

SA River Murray Flow Report



Report #46/2022

Issued 12:00 pm 25 November 2022

This supersedes the previous Flow Report issued by the Department for Environment and Water (DEW) on 18 November 2022. The next Flow Report will be provided on Friday 2 December 2022.

Flow outlook



The flow at the South Australian border is approximately 131 GL/day and is forecast to increase to around 150 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 and December 2022. It is expected that there will be two peaks as detailed in the table below:

Likelihood	What does this mean?	First peak	Second peak
High probability	The flow peak will be at least this volume	175 GL/day	185 GL/day
Moderate probability	This flow may occur with future rainfall and/or improved accuracy in forecasting in coming weeks	190 GL/day	200 GL/day
Lower probability	There is a chance that this flow may occur with significant future rainfall &/or improved accuracy in forecasting in coming weeks. Be prepared for this flow & river levels "just in case"	200 GL/day	220 GL/day
Timing of peak at the SA border		First week of December 2022	Late December 2022

Now that the forecast first peak has passed through the Edward-Wakool system there is a greater level of confidence in the accuracy of the projections being made about its magnitude at the SA border. This has resulted in the narrowing of the forecast range this week, with the high probability forecast for the first week in December remaining at 175 GL/day, the moderate probability forecast reducing to 190 GL/day and the low probability forecast coming down to 200 GL/day.

River operators upstream are observing that the second pulse of water is moving through the system quicker than the first pulse, which is closing the gap between it and the first pulse as it moves closer to the SA border.

This means that rather than water levels falling after the first peak in early December, the most likely scenario is that the River will briefly flatten, before increasing again to reach its second peak in late December. Current forecasting for this peak flow is within the range of the peak flow forecasts previously provided, with a high probability of it reaching at least 185 GL/day, a moderate probability of 200 GL/day and a lower probability of 220 GL/day.

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-flood>

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.

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.

The size of any peak is being influenced by water that has travelled through the Edward and Wakool River system that act as anabranches of the Murray. The first flow peak has now reached the end of this system and is re-joining the River Murray downstream of Swan Hill (see figure below). The second pulse of water is yet to reach the end of this system as at 24 November 2022.

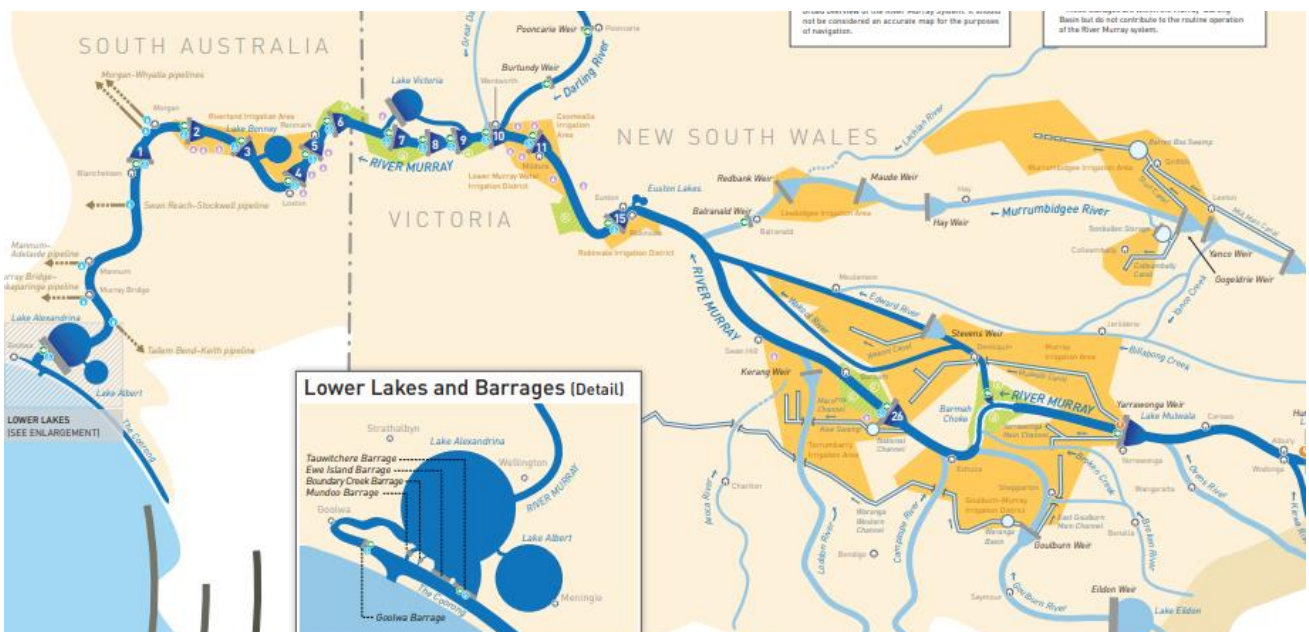


Figure 1: Map showing the River Murray system (MDBA)

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)¹;

¹ 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.

- interstate trade adjustments;
- Additional Dilution Flow (ADF); and
- Unregulated flow.

The flow over Lock 1 is approximately 87.7 GL/day and will increase to around 95 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.

Historical water levels and other modelled water levels at different flow rates can be found at the following link:

<https://cdn.environment.sa.gov.au/environment/images/Tabulated-Version-Flows-vs.-levels-100GL-250GL-FINAL.pdf>

Note that forecasts are based on information available at the time of preparation and may change due to rainfall events or changed operations upstream.

