



RIVER MURRAY WEEKLY REPORT

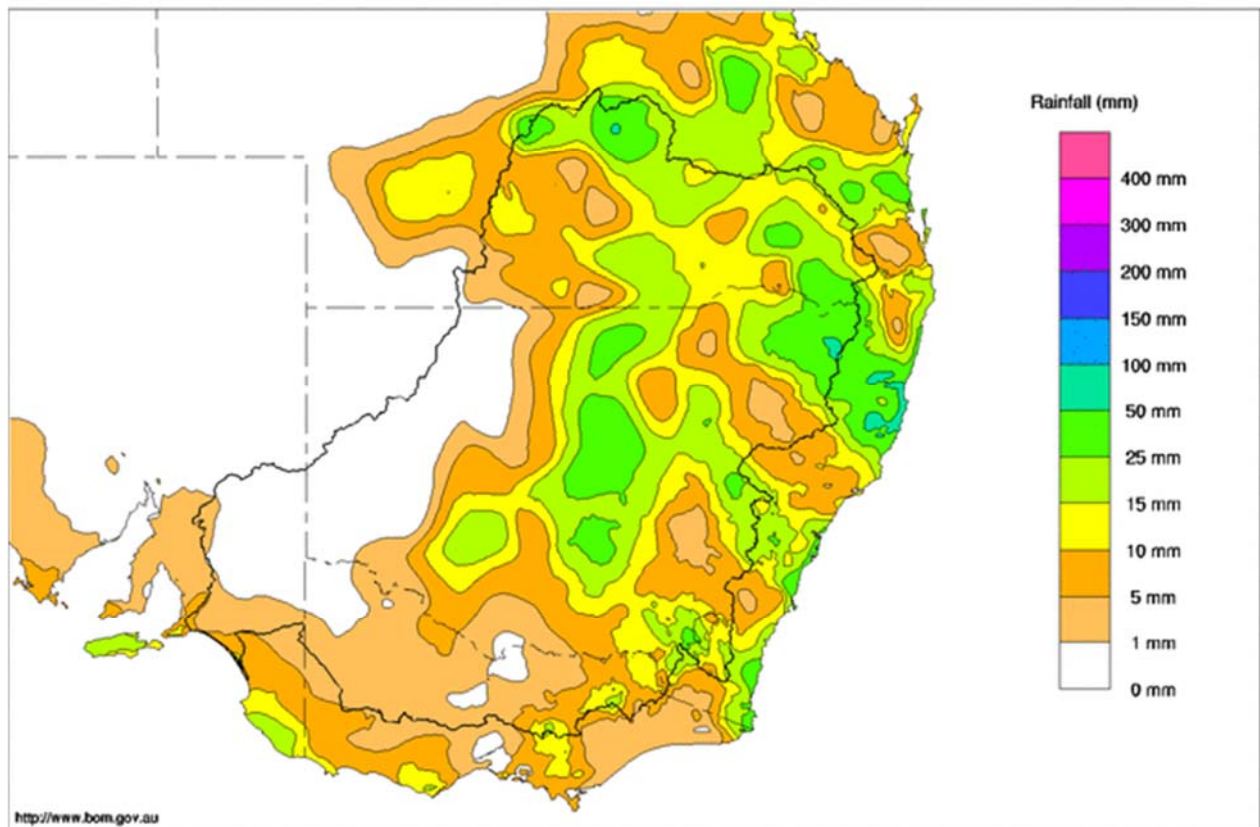
FOR THE WEEK ENDING WEDNESDAY, 4 JULY 2018

Trim Ref: D18/33263

Rainfall and inflows

Rainfall was widespread across the Murray-Darling Basin for week ending 4th July. Whilst small amounts of rain fell in most parts of the southern Basin, moderate rainfall was recorded in the northern Basin (Map 1). The highest observed rainfall was in the north and northeast of New South Wales and included 46 mm at Lightning Ridge and 59 mm at Glen Innes AP AWS. In the southern Basin the highest rainfall totals were 34 mm at Mt Ginini AWS in NSW southern tablelands and 33 mm at Rocky Valley in upper northeast Victoria.

Murray-Darling Rainfall Totals (mm) Week Ending 4th July 2018
Australian Bureau of Meteorology



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Map 1 - Murray-Darling Basin rainfall map week ending 4 July 2018 (Source: Bureau of Meteorology).

