

RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

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Report #46/2014

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This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 7 November 2014. The next flow report will be provided on Friday, 21 November 2014.

In this report, for ease of representation, large volumes of water are expressed in gigalitres (GL), while smaller volumes are expressed in megalitres (ML). One GL is equal to 1 000 ML.

WATER RESOURCES UPDATE

During October 2014, the total River Murray System inflow was approximately 340 GL, which is less than a quarter of the October long-term average of 1 410 GL. Inflow to Menindee Lakes (from the Darling System) during October 2014 was 0 GL, which is well below the October long-term average of 170 GL.

The flow to South Australia during October 2014 was approximately 275 GL (compared to 620 GL in October 2013 and the October long-term average of 990 GL). The flow comprised:

- 170.5 GL of October Entitlement Flow; and
- approximately 105 GL of environmental water from *The Living Murray* program and Commonwealth Environmental Water Holder.

STORAGE VOLUMES

Murray-Darling Basin storage volumes at 12 November 2014 and 12 November 2013

Storage	Full Supply Volume (GL)	12/11/2014 (GL)	12/11/2013 (GL)	Long-term average (end of November)
Dartmouth	3 856	3 485 (90%)	3 806 (99%)	
Hume	3 003	2 061 (69%)	2 579 (86%)	
Lake Victoria	677	572 (84%)	639 (94%)	
Menindee Lakes	1 731*	257**(15%)	1 024 (59%)	
TOTAL	9 267	6 375 (69%)	8 048 (87%)	7 308 (79%)

*Menindee Lakes can be surcharged to 2 015 GL

**Menindee Lakes are now under New South Wales control

MENINDEE LAKES

Under the Murray-Darling Basin Agreement, the Murray-Darling Basin Authority controls the Menindee Lakes until the stored water volume decreases to 480 GL. The New South Wales Government assumes control of the storage at 480 GL and maintains control until the volume in storage exceeds 640 GL. On 18 February 2014, the volume in the Menindee Lakes decreased to below 480 GL and control switched to the New South Wales Government.

Given Menindee Lakes remain under New South Wales control, there is less flexibility in the way water can be delivered to South Australia in 2015, unless the storage position improves significantly.



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RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for November 2014 to January 2015 indicates a drier than normal season is more likely for eastern and south-eastern Australia with temperatures likely to be warmer than normal.

The climate influences include warmer than normal temperatures in the tropical Pacific Ocean and near normal temperatures in the tropical Indian Ocean.

For the latest forecast on the likelihood of El Niño establishing in 2014, please refer to the following website:

