

River Murray Flow Report and Water Resources Update



Report #31/2021

Issued 10:00 am 13 August 2021

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 6 August 2021. The next flow report will be provided on Friday 20 August 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 July 2021, the total River Murray System inflow was approximately 1 572 GL, which is above the July long-term average of 1 238 GL. During July 2021, the total Menindee Lakes inflow was approximately 137 GL, which is below the July long-term average of 153 GL.

The flow to South Australia during July 2021 was approximately 183 GL, which is about 47 % of the July long-term average of 389 GL. The flow comprised of Entitlement Flow (including environmental water on SA licence), environmental water and trades.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority confirmed that on 1 August 2021 South Australia had 386.6 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.

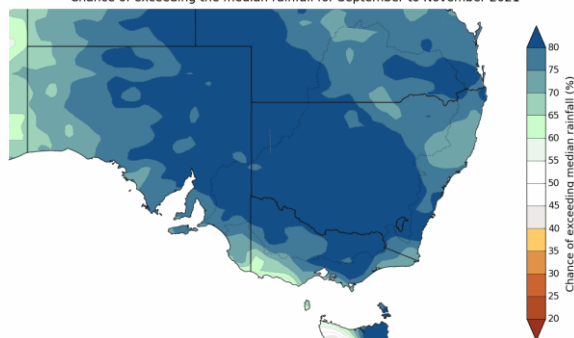
At 1 August 2021				
Purpose	Lake Victoria (GL)	Hume (GL)	Dartmouth (GL)	Total (GL)
*CHWN	9.5	40	236.3	285.8
Private Carryover	0	0	100.8	100.8
Total	9.5	0.0	337.1	386.6

*Critical Human Water Needs (CHWN)

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook forecasts that rainfall during spring (September to November) is likely to be above median throughout the Murray-Darling Basin. Temperatures are more likely to be average to below average across the Basin for the next three months.

Chance of exceeding the median rainfall for September to November 2021

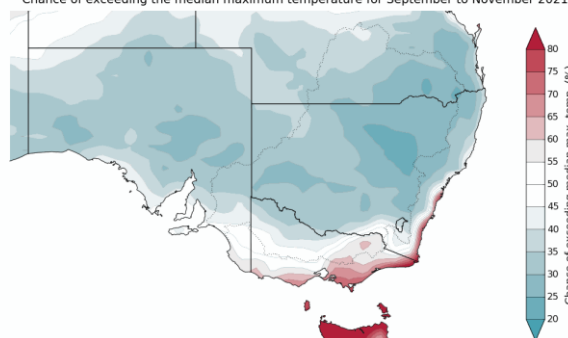


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Model: ACCESS-S1
Base period: 1990-2012

Model run: 02/08/2021
Issued: 05/08/2021

Chance of exceeding the median maximum temperature for September to November 2021



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Model: ACCESS-S1
Base period: 1990-2012

Model run: 02/08/2021
Issued: 05/08/2021

The Bureau has noted that the negative Indian Ocean Dipole (IOD) has continued and is likely to continue through spring. A negative IOD increases the chance of above average winter-spring rainfall for much of southern and eastern Australia.

Above average sea surface temperatures to the north of Australia and in the eastern Indian Ocean are also providing more conducive conditions for rainfall across parts of Australia.

The El Niño–Southern Oscillation (ENSO) is currently neutral. Forecasts by all seven climate models are indicating a cooling of the tropical central Pacific. Four of these models are forecasting neutral ENSO conditions during spring and three (including the Bureau’s own model) are forecasting that La Nina thresholds will turn positive over the same time period.