The flow in the upper Mitta-Mitta River at Hinnomunjie, decreased from 540 ML/day to the current flow of 470 ML/day. Biggara, on the upper Murray, rose to 530 ML/day after weekend rain before falling to the current flow of 420 ML/day. Downstream from Hume, inflows from the Kiewa River measured at Bandiana, fell from around 1,500 ML/day to 710 ML/day, before rising again to the current flow of 1,030 ML/day. The flow in the Ovens River at Wangaratta averaged 1,100 ML/day.

Further rain is forecast in the upper Murray over the weekend which is expected to result in a modest increase in streamflows to Hume and Dartmouth Dam.

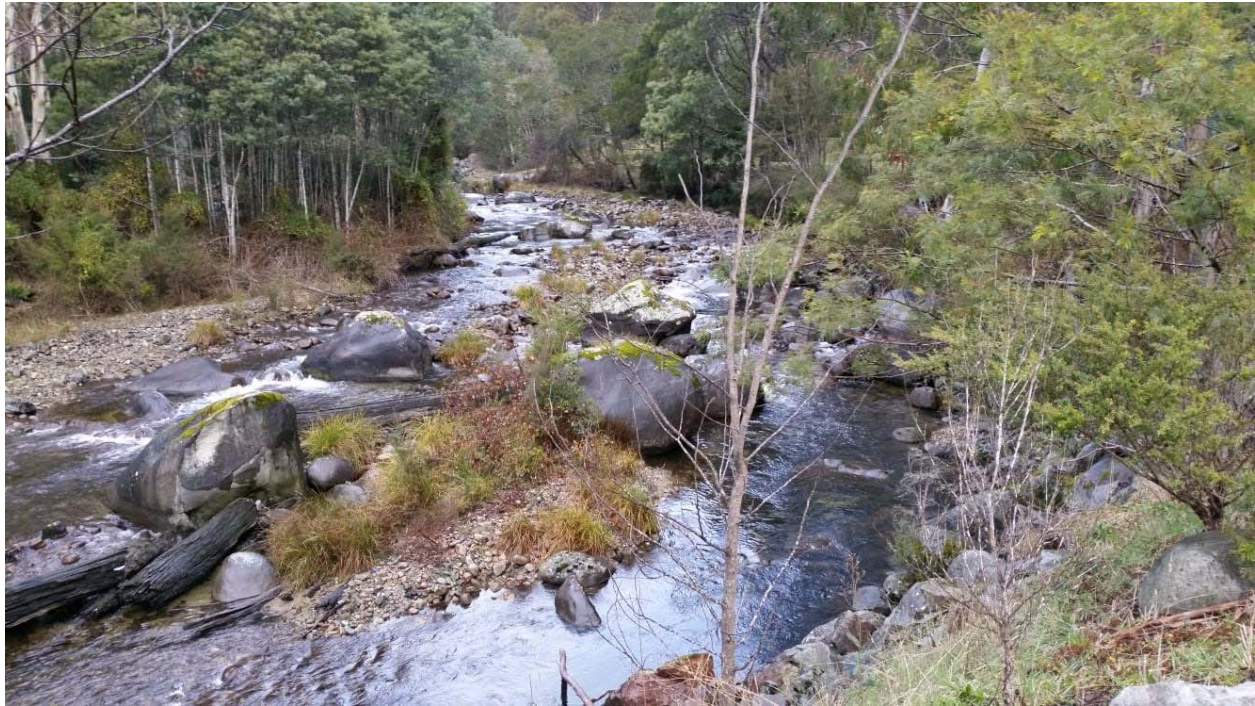
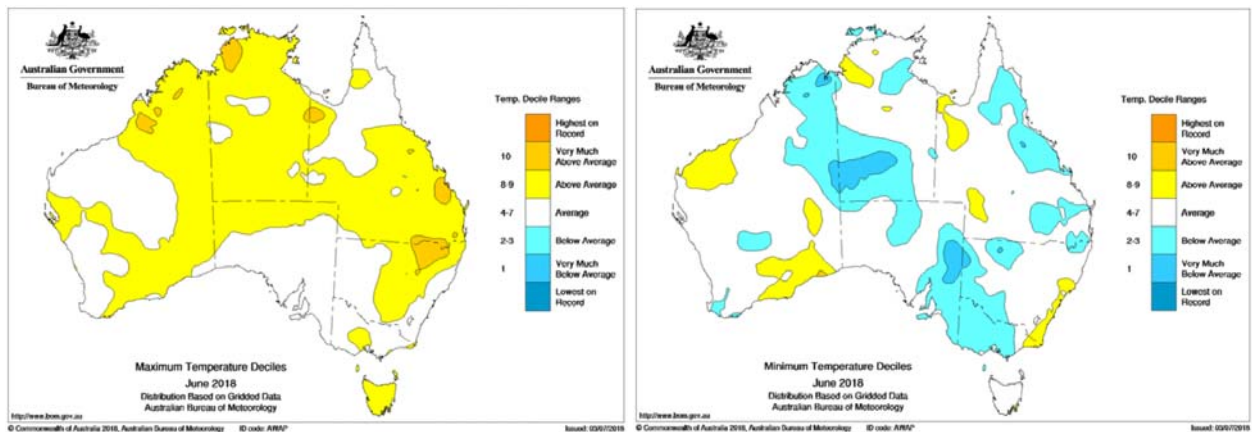


