



RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 21 DECEMBER 2016

Trim Ref: D16/46008

The Murray-Darling Basin Authority and staff at the storages, weirs and barrages of the River Murray System wish all our readers a safe and happy festive season.

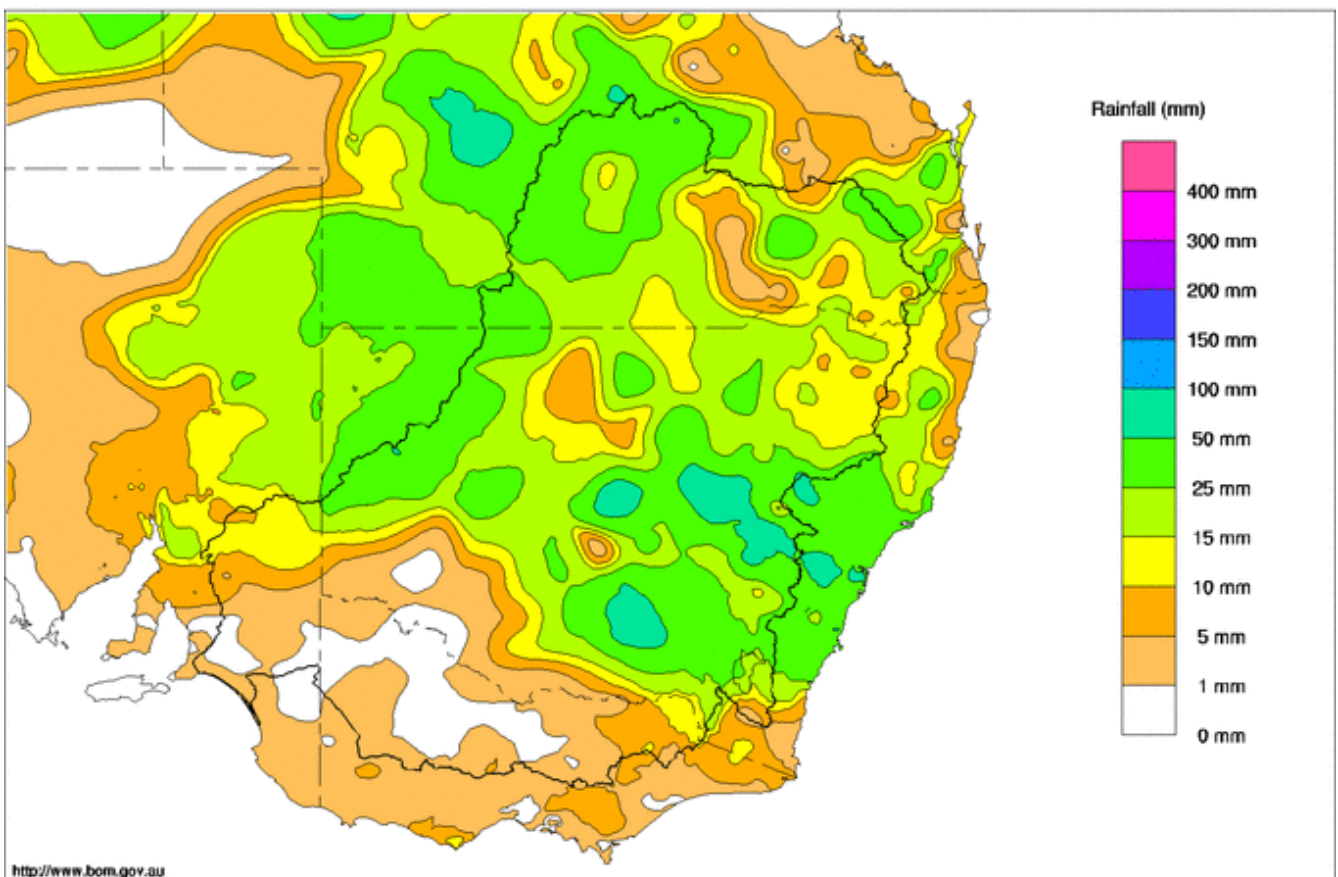
Rainfall and inflows

A series of troughs delivered widespread rainfall to much of the Queensland and New South Wales areas of the Murray-Darling Basin this week (Map 1). In Queensland the highest falls were in the west, with Meandarra recording 49 mm, while in New South Wales heavy falls were recorded across much of the Central Tablelands, the highest being 82 mm at Hill End.

