

RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

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Report #24/2015

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This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 12 June 2015. The next flow report will be provided on Friday, 26 June 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 1000 ML.

WATER RESOURCES UPDATE

During May 2015, the total River Murray System inflow was approximately 250 GL, which is well below the May long-term average of 440 GL. Inflow to Menindee Lakes (from the Darling System) during May 2015 was 0 GL, which is well below the May long-term average of 200 GL.

The flow to South Australia during May 2015 was approximately 140 GL (compared to 115 GL in May 2014 and the May long-term average of 350 GL). The flow comprised:

- 88 GL of May Entitlement Flow (93 GL minus 5 GL of deferred and stored Entitlement Flow for private carryover); and
- approximately 40 GL of environmental water from the Commonwealth Environmental Water Holder and 10.7 GL from the Victorian Environmental Water Holder from environmental watering actions in the Goulburn River.

STORAGE VOLUMES

Murray-Darling Basin storage volumes at 17 June 2015 and 17 June 2014

Storage	Full Supply Volume (GL)	17/06/2015 (GL)	17/06/2014 (GL)	Long-term average (end of June)
Dartmouth	3 856	2 836 (74%)	3 466 (90%)	
Hume	3 003	899 (30%)	1 395 (46%)	
Lake Victoria	677	410 (61%)	442 (65%)	
Menindee Lakes	1 731*	**77 (4%)	387 (22%)	
TOTAL	9 267	4 222 (46%)	5 690 (61%)	6 174 (67%)

*Menindee Lakes can be surcharged to 2 015 GL

**Menindee Lakes are now under New South Wales control

It is important to note that the volume of water held in storage includes water set aside for carryover for New South Wales, Victoria and South Australia, environmental water and other reserves. The volume held in storage has started to increase as a result of recent rainfall and reduction in downstream deliveries from Hume.

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.



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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 June to August 2015 indicates drier than average conditions with warmer temperatures across the Murray-Darling Basin. The Pacific and Indian Oceans are influencing this weather outlook. The El Niño in the Pacific Ocean is expected to strengthen and have a drying impact on eastern Australia.

El Niño is often associated with below-average winter and spring rainfall over eastern Australia, and above-average daytime temperatures over the southern half of the country. El Niño events have been shown to adversely affect water resources availability, particularly from spring. El Niño conditions are an important consideration as key catchments in the River Murray system have been relatively dry in 2015. Substantial rainfall will be required to wet-up catchments sufficiently to provide inflows into storages. Without increased inflows into the storages, there would be limited improvements to the storage volume and this affects the sharing of water between New South Wales, Victoria and South Australia.

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

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

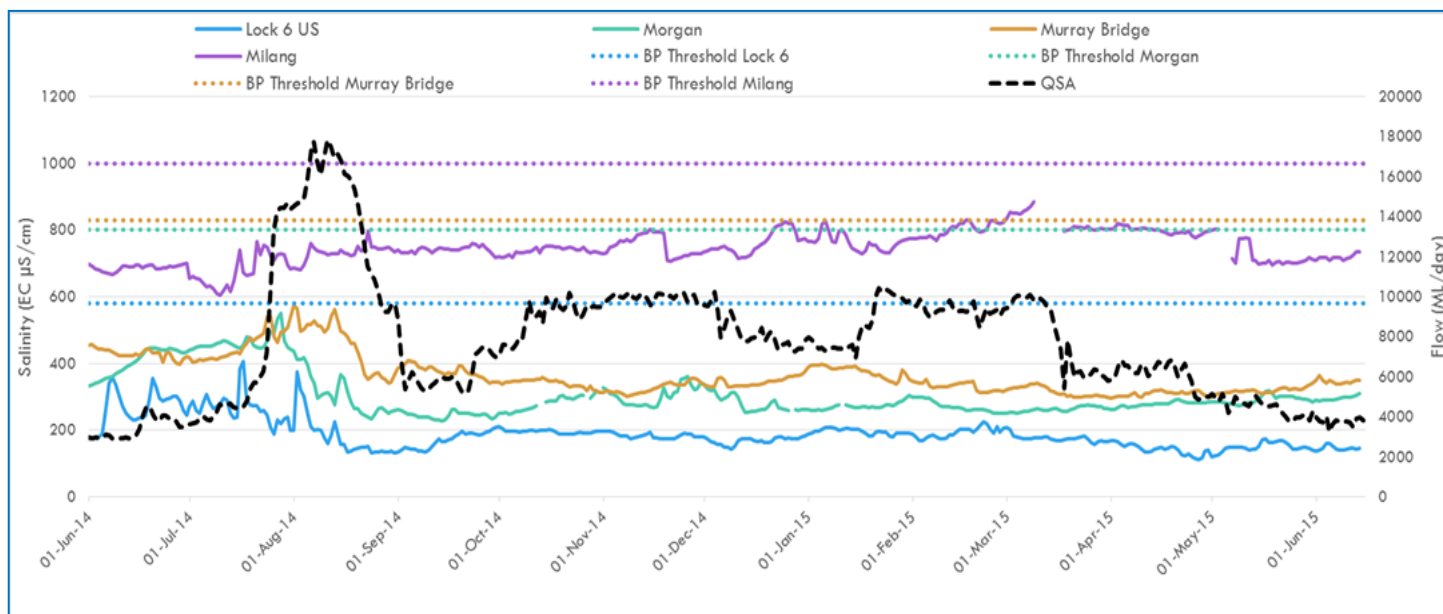
WATER QUALITY - Salinity

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 June 2014 to June 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 were invalid due to an issue with the recording instrument.

