



# RIVER MURRAY WEEKLY REPORT

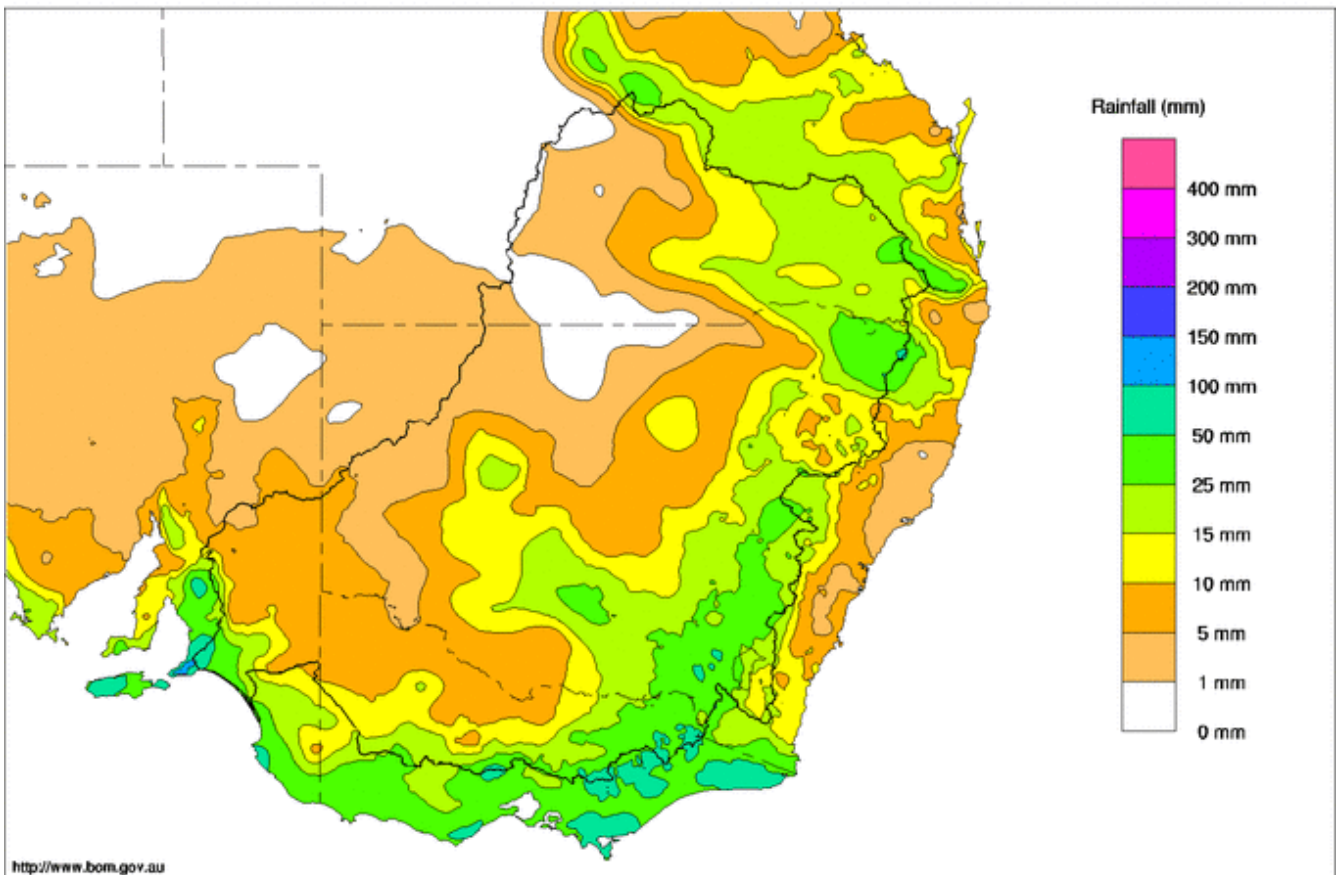
FOR THE WEEK ENDING WEDNESDAY, 6<sup>TH</sup> JULY 2016

Trim Ref: D16/23317

## Rainfall and inflows

As occurred last week, this week's highest falls were recorded along the Great Dividing Range, with reasonable falls recorded from Queensland down to Victoria, and also in areas of South Australia, see map 1. In Queensland 45 mm fell at Beardy Junction, while in New South Wales 52 mm was recorded at Deepwater and 41 mm down south at Tumbarumba. In the Victorian ranges, 105 mm fell at Omeo, while this week's highest rainfall total for the Basin was 112 mm at Mount Compass in South Australia's Mount Lofty Ranges.

