

River Murray Flow Report and Water Resources Update



Report #44/2021

Issued 10:00 am 12 November 2021

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 5 November 2021. The next flow report will be provided on Friday 19 November 2021.

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 RESOURCES UPDATE

During October 2021, the total River Murray System inflow was approximately 1 308 GL, which is slightly below the October long-term average of 1 414 GL. During October 2021, the total Menindee Lakes inflow was approximately 142 GL, which is below the October long-term average of 169 GL.

The flow to South Australia during October 2021 was approximately 925 GL, which is about 93 % of the October long-term average of 994 GL. The flow comprised of Entitlement Flow (including environmental water on SA licence), environmental water, trades, Additional Dilution Flow (ADF) and unregulated flow.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

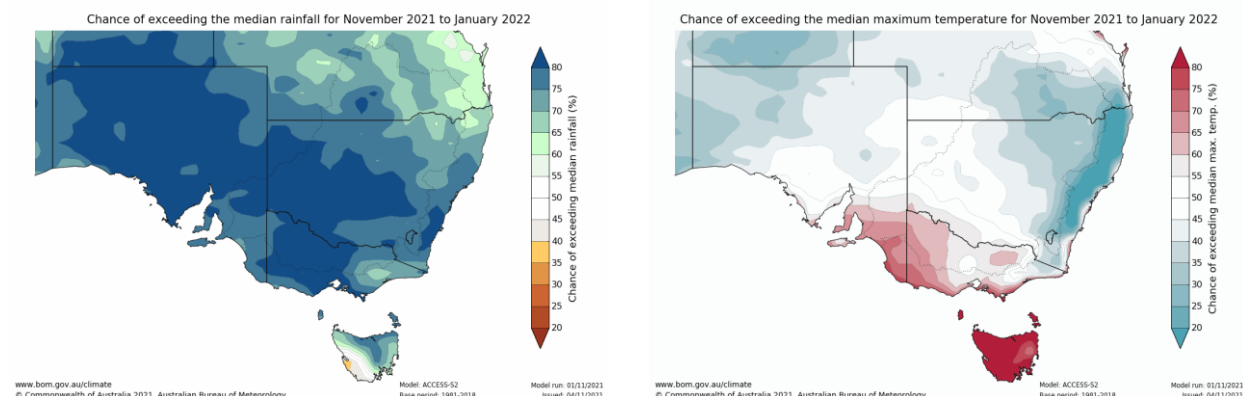
The Murray-Darling Basin Authority confirmed that on 1 November 2021 South Australia had 337.1 GL of deferred water held in storage in the Murray-Darling Basin. The following table identifies the storage in which it is held and its purpose. Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

At 1 November 2021				
Purpose	Lake Victoria (GL)	Hume (GL)	Dartmouth (GL)	Total (GL)
*CHWN	0	0	236.3	236.3
Private Carryover	0	0	100.8	100.8
Total	0	0	337.1	337.1

*Critical Human Water Needs (CHWN)

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook forecasts that rainfall from November 2021 to January 2022 is likely to be above median for SA, VIC and NSW, including across the Murray-Darling Basin. Temperatures from November 2021 to January 2022 are more likely to be above median in the South East of South Australia and parts of Victoria.



The Bureau's ENSO Outlook is at La Nina ALERT. In the past when the outlook has been set to La Nina ALERT a La Nina event has been met around 70 % of the time (triple the normal likelihood). Typically La Nina events increase the chance of above average rainfall for northern and eastern Australia during spring and summer.

The Indian Ocean Dipole (IOD) remains negative. Models are forecasting that the negative IOD will return to neutral levels in late spring. A neutral IOD has little influence on Australian climate.

The Southern Annular Mode (SAM) has returned to positive levels. It is forecast to remain positive until the end of the year. A positive SAM typically brings wetter conditions to eastern parts of Australia.

The latest Bureau of Meteorology outlook information can be accessed [here](#).

STORAGE VOLUMES

Table 1: Murray-Darling Basin Storage volumes

Storage	Full Supply Volume (GL)	10/11/2021 (GL)	10/11/2020 (GL)	Long-term average (end of Nov) (GL)
Dartmouth	3 856	3 204 (83%)	2 348 (61%)	
Hume	3 007	2 931 (97%)	2 417 (80%)	
Lake Victoria	677	670 (98%)	652 (96%)	
Menindee Lakes	*1 731	1 925 (111%)	438 (25%)	
TOTAL	9 271	8 730 (94%)	5 855 (63%)	7 308 (79%)

*Menindee Lakes can be surcharged to 2 015 GL

WATER QUALITY - Salinity

A number of targets are identified under the Murray-Darling Basin Plan, which all Basin jurisdictions 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 November 2020 to November 2021. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