Photo 1 – Kiewa River East Branch at Bogong Village (photo courtesy of Sam Gitahi, MDBA REO).

April 2018 Summary

The Bureau of Meteorology (BoM) reported for Australia as a whole, day-time temperatures for June were warmer than average and nights cooler than average (Map 2). Parts of the North West slopes and plains of New South Wales (NSW) were amongst the warmest 10% of historical observations. The cooler nights were felt across Victoria, western NSW and eastern South Australia (SA).



Map 2 – Maximum and minimum temperature declines for June 2018 (Source: Bureau of Meteorology).

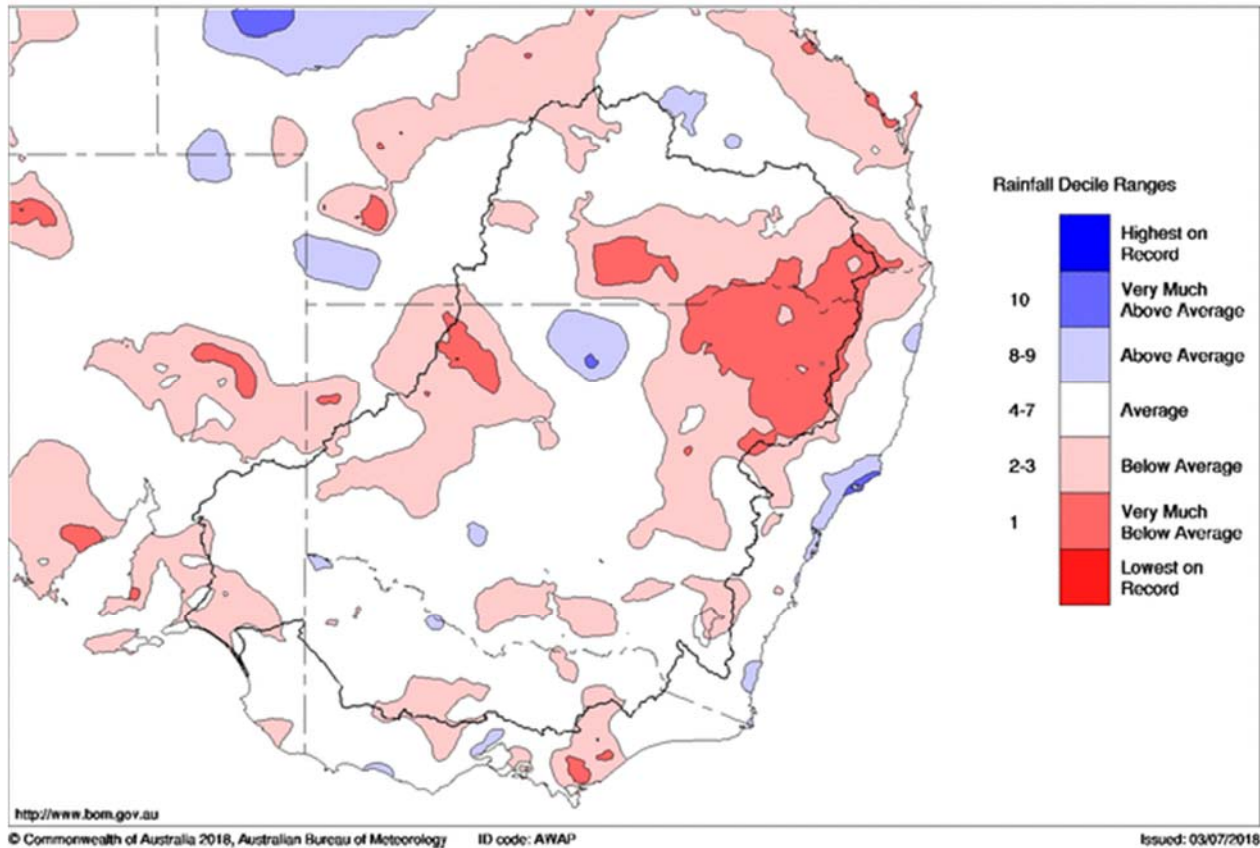
Rainfall for June 2018 was average across a majority of the southern, central and north-western parts of the Basin (Map 3). Rainfall in the north-west and north-east NSW Basin was below to very much below average for June. The BoM reported the area-averaged rainfall for the Murray-Darling Basin in June was 23.4 mm, which is 30% below the average.

