RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

Public I2 A2

Report #24/2018
Issued 10:00 am 15 June 2018

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 8 June 2018. The next report will be provided on Friday 22 June 2018.

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 TRADE

The final date for South Australian River Murray water access entitlement holders to receive guaranteed processing and determining of River Murray water allocation trade applications for the 2017-18 water year is Friday, 15 June 2017. 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 2018 South Australia had 260.7 GL of deferred water held in storage. The table below identifies the storage in which it is held and the purpose.

At 1 May 2018				
Purpose	**Lake Victoria (GL)**	**Hume (GL)**	**Dartmouth (GL)**	**Total (GL)**
***CHWN**	0	76.6	81.4	158.0
Private Carryover	0	43.5	59.2	102.7
Total	0	120.1	140.6	260.7

*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 2018-19.

WATER RESOURCES UPDATE

During May 2018, the total River Murray System inflow was approximately 115 GL, which is approximately 26% of the May long-term average of 443 GL. There was no inflow to Menindee Lakes (from the Darling System) during May 2018, compared to the May long-term average of 201 GL.

The flow to South Australia during May 2018 was approximately 102 GL, which is about 29% 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
- 9 GL of environmental water.

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for May to July 2018 indicates average to below average rainfall with warmer than average temperatures across the Murray-Darling Basin. The outlook is influenced by El Niño Southern Oscillation in the Pacific Ocean and Indian Ocean Dipole, both of which are neutral.

Government of South Australia
Department for Environment and Water

STORAGE VOLUMES

Murray-Darling Basin Storage Volumes

Storage	Full Supply Volume (GL)	13/6/2018 (GL)	13/6/2017 (GL)	Long-term average (end of June) (GL)
Dartmouth	**3 856**	**3 401 (88%)**	**3 009 (78%)**	
Hume	**3 003**	**1 158 (39%)**	**2 055 (68%)**	
Lake Victoria	**677**	**341 (50%)**	**430 (63%)**	
Menindee Lakes	***1 731**	**212 (12%)**	**773 (45%)**	
TOTAL	**9 267**	**5 112 (55%)**	**6 267 (68%)**	**6 173 (67%)**

