River Murray Flow Report and Water Resources Update

Government of South Australia
Department for Environment and Water

Report #31/2019

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This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 9 August 2019. The next report will be provided on Friday 23 August 2019.

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 ALLOCATIONS AND PRIVATE CARRYOVER

Water allocations for South Australian River Murray Class 3 water access entitlement holders have increased to 68%.

The next water allocation announcement will be issued on Monday 2 September 2019. Water availability updates will be provided twice a month during 2019-20 while water allocations are less than 100%.

Further information is included in SA's River Murray Water Allocation Statement (PDF).

Private carryover will also be made available in 2019-20 for eligible Class 3 entitlement holders.

To make it easy to understand how private carryover works, please view the carryover video.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority confirmed that on 1 August 2019 South Australia had 341.6 GL of deferred water held in storage. The table below identifies the storage in which it is held and the purpose.

At 1 August 2019				
Purpose	**Lake Victoria (GL)**	**Hume (GL)**	**Dartmouth (GL)**	**Total (GL)**
***CHWN**	0.0	0.0	239.5	239.5
Private Carryover	0.0	0.0	102.1	102.1
Total	0.0	0.0	341.6	341.6

*Critical Human Water Needs (CHWN)

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

WATER RESOURCES UPDATE

During July 2019, the total River Murray System inflow was approximately 585 GL, which is approximately 47% of the July long-term average of 1 238 GL. There was no inflow to Menindee Lakes (from the Darling System) during July 2019, compared to the July long-term average of 153 GL.

The flow to South Australia during July 2019 was approximately 186 GL, which is about 30% of the July long-term average of approximately 625 GL. The flow comprised of Entitlement Flow (includes environmental water on SA licence) and environmental water.

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for August to October 2019 indicates below average rainfall with warmer than average temperatures across most of the Murray-Darling Basin. The outlook is being influenced by the Indian Ocean Dipole (IOD), which has fluctuated around a positive IOD. A positive IOD usually brings below average winter and spring rainfall, with above average temperatures to Southern Australia. The El Niño-Southern Oscillation (ENSO) is currently neutral, which means the Australian climate is not being influenced by El Niño nor La Niña.

STORAGE VOLUMES

Murray-Darling Basin Storage Volumes

Storage	Full Supply Volume (GL)	14/8/2019 (GL)	14/8/2018 (GL)	Long-term average (end of August) (GL)
Dartmouth	3 856	**2 335 (61%)**	3 462 (90%)	
Hume	3 003	**1 169 (39%)**	1 429 (48%)	
Lake Victoria	677	**461 (68%)**	351 (52%)	
Menindee Lakes	*1 731	**15 (1%)**	189 (11%)	
TOTAL	9 267	**3 980 (43%)**	5 431 (59%)	7 127 (77%)