Murray-Darling Rainfall Totals (mm) Week Ending 6th July 2016  
Australian Bureau of Meteorology



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Map 1 - Murray-Darling Basin rainfall week ending 6th July 2016 (Source: Bureau of Meteorology)

With much of this week's rainfall occurring late in the week, limited streamflow increases have been observed so far. Biggara on the upper Murray has hovered around 1,500 ML/day, while the Mitta Mitta River at Hinnomunjie has remained near 1,000 ML/day this week. On the Kiewa River Bandiana has averaged near 3,700 ML/day while Wangaratta on the Ovens River peaked at 10,100 ML/day over the weekend before receding to its current rate of around 8,000 ML/day.

As the Murray catchments are now relatively wet from above average rainfall in May and June, significant streamflow increases may occur if the forecast rainfall over the coming week eventuates.



## June 2016 Summary

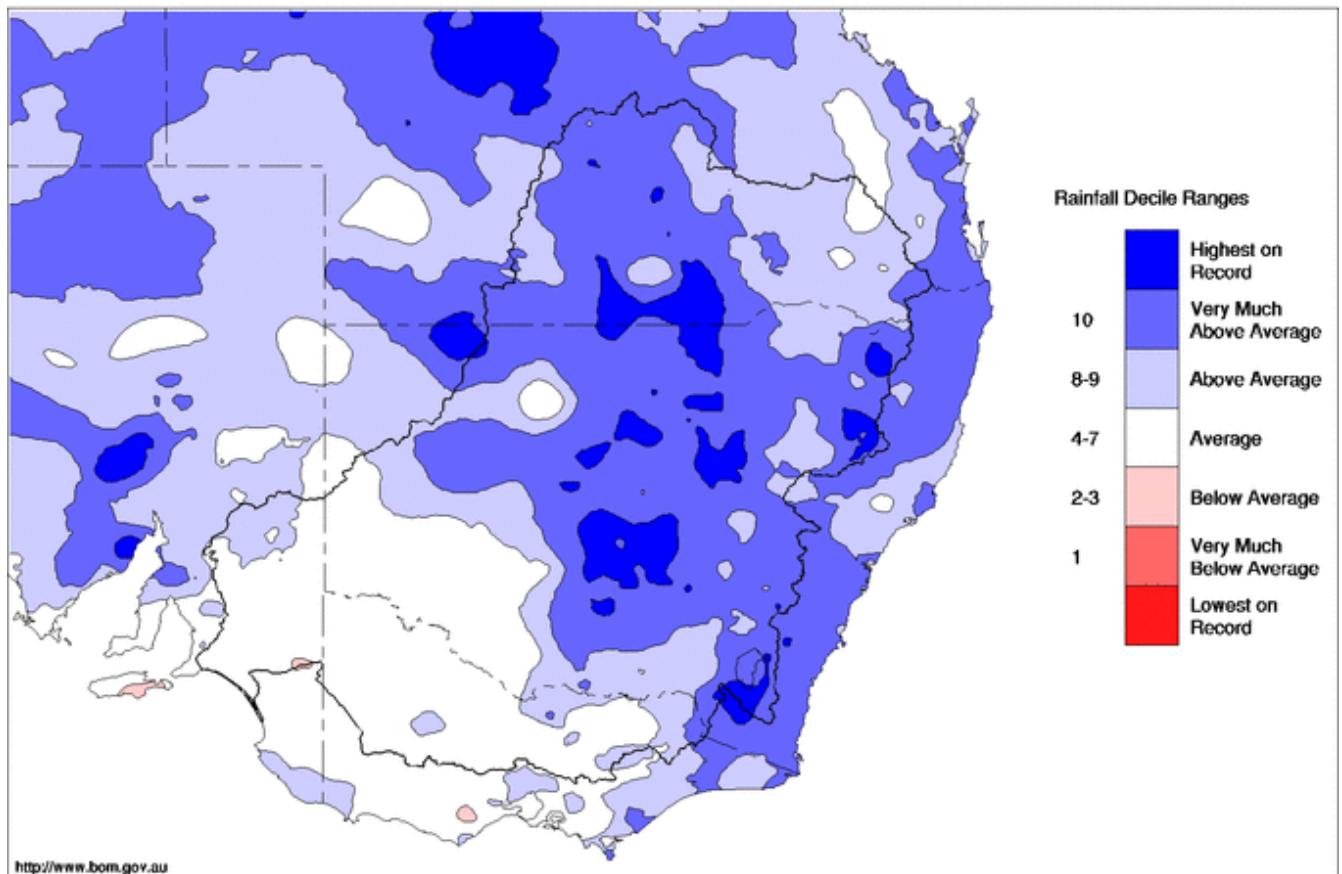
June 2016 delivered 'Above Average' to 'Highest on Record' rainfall across most of the Queensland and New South Wales area of the Murray-Darling Basin (see Map 2). The upper Murray catchments generally recorded above average falls, while the remainder of Victoria, south-west New South Wales and South Australia received near average rainfall for this time of year. Overall, the Bureau of Meteorology reported that rainfall across the Basin averaged 85.8 mm which was 156% above the long-term monthly mean, and was the 4<sup>th</sup> wettest June in 117 years of records. These conditions follow on from above average rainfall across most of the Murray-Darling Basin in May (26% above the long-term monthly mean).

