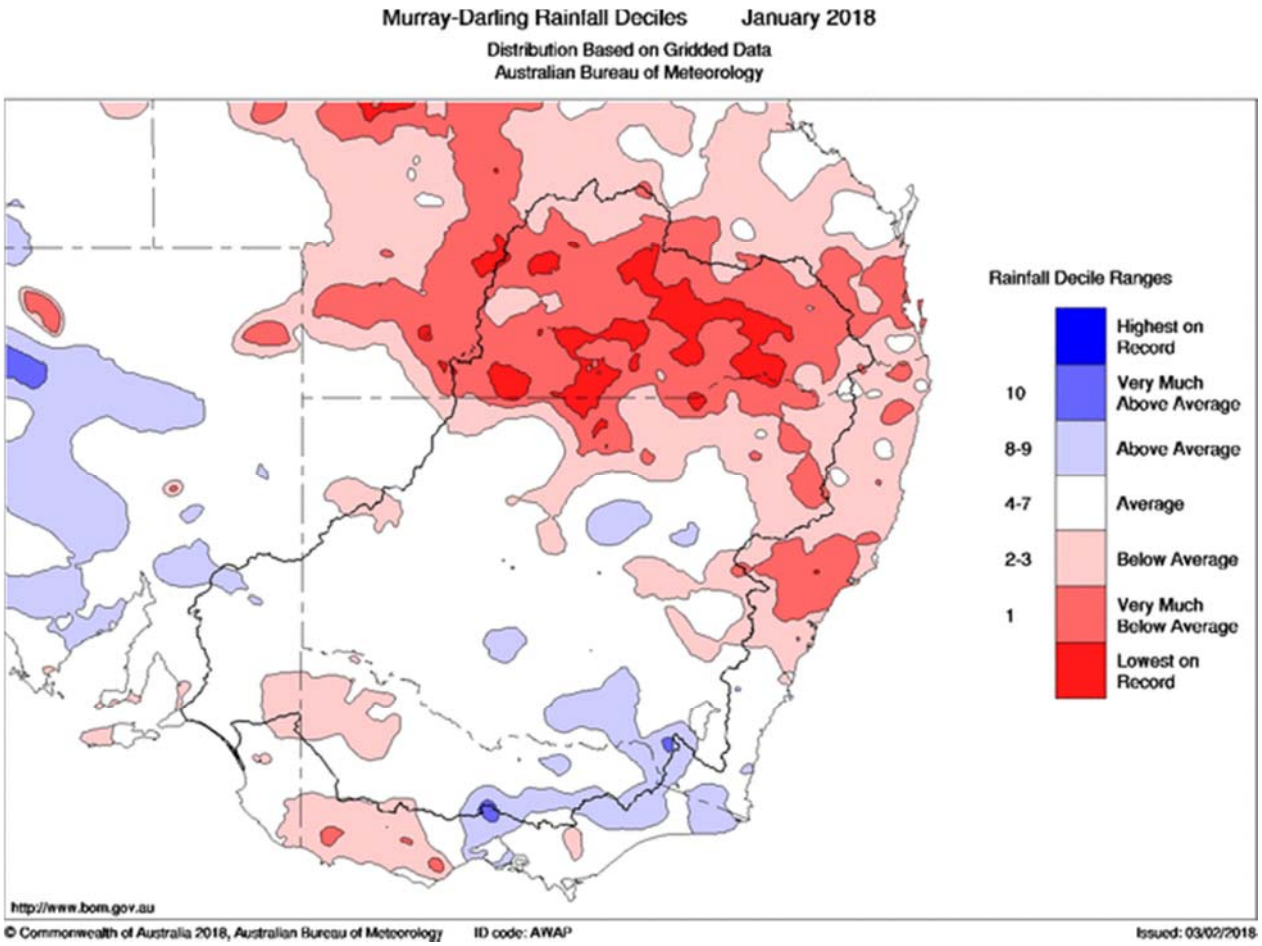
RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 7 FEBRUARY 2018

