



# RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 17<sup>TH</sup> AUGUST 2016

Trim Ref: D16/27298

## Rainfall and inflows

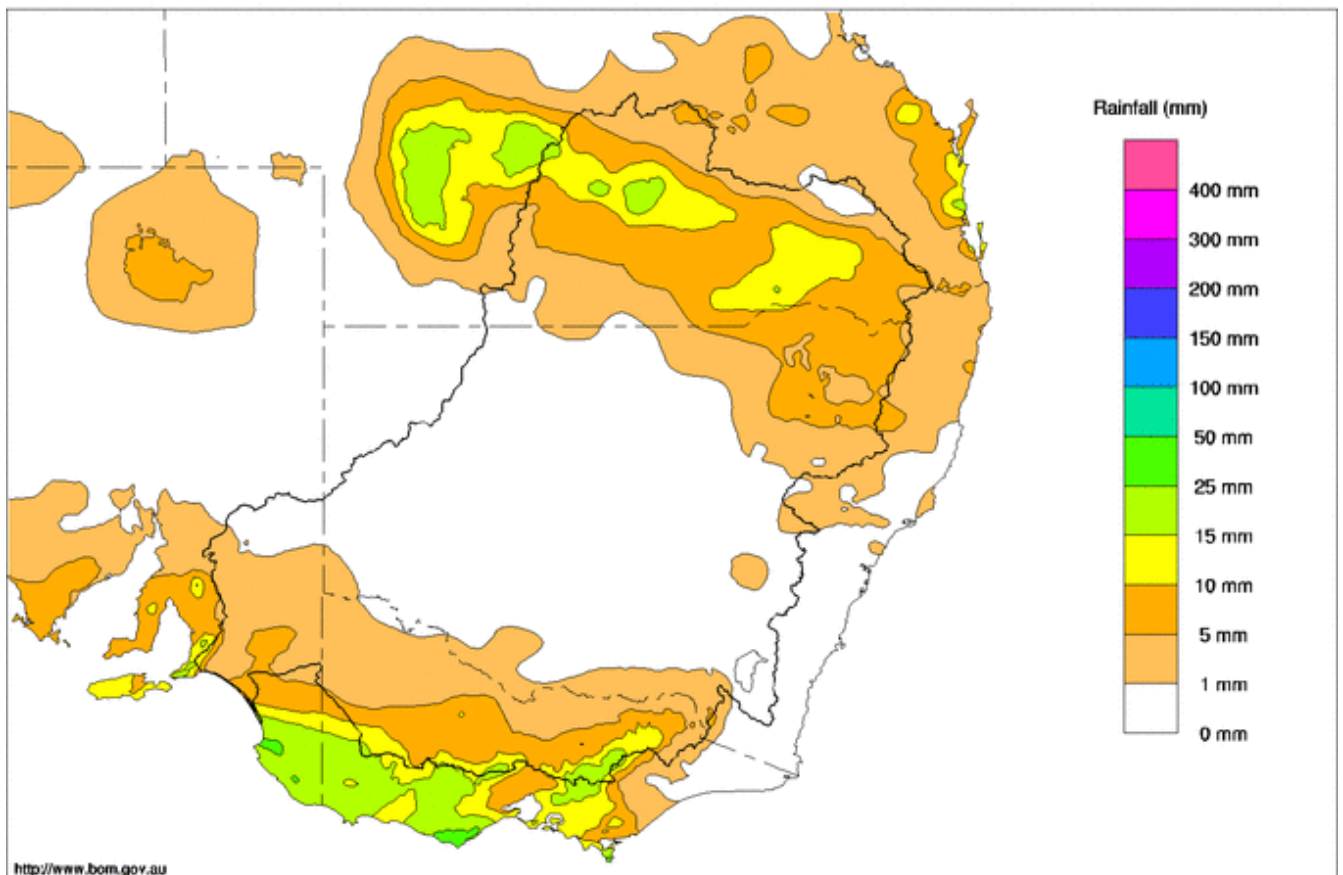
Last week, a trough moving across the north of the Basin produced showers and thunderstorms with light to moderate rainfall in southern Queensland and northeast New South Wales.

High pressure cells have dominated over southern Australia, restricting the passage of cold fronts to southern coastlines. Light to moderate falls were recorded in southeast South Australia, Victoria and southern New South Wales.

Rainfall totals between 10 mm and 50 mm were recorded in South Australia's southeast, much of the southern and alpine regions in Victoria and in southeast Queensland.