As a result catchments have become more responsive over the last two months, with inflows to the River Murray System (excluding Snowy Scheme, Darling River and managed environmental inflows) for June increasing to 763 GL, marginally above the long-term average for June (see graph on page 7).

Despite the recent inflow improvements, with the upper Murray storages remaining at relatively low levels further significant and sustained rainfall will be required before storages approach capacity.

### Murray-Darling Rainfall deciles

Distribution Based on Gridded Data  
Australian Bureau of Meteorology



<http://www.bom.gov.au>

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Map 2- Murray-Darling Basin rainfall deciles for June 2016 (Source: Bureau of Meteorology)



Estimated evaporation losses from MDBA storages for June 2016 are reported in Table 1. Evaporation is estimated by multiplying the surface area of the storage by the net evaporation. Net evaporation is derived by subtracting the rainfall recorded at the storage from this calculated evaporation. Evaporative losses have continued to reduce as would be expected when moving into the cooler and shorter days of winter. As a result of rainfall exceeding evaporation during June, net evaporation at Dartmouth Reservoir, Hume Reservoir and Menindee Lakes was negative (i.e. there was a gain of water on the storage, not a loss).

**Table 1:** Monthly evaporation figures for MDBA storages

Storage	*Approximate (net) evaporative loss in June 2016 (GL)	Average storage volume in June 2016 (GL)	Percentage net evaporative loss in June 2016
Dartmouth	-4.2	1748.7	-0.2
Hume	-7.3	920.1	-0.8
Lake Victoria	2.0	372.2	0.5
Menindee Lakes	-0.1	47.9	-0.2

## River operations

- Total active storage continues to increase
- Dartmouth release increases
- Flow downstream of Yarrawonga remains above channel capacity
- Unregulated flow between Murrumbidgee Junction and the South Australian border.

This week the total MDBA storage increased by 168 GL, with the active storage now 3,350 GL or 40% capacity.

At **Dartmouth** Reservoir, the storage volume increased by 17 GL to 1,815 GL (47% capacity). The release has increased from a minimum of 200 ML/day up to 3,000 ML/day due to the release of AGL entitlement water for hydroelectricity generation.

At **Hume** Reservoir, the storage volume increased by 103 GL to 1,248 GL (42% capacity). Releases remain at minimums of 600 ML/day.

Downstream, the **Kiewa** and **Ovens** continue to provide substantial volumes into the Murray. As a result, releases from **Yarrawonga** Weir have been above the downstream channel capacity (approximately 10,000 ML/day) for almost two weeks, resulting in most regulators in the Barmah-Millewa Forest being opened. Releases from Yarrawonga have been reduced from last week’s peak of 17,600 ML/day to a current release near 13,000 ML/day, although this is expected to rise during the week as additional water from the Kiewa and Ovens catchments arrives. The current rainfall forecast indicates further significant falls over these catchments during the weekend.

On the **Edward** River system, the flow through the Edward River offtake has averaged 2,000 ML/day this week, while flow through the Gulpa Creek offtake remains steady at about 320 ML/day and is forecast to remain at this rate for the coming week. Flows downstream of Stevens Weir have risen to 2,800 ML/day and are expected to continue rising over the coming days.