January 2018 Summary

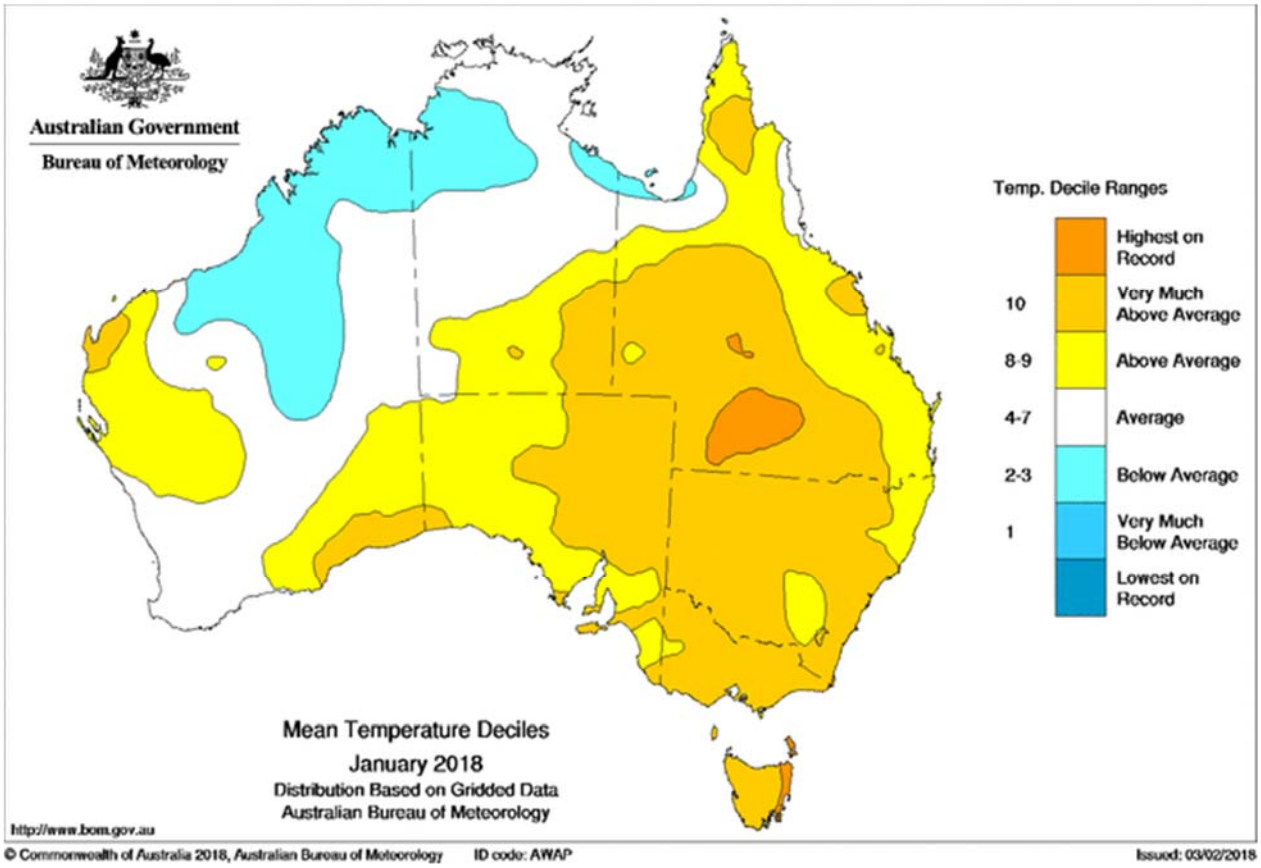
In the northern Basin, rainfall for the month of January was mostly below to very much below average, with some parts of south-eastern Queensland experiencing lowest rainfall on record. For the central and southern parts of the Basin, rainfall was generally average (refer to Map 1). Across the Basin as a whole the Bureau of Meteorology has reported area-average rainfall totalling 22.2 mm. This is 60% below the long term average and makes January 2018 the 22nd driest January in 119 years of record.

Despite the recent and widespread hot and dry conditions, River Murray system inflows for January totalled 154 GL (64% AEP). For comparison the median January inflow is 194 GL (50% AEP) and the long term average is 252 GL. The total system inflows since November (last three months) totalled 1,058 GL (54% AEP), slightly drier than the long term average for the same period of 1,485 GL.



Map 1 - Murray Darling Basin rainfall deciles for January 2018 (Source: Bureau of Meteorology).

Temperatures during January were very much above average across the majority of the Basin, with most parts of Victoria, New South Wales and southern Queensland experiencing temperatures in the warmest decile (top 10% of records). A patch of southern Queensland recorded their highest January mean temperature (Map 2). Heatwave conditions were experienced in the mid-Murray through the second half of January. At Mildura the temperature was above 37°C for 13 days. This included 7 days above 40°C, reaching a maximum temperature of 45°C.



