

# SA River Murray Flow Report

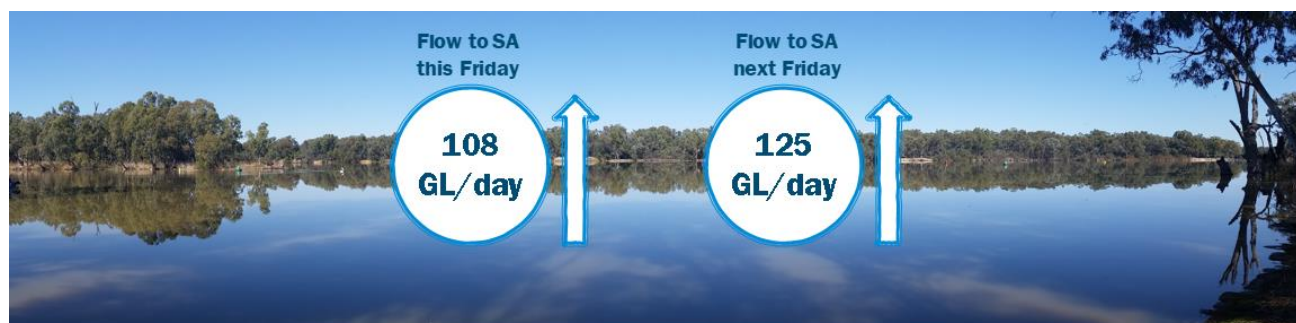


Report #45/2022

Issued 10:00 am 18 November 2022

This supersedes the previous Flow Report issued by the Department for Environment and Water (DEW) on 11 November 2022. The next Flow Report will be provided on Friday 25 November 2022.

## Flow outlook



The flow at the South Australian border is approximately 108 GL/day and is forecast to increase to around 125 GL/day over the coming week.

The latest forecasts upstream of the South Australian border indicate that the flow to SA will continue increasing during November 2022. It is expected that:

- there is a **high probability** that the flow will reach a peak of at least **175 GL/day in early December 2022**;
- there is a **moderate probability** that the flow will reach a peak of **200 GL/day**;
  - This flow may occur with future rainfall and/or improved accuracy in forecasting in coming weeks
- there is a **lower probability** that the flow will reach a peak of **220 GL/day**
  - There is a chance that this flow may occur with significant future rainfall and/or improved accuracy in forecasting in coming weeks. Be prepared for this flow and river levels "just in case".

Forecasting of the size and timing of flows, particularly floods, to the South Australian border is particularly challenging due to the complex interaction of flows from multiple tributaries (including the Darling, Murrumbidgee, Edward, Wakool, upper Murray and Goulburn Rivers) and the attenuating effect of water spreading out over floodplains and filling wetlands on its way to the South Australian border.

## FLOOD INFORMATION AND WARNINGS

Keep up to date with the latest information on conditions and advice from authorities on:

<https://www.sa.gov.au/topics/emergencies-and-safety/river-murray-high-flows-2022>

The South Australian State Emergency Service (SASES) is the control agency for flood and is responsible for providing public information and warnings for River Murray flood events in SA.

You can view the latest warning on the SASES website: <https://www.ses.sa.gov.au/incidents-and-warnings/current-warning-list/>

The SASES Infoline on **1800 362 361** can also be contacted between 9am and 5pm (weekdays) for further information.

There was substantial rainfall over many parts of the Murray-Darling Basin during the last week, which was a contributing factor in the forecast increasing to 175 GL/day in early December and is likely to extend the duration of elevated flows reaching SA. Higher releases at Hume Dam and Yarrowonga Weir in the last week are not expected to reach the South Australian border until later in December.

The size of the early December peak is being influenced by water that arrived at places like Echuca during September and October 2022, which has pushed across into the Edward and Wakool River system that act as anabranches of the Murray. The flow peak is now reaching the end of this system and is re-joining the River Murray downstream of Swan Hill (see figure below). As at 17 November 2022, water levels at sites at the downstream end of the Murray-Edward-Wakool system are steadying or beginning to fall, which whilst a level of uncertainty remains, has increased the confidence in the forecast flow peak. However, water levels are expected to remain high for a period of time as the flow from the Hume and Yarrowonga releases arrive.