On the **Goulburn** River, the flow at McCoys Bridge peaked around 3,000 ML/day and is gradually falling. Downstream at **Torrumbarry** Weir, water continues to be diverted at National Channel to maintain winter base flows in Gunbower Creek and for filling mid-Murray storages. The flow downstream of Torrumbarry is now 8,400 ML/day but is expected to begin rising above 9,000 ML/day in the coming days.

The **Murrumbidgee** River at Balranald has increased to 5,860 ML/day and is expected to continue rising this week as the early-June translucent releases from Burrinjuck Dam and increased Murrumbidgee tributary waters arrive (see Picture 1).



**Photo 1 – Jugiong Creek is one of a number of tributaries contributing to higher Murrumbidgee flows. Photo – Damian McRae, Commonwealth Environmental Water Office**

With the increasing Murrumbidgee flows combining with reasonable Murray flows, the flow at **Euston** has risen above 15,000 ML/day and is forecast to continue rising over the next week at least. The pool level at Euston is currently 20 cm above Full Supply Level (FSL).

The flow in the **Darling River** at Bourke has increased above 8,400 ML/day and is expected to peak in the next day or so. Downstream at the **Menindee Lakes** the storage volume remained steady at 47 GL (3% capacity). Inflows of at least 100 GL are expected to start reaching Menindee from about mid-July.

Further downstream at the junction of the lower Darling and Murray, flow downstream of **Wentworth Weir** has increased to near 13,400 ML/day and is forecast to continue rising over the next fortnight.

**Lock 9** has been surcharged 15 cm above FSL to increase the amount of water able to be directed through Frenchman's Creek and into **Lake Victoria**, which has increased by 49 GL this week to 481 GL (71% capacity). With inflows to Lake Victoria currently at the inlet capacity, and with a sufficient volume of surplus water remaining in the river after meeting South Australian entitlement, a period of unregulated flows has been called in the River Murray between the Murrumbidgee Junction and the South Australian border. For more information water users in this reach should refer to their local water authority.

The flow across the **South Australian** border has increased from 2,800 ML/day last week to 5,260 ML/day and is forecast to increase further this week.

Substantial rainfall over the lower lakes and in particular the eastern Mount Lofty Ranges helped boost the 5-day average **Lower Lakes** level up to 0.70 m AHD and this level is likely to rise further over the coming weeks.

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

DAVID DREVERMAN  
Executive Director, River Management  
**Water in Storage**

**Week ending Wednesday 06 Jul 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	447.65	1 815	47%	71	1 744	+17
Hume Reservoir	192.00	3 005	180.97	1 248	42%	23	1 225	+103
Lake Victoria	27.00	677	25.31	481	71%	100	381	+49
Menindee Lakes		1 731*		47	3%	(- -) #	0	-0
<b>Total</b>		<b>9 269</b>		<b>3 591</b>	<b>39%</b>	<b>--</b>	<b>3 350</b>	<b>+168</b>
Total Active MDBA Storage								40% ^

**Major State Storages**

Burrinjuck Reservoir	1 026	609	59%	3	606	+8
Blowering Reservoir	1 631	1 104	68%	24	1 080	+68
Eildon Reservoir	3 334	1 221	37%	100	1 121	+43

\* 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 05 Jul 2016

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2016
Lake Eucumbene - Total	1 375	-11	Snowy-Murray	+30	219
Snowy-Murray Component	832	-17	Tooma-Tumut	+11	76
Target Storage	1 170		Net Diversion	19	143
			Murray 1 Release	+36	296

**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)	-0.1	0	Yarrawonga Main Channel (net)	0	0
Wakool Sys Allowance	0.2	0	Torrumbarry System + Nyah (net)	5.6	5
Western Murray Irrigation	0.0	0	Sunraysia Pumped Districts	0	0
Licensed Pumps	0.7	1	Licensed pumps - GMW (Nyah+u/s)	0	0
Lower Darling	0.1	0	Licensed pumps - LMW	1.1	1
<b>TOTAL</b>	<b>0.9</b>	<b>1</b>	<b>TOTAL</b>	<b>6.7</b>	<b>6</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 may be greater than normal entitlement for this month due to the delivery of unregulated flows and additional environmental water.

