

RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

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Report #50/2015

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This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 11 December 2015. The next flow report will be provided on Thursday, 24 December 2015.

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 November 2015, the total River Murray System inflow was approximately 250 GL, which is about a third of the November long-term average of 800 GL. Inflow to Menindee Lakes (from the Darling System) during November 2015 was approximately 0 GL, which is well below the November long-term average of 125 GL.

The flow to South Australia during November 2015 was approximately 211 GL, which is about a quarter of the November long-term average of approximately 900 GL. The flow comprised:

- approximately 165 GL of Entitlement Flow (180 GL of November Entitlement Flow less 15 GL of deferred Entitlement Flow); and
- approximately 46 GL of environmental water from the Commonwealth Environmental Water Holder (CEWH) and the Murray-Darling Basin Authority's *The Living Murray* (TLM).

STORAGE VOLUMES

Murray-Darling Basin storage volumes at 16 December 2015 and 16 December 2014

Storage	Full Supply Volume (GL)	16/12/2015 (GL)	16/12/2014 (GL)	Long-term average (end of Dec)
Dartmouth	3 856	2 090 (54%)	3 308 (86%)	
Hume	3 003	1 269 (42%)	1 866 (62%)	
Lake Victoria	677	554 (82%)	551 (81%)	
Menindee Lakes	1 731*	**85 (5%)	204 (12%)	
TOTAL	9 267	3 998 (43%)	5 929 (64%)	6 871 (74%)

*Menindee Lakes can be surcharged to 2 015 GL

**Menindee Lakes are 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 dropped to below 480 GL and control switched to the New South Wales Government.

Given that the 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.



RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for December 2015 to February 2016 indicates average to below average rainfall is likely across the Murray-Darling Basin with average to cooler than average temperatures. The outlook is influenced by very warm sea surface temperatures in the Indian Ocean and strong El Niño conditions.

For the latest forecast on El Niño please refer to the following website:

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

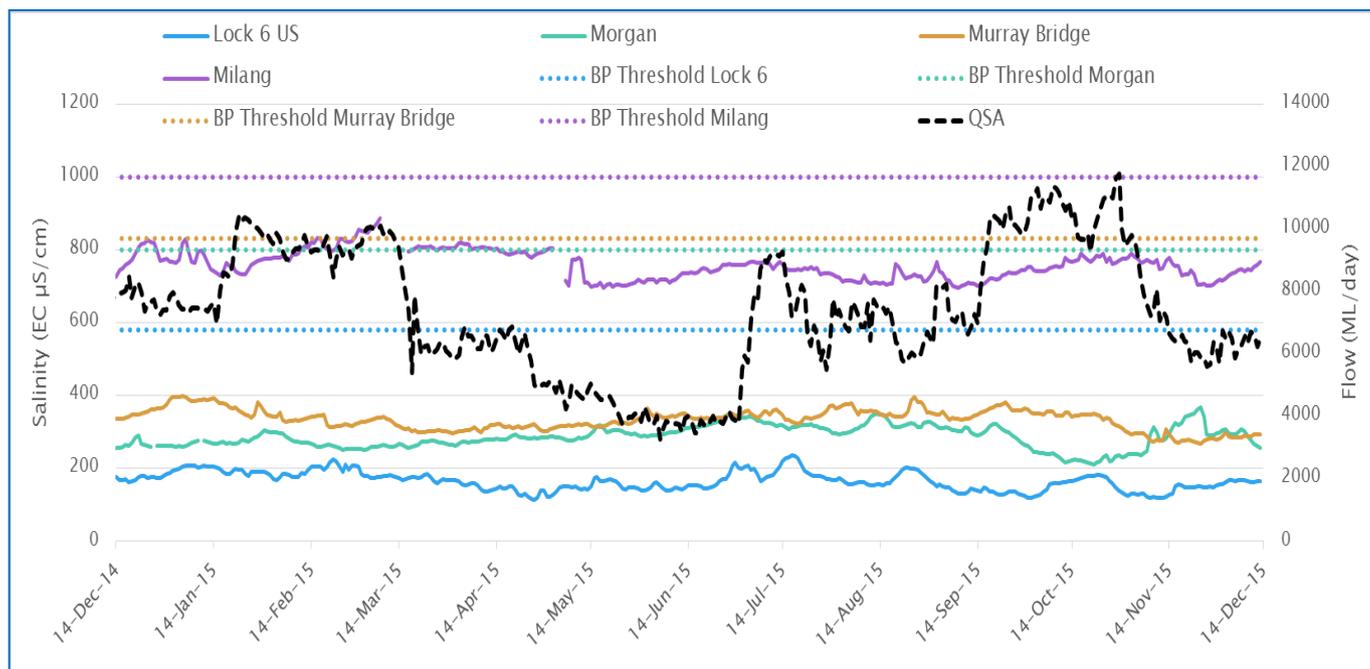
WATER QUALITY - Salinity

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 (QSA) from December 2014 to December 2015. The dashed-lines identify the Basin Plan (BP) 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



Note: Milang salinity readings from 10-17 March and 3-8 May are not available.

FLOW OUTLOOK

The flow at the South Australian border is approximately 6.5 GL/day and will remain around this rate during the coming week. It comprises the normal December Entitlement Flow of 7 GL/day less deferred Entitlement Flow plus environmental water. Most of the environmental that South Australia is receiving in December is held on South Australian Licences and included in South Australia's Entitlement Flow.

The flow over Lock 1 is approximately 3.6 GL/day and will decrease to around 3.5 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. The forecasts will be revised as new information becomes available.

ENVIRONMENTAL WATER

During December 2015, the Commonwealth Environmental Water Holder (CEWH) and the Murray-Darling Basin Authority's *The Living Murray* are providing environmental water to South Australia. The environmental water will provide in-channel, Chowilla anabranch, Lower Lakes and Coorong environmental and water quality benefits.

South Australia and the CEWH have agreed on an environmental watering schedule to deliver environmental water to the Lower Lakes, Coorong and Murray Mouth in 2015–16. The bulk of the environmental water will be delivered before January 2016.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority confirmed that on 1 December 2015, South Australia had 117.8 GL of deferred water in storage. Of this total, 68 GL is stored for critical human water needs and 49.8 GL for private carryover use in future dry years. Volumes stored are adjusted for net evaporation losses until delivered to South Australia.

DEWNR will continue to pursue opportunities to defer additional Entitlement Flow during 2015–16. Opportunities to defer and store water are considered on the basis of how Entitlement Flow is managed, plus operational flow objectives for water quality and weather conditions.

MURRAY MOUTH

Dredging operations at the Murray Mouth commenced on 9 January 2015 to maintain connectivity (exchange of water) between the river and the Southern Ocean. Dredges are operating in the Tauwitche and Goolwa Channels. At 13 December 2015, a total of approximately 945 500 cubic metres of sand had been removed. Routine monitoring confirms an improvement in the condition of both channels as a result of dredging.

Dredging operations will close over the Christmas period, starting on 18 December 2015 and recommencing on 4 January 2016. Dredging operations have been doubled over the last few weeks, providing a buffer for the Christmas period closure.

Mariners are reminded that navigation through the Murray Mouth is only permitted during daylight hours and that Exclusion Zones established around the dredges remain in place to ensure public safety. For more information refer to the Notice to Mariners at:

http://webapps.transportsa.com.au/news/templates/dtei_template2010.aspx?articleid=2865&zoneid=15

There is also a partial park closure in place for the northern tip of the Coorong National Park. For more information refer to the following:

http://www.environment.sa.gov.au/parks/Safety/Park_closures/141219-coorong-national-park

Signage has been installed at appropriate locations and flyers distributed advising of Exclusion Zones.

Any boats navigating through the Murray Mouth area should proceed with caution due to sandbars being present at shallow depth. Boats equipped with 'echo sounders' are strongly encouraged to regularly check depths and avoid travelling at low tide.

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.73 m AHD and in Lake Albert is approximately 0.72 m AHD. During the week ending 15 December 2015, total barrage releases were approximately 1 GL. On 25 November 2015, barrage releases were reduced to a minimum. Under minimum release conditions, all barrage gates are closed, but all fishways remain open to provide a critical connection for fish passage between Lake Alexandrina and the Coorong. The reason for reducing barrage releases is to maintain water levels in the Lower Lakes above 0.4 m AHD during summer, which is predicted to be dry.

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.

WEIR POOL OPERATIONS

The Lock 5 and Lock 2 weir pool raising events are now complete, with the water level back at the normal pool level. The CEWH provided approximately 6 GL towards these weir pool raising events.