<http://www.bom.gov.au/climate/enso/>

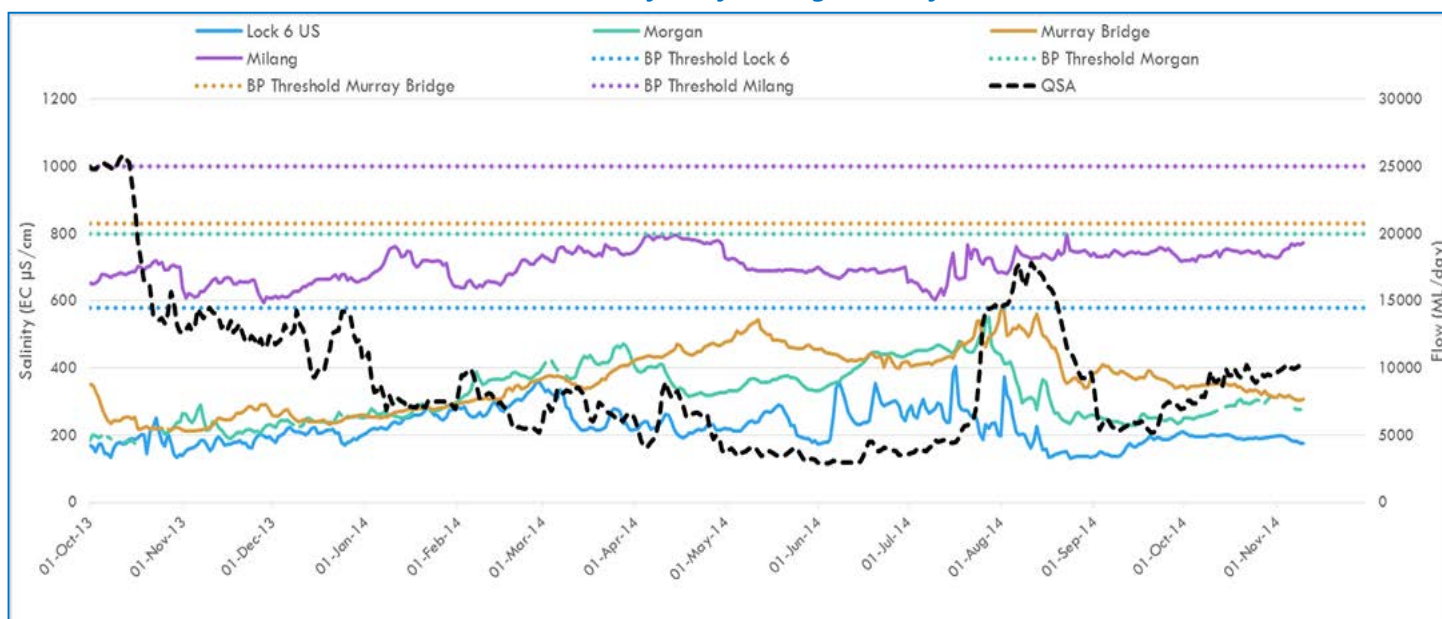
WATER QUALITY - Salinity

A number of targets are identified under the Basin Plan, which all Basin States must have regard to in managing River Murray flows. The targets for real-time salinity are identified below. Salinity must not exceed these values for 95 per cent of the time:

- 580 EC at Lock 6
- 800 EC at Morgan
- 830 EC at Murray Bridge
- 1 000 EC at Milang

The following graph shows the salinity at these locations and the flow to South Australia from October 2013 to November 2014. The dashed-lines identify the Basin Plan thresholds for the corresponding colour coded location. It confirms that salinity has not exceeded the threshold at any of these four locations during this period.

SA River Murray Daily Average Salinity



* Issues have been experienced with the Morgan EC sensor. This sensor is being replaced in November 2014.

FLOW OUTLOOK

The flow at the South Australian border is approximately 10 GL/day and will remain around this rate during the coming week, depending on upstream river and storage operations, extractions, and rainfall events. The flow comprises the normal November Entitlement Flow of 6 GL/day plus environmental water from the Murray-Darling Basin Authority's *The Living Murray* and Commonwealth Environmental Water Holder. The environmental water is being delivered to provide in-channel and Lower Lakes environmental benefits. South Australia is working with the Commonwealth Environmental Water Holder to seek further opportunities to deliver environmental water during spring and summer.

The flow over Lock 1 is approximately 8.2 GL/day and will reduce to around 8.0 GL/day during the coming week, depending on weather conditions and extractions.

It is important to note that flow forecasts in this advice are based on the information available at the time of preparation. They may change as new gauging information becomes available, or due to rainfall events or changed operations upstream. Flow forecasts are dependent on predictions made by the Bureau of Meteorology, Murray-Darling Basin Authority and water management agencies in upstream jurisdictions. They will be revised as new information becomes available.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority advised that on 1 November 2014, South Australia had 42.8 GL of water deferred and stored in Dartmouth (29.5 GL for critical human water needs and 13.3 GL for private carryover use in future dry years). Volumes stored are adjusted for net evaporation losses until delivered to South Australia.

DEWNR is investigating opportunities to defer additional Entitlement Flow during 2014-15 given the latest climate outlook provided by the Bureau of Meteorology.

MURRAY MOUTH

A continuous flow of at least 2 GL/day is required from the barrages to minimise sand build-up in the Murray Mouth. Flows of this magnitude reduce the rate that sand is deposited in the Murray Mouth through tidal activity, wave energy, and storms. Without unregulated flow or large volumes of environmental water, South Australia does not receive enough Entitlement Flow to maintain barrage releases of 2 GL/day during January, February and March each year.