Over the coming 8 days the Bureau of Meteorology is forecasting over 15mm for much of the basin with some regions forecast to receive over 50 mm.

Murray-Darling Rainfall Totals (mm) Week Ending 17th August 2016  
Australian Bureau of Meteorology



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Issued: 17/08/2016

Map 1 - Murray-Darling Basin rainfall week ending 17th August 2016 (Source: Bureau of Meteorology (BoM))

Stream flows in the upper Murray tributaries have continued to recede given there was little rainfall over the last week. The flow in the Mitta Mitta River at Hinnomunjie has reduced to 1,400 ML/day whilst the upper Murray at Biggara has decreased to 1,700 ML/day. On the Ovens River, the flow at Wangaratta fell from 12,300 ML/day to 7,500 ML/day.



Whilst inflows have receded over the last week the upper catchments are still very wet and further rainfall could see rises in the tributaries. There has been a significant turnaround in River Murray system inflows in the last four months. Inflows were the in the lowest 2% of historical records (98% “annual exceedance probability or AEP”) for the month of April but have since risen to be in the wettest 18% of July records (18% AEP) see Figure 1.

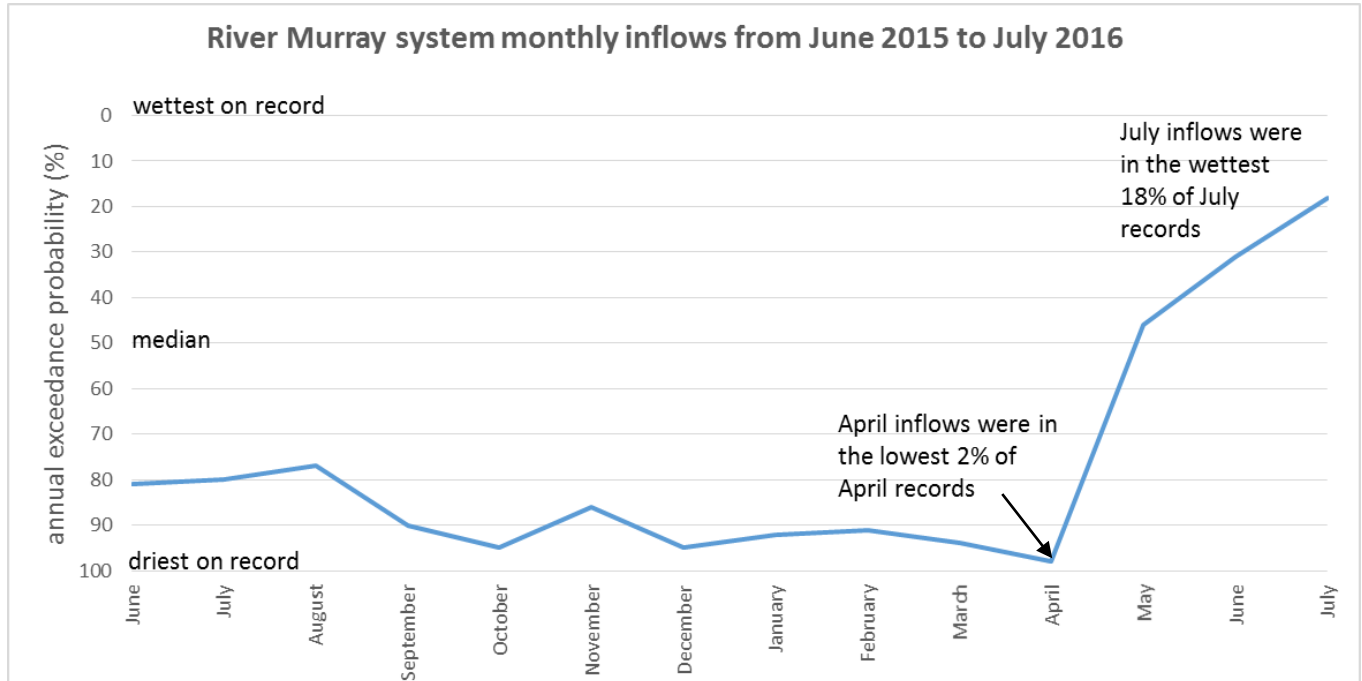


Figure 1 –The dramatic turnaround in River Murray system monthly inflows over the last 14 months.

The MDBA active storage has risen quickly over the last few months from 3,200 GL at the beginning of July to almost 5,000 GL at present. This is around 1,000 GL below the long term average active storage for this time of year, see Figure 2.