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)	11/08/2021 (GL)	11/08/2020 (GL)	Long-term average (end of Aug) (GL)
Dartmouth	3 856	2 759 (72%)	2 068 (54%)	
Hume	3 007	2 686 (88%)	1 596 (53%)	
Lake Victoria	677	600 (89%)	671 (99%)	
Menindee Lakes	*1 731	1 254 (72%)	459 (27%)	
TOTAL	9 271	7 299 (79%)	4 794 (52%)	7 127 (77%)

*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 August 2020 to August 2021. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

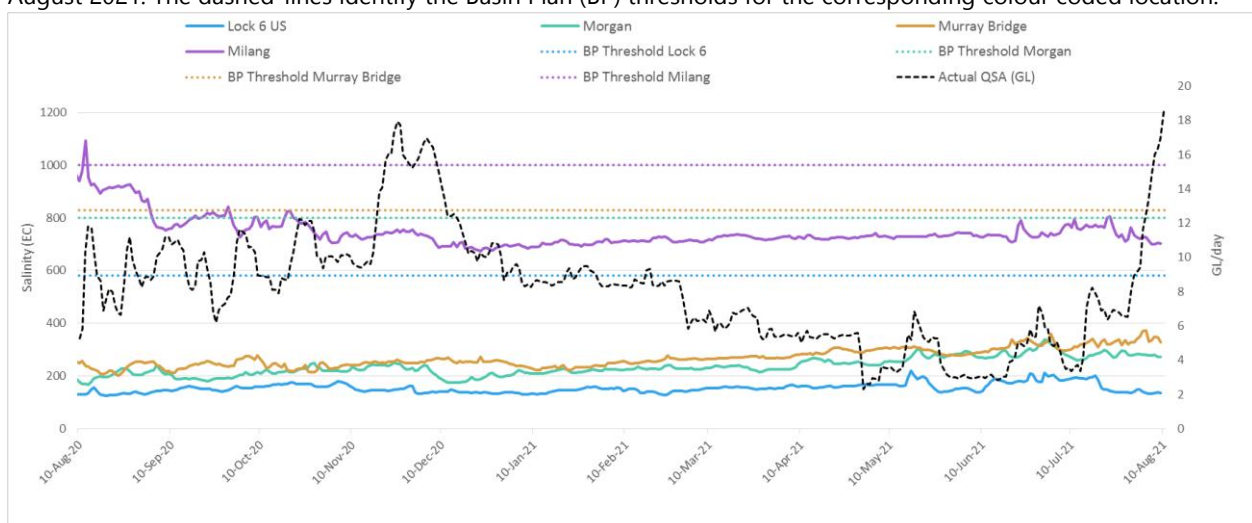


Figure 1: SA River Murray daily average salinity

FLOW OUTLOOK

The flow at the South Australian border is approximately 21.5 GL/day and will increase to around 23 GL/day over the coming week. It comprises:

- full August Entitlement Flow (4 GL/day);
- plus water for the environment (see below *Environmental News*);
- interstate trade adjustments; and
- unregulated flow.

The flow over Lock 1 is approximately 18.5 GL/day and will increase to around 20 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

Recent rainfall in Victoria and NSW has generated unregulated flow to South Australia. South Australia is also receiving water for the environment from South Australia's environmental water allocation and return flows from a water action in the Goulburn River, Victoria.

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 for barrage releases to the Coorong to support a productive, food-rich environment for fish and birds;
- 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 including for Lamprey which will be migrating into the river from the Southern Ocean for spawning over the next few months;
- maintaining healthy water quality, salinity and water levels in the River Murray Channel and the Lower Lakes and Coorong, including through targeted releases at the barrages when weather conditions are best suited to push water down the Coorong;
- removing excess salt from the River Murray;
- undertaking floodplain operations at Chowilla, Pike and Katarapko as well as raising the water levels in weir pools 2, 4, 5 and 6 (see more details below in Environmental Water Operations); and
- Delivering a range of outcomes to wetlands in the Riverland via arrangements with Renmark Irrigation Trust and the Murraylands and Riverland Landscape Board.



Figure 2: The Katarapko floodplain prior to receiving water for the environment in 2021 (Ellee Eleftheriadis, DEW)

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 8 August 2021, a total of approximately 7 440 917 cubic metres of sand had been removed by dredging operations.

Both dredges are currently operating between the Goolwa and Tauwitchere 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 0.77 m AHD and Lake Albert is approximately 0.85 m AHD. The difference is due to wind effects.