Rainfall was patchy and generally light in Victoria, with 15 mm recorded in the north-east at Berringama. No significant falls in the Basin were recorded in South Australia.

Conditions are expected to be hot over the Christmas period, with temperatures forecast to reach 40 °C along much of the Murray.

Murray-Darling Rainfall Totals (mm) Week Ending 21st December 2016
Australian Bureau of Meteorology



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Map 1 - Murray-Darling Basin rainfall week ending 21 December 2016 (Source: Bureau of Meteorology)

Tributaries in the upper Murray catchments slowly receded this week before light rainfall provided a brief rise. Hinnomunjie, on the Mitta Mitta River upstream of Dartmouth Reservoir, averaged around 320 ML/day this week, while Biggara on the upper Murray averaged near 750 ML/day. The flow in the Ovens River at Wangaratta receded from 1,600 ML/day to below 1,300 ML/day.



River operations

- Hypoxic blackwater along the River Murray now confined to parts of South Australia
- Weirs along the River Murray being reinstated as flows recede
- Unregulated flows to South Australia predicted to cease over the holiday period
- River Murray system steady into the new year – see attached media release

Dissolved oxygen readings are returning to regular levels in the Murray upstream of South Australia. However, areas of hypoxic blackwater continue to be recorded in parts of the South Australian River Murray – see DEWNR's latest [flow report](#). As is occurring upstream, dissolved oxygen readings are expected to improve as river levels return to within the channel and the volume of water returning from the floodplain reduces. The MDBA, together with New South Wales, Victorian and South Australian agencies, will continue to monitor dissolved oxygen levels.

After peaking last week, MDBA total storage fell by 79 GL to 7,329 GL (85% capacity). Without further significant rain, total storage will fall away over the coming months as demands continue to draw upon storages.

At **Dartmouth Reservoir**, the storage volume increased by 5 GL this week, to 2,989 GL (78% capacity). The release is currently at 300 ML/day. The storage volume at **Hume Reservoir** decreased by 49 GL this week to 2,776 GL (93% capacity). Release from Hume Reservoir is currently 15,100 ML/day and is expected to increase in the coming days.



Photo 2 – A native bee captured on a Native Bluebell in the Nail Can Hill reserve near Albury. Source: John Naimo, NSW Department of Primary Industries, antlers courtesy Brayden Dykes, MDBA.

Downstream, the flow at **Corowa** rose to 17,500 ML/day during the week before falling to around 14,900 ML/day. Over the next few days the flow is expected to rise again. The large volumes of sediment mobilised by the recent flooding have resulted in the formation of large sandy point bars on inside bends (photo 1), features that in recent times have been absent in this reach. They are likely to have been common features prior to regulation, but had been removed by years of regulated flows. It will be interesting to see how long they persist following resumption of high regulated flows.



Photo 3 – Large sandy point bars, such as this one downstream of Corowa, are likely to be popular camping spots over the festive season. Source: Hugo Bowman, MDBA.

At **Yarrowonga Weir**, diversions to Mulwala Canal and Yarrowonga Main Channel have increased to 4,000 ML/day and 1,500 ML/day respectively, and are anticipated to rise further as temperatures climb to 40 °C in the coming week. The downstream release is currently at 12,000 ML/day and is expected to fall to around 8,000 ML/day by early January 2017. Over the holiday season, Yarrowonga Weir will be operated to maintain **Lake Mulwala** above 124.7 m AHD.