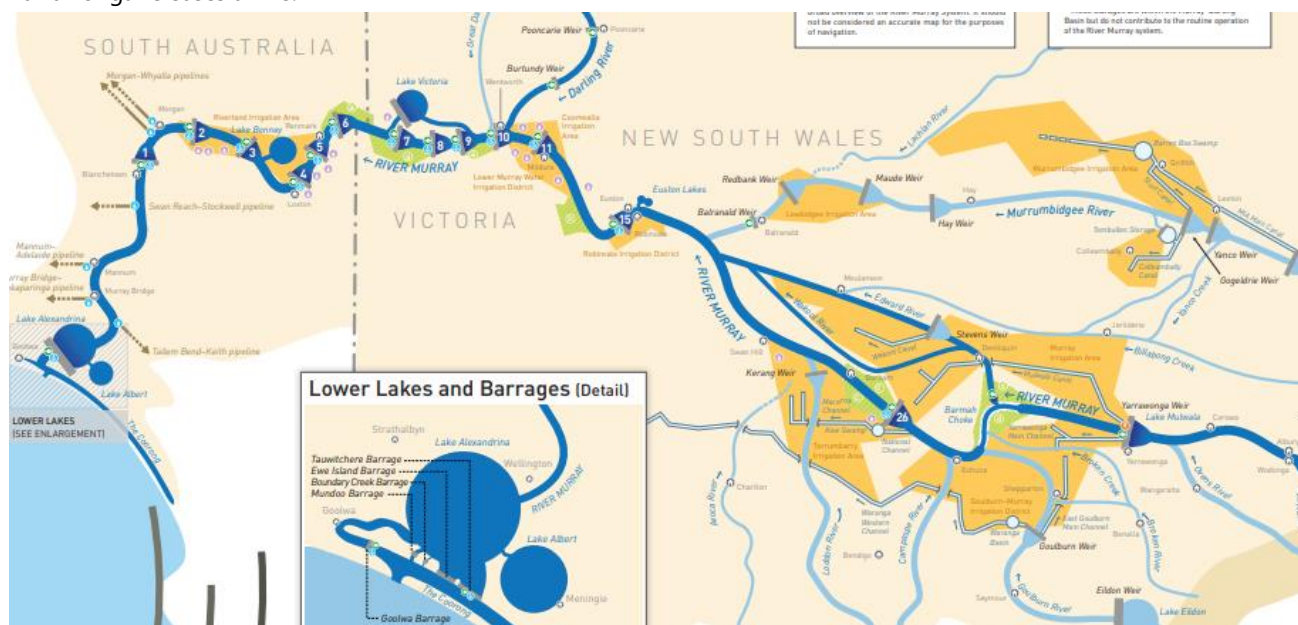


Figure 1: Map showing the River Murray system (MDBA)

Major flooding on the Lachlan River during the last week (for example, at Eugowra, Molong and Forbes) is not expected to affect the current forecast flood peak at the SA border. While the Lachlan River is part of the Murray-Darling Basin, it flows into the vast Cumbung swamp in its lower reach and only rarely connects to the Murrumbidgee River. The flood peak on the Lachlan River will be significantly attenuated by the Cumbung swamp.

The flow forecast at the SA border is based on water that is already in transit to South Australia and does not include future rainfall. Further increases are possible if there is more rainfall over the Murray-Darling Basin in the coming weeks, particularly if it falls in areas that are closer to the SA border.

**Due to the unavoidable uncertainty in the flow forecast, the community is encouraged to continue to plan and prepare for the possibility of flows within the range provided and for a prolonged duration lasting into late January 2023 and possibly beyond.**

The current flow at the border comprises:

- full November Entitlement Flow (6 GL/day)<sup>1</sup>;
- interstate trade adjustments;
- Additional Dilution Flow (ADF); and

<sup>1</sup> The entitlement flow for South Australia under the Murray-Darling Basin Agreement determines the minimum flows that South Australia will receive across the border. In November 2022, approximately 0.53 GL/day of this is Commonwealth environmental water.

- Unregulated flow.

The flow over Lock 1 is approximately 80 GL/day and will increase to around 86 GL/day over the coming week.

## Current and forecast water levels

The table below shows estimated high water levels (based on historical events and modelling) and approximate timing of those water levels at various flows at the SA border in the coming weeks.