The rise in storage levels has resulted in an increase in water allocations announced by the States, see page 11. These are welcome increases given the irrigation season for major regions typically starts the 15th of August. The allocation increases will also assist environmental water holders as they use water over winter and spring. Even if Hume reservoir fills in coming weeks, the water in storage able to be allocated by NSW and Victoria will be constrained until significant further inflows are captured in Menindee Lakes and Dartmouth Reservoir. However, in the coming weeks and months, any water demands which are met from tributary inflows downstream of Hume Dam will reduce the reliance on water held in storage and may thereby allow NSW and Victoria to further increase allocations.

Unregulated flows (that is those flows unable to be captured in Lake Victoria) are currently available in the Murray and Edward River systems downstream of Hume Reservoir. Forecast rain may permit an extension of unregulated flows in the upper reaches of the Murray. The unregulated flows are providing extra opportunities for environmental watering along the Murray. Environmental managers and system operators are working closely to achieve the best possible overall environmental outcomes from the Barmah-Millewa Forest to the Coorong.

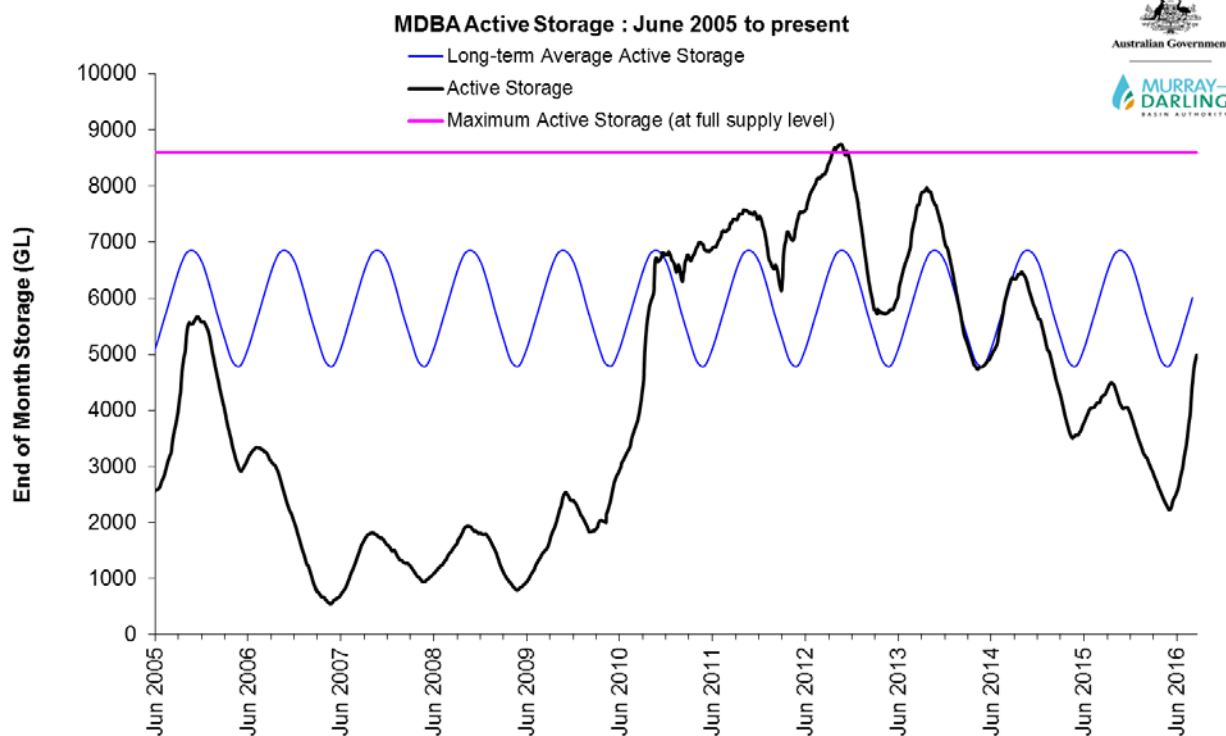


Figure 2 – MDBA active storage from June 2005 until present

## River operations

- Unregulated flows continue in the Murray
- Small environmental releases made from Hume for Barmah-Millewa forest
- Updated live river data website

MDBA total storage increased by 133 GL this week, with the active storage now 4,988 GL (58% capacity).

At **Dartmouth Reservoir**, the storage volume increased by 20 GL to 2,150 GL (56% capacity). The release from Dartmouth is currently 1,200 ML/day due to the release of AGL entitlement water for hydroelectricity generation.

