SA River Murray Flow Report

Government of South Australia
Department for Environment and Water

Report #51/2022

Issued 2:00 pm 30 December 2022

This supersedes the previous Flow Report issued by the Department for Environment and Water (DEW) on 23 December 2022. The next Flow Report will be provided on Friday 6 January 2023.

Current and forecast water levels

The table below shows estimated high water levels at key points along the river system.

The table below also details the date it is estimated the river will reach its peak at these locations.

Location	Normal Pool Level (m AHD)	Current level at 30/12/22 (m AHD)	Water level is currently	Estimated water level at peak (m AHD)	Estimated timing of peak	1931 flood water level ~210 GL/day
Lock 6	19.25	21.27 (29/12/22)	Falling	Peak 24/12/22 21.32	-	21.17
Renmark Pump Stn	16.30	19.01 (29/12/22)	Falling	Peak 25-27/12/2022 19.04	-	18.65
Lock 5		18.50	Falling	Peak 26/12/2022 18.55	-	18.40
Lyrup	13.20	17.49	Falling	Peak 27/12/2022 17.54	-	-
Berri		16.46	Falling	Peak 27/12/2022 16.50	-	16.56
Lock 4		15.90	Steady	15.9 - 16	At or near peak	15.94
Loxton	9.80	15.33	Steady	15.3 - 15.5	At or near peak	-
Cobdogla		-	-	14.4 - 14.7	30 Dec – 3 Jan	14.04
Lock 3		13.99	Rising	14 - 14.5	30 Dec – 5 Jan	13.74
Overland Corner	6.10	13.55	Rising	13.5 - 14		-
Waikerie		-	Rising	12.1 - 12.6	1 – 7 Jan	11.67
Lock 2		11.13	Rising	11.2 - 11.6		10.75
Cadell	3.20	-	Rising	9.9 – 10.2		9.75
Morgan		9.50	Rising	9.6 - 9.9		9.03
Lock 1		7.34	Rising	7.3 - 7.6	4 – 13 Jan	7.32
Swan Reach*	0.75	6.61	Rising	-		-
Walker Flat		4.94	Rising	5.1 – 5.5		
Mannum PS		3.04	Rising	3.2 - 3.5		3.50
Murray Bridge		2.02	Rising	2.1 - 2.4	5 – 14 Jan	2.42
Wellington		1.27	-	1.1 - 1.4		2.03
Lake Alexandrina		1.1**	Varying	< 1.0		-

** Water levels at Swan Reach levels are currently under investigation due to anomalies in measured data.*

*** Recent high tides and weather conditions have impeded barrage releases*

Notes

Giga Litre (GL) = 1,000,000,000 litres

mAHD = elevation in metres above Australian Height Datum (approximately equivalent to sea level)

Some things to consider –

- These updated flow and height tables should be used in conjunction with other information sources available at sa.gov.au/floods
- Maps which model potential inundation at various flood levels are available here.
- The locations included in the table have been chosen because they are monitored sites (either current or historical).
- It is estimated that the peak flow will reduce as the flood peak moves down the river from the SA border towards the Lower Lakes. However, the degree to which the peak reduces is different for every flood.
- This is the first time in nearly 70 years that River Murray flows have reached many areas of the landscape and it is almost certain that changes to the river channel and floodplain in that time will lead to unforeseen and unexpected difference in flood behaviour. For example, it is possible that the flood this year will look different to pictures you have from the past – even with water flows at similar levels to past events.
- Some of the things that can impact flood behaviour include:
    - Floodplains – Changes on the floodplain will impact how far floodwaters spread, how they soak in and how water returns to the river
    - Bathymetry – Changes to the depth of the river channel due to increased sedimentation or scouring
    - Vegetation – Changes in vegetation density as a result of changes in grazing pressure
    - Infrastructure – New infrastructure like roads, buildings, levees
    - Wind – Wind can cause changes in flood behaviour, especially in the Lower Murray
    - Weather conditions – Rainfall across the border

Peak water level and flow

The peak flow reached the South Australian border on 23 December and has since passed through Renmark, Lyrup and Berri, and is currently around the town of Loxton.

The adjusted peak flow at the border was around 190 GL/day, taking into account on-ground measurements of flow during this flood event, which is consistent with our forecast flow range of 190 – 220 GL/day. The calculated flow today is approximately 172 GL/day at the border and is falling.

As previously reported, compared with previous flooding events, water level continues to measure higher relative to flow, meaning that this flood will look and feel more like an event akin to 1931 (210 GL/day), or slightly above. In addition to there being an overall trend of higher water level relative to flow in this flood, there also remains a local site influence on water levels experienced.

Flood inundation mapping

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.

Barrage operations and water levels in the Lower Lakes

The water level in Lake Alexandrina is approximately 1.1 m AHD and Lake Albert is approximately 1.0 m AHD.

As of Friday 2 December 2022, all operational gates across all 5 barrages were opened and will remain constantly open for the next few months to pass the floodwaters, even during storm events. Fishways at all barrages and at Hunters Creek (11 in total) were also 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 can now also be accessed via Water Data SA and viewing the 'Barrage Gate Change History' dashboard.

As of Tuesday 27 December 2022, the weekly releases were approximately 403 GL.

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/

During December to February 2022, 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. As 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.

Weather and tide events may result in short-term exceedances of this level.

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

Murray Mouth

High flows are achieving good scouring of sand at the Murray Mouth, now that average tide levels are becoming lower (typical for this time of year). In addition to the obvious environmental benefits, the current deepening and widening of the Mouth will also further improve capacity of the barrages to pass flood waters out to sea.

River Murray River Vessel Waste Disposal Stations

As flow to South Australia has risen all river vessel waste disposal stations are offline with the exception of Goolwa which remains operational.

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, 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

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 including Burdett, Cowirra, Jervois, Long Flat, Mobilong, Monteith, Mypolonga, Neeta, Pompoota and Wall Flat. 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.

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 and/or by the SASES if the levee is deemed unsafe.

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 or to help manage blackwater from time to time, 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.

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 hypoxic 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, with support from DEW, SA Water and the Murray-Darling Basin Authority and other relevant government agencies, continues 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.

Marine Safety

Vessel restrictions under Notice of Direction Section 67 – *Harbours and Navigation Act 1993* have been introduced for users of the River Murray during the flood event. Restrictions aim to keep river users safe and protect infrastructure and further details can he found here: https://www.marinesafety.sa.gov.au/river-murray-flood-event-marine-safety-advice

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 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:

- 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.

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

Department for Environment and Water Home page.

ID	RM-Flow-Report-2022 12 30
Classification	Public I2 A2
Issued	30 December 2022
Authority	DEW
Master Document Location	R:\Water Group\RMO\WRO\04 Communications\Flow Advices\2022-23
Managed and Maintained by	Water Infrastructure and Operations Branch
Author	Water Infrastructure and Operations Branch
Reviewer	Director, Water Infrastructure and Operations