Note that forecasts are based on information available at the time of preparation and may change due to rainfall events or changed operations upstream. Note also that the current forecast indicates a flat peak spanning a number of weeks, hence an approximate date range has been provided.

Location	Normal Pool Level (m AHD)	Current level at 16/11/22 (m AHD)	Water level is currently	1975 Levels (m AHD)	180 GL/day Modelled water level (m AHD)	Nov 1974 Levels (m AHD)	200 GL/day Modelled Water level (m AHD)	Estimated timing of peak
				Flow to SA 162 GL/day		182 GL/day Flow to SA		
				Flow at Lock 1 155 GL/day		Flow at Lock 1 163 GL/day		
Lock 6	19.25	20.25	Rising	20.92	-	21.01	-	4 – 12 Dec
Renmark	-	17.49	N/A	18.50	18.58	18.54	18.76	
Lock 5	16.30	17.12	Rising	18.07	18.23	18.07	18.42	
Lyrup	-	15.83	Rising	-	17.22	-	17.42	
Berri	-	15.19	Rising	16.20	16.21	16.27	16.30	10 – 17 Dec
Lock 4	13.20	14.63	Rising	15.57	15.62	15.66	15.70	
Loxton	-	13.56	Rising	14.96	14.99	15.04	15.07	11 – 18 Dec
Cobdogla	-	-	N/A	13.33	13.70	13.43	13.84	
Lock 3	9.80	10.99	Rising	13.08	13.47	13.17	13.64	13 – 19 Dec
Overland Corner	-	10.41	Rising	12.62	13.05	12.73	13.30	
Waikerie	-	9.13	Rising	11.17	11.43	11.24	11.64	17 – 24 Dec
Lock 2	6.10	8.20	Rising	10.24	10.42	10.29	10.62	18 – 25 Dec
Cadell	-	6.92	Rising	9.05	9.13	9.16	9.41	
Morgan	-	6.03	Rising	8.43	8.90	8.57	9.19	20 – 27 Dec
Lock 1	3.20	4.24	Rising	6.42	7.07	6.81	7.46	21 – 28 Dec
Swan Reach	-	3.27	Rising	5.82	6.28	6.04	6.73	
Mannum PS	-	1.38	Rising	2.90	3.22	3.14	3.47	
Murray Bridge	-	1.07	Rising	1.90	2.25	2.02	2.47	22 – 30 Dec
Jervois	-	N/A	N/A	1.39	1.63	1.55	1.73	
Wellington	-	N/A	N/A	-	1.36	-	1.42	
Lake Alexandrina	0.75	0.89	Varying	< 1.0	<1.0 See note	< 1.0	<1.0 See note	

Some modelled levels, particularly downstream of Lock 1, have been revised since the 11 November 2021 Flow Report

Notes to assist interpretation:

1. The extent of inundation shown in DEW flood maps are matched to the modelled water levels shown above.
2. High flows in the River Murray can be reliably calculated at only three locations in South Australia: at the SA border (QSA), Lock 1 at Blanchetown and the barrages at the Murray mouth. There are no major tributaries entering the River Murray between the border and the Lower Lakes. Historically, the peak flow measured at the SA border will 'attenuate' (reduce) as the flood peak moves down the river towards the Lower Lakes. The degree to which the peak attenuates is different for every flood. Typically, by the time the flood peak reaches Lock 1, it will have reduced by 5 to 20 GL/day compared to the peak flow measured at the border (QSA).
3. Between the SA border and Morgan, the modelled water levels and inundation extents relate to the maximum flow measured at the SA border (QSA). DEW flood modelling has assumed that minimal attenuation of the flood peak will occur (a conservative assumption). If attenuation does occur, the modelled water levels and inundation extents will over-predict the actual values.
4. Between Morgan and Wellington, the modelled water levels and inundation extents relate to the maximum flow measured at Lock 1. For flood preparedness purposes, it is appropriate to assume that the flow at Lock 1 will be the same as QSA. Regular updates will be provided on anticipated water levels as the flood peak moves down the river in South Australia and maximum water levels are observed. This may be reduced from what is initially forecast.
5. Water levels downstream of Lock 1 can be impacted by wind events which may cause temporary increases in water levels.
6. It is expected that barrage operations will be able to safely pass the forecast flood peak and maintain water levels in the Lower Lakes below 1.0 m AHD.

