

River Murray System

Drought Update No. 10

October 2007

IN BRIEF

Deepening Drought

Murray System inflows through winter 2007 have been marginally better than those received in 2006 (which was the driest year on record), but are still amongst the lowest on record and substantially less than the long term average. August and September were particularly dry across most of the Murray-Darling Basin.



Grape vine removal
Photo by Arthur Mostead

Key developments since the last Update in August 2007:

- Rainfall (July - September) over much of the Basin has continued below average or very much below average, with patches of lowest on record in northern NSW
- Inflows over August and September have receded towards record low levels of 2006
- System storages are around 1200 GL lower than this time last year
- The prospect of substantial increases over the remainder of the season is poor given the majority of inflows are usually received during winter and early spring.
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Water is scarce throughout the Basin, with low or zero irrigation allocations widespread.

As the impact of this severe water shortage on irrigators and their communities is likely to be substantial, River Murray operations are focused on conserving as much water as possible. This includes keeping as much as possible in upstream storages, and making use of weir pools, such as Yarrowonga and Torrumbarry to supply downstream demands.

CURRENT SITUATION

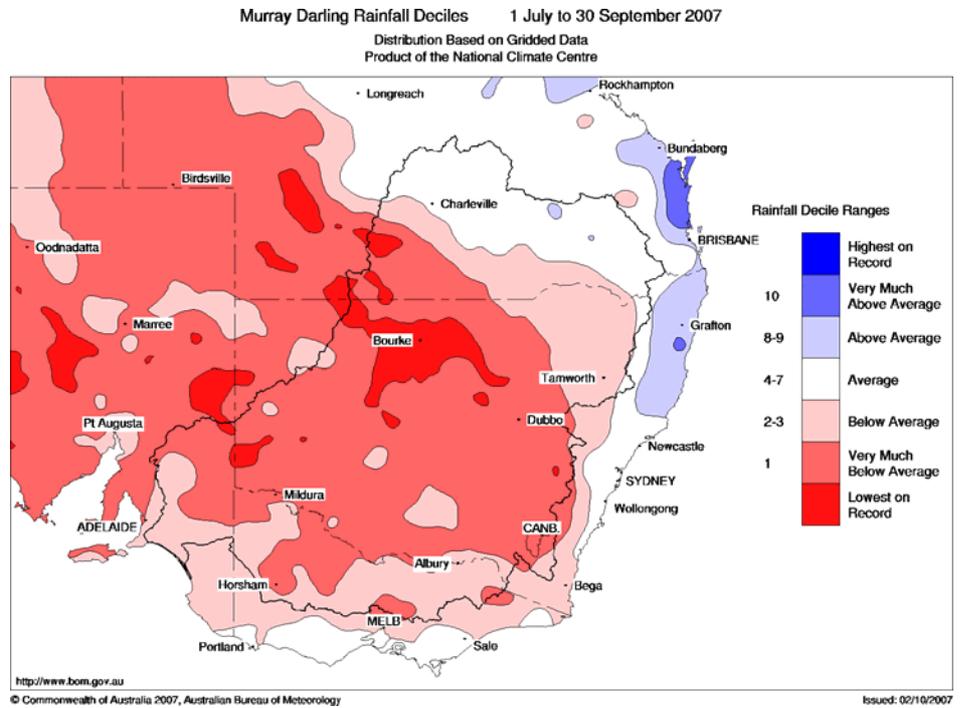
Rainfall and Streamflow

In July the southern half of the Basin received average to above average rainfall, while the northern half of the Basin was below average. However in August the situation changed with most of the

Figure 1 - Rainfall Deciles Winter-Early Spring 2007 (Australian Bureau of Meteorology)

Basin receiving below average rainfall except for some regions in the north-east, and these dry conditions continued into September (Figure 1). Significantly, the upper catchments that feed the major storages of the River Murray suffered a severe rainfall deficiency.

The Bureau of Meteorology has stated that this is the first time in the meteorological record dating from 1900 that an El Niño-drought in the Murray-Darling Basin has not been followed by at least one three-month period with "above normal" (Basin average) rainfall by the end of the following winter.

