

River Murray Flow Report and Water Resources Update



Report #10/2022

Issued 10:00 am 11 March 2022

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 4 March 2022. The next flow report will be provided on Friday 18 March 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 February 2022, the total River Murray System inflow was approximately 505 GL, which is well above the February long-term average of 189 GL. During February 2022, the total Menindee Lakes inflow was approximately 786 GL, which is also well above the February long-term average of 124 GL.

The flow to South Australia during February 2022 was approximately 765 GL, which is above the February long-term average of 291 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

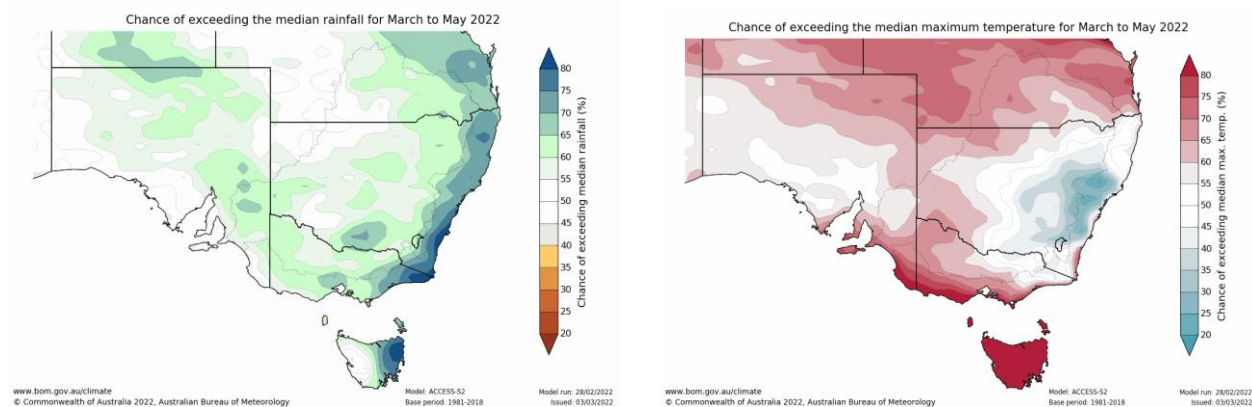
The Murray-Darling Basin Authority confirmed that on 1 March 2022 South Australia had 336.4 GL of deferred water held in storage in the Murray-Darling Basin. The following table identifies the storage in which it is held and its purpose. Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

At 1 March 2022				
Purpose	Lake Victoria (GL)	Hume (GL)	Dartmouth (GL)	Total (GL)
*CHWN	0	0	235.8	235.8
Private Carryover	0	0	100.6	100.6
Total	0	0	336.4	336.4

*Critical Human Water Needs (CHWN)

Rainfall and temperature outlook

As at 8 March 2022, the Bureau of Meteorology weather outlook forecasts that rainfall from March to May 2022 is likely to be above median for large parts of the Murray-Darling Basin. Areas across the Basin will have a 50 – 65 % chance of exceeding the median rainfall depending on location. Temperatures from March to May 2022 are more likely to be above median for the Lower Murray region.



The Bureau’s ENSO Outlook shows that a La Nina has peaked and is likely to return to neutral levels in Autumn 2022. Typically La Nina events increase the chance of above average rainfall for northern and eastern Australia during spring and summer and its effects can still influence global weather and climate as it weakens.

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)	9/3/2022 (GL)	9/3/2021 (GL)	Long-term average (end of Mar) (GL)
Dartmouth	3 856	3 590 (93%)	2 445 (63%)	
Hume	3 007	2 844 (95%)	1 490 (50%)	
Lake Victoria	677	531 (78%)	220 (32%)	
Menindee Lakes	*1 731	1 897 (110%)	306 (18%)	
TOTAL	9 271	8 862 (96%)	4 461 (48%)	