## Flood inundation mapping

As floods don't regularly occur in South Australia it can be hard to plan for one or even know if you are at a high risk of being impacted. To help people know if they are at a greater risk of being affected by flooding, communities can view inundation maps prepared by DEW for a range of river flows.

Inundation mapping for the River Murray from north of Renmark to Wellington for flows ranging from 60 GL/day to the highest flood on record (341 GL – the 1956 flood) is available via the [Flood Awareness Map](#).

To use the Flood Awareness Map to see if your property is impacted at various flows, follow the steps below (also shown on the image):

1. Open the [Flood Awareness Map](#) and agree to the terms and conditions;
2. Search to your property via the search box at the top of the map or via council area or suburb drop down lists;
3. In the box titled 'Flood Studies' select 'Flood Mapping of the River Murray 2014';
4. Then select, the flow band you wish to view e.g. '200,000, ML per day flow'.
5. (optional) Change Map Type to Aerial Photograph and use the Transparency Slider to improve the presentation.

## Decommissioning of River Murray River Vessel Waste Disposal Stations

As flow to South Australia continues to rise, we are preparing to decommission river vessel waste disposal stations below Lock 1 to Murray Bridge from Monday 21 November 2022. All river vessel waste disposal stations above Lock 1 are already offline.

The river vessel waste disposal station at Goolwa will remain open at this point, however we will be monitoring this station on a regular basis.

These proactive and preventative measures are required to minimise risks to public safety and water quality and ensure infrastructure is protected. The temporary closure of this infrastructure is to ensure that when the flows do recede, the systems can go back online in a timely manner.

In the interim while flows are high, commercial options are available for businesses to utilise temporarily at houseboat owners and operators expense while the disposal stations are closed.

If you have any questions, please contact the DEW Engagement Team on [DEW.WIOCommunications@sa.gov.au](mailto:DEW.WIOCommunications@sa.gov.au)

## Closure of Government owned levee banks

The Department for Environment and Water is preparing to close all Government owned levee banks along the Lower Murray from Mannum to Wellington from 21 November 2022. Recreational activity along the levee banks will not be allowed during this time. Local Irrigation Trust members and contractors will have continued access and are encouraged to take all necessary precautions when working on the levees, particularly during or following wet weather.

Access to the following levee banks is closed for public recreation from Monday 21 November 2022: Burdett, Cowirra, Jervois, Long Flat, Mobilong, Monteith, Mypolonga, Neeta, Pompoota and Wall Flat.

The Department is taking these preventative measures to minimise risks to public safety. We are being proactive in closing the levee banks temporarily so when the flows do recede, we can reopen in a timely manner once water levels have fallen sufficiently.

We acknowledge that there are privately owned levee banks along the Lower Murray. As they are managed and maintained by private landholders, access to these levee banks may also be closed at the discretion of the landholder.

If you have any questions, contact the DEW Engagement Team on [DEW.WIOCommunications@sa.gov.au](mailto:DEW.WIOCommunications@sa.gov.au)

## Environmental news

Unregulated flows have been continuous to SA since July 2021 due to wetter than average conditions across much of the Murray-Darling Basin and flows are increasing due to significant flooding in NSW and Victoria. Apart from small volumes that are delivered as part of SA's entitlement flow, deliveries of water for the environment are generally on hold until flooding recedes. High flows provide a range of benefits for the environment in SA, including:

- connecting the river with floodplains and wetlands, inundating areas that have been dry for many years;
- allowing fish dispersal and movement into new habitats and throughout the Murray-Darling Basin;
- 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 spawning and recruitment of large native fish. Golden perch have been detected spawning in the South Australian Murray in recent weeks;
- improving water quality and productivity in the Coorong, providing a food-rich environment for fish and birds including healthy populations of keystone native plant *Ruppia tuberosa*;
- providing habitat for birds, frogs and threatened small-bodied native fish species in the Lower Lakes;
- removing excess salt from the River Murray.

## Murray Mouth

Dredging operations at the Murray Mouth have now ceased due to the good condition of the Mouth and the forecast higher flows.

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 0.89 m AHD and Lake Albert is approximately 0.89 m AHD.

