RIVER MURRAY FLOW REPORT and WATER RESOURCES UPDATE

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This supersedes the previous flow report issued by the Department of Environment, Water and Natural Resources (DEWNR) on 6 December 2013. The next flow report will be provided on Friday, 20 December 2013.

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 2013, the total River Murray System inflow was approximately 270 GL, which was well below the November long-term average of 800 GL. Inflow to Menindee Lakes (from the Darling System) during November 2013 was 0 GL, which was also well below the November long-term average of 125 GL.

The flow to South Australia during November 2013 was approximately 390 GL (compared to 490 GL in November 2012), which comprised 180 GL of Entitlement Flow and approximately 209 GL of environmental water and allocation trade.

The flow to South Australia is currently around 9 500 ML/day, which comprises the December Entitlement Flow of 7 000 ML/day, less deferred Entitlement Flow of 650 ML/day, plus environmental water. The major Murray-Darling Basin Authority controlled storages are holding around 82 per cent capacity.

STORAGE VOLUMES

Murray-Darling Basin Authority storage volumes at 11 December 2013 and 11 December 2012

Storage	Full Supply Volume (GL)	11/12/2013 (GL)	11/12/2012 (GL)	Long-term average (end of December)
Dartmouth	3 856	3 762 (98%)	3 817 (99%)	
Hume	3 003	2 351 (78%)	2 652 (88%)	
Lake Victoria	677	595 (88%)	613 (91%)	
Menindee Lakes	1 731*	864 (50%)	1 564 (90%)	
TOTAL	9 267	7 572 (82%)	8 646 (93%)	6 871 (74%)

*Menindee Lakes can be surcharged to 2 015 GL

RAINFALL AND TEMPERATURE OUTLOOK

The latest Bureau of Meteorology weather outlook for December 2013 to February 2014 indicates that south-eastern Australia has an equal chance of a wetter or drier than normal season, with warmer temperatures.

The climate is being influenced by a neutral Indian Ocean Dipole, neutral tropical Pacific, and locally warm sea surface temperatures around most of Australia.

WATER ALLOCATION OUTLOOK

South Australia will receive its full Entitlement Flow of 1 850 GL in 2013-14. As a result, South Australian River Murray Water Access Entitlement Holders will have access to 100 per cent water allocation in 2013-14. A total volume of 835 GL has been progressively reserved under the Murray-Darling Basin Agreement clause 103 (minimum reserve) to assist with supplying South Australia's Entitlement Flow in 2014-15.