Map 2 - Murray Darling Basin mean temperature deciles for January 2018 (Source: Bureau of Meteorology).

Estimated evaporative losses from the MDBA storages for the month of January 2018 are reported in Table 1. The volume of evaporation 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 all MDBA storages, total volume lost to evaporation exceeded total rainfall resulting in a net loss from storage. This is consistent with the hot and dry conditions observed during January. As expected, the net evaporation experienced at the Menindee Lakes was the most significant of all storages.

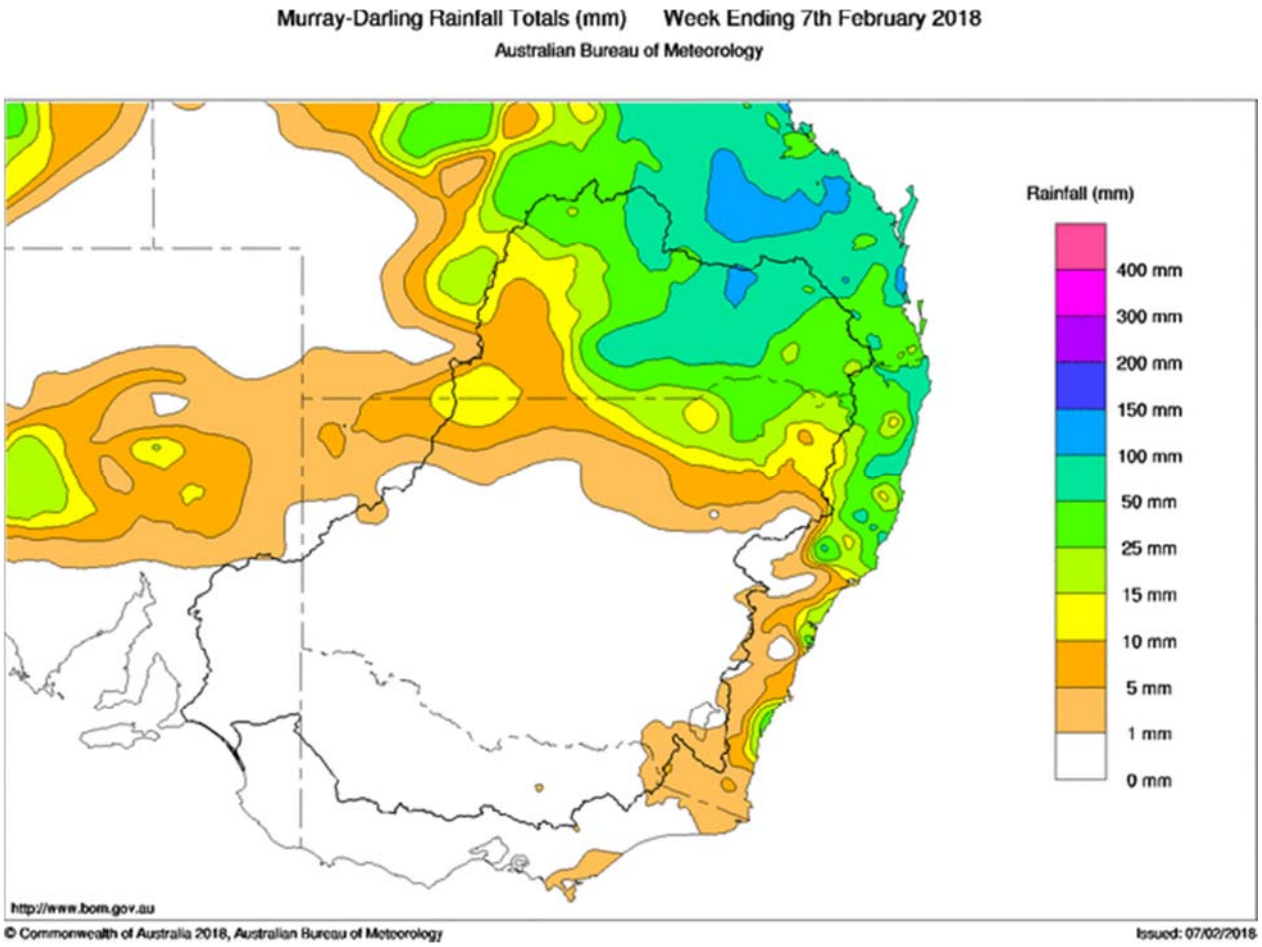
Table 1: Monthly evaporation figures for MDBA Storages

Storage	Net evaporation depth in January 2018 (mm)	*Approximate (net) evaporative loss in January 2018 (GL)	Average storage volume in January 2018 (GL)	Percentage net evaporative loss in January 2018 (%)
Dartmouth	121.1	7.3	3,436	0.2
Hume	167.7	26.4	1,990	1.3
Lake Victoria	204.9	23.9	600	4.0
Menindee Lakes	268.9	62.5	401	15.6

*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.

