

# RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

Public I2 A2

Report #29/2017

Issued 10:00 am 21 July 2017

This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 14 July 2017. The next report will be provided on Friday 28 July 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.

## MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority confirmed that on 1 July 2017 South Australia had 149.7 GL of deferred water held in storage. The table below identifies the storage in which it is held and the purpose.

At 1 July 2017				
Purpose	Lake Victoria (GL)	Hume (GL)	Dartmouth (GL)	Total (GL)
*CHWN	8.5	0.0	81.7	90.2
Private Carryover	0.0	0.0	59.5	59.5
<b>Total</b>	8.5	0.0	141.2	149.7

\*Critical Human Water Needs (CHWN)

Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

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

## WATER RESOURCES UPDATE

During June 2017 the total River Murray System inflow was approximately 162 GL, which is about 22% of the June long-term average of 739 GL. Inflow to Menindee Lakes (from the Darling System) during June 2017 was approximately 18 GL, which is about 13% of the June long-term average of 135 GL.

The flow to South Australia during June 2017 was approximately 160 GL, which is about 41% of the June long-term average of approximately 389 GL. The flow comprised:

- 90 GL of Entitlement Flow (includes environmental water on SA licence); plus
- 70 GL of environmental water.



# River Murray Flow Report and Water Resources Update

## STORAGE VOLUMES

### Murray-Darling Basin Storage Volumes

Storage	Full Supply Volume (GL)	19/7/2017 (GL)	19/7/2016 (GL)	Long-term average (end of July) (GL)
Dartmouth	3 856	3 028 (79%)	1 909 (50%)	
Hume	3 003	2 228 (74%)	1 549 (52%)	
Lake Victoria	677	422 (62%)	566 (84%)	
Menindee Lakes	*1 731	765 (44%)	86 (5%)	
<b>TOTAL</b>	<b>9 267</b>	<b>6 443 (70%)</b>	<b>4 110 (44%)</b>	<b>6 659 (72%)</b>

\*Menindee Lakes can be surcharged to 2 015 GL

## RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for July to September 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 and a neutral Indian Ocean Dipole.

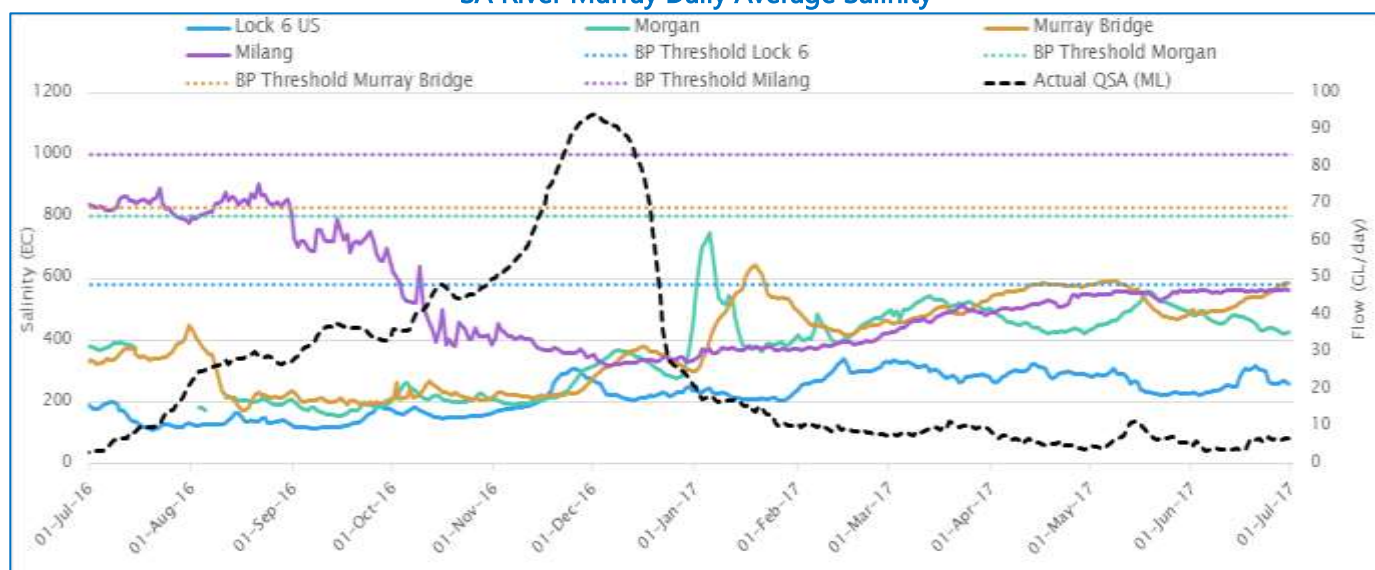
## WATER QUALITY - Salinity

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 July 2016 to July 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 11.5 GL/day and will decrease to around 10 GL/day during the coming week. It comprises:

- normal July Entitlement Flow of 3.5 GL/day,
- less deferred water;
- plus environmental water, and
- interstate trade adjustments.