Periods of low River Murray flow have presented management challenges in the past and resulted in continuous dredging operations from 2002 to 2010. The physical condition and openness of the Murray Mouth has deteriorated rapidly since early 2014. The extended duration of unregulated flow conditions ceased in October 2013, which meant less water was available for barrage releases and barrage flows fell below 2 GL/day on occasions. Recent monitoring of Murray Mouth sand volume and bathymetry (a measurement of depth) confirms that the condition of the Mouth is approaching that experienced in 2002 when dredging was commenced. DEWNR, SA Water and the Murray-Darling Basin Authority have commenced planning and approvals to prepare for the possibility of dredging.

WEIR POOL OPERATIONS

On 3 November 2014, water levels in the Lock 1 and 2 weir pools reached the target water level of 0.2 m above the normal operating range (0.5 m above full supply level). The water levels were raised to mimic historic natural water level variability to promote a range of ecological benefits. Environmental water is being used for the operation. The outcomes of the weir pool raising are being monitored and will be assessed.

The water levels are currently being drawn-down and should be around normal pool level by the first week in December 2014. The Lock 1 weir pool is being drawn-down more rapidly than previously planned as a precautionary measure due to seepage occurring on the downstream side of the weir structure.

All water users should be aware of the potential impacts of changing water levels including on pumping infrastructure and boats. Moored boats will need to be checked regularly and mooring ropes adjusted to compensate for lowering water levels.

If you would like to be kept informed on how the project is tracking, please send your name, address and email details to: RiverineRecovery@sa.gov.au

Alternatively, you may call the Contact Officer, Ms Wendy Georganas on (08) 8463 3918.

CHOWILLA OPERATIONS

Water levels at the Chowilla regulator are now gradually being returned to normal following the testing of the new environmental water management infrastructure on the Chowilla Floodplain. The testing event will conclude in early December 2014. Water levels reached the target heights of 19.10 m AHD at the Chowilla regulator (raised by about 2.7 m) and 19.65 m AHD at Lock 6, which is 0.40 m above normal pool level. These water levels were held until 29 October 2014 to enable engineering checks and environmental monitoring. Water levels at Lock 6 are also being gradually lowered and will be back to normal pool level by about 18 November 2014. The testing has proceeded well with large numbers of waterbirds using the wetlands and significant frog breeding occurring. Environmental water from *The Living Murray* has been delivered to enable the testing at Chowilla. More information can be found at: www.environment.sa.gov.au/chowilla-floodplain

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.68 m AHD and approximately 0.66 m AHD in Lake Albert. When conditions are favourable, barrage releases will be prioritised through Tauwichee and Goolwa (approximately 70:30 ratio), adjacent to the fishways, targeting a volume of approximately 2 GL/day. SA Water will continue to operate the barrages to minimise any negative salinity impacts from reverse flow events. All fishways are operating.

To see live salinity data at various locations on the River Murray and in the Lower Lakes, please refer to the following website: <http://www.waterconnect.sa.gov.au/Systems/RTWD/SitePages/Home.aspx>

Water levels and barrage operations are monitored closely by various agencies of the South Australian Government, Murray-Darling Basin Authority and Commonwealth Environmental Water Office.

NAVIGATION ISSUES

Sandbars in the vicinity of the Murray Mouth may cause navigation hazards. Mariners are advised to navigate with caution when operating in the area. Sandbars are also present along sections of the River Murray, downstream of Lock 7 and 8 and in South Australia. All watercraft users should be aware of the risk of submerged navigation hazards, and should regularly check river depth.

When weir pools are being raised above their normal operating range, watercraft users need to be aware of the changed river conditions and exercise caution.

WATER TRADE

On 28 October 2014, the Murray-Darling Basin Authority announced that trade from above the Barmah Choke to below the Barmah Choke (downstream trades) will be restricted immediately. A downstream trade can only occur if an upstream trade of the same or greater volume has already occurred. Entitlement holders can still trade upstream. The restriction is necessary because of:

- current and forecast dry conditions;
- high demand for water use due to dry conditions;
- ability to protect delivery of existing water Entitlements (downstream of Barmah Choke); and
- inability to deliver water from Menindee Lakes.