DEW and SA Water will be operating the lakes within a wider range of operating levels throughout November to give SA Water more flexibility during periods of bad weather, during high flows and to avoid flooding. Depending on conditions, this increased flexibility may be further extended into December and January.

Barrage releases will continue to be managed to provide air space in the Lower Lakes when conditions allow. DEW and SA Water are targeting a water level 0.65 m AHD as much as possible via barrage releases when operationally possible. Rapid increases in water level can be expected during periods of storms/high tides/swells, followed by more gradual decreases in level as barrage flows can be increased and airspace is gained.

**Residents and water users around the Lower Lakes should prepare themselves for temporary water level rises over the coming weeks when the barrages need to be closed.**

**It is expected that barrage operations will be able to safely pass the forecast flood peak and maintain average lake levels below 1.0 m AHD. Because flooding is not expected to occur at the Lower Lakes, flood warnings for the River Murray and flood inundation maps only extend as far downstream as Wellington.**

As of Tuesday 15 November 2022, the weekly releases were approximately 368 GL (total daily releases varied from 19 - 75 GL/day depending on tidal conditions). Total daily release volumes from the barrages can now be accessed via [Water Data SA](#) by searching for the gauge [A4261002](#). Gate openings at the barrages during the week can be seen in the table below.

Barrage (total number of gates)	Goolwa (120)	Mundoo (25)	Boundary Creek (5)	Ewe Island (110)	Tauwitchere (319)	Fishways
9 Nov 2022	40	6*	1	58	177	Fishways at all barrages and at Hunters Creek (11 in total) were open during the entire week
10 Nov 2022	40→60	6*	1	58	177	
11 Nov 2022	60	6*	1	58	177	
12 Nov 2022	60	6*	1	58	177	
13 Nov 2022	60→0	6*→0	1	58	177	
14 Nov 2022	0→1→0	0→6*	1	58	177	
15 Nov 2022	0→50	6*→0→6*	1	58→105	177→230	
<b>Objective of releases</b>	Maintain connectivity between the River Murray channel through to the Murray Mouth to support fish migration.	Provide localised freshening conditions in the Mundoo channel & support fish passage.	Provide attractant flow adjacent the fish way to support fish passage.	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity.	Provide for fish passage between the Coorong and Lower Lakes.	

*Number of barrage gates open each day for the week ending Tuesday 15 November 2022*

*\*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.

## Marine Safety

The Department for Infrastructure and Transport has established a dedicated marine safety page regarding the current high flow situation. As well as general safety information, this website lists identified current marine hazards. For more information please visit: <https://www.marinesafety.sa.gov.au/river-murray-high-flows-2022-marine-safety-advice>.

## Blackwater

Blackwater occurs naturally when floods wash leaves, grass and cropping material off riverbanks and floodplains into waterways. High levels of organic matter in waterways, combined with warm weather, can cause oxygen levels in the water to drop. This is known as hypoxic (low oxygen) blackwater, which can have a blackish colour and a strong, unpleasant smell.

There is currently no blackwater present in the South Australian section of the River Murray. There have however been recent reports of low dissolved oxygen levels and blackwater in upstream sections of the river and its tributaries as a result of recent flooding.

PIRSA, DEW, SA Water and the Murray-Darling Basin Authority, along with other relevant government agencies, continue to closely monitor blackwater events upstream and plan mitigation measures should it reach South Australia.

When dissolved oxygen levels in water drop below critical levels, it can cause fish and crustaceans to die. To report sightings of large numbers of dead or distressed fish, please contact the 24-hour Fishwatch hotline on 1800 065 522.

## Further information

All information regarding the 2022 high flow event (including that of partner agencies) can be accessed via the following link: <https://www.sa.gov.au/topics/emergencies-and-safety/river-murray-high-flows-2022>

[The SA Department for Environment and Water \(DEW\) has developed a number of products to assist in the interpretation of information during the high flows:](#)

- River Murray estimated water levels by flow rate in an [illustrative map](#) and in a [table](#);
- [River Murray estimated travel times during flood events](#);
- [Frequently asked questions](#);
- Inundation maps for the River Murray are available at [Flood Awareness Map](#) & [River Murray Inundation Maps](#).

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](#). Please note that some surface water monitoring stations may be removed as river flow increases and that data will be unavailable for those stations until they are reinstated.

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](#)
- [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](#).

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 for Infrastructure and Transport 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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