RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

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Report #24/2017
Issued 10:00 am 16 June 2017

This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 9 June 2017. The next report will be provided on Friday 23 June 2017.

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.

2017-18 WATER ALLOCATIONS AND CARRYOVER

South Australian River Murray water access entitlement holders (Class 3a, 3b, 4, 7 and 8) will receive a 100% water allocation in 2017-18. Private carryover will not be made available in 2017-18 due to the positive water resource availability outlook and the risk of spill from the Murray-Darling Basin controlled storages.

WATER TRADE

Interstate trade between New South Wales and South Australia, and between New South Wales and Victoria, for the 2016-17 season has closed.

Today (16 June 2017) is the final day for South Australian River Murray water access entitlement holders to receive guaranteed processing and determining of River Murray water allocation trade applications for the 2016-17 water year. The final date is always the third Friday in June.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority confirmed that on 1 June 2017 South Australia had 149.8 GL of deferred water held in storage. The table below identifies the storage in which it is held and the purpose.

At 1 May 2017				
Purpose	**Lake Victoria (GL)**	**Hume (GL)**	**Dartmouth (GL)**	**Total (GL)**
***CHWN**	8.6	0.0	81.7	90.3
Private Carryover	0.0	0.0	59.5	59.5
Total	8.6	0.0	141.2	149.8

*Critical Human Water Needs (CHWN)

Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia. A total of 66.9 GL spilled from Lake Victoria during May (25.8 GL for critical human water needs and 41.1 for private carryover).

In accordance with Schedule G of the Murray-Darling Basin Agreement, the first water to spill from a storage is South Australia's deferred water. A principal requirement in Schedule G is that private carryover spills before water for critical human water needs. The spill will have no impact on 2016-17 or 2017-18 water allocations or private carryover. The spilled water assisted in scouring sand from the Murray Mouth.

South Australia is seeking opportunities to defer and store water during 2017-18.

WATER RESOURCES UPDATE

During May 2017 the total River Murray System inflow was approximately 170 GL, which is about 38% of the May long-term average of 443 GL. Inflow to Menindee Lakes (from the Darling System) during May 2017 was approximately 35 GL, which is well below the May long-term average of 201 GL.

The flow to South Australia during May 2017 was approximately 221 GL, which is about 63% of the May long-term average of approximately 351 GL. The flow comprised:

- 93 GL of Entitlement Flow (includes environmental water on SA licence);
- plus 66.9 GL of spill from Lake Victoria;
- plus 61 GL of environmental water.

STORAGE VOLUMES

Murray-Darling Basin Storage Volumes

Storage	Full Supply Volume (GL)	14/6/2017 (GL)	14/6/2016 (GL)	Long-term average (end of June) (GL)
Dartmouth	**3 856**	**3 009 (78%)**	**1 746 (45%)**	
Hume	**3 003**	**2 038 (68%)**	**895 (30%)**	
Lake Victoria	**677**	**425 (63%)**	**368 (54%)**	
Menindee Lakes	***1 731**	**774 (45%)**	**48 (3%)**	
TOTAL	**9 267**	**6 246 (67%)**	**3 057 (33%)**	**6 174 (67%)**

*Menindee Lakes can be surcharged to 2 015 GL

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for June to August 2017 indicates drier than average rainfall with warmer than average temperatures across the Murray-Darling Basin. The outlook is influenced by a neutral El Niño-Southern Oscillation, warming of tropical Pacific Ocean, and cooler eastern Indian Ocean.

