

RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

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Report #50/2017

Issued 10:00 am 15 December 2017

This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 8 December 2017. The next report will be provided on Friday 22 December 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.

WATER ALLOCATIONS AND CARRYOVER

South Australian River Murray water access entitlement holders (Class 3a, 3b, 4, 7 and 8) have been granted 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 December 2017 South Australia had 223.5 GL of deferred water held in storage. The table below identifies the storage in which it is held and the purpose.

| At 1 December 2017 | | | | |
|--------------------|--------------------|-----------|----------------|------------|
| Purpose | Lake Victoria (GL) | Hume (GL) | Dartmouth (GL) | Total (GL) |
| *CHWN | 11.2 | 33.7 | 81.6 | 126.5 |
| Private Carryover | 11.2 | 26.3 | 59.5 | 97.0 |
| Total | 22.4 | 60.0 | 141.1 | 223.5 |

*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 November 2017 the total River Murray System inflow was approximately 314 GL, which is about 39% of the November long-term average of 803 GL. There was no inflow to Menindee Lakes (from the Darling System) during November 2017, compared to the November long-term average of 125 GL.

The flow to South Australia during November 2017 was approximately 297 GL, which is about 33% of the November long-term average of approximately 898 GL. The flow comprised:

- 180 GL of Entitlement Flow (includes environmental water on SA licence); less
- 22.4 GL of deferred water; plus
- 139 GL of environmental water.

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for December 2017 to February 2018 indicates an equal chance of receiving above or below average rainfall with warmer than average temperatures across the Murray-Darling Basin. Weak La Niña conditions have established in the Pacific Ocean. This is unlikely to produce widespread heavy rainfall that is typical of most La Niña events.



River Murray Flow Report and Water Resources Update

STORAGE VOLUMES

Murray-Darling Basin Storage Volumes

| Storage | Full Supply Volume (GL) | 13/12/2017 (GL) | 13/12/2016 (GL) | Long-term average (end of December) (GL) |
|----------------|----------------------------|--------------------|--------------------|--|
| Dartmouth | 3 856 | 3 422 (89%) | 2 982 (77%) | |
| Hume | 3 003 | 2 320 (77%) | 2 847 (95%) | |
| Lake Victoria | 677 | 657 (97%) | 671 (99%) | |
| Menindee Lakes | *1 731 | 486 (28%) | 1 574 (91%) | |
| TOTAL | 9 267 | 6 885 (74%) | 8 074 (87%) | 6 871 (74%) |

*Menindee Lakes can be surcharged to 2 015 GL

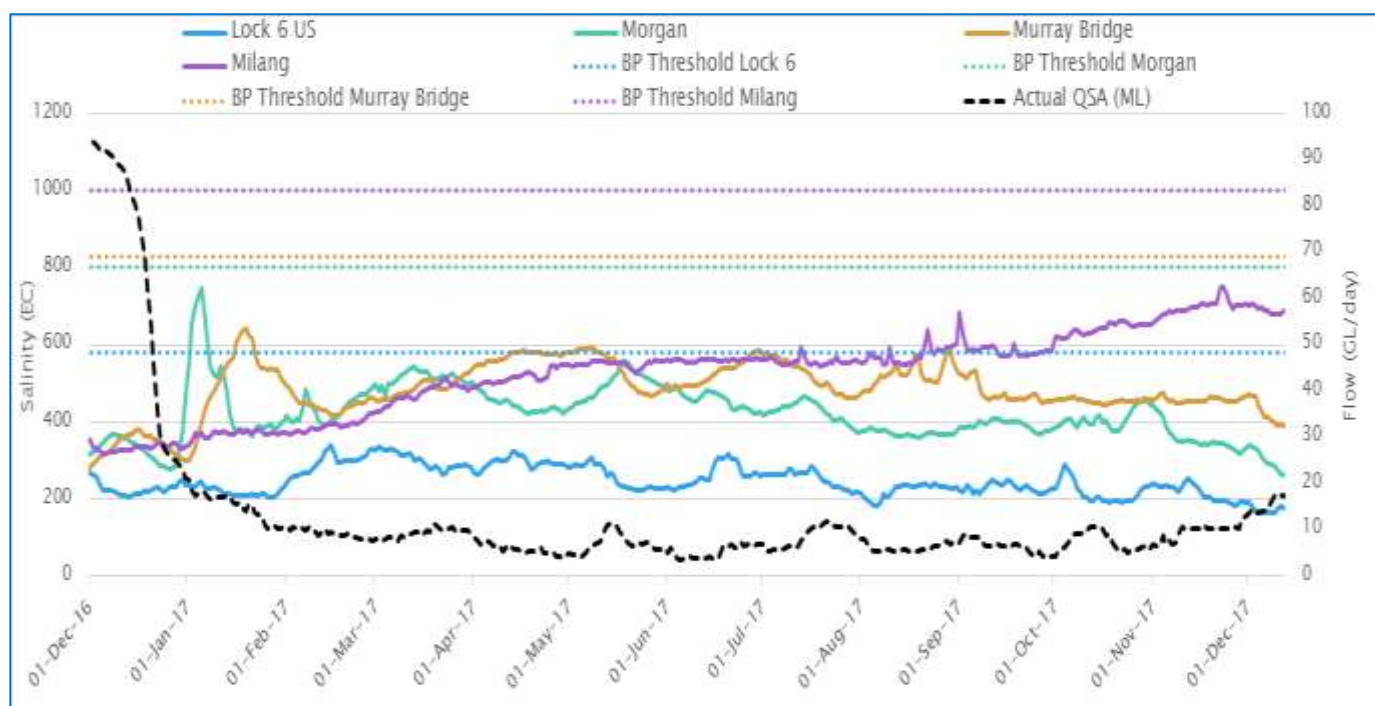
WATER QUALITY - Salinity

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 December 2016 to December 2017. 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 13 GL/day and will increase to around 15 GL/day during the coming week. It comprises:

- normal December Entitlement Flow of 7 GL/day;
- less deferred water;
- plus environmental water; and
- interstate trade adjustments.

