

RIVER MURRAY FLOW REPORT

Public I2 A2

Report #42/2016

Issued 10:00 am 4 November 2016

This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 28 October 2016. The next flow report will be provided on Friday 11 November 2016.

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.

FLOW OUTLOOK

The flow at the South Australian border is approximately 55 GL/day and will increase to around 65 GL/day during the coming week. Due to recent rainfall events and flooding across Victoria and News South Wales the flow to South Australia is predicted to increase and peak at around 90 to 95 GL/day in late November to early December. The actual peak flow will be dependent on inflows and floodplain consumption upstream of South Australia. At around 60 GL/day, the land beneath some shacks built on the floodplain start to be inundated. For comparison, in 1974 the peak flow at the South Australian border was around 180 GL/day and in 2011 it was around 94 GL/day.

Below is a table of the predicted River Murray water levels at a number of locations from Lock 6 to Murray Bridge under different flows at the South Australian border. The predicted water levels are based on previous flood events and are provided as a guide only.

Location	River km	Normal Pool Level (m AHD)	Current level at 2/11/2016 (m AHD)	Predicted water level at			
				60 GL/day at SA Border (m AHD)	70 GL/day at SA Border (m AHD)	80 GL/day at SA Border (m AHD)	90 GL/day at SA Border (m AHD)
Lock 6	619.8	19.25	19.30	19.41	19.75	19.77	19.94
Renmark	567.4	-	-	16.57	16.76	16.90	17.34
Lock 5	562.4	16.30	16.32	16.32	16.46	16.60	16.90
Lyrup	537.8	-	14.13	14.70	15.15	15.41	15.60
Berri	525.9	-	13.79	14.35	14.63	14.80	15.20
Lock 4	516.2	13.20	13.48	13.90	14.10	14.30	14.60
Loxton	489.9	-	12.06	12.60	12.72	13.30	13.50
Cobdogla	446.9	-	10.35	10.70	10.73	10.88	11.50
Lock 3	431.4	9.80	9.77	9.98	10.14	10.30	10.90
Overland Corner	425.9	-	8.34	9.10	9.93	10.10	10.70
Waikerie	383.6	-	7.12	7.87	8.04	8.53	9.30
Lock 2	362.1	6.10	6.30	7.05	7.33	7.61	8.25
Cadell	332.6	-	5.00	5.75	5.77	6.41	7.15
Morgan	321.7	-	4.52	5.15	5.71	5.89	6.50
Lock 1	274.2	3.20	3.06	3.55	3.75	3.96	4.50
Swan Reach	245.0	0.75	1.83	2.17	2.48	2.79	3.10
Mannum PS	149.8	0.75	1.05	1.06	1.19	1.33	1.46
Murray Bridge	115.3	0.75	0.91	0.90	1.00	1.11	1.21

Note: Water levels (in particular below Lock 1) can be affected by local wind conditions by approximately 0.3 m



River Murray Flow Report

Now is a great time to enjoy the River Murray at its best. However visitors are reminded to exercise caution at all times when using the river and seek local advice.

The flow to South Australia comprises the normal November Entitlement Flow of 6 GL/day, unregulated flow and environmental water.

The flow over Lock 1 is approximately 42 GL/day and will increase to around 50 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 November 2016, the Commonwealth Environmental Water Holder and the Murray-Darling Basin Authority's *The Living Murray* are expected to provide environmental water 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 2016-17.

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.

The dredging operations combined with recent substantial barrage releases have improved conditions at the Murray Mouth. As a result one of the two dredges has been decommissioned. The remaining dredge will continue to operate between the Tauwitchere and Goolwa channels. At 30 October 2016 approximately 1 678 400 cubic metres of sand had been removed by dredging operations.

