

River Murray Flow Report and Water Resources Update



Report #22/2022

Issued 10:00 am 10 June 2022

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 3 June 2022. The next flow report will be provided on Friday 17 June 2022.

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 May 2022, the total River Murray System inflow was approximately 371 GL, which is below the May long-term average of 443 GL. During May 2022, the total Menindee Lakes inflow was approximately 576 GL, which is more than double the May long-term average of 201 GL.

The flow to South Australia during May 2022 was approximately 730 GL, which is more than double the May long-term average of 351 GL. The flow comprised of Entitlement Flow (including environmental water on SA licence), environmental water, trades, Additional Dilution Flow (ADF) and unregulated flow.

Management of South Australia's deferred water

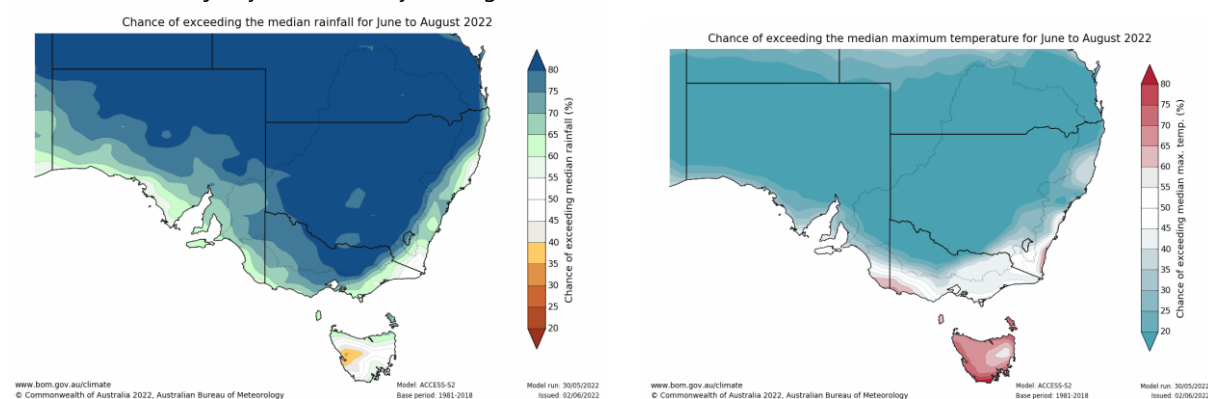
The Murray-Darling Basin Authority confirmed that on 1 June 2022 South Australia had 336.2 GL of deferred water held in storage in the Murray-Darling Basin. The following table identifies the storage in which it is held and its purpose. Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

At 1 June 2022				
Purpose	Lake Victoria (GL)	Hume (GL)	Dartmouth (GL)	Total (GL)
*CHWN	0	0	235.7	235.7
Private Carryover	0	0	100.5	100.5
Total	0	0	336.2	336.2

*Critical Human Water Needs (CHWN)

Rainfall and temperature outlook

As at 8 June 2022, the Bureau of Meteorology weather outlook forecasts that rainfall from June to August 2022 is likely to be above median for the majority of the Murray-Darling Basin. Areas across the Basin will have a 65 – 80 % chance of exceeding the median rainfall depending on location. Temperatures from June to August 2022 are more likely to be below median for the majority of the Murray-Darling Basin.



The Bureau's ENSO Outlook shows that the La Nina continues to weaken and is likely to return to neutral levels in winter 2022. The accuracy of the Indian Ocean Dipole (IOD) increases during June and all climate models are forecasting that a

negative IOD is likely to form in the coming months. A negative IOD increases the chances of above average winter-spring rainfall for northern and eastern Australia.

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)	8/6/2022 (GL)	8/6/2021 (GL)	Long-term average (end of June) (GL)
Dartmouth	3 856	3 628 (94%)	2 473 (64%)	
Hume	3 005	2 814 (94%)	1 410 (47%)	
Lake Victoria	677	384 (57%)	306 (45%)	
Menindee Lakes	*1 731	1 924 (111%)	1 081 (62%)	
TOTAL	9 289	8 750 (94%)	5 270 (57%)	6 173 (67%)

*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 and 1 000 EC at Milang.