The flow over Lock 1 is approximately 12.3 GL/day and will decrease to around 9.5 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 July, approximately 175 GL of environmental water (dependant on return flows from other watering events upstream) is likely to 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 16 July 2017, a total of approximately 2 073 100 cubic metres of sand had been removed by dredging operations.

Since late May, when weather conditions were appropriate, several pulses of environmental water have successfully flushed and scoured sand from the Murray Mouth. Dependent on environmental water availability and weather conditions, further scouring flushes are expected to occur in late July and early August.

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](http://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](http://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 0.70 m AHD and Lake Albert is approximately 0.80 m AHD. The difference in water levels is due to wind effects. Water levels are being managed to achieve a target water level of between 0.7 m AHD and 0.8 m AHD during July 2017.

During the week ending 18 July 2017 total barrage releases were approximately 30 GL. 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. Releases are being prioritised at Tauwitchere and Goolwa Barrages.

## River Murray Flow Report and Water Resources Update

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

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.

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

On 14 July 2017, the following weir pools commenced being lowered gradually by 0.08 m (8 cm) (within the normal operating ranges):

- Lock 2 to 6.02 m AHD;
- Lock 5 to 16.22 m AHD; and
- Lock 6 to 19.17 m AHD.

The target water levels at these locks and weirs has been achieved. These water levels are likely to be held for approximately 2 weeks (depending on flow conditions).

Lowering these weir pools will be followed by weir pool raisings in late winter to spring, which could raise:

- Lock 2 by up to 0.5 m above the NPL to 6.60 m AHD (raised last year to 6.85 m AHD);
- Lock 5 by up to 0.45 m above NPL to 16.75 m AHD (raised last year to 16.80 m AHD);
- Lock 6 by up to 0.62 m above NPL to 19.87 m AHD (raised last year to 19.84 m AHD). Raising Lock 6 will only be undertaken if the potential operation of the Chowilla Regulator is undertaken (see below *CHOWILLA OPERATIONS (potential)*).

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

A collaborative partnership between DEWNR, SA Water, Commonwealth Environmental Water Office and the Murray-Darling Basin Authority has enabled weir pool manipulation events to be undertaken.

Weir pool manipulations aim to reinstate some of the natural variability of water levels in the River Murray system, which has 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. Combining weir pool lowering with weir pool raising increases the scale of reinstatement of variability in water levels. It is intended that weir pool manipulations will become a routine part of river operations.

### **CHOWILLA OPERATIONS (*Potential*)**

DEWNR is planning a potential operation of the Chowilla Regulator between August and December 2017 in conjunction with raising Lock 6, to consolidate the benefits from watering and flooding in 2016. This event will only commence if flows reach 20 GL/day and are predicted to increase to 35 GL/day.

### **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 Flow Report and Water Resources Update

## 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 19/7/2017 (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	27.40	30.03	29.44	28.85
Lock 8 Wangumma	725.7	24.60	23.64	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	19.17	21.03	20.50	20.19
Renmark	567.4	-	16.32	18.54	18.04	17.44
Lock 5	562.4	16.30	16.21	18.07	17.50	17.05
Lyrup	537.8	-	13.28	16.85	16.26	15.80
Berri	525.9	-	13.23	15.81	15.74	15.21
Lock 4	516.2	13.20	13.20	15.65	15.08	14.73
Loxton	489.9	-	10.24	15.05	14.12	13.54
Cobdogla	446.9	-	9.88	13.44	12.38	11.59
Lock 3	431.4	9.80	9.83	13.16	12.02	10.98
Overland Corner	425.9	-	6.39	12.73	11.58	10.41
Waikerie	383.6	-	6.23	11.26	10.24	9.20
Lock 2	362.1	6.10	6.05	10.28	9.30	8.32
Cadell	332.6	-	3.29	9.17	8.08	7.01
Morgan	321.7	-	3.24	8.85	7.65	6.38
Lock 1 Blanchetown	274.2	3.20	3.12	6.81	5.38	4.46
Swan Reach	245.0	0.75	0.86	6.06	4.51	3.11
Mannum PS	149.8	0.75	0.87	3.15	1.90	1.33
Murray Bridge	115.3	0.75	0.81	2.06	1.26	1.04

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

# River Murray Flow Report and Water Resources Update

## FURTHER INFORMATION

The WaterConnect website is South Australia's comprehensive water information portal and can be accessed at [www.waterconnect.sa.gov.au](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

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

Department of Environment, Water and Natural Resources [www.environment.sa.gov.au](http://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](http://www.sa.gov.au/boatingmarine)

ID	RM-Flow-Report 20170721
Classification	Public I2 A2
Issued	21 July 2017
Authority	DEWNR
Master Document Location	Q:\OMP\RM REM\02 RM Ops\04 Communications\Flow Advices\2017-18
Managed and Maintained by	River Murray Operations
Author	River Murray Operations
Reviewer	Director River Murray Operations, Water