RIVER MURRAY FLOW REPORT

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This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 30 June 2016. The next flow report will be provided on Friday, 15 July 2016.

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 ALLOCATIONS AND CARRYOVER

South Australian River Murray water access entitlement holders (Class 3a, 3b, 4, 7 and 8) will begin 2016-17 with an opening water allocation of 36 per cent. Eligible water access entitlement holders (Class 3a, 3b, 4 and 7) will also have access to private carryover and receive a letter and updated water account with their carryover volume endorsed. It is expected that this advice will be received in October 2016. Eligibility criteria include:

- underuse in 2015-16; and
- final meter readings submitted to DEWNR by 31 July 2016.

If you don't have a water meter you may still be eligible for carryover but you must contact DEWNR by 31 July 2016.

As rainfall events occur and inflows to storages increase, water users will be advised of any improvements to their water allocations via this *River Murray Flow Report* (provided around the middle of the month).

MANAGEMENT OF SOUTH AUSTRALIA'S DEFERRED WATER

The Murray-Darling Basin Authority confirmed that on 1 July 2016, South Australia had 209.2 GL of deferred water held in storage. The table below identifies the storage in which it is held and the purpose.

At 1 July 2016				
Purpose	**Lake Victoria (GL)**	**Hume (GL)**	**Dartmouth (GL)**	**Total (GL)**
***CHWN**	38.7	9.8	82.0	130.5
Private Carryover	19.0	0.0	59.7	78.7
Total	57.7	9.8	141.7	209.2

*Critical Human Water Needs (CHWN)

Volumes stored are adjusted for net evaporation losses and spills until delivered to South Australia.

There has been no opportunity to move water held in Lake Victoria to a more secure upstream storage since March 2016.

As a result of an unregulated flow event occurring in July and early August 2016 (see *Flow Outlook* section), Lake Victoria is likely to fill and physically spill in August. South Australia's deferred water will be the first to spill because the rules under the Murray-Darling Basin Agreement require that water held by South Australia in the Storage Right must not affect water availability to New South Wales and Victoria. This unregulated flow event is likely to cause a spill of up to 57.7 GL (38.7 GL of water held for critical human water needs and 19 GL held for private carryover). All other private carryover water (59.7 GL) is currently held in Dartmouth Reservoir, where the risk of spill is much lower.

Opportunities to defer and store water are considered on the basis of how Entitlement Flow is managed, plus operational flow objectives for water quality and weather conditions.

FLOW OUTLOOK

Recent rainfall has wet-up catchments across north eastern Victoria and the upper River Murray. These catchments are responding with inflow to the storages. The location and source of inflow is important from a sharing of water with NSW and Victoria perspective. Inflow from non-shared resources, such as the Murrumbidgee River, remain a state owned resource. This means the inflow to the River Murray system from these sources cannot be allocated to South Australia. Inflow to Hume Reservoir can originate from several sources:

- natural inflow from upstream of Hume Dam;
- routine releases from Snowy Hydro Scheme; or
- specific commercial releases from Snowy Hydro Scheme, such as irrigation water for Murray Irrigation Limited.

The water sharing arrangements are complex and improvements to South Australia's share of the River Murray System water resources will depend on the origin of the inflow and its intended use. Further information on how water sharing works will be communicated in next week's *River Murray Flow Report*.

The flow at the South Australian border is approximately 7 GL/day and will increase to around 8 GL/day during the coming week. It comprises the normal July Entitlement Flow of 3.5 GL/day plus environmental water and unregulated flow.

South Australia is experiencing a unique situation where it is currently expecting to receive less than its Entitlement Flow for the 2016-17 water year, but receiving an unregulated flow event. The unregulated flow event is a result of rainfall and inflows to the River Murray System below Hume and Dartmouth Reservoirs (from sources such as the Murrumbidgee and Ovens Rivers), therefore the only opportunity to capture and store (regulate) this water is in Lake Victoria. The additional volume of water in the river is greater than the Lake Victoria inlet capacity so the additional water will flow into South Australia as an unregulated flow (meaning it cannot be captured and allocated for use at a later time). It is also likely that Lake Victoria will physically spill in the next month as a result of the unregulated flow.