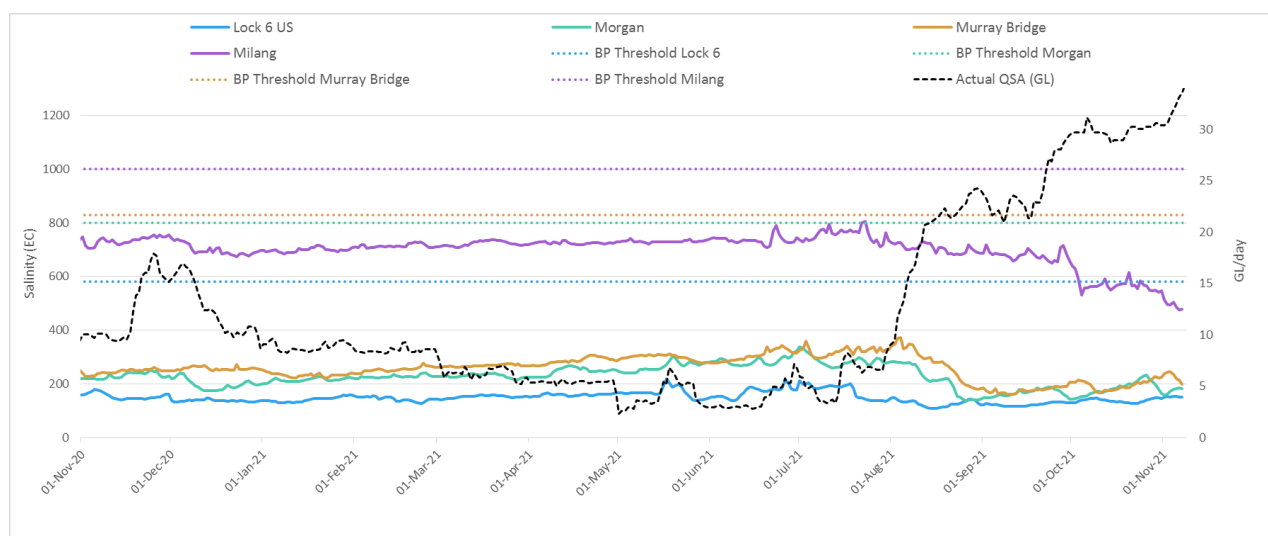


Figure 1: SA River Murray daily average salinity

FLOW OUTLOOK



The flow at the South Australian border is approximately 34 GL/day and will decrease to around 28 GL/day over the coming week. It comprises:

- full November Entitlement Flow (6 GL/day);
- plus water for the environment (see below *Environmental News*);
- interstate trade adjustments;
- Additional Dilution Flow (ADF); and
- Unregulated flow.

The flow over Lock 1 is approximately 33 GL/day and will decrease to around 29 GL/day over the coming week.

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 NEWS

Unregulated flow from spring rainfall in upstream catchments continues to reach South Australia. South Australia is also receiving water for the environment from South Australia's environmental water allocation and return flows from upstream watering actions including the 2021 Murray Wetland Flow. More information on this event can be found [here](#).

The current flows from the River Murray and upstream tributaries, through to the Coorong, will provide a range of benefits for the environment in SA, including:

- providing 'flowing water habitat' to benefit native fish, animals and plants in the River Murray channel that have adapted to a riverine environment, including supporting conditions that favour spawning and recruitment of golden perch and Murray cod. Monitoring has detected golden perch eggs at various sites throughout the Lower Murray in recent weeks;
- providing for barrage releases to the Coorong to support a productive, food-rich environment for fish and birds and promote suitable conditions for estuarine fish to spawn;
- providing habitat for birds, frogs and threatened small-bodied native fish species in the Lower Lakes;
- maintaining good connections from the Coorong to the upstream areas of the River Murray, and its tributaries, to enable fish movement and migration;
- maintaining healthy water quality, salinity and water levels in the River Murray Channel and the Lower Lakes and Coorong;
- removing excess salt from the River Murray; and
- Delivering a range of outcomes to wetlands in the Riverland via arrangements with Nature Foundation Limited, Renmark Irrigation Trust, Australian Landscape Trust, Accolade Wines Ltd and the Murraylands and Riverland Landscape Board.

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. At 7 November 2021, a total of approximately 7 781 789 cubic metres of sand had been removed by dredging operations.

Both dredges are currently operating between the Goolwa and Tauwichee channels 24 hours a day, seven days a week.

Barrage releases combined with dredging have helped to maintain flow connectivity of the River Murray Channel to the Murray Mouth and have assisted in exporting salt from the river system.

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 0.83 m AHD and Lake Albert is approximately 0.76 m AHD. The difference is due to wind effects.

As of Tuesday 9 November 2021, the weekly releases were approximately 145 GL. Gate openings at the barrages during the week can be seen in Table 1.