Entitlement this month	108.5 *
Flow this week	26.6
Flow so far this month	23.6
Flow last month	85.2

(3 800 ML/day)

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

	Current	Average over the last week	Average since 1 August 2015
Swan Hill	70	60	70
Euston	120	110	100
Red Cliffs	110	110	120
Merbein	100	100	120
Burtundy (Darling)	1 600	1 600	1 330
Lock 9	110	120	120
Lake Victoria	180	180	200
Berri	270	290	220
Waikerie	380	370	280
Morgan	380	370	270
Mannum	320	310	310
Murray Bridge	340	330	330
Milang (Lake Alex.)	820	830	810
Poltalloch (Lake Alex.)	750	700	680
Meningie (Lake Alb.)	1 550	1 690	2 090
Goolwa Barrages	7 120	7 190	2 270



**River Levels and Flows**

**Week ending Wednesday 06 Jul 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	-	-	-	9 190	F	6 170	9 540
Jingellic	4.0	2.63	209.15	12 990	R	11 070	16 700
Tallandoon ( Mitta Mitta River )	4.2	1.86	218.75	1 750	R	1 570	1 840
Heywoods	5.5	1.42	155.05	600	S	600	600
Doctors Point	5.5	1.93	150.40	3 700	R	3 910	5 270
Albury	4.3	1.03	148.47	-	-	-	-
Corowa	4.6	1.25	127.27	4 050	F	4 470	5 410
Yarrowonga Weir (d/s)	6.4	1.99	117.03	12 990	F	14 540	14 360
Tocumwal	6.4	2.78	106.62	14 500	S	15 420	12 680
Torrumbarry Weir (d/s)	7.3	2.70	81.25	8 400	F	8 880	7 840
Swan Hill	4.5	1.61	64.53	8 810	S	8 270	7 540
Wakool Junction	8.8	3.78	52.90	11 770	R	10 840	9 510
Euston Weir (d/s)	9.1	2.62	44.46	15 220	R	13 860	10 870
Mildura Weir (d/s)	-	-	-	13 430	F	12 270	8 920
Wentworth Weir (d/s)	7.3	3.41	28.17	13 370	R	12 090	8 360
Rufus Junction	-	3.22	20.15	4 880	R	3 430	2 410
Blanchetown (Lock 1 d/s)	-	0.71	-	2 690	R	2 500	2 520
<b>Tributaries</b>							
Kiewa at Bandiana	2.8	2.59	155.82	3 280	R	3 680	6 400
Ovens at Wangaratta	11.9	10.30	147.98	7 940	F	8 440	10 560
Goulburn at McCoys Bridge	9.0	2.55	93.97	2 960	R	2 380	2 380
Edward at Stevens Weir (d/s)	5.5	2.48	82.25	2 760	S	2 180	1 910
Edward at Liewah	-	2.87	58.25	2 340	R	2 060	1 730
Wakool at Stoney Crossing	-	1.32	54.81	250	F	240	270
Murrumbidgee at Balranald	5.0	4.83	60.79	5 860	R	5 150	4 050
Barwon at Mungindi	6.1	3.10	-	0	F	0	0
Darling at Bourke	9.0	5.12	-	8 460	R	6 400	2 980
Darling at Burtundy Rocks	-	0.59	-	0	F	0	0

Natural Inflow to Hume	13 310	24 120
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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	-0.18	-	No. 7 Rufus River	22.10	+0.02	+0.90
No. 26 Torrumbarry	86.05	-0.40	-	No. 6 Murtho	19.25	+0.01	+0.06
No. 15 Euston	47.60	+0.19	-	No. 5 Renmark	16.30	+0.06	+0.13
No. 11 Mildura	34.40	+0.06	+0.50	No. 4 Bookpurnong	13.20	+0.04	+0.46
No. 10 Wentworth	30.80	+0.01	+0.77	No. 3 Overland Corner	9.80	+0.03	+0.27
No. 9 Kulnine	27.40	+0.16	+0.13	No. 2 Waikerie	6.10	+0.15	+0.02
No. 8 Wangumma	24.60	+0.09	+0.17	No. 1 Blanchetown	3.20	-0.07	-0.04

**Lower Lakes** FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.70
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**Barrages**