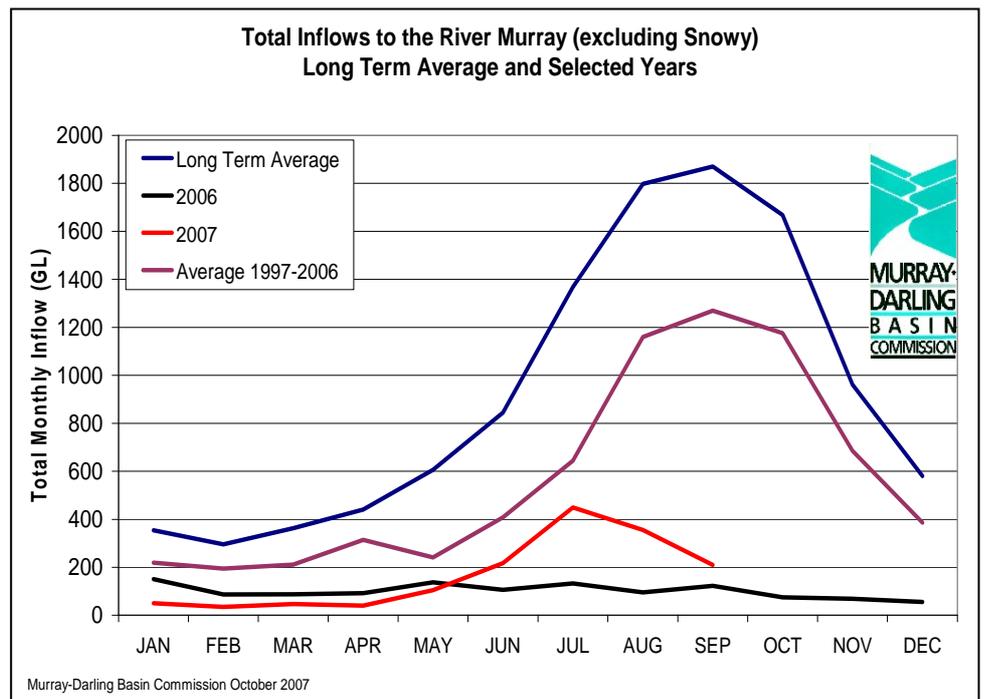


The deficiencies discussed above have occurred against a backdrop of multi-year rainfall deficits and record high temperatures that have severely depleted water supplies.

As a result of the below-average rainfall in the main catchment area during August, Murray System inflows for August were only 360 GL, which is well below the long term August average of 1570 GL.

The dry weather persisted throughout September, with inflows of about 210 GL, compared to the long term September average of 1610 GL (Figure 2). Monthly inflows have now been below average for the last 24 months.

Figure 2 - River Murray Inflows (MDBC)

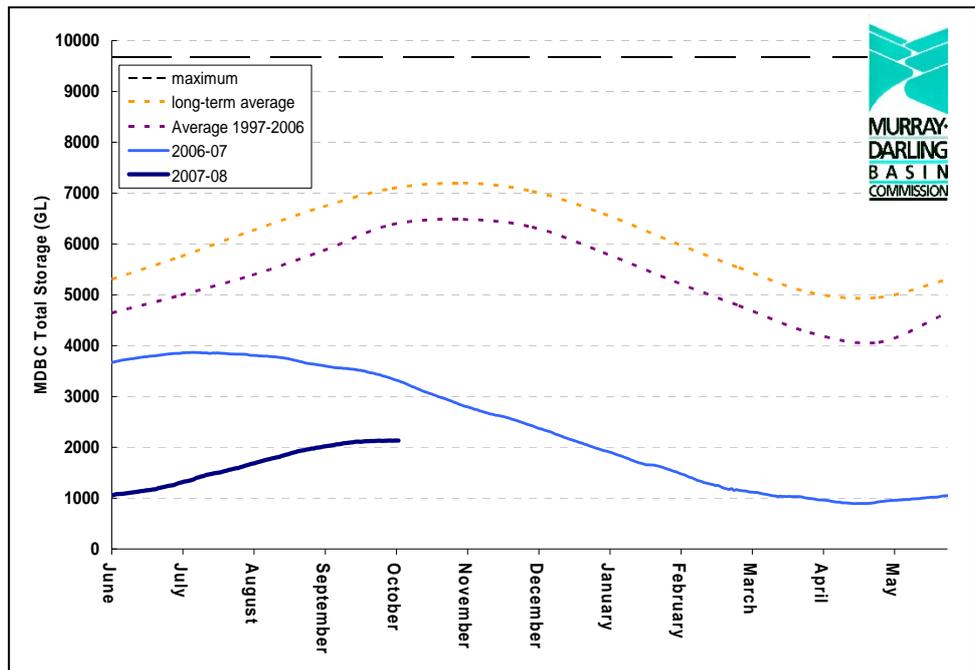


In August there were some good falls of rain in the far northeast of the Basin and this has resulted in some small inflows to the Darling River. This flow is travelling very slowly downstream, but is unlikely to result in significant inflows to Menindee Lakes.