River Murray System inflows for the month of June totalled around 203 GL, representing the 10 percentile driest Junes on record. For comparison the long term median inflow for June is 450 GL.



Murray-Darling Rainfall Deciles June 2018

Distribution Based on Gridded Data
Australian Bureau of Meteorology



Map 3 - Murray Darling Basin rainfall deciles for June 2018 (Source: Bureau of Meteorology).

Estimated evaporative losses from the MDBA storages for the month of June 2018 are reported in Table 1. The volume of evaporative loss is estimated by multiplying the surface area of the storage by the net evaporation depth. The net evaporation depth is derived by subtracting the rainfall recorded at the storage from the evaporation depth, with the evaporation depth determined using Class A pan factors and measured pan evaporation. At Dartmouth and Hume storages, rainfall resulted in modest net gains (negative evaporative loss). Evaporation exceeded rainfall at the Menindee Lakes resulting in a net loss in storage volume.

Table 1: Monthly evaporation figures for MDBA storages

Storage	Net evaporation depth in June 2018 (mm)	*Approximate (net) evaporative loss in June 2018 (GL)	Average storage volume in June 2018 (GL)	Percentage net evaporative loss in June 2018 (%)
Dartmouth	-53.3	-3.0	3,412	-0.1
Hume	-19.7	-2.3	1,188	-0.2
Lake Victoria	9.4	0.7	342	0.2
Menindee Lakes	37.2	6.1	210	2.9

*Evaporative loss from storage = surface area of the storage x net evaporation depth. Net evaporation depth = measured evaporation depth (using a 'pan' instrument) minus rainfall. For this table, a positive value indicates a loss of water, a negative value indicates a gain in water.



River operations

- Goulburn flow pulse peaked at McCoys Bridge and is now moving through the Murray
- Releases from Yarrawonga Weir lowered to a target minimum of 3,000 ML/day

MDBA active storage increased by 55 GL this week to 4,923 GL (58% capacity).

The storage volume at **Dartmouth Reservoir** by increased by 4 GL to 3,427 GL (89% capacity). The release, measured at the Colemans gauge, is currently 500 ML/day. A flow pulse on the Mitta Mitta River is planned to commence on Saturday 7 July, peaking briefly around 2,400 ML/day on Sunday and returning to a minimum flow of 500 ML/day by mid next week. The pulse will benefit water quality in the Mitta Mitta River downstream of Dartmouth Dam. More information can be found on the [MDBA website](#).

At **Hume Reservoir**, the storage volume increased by 49 GL to 1,324 GL (44% capacity). The release from Hume reduced from 2,000 ML/day to the current minimum release of 600 ML/day and is forecast to remain at minimums over the coming week.

Downstream at **Lake Mulwala**, the lake level is currently targeting 120.2 m AHD (4.5 metres below the normal operating level of 124.7 m AHD). The lake is expected to remain around this level until mid-July to manage the invasive water weed *Egeria densa*. Lowering the water level and subjecting the exposed weed to drying and frost has proven to be an effective method for controlling its abundance within the weir pool. The drawdown also provides an opportunity to undertake works on the lake foreshore. From mid-July the lake will commence refilling and reach the normal operating level of around 124.7 m AHD in early August ready for the irrigation season.

