

River Murray Flow Report and Water Resources Update



Report #51/2020

Issued 10:00 am 18 December 2020

This supersedes the previous flow report issued by the Department for Environment and Water (DEW) on 11 December 2020. The next flow report will be provided on Thursday 24 December 2020.

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 November 2020, the total River Murray System inflow was approximately 465 GL, which is about 60 % of the November long-term average of 803 GL. During November 2020, the total Menindee Lakes inflow was approximately 6 GL, which is approximately 5 % of the November long-term average of 125 GL.

The flow to South Australia during November 2020 was approximately 371 GL, which is about 41 % of the November long-term average of 898 GL. The flow comprised of Entitlement Flow (including environmental water on SA licence), environmental water and trades.

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

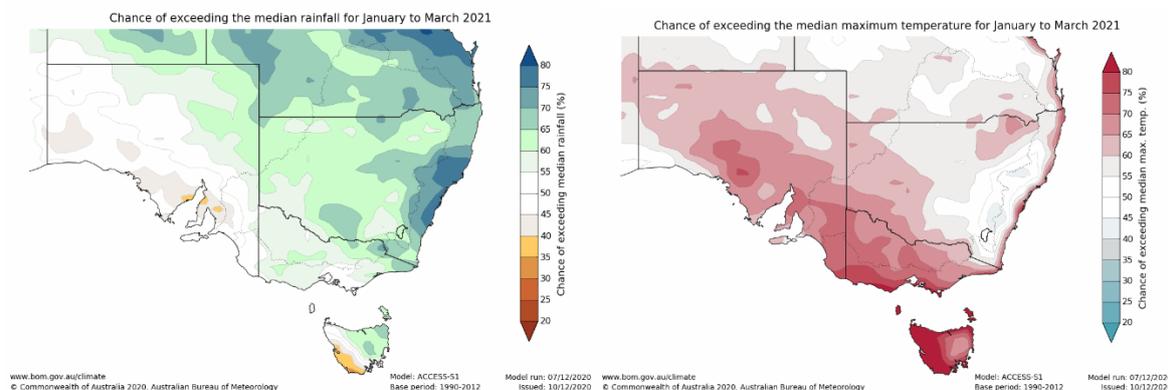
The Murray-Darling Basin Authority confirmed that on 1 December 2020 South Australia had 339.3 GL of deferred water held in storage in the Murray-Darling Basin. The following table identifies the storage in which it is held and the purpose. Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

At 1 December 2020				
Purpose	Lake Victoria (GL)	Hume (GL)	Dartmouth (GL)	Total (GL)
*CHWN	0.0	0.0	237.9	237.9
Private Carryover	0.0	0.0	101.4	101.4
Total	0.0	0.0	339.3	339.3

*Critical Human Water Needs (CHWN)

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for the Murray-Darling Basin from January to March 2021 indicates that the region is expected to receive above average rainfall and above average temperatures in the Southern Connected Basin.



The El Niño-Southern Oscillation (ENSO) is currently negative meaning that a La Niña is currently underway. La Niña is typically associated with an increased likelihood of above average winter-spring rainfall across southern and eastern Australia. Model outlooks are suggesting that the La Niña event is likely to persist until the end of January 2021.

The Southern Annular Mode (SAM) is positive and this generally enhances the wet signal of a La Nina in parts of 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)	16/12/2020 (GL)	16/12/2019 (GL)	Long-term average (end of Dec) (GL)
Dartmouth	3 856	2 385 (62%)	2 030 (53%)	
Hume	3 007	2 102 (70%)	909 (30%)	
Lake Victoria	677	465 (69%)	495 (73%)	
Menindee Lakes	*1 731	376 (22%)	8 (<1%)	
TOTAL	9 271	5 328 (57%)	3 442 (37%)	6 871 (74%)

*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
- 1 000 EC at Milang.