*Menindee Lakes can be surcharged to 2 015 GL

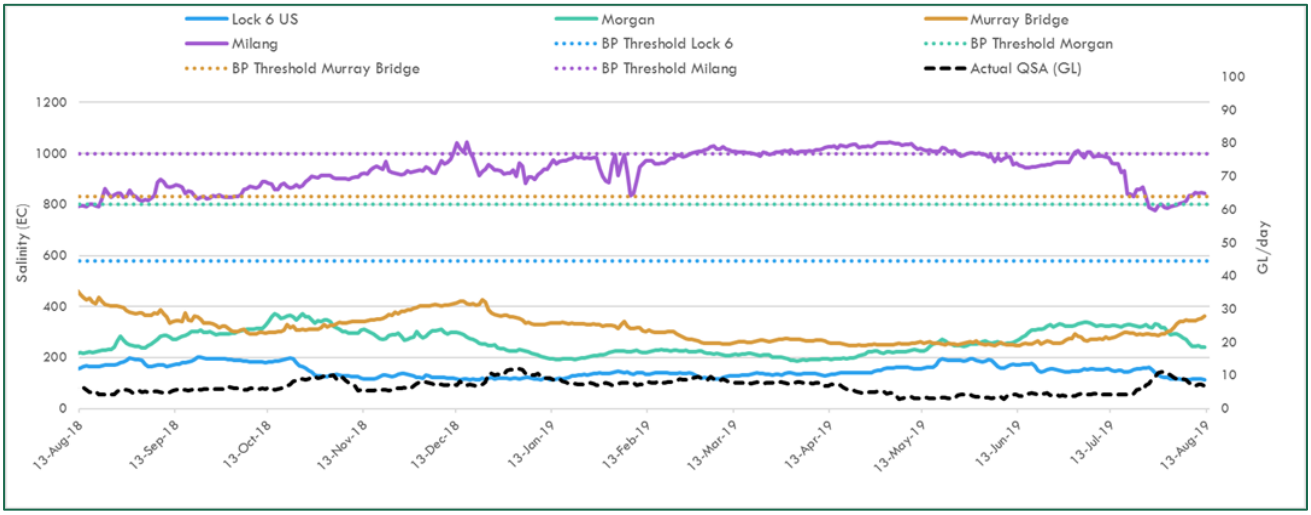
WATER QUALITY - Salinity

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 should not exceed these values for 95% 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 August 2018 to August 2019. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

SA River Murray Daily Average Salinity



FLOW OUTLOOK

The flow at the South Australian border is approximately 3.5 GL/day and will remain around 3.5 GL/day during the coming week. It comprises:

- reduced August Entitlement Flow of 2.5 GL/day;
- environmental water; and
- interstate trade adjustments.

Due to the dry water resource conditions across the Murray-Darling Basin, South Australia is receiving reduced monthly Entitlement Flows. This will continue during 2019-20 unless the water resource conditions improve enough to provide South Australia with its full Entitlement Flow. In addition to the reduced Entitlement Flow, South Australia will receive environmental water.

The flow over Lock 1 is approximately 2 GL/day and will remain around 2 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.

ENVIRONMENTAL WATER

A pulse of environmental water is currently moving through the system with return flows from an environmental watering event in the Goulburn River. After supporting river bank vegetation, water bugs and improving water quality in the Goulburn River, the environmental water will deliver a range of outcomes in South Australia. This water will:

- provide for weir pool raising events at Locks 6 and 2;
- provide for increased barrage releases for Coorong outcomes (now and during spring);
- assist in exporting salt from the Basin; and
- improve water quality (including salinity) in the Coorong for estuarine species.

Environmental water is supporting the temporary raising of weir pools 6 and 2 to help restore a more natural wetting cycle. These events will re-connect the main river channel with the floodplain and wetlands in the area and provide a much needed watering. This will promote vegetation growth and breeding of local wildlife. Weir pool raising improves vegetation and macroinvertebrate communities by spreading plant seedlings and supporting the creation of algae, which is a much needed food source for bugs and fish.

Winter barrage releases provide cues and connection to support the movement of several migratory fish species. Monitoring is underway to investigate the upstream migration and spawning of pouched and short-headed lamprey travelling from the Southern Ocean via the Coorong estuary to spawning grounds in upstream areas of the River Murray system. A total of 31 lamprey (includes both species) have been found moving through the fishways at the barrages and have been tagged so their passage along the River Murray system can be traced. This will assist to understand their movements and lifecycle.

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.

Both dredges are operating 24/7 in the Goolwa and Tauwitchere channels. At 11 August 2019, a total of approximately 4 772 909 cubic metres of sand had been removed by dredging operations. Barrage releases combined with dredging have helped to maintain connectivity of the Murray Mouth.

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. Mariners equipped with echo sounders should check depths regularly. Navigation through the Murray Mouth is only permitted during daylight hours. 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 0.82 m AHD and Lake Albert is approximately 0.88 m AHD. The difference in water level is due to wind effects. The increased water level in the Lower Lakes is due to environmental water being provided. This water is, and will be, managed through the Lower Lakes to the Coorong via barrage releases. The environmental water will enable barrage releases to be undertaken for a longer period.

During the week ending 13 August 2019 total barrage releases were approximately 15 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, Murray-Darling Basin Authority and Commonwealth Environmental Water Office.

WEIR POOL MANIPULATIONS

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	16.13 - 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	5.90 - 6.40
Lock 1 – Blanchetown	3.20	3.10 - 3.40

Weir and Lock 6

The Lock 6 weir pool raising event is being undertaken in stages. The first stage of the raising event has occurred. The water level will be held around the current level until the flow to South Australia increases above a trigger volume, which is when water level raising will re-commence. If the trigger volume is achieved, the raising event will increase the Lock 6 water level by a maximum of 0.42 m above NPL to 19.67 m AHD. The water level changes will be undertaken at a rate of approximately 0.05 m/day. It is expected that the water level will be returned to normal pool level by the end of November 2019.