The weir pool raising events mimicked a degree of the historic natural water level variability, which has been largely lost through river regulation. The objective is to promote a range of ecological benefits. For further information please refer to the following website: www.naturalresources.sa.gov.au/weirpools

The Lock 1 weir pool remains approximately 0.1 m below the normal pool level of 3.2 m AHD to enable engineering investigations to be undertaken at the weir.

CHOWILLA OPERATIONS

The Chowilla Creek environmental regulator operations are now complete, with the water level back at the normal pool level. Boating access through the regulator will re-open by Saturday, 19 December 2015.

This event increased water levels within channels in the anabranch, and connected some low level wetland areas. The in-channel rise provided important outcomes for trees including seedlings and saplings and other riparian vegetation.

The Murray-Darling Basin Authority's *The Living Murray* provided environmental water to support the Chowilla operation and environmental watering.

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 Locks 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.

BASIN SALINITY MANAGEMENT 2030

Murray-Darling Basin jurisdictions have recently renewed their joint commitment to manage salinity through a new inter-governmental strategy; Basin Salinity Management 2030 (BSMS2030). The BSMS2030 builds on the significant investment in salinity management by governments over the last 30 years. It retains existing regulatory settings and management arrangements that provide the foundation for Basin salinity management, while aligning with the Basin Plan, streamlining administration and exploring ways to further optimise the operation of salt interception schemes and reduce costs.

A copy of the BSMS2030 can be found at:

<http://www.mdba.gov.au/media-pubs/publications/basin-salinity-management-2030>

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 16 December 2015

Location	River km	Normal Pool Level	Current Level (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)	2011 High Water Level (m AHD)
Lock 10	825.0	30.80	30.93	33.81	33.32	32.28
Lock 9 Kulnine	764.8	27.40	27.33	30.03	29.44	28.80
Lock 8 Wangumma	725.7	24.60	24.12	27.60	27.19	26.79
Lock 7 Rufus River	696.6	22.10	22.11	25.70	25.24	24.92
Lock 6 Murtho	619.8	19.25	19.29	21.03	20.50	20.11
Renmark	567.4	-	-	18.54	18.04	17.38
Lock 5	562.4	16.30	16.42	18.07	17.50	17.05
Lyrup	537.8	-	13.26	16.85	16.26	15.68
Berri	525.9	-	13.19	15.81	15.74	15.16
Lock 4	516.2	13.20	13.23	15.65	15.08	14.75
Loxton	489.9	-	10.04	15.05	14.12	13.42
Cobdogla	446.9	-	9.84	13.44	12.38	11.52
Lock 3	431.4	9.80	9.83	13.16	12.02	10.93
Overland Corner	425.9	-	6.22	12.73	11.58	10.27
Waikerie	383.6	-	6.25	11.26	10.24	9.06
Lock 2	362.1	6.10	6.12	10.28	9.30	8.25
Cadell	332.6	-	3.24	9.17	8.08	6.82
Morgan	321.7	-	3.20	8.85	7.65	6.20
Lock 1 Blanchetown	274.2	3.20	3.16	6.81	5.38	4.42
Swan Reach	245.0	0.75	-	6.06	4.51	3.09
Mannum PS	149.8	0.75	0.74	3.15	1.90	1.46
Murray Bridge	115.3	0.75	0.67	2.06	1.26	1.21

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 salinity, 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:

<https://www.waterconnect.sa.gov.au/Systems/RTWD/Pages/Default.aspx>

<http://www.sawater.com.au/SAWater/Environment/WaterProofingAdelaide/TheRiverMurray/RMOU/Dailyflow.htm>

<http://livedata.mdba.gov.au/>

The Department of Environment, Water and Natural Resources has published a series of inundation maps for the River Murray. They are available at:

<https://www.waterconnect.sa.gov.au/Systems/RMIM/SitePages/Home.aspx>

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

http://www.epa.sa.gov.au/environmental_info/water_quality/programs/acid_sulfate_soils/lower_river_murray_rec_laimed_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>

Basin Salinity Management 2030 can be accessed at:

<http://www.mdba.gov.au/media-pubs/publications/basin-salinity-management-2030>

Information provided by the Department of Transport, Energy and Infrastructure on boat licences, registering motor boats, owning and operating water craft, and boat and marine safety can be accessed at:

www.sa.gov.au/boatingmarine

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