At **Hume Reservoir**, the storage volume increased by 129 GL to 2,475 GL (82% capacity). As storage levels rise over the coming weeks MDBA may soon commence ‘airspace management’ releases aimed at providing a measure of flood protection, balanced against ensuring Hume fills prior to demand emerging and maximising water availability.

MDBA is operating Hume Dam in accordance with arrangements agreed by the joint governments of the Commonwealth, New South Wales, Victoria and South Australia. These are outlined within a set of [Objectives and Outcomes for river operations in the River Murray System](#) and state that the order of priority for dam operations is:

- *Firstly, protect the security of assets (e.g. Hume Dam);*
- *Secondly, to maximise the available water at the end of the relevant flooding episode;*
- *Thirdly, subject to the foregoing items, limit flood damage to downstream communities and increase benefits to the environment and public amenity.*

Given recent inflows and rainfall predictions, it is *likely* that Hume Reservoir will fill. However it is not yet *assured* that the dam will fill and historical records show that conditions can quickly turn dry. **The primary role of Hume Dam is water conservation.**

In recent weeks, by capturing significant inflow events, Hume Dam has provided considerable flood protection to communities downstream. However, as the storage approaches its full supply level (3,005



GL), the dam will have reduced capacity to mitigate flood events. Further details about flood management at Hume Dam are available on the [MDBA website](#). Regular updates on Hume storage levels and releases will be provided in future weekly reports, however communities are reminded that all [Flood Watches and Warnings](#) are issued by the Bureau of Meteorology.

Environmental releases from Hume Dam commenced on Tuesday, and are currently 2,000 ML/day. These releases are supplementing the receding inflows from the Kiewa and Ovens rivers to target a maximum river level of 3.0 m at Tocumwal or roughly 15,000 ML/day downstream of Yarrowonga. Whilst flows along the Murray have been high over the last month, they would naturally have been much higher without storages to capture these inflows, see Figure 3. Environmental releases for Barmah-Millewa forest are augmenting regulated flows to restore 'gaps' in the hydrograph resulting from stored inflows. Targeting a river level of 3.0 m at Tocumwal downstream of Barmah-Millewa forest is aimed at maintaining low level inundation of the forest. Subject to consultation with affected landholders, the target may subsequently be increased to a maximum level of 3.3 m at Tocumwal (~18,000 ML/day). The release of environmental water from Hume Dam will be ceased if the rain forecast, or observed, risks flows rising above the target.