The following graph shows the salinity at these locations and the flow to South Australia (QSA) from June 2021 to June 2022. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

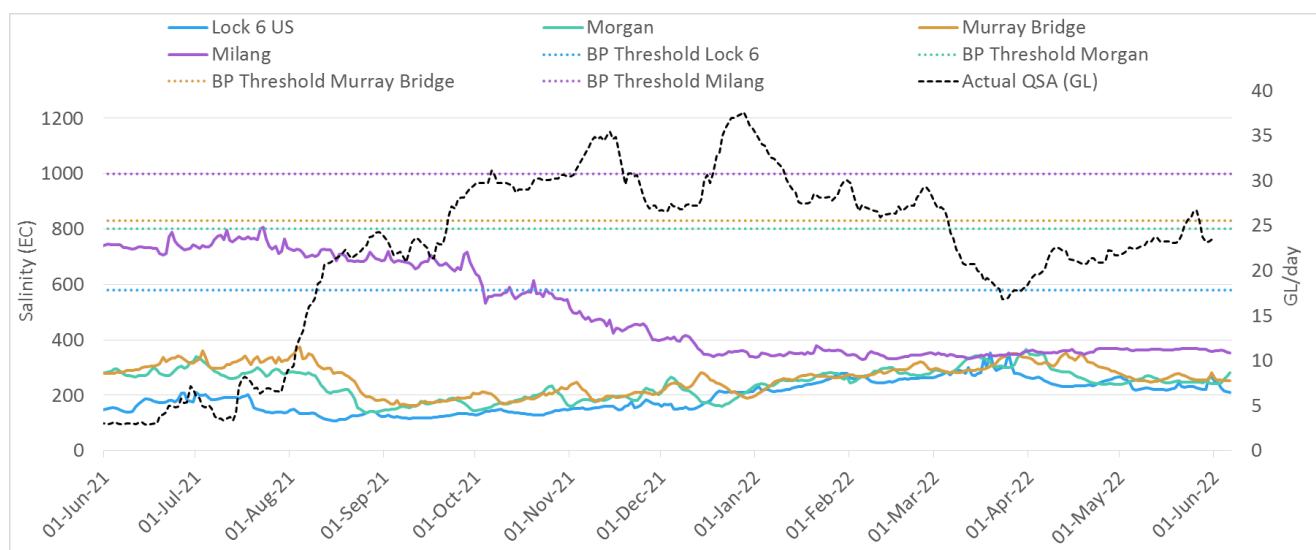


Figure 1: SA River Murray daily average salinity

Flow outlook



Over the coming weeks the flow to South Australia will continue to increase due to a number of factors including increased releases from Menindee Lakes in response to continuing inflows arriving from the northern Murray-Darling Basin. The flow at the South Australian border is approximately 33 GL/day and is expected to increase to around 37 GL/day over the coming week. It comprises:

- full June Entitlement Flow (3 GL/day);
- plus water for the environment (see below *Environmental News*);
- interstate trade adjustments;
- Additional Dilution Flow (ADF); and
- Unregulated flow.

The flow over Lock 1 is approximately 28 GL/day and will increase to around 32 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.

What is considered a flood in South Australia?

With the flow at the South Australian border increasing it's a timely reminder to remain aware of what is considered a flood in South Australia, even if flood levels are not reached at this point in time.

When the flow at the South Australian border is forecast to exceed 40 GL/day, the Department for Environment and Water will issue a *High Flow Advice*. This is not an emergency warning. A High Flow Advice is intended to inform the community of higher than normal river flow, velocity and water levels, as well as raise awareness and monitoring regarding potential hazards and to prompt the community to consider preventative actions to minimise any potential impacts.

If the flow at the South Australian border is forecast to exceed 60 GL/day, a *Flood Advice – River Murray Shack Areas* is issued by the South Australian State Emergency Service (SA SES) as an official emergency warning product, consistent with the Australian Warning System. The River Murray Shack Areas comprises the shack communities between Cadell and Mannum, excluding the towns. Above 60 GL/day, low lying areas and floodplains become inundated and ground level flooding of the shack areas commences. For the remainder of the River Murray in South Australia, a High Flow Advice remains in place.

When the flow at the border is forecast to exceed 100 GL/day, a *Flood Advice – River Murray* is issued by the SA SES for the River Murray between the SA border and Wellington. Further advice will be issued by the SA SES when the flow reaches 130 GL/day at the border (*Flood Watch and Act – River Murray*) and 200 GL/day at the border (*Flood Emergency Warning – River Murray*).