CONSTRUCTION WORKS

Yatco Lagoon

Work is underway to relocate pump offtakes from Yatco Lagoon and install new pump offtakes on the River Murray. The construction work is expected to be completed by early 2015.

Deep Creek (Pike Floodplain)

Work to replace the Deep Creek inlet structure and construct a vertical slot fishway is underway. Deep Creek flow will be maintained throughout the construction period via a temporary diversion pipe. Construction is expected to be completed by mid-December 2014. Traffic conditions on the Lock 5 Road will be changed during this period.

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RIVER MURRAY WATER LEVELS

Below is a table of River Murray water levels at a number of locations from Lock 10 (near Wentworth) to Murray Bridge.

River Murray Water Levels on 12 November 2014

Location	River km	Normal Pool Level	Current Level (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)
Lock 10	825.0	30.80	30.90	33.81	33.32
Lock 9 Kulnine	764.8	27.40	27.64	30.03	29.44
Lock 8 Wangumma	725.7	24.60	25.35	27.60	27.19
Lock 7 Rufus River	696.6	22.10	22.11	25.70	25.24
Lock 6 Murtho	619.8	19.25	19.38	21.03	20.50
Renmark	567.4	-	-	18.54	18.04
Lock 5	562.4	16.30	16.39	18.07	17.50
Lyrup	537.8	-	13.28	16.85	16.26
Berri	525.9	-	13.23	15.81	15.74
Lock 4	516.2	13.20	13.22	15.65	15.08
Loxton	489.9	-	10.18	15.05	14.12
Cobdogla	446.9	-	9.88	13.44	12.38
Lock 3	431.4	9.80	9.81	13.16	12.02
Overland Corner	425.9	-	6.74	12.73	11.58
Waikerie	383.6	-	6.71	11.26	10.24
Lock 2	362.1	6.10	6.60	10.28	9.30
Cadell	332.6	-	3.81	9.17	8.08
Morgan	321.7	-	3.79	8.85	7.65
Lock 1 Blanchetown	274.2	3.20	3.67	6.81	5.38
Swan Reach	245.0	0.75	0.70	6.06	4.51
Mannum PS	149.8	0.75	0.70	3.15	1.90
Murray Bridge	115.3	0.75	0.63	2.06	1.26

Note that the above water levels may be affected by local wind conditions.

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FURTHER INFORMATION

The WaterConnect website is South Australia's comprehensive water information portal and can be accessed at: <http://www.waterconnect.sa.gov.au>

Up-to-date River Murray flow and water level information can be accessed at the Department of Environment, Water and Natural Resources, SA Water and Murray-Darling Basin Authority websites:

<http://www.waterconnect.sa.gov.au/Systems/RTWD/SitePages/Home.aspx>

www.sawater.com.au/SAWater/Environment/TheRiverMurray/River+Murray+Levels.htm

<http://www.mdba.gov.au/river-data/live-river-data>

The Department of Environment, Water and Natural Resources has published a series of inundation maps for the River Murray. They are available at: <http://www.waterconnect.sa.gov.au/Systems/RMIM/Pages/default.aspx>

Information on the management of acid drainage water in the Lower River Murray can be accessed online at:

http://www.epa.sa.gov.au/environmental_info/water_quality/acid_sulfate_soils_ass/lower_river_murray_reclaimed_irrigation_area_lmria

Details of river height and rainfall information in the River Murray within Victoria and New South Wales are available at the Bureau of Meteorology website: <http://www.bom.gov.au/vic/flood>

Information provided by the Commonwealth Environmental Water Office can be accessed at:

www.environment.gov.au/ewater/southern/murray/lower-murray.html

Information on The Living Murray can be accessed at:

<http://www.mdba.gov.au/about-basin/environmental-sites>

Department of Environment, Water and Natural Resources

<http://www.environment.sa.gov.au/Home>

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