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

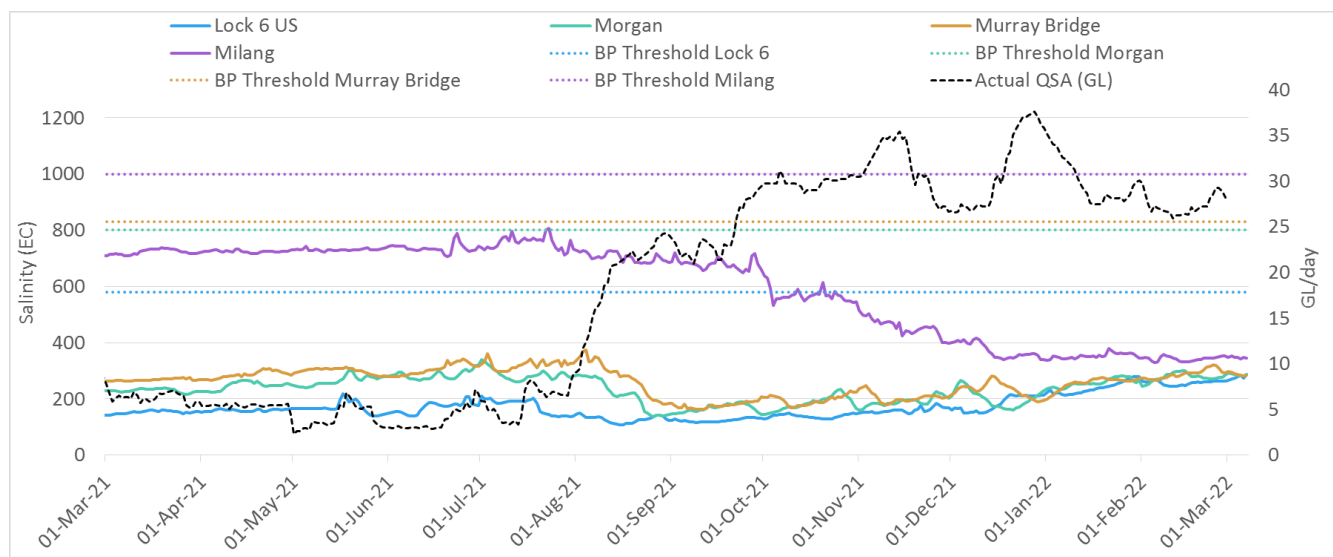


Figure 1: SA River Murray daily average salinity

Proposed changes to the River Murray Water Allocation Plan

In summary, the draft Water Allocation Plan for the River Murray Prescribed Watercourse plan proposes changes to the private carryover policy. Private carryover is a drought management measure to keep industries productive in dry years and help maintain resilient communities. Changes to the carryover policy were made in 2020 to allow rollover into a future dry year when allocations reached 100 percent, based on community feedback. Since then, the landscape board has heard that the ‘rollover’ and forfeiture rules for carryover are complex and difficult to understand.

The proposed changes will remove 'rollover' and forfeiture of carryover volumes and will allow carryover to be used in the year that it is granted. As part of the proposed changes, Class 3 (High Security) South Australian water entitlement holders will no longer be automatically granted carryover. To be eligible for carryover, Class 3 (High Security) South Australian water entitlement holders will be required to lodge an application.

The draft plan, factsheet, upcoming information sessions and how to provide feedback is available on the Landscape Board website <https://www.landscape.sa.gov.au/mr/water/water-allocation-plans/river-murray-wap>

There are two upcoming information sessions to hear about the changes:

Murray Bridge drop-in session: Tuesday 22 March, 11am – 2pm at the Murray Bridge RSL, 2 Ross Road, Murray Bridge. Drop in any time or arrive for the presentations which will occur at 11.30 am and 12.30 pm

Berri drop-in session: Wednesday 23 March, 3pm – 6 pm at the Berri Bowling Club, 25 Chilton Road, Berri. Drop in any time or arrive for the presentations which will occur at 3.30pm and 4.30pm

