



# RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 9 NOVEMBER 2016

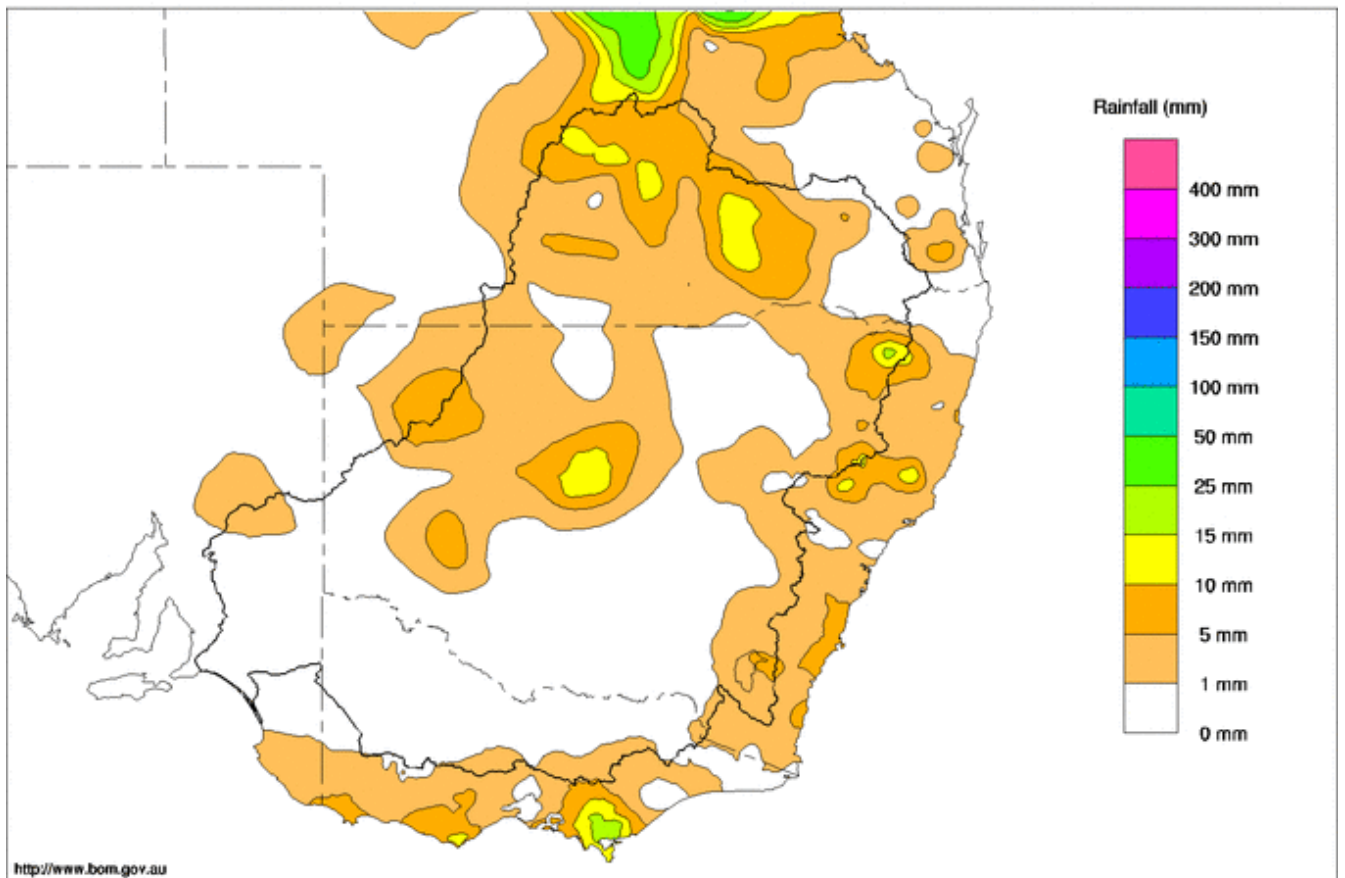
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## Rainfall and inflows

Rainfall across the Murray-Darling Basin was patchy and generally light this week (map 1). Emmaville in the Northern Tablelands of New South Wales recorded this weeks' highest total of 23 mm.