The flow over Lock 1 is approximately 13 GL/day and will decrease to around 11 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 December, approximately 160 GL of environmental water is expected to be delivered to South Australia. This volume will vary depending on rainfall and weather conditions. Environmental water will provide environmental and water quality benefits to the River Murray channel, Lower Lakes and Coorong.

Environmental water is being provided predominantly from:

1. Hume Reservoir on the River Murray. The release of environmental water from the upstream storages is contributing towards outcomes for Moira grass in the Millewa Forest (part of the Barmah-Millewa Ramsar site), before contributing to environmental outcomes in the lower River Murray.
2. Hattah Lakes Ramsar site in Victoria. Environmental water used to support black box woodlands during spring is being released back to the river for environmental outcomes in the lower River Murray throughout November, December and January.
3. Victorian rivers. Environmental water used to support golden and silver perch spawning in the Goulburn and Campaspe Rivers in Victoria is now contributing to ecological benefits in the River Murray in South Australia.

Environmental water delivered to achieve ecological outcomes upstream is continuing to provide continuous flows to the Coorong, which is important for a range of fish species such as black bream and greenback flounder.

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.

Two dredges are operating in the Goolwa and Tauwitchere channels. At 10 December 2017, a total of approximately 2 566 461 cubic metres of sand had been removed by dredging operations.

Dredging operations are planned to shut down over the Christmas New-Year period. Operations will pause on 21 December 2017 and recommence on 3 January 2018.

There are a number of shallow zones in and adjacent to the Murray Mouth. Mariners should follow all directions in the area and reduce speed. Boats equipped with echo sounders should check depths regularly 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

River Murray Flow Report and Water Resources Update

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 0.86 m AHD and Lake Albert is approximately 0.85 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 between 0.75 m AHD and 0.85 m AHD during December 2017.

During the week ending 12 December 2017 total barrage releases were approximately 52 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.

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.

While there are no plans in place to raise or lower weir pool levels outside of their normal operating range during the coming months, planning and investigations for potential future weir pool manipulations, including weir pool lowering, are continuing.

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 13/12/2017 (m AHD) | 1974 Flood Level (m AHD) | 1993 Flood Level (m AHD) | 2016 High Water Level (m AHD) |
|--------------------|----------|---------------------------|----------------------------------|--------------------------|--------------------------|-------------------------------|
| Lock 10 | 825.0 | 30.80 | 30.77 | 33.81 | 33.32 | 32.72 |
| Lock 9 Kulnine | 764.8 | 27.40 | 27.39 | 30.03 | 29.44 | 28.85 |
| Lock 8 Wangumma | 725.7 | 24.60 | 24.62 | 27.60 | 27.19 | 26.85 |
| Lock 7 Rufus River | 696.6 | 22.10 | 22.00 | 25.70 | 25.24 | 24.97 |
| Lock 6 Murtho | 619.8 | 19.25 | 19.29 | 21.03 | 20.50 | 20.19 |
| Renmark | 567.4 | - | 16.39 | 18.54 | 18.04 | 17.44 |
| Lock 5 | 562.4 | 16.30 | 16.37 | 18.07 | 17.50 | 17.05 |
| Lyrup | 537.8 | - | 13.36 | 16.85 | 16.26 | 15.80 |
| Berri | 525.9 | - | 13.29 | 15.81 | 15.74 | 15.21 |
| Lock 4 | 516.2 | 13.20 | 13.29 | 15.65 | 15.08 | 14.73 |
| Loxton | 489.9 | - | 10.43 | 15.05 | 14.12 | 13.54 |
| Cobdogla | 446.9 | - | 9.87 | 13.44 | 12.38 | 11.59 |
| Lock 3 | 431.4 | 9.80 | 9.81 | 13.16 | 12.02 | 10.98 |
| Overland Corner | 425.9 | - | 6.63 | 12.73 | 11.58 | 10.41 |
| Waikerie | 383.6 | - | 6.34 | 11.26 | 10.24 | 9.20 |
| Lock 2 | 362.1 | 6.10 | 6.10 | 10.28 | 9.30 | 8.32 |
| Cadell | 332.6 | - | 3.44 | 9.17 | 8.08 | 7.01 |
| Morgan | 321.7 | - | 3.32 | 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 | 0.92 | 6.06 | 4.51 | 3.11 |
| Mannum PS | 149.8 | 0.75 | 0.83 | 3.15 | 1.90 | 1.33 |
| Murray Bridge | 115.3 | 0.75 | 0.76 | 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 <https://www.waterconnect.sa.gov.au/Pages/Home.aspx>

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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