*Menindee Lakes can be surcharged to 2 015 GL

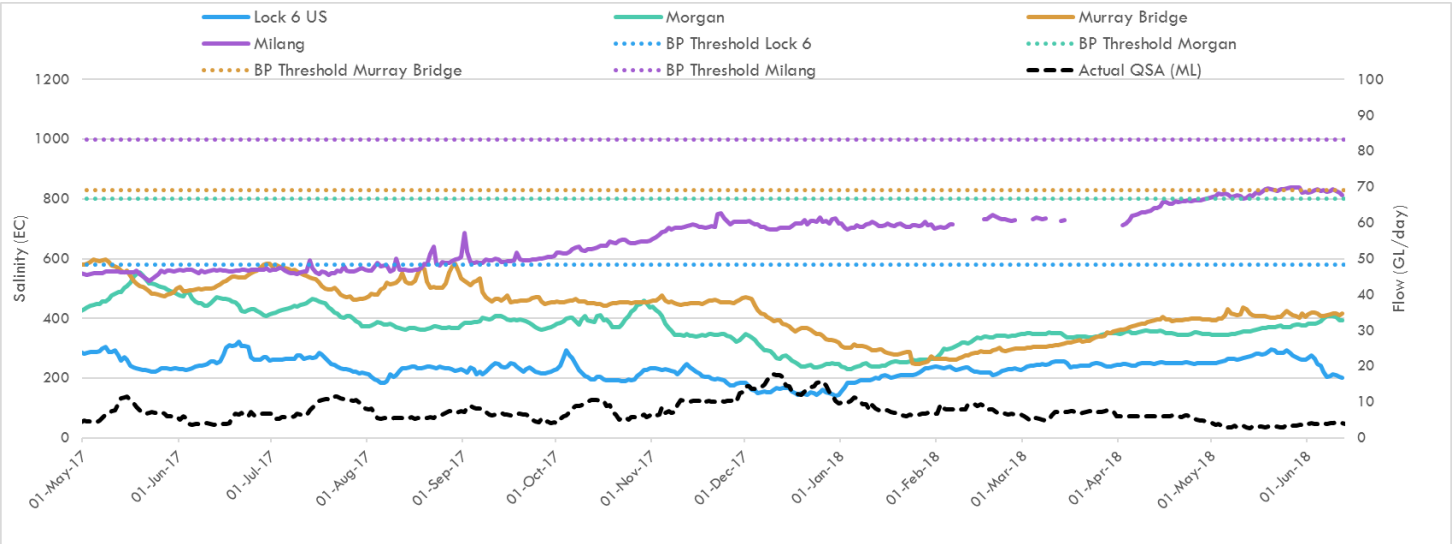
WATER QUALITY - Salinity

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 May 2017 to June 2018. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

SA River Murray Daily Average Salinity



Note: Missing Milang salinity readings periodically during February, March and April 2018 are due to biofouling at the EC sensor

FLOW OUTLOOK

The flow at the South Australian border is approximately 4 GL/day and will increase to around 4.5 GL/day during the coming week. It comprises:

- normal June Entitlement Flow of 3.0 GL/day;
- plus environmental water; and
- interstate trade adjustments.

The flow over Lock 1 is approximately 4.5 GL/day and will decrease to around 4 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, environmental water will be delivered to South Australia to help rebuild Lower Lake water levels, following the draw-down of the Lakes during summer/autumn 2018. This draw-down provided benefits for fringing lake vegetation and feeding habitat on exposed mudflats for thousands of migratory shorebirds.

Smaller volumes of environmental flow will also arrive in South Australia from upstream watering events. These events will aim to support base flow in the Goulburn and Mid Murray Rivers to improve fish habitat and any flows that remain in the river after supporting these actions will flow on to South Australia as additional environmental water. This water will also contribute to rebuilding Lower Lake water levels and refilling the Lock 6 weir pool following the current lowering event.

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 currently operating 24/7 in the Goolwa and Tauwitchere channels. The second dredge has currently paused for maintenance and once operational, will again begin removing sand from the Murray Mouth. At 13 June 2018, a total of approximately 3 096 478 cubic metres of sand had been removed by dredging operations.

There are a number of shallow zones in and adjacent to the Murray Mouth. Mariners should use caution when traversing the mouth area, follow all directions, reduce speed and avoid travelling at low tide. Boats equipped with echo sounders should check depths regularly. 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 Notice 42

There is a partial park closure in place for the northern tip of the Coorong National Park. For more information visit Coorong partial park closure notice

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.58 m AHD and Lake Albert is approximately 0.67 m AHD. The difference in water levels is due to wind effects. When possible, water levels are being managed to achieve a target water level of 0.6 m AHD by the end of June.

During the week ending 13 June 2018 total barrage releases were approximately 3 GL. All fishways remain open. 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.

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 Normal Pool Level (NPL) and Normal Operating Range (NOR) 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

Weir and Lock 1

Remedial works to fix the seepage issue at the Lock 1 abutment have been completed. Testing the structure at various water levels above NPL, but within the NOR, has been successfully completed with no seepage issues detected. The water level has been reinstated to the NPL of 3.20 m AHD.

Weir and Lock 6

Lowering the water level in the Lock 6 weir pool commenced on 21 May 2018. The water level is approximately 0.16 m below NPL and will not be lowered any further during this event. This level will be held for a short period, then raised back to NPL in late June. Water level changes will be undertaken in stages, at a rate of approximately 0.02 m/day

For further information on the lowering please click on Fact Sheet and scroll down to related links or you can contact Ms Jodie Woof on (08) 8595 2141 or jodie.woof@sa.gov.au.

A weir pool raising event is also being considered for the Lock 6 weir pool following the lowering trial. This event would see the water level rise by a maximum of 0.20 m above NPL to 19.45 m AHD.

Weirs and Locks 5 and 2

Unless flow conditions change substantially, trial lowering of the Lock 5 and Lock 2 weir pools is now unlikely to proceed this year.

A weir pool raising event is being considered for the Lock 2 and Lock 5 weir pools by a maximum of 0.50 m above NPL (to 6.60 m AHD) and 0.35 m above NPL (to 16.65 m AHD) respectively. This is being considered for the period between August and December.

All weir pool manipulation actions may be subject to change depending on river conditions. Water level changes will be undertaken in stages, at a rate of approximately 0.02 m/day.