Flows through the Edward River offtake and Gulpa Creek offtake have remained near 1,600 ML/day and 570 ML/day respectively. The flow at Toonalook on the **Edward River** has slowly receded to near 4,050 ML/day. Downstream of Stevens Weir, the flow has receded from 1,900 ML/day to around 1,650 ML/day, and is forecast to decrease further over the coming week.

During 2017, system demands downstream of the Barmah Choke will be supplemented by large volumes of water traded from the Goulburn and Murrumbidgee valleys and water currently available in Menindee lakes. Deliveries of water through Inter Valley Trade (IVT) to the Murray are expected to begin in early January from the Goulburn system, and from late January or early February from the Murrumbidgee system. This means that flow rates downstream of Yarrowonga during the remainder of summer are likely to be lower than rates experienced last summer when flows were generally close to channel capacity.

Inflows to the Murray from the **Goulburn River** have fallen to around 940 ML/day, with environmental water contributing to this flow. This flow rate is expected to persist into early January. On the Murray, the flow downstream of **Torrumbarry Weir** has remained close to 7,600 ML/day, and is expected to remain around this rate for the next couple of days before gradually receding. This week diversion to National Channel decreased from 2,800 ML/day to near 2,300 ML/day.

The flow at **Swan Hill** steadied around 8,000 ML/day this week before gently receding to 7,850 ML/day. The flow is expected to remain around this level over the next few days before gradually falling later in the week. The flow in the Murray at **Wakool Junction** fell from 19,100 ML/day to 12,100 ML/day this week, and is expected to gradually recede over the coming weeks.



On the **Murrumbidgee River** at Balranald, the flow has returned to channel capacity for the first time since September. This week the flow fell from around 10,600 ML/day to 8,200 ML/day, and is expected to continue falling over the next few weeks. Dissolved oxygen levels improved during the last fortnight from around 1 mg/L to near 5 mg/L. On the Murray downstream of the junction with the Murrumbidgee, dissolved oxygen levels are currently above 6 mg/L at Boundary Bend.

At **Euston**, the downstream flow has fallen to 24,300 ML/day and is expected to continue receding into the New Year. With the weir now reinstated, the pool level will be lowered from 47.7 m AHD to the Full Supply Level (FSL) of 46.6 m AHD over the coming week. The **Mildura Weir** was reinstated over the weekend (see Photo 2) with navigation through the lock chamber planned to be available by Boxing Day. The weir pool level is currently near 33.5 m AHD but is being raised over the next few days back to the FSL of 34.4 m AHD. In doing so the downstream release will fall relatively quickly over the next few days. In anticipation of reduced release from Mildura Weir, the **Wentworth Weir** pool was raised above FSL after the weir was reinstated earlier in the week. The weir pool is expected to return to around the FSL of 30.8 m AHD over the next couple of days.



Photo 2 – The Mildura Weir was reinstated over the weekend, and the upstream pool will be raised to near FSL in the next few days. Source: Julian Kelleher, Goulburn-Murray Water.

The volume stored in the **Menindee Lakes** peaked earlier in the week at 1,585 GL before falling to 1,559 GL (90% capacity). Inflows to the lakes continue to recede and the release, measured at Weir 32, is currently around 1,750 ML/day with a portion of this flow environmental water aimed at supporting the growth and dispersal of Murray Cod that have spawned in the Lower Darling River over the past few months. Operational releases are likely to commence from the Menindee Lakes in early January in order to meet downstream demands in the Murray system. Delivery of environmental water for the Lower Darling fish flow event will be postponed at that time until further notice. In the interim, environmental water holders and river operators are working closely together to look at ways of how the operational water can be delivered to maximise native fish outcomes in the Lower Darling River.