Murray-Darling Rainfall Totals (mm) Week Ending 9th November 2016

Australian Bureau of Meteorology



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Map 1 - Murray-Darling Basin rainfall week ending 9th November 2016 (Source: Bureau of Meteorology)

Tributaries in the upper Murray continued to recede this week. The flow in the Mitta Mitta River at Hinnomunjie has reduced from 2,000 ML/day to 1,260 ML/day, while the upper Murray at Biggara has decreased from 2,400 ML/day to 1,650 ML/day. On the Ovens River, the flow at Wangaratta fell from 6,100 ML/day to 4,250 ML/day.

Moderate rainfall is forecast across the upper Murray catchment this weekend. If the forecast rainfall eventuates, some stream rises could be expected, though these are likely to be short-lived without follow up rain.



## River operations

- Widespread 'blackwater' event continues.
- Hume dam effectively full.
- Murray peak currently near Euston.

Reaches of the River Murray system between Barmah-Millewa Forest and into South Australia are continuing to experience hypoxic '[blackwater](#)'. Blackwater occurs naturally when there is rapid breakdown of leaf litter from inundated areas. Breakdown of leaf litter is an important ecological process which provides nutrients for the growth of aquatic organisms. However, as is currently occurring now, particularly in the Edward-Wakool system and downstream of Wakool Junction, this process can result in very low levels of dissolved oxygen resulting in fish deaths. The MDBA, together with New South Wales and Victorian agencies, will continue to monitor dissolved oxygen levels.

MDBA total storage increased by 192 GL this week, with the active storage now 6,807 GL (79% capacity).

**Dartmouth Reservoir** increased by 23 GL this week to 2,913 GL (76%). Releases remain at the minimum of 200 ML/day at Colemans gauge.

At **Hume Reservoir**, flood operations have continued throughout the week. The storage rose by 12 GL to 2,984 GL (99%). The storage was slowly increased during the week to maximise water availability prior to downstream demands exceeding inflows to the storage. Releases were reduced to 10,500 ML/day, however forecast rainfall over the Hume catchment has resulted in releases being increased to 12,000 ML/day to maintain some airspace to mitigate possible further inflows. Releases may be increased further over the next few days.

Whilst longer range forecasts currently favour warmer and drier conditions, the risk of renewed flooding remains. MDBA continues to carefully watch BoM forecasts for any potential future flooding and communities and landholders should also keep up with the latest BoM [Flood Watches and Warnings](#). Further information on MDBA's approach to [flood management](#) at Hume Dam is available on the MDBA website.

At **Yarrowonga Weir**, the release continues to be gradually reduced and is now 18,500 ML/day. The pool level at Yarrowonga Weir was gradually raised to the Full Supply Level (FSL) of 124.9 m AHD to maximise water availability prior to the conclusion of flood operations at Hume Dam. However, given the weekend weather forecast the weir pool is being returned to a level closer to 124.8 m AHD.

Diversions to the major irrigation offtakes have increased over the past week. Diversion to Yarrowonga Main Channel averaged 1,400 ML/day, whilst diversion to Mulwala Canal averaged 4,500 ML/day. Of this about 1,000 ML/day is being delivered back into the Edward River downstream of Millewa Forest in an effort to [create refuges for native fish](#) from blackwater. The costs of using the Murray Irrigation infrastructure are being met by environmental water holders.

Flows continue to gradually recede at the Edward River and Gulpa Creek offtakes, with the combined flow now around 3,400 ML/day. The volume of water exiting Millewa Forest into the **Edward River** is decreasing, with the flow at Toonalook falling from 17,000 ML/day to 11,100 ML/day this week. On the **Wakool River** Stoney Crossing peaked on 3 November at 9.26 m local gauge height, the highest peak since 1993 when the river reached 9.47 m. All creeks and rivers in the Edward-Wakool system are now receding. For flood forecasts on the Edward-Wakool system, see the latest [Flood Warnings](#) issued by the Bureau of Meteorology.

Inflows to the Murray from the **Goulburn River** have now receded to 1,650 ML/day and from the **Campaspe River** to around 150 ML/day.

At **Torrumbarry Weir**, the flow has decreased this week from 39,000 ML/day to 27,500 ML/day. The gates on Torrumbarry Weir, which were fully raised during the recent high flow event, are now being reinstated to gradually return the weir pool level to near FSL. Diversions to National Channel increased this week from 1,700 ML/day to 2,000 ML/day in order to meet irrigation demand and environmental water orders in Gunbower Creek.



