River Murray Flow Report and Water Resources Update

Government of South Australia
Department for Environment and Water

Report #11/2022

Issued 10:00 am 14 April 2022

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 8 April 2022. The next flow report will be provided on Friday 22 April 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 March 2022, the total River Murray System inflow was approximately 370 GL, which is above the March long-term average of 221 GL. During March 2022, the total Menindee Lakes inflow was approximately 207.6 GL, which is also above the March long-term average of 187 GL.

The flow to South Australia during March 2022 was approximately 638 GL, which is above the March long-term average of 286 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

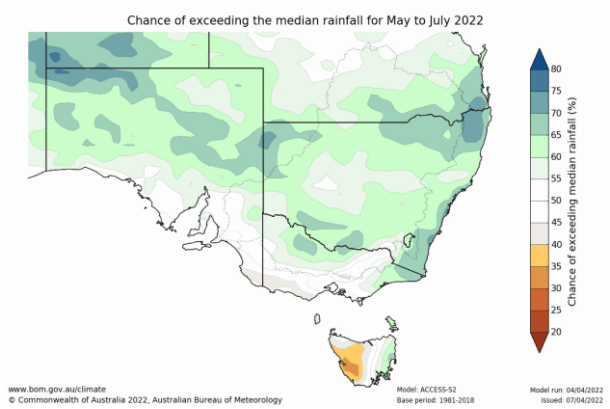
The Murray-Darling Basin Authority confirmed that on 1 April 2022 South Australia had 336.3 GL of deferred water held in storage in the Murray-Darling Basin. The following table identifies the storage in which it is held and its purpose. Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

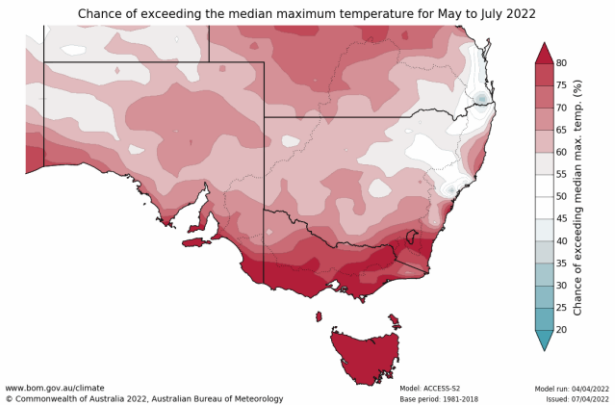
At 1 April 2022				
Purpose	**Lake Victoria (GL)**	**Hume (GL)**	**Dartmouth (GL)**	**Total (GL)**
***CHWN**	0	0	235.7	235.7
Private Carryover	0	0	100.5	100.5
Total	0	0	336.3	336.3

*Critical Human Water Needs (CHWN)

Rainfall and temperature outlook

As at 11 April 2022, the Bureau of Meteorology weather outlook forecasts that rainfall from May to July 2022 is likely to be above median for large parts of the Murray-Darling Basin. Areas across the Basin will have a 50 – 70 % chance of exceeding the median rainfall depending on location. Temperatures from May to July 2022 are more likely to be above median for the Southern Connected Basin.





The Bureau's ENSO Outlook shows that a La Nina is weakening and is likely to return to neutral levels in late autumn or early winter 2022. Although the event is weakening it continues to have some influence on the climate across the Australia. Typically La Nina events increase the chance of above average rainfall for northern and eastern Australia during spring and summer.

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)	12/4/2022 (GL)	12/4/2021 (GL)	Long-term average (end of April) (GL)
Dartmouth	3 856	**3 594 (93%)**	2 453 (64%)	
Hume	3 005	**2 600 (87%)**	1 383 (46%)	
Lake Victoria	677	**422 (62%)**	204 (30%)	
Menindee Lakes	*1 731	**1 804 (104%)**	315 (18%)	
TOTAL	9 289	**8 420 (91%)**	4 355 (47%)	5 424 (59%)

*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 April 2021 to April 2022. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