Storages

At September 30, the total volume of water stored in River Murray System storages was 2130 GL (23%), which is the lowest for this time of year since 1957, before the construction of Dartmouth Reservoir and Menindee Lakes storage, and the expansion of Hume Dam. At this time last year storage totalled 3350 GL. (Figure 3)

Figure 3 - MDBC Total Storage (MDBC)



Storage volumes in Dartmouth Reservoir (currently at 17% capacity) and Hume Reservoir (29% capacity) are rising slowly, but are forecast to drop as consumptive demand increases over summer. Lake Victoria is currently 78% full and has begun gradually falling as it is drawn upon to supplement South Australian flow requirements.

CURRENT OPERATIONS

Drought Response Measures

Current river operations are focussed on reducing system losses and allowing as much water as possible to be conserved in the upstream storages where evaporation rates are lower. The combination of low storage levels and low inflows will require the river to be operated outside the normal operating regime.

For the past few months, critical water requirements along the River Murray were largely supplied by the Kiewa River and Ovens River, which allowed the water stored in Hume and Dartmouth Reservoirs to be conserved for use later in the season. However, as the demand for water increased, and the Kiewa and Ovens inflows receded, the release from Hume Dam was increased in mid September.

To minimise in-river losses, the drawdown of some weir pools has commenced. This can significantly reduce evaporation losses from the surface of the weir pools and any associated lakes and wetlands. The water level in Lake Mulwala (Yarrowonga Weir) was gradually lowered over the last 2 months, and the first stage of the Euston Weir drawdown commenced in early August. The weir pool at Torrumbarry will be used to re-regulate flows along the mid reaches of the Murray, which will cause the pool level to fluctuate during the next few months. See specific MDBC Media releases for details of these drawdowns.

Further water saving measures being considered include a limited drawdown of Weirs 8 and 9. Water users will be notified in specific media releases well in advance. Weir pool levels in South Australia will remain as close as possible to Full Supply Level immediately upstream of the weirs to contain salinity increases. However, the lower lakes are likely to fall to record lows under continuing dry conditions (possibly as low as -0.6m by March 2008). The temporary disconnection of selected wetlands in South Australia and New South Wales will deliver significant water savings, and has the additional benefit of reducing the amount of salt and nutrients entering the river.

Water currently stored in Lake Victoria is the result of tributary inflows during winter, particularly from the Ovens and Kiewa Rivers. This will provide a significant portion of South Australia's water over the coming

months and will reduce the demand on Hume and Dartmouth Reservoirs. The flow to South Australia has increased to 2600 ML/day and will remain at this level for the rest of October. This is well below South Australia's entitlement flow for October of 5500 ML/day. As a result of the low flow, salinity has been increasing, and at Morgan had increased from 430 EC in early June to 780 EC by the end of September.

Salinity and Other Water Quality Considerations

Since May there has been very little flow beyond Wellington into Lake Alexandrina. The lake level was steady over winter due to local rain and low rates of evaporation, but has now begun to gradually fall.

The water in the reach between Lock 1 and Wellington has been of reasonably good quality, with salinities of less than 500 EC. As water from this reach evaporates or is pumped to Adelaide and other urban centres in South Australia, it is slowly replaced with poorer quality water from upstream. Under continuing dry conditions, salinities are forecast to rise, and flows to South Australia will be aimed at maintaining the water quality within levels suitable for human consumption.

Salinity in the Lower Lakes is already in the range of 2300 to 2500 EC, with much higher levels immediately upstream of the barrages, where leakage over, under or through the structures has resulted in seawater mixing with the much fresher water of Lake Alexandrina. In isolated areas of the lakes salinity levels may also be higher due to local groundwater inflows. Considerable efforts have gone into minimising leakage, but seepage under, and storm waves over, the barrages cannot be prevented and will continue to bring salt in to the lake.