Rainfall and inflows

For the week ending the 7th February there was almost no rainfall recorded over Victoria and most of New South Wales. Totals between 1 – 5 mm were recorded only on outskirts of the upper Murray catchment. Light to moderate rain (<20mm) was recorded in the north-east of New South Wales with moderate falls in south-eastern Queensland including isolated patches reaching 150 mm for the week (refer to Map 3).



Map 3 - Murray-Darling Basin rainfall map week ending 7 February 2018 (Source: Bureau of Meteorology).

In the upper Murray, tributaries have gradually receded following a short-lived spike resulting from rain late in the previous week. On the upper Murray at Biggara the flow decreased from 470 ML/day to the current flow of 290 ML/day. On the upper Mitta Mitta River, the flow at Hinnomunjie fell from 460 ML/day to 340 ML/day. Downstream of Hume Dam, inflow from the Kiewa at Bandiana averaged 520 ML/day this week with the current flow at 350 ML/day. The Ovens River at Wangaratta is at 660 ML/day having receded from a flow of 920 ML/day earlier in the week.

River operations

- System demands remain high as hot weather continues
- Delivery of water traded from the Goulburn Valley to the Murray continues
- Higher flows to South Australia during February to support continuous barrage outflows

MDBA active storage decreased this week by 122 GL to 5,513 GL (65% capacity). The active storage volume is around the long-term average for this time of year (Figure 1) and is around 1,000 GL less than for the same time last year.