Weir and Lock 2

The Lock 2 weir pool raising event is being undertaken in stages. The first stage of the raising event has occurred. The water level will be held around the current level until the flow to South Australia increases above a trigger volume, which is when water level raising will re-commence. If the trigger volume is achieved, the raising event will increase the Lock 2 water level by a maximum of 0.52 m above NPL to 6.62 m AHD. Water level changes will be undertaken at a rate of approximately 0.05 m/day. It is expected that the water level will be returned to normal pool level by the end of November 2019.

NAVIGATION ISSUES

Mariners are advised to navigate with caution upstream of Lock 6 and Lock 2 due to the weir pool raising events. Mariners may also need to adjust moorings (see Notice to Mariners No 27 of 2019 (Temporary)).

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 constructing environmental regulators to manage a number of wetlands between Mannum and Murtho. Construction has finished at a number of these sites with the remaining wetlands due for completion by the end of September 2019. Work is currently underway at Teal Flat, Putjeda Creek and Bollenhagen Road in Gurra Gurra.

SA RIVERLAND FLOODPLAINS INTEGRATED INFRASTRUCTURE PROGRAM CONSTRUCTION WORKS

Katarapko

Construction works on the Katarapko Floodplain are expected to be completed by mid-2020. As a result, some parts of the Murray River National Park will be temporarily closed for camping and other recreational activities. See the link for temporary park closure map Caring for Katarapko

For safety reasons, the following water access restrictions apply to river vessels and people (other than authorised personnel) until late March 2020:

1. Sawmill Creek, the entire length between Katarapko Creek and Eckert's Creek; and
2. Eckert's Creek, for 1.3 kilometres upstream of the confluence point with Katarapko Creek (ie *The Splash*).

The construction works will enable over 1120 hectares of floodplain to be inundated more regularly to improve ecological health and resilience. For more information, or to receive regular updates, about the Katarapko Floodplain Project please contact the Department for Environment and Water's Engagement Officer, Ms Ellee Eleftheriadis on 8595 2148 or email ellee.eleftheriadis2@sa.gov.au

Pike

Regulating structures and a blocking bank on the Pike Floodplain are expected to be completed by December 2019. During the construction period, vessels and persons other than those participating in the works are prohibited from entering the Pike River near the Rumpagunyah Creek and Tanyaca Creek junction, downstream of the Mundic Creek junction. The works will enable a portion of the floodplain to be inundated more regularly to improve ecological health and fish to move freely between the River Murray and the floodplain.

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 14/8/2019 (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.89	33.81	33.32	32.72
Lock 9 Kulnine	764.8	27.40	27.55	30.03	29.44	28.85
Lock 8 Wangumma	725.7	24.60	24.71	27.60	27.19	26.85
Lock 7 Rufus River	696.6	22.10	22.22	25.70	25.24	24.97
Lock 6 Murtho	619.8	19.25	19.48	21.03	20.50	20.19
Renmark	567.4	-	16.38	18.54	18.04	17.44
Lock 5	562.4	16.30	16.37	18.07	17.50	17.05
Lyrup	537.8	-	13.29	16.85	16.26	15.80
Berri	525.9	-	13.27	15.81	15.74	15.21
Lock 4	516.2	13.20	13.26	15.65	15.08	14.73
Loxton	489.9	-	9.98	15.05	14.12	13.54
Cobdogla	446.9	-	9.84	13.44	12.38	11.59
Lock 3	431.4	9.80	9.80	13.16	12.02	10.98
Overland Corner	425.9	-	6.55	12.73	11.58	10.41
Waikerie	383.6	-	6.54	11.26	10.24	9.20
Lock 2	362.1	6.10	6.48	10.28	9.30	8.32
Cadell	332.6	-	3.33	9.17	8.08	7.01
Morgan	321.7	-	3.28	8.85	7.65	6.38
Lock 1 Blanchetown	274.2	3.20	3.22	6.81	5.38	4.46
Swan Reach	245.0	0.75	0.74	6.06	4.51	3.11
Mannum PS	149.8	0.75	0.78	3.15	1.90	1.33
Murray Bridge	115.3	0.75	0.73	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. For real-time data (like salinity, water levels) go to the following page:
WaterConnect Real-time water data

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

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