River Murray Flow Report

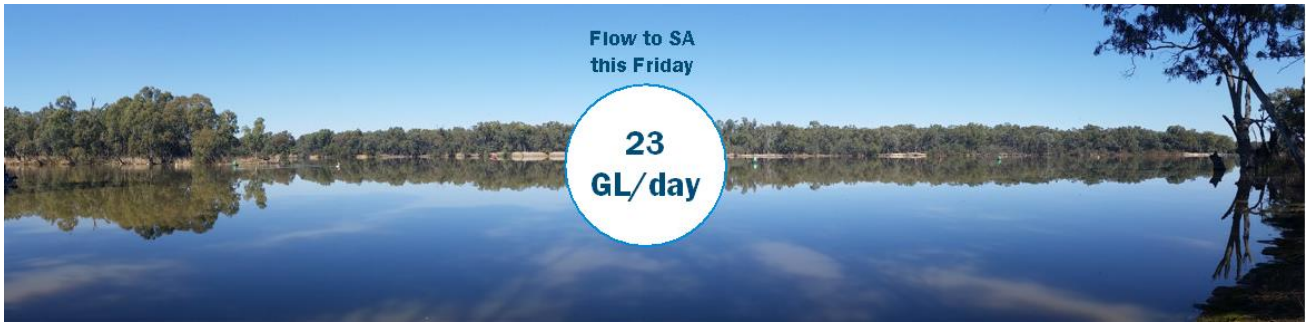
Government of South Australia
Department for Environment and Water

Report #35/2021

Issued 10:00 am 10 September 2021

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 3 September 2021. The next flow report will be provided on Friday 17 September 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.

FLOW OUTLOOK



The flow at the South Australian border is approximately 23 GL/day. Estimates for the flow the following Friday are still being developed due to the uncertainty of high flow peaks received in the upper catchments over the past week. It comprises:

- full September Entitlement Flow (4.5 GL/day);
- plus water for the environment (see below *Environmental News*);
- interstate trade adjustments; and
- unregulated flow.

The flow over Lock 1 is approximately 21.5 GL/day. 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.

NEW PENALTIES FOR UNAUTHORISED OR UNLAWFUL WATER USE

All South Australian River Murray water users are reminded that they must remain within the available allocation on their water account at all times.

New penalty rates have been declared for taking water in excess of available allocation (unauthorised use) or without authorisation (unlawful use). These penalty rates will apply to any unauthorised or unlawful water use in the current quarter, being Quarter 1 of the 2021-22 water use year (between 1 July 2021 and 30 September 2021).

Accounting period	Up to and including 500,000 kilolitres overuse	More than 500,000 kilolitres overuse	Unlawful taking or use of water
1 July 2021 to 30 September 2021	$1.125/kilolitre	$1.500/kilolitre	$1.500/kilolitre

For further information, please visit the following website www.environment.sa.gov.au/topics/water/water-markets-and-trade/fees-and-charges

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 upstream watering actions.

The Commonwealth Environmental Water Office is also contributing additional water for the environment through 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 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 1: Shelduck chicks enjoying the water on the Pike floodplain (Samantha Walters, 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 5 September 2021, a total of approximately 7 522 851 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 0.69 m AHD and Lake Albert is approximately 0.71 m AHD. The difference is due to wind effects.

As of Tuesday 7 September 2021, the weekly releases were approximately 121.4 GL. A lake level cycling event is currently underway (see *Water levels in the Lower Lakes are going to be lowered* below for more details). Increases in barrage openings is a result of the cycling event. Gate openings at the barrages during the week can be seen in Table 1.

Table 1: Number of barrage gates open each day for the week ending Tuesday 7 September 2021

Barrage (total number of gates)	**1 Sept 2021**	**2 Sept 2021**	**3 Sept 2021**	**4 Sept 2021**	**5 Sept 2021**	**6 Sept 2021**	**7 Sept 2021**	**Objective of releases**
Goolwa (120)	8	8	8→5	5	5	5	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)	6*	6*	6*→4*	4*	4*	4*→5*	5*	Provide some localised freshening conditions in the Mundoo channel and contribute to lake cycling.
Boundary Creek (5)	1	1	1	1	1	1	1	Provide attractant flow adjacent the fish way to support fish passage.
Ewe Island (110)	28	28	28→12*	12*	12*	12*	12*	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity. Large releases will also assist in drawing down the water level in the Lower Lakes as part of the lake cycling event.
Tauwitchere (319)	46	46	46→21*	21*	21*	21*→30	30	
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.

Water levels in the Lower Lakes are being lowered

As Lake Albert is a terminal wetland, the salinity of the lake can increase over time due to climate conditions and infrequent River Murray high flows. Prior to the 1980's, typical Lake Albert salinity was around 300 - 600 EC. The average daily salinity in Lake Albert at the present time is approximately 1 300 EC (potentially increasing up to 2 000 EC during summer).

One of the ways to lower salinity in the Lake is via lake level cycling. This action involves lowering the water level in Lakes Alexandrina and Albert (by releasing water from the barrages) to draw out salty water from Lake Albert, and then refilling the lakes with fresher water as it flows into the Lakes.

As South Australia is currently receiving unregulated flow it provides an opportunity to lower the Lakes' water levels and then refill them before summer, when usage and evaporation are high.

On Tuesday 24 August 2021 barrage releases were increased in order to lower the water level in Lakes Alexandrina and Albert. As at 7 September 2021 the water level in the lakes is 0.69 and 0.71 m AHD respectively. The water levels will be held around 0.65 – 0.7 m AHD for a few more days. Following this, unregulated flow from upstream will then be used to refill the Lower Lakes to approximately 0.75 – 0.85 m AHD.