The most up to date information will continue to be provided in the SA River Murray Flow Report and readers can subscribe here: <https://confirmsubscription.com/h/r/8D42C972B80E0D172540EF23F30FEDED>

Environmental news

Water for the environment and unregulated flows have provided and continue to provide a range of benefits for the environment in SA, including:

- providing 'flowing water habitat' to benefit native fish, animals and plants in the River Murray channel that have adapted to a riverine environment. For example, recent monitoring indicates that flowing conditions in the river since spring may have supported the first major spawning and recruitment event for golden perch in the Lower Murray in a decade;
- allowing fish dispersal and movement into new habitats, including for young golden perch which may have travelled down the Great Darling Anabranch into the Murray in recent months;
- providing for barrage releases to the Coorong to support a productive, food-rich environment for fish and birds and provide salinities and water levels that support healthy populations of keystone native plant *Ruppia tuberosa*. For example, recent monitoring indicates that extended freshwater flows to the Coorong through spring to autumn have supported a major recruitment event for the Coorong black bream population. Hundreds of baby black bream have been recorded by scientists in autumn 2022;
- providing habitat for birds, frogs and threatened small-bodied native fish species in the Lower Lakes;
- maintaining healthy water quality, salinity and water levels in the River Murray Channel and the Lower Lakes and Coorong;
- removing excess salt from the River Murray; and
- delivering a range of outcomes to wetlands in the Riverland via arrangements with Nature Foundation Limited, Australian Landscape Trust, Accolade Wines Ltd and the Murraylands and Riverland Landscape Board.

How many bird nests can you see?

Figure 2 shows a colonial nesting site (a site where colonies of birds nest in one place) of cormorants and darters at Markaranka Wetland Complex as a result of recent environmental watering. As our newest scientist, how many nests can you count in the photo? An answer will be provided in next week's flow report (Hint: it's more than three).



Figure 2: Colonial nesting (where colonies of birds nest in one place) of cormorants and darters at Markaranka Wetland Complex as a result of environmental watering (Photo: Murraylands & Riverland Landscape Board)

Planning for floodplain operations and weir pool raising/lowering in 2022-23

Water for the environment plays a vital role in supporting the health and resilience of the River, floodplains and wetlands and is critical for plant and animal life. Each year, planning is undertaken to determine the best use of water for the environment. See here: <https://youtu.be/f6QLLNsc3nk> to view a video made by the Victorian Environmental Water Holder explaining why water for the environment is so important.

Planning is progressing for delivery of water for the environment in 2022-23 for the River Murray Channel and the floodplains and wetlands. This includes planning for operation of environmental regulators at Chowilla, Pike and Katarapko floodplains along with weir raising at Locks 6, 5 and 4 and also at Lock 2. These operations are being planned to occur during the coming winter-spring in order to achieve a range of benefits for floodplain and wetland vegetation and wildlife. The final decision to operate and the scale of operation at the three floodplains and weirs will be made in the coming weeks and will depend on river conditions (flow and water quality), availability of water for the environment and approvals. The scale of any operations to be undertaken is also dependant on the flow conditions.

At this stage Operations at Pike are expected to commence in late June – early July with the associated raising of Lock 5 to commence in early July.

At Chowilla, a large scale operation of the environmental regulator along with Lock 6 weir raising to is expected commence in early July.

At Katarapko – given the lower lying nature of this floodplain the higher water levels associated with the current good River flows are providing watering across areas of the floodplain so the timing and scale of operations to increase the watering across the Katarapko floodplain will depend on the continuing flow conditions.

Smaller scale weir pool raising and lowering within normal operating range is also planned at Locks 1 and 3.

To ensure you receive updates with further information please email Engagement Officer Ellee Eleftheriadis (ellee.eleftheriadis2@sa.gov.au) with your contact details.

Water quality – Algal blooms

Algal levels around Mildura have increased recently and as a result the following **amber** alerts for blue-green algae are in place upstream of the SA border:

- Murray River at Lock 8;
- Murray River at Fort Courage;
- Murray River at Curlwaa;
- Murray River at Merbein; and
- Murray River at Buronga.