FLOW OUTLOOK

The flow at the South Australian border is approximately 3.7 GL/day and will remain around this rate during the coming week. It comprises the normal June Entitlement Flow of 3.0 GL/day plus environmental water.

The flow over Lock 1 is approximately 3.4 GL/day and will reduce to around 3.1 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 June 2015, the Commonwealth Environmental Water Holder (CEWH) will deliver approximately 24 GL of environmental water to South Australia. In July 2015, the CEWH will provide environmental water to South Australia, including return flows from a winter environmental watering event in the Goulburn system. The environmental water will provide in-channel, Lower Lakes, and Coorong environmental and water quality benefits. South Australia is working with the CEWH to identify further opportunities to deliver environmental water in the coming months.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority advised that on 1 June 2015, South Australia had 53.7 GL of water deferred water in storage. Of this total, 35.5 GL is stored for critical human water needs and 18.2 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, 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 currently operating in the Tauwitchere and Goolwa Channels. At 14 June 2015, a total of approximately 510 000 cubic metres of sand had been removed. Routine monitoring has confirmed an improvement in the condition of both channels as a result of dredging.

Mariners are reminded that navigation through the Murray Mouth is only permitted during daylight hours and that Exclusion Zones established around the dredging operations 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 0.67 m AHD and Lake Albert is approximately 0.71 AHD. The higher water level in Lake Albert is due to wind effects. Barrage releases are being prioritised through Tauwichee and Goolwa, adjacent to the fishways. In the week 10 June to 16 June 2015, total barrage releases were approximately 5.7 GL. SA Water will continue to operate the barrages to minimise any negative salinity impacts from reverse flow events. All fishways are operating.

The Lower Lakes water level target is 0.70 m AHD (or higher) by the end of June 2015. It is proposed to maintain this water level for the next month or so and then gradually raise the water level to around 0.8 to 0.85 m AHD by end spring. It is important to note that water level targets are based on the information available at the time of preparation and may change due to rainfall events or changed operations upstream.

To see live salinity and water level 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.

WEIR POOL OPERATIONS

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

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.

CONSTRUCTION WORKS

Goolwa Lock

The Goolwa Lock has been closed to navigation since the June long weekend. The Lock will be re-opened to navigation on Saturday, 20 June 2015.

Lock 11

Remedial works at Lock 11 (Mildura) commenced on 20 May 2015. The weir pool was lowered by about 3.2 metres below full supply level to enable repairs to the concrete structure on the riverbed and installation of new mechanised trestles. The works are expected to be completed around the end of July 2015.

Remedial works on the lock chamber also commenced on 20 May 2015. These works are expected to be completed around mid-September 2015. Lock 11 will be closed to navigation during this period.

Renmark River Vessel Waste Disposal Station (RVWDS)

Works to upgrade the Renmark RVWDS are completed. The station will be available for public use as of today, 19 June 2015.

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 end of June 2015.

Katarapko Floodplain, Murray River National Park

Construction works are continuing on the Katarapko Floodplain. Road and waterway access restrictions are in place at Eckert Creek Log Crossing. The construction works will improve water flow and movement of native fish through Eckert Creek. Works are due for completion by end of June 2015. For further information on the Katfish Reach Project please refer to the following website: <http://katfish.org.au/>

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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 17 June 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	30.82	33.81	33.32	32.28
Lock 9 Kulnine	764.8	27.40	27.42	30.03	29.44	28.80
Lock 8 Wangumma	725.7	24.60	24.61	27.60	27.19	26.79
Lock 7 Rufus River	696.6	22.10	22.10	25.70	25.24	24.92
Lock 6 Murtho	619.8	19.25	19.27	21.03	20.50	20.11
Renmark	567.4	-	-	18.54	18.04	17.38
Lock 5	562.4	16.30	16.31	18.07	17.50	17.05
Lyrup	537.8	-	13.27	16.85	16.26	15.68
Berri	525.9	-	13.27	15.81	15.74	15.16
Lock 4	516.2	13.20	13.27	15.65	15.08	14.75
Loxton	489.9	-	10.02	15.05	14.12	13.42
Cobdogla	446.9	-	9.88	13.44	12.38	11.52
Lock 3	431.4	9.80	9.83	13.16	12.02	10.93
Overland Corner	425.9	-	6.21	12.73	11.58	10.27
Waikerie	383.6	-	6.26	11.26	10.24	9.06
Lock 2	362.1	6.10	6.13	10.28	9.30	8.25
Cadell	332.6	-	3.21	9.17	8.08	6.82
Morgan	321.7	-	3.15	8.85	7.65	6.20
Lock 1 Blanchetown	274.2	3.20	3.14	6.81	5.38	4.42
Swan Reach	245.0	0.75	0.64	6.06	4.51	3.09
Mannum PS	149.8	0.75	0.68	3.15	1.90	1.46
Murray Bridge	115.3	0.75	0.62	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 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>

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