SOUTH AUSTRALIA'S STORAGE RIGHT

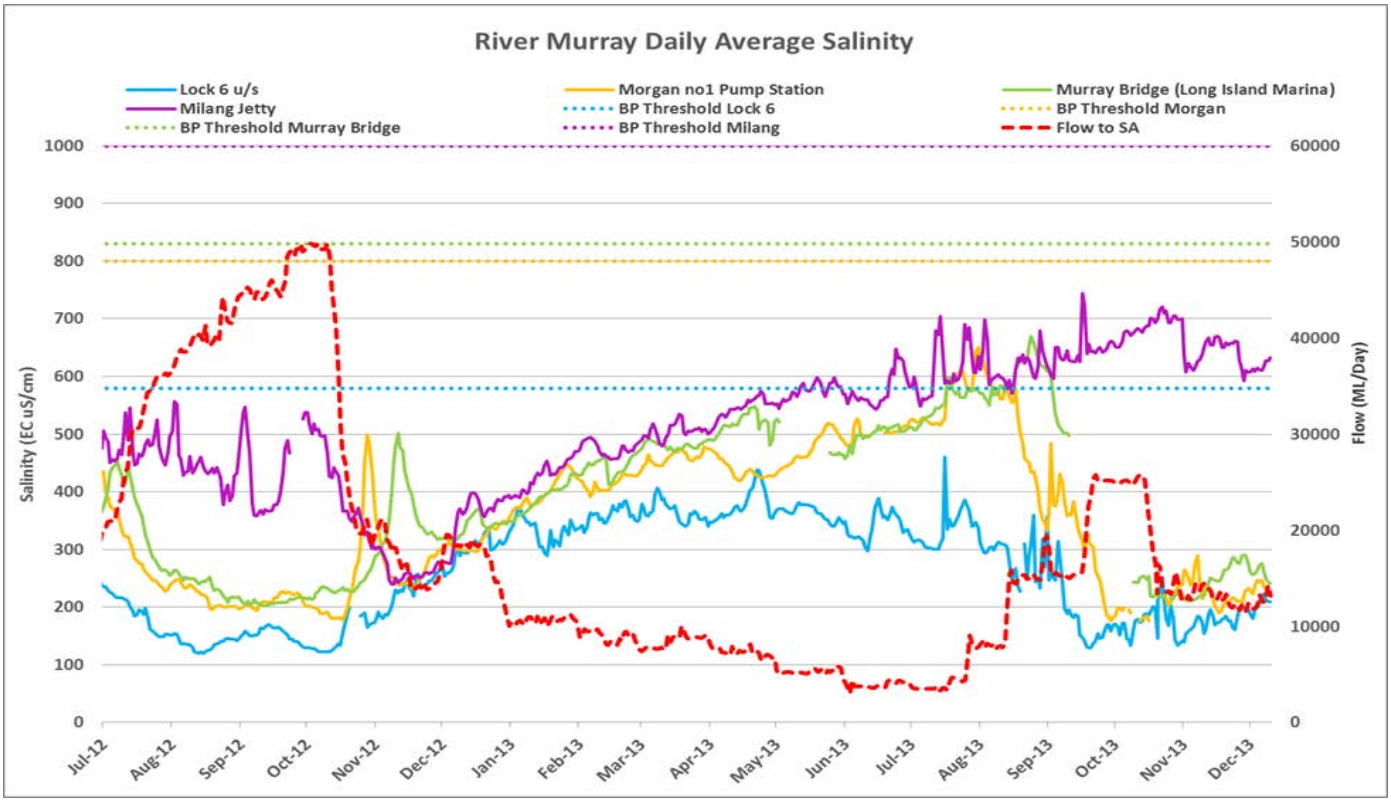
As a result of current water resource conditions, storage and weather outlook, South Australia has activated its Storage Right (for the first time) by requesting the Murray-Darling Basin Authority (MDBA) to defer and store part of its Entitlement Flow in the upstream (interstate) storages. The MDBA will defer and store 20 GL of South Australia's Entitlement Flow in December 2013 for critical human water needs (CHWN) use in future dry years. DEWNR is currently considering opportunities to defer and store additional Entitlement Flow for CHWN and private carryover in early 2014. This decision will be considered against the need to provide water for purposes such as maintaining a flow out through the Murray Mouth.

WATER QUALITY

A number of targets are identified under the Basin Plan, which all Basin States must have regard to in managing River Murray flows. The targets for real-time salinity are identified below. Salinity must not exceed these values for 95 per cent 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 July 2012 to December 2013. The dotted lines identify the Basin Plan thresholds for the corresponding coloured location. It confirms that salinity has not exceeded the target at any of these four locations during this period.



Note: Data gaps are due to technical monitoring issues experienced at the site

FLOW OUTLOOK

The flow at the South Australian border is approximately 10 500 ML/day and will reduce to around 9 500 ML/day during the coming week, depending on upstream river and storage operations, extractions, and rainfall events. The flow comprises the December Entitlement Flow of 7 000 ML/day, less deferred Entitlement Flow of 650 ML/day, plus environmental water from The Living Murray and Commonwealth Environmental Water Holder. The environmental water will:

- maintain a flow at the border higher than normal Entitlement Flow;
- provide improved conditions for juvenile fish survival;
- provide environmental benefits in the Coorong; and
- provide in-channel ecological and water quality benefits.

The flow to South Australia will increase again in late December as additional environmental water arrives before reducing back to the normal Entitlement Flow rate of 7 000 ML/day from early January 2014. It will be difficult to deliver environmental water to South Australia during late summer and autumn due to upstream channel capacity constraints and the high likelihood of the Menindee Lakes control transferring back to the New South Wales Government in early 2014 (due to storage volume). These constraints will result in limited flexibility to deliver any additional environmental water to South Australia for the remainder of 2013-14, unless future rainfall events generate inflow into Menindee Lakes.

Flow to South Australia in December 2013 will be around 380 GL, compared to normal December Entitlement Flow of 217 GL.

The flow over Lock 1 is approximately 10 000 ML/day and will reduce to between 8 000 and 9 000 ML/day during the coming week, depending on weather conditions and extractions. Hot and dry conditions are expected along the length of the River Murray in South Australia over the next week.

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. Flow forecasts are dependent on predictions made by the Bureau of Meteorology, Murray-Darling Basin Authority and water management agencies in upstream jurisdictions. They will be revised as new information becomes available.