At **Lake Victoria**, the storage volume peaked last week at 672 GL (99% capacity), which is effectively full, before falling 16 GL to 656 GL (97% capacity). A flow of 3,500 ML/day was being maintained through the outlet regulator to provide better quality water in **Rufus River**. While dissolved oxygen levels are now quickly improving, this release has been increased to target 4,500 ML/day in combination with reducing inflows to Lake Victoria back to 500 ML/day. These changes are part of an environmental delivery to South Australia, which will also broaden the steep flow recession in Murray flows to South Australia.



Over the last fortnight dissolved oxygen monitoring has shown concentrations improve from near 1 mg/L (hypoxic) to above 6 mg/L (near normal) in the River Murray at Lock 9 and upstream of Lock 7. Dissolved oxygen readings in Lake Victoria and the Rufus River have remained near normal levels, while concentrations near the South Australian border have now increased to about 5 mg/L.

The flow to **South Australia** has very quickly receded from 81,000 ML/day to 36,000 ML/day this week, and is forecast to continue receding into the New Year, although at a lower rate thanks in part to the above-mentioned environmental delivery. The flood peak is currently downstream of Waikerie and expected to reach Lock 1 around Christmas Day—see DEWNR's latest [flow report](#).

The 5-day average level in the **Lower Lakes** is 0.87 m AHD with high barrage releases expected to continue into January 2017.

There will be no Weekly Report issued for the week ending Wednesday, 28th December 2016. The next report will be available from Friday, 6th January 2017.

[Flow and salinity forecasts](#) will be updated and available on the MDBA website on Wednesday, 4th January 2017.

For media inquiries contact the Media Officer on 02 6279 0141

DAVID DREVERMAN
Executive Director, River Management



Water in Storage

Week ending Wednesday 21 Dec 2016

MDBA Storages	Full Supply Level	Full Supply Volume	Current Storage Level	Current Storage		Dead Storage	Active Storage	Change in Total Storage for the Week
	(m AHD)	(GL)	(m AHD)	(GL)	%	(GL)	(GL)	(GL)
Dartmouth Reservoir	486.00	3 856	471.73	2 989	78%	71	2 918	+5
Hume Reservoir	192.00	3 005	190.95	2 799	93%	23	2 776	-49
Lake Victoria	27.00	677	26.83	656	97%	100	556	-16
Menindee Lakes		1 731*		1 559	90%	(480 #)	1 079	-19
Total		9 269		8 003	86%	--	7 329	-79
Total Active MDBA Storage							85% ^	

Major State Storages

Burrinjuck Reservoir	1 026	976	95%	3	973	-1
Blowering Reservoir	1 631	1 576	97%	24	1 552	+4
Eildon Reservoir	3 334	2 641	79%	100	2 541	-11

* Menindee surcharge capacity – 2050 GL

** All Data is rounded to nearest GL **

NSW has sole access to water when the storage falls below 480 GL. MDBA regains access to water when the storage next reaches 640 GL.

^ % of total active MDBA storage

Snowy Mountains Scheme

Snowy diversions for week ending 20 Dec 2016

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2016
Lake Eucumbene - Total	2 010	-69	Snowy-Murray	+30	838
Snowy-Murray Component	905	-24	Tooma-Tumut	+6	310
Target Storage	1 510		Net Diversion	25	528
			Murray 1 Release	+31	1 215

Major Diversions from Murray and Lower Darling (GL) *

New South Wales	This Week	From 1 July 2016	Victoria	This Week	From 1 July 2016
Murray Irrig. Ltd (Net)	29.5	301	Yarrowonga Main Channel (net)	8.6	66
Wakool Sys Allowance	0.0	0	Torrumbarry System + Nyah (net)	15.3	155
Western Murray Irrigation	0.8	7	Sunraysia Pumped Districts	4.9	34
Licensed Pumps	n/a	64	Licensed pumps - GMW (Nyah+u/s)	0.5	7
Lower Darling	n/a	2	Licensed pumps - LMW	7.5	119
TOTAL	30.3	374	TOTAL	36.8	381

* Figures are derived from actual and estimates where data is unavailable. Please note that not all data may have been available at the time of creating this report.