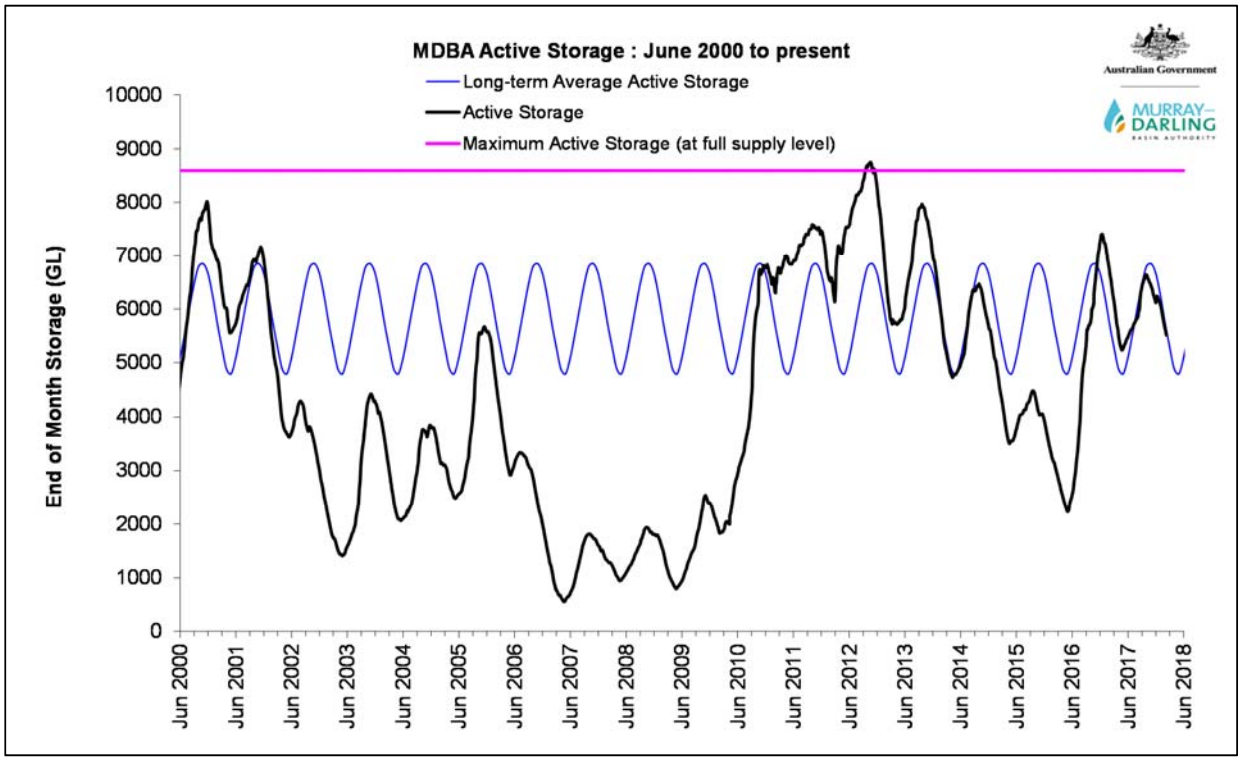


Figure 1 – MDBA active storage: June 2000 to present

The storage volume at **Dartmouth Reservoir** increased by 2 GL to 3,435 GL (89% capacity). The release, measured at the Colemans gauge, is currently targeting 300 ML/day.

At **Hume Reservoir**, the storage volume fell by 68 GL to 1,796 GL (60% capacity). The storage volume is currently around 690 GL less than at the same time last year, and in the coming week is expected to fall below the minimum level reached at the end of the 2016-17 season. The release from Hume averaged around 12,000 ML/day and is currently 14,000 ML/day.

Downstream at **Lake Mulwala**, the pool level has remained within the normal operating range of 124.7 to 124.9 m AHD. Diversions at the major irrigation offtakes progressively increased over the week in response to hotter temperatures. Diversion to Mulwala Canal increased from 2,600 ML/day to 3,400 ML/day. At Yarrawonga Main Channel, the diversions increased from 800 ML/day to 1,400 ML/day. Releases from **Yarrawonga Weir** remained steady at around 8,900 ML/day for most of the week before easing back to 8,400 ML/day at the end of the week.

Flow into **Gulpa Creek** is currently targeting 500 ML/day to support bird breeding in Reedbeds wetland. The flow will be gradually reduced by 50 ML/week to 350 ML/day over the remainder of February as the chicks fledge and leave the nest. The flow through the Edward offtake regulator is averaging close to 1,600 ML/day.

Downstream on the **Edward River** at Toonalook the flow is 1,850 ML/day. Diversions into Wakool Main Canal have eased and averaged 700 ML/day this week compared with an average of around 1,300 ML/day for much of January. The release from Edward Escape to help meet orders at Wakool Main Canal has reduced by a similar amount and is currently averaging only 50 ML/day. To manage the water level in the channel upstream of the Wakool Canal regulator during this period of lower diversions at Wakool Main Canal, WaterNSW has lowered the level of Stevens weir pool by around 20 cm to target 4.7 m (local gauge height). The release from Stevens Weir has averaged 740 ML/day.

Inflow to the Murray from the **Goulburn River**, measured at McCoys Bridge, averaged 2,800 ML/day as the planned flow pulse passes through the lower Goulburn River. Flows will remain around this rate for most of the coming week before gradually receding for the remainder of February. The increase in flow is to facilitate the delivery of inter-valley trade (IVT) water to help meet system demands along the Murray downstream of the Barmah choke as well as provide for environmental benefit.

Goulburn Valley IVT water is also being delivered to the Murray via the **Campaspe River** in the form of a small pulse targeting around 600 ML/day at Rochester until late February. Information regarding current opportunities for allocation trade between the Goulburn and Murray valleys is available at the Victorian water register website.

Diversions into National Channel, from **Torrumbarry Weir** pool, have remained at around 2,000 ML/day. The release downstream of Torrumbarry averaged 7,650 ML/day this week and is expected to remain around this rate for the coming weekend before easing.

Downstream of Torrumbarry Weir, the flow at **Swan Hill** is being supplemented with additional water being delivered from the Torrumbarry irrigation network. This includes around 350 ML/day from Gunbower Creek (this flow is maintaining the water level in the creek for the benefit of native fish and returning via Koondrook spillway), approximately 100 ML/day released from Lake Boga (this is helping to reduce lake salinity levels), and 50 ML/day via Channel 6/7 (this flow will cease in the coming week).

Inflow from the **Murrumbidgee River,** measured at Balranald, averaged around 300 ML/day. The Murrumbidgee IVT balance is currently 6.8 GL, restricting the MDBA from calling on water from this valley to help meet Murray system demands.