BARRAGE OPERATIONS AND WATER LEVELS IN THE LOWER LAKES

The water level in Lake Alexandrina is approximately 0.71 m AHD and Lake Albert is approximately 0.75 m AHD. Barrage operations will target a water level of 0.80 m AHD in both Lakes by the beginning of January 2014. The aim of this action is to maximise water availability for continuous barrage releases during summer. Barrage releases are being prioritised through the Tauwitchere and Goolwa barrages to maintain an open and functioning Murray Mouth and promote native fish migration. All barrage fishways are in operation and are being supplemented with attractant flows in adjacent bays. SA Water will continue to operate the barrages to minimise any negative salinity impacts from reverse flow events.

To see live salinity data at various locations on the River Murray and in the Lower Lakes, please refer to the following website: http://www.waterconnect.sa.gov.au/Systems/RTWD/SitePages/Home.aspx

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

WATER QUALITY

The New South Wales Government (through Sunraysia Regional Algal Coordinating Committee) has issued a red alert warning for toxic blue-green algae in the Great Darling Anabranch at, and upstream of, Tara Downs. The water at that site is unsuitable for domestic, irrigation and recreational purposes. Although this toxic blue-green algal bloom poses no immediate threat to South Australia at this stage, the Murray-Darling Basin Authority and the relevant South Australian Government agencies are regularly monitoring the situation. It is not uncommon to experience algal blooms at this time of the year.

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 in South Australia and all watercraft users should be aware of, and regularly check, the river depth.

CONSTRUCTION WORKS

Currency Creek

Subject to confirmation by the Commonwealth Government under the Environment Protection and Biodiversity Conservation Act 1999 (Cwlth), water-based works to remove the Currency Creek Regulator are completed and the boating exclusion zone has been removed. The site has a stockpile of rock material that was removed from the regulator, which will be removed when weather conditions improve to enable access.

Chowilla

Construction of the Chowilla Creek Environmental Regulator and associated structures is ongoing. For public safety reasons the Chowilla Creek remains closed to navigation at the construction site. Works are also underway to upgrade the weirs on Pipeclay Creek and Slaney Creek to improve the management of flows into the Chowilla anabranch and to enable fish passage. Public access around the weirs is restricted during this construction program.

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 11 December 2013

Location	River km	Normal Pool Level	Current Level (m AHD)	1974 Flood Level (m AHD)	1993 Flood Level (m AHD)
Lock 10	825.0	30.80	30.83	33.81	33.32
Lock 9 Kulnine	764.8	27.40	27.40	30.03	29.44
Lock 8 Wangumma	725.7	24.60	24.59	27.60	27.19
Lock 7 Rufus River	696.6	22.10	22.08	25.70	25.24
Lock 6 Murtho	619.8	19.25	19.28	21.03	20.50
Renmark	567.4	-	16.35	18.54	18.04
Lock 5	562.4	16.30	16.34	18.07	17.50
Lyrup	537.8	-	13.35	16.85	16.26
Berri	525.9	-	13.29	15.81	15.74
Lock 4	516.2	13.20	13.29	15.65	15.08
Loxton	489.9	-	10.37	15.05	14.12
Cobdogla	446.9	-	9.95	13.44	12.38
Lock 3	431.4	9.80	9.84	13.16	12.02
Overland Corner	425.9	-	6.47	12.73	11.58
Waikerie	383.6	-	6.30	11.26	10.24
Lock 2	362.1	6.10	6.12	10.28	9.30
Cadell	332.6	-	3.45	9.17	8.08
Morgan	321.7	-	3.34	8.85	7.65
Lock 1 Blanchetown	274.2	3.20	3.22	6.81	5.38
Swan Reach	245.0	0.75	0.82	6.06	4.51
Mannum PS	149.8	0.75	0.79	3.15	1.90
Murray Bridge	115.3	0.75	0.73	2.06	1.26

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 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:
http://www.waterconnect.sa.gov.au/Systems/RTWD/SitePages/Home.aspx
www.sawater.com.au/SAWater/Environment/TheRiverMurray/River+Murray+Levels.htm
www.mdba.gov.au/water/live-river-data

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

Information on the management of acid drainage water in the Lower River Murray can be accessed online at:
http://www.epa.sa.gov.au/environmental_info/water_quality/acid_sulfate_soils_ass/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: http://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:
http://www.mdba.gov.au/about-basin/environmental-sites

Information is also available from the SA Water Hotline on **08 8595 2299**

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

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