Mariners are advised that there are still a number of shallow zones in and adjacent to the Murray Mouth and 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 remain in place to ensure public safety. For more information refer to the Notice to Mariners at <http://dpti.sa.gov.au/news/?a=247918>

There is also a partial park closure in place for the northern tip of the Coorong National Park. For more information refer to the following http://www.environment.sa.gov.au/parks/Safety/Park_closures/141219-coorong-national-park. Signage has been installed at appropriate locations advising of Exclusion Zones.

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.82 m AHD and Lake Albert approximately 0.86 m AHD. The difference in water levels is due to wind effects. Water levels are being actively managed to achieve a target water level of 0.8 m AHD at the end of December 2016.

Due to the unregulated flow event, when weather conditions are favourable, water is being released from the barrages into the Coorong. Releases are being prioritised at Tauwitchere, Goolwa, Ewe Island and Mundoo barrages. The primary aims of the releases are to reduce salinity levels in the Lower Lakes and scour sand from the Murray Mouth. All fishways are operational to provide fish passage between Lake Alexandrina and the Coorong.

During the week ending 1 November 2016 total barrage releases were approximately 222 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.

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

WATER QUALITY - BLACKWATER (upstream of SA)

High flows across New South Wales and Victoria have mobilised large amounts of organic matter from the floodplain into the River Murray.

The breakdown of organic matter consumes dissolved oxygen, which has led to low levels of oxygen in the water and dark discolouration - known as blackwater. Blackwater events occur naturally but can cause fish to die. The impacts could be widespread and possibly extend downstream into South Australia.

SA Water and the Murray-Darling Basin Authority are monitoring the situation closely.

WEIR POOL OPERATIONS

Due to high flows, several weirs along the River Murray (including Locks 2 and 4 in South Australia) have been temporarily opened (open river conditions). The remaining weirs in South Australia are likely to be opened during November (depending on the peak flow). This is a standard operating procedure during periods of high flow. The weirs will be reinstated once the high flows cease.

Lock 1

The Lock 1 weir pool remains approximately 0.1 m below the normal pool level (NPL) of 3.2 m AHD to enable engineering investigations to be undertaken at the weir.

Lock 2

The Lock 2 weir pool raising (and lowering) event is now complete. The current water level is a result of the high flows and will return to NPL after the high flow period.

Lock 5

The Lock 5 weir pool raising (and lowering) event is now complete.

CHOWILLA WATERING

Operations to further test the Chowilla Regulator and ancillary structures are continuing. The target water level at the Chowilla Regulator of 19.75 m AHD (3.45 m above NPL) was achieved in late September, in conjunction with raising Lock 6 to 19.84 m AHD (0.59 m above NPL). The levels are currently being drawn down but will not return to NPL until after the high flow period. The operation resulted in inundation of approximately 7 650 hectares of floodplain.

LOWER MURRAY LEVEE EMBANKMENTS

Between Mannum and Wellington there are approximately 118 kilometres of levee banks, of which 67 kilometres are managed and maintained by the South Australian Government.

Recently, the government-managed levee banks have been inspected to assess their condition. A number of localised defects such as settlement, erosion and minor seepage have been identified and are being managed through earthworks. DEWNR officers have contacted relevant landholders and irrigation trusts about the affected levee banks.

DEWNR has also examined data from a 2010 levee bank survey, which has identified privately owned levee banks that, unless modified or repaired, adjacent properties could be susceptible to inundation, particularly in the event of severe wind seiche (wind driven water rise, typically caused by southerly wind blowing across lake

Alexandrina). The 2010 Levee Profile Mapping can be accessed through the Water Connect website at www.waterconnect.sa.gov.au/River-Murray

In early November 2016 an additional survey of levee banks will be undertaken to measure the current bank heights. Information about the outcome of the surveys will be provided in future SA River Murray Flow Reports.

Levee bank assessments and surveys have been undertaken to identify any issues. DEWNR is keen to hear about infrastructure leakages at trust syphons or sluices, and levee bank cracking or subsidence on government-managed levee banks (to confirm that the survey information is complete).