At **Euston**, the weir pool level is currently around 10 cm above the full supply level (FSL). The pool is currently surcharged to hold additional water to meet any future high demands downstream during February. However with higher flows in the river and demands expected to ease in the Sunraysia area later in February, it is likely that in the coming weeks this additional water will not be required and the pool will be returned to the full supply level. The downstream release increased this week and is currently 6,600 ML/day and forecast to be around 7,000 ML/day over the coming week.

At **Menindee Lakes**, the storage volume reduced by 13 GL to 354 GL (20% capacity). A red alert warning (high alert) for blue-green algae is current for Lake Wetherell, Lake Menindee and Lake Tandure. Releases from the Menindee Lakes are currently being managed by WaterNSW in accordance with the Lower Darling Annual Operations Plan. This plan was implemented by WaterNSW when the storage volume fell below 480 GL in December 2017 and will remain in place until the storage volume next exceeds 640 GL. The plan aims to help ensure critical human water needs are met whilst seeking to maintain environmental objectives in the Lower Darling under the worst-case inflow scenario. The release from Weir 32 is currently around 200 ML/day and being managed to maintain a minimum flow in the lower Darling at Burtundy, where the flow is currently 45 ML/day.

The flow at **Wentworth** rose this week and is currently around 4,200 ML/day. The weir pool level is currently targeting 10 cm above FSL to assist pumpers on the lower Darling River in the upper reaches of the Wentworth weir pool whilst flows downstream of Burtundy are very low.

At **Lake Victoria**, the storage volume reduced by 43 GL and is currently at 476 GL (70% capacity). The Lake level is expected to continue to fall away as stored water is used to help deliver South Australia's flow requirements. The flow to South Australia is currently targeting 8,300 ML/day, and will increase to 9,300 ML/day in the coming week. This includes additional water being delivered on behalf of the Commonwealth Environmental Water Holder (CEWH) during February to support ongoing barrage releases into the Coorong.

At the **lower lakes**, the 5-day average water level reduced by 3 cm to 0.66 m AHD. Releases through the barrages over the last week averaged around 1,000 ML/day and were prioritised at Tauwitchere and Goolwa to provide attractant flows at the fishways. All the fishways at the barrages 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 07 Feb 2018

MDBA Storages	Full Supply Level (m AHD)	Full Supply Volume (GL)	Current Storage Level (m AHD)	Current Storage (GL)	Current Storage %	Dead Storage (GL)	Active Storage (GL)	Change in Total Storage for the Week (GL)
Dartmouth Reservoir	486.00	3 856	479.36	3 435	89%	71	3 364	+2
Hume Reservoir	192.00	3 005	185.06	1 796	60%	23	1 773	-68
Lake Victoria	27.00	677	25.26	476	70%	100	376	-43
Menindee Lakes		1 731*		354	20%	(- -) #	0	-13
Total		**9 269**		**6 061**	**65%**	**- -**	**5 513**	**-122**
Total Active MDBA Storage							65% ^	

Major State Storages

Burrinjuck Reservoir	1 026		561	55%	3	558	-27
Blowering Reservoir	1 631		654	40%	24	630	-12
Eildon Reservoir	3 334		2 357	71%	100	2 257	-31

* 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 06 Feb 2018

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2017
Lake Eucumbene - Total	1 677	-23	Snowy-Murray	+16	656
Snowy-Murray Component	671	-19	Tooma-Tumut	+0	188
Target Storage	1 460		Net Diversion	16	467
			Murray 1 Release	+14	882

Major Diversions from Murray and Lower Darling (GL) *

New South Wales	This Week	From 1 July 2017	Victoria	This Week	From 1 July 2017
Murray Irrig. Ltd (Net)	24.7	638	Yarrawonga Main Channel (net)	6.5	180
Wakool Sys Allowance	2.9	33	Torrumbarry System + Nyah (net)	11.3	283
Western Murray Irrigation	1.1	16	Sunraysia Pumped Districts	3.6	81
Licensed Pumps	5.4	151	Licensed pumps - GMW (Nyah+u/s)	1	23
Lower Darling	3.7	72	Licensed pumps - LMW	4.6	248
TOTAL	**37.8**	**910**	**TOTAL**	**27**	**815**

* 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	194.0 *
Flow this week	57.9
Flow so far this month	57.9
Flow last month	243.6