In New South Wales, **Amber** alerts indicate that blue-green algae may be multiplying and water may have a green tinge and musty or organic odour. This water should be considered unsuitable for potable use.

Further information on the alert can be found on the WaterNSW website: <https://www.watarnsw.com.au/water-quality/algae>

Ongoing water quality sampling has detected low levels of blue-green algae in the River Murray of South Australia. These localised detections don't currently represent a health hazard.

As a standard and precautionary measure, **SA Health encourages people to avoid contact with obvious green discoloured water**, as it may cause skin irritations.

SA Water, SA Health and DEW will continue to monitor the situation upstream and will take appropriate mitigation measures, as well as provide notification to the community, as needed.

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 June 2022, a total of approximately 8,292,462 m³ of sand has been removed from the Murray Mouth. Both dredges are fully operational working 12 hours a day, 7 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 0.87 m AHD and Lake Albert is approximately 0.88 m AHD. The difference is due to wind effects.

As of Tuesday 7 June 2022, the weekly releases were approximately 57 GL. Over the past week large swell and strong winds have meant closing all barrages (fishways remained open) in order to prevent reverse flow. Total daily release volumes from the barrage 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 Table 1.

Table 1: Number of barrage gates open each day for the week ending Tuesday 7 June 2022

Barrage (total number of gates)	1 June 2022	2 June 2022	3 June 2022	4 June 2022	5 June 2022	6 June 2022	7 June 2022	Objective of releases
Goolwa (120)	0	0→7	7→1→0	0	0	0	0→5	Maintain connectivity between the River Murray channel through to the Murray Mouth to support fish migration.
Mundoo (25)	6*→0*	0→6*	6*→0	0	0	0→6*→0	0→6*	Provide some localised freshening conditions in the Mundoo channel and support fish passage.
Boundary Creek (5)	1*	1*	1*	1*	1*	1*	1*	Provide attractant flow adjacent the fish way to support fish passage.
Ewe Island (110)	12*	12*	12*→0	0	0	0→12*→0	0→12*	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity.
Tauwichee (319)	65	65	65→44→0	0	0	0→21*→0	0→21*	
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.

Localised flooding on Hindmarsh Island

Residents around Mundoo Channel Dr on Hindmarsh Island may have noticed localised flooding over the last week. This has been predominantly caused by very high tides over the last two weeks rather than high river flows, due to being situated downstream of the barrages. The tides up to Sunday 5 June 2022 were very high with the highest occurring on 31 May 2022 when the water level downstream of the Tauwichee barrage peaked at 1.37 m AHD. SA Water barrage operators advised that this was the highest water level observed downstream of the barrages in over ten years. It's likely that high tide conditions will continue through until August 2022.

Lock 3 River Vessel Waste Disposal Station

The Lock 3 River Vessel Waste Disposal Station is currently out of commission due to an infrastructure failure. Investigations are currently 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.

River Murray water levels

Below is a table of River Murray water levels at a number of locations from Lock 10 to Murray Bridge.

Location	River km	Normal Pool Level (m AHD)	Current Level 8/6/2022 (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.78	32.72
Lock 9 Kulnine	764.8	27.40	27.40	28.85
Lock 8 Wangumma	725.7	24.60	24.71	26.85
Lock 7 Rufus River	696.6	22.10	23.11	24.97
Lock 6 Murtho	619.8	19.25	19.24	20.19
Renmark	567.4	-	16.38	17.44
Lock 5	562.4	16.30	16.33	17.05
Lyrup	537.8	-	13.54	15.80
Berri	525.9	-	13.36	15.21
Lock 4	516.2	13.20	13.24	14.73
Loxton	489.9	-	11.08	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.82	10.98
Overland Corner	425.9	-	7.25	10.41
Waikerie	383.6	-	6.51	9.20
Lock 2	362.1	6.10	6.12	8.32
Cadell	332.6	-	4.03	7.01
Morgan	321.7	-	3.72	6.38
Lock 1 Blanchetown	274.2	3.20	3.21	4.46
Swan Reach	245.0	0.75	1.19	3.11
Mannum PS	149.8	0.75	0.95	1.33
Murray Bridge	115.3	0.75	0.86	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 (like salinity, water levels) go to the following page: [Water Data SA](#).

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](#)
- [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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