The release from **Yarrawonga Weir** reduced this week from 4,000 ML/day to the current flow just over 3,400 ML/day and will continue to reduce to 3,000 ML/day in the coming week.

The **Edward River** and **Gulpa Creek** offtakes are currently passing 690 ML/day and 190 ML/day respectively with all gates raised clear of the water. Inflows to the Edward-Wakool system through the Edward and Gulpa offtakes can be expected to fluctuate over winter in response to flow changes in the River Murray downstream of Yarrawonga Weir.

[Trading water](#) from above the Barmah Choke to below the choke will continue to be restricted in the 2018-19 water year. Water market participants should contact their state trading authority for more information.

Opening allocations have been announced by state resource managers. For the most up to date information regarding state **allocation announcements** please see the state resource manager information available on the [NSW](#), [Victorian](#) and [South Australian](#) websites.

Downstream on the Edward River, [WaterNSW](#) has drawn down **Stevens Weir** pool and raised the gates clear of the water to allow maintenance works on the weir and at the offtake regulators. The flow at Stevens Weir fell from 1,200 ML/day this week to the current flow of 850 ML/day.

Inflow to the Murray from the **Goulburn River**, measured at McCoys Bridge, peaked around 8,600 ML/day this week as a winter pulse passes into the Murray. Flow at McCoys Bridge is expected to steadily recede back to baseflows by the end of July. This winter fresh aims to improve water quality and benefit aquatic biota and vegetation along the Goulburn River and further downstream along the Murray. This pulse has been planned by the Goulburn Broken Catchment Management Authority (CMA) in consultation with the Commonwealth Environmental Water Office and the Victorian Environmental Water Holder. For more information visit the [Goulburn Broken CMA website](#).

Flow at **Torrumbarry Weir** rose this week with the arrival of the Goulburn pulse. The peak flow passing Torrumbarry will be maintained around 10,000 ML/day until Sunday, as the pulse moves downstream. Adjustments to the pool level during this time are expected to protect the lock refurbishment works currently underway on the downstream side of the weir. This includes temporary raising the weir pool from its current level of 30cm below Full Supply Level (FSL) towards FSL as the peak of the pulse arrives with subsequent lowering on the recession of the pulse. The weir pool will then continue to vary around this level before being raised back to FSL ahead of the start of the irrigation season. More information is available at the [MDBA website](#).



River users in the **Echuca** district and downstream should be aware that water levels will rise and then fall noticeably over the coming days. The fluctuations in river level are due to the Goulburn flow pulse moving through the system and the raising and lowering the Torrumbarry weir pool.

The diversion into National Channel averaged 990 ML/day for most the week. Towards the end of the week the diversion was increased to the current diversion rate of 1,400 ML/day to help maintain 10,000 ML/day downstream of Torrumbarry Weir as the Goulburn pulse moves through the system. Flow is expected to reduce back to 1,200 ML/day in the coming days. Water diverted into National Channel is being used to deliver environmental water to the Gunbower Forest. More information on the Gunbower Forest watering can be found on the [North Central Catchment Management Authority \(NCCMA\) website](#).

At **Swan Hill**, the flow rose from 4,150 ML/day to the current flow of 7,400 ML/day as the Goulburn pulse continues to move downstream.

Inflow from the **Murrumbidgee River**, measured at Balranald, increased from 460 ML/day at the beginning of the week to the current flow of 820 ML/day. Flow is expected to remain steady over the coming week.

At **Euston**, the weir pool is being varied to target between 30 and 40 cm below FSL. Lowering Euston weir is part of the [weir pool variability program](#) which aims to help restore a more natural wetting and drying regime for river banks and wetlands. The downstream release is currently 6,260 ML/day and is expected to steadily rise as the Goulburn pulse arrives.

On the **Darling River** upstream of the Menindee Lakes, an environmental release made by WaterNSW on behalf of state and Commonwealth governments back in mid-April has begun to recede at Wilcannia. The flow at Wilcannia has reduced to around 120 ML/day, down from around 200 ML/day earlier in the week.