Regular water quality monitoring undertaken along the entire River Murray will provide early indications of salinity increases or any other problems, such as algal blooms. All people using the waters of the River Murray should be aware of the increased potential for water quality problems and the difficulty dealing with these issues while flows remain very low.

Environmental Considerations

Water allocated to the environment has been severely reduced by the drought, just like water allocated to irrigators and the community.

Any water made available to the environment of the River Murray this season will be used to provide critical drought refuge for key species in specific locations.

Less than 1% of total available water has been earmarked for environmental use, and discussion is currently underway to ensure appropriate usage of this small volume of water for critical environmental purposes under the current extreme conditions.



Rapid growth of Azola in Broken Creek near Cobram, Victoria
Azola growth has been exacerbated by the long drought and low inflows. Photo by Arthur Mostead

OUTLOOK

Rainfall and Streamflows

The Bureau of Meteorology's ENSO wrap-up shows a La Niña weather pattern intensifying during September. With such a late-developing La Niña, however, the typical increased rainfall response is not as likely as in past episodes.

The Bureau's rainfall outlook for October to December shows no strong odds of wetter or drier conditions. However, the outlook is for warm conditions over this period which could have a significant impact on demands, river system losses and runoff from any storm events that do occur. With catchments drier than normal for this time of year it will take a series of medium to large rainfall events to produce a good response in streamflow.

Water Availability for 2007/08

Current water availability is the lowest for the River Murray System over the past 116 years (using modelled behaviour at the current level of system development). Additionally, significant improvement over the next few months is becoming less likely. Two months ago we reported that there was a 25% chance that total water availability would be less than in 2006/07. The chance of this occurring has now increased to about 50% - if conditions don't improve significantly in October there will be a greater than 75% chance that total water available for use by the end of the season (in May 2008) will be worse than last season, as the months from November to May do not typically yield substantial inflows.

By October 3, there had been 1108 GL of improvements (excluding transmission losses) above critical human requirements available for sharing between States, according to special sharing rules agreed by partner governments to manage extremely low water availability. South Australia has announced a 16% allocation, with full delivery of carryover. Victoria has made all carryover water available and allocation is currently at 16% of High Reliability Water Shares. NSW has announced 0% allocation for both high security and general security water, but has re-credited 25% of water suspended in 2006/07. Some small allocations have also been granted to meet critical industry needs and to sustain permanent plantings. State water authorities provide regular updates, including information about the probability of future improvements in allocation.

Drought Planning for 2007/08 and Beyond

MDBC has been working closely with partner governments to develop contingency plans to manage water supplies during this unprecedented drought. In early 2007, agreement was reached on special water sharing arrangements that ensured critical human water was delivered to towns along the Murray, and changed the way water is shared between states to cope with the current extreme conditions.

The temporary disconnection of wetlands in all three States is expected to deliver savings equal to the amount of water required to supply critical human needs in Victorian and New South Wales towns dependent on Murray supplies for 2007/08.

South Australia has pumped water earlier usual from the lower Murray to storages in the Adelaide hills. Major South Australian pump stations are being lowered to allow operation at low river levels. This measure has been critical in being able to defer the construction of a temporary weir near Wellington. Wellington Weir would not increase water availability to South Australian or upstream users, but would maintain a pumping pool for urban water supply offtakes. Hence, the proposal to construct a temporary weir near Wellington is considered a measure of last resort.

Senior officials from MDBC and partner governments have been investigating options to ensure that there is sufficient water available in 2008/09 to meet critical human needs in the Murray Valley, as well as supplying urban centres in South Australia, including Adelaide. A range of contingency measures have been identified which can be implemented if late season improvements this year and inflows next year are insufficient by themselves to guarantee that critical human needs can be supplied. The probability of such poor inflows occurring is very low, but it is prudent to plan for such circumstances.

ADDITIONAL INFORMATION

MDBC will provide further drought updates in coming months. Additional information is available at <http://www.mdbc.gov.au> and from the relevant Australian and State Government Agencies.

For media interviews with MDBC personnel,

please contact: Sam Leone, MDBC Media Liaison, telephone: 0407 006 332