The following graph shows the salinity at these locations and the flow to South Australia (QSA) from December 2019 to December 2020. The dashed-lines identify the Basin Plan (BP) thresholds for the corresponding colour coded location.

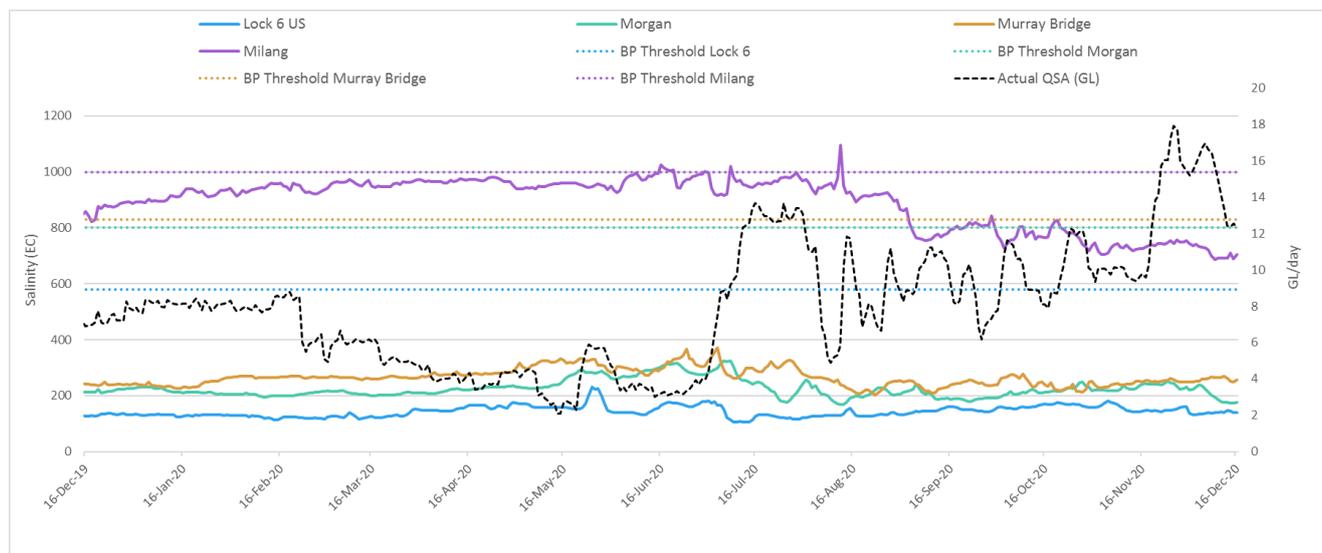


Figure 1: SA River Murray daily average salinity

FLOW OUTLOOK

The flow at the South Australian border is approximately 10.75 GL/day and will decrease to around 9.25 GL/day over the coming week. It comprises:

- full December Entitlement Flow (7 GL/day);
- plus water for the environment (see below *Environmental News*); and
- interstate trade adjustments.

The flow over Lock 1 is approximately 8.5 GL/day and will decrease to around 7 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

Water for the environment delivered this spring has been giving vegetation and wetlands a drink and providing food and shelter for native fish and other aquatic animals from the mid-Murray to the lower Murray, all the way to the Lower Lakes and Coorong. Monitoring in recent weeks has detected good numbers of perch eggs (suspected to be golden perch) downstream of Lock 4 and Lock 1, associated with the elevated flows during the pulse peak. Reports of fish spawning informed the delivery of a small additional amount of water for the environment to the lower Murray to maintain the flowing conditions needed for perch eggs and larvae to develop and disperse. The increased spring flows, sourced from the Murray, Goulburn and Murrumbidgee Rivers, are now receding as the pulse moves towards the Lower Lakes and Coorong.

Further information on the "Southern Spring Flow 2020" including the most recent update can be found [here](#).