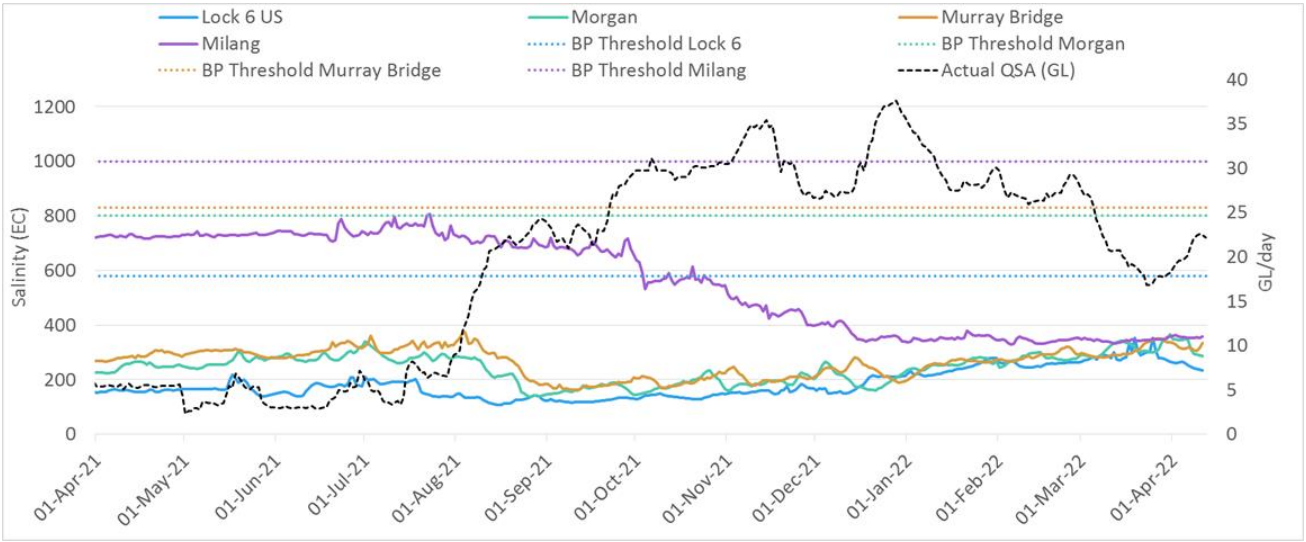


Figure 1: SA River Murray daily average salinity

Quarter 3 meter readings due by 30 April 2022

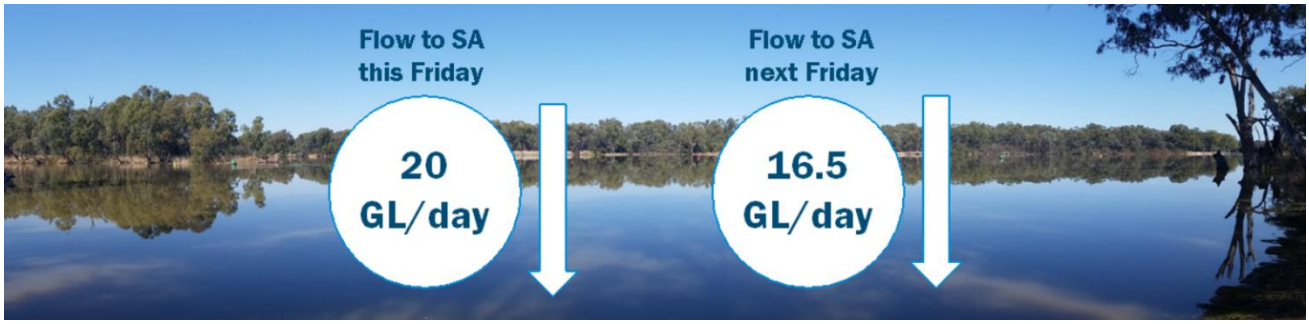
If you hold a water resource works approval that includes a condition that requires you to provide quarterly meter readings to the Department for Environment and Water, please be reminded that meter readings for the Quarter 3 accounting period for 2021-22 (which ended on 31 March 2022) must be recorded within the first fourteen days of April 2022 and submitted to the department by 30 April 2022.

Your meter reading can be submitted via one of the following options:

- The online meter reading form at https://forms.business.gov.au/smartforms/sa-dfw/meter-reading-form/ ; OR
- By emailing the Department for Environment and Water at DEW.waterlicensingberri@sa.gov.au

Should you require assistance in supplying your meter reading, including how to complete the online meter reading form, please call the Berri office on (08) 8595 2053 and an officer of the department will be happy to assist you.

The department's preferred approach is to encourage and facilitate voluntary compliance. However, failure to voluntarily comply with the conditions of a water resource works approval may result in an expiation notice being issued.



Flow outlook

The flow at the South Australian border is approximately 20.0 GL/day and will decrease to around 16.5 GL/day over the coming week. It comprises:

- full April Entitlement Flow (4.5 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 18.5 GL/day and will decrease to around 15 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.

Environmental news

The unregulated flows which have driven the higher flows to South Australia since August 2021 are continuing but are expected to recede due to drier upstream conditions in recent weeks.

Rainfall events in Queensland and northern NSW during March and early April have produced an increase in flow in some catchments, however it will be some time before this water makes its way to the Menindee Lakes system and potentially to South Australia. WaterNSW is forecasting an additional 500 – 800 GL will arrive at Menindee Lakes by the end of May 2022, with inflows continuing during June. More information can be found at https://waterinsights.waternsw.com.au/12104-lower-darling-regulated-river/updates

South Australia is also receiving water for the environment from South Australia's environmental water allocation and return flows from upstream watering.

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 '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;
- 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.

Water quality – Algal blooms

There remains in place several alerts for blue-green algae at various locations along the Murray and Lower Darling Rivers upstream of the South Australian border. They include:

- Murray River at Lock 8 (**amber** alert) ;
- Murray River at Fort Courge (**amber** alert);
- Murray River at Merebein (**amber** alert); and
- Murray River at Buronga (**amber** alert);
- Lower Darling River at Burtundy (**red** alert);
- Menindee Lakes (**red** alert).