The **Menindee Lakes** storage volume remained steady at 206 GL (12% capacity). WaterNSW continues to manage the Menindee Lakes in accordance with the [Lower Darling Annual Operations Plan](#). The [release from Weir 32](#) is targeting minimum flow rates of around 130 ML/day with the aim to maintain flow in the lower Darling at Burtundy, where the flow is currently around 40 ML/day. Blue-green algae alert warnings have been removed for Lake Tandure and the lower Darling at Burtundy. A [red alert](#) warning (high alert) has been issued for the lower Darling at Ellerslie, directly downstream of Burtundy. [WaterNSW](#) has advised the drought contingency measure of installing two temporary block banks across the lower Darling is being planned which will assist in maintaining supply to domestic, stock and permanent plantings along the lower Darling.

On the Murray at **Wentworth Weir**, the release this week averaged 5,550 ML/day and is expected to slowly rise over the coming week with the arrival of the Goulburn pulse.

The **Locks 7 and 9** weir pools continue to target a water level 10 cm below FSL and will vary between FSL and 10 cm below FSL over the coming weeks. The **Lock 8** weir pool is targeting 30 cm below FSL.

At **Lake Victoria**, the storage volume increased by 3 GL to 366 GL (54% capacity). The volume of water released from the drawdown of Lake Mulwala has now reached Lake Victoria. The storage volume is expected to remain steady over the coming week.

The flow to **South Australia** averaged 4,900 ML/day. The flow to South Australia is expected to start increasing later in the week as environmental water from the Goulburn River is delivered to South Australia.

Downstream at **Lock 6**, the pool has been raised to the normal operating level. Weir pool lowering trials at **Locks 5 and 2** will not proceed this year. More information is available in South Australia's [River Murray flow report](#). **Lock 3** remains [temporarily closed for a major refurbishment](#) which is expected to take up to 14 weeks to complete.



Photo 2: River Murray at the Bookpurnong Floodplain between Locks 5 and 4 (photo courtesy of Vanessa Olifent, MDBA)

The 5-day average water level in the **Lower Lakes** is currently 0.64 m AHD. When conditions allow, small barrage releases have been prioritised through Tauwitchere and Goolwa barrages. Barrages releases averaged 495 ML/day and all fishways remain open.

For media inquiries contact the Media Officer on 02 6279 0141

ANDREW REYNOLDS
Executive Director, River Management



Water in Storage

Week ending Wednesday 04 Jul 2018

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	479.22	3 427	89%	71	3 356	+4
Hume Reservoir	192.00	3 005	181.59	1 324	44%	23	1 301	+49
Lake Victoria	27.00	677	24.21	366	54%	100	266	+3
Menindee Lakes		1 731*		206	12%	(- -) #	0	+1
Total		9 269		5 323	57%	--	4 923	+56
Total Active MDBA Storage							58% ^	

Major State Storages

Burrinjuck Reservoir	1 026	415	40%	3	412	+2
Blowering Reservoir	1 631	1 115	68%	24	1 091	+34
Eildon Reservoir	3 334	1 808	54%	100	1 708	-42

* 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 03 Jul 2018

Storage	Active Storage (GL)	Weekly Change (GL)	Diversions (GL)	This Week	From 1 May 2018
Lake Eucumbene - Total	748	n/a	Snowy-Murray	+35	305
Snowy-Murray Component	336	n/a	Tooma-Tumut	+0	34
Target Storage	1 170		Net Diversion	35	271
			Murray 1 Release	+50	353

Major Diversions from Murray and Lower Darling (GL) *

New South Wales	This Week	From 1 July 2018	Victoria	This Week	From 1 July 2018
Murray Irrig. Ltd (Net)	0.0	0	Yarrowonga Main Channel (net)	0	0
Wakool Sys Allowance	-0.4	0	Torrumbarry System + Nyah (net)	4.6	3
Western Murray Irrigation	0.1	0	Sunraysia Pumped Districts	0.1	0
Licensed Pumps	0.5	0	Licensed pumps - GMW (Nyah+u/s)	1	0
Lower Darling	0.2	0	Licensed pumps - LMW	4.6	0
TOTAL	0.4	0	TOTAL	10.3	3

* 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 environmental flows.