**Fishways at Barrages**

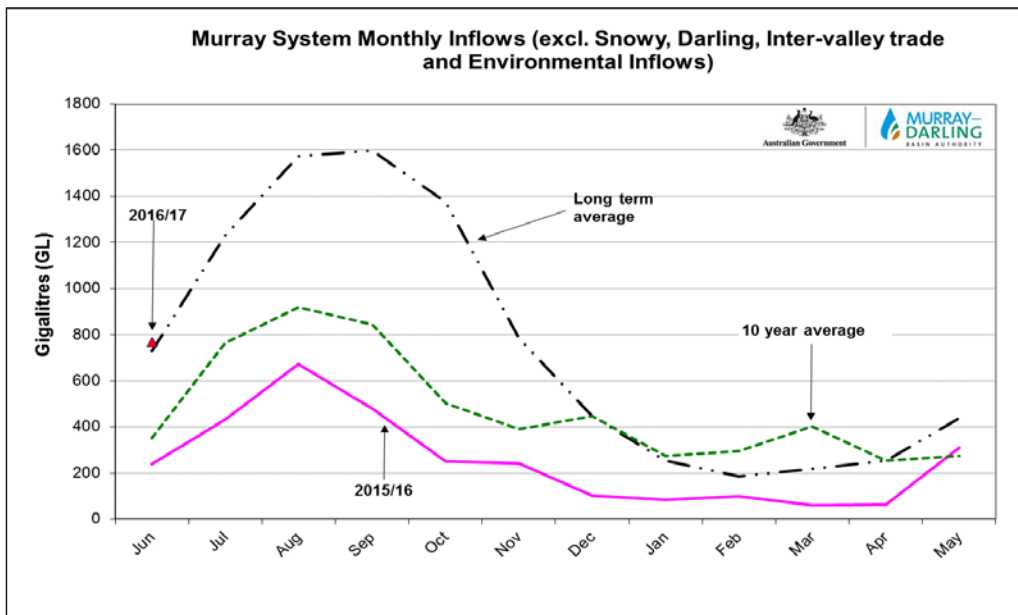
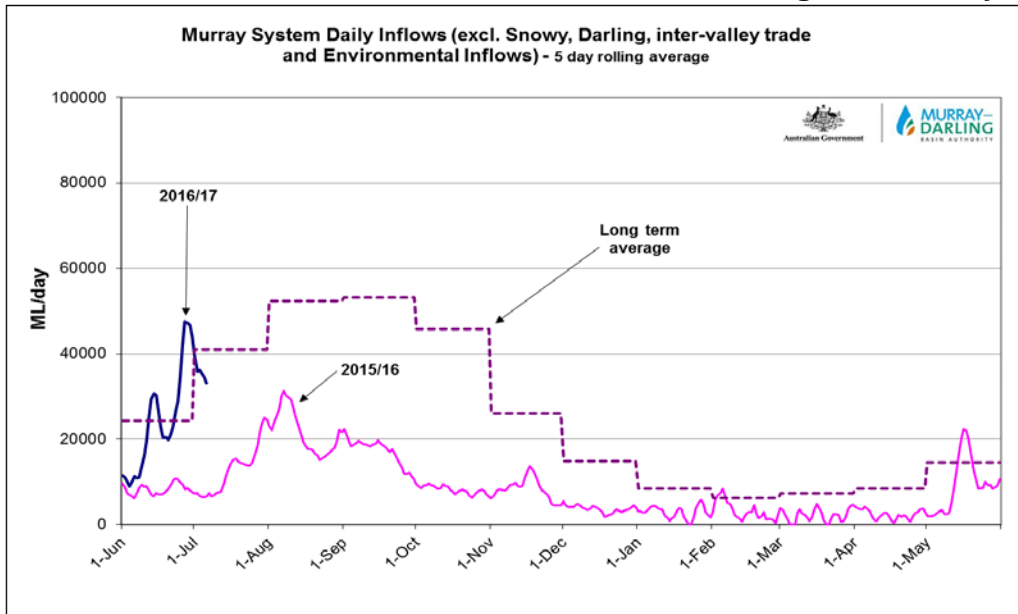
	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.73	All closed	-	Closed	Closed	-
Mundoo	26 openings	0.71	All closed	-	-	-	Closed
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwicheere	322 gates	0.73	All closed	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 06 Jul 2016



State Allocations (as at 06 Jul 2016)

NSW - Murray Valley

High security	97%
General security	0%

Victorian - Murray Valley

High reliability	1%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	20%

Victorian - Goulburn Valley

High reliability	8%
Low reliability	0%

NSW - Lower Darling

High security	20%
General security	0%

South Australia - Murray Valley

High security	36%
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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>