(8 300 ML/day)

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

	Current	Average over the last week	Average since 1 August 2017
Swan Hill	120	120	110
Euston	150	120	-
Red Cliffs	170	180	160
Merbein	180	190	150
Burtundy (Darling)	660	640	660
Lock 9	180	180	170
Lake Victoria	230	240	230
Berri	190	230	270
Waikerie	300	290	330
Morgan	310	300	340
Mannum	280	280	380
Murray Bridge	290	290	430
Milang (Lake Alex.)	780	720	660
Poltalloch (Lake Alex.)	720	690	610
Meningie (Lake Alb.)	1 670	1 630	1 570
Goolwa Barrages	990	970	1 170

River Levels and Flows

Week ending Wednesday 07 Feb 2018

River Murray	Minor Flood Stage (m)	Gauge Height local (m)	Gauge Height (m AHD)	Flow (ML/day)	Trend	Average Flow this Week (ML/day)	Average Flow last Week (ML/day)
Khancoban	-	-	-	4 450	F	1 870	4 880
Jingellic	4.0	1.66	208.18	4 080	R	2 540	5 620
Tallandoon (Mitta Mitta River)	4.2	1.41	218.30	620	R	670	1 390
Heywoods	5.5	3.00	156.63	14 000	R	11 790	11 230
Doctors Point	5.5	2.97	151.44	14 800	S	12 840	12 400
Albury	4.3	1.99	149.43	-	-	-	-
Corowa	4.6	2.77	128.79	12 680	R	11 910	12 790
Yarrawonga Weir (d/s)	6.4	1.48	116.52	8 380	F	8 780	8 990
Tocumwal	6.4	2.14	105.98	8 770	F	8 860	9 090
Torrumbarry Weir (d/s)	7.3	2.56	81.10	7 540	S	7 650	6 810
Swan Hill	4.5	1.47	64.39	7 830	S	7 550	6 400
Wakool Junction	8.8	3.06	52.18	7 880	R	7 550	6 320
Euston Weir (d/s)	9.1	1.36	43.20	6 560	R	6 290	4 960
Mildura Weir (d/s)		-	-	5 560	F	4 600	3 440
Wentworth Weir (d/s)	7.3	2.81	27.57	4 160	S	3 630	2 130
Rufus Junction	-	3.71	20.64	7 850	F	7 990	6 510
Blanchetown (Lock 1 d/s)	-	0.72	-	4 980	S	5 070	1 910
Tributaries							
Kiewa at Bandiana	2.8	0.87	154.10	340	F	520	530
Ovens at Wangaratta	11.9	8.05	145.73	660	F	830	800
Goulburn at McCoys Bridge	9.0	2.44	93.86	2 730	R	2 770	2 160
Edward at Stevens Weir (d/s)	5.5	0.99	80.76	640	S	740	790
Edward at Liewah	-	1.46	56.84	820	F	850	740
Wakool at Stoney Crossing	-	1.44	54.93	470	F	490	470
Murrumbidgee at Balranald	5.0	0.63	56.59	290	F	310	190
Barwon at Mungindi	6.1	2.97	-	0	F	230	210
Darling at Bourke	9.0	3.70	-	0	F	0	0
Darling at Burtundy Rocks	-	0.67	-	40	S	50	40

Natural Inflow to Hume	1 550	1 640

(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	-0.16	-	No. 7 Rufus River	22.10	+0.06	+1.39
No. 26 Torrumbarry	86.05	+0.00	-	No. 6 Murtho	19.25	+0.00	+0.14
No. 15 Euston	47.60	+0.10	-	No. 5 Renmark	16.30	+0.03	+0.23
No. 11 Mildura	34.40	+0.03	+0.12	No. 4 Bookpurnong	13.20	+0.05	+0.77
No. 10 Wentworth	30.80	+0.10	+0.17	No. 3 Overland Corner	9.80	+0.06	+0.24
No. 9 Kulnine	27.40	+0.02	+0.04	No. 2 Waikerie	6.10	+0.02	+0.08
No. 8 Wangumma	24.60	+0.03	+0.13	No. 1 Blanchetown	3.20	-0.10	-0.03

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.66

Barrages

	Openings	Level (m AHD)	No. Open	Fishways at Barrages: Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.65	1	-	Open	Open	-
Mundoo	26 openings	0.64	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	1	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwitchere	322 gates	0.64	3	Open	Open	Open	-