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, which will potentially inundate 2 000 – 5 000 hectares of the Chowilla floodplain upstream of the regulator than would otherwise be achieved by river flows. The operation plans to raise water levels in Chowilla Creek and through the Anabranch 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.

Figure 2: A Wedge-tailed Eagle in its nest on the Pike floodplain (Samantha Walters, DEW)

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 is now at the maximum height of the event (6.65 m AHD). The water level will be held around this level until mid-October after which it will be lowered back to normal pool level at a rate of 3 cm / day.

Want to know more about how weir pool raising effects your stretch of the lock reach?

Weir pool raising (WPR) impacts different sections of the lock reach in different ways. Your distance from the lock and weir can impact how much the water level rises, particularly when higher flows are occurring at the same time.

Figure 2 shows the behaviour of water levels prior to river regulation, after river regulation while at normal pool level (NPL) and during weir pool raising.

It demonstrates that during weir pool raising the base water level is raised, however when this is done in combination with higher flows, the further you are away from the downstream lock and weir the greater the water level rise will be.

Some people have observed over the last few weeks that although the weir pool raising at Lock 2 is to 6.65 m AHD, the water level further away from Lock 2 is greater than 6.65 m AHD. This is due to the impact of higher flows that are coming across the SA border.

This means that greater environmental benefits will be experienced through larger areas being inundated giving vital water to freshen the soil which supports the growth and regeneration of floodplain vegetation that provides valuable habitat for a range of wildlife.

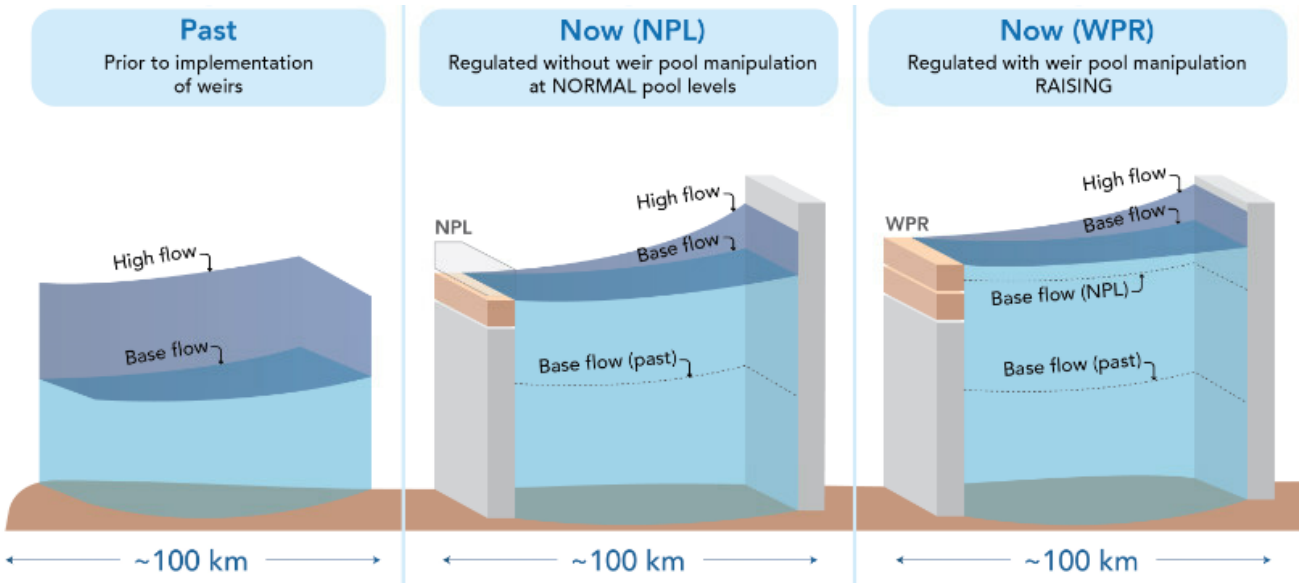


Figure 3: A diagram showing the impacts of weir pool raising on a weir and lock reach in South Australia (Weir Pool Manipulation Program, DEW)

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 8/09/2021 (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.85	32.72
Lock 9 Kulnine	764.8	27.40	27.58	28.85
Lock 8 Wangumma	725.7	24.60	25.42	26.85
Lock 7 Rufus River	696.6	22.10	22.66	24.97
Lock 6 Murtho	619.8	19.25	19.59	20.19
Renmark	567.4	-	16.79	17.44
Lock 5	562.4	16.30	16.77	17.05
Lyrup	537.8	-	13.65	15.80
Berri	525.9	-	13.54	15.21
Lock 4	516.2	13.20	13.51	14.73
Loxton	489.9	-	10.70	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.89	10.98
Overland Corner	425.9	-	7.26	10.41
Waikerie	383.6	-	6.89	9.20
Lock 2	362.1	6.10	6.67	8.32
Cadell	332.6	-	3.83	7.01
Morgan	321.7	-	3.57	6.38
Lock 1 Blanchetown	274.2	3.20	3.29	4.46
Swan Reach	245.0	0.75	0.91	3.11
Mannum PS	149.8	0.75	0.73	1.33
Murray Bridge	115.3	0.75	0.65	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 (e.g. salinity, water levels) go to the following page: Water Data SA.

Up-to-date River Murray information can be accessed at the Department for Environment and 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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