### Flow downstream of Yarrowonga: 2016-2017

Actual flow in River Murray downstream of Yarrowonga vs approximate natural

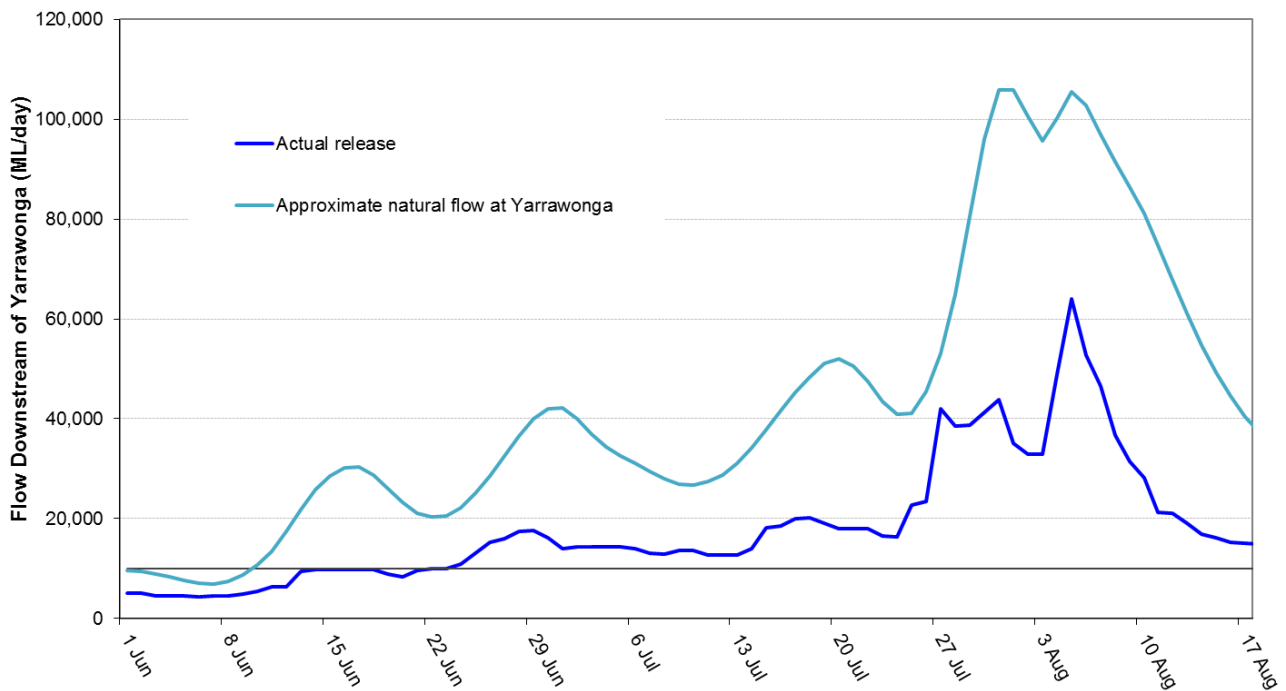


Figure 3- Flow downstream of Yarrowonga and approximate natural flow.

Flows downstream of Yarrowonga Weir have attenuated significantly through Barmah and Millewa forests with flows of 19,900 ML/day at Barmah and 10,200 ML/day at Toonalook respectively.

On the **Edward River**, the flow through the Edward Offtake, 2,050 ML/day, and the Gulpa Offtake, 750 ML/day, have contributed to the Toonalook flow.

At **Stevens Weir**, the gates have been raised and a peak flow of 10,500 ML/day passed on Monday with flows currently 9,900 ML/day. On to the **Wakool River**, small returns from the natural flooding of the Koondrook-Perricoota Forest are expected to enter the Wakool River over the coming week through Thule and Barbers Creeks. At Kyalite the flow is currently 8,000 ML/day and rising as the returns through Millewa forest make their way through the Edward-Wakool system.

Inflows to the Murray from the **Goulburn River** receded this week to 6,500 ML/day at McCoys Bridge. On the Murray at **Torrumbarry Weir**, the downstream flow peaked at 32,200 ML/day last Thursday and is currently 28,000 ML/day. **Gunbower** and **Koondrook-Perricoota Forest** have been naturally



inundated since early August due to the high flows at Torrumbarry. Inundation of these sites would have been significantly higher without regulation.

Following a winter drawdown, Torrumbarry weir pool is currently 85.80 m AHD (25 cm below FSL) and will be further raised close to Full Supply Level (FSL) in the coming weeks

At Balranald on the **Murrumbidgee** River, the flow continues at 8,400 ML/day. Downstream on the Murray at **Euston**, the flow is 32,500 ML/day and the Euston weir pool is currently around 10 cm below FSL.

On the Darling River at **Menindee Lakes** the storage increased 6 GL to 160 GL (9% capacity).

Releases from Lake Wetherell into the lower Darling River commenced 29 July. Releases at Weir 32 are currently 170 ML/day and the block banks across the Darling have been removed with the flow at Burtundy currently 1,000 ML/day, see [WaterNSW media release](#). Given the high flows in the Murray at Wentworth only a minor, and short-lived, rise in salinity is expected as the flow front from the Darling passes downstream into South Australia.

On the Murray at **Lock 9** the weir pool is currently 7 cm above FSL and at **Lock 8** the weir pool target is 50 cm above FSL. The river is flowing freely through **Lock 7** as the stop logs have been fully removed. The higher flows are resulting in the current river height being around 80 cm above FSL. The gates at the **Mullaroo** offtake regulator have been laid flat to maximise the flow into the Mullaroo Creek.

The total storage at **Lake Victoria** was reduced by 22 GL this week to 557 GL (82% capacity). MDBA has lowered Lake Victoria over the last month to minimise disturbance to Aboriginal cultural heritage material. MDBA operates in accordance with the Lake Victoria Operating Strategy (LVOS), which requires the period of time that the water level in Lake Victoria is held high to be minimised in order to limit erosion and allow for revegetation to protect important cultural heritage. The MDBA is now beginning to reduce the outflows from Lake Victoria to maintain the Lake Victoria level. The MDBA will continue to assess the upstream inflows to determine when to refill Lake Victoria.

The flow to **South Australia** averaged 28,000 ML/day this week and is expected to average a similar rate over the coming week. Whilst it is unusual, it is not unprecedented to see such unregulated flows at a time when water allocations remain low.