Entitlement this month	108.5 *	
Flow this week	34.1	(4 900 ML/day)
Flow so far this month	19.2	
Flow last month	132.5	

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

	Current	Average over the last week	Average since 1 August 2017
Swan Hill	140	130	100
Euston	-	-	-
Red Cliffs	130	130	150
Merbein	120	120	150
Burtundy (Darling)	690	710	680
Lock 9	120	120	160
Lake Victoria	190	190	230
Berri	260	270	290
Waikerie	410	430	330
Morgan	460	450	350
Mannum	390	390	370
Murray Bridge	400	400	400
Milang (Lake Alex.)	860	850	720
Poltalloch (Lake Alex.)	510	660	650
Meningie (Lake Alb.)	1 560	1 630	1 590
Goolwa Barrages	4 290	4 850	2 870



River Levels and Flows

Week ending Wednesday 04 Jul 2018

	Minor Flood Stage	Gauge Height		Flow (ML/day)	Trend	Average Flow this Week (ML/day)	Average Flow last Week (ML/day)
		local (m)	(m AHD)				
River Murray	(m)						
Khancoban	-	-	-	3 480	F	6 080	6 170
Jingellic	4.0	1.72	208.24	4 530	F	6 430	7 380
Tallandoon (Mitta Mitta River)	4.2	1.56	218.45	860	S	790	750
Heywoods	5.5	1.21	154.84	600	F	1 050	1 030
Doctors Point	5.5	1.49	149.96	1 310	R	1 780	2 240
Albury	4.3	0.71	148.15	-	-	-	-
Corowa	4.6	0.59	126.61	1 580	F	2 330	2 130
Yarrawonga Weir (d/s)	6.4	0.64	115.68	3 420	F	3 950	4 710
Tocumwal	6.4	1.27	105.11	3 920	F	4 130	5 070
Torrumbarry Weir (d/s)	7.3	3.15	81.69	9 830	F	7 720	3 760
Swan Hill	4.5	1.41	64.33	7 400	R	5 240	3 860
Wakool Junction	8.8	2.72	51.84	6 540	R	5 780	5 480
Euston Weir (d/s)	9.1	1.29	43.14	6 260	R	5 860	6 100
Mildura Weir (d/s)	-	-	-	5 790	F	5 900	6 490
Wentworth Weir (d/s)	7.3	2.75	27.51	5 390	S	5 500	6 050
Rufus Junction	-	3.13	20.06	4 350	F	4 470	4 870
Blanchetown (Lock 1 d/s)	-	0.54	-	4 330	S	4 420	4 170
Tributaries							
Kiewa at Bandiana	2.8	1.41	154.64	1 030	R	920	1 350
Ovens at Wangaratta	11.9	8.23	145.91	1 070	F	1 100	1 610
Goulburn at McCoys Bridge	9.0	5.00	96.42	8 570	S	7 560	1 570
Edward at Stevens Weir (d/s)	5.5	1.19	80.96	850	F	1 010	1 050
Edward at Liewah	-	1.87	57.25	1 160	S	1 170	1 210
Wakool at Stoney Crossing	-	1.28	54.77	220	S	250	270
Murrumbidgee at Balranald	5.0	1.30	57.26	820	R	600	450
Barwon at Mungindi	6.1	3.13	-	10	S	0	0
Darling at Bourke	9.0	4.13	-	450	F	310	60
Darling at Burtundy Rocks	-	0.68	-	40	S	50	50

Natural Inflow to Hume	5 250	3 610
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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
Yarrawonga	124.90	-4.54	-	No. 7 Rufus River	22.10	-0.08	+0.82
No. 26 Torrumbarry	86.05	-0.24	-	No. 6 Murtho	19.25	+0.02	+0.07
No. 15 Euston	47.60	-0.35	-	No. 5 Renmark	16.30	+0.09	+0.12
No. 11 Mildura	34.40	+0.02	+0.06	No. 4 Bookpurnong	13.20	+0.04	+0.53
No. 10 Wentworth	30.80	-0.01	+0.11	No. 3 Overland Corner	9.80	+0.00	+0.21
No. 9 Kulnine	27.40	-0.11	-0.27	No. 2 Waikerie	6.10	+0.05	+0.13
No. 8 Wangumma	24.60	-0.29	+0.01	No. 1 Blanchetown	3.20	+0.01	-0.21