Downstream at **Swan Hill**, the flow is 23,900 ML/day and gradually falling. Further downstream at **Wakool junction**, high inflows from the Wakool River resulted in a peak of 116,600 ML/day (11.01 m local gauge height) on the 4<sup>th</sup> of November – the highest since 1993 (11.46 m).

On the lower **Murrumbidgee River**, the flow at Balranald has risen to 28,600 ML/day and is close to a peak. For more information, see the latest [Flood Warning](#) from the Bureau of Meteorology.

Downstream at **Euston Weir**, the flow has increased to around 120,000 ML/day and is continuing to rise. A peak is expected in the coming days. Downstream at Mildura, the flow continues to rise (see Photo 1) and is near 83,000 ML/day. For more information, see the latest [Flood Warning](#) from the Bureau of Meteorology.



Photo 1 – A rising Murray at Bottle Bend, downstream of Mildura. Source: Adam McLean, MDBA.

At **Menindee Lakes**, the storage volume has increased by 122 GL to 964 GL (56% capacity). In the Darling River upstream of the storage, the peak is now downstream of **Louth** which is currently near 34,000 ML/day. The release from Menindee Lakes, measured at **Weir 32**, remains steady at 700 ML/day.

At **Wentworth Weir**, just below the junction of the Murray and Darling Rivers, the flow is currently about 70,000 ML/day (see Photo 2) and is expected to continue rising over the next week at least, see the latest [Flood Warning](#) from the Bureau of Meteorology.



Photo 2 – Looking upstream from just below Lock 10. Source: Adam McLean, MDBA.

At **Lake Victoria**, the storage volume increased by 35 GL this week to 620 GL (92% capacity). Lake Victoria is planned to be gradually filled over coming weeks to its full supply volume by late November. Releases of relatively oxygenated water from Lake Victoria have been increased to provide further refuge for fish from the spreading hypoxic blackwater event.

The flow to **South Australia** averaged 54,900 ML/day over the past week. The peak flow to South Australia is currently forecast to arrive in late November to early December, see [DEWNR's latest high flow advice](#).

At the **Lower Lakes**, barrage releases have averaged over 40,000 ML/day this week with the current 5-day average level in Lake Alexandrina 0.80 m AHD. Recent barrage releases have scoured a modest amount of sand, sufficient to improve connectivity of the Murray Mouth in the short term. Larger flows through November and into December are expected to scour larger volumes of sand.

**For media inquiries contact the Media Officer on 02 6279 0141**

DAVID DREVERMAN  
Executive Director, River Management



**Water in Storage**

**Week ending Wednesday 09 Nov 2016**

MDBA Storages	Full Supply Level	Full Supply Volume (GL)	Current Storage Level	Current Storage		Dead Storage (GL)	Active Storage (GL)	Change in Total Storage for the Week (GL)
	(m AHD)		(m AHD)	(GL)	%			
Dartmouth Reservoir	486.00	3 856	470.37	2 913	76%	71	2 842	+23
Hume Reservoir	192.00	3 005	191.89	2 984	99%	23	2 961	+12
Lake Victoria	27.00	677	26.53	620	92%	100	520	+35
Menindee Lakes		1 731*		964	56%	(480 #)	484	+122
<b>Total</b>		<b>9 269</b>		<b>7 481</b>	<b>81%</b>	<b>--</b>	<b>6 807</b>	<b>+192</b>
Total Active MDBA Storage							79% ^	

**Major State Storages**

Burrinjuck Reservoir	1 026	991	97%	3	988	-20
Blowering Reservoir	1 631	1 557	95%	24	1 533	-9
Eildon Reservoir	3 334	2 632	79%	100	2 532	+18

\* 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 08 Nov 2016

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2016
Lake Eucumbene - Total	2 263	-34	Snowy-Murray	+27	681
Snowy-Murray Component	992	-8	Tooma-Tumut	+2	287
Target Storage	1 450		Net Diversion	25	394
			Murray 1 Release	+31	1 024

**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)	30.0	154	Yarrawonga Main Channel (net)	9.2	23
Wakool Sys Allowance	0.0	0	Torrumbarry System + Nyah (net)	6.8	70
Western Murray Irrigation	0.7	3	Sunraysia Pumped Districts	3.3	13
Licensed Pumps	5.2	33	Licensed pumps - GMW (Nyah+u/s)	0.6	3
Lower Darling	0.1	2	Licensed pumps - LMW	8.4	71
<b>TOTAL</b>	<b>36.0</b>	<b>192</b>	<b>TOTAL</b>	<b>28.3</b>	<b>180</b>