The flow over Lock 1 is approximately 3.5 GL/day and will increase to around 6.5 GL/day during the coming week, depending on weather conditions and extractions.

It is important to note that flow forecasts in this advice are based on the information available at the time of preparation. They may change as new gauging information becomes available, or due to rainfall events or changed operations upstream. The forecasts will be revised as new information becomes available.

ENVIRONMENTAL WATER

During July 2016 the Commonwealth Environmental Water Holder (CEWH) and the Murray-Darling Basin Authority's *The Living Murray* are expected to provide up to 9 GL of environmental water to South Australia.

The environmental water will provide in-channel, Lower Lakes and Coorong environmental and water quality benefits.

DEWNR is continuing discussions regarding environmental water to be delivered during 2016-17.

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. Dredges are operating in the Tauwitchere and Goolwa Channels. At 3 July 2016, approximately 1 397 400 cubic metres of sand had been removed.

Mariners are advised that there are a number of shallow zones in, and adjacent to, the Murray Mouth, and should follow all directions in the area and reduce their speed. Boats equipped with echo sounders should regularly check depths and avoid travelling at low tide. Mariners are reminded that navigation through the Murray Mouth is only permitted during daylight hours and that Exclusion Zones established around the dredging operations remain in place to ensure public safety. For more information refer to the Notice to Mariners at http://dpti.sa.gov.au/news/?a=247918

There is also a partial park closure in place for the northern tip of the Coorong National Park. For more information refer to the following http://www.environment.sa.gov.au/parks/Safety/Park_closures/141219-coorong-national-park Signage has been installed at appropriate locations advising of Exclusion Zones.

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.72 m AHD and in Lake Albert is approximately 0.70 m AHD. The difference in water levels is due to wind effects.

During the week ending 5 July 2016, total barrage releases were less than 1 GL. The barrages have been closed to minimise the risk of seawater entering Lake Alexandrina during adverse conditions but will now be re-opened for a few days to provide a pulse of fresh water to the Coorong and assist in maintaining an open Murray Mouth.

Fishways are operational to provide fish passage between Lake Alexandrina and the Coorong.

SA Water will continue to operate the barrages to minimise any negative salinity impacts from reverse flow events.

Water levels and barrage operations are monitored closely by South Australian Government agencies, the Murray-Darling Basin Authority and Commonwealth Environmental Water Office.

WEIR POOL OPERATIONS

The Lock 1 weir pool remains approximately 0.1 m below the normal pool level of 3.2 m AHD to enable engineering investigations to be undertaken at the weir.

WEIR POOL OPERATIONS

Using the current unregulated flow event, the Lock 2 and Lock 5 weir pools are being raised towards the top of their normal operating range as defined in the table below.

Weir	Normal Pool Level (NPL) m AHD	Normal Operating Range m AHD
Lock 5 - Renmark	16.30	16.22 - 16.43
Lock 2 – Waikerie	6.10	6.02 - 6.40

Raising the water level to the top of the normal operating range is being treated as the first stage of a more substantial weir pool raising event that DEWNR is considering. The next stage would be to raise the Lock 2 weir pool by up to 0.75 m above normal pool level (NPL) and Lock 5 weir pool by up to 0.5 m above NPL, during spring (August to October). This would raise Lock 2 to 6.85 m AHD and Lock 5 to 16.80 m AHD. Raising the Lock 6 weir pool is also being considered in association with the possible operation of the Chowilla Regulator. While these events are being planned, any further operation or activity will depend on the flow to South Australia (including unregulated flow) and availability of environmental water across the River Murray System.

Weir pool manipulations aim to reinstate some of the natural variability of water levels in the River Murray system, which have been lost due to river regulation. The manipulations will assist to improve lateral

connectivity, health, resilience and biodiversity of the river channel, floodplain and wetlands. It is intended that weir pool manipulations will become a routine part of river operations.

CHOWILLA WATERING

A range of environmental watering actions are being considered for the Chowilla Floodplain Icon site during 2016-17. These include possible further testing of the Chowilla Regulator to a higher level in conjunction with raising Lock 6. This will only occur if flow in the River Murray is in excess of 15 GL/day and environmental water is made available.