As of Tuesday 10 August 2021, the weekly releases were approximately 98 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 10 August 2021

Barrage (total number of gates)	4 Aug 2021	5 Aug 2021	6 Aug 2021	7 Aug 2021	8 Aug 2021	9 Aug 2021	10 Aug 2021	Objective of releases
Goolwa (120)	0→1*→4	5	5	5	5	5	4→1*→0	Maintain connectivity between the River Murray channel through to the Murray Mouth to support fish migration.
Mundoo (25)	4*→2*→0	2*	6*	6*	6*	6*	2*→0	Provide some localised freshening conditions in the Mundoo channel
Boundary Creek (5)	1	1	1	1	1	1	1	Provide attractant flow adjacent the fishway to support fish passage.
Ewe Island (110)	0→12*	12*	12*	12*	12*	12*	12*→0	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity.
Tauwitchere (319)	0→21*	21*	21*	21*	21*	21*	21*→0	
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 has commenced and the water level is rising. The operation plans to raise water levels in Chowilla Creek and through the Anabranche by between approximately 18.9 and 19.6 m AHD though the higher level is dependent on having flows in the River Murray of over 30 000 ML/day.

The water level in Weir and Lock 6 is also raised in conjunction with the Chowilla Regulator. This will see the water level raised up to a height of 19.67 m AHD depending on flow conditions at the time.

Pike Floodplain and Weir and Lock 5

Operations on the Pike Floodplain commenced 26 July 2021. The operation will raise water levels on the Pike Floodplain between 15 m AHD to 15.4 m AHD.

The water level in Weir and Lock 5 is also raised in conjunction with the Pike Regulator. This will increase the water level to a height of 16.8 m AHD (+0.5 m AHD) depending on flow conditions.

Should the flow to South Australia increase significantly the Pike Regulator may be operated to raise the water level further to between 15.4 m AHD to 15.8 m AHD. The exact height will depend on the flow and conditions within the river and the Pike anabranch.

Katarapko Floodplain and Weir and Lock 4

Operations on the Katarapko Floodplain also commenced 26 July 2021. The operation plans to raise the water levels on the Katarapko Floodplain initially up to 13 m AHD to 13.2 m AHD, depending on the actual flow conditions.

The water level in Weir and Lock 4 is also raised in conjunction with water levels on the Katarapko Floodplain. This will increase the water level to a maximum height of 13.5 m AHD (+ 0.3 m AHD).

Weir and Lock 2

The water level in Weir and Lock 2 continues to rise and will continue up to a maximum height of 6.65 m AHD. This will increase the water level by up to a maximum of 0.55 m AHD above NPL at a rate of 3 cm / day.

These floodplain operations and associated weir raising will generate floodplain inundation which freshens soils to support the growth and regeneration of floodplain vegetation and provides valuable habitat for a range of wildlife. The operations connect up wetlands and support the movement of carbon and nutrients to the river providing resources to the river foodwebs.

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 11/08/2021 (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	27.53	28.85
Lock 8 Wangumma	725.7	24.60	24.67	26.85
Lock 7 Rufus River	696.6	22.10	22.68	24.97
Lock 6 Murtho	619.8	19.25	19.41	20.19
Renmark	567.4	-	16.57	17.44
Lock 5	562.4	16.30	16.56	17.05
Lyrup	537.8	-	13.59	15.80
Berri	525.9	-	13.51	15.21
Lock 4	516.2	13.20	13.49	14.73
Loxton	489.9	-	10.60	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.91	10.98
Overland Corner	425.9	-	7.10	10.41
Waikerie	383.6	-	6.78	9.20
Lock 2	362.1	6.10	6.63	8.32
Cadell	332.6	-	3.62	7.01
Morgan	321.7	-	3.47	6.38
Lock 1 Blanchetown	274.2	3.20	3.29	4.46
Swan Reach	245.0	0.75	0.83	3.11
Mannum PS	149.8	0.75	0.80	1.33
Murray Bridge	115.3	0.75	0.71	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: [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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