In South Australia, this water for the environment is helping to:

- increase '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 golden perch and Murray cod;
- provide for increased spring barrage releases to the Coorong to support a productive, food-rich environment for fish and birds and promote suitable conditions for estuarine fish to spawn;
- remove excess salt from the River Murray (see more information [here](#));
- maintain healthy water quality, salinity and water levels in the River Murray channel, Lower Lakes and Coorong, including through targeted releases at the barrages when weather conditions are best suited to push water down the Coorong (see more information [here](#));
- maintain good connection from the Coorong to the upstream areas of the River Murray and its tributaries to enable fish migration and movement; and
- deliver a range of outcomes to wetlands in the Riverland via arrangements with the Murraylands and Riverland Landscape Board, Renmark Irrigation Trust, Australian Landscape Trust and Nature Foundation.

Monitoring from late July to early September 2020 caught 101 pouched and 3 short-headed lamprey migrating through the fishways at the barrages to spawn in the River Murray. The majority have been tagged with Passive Integrated Transponders (PIT tags) so their passage can be detected via receivers along the River Murray. You can track upstream lamprey migration [here](#).

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 6 December 2020, a total of approximately 6 680 048 cubic metres of sand had been removed by dredging operations.

One dredge is currently operating between the Goolwa and Tauwitchere channels 24 hours a day, 7 days a week. The second dredge is currently undergoing maintenance.

Barrage releases combined with dredging have helped to maintain connectivity of the Murray Mouth.

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 0.83 m AHD and Lake Albert is approximately 0.75 m AHD. The difference in water levels is due to wind effects.

Water for the environment has enabled continuous fishway releases and barrage releases to be undertaken during winter and into spring.

During the past week:

- fishways at all the barrages have provided connectivity between the Coorong and the Lower Lakes;
- Tauwitchere had numerous gates open to push fresher water down the Coorong; and
- Goolwa and Boundary Creek Barrages had gates open to provide releases to support diadromous fish migration.

As of Tuesday 15 December 2020, the weekly releases were approximately 44.5 GL.

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.

HEALTHY COORONG, HEALTHY BASIN'S INVESTIGATIONS PROJECT

Healthy Coorong, Healthy Basin's Coorong Infrastructure Investigations Project has released the [shortlist of infrastructure](#) and management options that will be investigated to support long-term health of the Coorong, with a focus on the South Lagoon. To learn more about the Coorong Infrastructure Investigations Project Visit the [website](#).

The [7th Coorong Partnership Communique](#) is now available on the DEW website

RIVER VESSEL WASTE DISPOSAL STATIONS

Loxton

The Loxton River Vessel Waste Disposal Station upgrade is now complete and available for public use. If you need any other help or advice with regard to this station, please call Mr Hayden Smith on 0457 820 553.



Figure 2: The recently upgraded Loxton River Vessel Waste Disposal Station (Simon Bullock, District Council of Loxton Waikerie)

Lock 3

The Lock 3 River Vessel Waste Disposal Station is currently out of commission due to an infrastructure failure. This means that boat operators who need to empty sewage tanks will need to use the nearest alternative waste facility located at Waikerie. Alternatively boat operators who require an urgent pump-out in the Kingston-on-Murray area can contact Mr Hayden Smith on 0457 820 553 for help or advice. Normal boat waste (domestic or galley waste) can still be deposited at the Lock 3 facility at the present time.

FLOODPLAIN OPERATIONS

The following table identifies the normal pool level (NPL) and normal operating range (NOR) for locks and weirs in South Australia. Potential operations could raise the water level above the NPL or NOR at some locks and weirs.