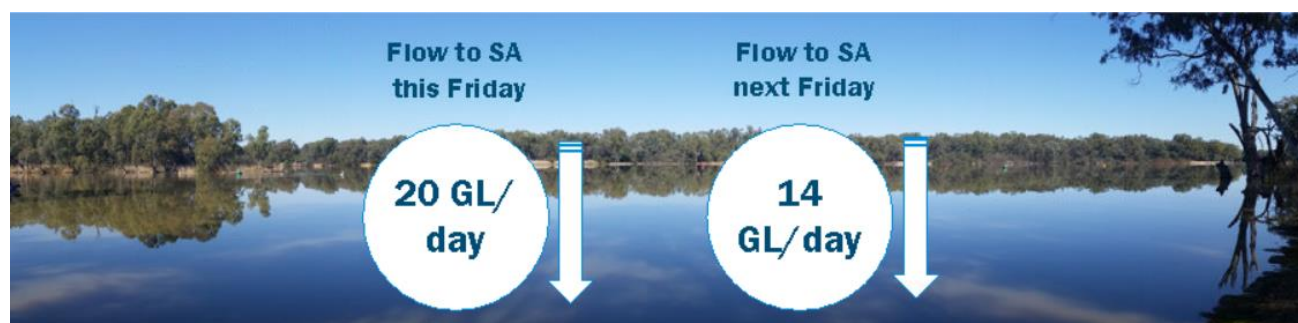
Penalties for unauthorised or unlawful water use 1 January 2022 to 31 March 2022

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 3 of the 2021-22 water use year (between 1 January 2022 and the 31 March 2022).

Accounting period	Penalty for overuse up to and including 500,000 kL	Penalty for overuse above 500,001 kL	Penalty for unlawful taking or use of water
1 Jan 2022 to 31 March 2022	\$1.38/kL	\$1.84/kL	\$1.84/kL

Flow outlook



The flow at the South Australian border is approximately 20 GL/day and will decrease to around 14 GL/day over the coming week. It comprises:

- full March Entitlement Flow (6 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 21 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 starting to recede due to drier upstream conditions in recent weeks. 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, including supporting conditions that favour recruitment of golden perch and Murray cod. Monitoring detected golden perch eggs and larvae at various sites throughout the Lower Murray during spring/early summer and autumn surveys will indicate whether the young fish are surviving;
- allowing fish dispersal and movement into new habitats, including for young golden perch which 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 support salinities and water levels that encourage the reproduction and growth 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.

SARFIIP comes to an end...but it's only just the beginning for Katarapko

Another short film on the work done on the Katarapko floodplain has been made to show the journey of the South Australian Riverland Floodplains Integrated Infrastructure Program (SARFIIP) and the valuable legacy it will leave behind for future generations. The environmental program included construction of regulators, fishways and blocking banks at the Katarapko floodplain to improve the overall health and resilience of these landscapes. They can deliver much needed water to a significant area of the floodplains ensuring that ecological conditions improve.

SARFIIP is a \$155 million investment program funded by the Australian Government through the Murray-Darling Basin Authority and implemented by the South Australian Government to improve the watering and management of River Murray floodplains in South Australia's Riverland.

This project is part of the package of 36 supply and constraints measures notified under the Basin Plan Sustainable Diversion Limit Adjustment Mechanism. These projects allow up to 605 GL of water to remain available for irrigation while achieving equal or better environmental outcomes through environmental works, system infrastructure and/or rule improvements.

This short film has been created to share the great results of the program and the benefits to the Pike and Katarapko floodplains. The film can be viewed here: <https://www.youtube.com/watch?v=hm-hAPsD61I&t=1s>

Katarapko and Pike floodplain stakeholder surveys

Now that the environmental watering events undertaken in 2021 on the Pike and Katarapko floodplains have come to an end, DEW would like to know your thoughts on how the operations went and if you observed any environmental benefits.

If you'd like to let us know your thoughts on the events, you can access a short survey on each floodplain at the following links:

- Katarapko floodplain event survey: <https://www.surveymonkey.com/r/Katarapkofloodplain>
- Pike floodplain event survey: <https://www.surveymonkey.com/r/Pikefloodplain>



Figure 2: The Pike floodplain during the 2021 environmental watering event

Water quality – Blackwater

Blackwater is a natural phenomenon that can occur after a significant rainfall event, when organic matter on the floodplain (e.g. leaves and wood) is washed into the river. The breakdown of organic matter consumes dissolved oxygen, which reduces the level of dissolved oxygen in the water. The water can be blackish in appearance and may have a strong unpleasant smell.