\* 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	180.0 *	
Flow this week	384.3	(54 900 ML/day)
Flow so far this month	487.1	
Flow last month	1,366.3	

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

	Current	Average over the last week	Average since 1 August 2016
Swan Hill	140	170	160
Euston	-	-	-
Red Cliffs	180	170	150
Merbein	180	170	140
Burtundy (Darling)	260	280	850
Lock 9	170	170	140
Lake Victoria	210	190	160
Berri	190	180	170
Waikerie	200	190	200
Morgan	200	190	200
Mannum	200	210	210
Murray Bridge	220	220	230
Milang (Lake Alex.)	410	410	660
Poltalloch (Lake Alex.)	280	280	320
Meningie (Lake Alb.)	1 740	1 740	1 760
Goolwa Barrages	710	700	1 090



**River Levels and Flows**

**Week ending Wednesday 09 Nov 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	-	-	-	4 350	F	5 520	9 580
Jingellic	4.0	2.21	208.73	8 860	R	11 590	16 430
Tallandoon ( Mitta Mitta River )	4.2	1.83	218.72	1 720	F	1 890	2 620
Heywoods	5.5	2.59	156.22	10 860	F	13 480	21 030
Doctors Point	5.5	2.97	151.44	14 710	F	18 020	26 040
Albury	4.3	1.98	149.42	-	-	-	-
Corowa	4.6	3.41	129.43	17 230	F	21 140	28 780
Yarrowonga Weir (d/s)	6.4	2.52	117.56	17 370	F	22 330	34 710
Tocumwal	6.4	3.54	107.38	21 460	F	27 800	42 080
Torrumbarry Weir (d/s)	7.3	6.33	84.88	27 600	F	31 440	44 220
Swan Hill	4.5	3.86	66.78	23 860	F	24 520	26 330
Wakool Junction	8.8	10.84	59.96	107 330	F	113 510	103 280
Euston Weir (d/s)	9.1	8.76	50.60	119 820	R	103 680	77 640
Mildura Weir (d/s)	-	-	-	82 910	F	73 410	59 450
Wentworth Weir (d/s)	7.3	6.78	31.54	71 830	R	67 300	58 600
Rufus Junction	-	7.20	24.13	57 890	R	54 900	49 590
Blanchetown (Lock 1 d/s)	-	2.87	-	43 000	R	42 440	43 340
<b>Tributaries</b>							
Kiewa at Bandiana	2.8	2.46	155.69	2 840	R	2 800	3 950
Ovens at Wangaratta	11.9	9.27	146.95	4 150	F	4 830	7 050
Goulburn at McCoys Bridge	9.0	1.90	93.32	1 650	F	2 150	6 140
Edward at Stevens Weir (d/s)	5.5	5.32	85.10	11 230	F	13 680	19 400
Edward at Liewah	-	6.84	62.22	14 800	F	15 750	15 930
Wakool at Stoney Crossing	-	8.68	62.17	54 900	F	61 510	61 540
Murrumbidgee at Balranald	5.0	6.91	62.87	28 620	R	27 030	19 910
Barwon at Mungindi	6.1	3.72	-	1 770	F	2 480	1 920
Darling at Bourke	9.0	9.44	-	29 960	F	34 910	38 900
Darling at Burtundy Rocks	-	0.95	-	800	R	800	870

Natural Inflow to Hume	15 300	21 840
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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	-0.00	-	No. 7 Rufus River	22.10	+2.20	-
No. 26 Torrumbarry	86.05	-0.07	-	No. 6 Murtho	19.25	+0.06	+2.90
No. 15 Euston	47.60	+3.07	-	No. 5 Renmark	16.30	+0.03	+2.54
No. 11 Mildura	34.40	+0.65	+4.25	No. 4 Bookpurnong	13.20	+0.50	+3.84
No. 10 Wentworth	30.80	+0.90	+4.14	No. 3 Overland Corner	9.80	-0.01	+3.00
No. 9 Kulnine	27.40	-	+3.20	No. 2 Waikerie	6.10	+0.30	+3.11
No. 8 Wangumma	24.60	+1.38	+3.81	No. 1 Blanchetown	3.20	-0.07	+2.12

**Lower Lakes** FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.80
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**Barrages**