Table 2: Number of barrage gates open each day for the week ending Tuesday 9 November 2021

Barrage (total number of gates)	3 Nov 2021	4 Nov 2021	5 Nov 2021	6 Nov 2021	7 Nov 2021	8 Nov 2021	9 Nov 2021	Objective of releases
Goolwa (120)	5	5→4	4	4	4	4	4→5	Maintain connectivity between the River Murray channel through to the Murray Mouth to support fish migration, provide some scouring of the Goolwa Channel and Murray Mouth.
Mundoo (25)	3*→1*	1*	1*	1*	1*	1*	1→3*	Provide some localised freshening conditions in the Mundoo channel and support fish passage.
Boundary Creek (5)	1	1	1	1	1	1	1	Provide attractant flow adjacent the fish way to support fish passage.
Ewe Island (110)	12*	12*	12*	12*	12*	12*	12*	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity.
Tauwichee (319)	40	40	40	40	40	40	40	
Fishways	Fishways at all barrages and at Hunters Creek (11 in total) were open during the entire week							Provide for fish passage between the Coorong and Lower Lakes.

**Automated gate utilised to maximise delivery to Coorong and avoid reverse flows.*

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.

RIVER VESSEL WASTE DISPOSAL STATIONS

Lock 3

The Lock 3 River Vessel Waste Disposal Station is currently out of commission due to an infrastructure failure. Investigations are underway to replace the station. In the interim river vessel users can contact Riverland Tank and Drain directly on 0412 839 392 for emptying of black and grey water in the Lock 3 area. Alternatively they can utilise the nearest alternative waste facility located at Waikerie. Normal boat waste (domestic or galley waste) can still be deposited at the Lock 3 facility at the present time.

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.

ENVIRONMENTAL WATER OPERATIONS

Chowilla Floodplain and Weir and Lock 6

A low to mid-level operation of the Chowilla environmental regulator commenced in July 2021. The operation raised water levels in Chowilla Creek and through the Anabranch to a maximum height of 19.6 m AHD. The water level is now being lowered back to normal pool level (NPL).

The water level in Weir and Lock 6 was also raised in conjunction with the Chowilla Regulator and reached a maximum height of 19.68 m AHD. The water level is now being lowered back to NPL.

Pike Floodplain and Weir and Lock 5

Operations on the Pike Floodplain commenced 26 July 2021 and the operation reached its planned maximum level on 30 September 2021 (15.8 m AHD). The water level is now being lowered back to NPL.

The Lock 5 weir pool was temporarily raised by 50 cm to 16.8 m AHD in conjunction with the Pike floodplain watering to assist water flow through the floodplain. The water levels are now being lowered back to NPL.

Katarapko Floodplain and Weir and Lock 4

Operations on the Katarapko Floodplain also commenced 26 July 2021 and reached the maximum planned height of 13.2 m AHD on 15 September 2021, delivering water across about 800 hectares of the floodplain. Drawdown of water levels within the floodplain is underway.

The Lock 4 weir pool level has been raised for the duration of the event to 13.50 m AHD to assist with water flow into the Katarapko Creek system and is being drawdown at a rate of approximately 3 cm / day. Water levels will be lowered slowly in the floodplain and in the weir pool with monitoring occurring on a daily basis.

Weir and Lock 2

The water level in Weir and Lock 2 is now back at NPL after being at the maximum height of the event for over 40 days.

National Park access

There are some short term access restrictions and closures of some roads, trails and campsites due to the environmental watering at Katarapko and Chowilla floodplains. On-site signage provides guidance about safe access. More information can be found at <https://www.parks.sa.gov.au/> or by contacting the Berri Regional Office on 8595 2111

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 10/11/2021 (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.83	32.72
Lock 9 Kulnine	764.8	27.40	27.57	28.85
Lock 8 Wangumma	725.7	24.60	24.80	26.85
Lock 7 Rufus River	696.6	22.10	23.27	24.97
Lock 6 Murtho	619.8	19.25	19.35	20.19
Renmark	567.4	-	16.84	17.44
Lock 5	562.4	16.30	16.79	17.05
Lyrup	537.8	-	13.67	15.80
Berri	525.9	-	13.44	15.21
Lock 4	516.2	13.20	13.26	14.73
Loxton	489.9	-	11.43	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.84	10.98
Overland Corner	425.9	-	7.71	10.41
Waikerie	383.6	-	6.70	9.20
Lock 2	362.1	6.10	6.14	8.32
Cadell	332.6	-	4.37	7.01
Morgan	321.7	-	3.96	6.38
Lock 1 Blanchetown	274.2	3.20	3.22	4.46
Swan Reach	245.0	0.75	1.36	3.11
Mannum PS	149.8	0.75	0.95	1.33
Murray Bridge	115.3	0.75	0.86	1.04

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

FURTHER INFORMATION

The Water Data SA website is South Australia's comprehensive water information portal. For real-time data (like salinity, water levels) go to the following page: [Water Data SA](#).

Up-to-date River Murray salinity, flow and water level information can also be accessed at the 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: [Managing Acid Sulfate Soils Research Project](#)

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](#).

[Katarapko Floodplain](#) site management

[Pike Floodplain](#) site management

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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