Location	Normal Pool Level (m AHD)	Current level at 25/11/22 (m AHD)	Water level is currently	Modelled water levels (m AHD)			Estimated timing to reach 175 GL/day	Estimated timing to reach 185 GL/day
				180 GL/day	200 GL/day	220 GL/day		
Lock 6	19.25	20.56	Rising	-	-	-	4 – 12 Dec	20 – 30 Dec
Renmark	-	17.90	-	18.58	18.76	18.92		
Lock 5	16.30	17.42	Rising	18.23	18.42	18.59		
Lyrup	-	16.26	Rising	17.22	17.42	17.74		
Berri	-	15.49	Rising	16.21	16.30	16.68	10 – 17 Dec	26 Dec – 4 Jan
Lock 4	13.20	14.83	Rising	15.62	15.70	16.23		
Loxton	-	13.82	Rising	14.99	15.07	15.75	11 – 18 Dec	27 Dec – 5 Jan
Cobdogla	-	-	N/A	13.70	13.84	14.66		
Lock 3	9.80	11.32	Rising	13.47	13.64	14.35	13 – 19 Dec	29 Dec – 6 Jan
Overland Corner	-	10.80	Rising	13.05	13.30	13.80		
Waikerie	-	-	Rising	11.43	11.64	12.16	17 – 24 Dec	2 – 11 Jan
Lock 2	6.10	8.57	Rising	10.42	10.62	11.15	18 – 25 Dec	3 – 12 Jan
Cadell	-	7.17	Rising	9.13	9.41	9.83		
Morgan	-	6.68	Rising	8.90	9.19	9.54	20 – 27 Dec	5 – 14 Jan
Lock 1	3.20	4.54	Rising	7.07	7.46	7.78	21 – 28 Dec	6 – 15 Jan
Swan Reach	-	3.65	Rising	6.28	6.73	7.02		
Mannum PS	-	1.44	Rising	3.22	3.47	3.75		
Murray Bridge	-	1.08	Rising	2.25	2.47	2.68	22 – 30 Dec	7 – 17 Jan
Jervois	-	-	-	1.63	1.73	1.84		
Wellington	-	-	-	1.36	1.42	1.48		
Lake Alexandrina	0.75	0.88	Varying	<1.0	<1.0	-		

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.

Live and/or daily information on current River Murray flow and water levels can be viewed at the websites below²:

- [Real-time water monitoring data](#) across South Australia, including locations along the River Murray (interactive water data site - Department for Environment and Water)
- [Daily water levels and flow rates](#) recorded at monitoring stations along the River Murray (SA Water)
- An [overview of flow rates, dam release rates and river heights](#) across the River Murray system and its tributaries (Murray-Darling Basin Authority)
- [Latest river heights](#) for the River Murray (Bureau of Meteorology)

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.

² The Department for Environment and Water has no direct control over the content of any linked sites, or the changes that may occur to the content on those sites. It is your responsibility to make your own decisions about visiting linked external sites, and about the accuracy, currency, completeness, quality, reliability and suitability for any purpose of information contained in such sites.

Links to external websites do not constitute an endorsement or a recommendation of those sites, including any information, material or third party products or services available from or through those sites. You are responsible for being aware of which organisation is hosting any site you visit.

Decommissioning of River Murray River Vessel Waste Disposal Stations

As flow to South Australia has risen all river vessel waste disposal stations above Lock 1 are offline. The river vessel waste disposal station at Goolwa remains 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

Closure of Government owned levee banks

The Department for Environment and Water has closed all Government owned levee banks along the Lower Murray from Mannum to Wellington. 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: 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

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 0.94 m AHD and Lake Albert is approximately 0.98 m AHD.

From this week, operations at the barrages will change in response to the increasing River Murray flow to ensure that lake levels can continue to be managed within the normal operating range.

The number of open barrage bays will be maximised across all five barrages. The majority of openings will be at Tauwitchere and Ewe Island barrages, the two eastern-most barrages.

People may start to notice over the coming weeks that bays may remain constantly open for the next few months to pass the floodwaters, even during storm events. The number of open bays will be increased to pass the peak flow when it arrives.

Lake holders and communities in the Lake Alexandrina region, particularly between Loveday Bay and Narrung Peninsula and in the vicinity of Goolwa, Hindmarsh Island and Mundoo Islands, are advised that short-term salinity increases are possible over the next few months due to flood-related barrage operations.

While the high volume of fresh water entering the Coorong estuary from the River Murray means the water downstream of the barrages is much fresher than usual, there is a small chance that saltier water will enter Lake Alexandrina for short periods from high tides or storms.

Residents pumping water from the Lower Lakes are advised to check real-time salinity data here:

<https://water.data.sa.gov.au/>

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 22 November 2022, the weekly releases were approximately 441 GL. As the flow to the Lower Lakes continues to increase, more barrage gates will be opened and this total release number will increase. Fishways at all barrages and at Hunters Creek (11 in total) were open during the entire week to provide fish passage between the Coorong and Lower Lakes. 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)	Total daily release volume
16 Nov 2022	90	6*	1	105	295	78 GL
17 Nov 2022	90→100	6*→0	1	105	295	86.8 GL
18 Nov 2022	100→50	0	1	105	295	113.39 GL
19 Nov 2022	50→0	0	1	105	295	57.27 GL
20 Nov 2022	0	0	1	105	295	5.15 GL
21 Nov 2022	0	0	1	105	295	16.39 GL
22 Nov 2022	0→60	0→6*	1	105	295	84.13 GL
Objective of releases	Passing flood flows through the lakes while maintaining average lake levels below 1.0 m AHD					

Number of barrage gates open each day for the week ending Tuesday 22 November 2022

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

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 River Murray flood event (including that of partner agencies) can be accessed via the following link: <http://www.sa.gov.au/topics/emergencies-and-safety/river-murray-flood>

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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