Weir	Normal Pool Level (NPL) (m AHD)	Normal Operating Range (m AHD)
Lock 6 - Murtho	19.25	19.17 - 19.50
Lock 5 - Renmark	16.30	16.13 - 16.43
Lock 4 - Bookpurnong	13.20	13.16 - 13.50
Lock 3 - Overland Corner	9.80	9.77 - 10.02
Lock 2 - Waikerie	6.10	5.90 - 6.40
Lock 1 - Blanchetown	3.20	3.10 - 3.40

Lowering Weir Pools 1 and 2

During December 2020 the water levels in the Lock 1 and 2 weir pools were lowered by 0.10 m AHD (to a level of 3.1 m AHD) and 0.08 m AHD (to a level of 6.2 m AHD) below NPL respectively. This lowering event is complete and water levels are slowly returning to NPL.

The aim of this event was to take advantage of the previous raised water levels over winter/spring and to maximise the benefit of the Southern Spring Flow environmental pulse.

During the winter/spring period water levels in weir pools 1 and 2 were raised to the top of their NOR. Weir pool 1 was raised to a maximum of 0.19 m AHD above NPL and weir pool 2, 0.22 m AHD above NPL. These raised water levels were then lowered, below NPL, to increase the lotic habitat (faster flowing areas) within the river while the peak of the Southern Spring Flow arrives in South Australia. This aimed to create ideal conditions for native fish to breed. While the heights by which the weir pools were lowered were only marginal it enabled DEW to undertake monitoring to determine the ecological benefits from such actions.

First Operation of New Floodplain Infrastructure

The operations of the new Pike and Katarapko floodplain infrastructure and associated weir pool raisings are expected to come to an end this month with current reporting welcoming environmental benefits in the area.

Updates on operations such as below will continue to be provided in the *River Murray Flow Report*. If you would like to be sent further communications about Pike and Katarapko floodplain operations via email, please provide your details to the Engagement Officer, Ellee Eleftheriadis, at ellee.eleftheriadis2@sa.gov.au.

Katarapko Floodplain with Raising Lock 4 Weir Pool

The first operation of the new environmental infrastructure on the Katarapko floodplain reached the planned target operation height of 12.8 m AHD at the main regulator (The Splash) in October 2020. Water levels are now being slowly lowered back to the normal operating height of 10 m AHD. The water level at The Splash on 16 December 2020 was 10.22 m AHD. The water level in the Lock 4 weir pool has been returned to normal pool level. The Katarapko operations are expected to be completed this month.

The watering extended out onto areas of the floodplain including filling Carpark Lagoons and Piggy Creek providing vegetation with a much needed drink. Plants like lignum which provide fantastic habitat for a range of species are greening up and starting to flower and waterbirds and frogs are responding to the inundation. Full environmental outcomes from the floodplain watering are still being collated with monitoring continuing over the summer to document the responses to the watering.

During this time Katarapko is still open to the general public for visiting however please be aware of some current road and location closures and detours in place for some locations. Conditions within the creeks will vary with water speed, depth and area being covered on the floodplain. We ask that when visiting Katarapko care should be taken when driving, boating or canoeing. For more information on the Murray River National Park closures and updates please visit: https://www.parks.sa.gov.au/find-a-park/Browse_by_region/Murray_River/murray-river-national-park



Figure 3: Photos of River Red Gums at Carpark's Lagoon on the Katarapko floodplain before and after environmental watering in 2020 (Kate Mason, LandscapeSA)

Pike Floodplain with Raising Lock 5 Weir Pool

The low level first operation of the new environmental watering infrastructure on the Pike floodplain is continuing to progress well with water levels at the Pike regulator being drawn down. The water level at the Pike Regulator is at 14.9 m AHD as of 14 December 2020. Water levels will continue to be lowered back to NPL of 14.55 m AHD by the end of December 2020. The Lock 5 weir pool is currently raised by 0.19 m AHD (above normal pool level (NPL)). The Lock 5 weir pool raising is also planned to be completed by mid to late December 2020.

The Pike Floodplain is closed to the general public during this time and ask that care should be taken when boating or canoeing around the area.