At **Chowilla**, a range of environmental watering actions are being considered. Operations to further test the Chowilla regulator and ancillary structures commenced Wednesday 10 August, see photo 1. Testing involves raising water levels behind the Chowilla regulator. The event will target an initial Chowilla regulator height of up to 19.4 m AHD (3.1 m above normal pool level) and if flow conditions increase, then the target height could be increased to around 19.75 m AHD. Engineering checks and monitoring of creek and floodplain conditions will be undertaken throughout the event to ensure the regulator and ancillary structures are operating as designed. **Lock 6** will be progressively raised by up to 62 cm to ensure flow through the Chowilla anabranch is maintained. This raising of the Lock 6 water level is important for the management of water quality and protection of important habitat for native fish.

Downstream at the **Lower Lakes**, flows through the barrages have remained high this week. Releases are being made to help improve water quality in Lake Albert and the Coorong, and to assist in scouring sand from the Murray Mouth. The 5-day average water level in Lake Alexandrina has remained relatively steady this week at around 0.72 m AHD.

Reducing the water level in Lake Alexandrina enables the higher salinity water of Lake Albert to drain out. Once Lake Alexandrina is raised again fresher water can then flow back into Lake Albert. The current lake level cycling operation has been made possible by favourable tidal and weather conditions combined with the assurance of high unregulated flows passing over the SA border which will enable the Lower Lakes to be raised again in the future. Salinity levels at Lake Albert have already decreased significantly in recent months, down from an average of around 2,250 EC ( $\mu\text{S}/\text{cm}$ ) in April 2016 to current levels of around 1,700 EC ( $\mu\text{S}/\text{cm}$ ). It is anticipated that there will be further reductions in Lake Albert salinity levels as a result of current operations.

The MDBA has refreshed its **Live River Data** site based on feedback from users. We now have three different views: system view, list view and map view. We encourage you to visit the help page to find



more information about the features of the new site, see <http://livedata.mdba.gov.au/help>. See the latest river information by visiting [livedata.mdba.gov.au](http://livedata.mdba.gov.au)



**Photo 1 – Flow downstream of pipeclay weir (source SA Water).**

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

**ANDREW REYNOLDS**  
Acting Executive Director, River Management



**Water in Storage**

**Week ending Wednesday 17 Aug 2016**

MDBA Storages	Full Supply Level	Full Supply Volume (GL)	Current Storage Level (m AHD)	Current Storage		Dead Storage (GL)	Active Storage (GL)	Change in Total Storage for the Week (GL)
	(m AHD)			(GL)	%			
Dartmouth Reservoir	486.00	3 856	455.29	2 150	56%	71	2 079	+20
Hume Reservoir	192.00	3 005	189.21	2 475	82%	23	2 452	+129
Lake Victoria	27.00	677	25.99	557	82%	100	457	-22
Menindee Lakes		1 731*		160	9%	(- -) #	0	+6
<b>Total</b>		<b>9 269</b>		<b>5 342</b>	<b>58%</b>	<b>--</b>	<b>4 988</b>	<b>+133</b>
Total Active MDBA Storage							59% ^	

**Major State Storages**

Burrinjuck Reservoir	1 026	900	88%	3	897	+1
Blowering Reservoir	1 631	1 279	78%	24	1 255	+24
Eildon Reservoir	3 334	1 758	53%	100	1 658	+44

\* 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 16 Aug 2016

Storage	Active Storage (GL)	Weekly Change (GL)	Diversions (GL)	This Week	From 1 May 2016
Lake Eucumbene - Total	1 674	+47	Snowy-Murray	+22	380
Snowy-Murray Component	877	-7	Tooma-Tumut	+12	142
Target Storage	1 190		Net Diversion	11	238
			Murray 1 Release	+29	532

**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)	11.8	46	Yarrowonga Main Channel (net)	0.4	1
Wakool Sys Allowance	0.0	0	Torrumbarry System + Nyah (net)	3.3	28
Western Murray Irrigation	0.1	0	Sunraysia Pumped Districts	0.4	1
Licensed Pumps	0.9	5	Licensed pumps - GMW (Nyah+u/s)	0	1
Lower Darling	0.1	1	Licensed pumps - LMW	1	7
<b>TOTAL</b>	<b>12.9</b>	<b>52</b>	<b>TOTAL</b>	<b>5.1</b>	<b>38</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 Lower than normal for this month due to SA entitlement deferral.