High floodwaters that are low in dissolved oxygen are currently moving downstream from the Barwon-Darling River to Menindee Lakes. While efforts are being taken to mix the water low in dissolved oxygen with 'fresher' water in Menindee Lakes, there remains a possibility that water in the Lower Darling may also become low in dissolved oxygen.

There remains no blackwater present in the South Australian section of the River Murray. DEW, SA Water and Murray-Darling Basin Authority, along with other relevant government agencies, continue to monitor the blackwater event upstream.

When the dissolved oxygen levels in water drop below critical levels, it can cause fish and crustaceans to die. There are currently no reports of this issue in South Australia. To report sightings of large numbers of dead or distressed fish contact the 24-hour FISHWATCH hotline on 1800 065 522.

Further information is available at <https://www.mdba.gov.au/issues-murray-darling-basin/blackwater>. For information on the latest monitoring updates in NSW, information can be accessed via the NSW Department of Planning and Environment at [Hypoxic blackwater - Water in New South Wales \(nsw.gov.au\)](#)

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 20 February 2022, a total of approximately 8 101 416 m³ of sand has been removed from the Murray Mouth. Currently only one dredge is operating due to mechanical issues, the remaining dredge is operating in the Goolwa and Tauwitchere channels 24 hours a day, 5 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 0.74 m AHD and Lake Albert is approximately 0.51 m AHD. The difference is due to wind effects.

As of Tuesday 8 March 2022, the weekly releases were approximately 127 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. Gate openings at Mundoo over the weekend utilised the automatic gates and were closed with the incoming tide and opened again with the outgoing tide in order to release more water into the Mundoo channel.

Table 1: Number of barrage gates open each day for the week ending Tuesday 8 March 2022

Barrage (total number of gates)	2 Mar 2022	3 Mar 2022	4 Mar 2022	5 Mar 2022	6 Mar 2022	7 Mar 2022	8 Mar 2022	Objective of releases
Goolwa (120)	4	4	4→5	5	5	5→6	6	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)	4*→5*	5*	5*	5*→0→5*→6*	6*→1*→6*	6*	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)	6	6→12	12	12	12	12	12	Releases will help push fresher water down the Coorong to assist lowering salinity levels and provide habitat diversity.
Tauwitchere (319)	30	30	30	30→35	35	35→40	40	
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

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 9/3/2022 (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.79	32.72
Lock 9 Kulnine	764.8	27.40	27.45	28.85
Lock 8 Wangumma	725.7	24.60	24.68	26.85
Lock 7 Rufus River	696.6	22.10	22.42	24.97
Lock 6 Murtho	619.8	19.25	19.24	20.19
Renmark	567.4	-	16.34	17.44
Lock 5	562.4	16.30	16.30	17.05
Lyrup	537.8	-	13.40	15.80
Berri	525.9	-	13.26	15.21
Lock 4	516.2	13.20	13.17	14.73
Loxton	489.9	-	10.80	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.81	10.98
Overland Corner	425.9	-	7.13	10.41
Waikerie	383.6	-	6.54	9.20
Lock 2	362.1	6.10	6.15	8.32
Cadell	332.6	-	4.09	7.01
Morgan	321.7	-	3.74	6.38
Lock 1 Blanchetown	274.2	3.20	3.27	4.46
Swan Reach	245.0	0.75	1.23	3.11
Mannum PS	149.8	0.75	0.91	1.33
Murray Bridge	115.3	0.75	0.77	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](#).

ID	RM-Flow-Report-and-WR-Update-20220311
Classification	Public I2 A2
Issued	11 March 2022
Authority	DEW
Master Document Location	R:\Water Group\RMO\WRO\04 Communications\Flow Advices\2020-21
Managed and Maintained by	Water Infrastructure and Operations Branch
Author	Water Infrastructure and Operations Branch
Reviewer	Director, Water Infrastructure and Operations