** All data above is rounded to nearest 100 ML for weekly data and nearest GL for cumulative data**

Flow to South Australia (GL)

* Flow to SA will be greater than normal entitlement for this month due to unregulated flows.

Entitlement this month	217.0 *
Flow this week	419.8
Flow so far this month	1,667.8
Flow last month	2,169.8

(60 000 ML/day)

Salinity (EC) (microSiemens/cm at 25° C)

	Current	Average over the last week	Average since 1 August 2016
Swan Hill	100	100	140
Euston	-	-	-
Red Cliffs	210	110	160
Merbein	200	230	160
Burtundy (Darling)	360	370	690
Lock 9	210	220	160
Lake Victoria	200	200	180
Berri	230	230	190
Waikerie	290	310	220
Morgan	300	320	220
Mannum	350	360	230
Murray Bridge	350	370	250
Milang (Lake Alex.)	340	340	570
Poltalloch (Lake Alex.)	400	380	310
Meningie (Lake Alb.)	1 840	1 830	1 780
Goolwa Barrages	320	300	1 350



River Levels and Flows

Week ending Wednesday 21 Dec 2016

River Murray	Minor Flood Stage (m)	Gauge	Height	Flow (ML/day)	Trend	Average Flow this Week (ML/day)	Average Flow last Week (ML/day)
		local (m)	(m AHD)				
Khancoban	-	-	-	4 310	F	5 210	6 000
Jingellic	4.0	1.93	208.45	6 100	F	6 970	7 810
Tallandoon (Mitta Mitta River)	4.2	1.58	218.47	1 000	R	920	980
Heywoods	5.5	3.04	156.67	15 030	R	14 590	13 660
Doctors Point	5.5	3.13	151.60	17 040	R	16 660	15 870
Albury	4.3	2.12	149.56	-	-	-	-
Corowa	4.6	3.12	129.14	14 940	S	16 080	15 490
Yarrowonga Weir (d/s)	6.4	2.02	117.06	13 150	R	13 390	14 750
Tocumwal	6.4	2.80	106.64	14 680	F	15 360	16 870
Torrumbarry Weir (d/s)	7.3	2.50	81.05	7 670	R	7 550	7 700
Swan Hill	4.5	1.47	64.39	7 860	F	7 980	8 690
Wakool Junction	8.8	3.85	52.97	12 120	F	14 750	22 390
Euston Weir (d/s)	9.1	3.65	45.49	24 330	F	28 150	43 550
Mildura Weir (d/s)	-	-	-	23 990	F	32 620	55 660
Wentworth Weir (d/s)	7.3	4.46	29.22	26 490	F	40 250	77 050
Rufus Junction	-	6.34	23.27	35 780	F	59 980	86 040
Blanchetown (Lock 1 d/s)	-	4.30	-	80 700	R	77 470	67 690
Tributaries							
Kiewa at Bandiana	2.8	1.22	154.45	830	R	1 080	1 140
Ovens at Wangaratta	11.9	8.28	145.96	1 280	R	1 410	1 820
Goulburn at McCoys Bridge	9.0	1.48	92.90	940	F	990	1 040
Edward at Stevens Weir (d/s)	5.5	1.74	81.52	1 670	F	1 810	1 950
Edward at Liewah	-	2.62	58.00	2 000	F	2 350	3 500
Wakool at Stoney Crossing	-	2.06	55.55	2 590	F	2 900	4 710
Murrumbidgee at Balranald	5.0	5.40	61.36	8 180	F	9 150	12 170
Barwon at Mungindi	6.1	3.19	-	70	R	50	80
Darling at Bourke	9.0	4.17	-	640	S	740	1 440
Darling at Burtundy Rocks	-	1.21	-	1 510	F	1 600	1 140

Natural Inflow to Hume	4 700	7 600
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(i.e. Pre Dartmouth & Snowy Mountains scheme)

Weirs and Locks Pool levels above or below Full Supply Level (FSL)