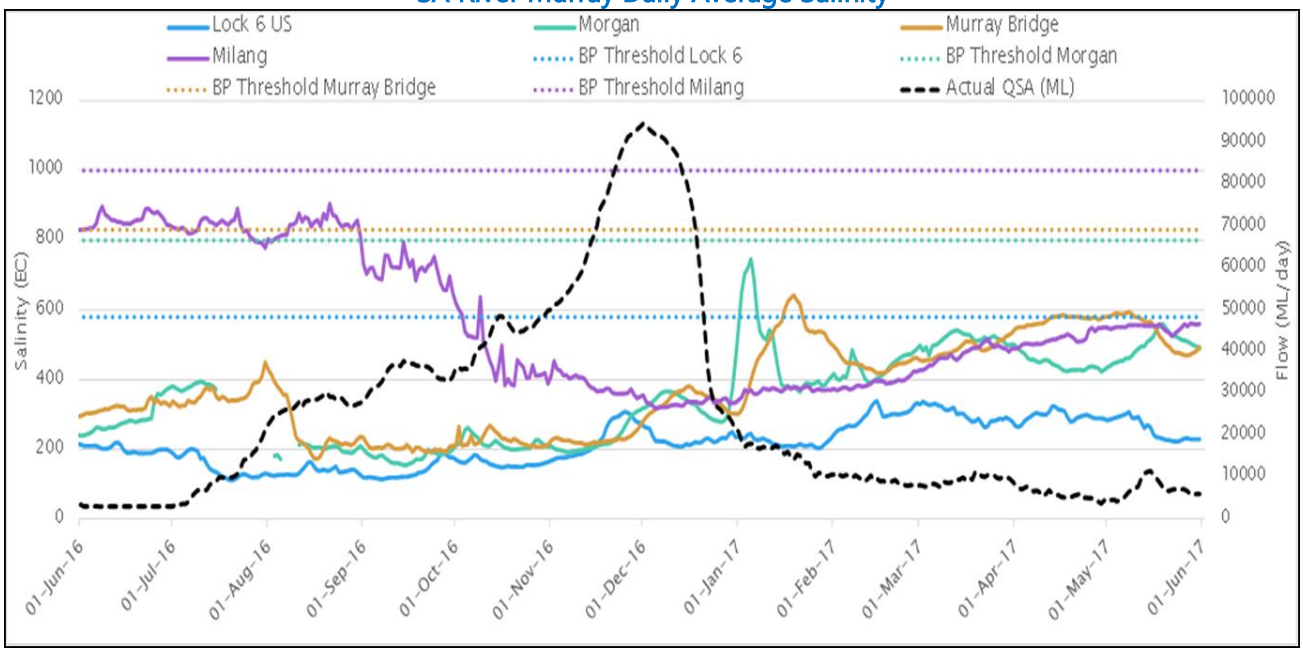
WATER QUALITY - Salinity

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 2016 to June 2017. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

SA River Murray Daily Average Salinity



Note: Missing Morgan salinity readings from 16-11 August 2016 are due to a faulty EC sensor

FLOW OUTLOOK

The flow at the South Australian border is approximately 5 GL/day and will increase to around 7.2 GL/day during the coming week. It comprises:

- normal June Entitlement Flow 3 GL/day
- plus environmental water, and
- interstate trade adjustments.

The flow over Lock 1 is approximately 3.5 GL/day and will increase to around 5.5 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. Advice may change as new gauging information becomes available, or due to rainfall events or changed operations upstream. The forecasts will be revised as new information becomes available.

ENVIRONMENTAL WATER

During June, approximately 56 GL of environmental water will be delivered to South Australia. The environmental water will provide in-channel, Lower Lakes and Coorong environmental and water quality benefits.

DEWNR is continuing discussions regarding environmental water to be delivered during 2017-18.

MURRAY MOUTH

Dredging operations at the Murray Mouth commenced on 9 January 2015 to maintain connectivity (exchange of water) between the Coorong and the Southern Ocean.

One dredge is operating in the Goolwa and Tauwitchere channels (currently operating in Goolwa channel). At 11 June 2017, a total of approximately 2 022 800 cubic metres of sand had been removed by dredging operations.

Between 18 and 23 May, additional water was delivered to flush the Murray Mouth to scour sand. This operation was a success. As a result, environmental water will be provided for two further scouring flushes. Dependent on water availability and weather conditions, these are likely to occur in the next few months.

Mariners are advised that there are still a number of shallow zones in and adjacent to the Murray Mouth. They should follow all directions in the area and reduce their speed. Boats equipped with echo sounders should regularly check depths and avoid travelling at low tide. Mariners are reminded that navigation through the Murray Mouth is only permitted during daylight hours and that Exclusion Zones established around the dredging operations are in place to ensure public safety. Refer to Notice to Mariners No 42 of 2016 www.dpti.sa.gov.au/news?a=287322

There is a partial park closure in place for the northern tip of the Coorong National Park. For more information visit www.environment.sa.gov.au/parks/Safety/Park_closures/141219-coorong-national-park.

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.68 m AHD and Lake Albert is approximately 0.70 m AHD. The difference in water levels is due to wind effects. Water levels are being managed to achieve a target water level of at least 0.6 m AHD by the end of June 2017.

During the week ending 13 June 2017 total barrage releases were approximately 14 GL. Releases are being prioritised at Tauwitchere and Goolwa Barrages. During adverse weather conditions SA Water will operate the barrages to minimise the risk of seawater entering Lake Alexandrina, therefore minimising any negative salinity impacts from reverse flow events.

All fishways are operational and providing fish passage between Lake Alexandrina and the Coorong.

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

WEIR POOL OPERATIONS (*current*)

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

WEIR POOL OPERATIONS (*Potential*)

The Normal Pool Level (NPL) and Normal Operating Range for the South Australian locks and weirs are identified in the table below.