MODERNISATION OF WAIKERIE RIVER VESSEL WASTE DISPOSAL STATION

Modernisation of the Waikerie River Vessel Waste Disposal Station will commence on 25 July 2016. The facility will be closed until 31 October 2016. Alternative temporary arrangements for pumping waste from vessels have been arranged. The temporary pump out service will be available 1 kilometre downstream of the Waikerie River Vessel Waste Disposal Station. Users will need to call Mr Mick Kemp on 0428 861 777 to arrange a suitable time between 8 am and 4 pm. Please note that at least 3 hours notice will be essential.

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 watercraft users 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 (near Wentworth) to Murray Bridge.

River Murray Water Levels on 6 July 2016

Location	River km	Normal Pool Level	Current Level (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)	2011 High Water Level (m AHD)
Lock 10	825.0	30.80	30.81	33.81	33.32	32.28
Lock 9 Kulnine	764.8	27.40	27.56	30.03	29.44	28.80
Lock 8 Wangumma	725.7	24.60	24.69	27.60	27.19	26.79
Lock 7 Rufus River	696.6	22.10	22.12	25.70	25.24	24.92
Lock 6 Murtho	619.8	19.25	19.25	21.03	20.50	20.11
Renmark	567.4	-	-	18.54	18.04	17.38
Lock 5	562.4	16.30	16.36	18.07	17.50	17.05
Lyrup	537.8	-	13.26	16.85	16.26	15.68
Berri	525.9	-	13.24	15.81	15.74	15.16
Lock 4	516.2	13.20	13.24	15.65	15.08	14.75
Loxton	489.9	-	10.02	15.05	14.12	13.42
Cobdogla	446.9	-	9.87	13.44	12.38	11.52
Lock 3	431.4	9.80	9.83	13.16	12.02	10.93
Overland Corner	425.9	-	6.34	12.73	11.58	10.27
Waikerie	383.6	-	6.33	11.26	10.24	9.06
Lock 2	362.1	6.10	6.25	10.28	9.30	8.25
Cadell	332.6	-	3.21	9.17	8.08	6.82
Morgan	321.7	-	3.20	8.85	7.65	6.20
Lock 1 Blanchetown	274.2	3.20	3.13	6.81	5.38	4.42
Swan Reach	245.0	0.75	0.74	6.06	4.51	3.09
Mannum PS	149.8	0.75	0.73	3.15	1.90	1.46
Murray Bridge	115.3	0.75	0.70	2.06	1.26	1.21

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 and can be accessed at http://www.waterconnect.sa.gov.au

Up-to-date River Murray salinity, flow and water level information can be accessed at the Department of Environment, Water and Natural Resources, SA Water and Murray-Darling Basin Authority websites
www.waterconnect.sa.gov.au/Systems/RTWD/Pages/Default.aspx
www.sawater.com.au/SAWater/Environment/WaterProofingAdelaide/TheRiverMurray/RMOU/Dailyflow.htm
http://livedata.mdba.gov.au/

The latest news, information and announcements about the River Murray and Basin Plan are available at River Murray Update

The Department of Environment, Water and Natural Resources has published a series of inundation maps for the River Murray. They are available at www.waterconnect.sa.gov.au/Systems/RMIM/SitePages/Home.aspx

Information on the management of acid drainage water in the Lower River Murray can be accessed at www.epa.sa.gov.au/environmental_info/water_quality/programs/acid_sulfate_soils/lower_river_murray_reclaimed_irrigation_area_lmria

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 www.bom.gov.au/vic/flood

Information provided by the Commonwealth Environmental Water Office can be accessed at www.environment.gov.au/ewater/southern/murray/lower-murray.html

Information on The Living Murray can be accessed at www.mdba.gov.au/managing-water/environmental-water/delivering-environmental-water/living-murray-program

Chowilla Floodplain Icon Site management www.environment.sa.gov.au/Chowilla-floodplain

Department of Environment, Water and Natural Resources www.environment.sa.gov.au/Home

Information provided by the Department of Transport, Energy and Infrastructure on boat licences, registering motor boats, owning and operating water craft, and boat and marine safety can be accessed at www.sa.gov.au/boatingmarine

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