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.64
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Barrages

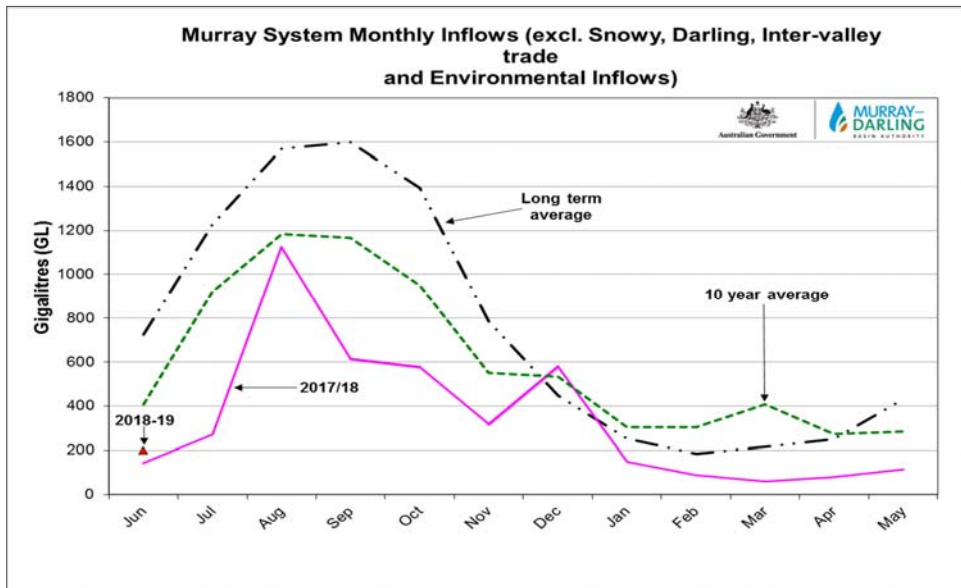
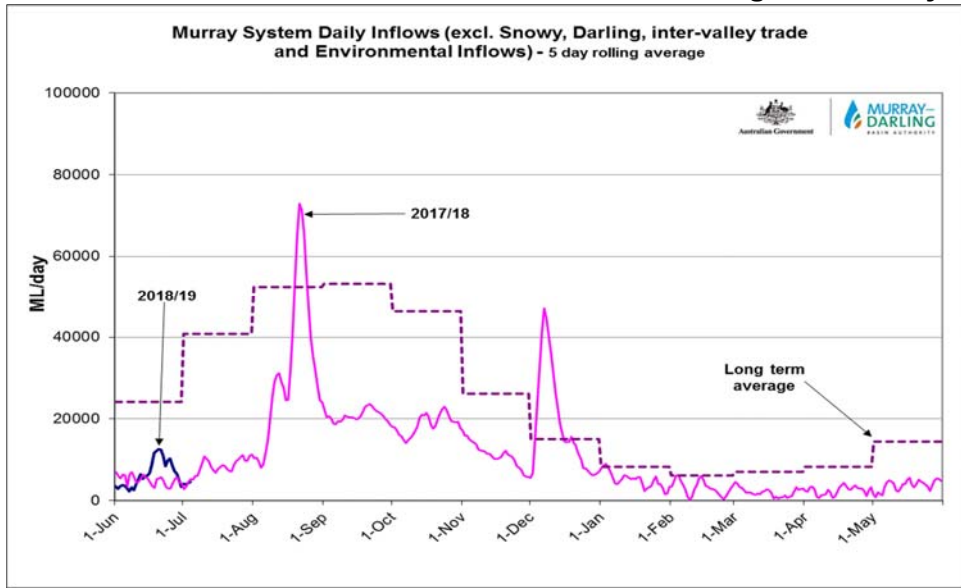
Fishways at Barrages

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.64	1	-	Open	Open	-
Mundoo	26 openings	0.65	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	1	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwitchere	322 gates	0.64	1	Open	Open	Open	-

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



Week ending Wednesday 04 Jul 2018



State Allocations (as at 04 Jul 2018)

NSW - Murray Valley

High security	97%
General security	0%

Victorian - Murray Valley

High reliability	41%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	3%

Victorian - Goulburn Valley

High reliability	32%
Low reliability	0%

NSW - Lower Darling

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