Murray	FSL (m AHD)	u/s	d/s		FSL (m AHD)	u/s	d/s
Yarrowonga	124.90	-0.15	-	No. 7 Rufus River	22.10	+0.94	-28.25
No. 26 Torrumbarry	86.05	+0.00	-	No. 6 Murtho	19.25	+0.07	+3.16
No. 15 Euston	47.60	+0.05	-	No. 5 Renmark	16.30	+0.40	+3.42
No. 11 Mildura	34.40	-0.91	+1.42	No. 4 Bookpurnong	13.20	+1.36	+4.66
No. 10 Wentworth	30.80	+0.10	+1.82	No. 3 Overland Corner	9.80	+1.15	+4.77
No. 9 Kulnine	27.40	+0.16	+0.86	No. 2 Waikerie	6.10	+2.20	+5.00
No. 8 Wangumma	24.60	-0.33	+2.06	No. 1 Blanchetown	3.20	+1.31	+3.55

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.87
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Barrages

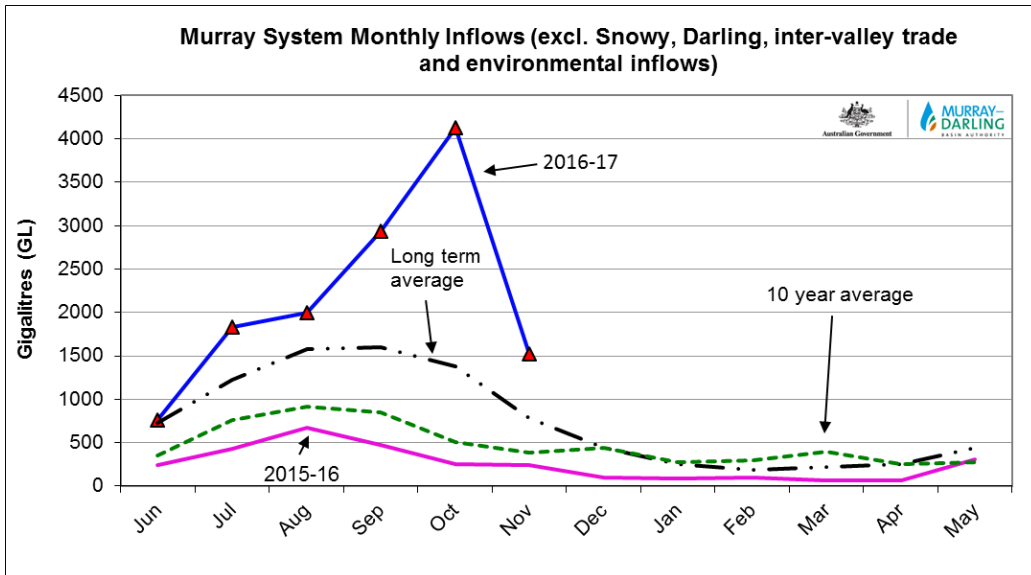
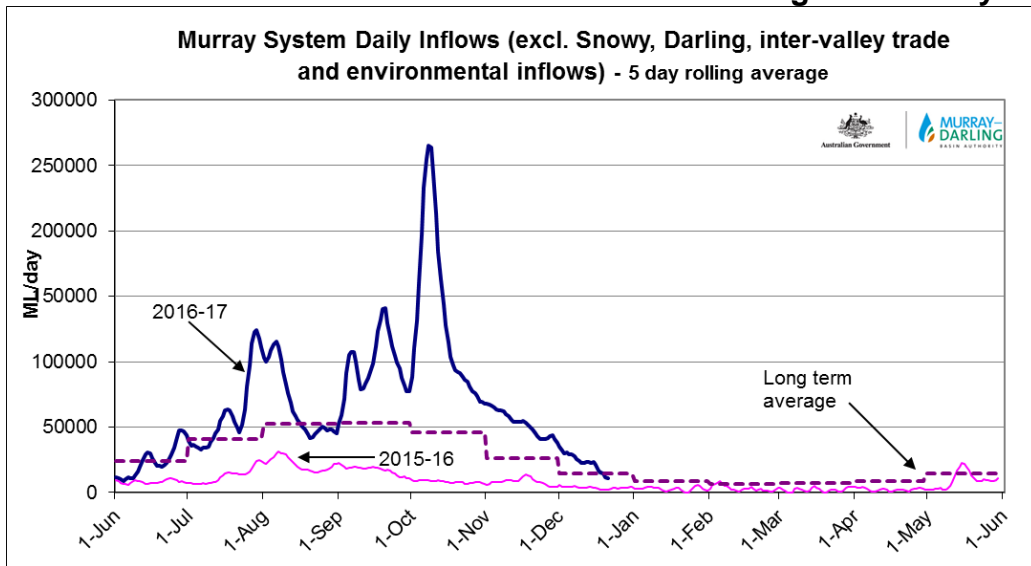
Fishways at Barrages

