 50,000 EC). Local rainfall and the pumping of water from Lake Alexandrina has increased the water level in Lake Albert from about -0.5 m AHD in March 2009 to about -0.3 m AHD at the end of May. The salinity in Lake Albert is steady at about 10,500 EC compared with a long term average of 1,800 EC.



**Figure 6. Water level of Lake Alexandrina, 1962 to 2009 (Full Supply Level = +0.75 m AHD)**

## Outlook

Autumn is a critical time for wetting of the catchment prior to winter rainfall and, similar to last year, this has not eventuated. The catchments remain relatively dry, and Murray system inflows are tracking close to record lows. Inflows are only likely to improve if there is a sustained period of above average rainfall during winter.

For south-eastern Australia, the Bureau of Meteorology's latest rainfall outlook (for June to August), indicates that the chance of above average rainfall is about the same as the chance of below average. However, recent trends in Pacific climate patterns, and the latest outputs from computer models, indicate an increased risk of an El Niño developing during winter and spring. Further information can be obtained from the Bureau of Meteorology's website at; [www.bom.gov.au/climate/ahead/rain.seaus.shtml](http://www.bom.gov.au/climate/ahead/rain.seaus.shtml).

The prospects for irrigation allocations in 2009-10 will be highly dependent on future rainfall and system inflows. Overall, the outlook for the 2009-10 water year remains grim, and is similar to the previous two years.

## Additional Information

Additional information is available at [www.mdba.gov.au](http://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.

## Acknowledgements

Front cover photo: River Murray near Waikerie in South Australia. Photo courtesy of Lex Cogle, MDBA.