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.

Red alerts indicate that the public should avoid coming into physical contact with untreated water at the site until the alert warning is lifted.

Further information on the alert can be found on the WaterNSW website: https://www.waternsw.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.

Some level of blue-green algae on a large open water source like the River Murray is normal for this time of year, when weather conditions are favourable for growth. 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 12 April 2022, a total of approximately 8,176,639 m^3 of sand has been removed from the Murray Mouth. Both dredges are fully operational working 5 days a week however will shut down over the Easter and Anzac day long weekends.

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 0.64 m AHD and Lake Albert is approximately 0.55 m AHD. The difference is due to wind effects.

As of Tuesday 12 April 2022, the weekly releases were approximately 79 GL. 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 12 April 2022

Barrage (total number of gates)	**6 April 2022**	**7 April 2022**	**8 April 2022**	**9 April 2022**	**10 April 2022**	**11 April 2022**	**12 April 2022**	**Objective of releases**
Goolwa (120)	3	3	3	3	3	3	3	Maintain connectivity between the River Murray channel through to the Murray Mouth to support fish migration and to provide some scouring of the Goolwa Channel and Murray Mouth.
Mundoo (25)	2*	2*	2*	2*	2*	2*	2*	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)	0	0	0	0	0	0	0	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity.
Tauwitchere (319)	25	25	25	25	25	25→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.

River Vessel Waste Disposal Stations

Easter long weekend is a busy time of year on the River Murray, especially for houseboats. It is very important that waste is disposed correctly at any of the river vessel waste disposal stations located along the River Murray. Just a few reminders to all users during this time:

- Please follow the following guide on how to dispose the waste correctly and how you should moor your river vessel safely River-vessel-waste-disposal.pdf (www.sa.gov.au) ;
- All waste disposal stations operate differently, we encourage you to take note of the information on the signage at the station;
- If a station is not operating properly note the name of the station and ring 1800 799 065 for the local service contractor for assistance.

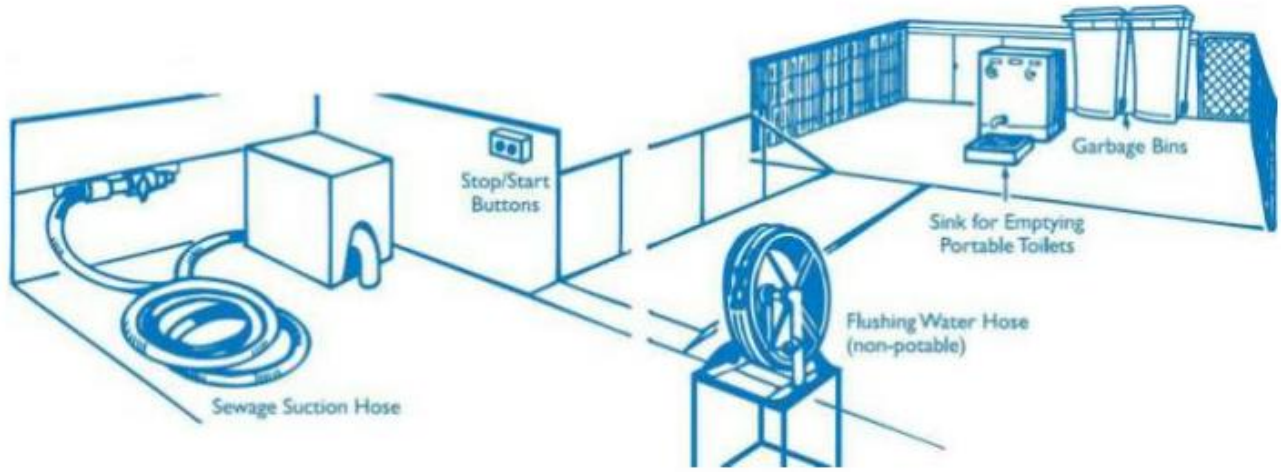


Figure 2: Components of a River Vessel Waste Disposal Station

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 13/4/2022 (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.83	32.72
Lock 9 Kulnine	764.8	27.40	27.44	28.85
Lock 8 Wangumma	725.7	24.60	24.66	26.85
Lock 7 Rufus River	696.6	22.10	22.54	24.97
Lock 6 Murtho	619.8	19.25	19.26	20.19
Renmark	567.4	-	-	17.44
Lock 5	562.4	16.30	16.31	17.05
Lyrup	537.8	-	13.43	15.80
Berri	525.9	-	13.31	15.21
Lock 4	516.2	13.20	13.24	14.73
Loxton	489.9	-	10.75	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.83	10.98
Overland Corner	425.9	-	6.98	10.41
Waikerie	383.6	-	-	9.20
Lock 2	362.1	6.10	6.14	8.32
Cadell	332.6	-	-	7.01
Morgan	321.7	-	3.59	6.38
Lock 1 Blanchetown	274.2	3.20	3.26	4.46
Swan Reach	245.0	0.75	0.83	3.11
Mannum PS	149.8	0.75	0.63	1.33
Murray Bridge	115.3	0.75	0.55	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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