Entitlement this month	124.0 *
Flow this week	198.4
Flow so far this month	453.6
Flow last month	322.2

(28 300 ML/day)

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

	Current	Average over the last week	Average since 1 August 2016
Swan Hill	100	100	100
Euston	-	-	-
Red Cliffs	140	140	140
Merbein	130	130	140
Burtundy (Darling)	1 990	1 660	1 610
Lock 9	130	140	130
Lake Victoria	160	150	150
Berri	190	180	180
Waikerie	200	210	190
Morgan	210	210	190
Mannum	220	190	250
Murray Bridge	180	190	280
Milang (Lake Alex.)	840	850	830
Poltalloch (Lake Alex.)	570	430	490
Meningie (Lake Alb.)	1 880	1 810	1 720
Goolwa Barrages	1 480	3 760	2 140



**River Levels and Flows**

**Week ending Wednesday 17 Aug 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	-	-	-	6 000	F	6 120	7 030
Jingellic	4.0	2.40	208.92	10 640	F	12 550	19 740
Tallandoon ( Mitta Mitta River )	4.2	2.16	219.05	2 840	F	3 180	4 100
Heywoods	5.5	1.70	155.33	1 200	R	690	600
Doctors Point	5.5	2.05	150.52	4 540	R	4 430	7 470
Albury	4.3	1.11	148.55	-	-	-	-
Corowa	4.6	1.33	127.35	4 480	F	5 080	10 340
Yarrowonga Weir (d/s)	6.4	2.27	117.31	15 160	F	17 880	44 090
Tocumwal	6.4	3.05	106.89	16 940	F	23 080	44 780
Torrumbarry Weir (d/s)	7.3	6.40	84.95	28 290	F	30 270	25 570
Swan Hill	4.5	3.32	66.24	20 110	S	19 770	17 750
Wakool Junction	8.8	6.31	55.43	26 940	R	25 700	22 740
Euston Weir (d/s)	9.1	4.46	46.30	32 500	R	30 700	27 320
Mildura Weir (d/s)	-	-	-	30 360	F	29 230	25 540
Wentworth Weir (d/s)	7.3	4.45	29.21	28 120	R	27 290	24 260
Rufus Junction	-	5.97	22.90	29 110	R	28 340	24 930
Blanchetown (Lock 1 d/s)	-	1.83	-	26 480	R	25 640	24 180
<b>Tributaries</b>							
Kiewa at Bandiana	2.8	2.58	155.81	3 260	F	4 390	7 630
Ovens at Wangaratta	11.9	10.19	147.87	7 510	F	9 370	24 750
Goulburn at McCoys Bridge	9.0	4.17	95.59	6 450	F	8 250	14 450
Edward at Stevens Weir (d/s)	5.5	5.00	84.77	9 880	S	9 950	7 910
Edward at Liewah	-	4.19	59.57	4 710	R	4 380	3 970
Wakool at Stoney Crossing	-	2.84	56.33	3 860	R	3 190	1 990
Murrumbidgee at Balranald	5.0	5.45	61.41	8 420	S	8 400	8 360
Barwon at Mungindi	6.1	3.50	-	770	R	370	530
Darling at Bourke	9.0	4.95	-	7 340	R	6 350	4 120
Darling at Burtundy Rocks	-	1.05	-	1 120	R	350	0

Natural Inflow to Hume	17 850	33 130
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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	-0.10	-	No. 7 Rufus River	22.10	+0.84	+3.64
No. 26 Torrumbarry	86.05	-0.25	-	No. 6 Murtho	19.25	+0.06	+1.73
No. 15 Euston	47.60	-0.14	-	No. 5 Renmark	16.30	+0.18	+1.44
No. 11 Mildura	34.40	-0.01	+1.49	No. 4 Bookpurnong	13.20	+0.07	+2.49
No. 10 Wentworth	30.80	+0.02	+1.81	No. 3 Overland Corner	9.80	+0.03	+1.81
No. 9 Kulnine	27.40	+0.07	+1.40	No. 2 Waikerie	6.10	+0.32	+1.82
No. 8 Wangumma	24.60	+0.32	+2.00	No. 1 Blanchetown	3.20	-0.16	+1.08

**Lower Lakes FSL = 0.75 m AHD**

Lake Alexandrina average level for the past 5 days (m AHD)	0.72
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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	0.72	5	-	Open	Open	-
Mundoo	26 openings	0.71	1	-	-	-	Closed
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	12	-	-	-	Open
Tauwicheere	322 gates	0.72	50	Open	Open	Open	-