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

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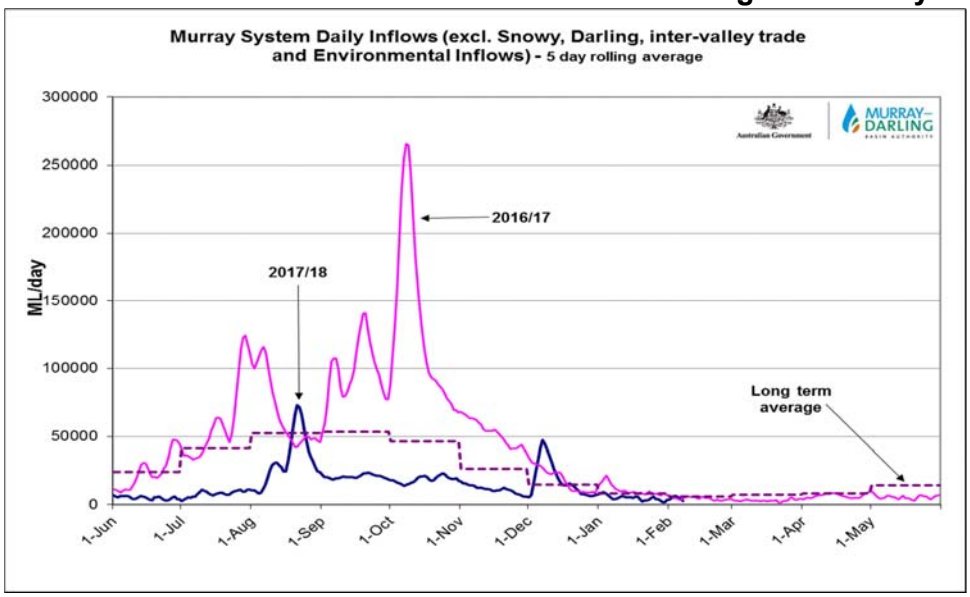

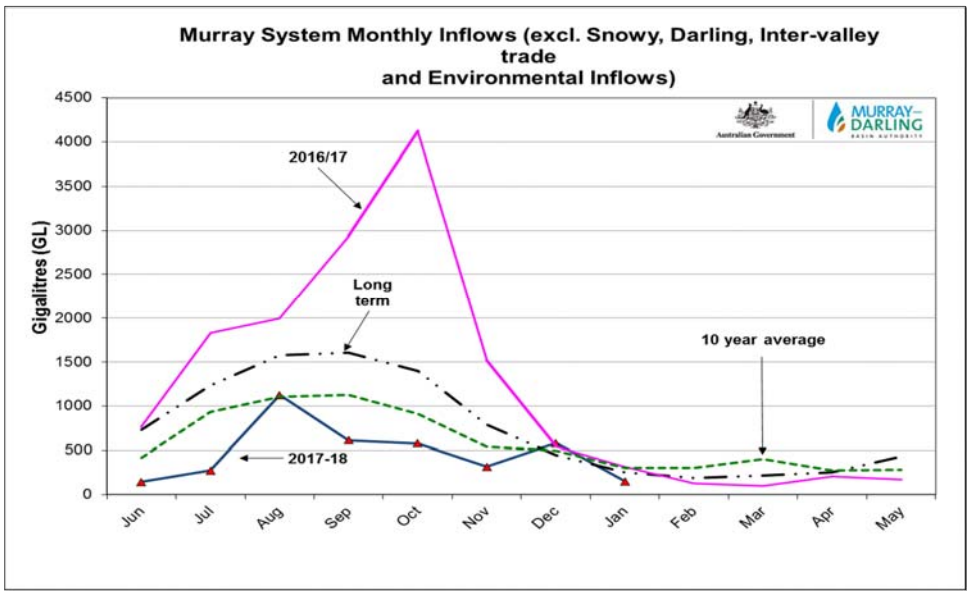

State Allocations (as at 07 Feb 2018)

NSW - Murray Valley

High security	97%
General security	49%

Victorian - Murray Valley

High reliability	100%
Low reliability	0%

NSW – Murrumbidgee Valley

High security	95%
General security	33%

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%

NSW : http://www.water.nsw.gov.au/water-management/water-availability
VIC : http://nvrm.net.au/seasonal-determinations/current
SA : http://www.environment.sa.gov.au/managing-natural-resources/river-murray