The low lying floodplain and wetlands at the Pike floodplain have received a drink from the watering event which is providing benefits for the vegetation including areas of river red gums, black box, lignum and understorey plants. Large numbers of frogs have been recorded responding to the watering including the threatened Southern bell frogs and is also providing valuable habitat for a range of waterbirds including shell duck, wood duck, grebes, swans, white-necked heron and yellow spoonbills.

The new environmental infrastructure at both Pike and Katarapko is being conservatively managed to maintain flows within the anabranch systems. During the operation there will be some increase in salinity and reduction in levels of dissolved oxygen levels but the sites are being cautiously managed. Water quality at the sites and in the river is closely monitored and the operations may be amended if conditions change more than expected. Water quality monitoring at the sites and within the river can be accessed via Water Connect

www.waterconnect.sa.gov.au/Systems/SiteInfo/Pages/Default.aspx?site=A4261053&period=HRLY#Parameter Summary

QUARTERLY COMPLIANCE – QUARTER 2 ENDS ON 31 DECEMBER 2020

All South Australian River Murray water users are reminded that the Quarter 2 accounting period for 2020-21 ends on 31 December 2020. Compliance action will be taken if any water is taken in excess of the allocation available on a water account at the end of the quarter. For a water trade to be considered for Quarter 2, all paperwork must be lodged with the Department for Environment and Water before 5:00 pm on 31 December 2020.

In order to comply with the *Landscape South Australia Act 2019* by remaining within your available water allocation, you can:

- Stop taking water when you reach your allocation limit;
- Before you reach your allocation limit, trade water allocation onto your water account to cover your additional water needs; or
- Investigate whether water efficiency measures could be implemented for your property to decrease your demand for water.

To assist you to monitor your water use and remain within the water allocation available on your water account, you can submit an online meter reading at any time and elect to receive a water usage advice (similar to a bank statement) by email or SMS: <https://forms.business.gov.au/smartforms/sa-dfw/meter-reading-form/>.

For more information please read the fact sheet: [SA River Murray quarterly compliance factsheet](#), or [visit DEW's website](#), or contact the Berri water licensing office via telephone: (08) 8595 2053 or email: DEW.waterlicensingberri@sa.gov.au.

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.

River Murray Water Levels

Location	River km	Normal Pool Level (m AHD)	Current Level 16/12/2020 (m AHD)	2016 High Water Level (m AHD)
Lock 10	825.0	30.80	30.76	32.72
Lock 9 Kulnine	764.8	27.40	27.43	28.85
Lock 8 Wangumma	725.7	24.60	24.63	26.85
Lock 7 Rufus River	696.6	22.10	22.10	24.97
Lock 6 Murtho	619.8	19.25	19.26	20.19
Renmark	567.4	-	16.48	17.44
Lock 5	562.4	16.30	16.47	17.05
Lyrup	537.8	-	13.27	15.80
Berri	525.9	-	13.21	15.21
Lock 4	516.2	13.20	13.20	14.73
Loxton	489.9	-	10.23	13.54
Cobdogla	446.9	-	-	11.59
Lock 3	431.4	9.80	9.79	10.98
Overland Corner	425.9	-	6.35	10.41
Waikerie	383.6	-	6.16	9.20
Lock 2	362.1	6.10	6.01	8.32
Cadell	332.6	-	3.39	7.01
Morgan	321.7	-	3.27	6.38
Lock 1 Blanchetown	274.2	3.20	3.12	4.46
Swan Reach	245.0	0.75	1.05	3.11
Mannum PS	149.8	0.75	0.97	1.33
Murray Bridge	115.3	0.75	0.85	1.04

Note that the above water levels may be affected by local wind conditions

FURTHER INFORMATION

The WaterConnect website is South Australia's comprehensive water information portal. For real-time data (like salinity, water levels) go to the following page: [WaterConnect Real-time water data](#).

Up-to-date River Murray salinity, flow and water level information can be accessed at the Department for Environment and Water, 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](#).

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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