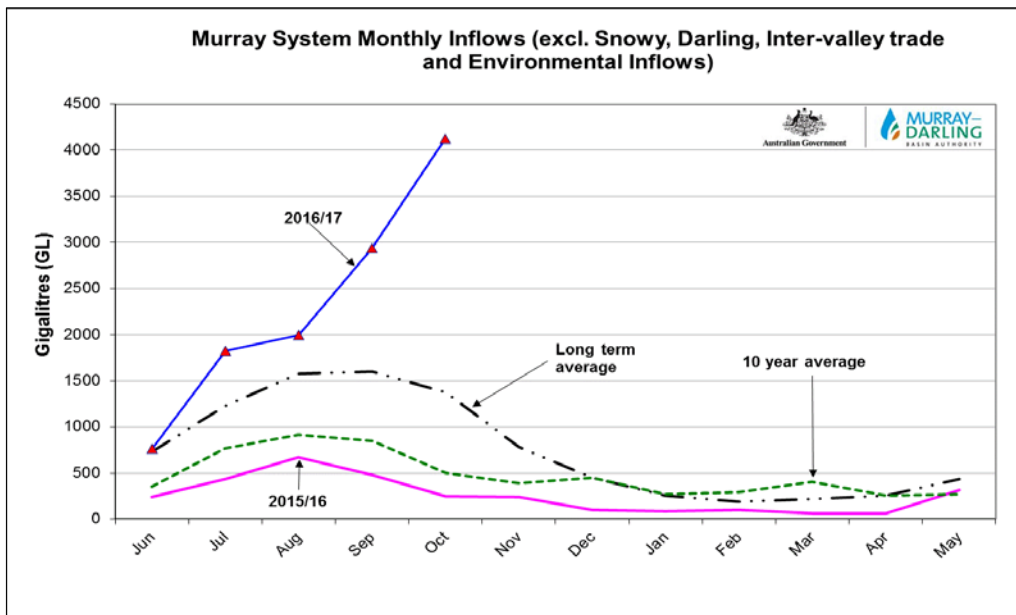
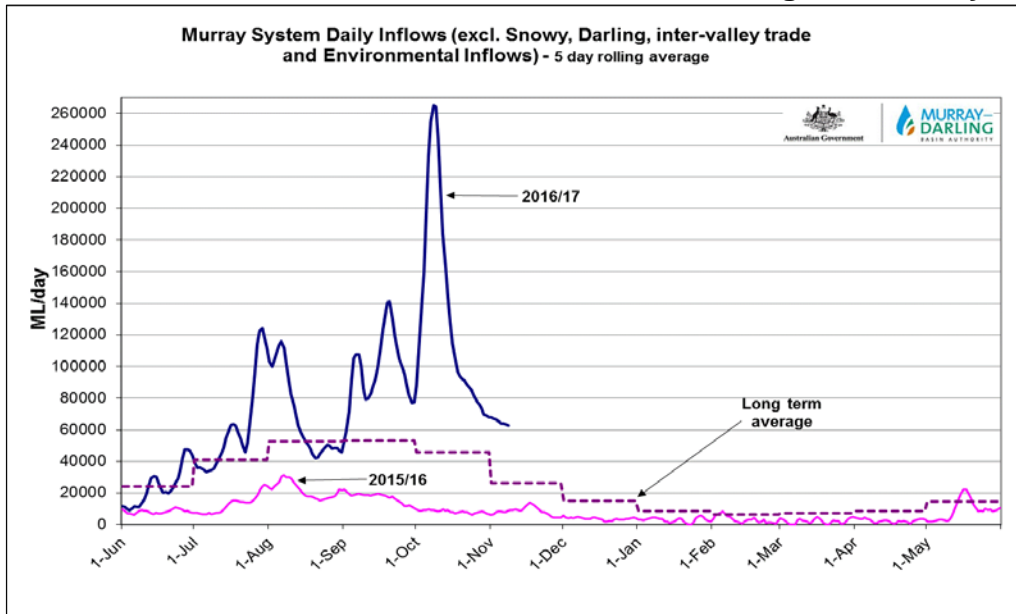
**Fishways at Barrages**

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.76	30	-	Open	Open	-
Mundoo	26 openings	0.75	6	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	57	-	-	-	Open
Tauwichee	322 gates	0.80	182	Open	Open	Open	-

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



Week ending Wednesday 09 Nov 2016



State Allocations (as at 09 Nov 2016)

NSW - Murray Valley

High security	97%
General security	72%

Victorian - Murray Valley

High reliability	100%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	76%

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>