If landholders have specific concerns about the government-managed levee banks they can contact Mr Said Khelwaty, Project Engineer on 0434 076 515 or said.khelwaty@sa.gov.au.

For any general advice or other questions relating to government or privately owned levee banks you can contact Mr Richard Brown, Infrastructure Operations Manager on 0412 046 777 or richard.brown@sa.gov.au.

NAVIGATION ISSUES

While this is a great time to visit the river, all visitors are reminded to exercise caution when navigating through the locks, weirs and 'opened' weirs, and to be mindful of partially submerged infrastructure such as jetties and floating debris. The higher flow may present a hazard to watercraft with low-horsepower engines.

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

RIVER HAZARDS

Boaters are advised that current and forecast high flow conditions on the River Murray are causing inundation of riverbanks and associated structures.

Some boat launching facilities may become unserviceable due to changed river levels. Bridge clearances will also be reduced by rising water levels. Boaters should exercise caution when operating vessels near to the banks of the river or under bridges, and be aware of structures on, or near, the riverbank which may be submerged. Boaters are also likely to encounter floating debris which may cause damage to vessels or injury to water skiers.

Property owners who are likely to have submerged infrastructure (such as jetties) projecting into the river are reminded to attach a floating marker, coloured Yellow, to the extremity of the infrastructure. This will assist boat users to avoid colliding with the submerged asset.

Persons intending to engage in high speed activities should ensure that the area of water is safe prior to commencing the activity. Vessel wash should be kept to a minimum if operating in the vicinity of inundated houses and other buildings.

For more information contact Department of Planning, Transport and Infrastructure Marine Operations on 1300 183 046.

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 on 2 November 2016

Location	River km	Normal Pool Level (m AHD)	Current Level (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)	2011 High Water Level (m AHD)
Lock 10	825.0	30.80	31.22	33.81	33.32	32.28
Lock 9 Kulnine	764.8	27.40	27.46	30.03	29.44	28.80
Lock 8 Wangumma	725.7	24.60	25.67	27.60	27.19	26.79
Lock 7 Rufus River	696.6	22.10	24.00	25.70	25.24	24.92
Lock 6 Murtho	619.8	19.25	19.30	21.03	20.50	20.11
Renmark	567.4	-	-	18.54	18.04	17.38
Lock 5	562.4	16.30	16.32	18.07	17.50	17.05
Lyrup	537.8	-	14.13	16.85	16.26	15.68
Berri	525.9	-	13.79	15.81	15.74	15.16
Lock 4	516.2	13.20	13.48	15.65	15.08	14.75
Loxton	489.9	-	12.06	15.05	14.12	13.42
Cobdogla	446.9	-	10.35	13.44	12.38	11.52
Lock 3	431.4	9.80	9.77	13.16	12.02	10.93
Overland Corner	425.9	-	8.34	12.73	11.58	10.27
Waikerie	383.6	-	7.12	11.26	10.24	9.06
Lock 2	362.1	6.10	6.30	10.28	9.30	8.25
Cadell	332.6	-	5.00	9.17	8.08	6.82
Morgan	321.7	-	4.52	8.85	7.65	6.20
Lock 1 Blanchetown	274.2	3.20	3.06	6.81	5.38	4.42
Swan Reach	245.0	0.75	1.83	6.06	4.51	3.09
Mannum PS	149.8	0.75	1.05	3.15	1.90	1.46
Murray Bridge	115.3	0.75	0.91	2.06	1.26	1.21

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

River Murray Flow Report

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/Home

Information provided by the Department of Transport, Energy 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

ID	RM-Flow-Report 20161104
Classification	Public I2 A2
Issued	4 November 2016
Authority	DEWNR
Master Document Location	Q:\OMP\RM REM\02 RM Ops\04 Communications\Flow Advices\2016-17
Managed and Maintained by	River Murray Operations
Author	River Murray Operations
Reviewer	Director River Murray Operations, Strategy and Advice