Weir	Normal Pool Level (NPL) m AHD	Normal Operating Range (NOR) m AHD
Lock 6 - Murtho	19.25	19.17 - 19.50
Lock 5 - Renmark	16.30	16.22 - 16.43
Lock 4 – Bookpurnong	13.20	13.16 - 13.50
Lock 3 - Overland Corner	9.80	9.77 - 10.02
Lock 2 – Waikerie	6.10	6.02 - 6.40
Lock 1 – Blanchetown	3.20	3.10 - 3.50

Based on the success of previous weir pool raisings, DEWNR is considering raising Lock 5 by approximately 0.45 m above the NPL and Lock 2 by approximately 0.50 m above the NPL in late winter to spring. These potential operations would raise Lock 5 to 16.75 m AHD (last year raised to 16.80 m AHD) and Lock 2 to 6.60 m AHD (last year raised to 6.85 m AHD).

Raising Lock 4 is also being considered in late winter to spring if high flows are experienced.

DEWNR is considering operation of the Chowilla Regulator in conjunction with raising Lock 6 to consolidate the benefits of the 2016 event.

Modest lowerings (within the normal operating ranges) are being investigated at Locks 2, 3, 5 and 6.

Further details of the proposed manipulations will be communicated in the coming weeks.

Weir pool manipulations aim to reinstate some of the natural variability of water levels in the River Murray system, which have been lost due to river regulation. The manipulations will assist to improve lateral connectivity, health, resilience and biodiversity of the river channel, floodplain and wetlands. It is intended that weir pool manipulations will become a routine part of river operations.

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 Mariners should be aware of the risk of submerged navigation hazards, and should regularly check river depth.

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

Location	River km	Normal Pool Level (m AHD)	Current Level 14/6/2017 (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.81	33.81	33.32	32.72
Lock 9 Kulnine	764.8	27.40	27.31	30.03	29.44	28.85
Lock 8 Wangumma	725.7	24.60	24.48	27.60	27.19	26.85
Lock 7 Rufus River	696.6	22.10	21.91	25.70	25.24	24.97
Lock 6 Murtho	619.8	19.25	19.27	21.03	20.50	20.19
Renmark	567.4	-	16.31	18.54	18.04	17.44
Lock 5	562.4	16.30	16.30	18.07	17.50	17.05
Lyrup	537.8	-	13.22	16.85	16.26	15.80
Berri	525.9	-	13.22	15.81	15.74	15.21
Lock 4	516.2	13.20	13.20	15.65	15.08	14.73
Loxton	489.9	-	10.00	15.05	14.12	13.54
Cobdogla	446.9	-	9.83	13.44	12.38	11.59
Lock 3	431.4	9.80	9.82	13.16	12.02	10.98
Overland Corner	425.9	-	6.23	12.73	11.58	10.41
Waikerie	383.6	-	6.26	11.26	10.24	9.20
Lock 2	362.1	6.10	6.12	10.28	9.30	8.32
Cadell	332.6	-	3.19	9.17	8.08	7.01
Morgan	321.7	-	3.13	8.85	7.65	6.38
Lock 1 Blanchetown	274.2	3.20	3.10	6.81	5.38	4.46
Swan Reach	245.0	0.75	0.63	6.06	4.51	3.11
Mannum PS	149.8	0.75	0.66	3.15	1.90	1.33
Murray Bridge	115.3	0.75	0.61	2.06	1.26	1.04

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

FURTHER INFORMATION

The WaterConnect website is South Australia's comprehensive water information portal and can be accessed at 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

- www.environment.sa.gov.au/managing-natural-resources/river-murray/water-allocation-and-trade/water-allocations-and-announcements
- www.waterconnect.sa.gov.au/Systems/RTWD/Pages/Default.aspx
- www.sawater.com.au/SAWater/Environment/WaterProofingAdelaide/TheRiverMurray/RMOU/Dailyflow.htm
- http://livedata.mdba.gov.au/

The latest news, information and announcements about the River Murray and Basin Plan are available at River Murray Update.

The Department of Environment, Water and Natural Resources has published a series of inundation maps for the River Murray. They are available at 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 www.epa.sa.gov.au/environmental_info/water_quality/programs/acid_sulfate_soils/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 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 www.mdba.gov.au/managing-water/environmental-water/delivering-environmental-water/living-murray-program

Chowilla Floodplain Icon Site management www.environment.sa.gov.au/Chowilla-floodplain

Department of Environment, Water and Natural Resources www.environment.sa.gov.au

Information provided by the Department of Planning, Transport 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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