To receive real-time SMS updates on weir pool manipulation actions please text or call DEW River Murray Operations on 0438 539 271 and indicate what weir pool reach you are interested in receiving updates for. If you have questions relating to river operations please also use this mobile number to contact DEW River Murray Operations.

NAVIGATION ISSUES

SA Water is undertaking maintenance work on the Lock 3 chamber, which commenced 12 June 2018. The works will take approximately 12-14 weeks to complete. Lock 3 will be closed to river vessel traffic during this period.

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.

RIVERINE RECOVERY CONSTRUCTION WORKS

The Riverine Recovery Project is in the process of constructing environmental regulators to manage a number of wetlands between Mannum and Murtho. Construction is expected to be completed by the end of October 2018. Construction works have commenced at Big Bend, Sugar Shack, Pyap and Murtho-Wiela wetlands. During the coming months work will commence at North Caurnamont, Teal Flat, Teal Flat Hut, Silverlea, Goat Island Paringa Paddock and Woolenook Bend wetlands.

BOOKMARK CREEK – PITTS REGULATOR REMOVAL

River Murray Operations will be removing Pitts Regulator on Bookmark Creek, which is located near Twenty-Sixth Street, Renmark. The regulator has been identified as a potential safety risk to the public, as well as a barrier to flow. The main inlet structure will be closed during the on-ground works and water levels in Bookmark Creek will be considerably reduced for the project to be completed. The works are planned to occur in July 2018.

RIVER MURRAY WATER LEVELS

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

River Murray Water Levels

Location	River km	Normal Pool Level (m AHD)	Current Level 13/6/2018 (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.82	33.81	33.32	32.72
Lock 9 Kulnine	764.8	27.40	27.33	30.03	29.44	28.85
Lock 8 Wangumma	725.7	24.60	24.31	27.60	27.19	26.85
Lock 7 Rufus River	696.6	22.10	22.03	25.70	25.24	24.97
Lock 6 Murtho	619.8	19.25	19.09	21.03	20.50	20.19
Renmark	567.4	-	16.32	18.54	18.04	17.44
Lock 5	562.4	16.30	16.32	18.07	17.50	17.05
Lyrup	537.8	-	13.27	16.85	16.26	15.80
Berri	525.9	-	13.24	15.81	15.74	15.21
Lock 4	516.2	13.20	13.24	15.65	15.08	14.73
Loxton	489.9	-	10.05	15.05	14.12	13.54
Cobdogla	446.9	-	9.87	13.44	12.38	11.59
Lock 3	431.4	9.80	9.84	13.16	12.02	10.98
Overland Corner	425.9	-	6.3	12.73	11.58	10.41
Waikerie	383.6	-	6.27	11.26	10.24	9.20
Lock 2	362.1	6.10	6.17	10.28	9.30	8.32
Cadell	332.6	-	3.33	9.17	8.08	7.01
Morgan	321.7	-	3.30	8.85	7.65	6.38
Lock 1 Blanchetown	274.2	3.20	3.26	6.81	5.38	4.46
Swan Reach	245.0	0.75	0.53	6.06	4.51	3.11
Mannum PS	149.8	0.75	0.55	3.15	1.90	1.33
Murray Bridge	115.3	0.75	0.50	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 Home page

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

- Water allocation and carryover announcements
- River Murray real-time water data
- SA Water River Murray info - levels, flows etc
- Murray-Darling Basin real-time water data

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

The Department for Environment and Water has published a series of inundation maps for the River Murray. They are available at River Murray Inundation Maps

Information on the management of acid drainage water in the Lower River Murray can be accessed at Acid drainage water 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
Victoria rainfall and river conditions
NSW rainfall and river conditions

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

Information on The Living Murray can be accessed at MDBA TLM

Chowilla Floodplain Icon Site management Chowilla-floodplain

Department for Environment and Water Home page

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 Boating and marine

ID	RM-Flow-Report 20180615
Classification	Public I2 A2
Issued	15 June 2018
Authority	DEW
Master Document Location	R:\Water Group\RMO\WRO\04 Communications\Flow Advices\2017-18
Managed and Maintained by	River Murray Operations
Author	River Murray Operations
Reviewer	Director, River Murray Operations, Water Group