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.78	45	-	Open	Open	-
Mundoo	26 openings	0.73	4	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	12	-	-	-	Open
Tauwichee	322 gates	0.83	130	Open	Open	Open	-

AHD = Level relative to Australian Height Datum, i.e. height above sea level



Week ending Wednesday 21 Dec 2016



State Allocations (as at 21 Dec 2016)

NSW - Murray Valley

High security	100%
General security	100%

Victorian - Murray Valley

High reliability	100%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	100%
General security	100%

Victorian - Goulburn Valley

High reliability	100%
Low reliability	0%

NSW - Lower Darling

High security	100%
General security	100%

South Australia - Murray Valley

High security	100%
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- NSW : <http://www.water.nsw.gov.au/water-management/water-availability>
- VIC : <http://nvrn.net.au/seasonal-determinations/current>
- SA : <http://www.environment.sa.gov.au/managing-natural-resources/river-murray>

MEDIA RELEASE



23 December 2016

River Murray system steady into the new year

Communities throughout the River Murray system will have noticed a progressive return to regulated conditions during December.

The Murray–Darling Basin Authority’s head of River Management, David Dreverman, said the peak of the flood from rainfall in September and October was currently passing Lock 2 and was expected to reach the Murray Mouth by the end of December.

“The volume of water now stored in Hume Dam, Lake Victoria and Menindee Lakes will provide for a substantial portion of this year’s demands. The significant volume stored in Dartmouth Dam, now at 78% capacity, is enough to provide for drought contingency water through 2017-18,” Mr Dreverman said.

“These healthy storage levels mean local economies can move into the coming year with a good degree of water security for irrigation and the environment, and the confidence to plan ahead.

“Over summer, flows entering the Murray from the Menindee Lakes and the Goulburn and Murrumbidgee valleys will assist in meeting the demand for water downstream of the Barmah Choke.

“We expect to increase orders from Menindee Lakes in early January in accordance with the water sharing rules, which will continue as needed until the end of the irrigation season unless the lakes reach 480GL, which is about 28% capacity.

“On the River Murray below Yarrawonga, flows over summer are expected to drop back to more moderate levels, in the vicinity of 8000 megalitres per day (ML/day).

“This means flows downstream of Yarrawonga will be lower than in the past few summers, when they were mostly around channel capacity at 10,000 ML/day. River heights this year at Tocumwal will be around 1.90 metres (compared to 2.25 metres at 10,000 ML/day) and around 2.30 metres (compared to 2.6 metres) at Barmah.”

Mr Dreverman said the rate of flow would depend on system conditions and demands.

“The temporary decline in water quality due to floodwater coming off the Murray floodplain is now easing as water on the floodplain drains back to the river channel and a higher proportion of flows are of good quality water. Significant improvements in dissolved oxygen levels are now being experienced upstream of the South Australian border and will continue to improve downstream over the coming weeks.”

ENDS

For more information, contact the MDBA Media office at media@mdba.gov.au or 02 6279 0141

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