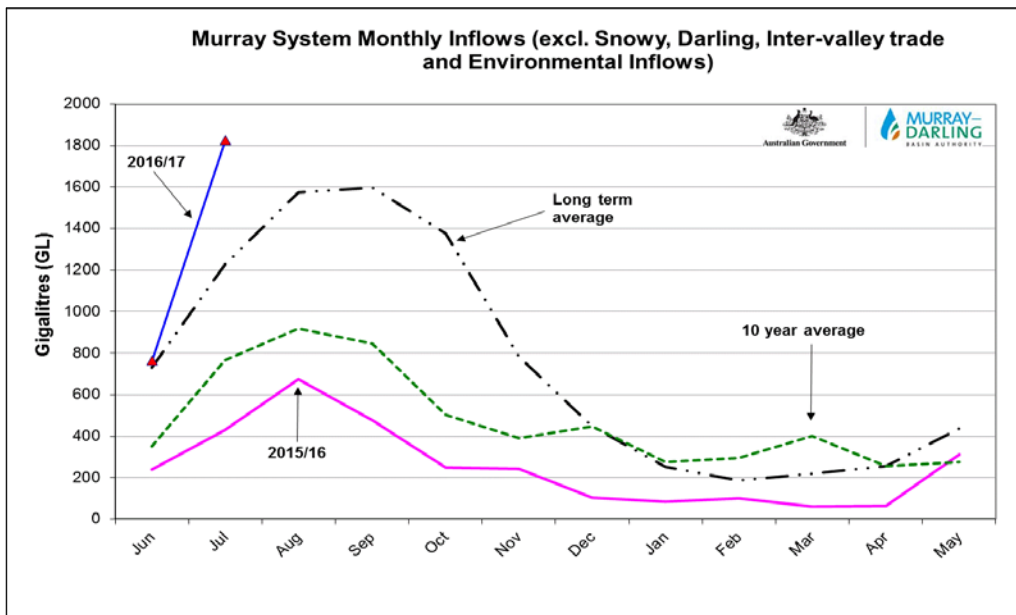
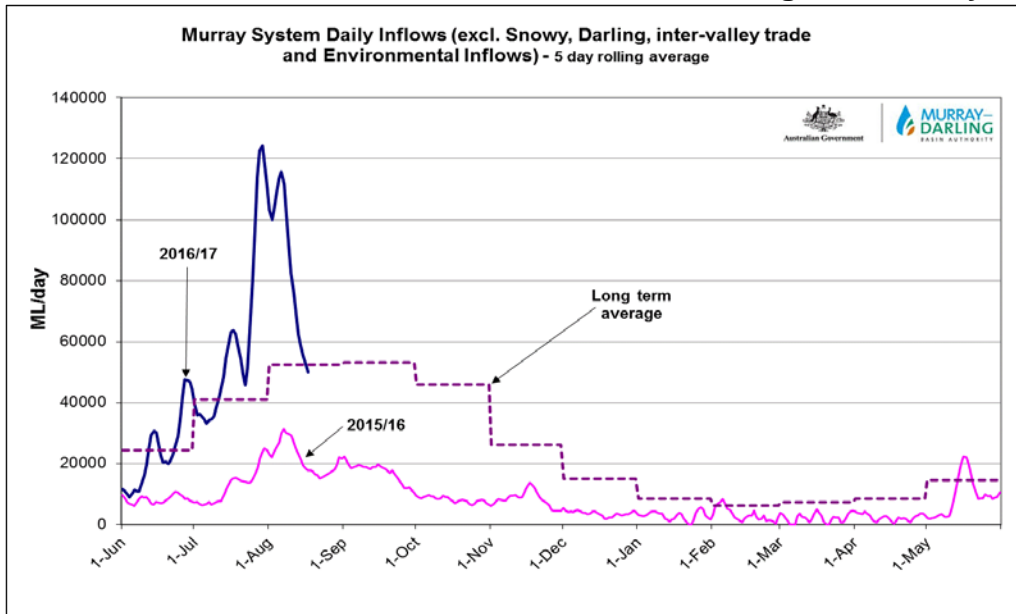
\* Mundoo Barrage Dual vertical slots are currently under construction.

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





Week ending Wednesday 17 Aug 2016



State Allocations (as at 17 Aug 2016)

NSW - Murray Valley

High security	97%
General security	25%

Victorian - Murray Valley

High reliability	51%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	50%

Victorian - Goulburn Valley

High reliability	46%
Low reliability	0%

NSW - Lower Darling

High security	40%
General security	0%

South Australia - Murray Valley

High security	100%
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NSW : <http://www.water.nsw.gov.au/Water-management/Water-availability/Water-allocations/Water-allocations-summary/water-allocations-summary/default.aspx>

VIC : <http://www.nvrn.net.au/allocations/current.aspx>

SA : <http://www.environment.sa.gov.au/managing-natural-resources/river-murray>