



River Murray Weekly Report

For the week ending Wednesday, 19 December 2018

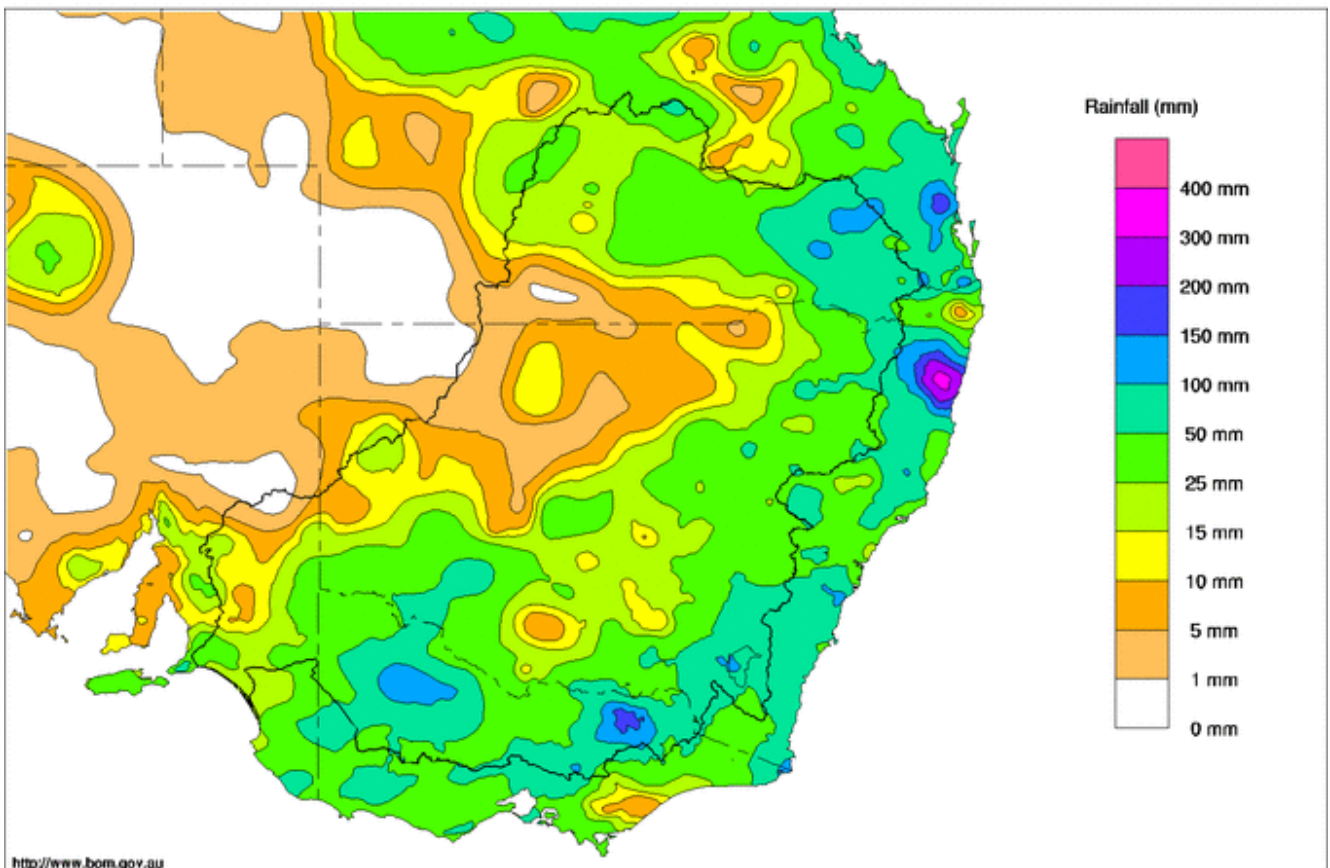
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The Murray-Darling Basin Authority and staff at the storages, weirs and barrages of the River Murray System wish all our readers a safe and happy festive season

Rainfall and inflows

It was a wet week for many parts of the Murray-Darling Basin as Tropical Cyclone Owen helped fortify a stream of tropical moisture that interacted with a slow moving cold front over south-eastern Australia. The result was a complex low pressure system that delivered several days of rain and widespread thunderstorms, with locally intense falls impacting a number of areas (Photo 1).

Murray-Darling Rainfall Totals (mm) Week Ending 19th December 2018
Australian Bureau of Meteorology



Map 1 - Murray-Darling Basin rainfall map week ending 19 December 2018 (Source: Bureau of Meteorology).

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The heaviest rain fell over the upper Condamine catchment in south-east Queensland, the Wimmera-Mallee region of Victoria and the mid to lower Ovens catchment in north-east Victoria (Map 1). Particularly intense rain over Victoria's north-east led to localised flash flooding and significant weekly totals including 204 mm at Eldorado, 140 mm at Lake Buffalo, 136 mm at Eurobin and 83 mm at Yarrawonga. Similarly large totals were recorded in north-west Victoria including 195 mm at Birchip and 140 mm at Hopetoun. Totals in Queensland included 159 mm at Traighli and 133 mm at Dalby; while in NSW, there was 135 mm at Crookwell and 113 mm at Mt Ginini on the ACT border.



Photo 1 - Satellite imagery of cloud spiralling around a large low pressure system that developed over south-eastern Australia earlier in the week. Image courtesy Bureau of Meteorology

The intense rainfall resulted in short but significant increases in stream flows in most upper Murray tributaries, particularly in the Kiewa and Ovens Rivers. The Mitta Mitta River at Hinnomunjie increased from 350 ML/day to peak around 2,800 ML/day midday Thursday before gradually receding to the current flow of 680 ML/day. The upper Murray River at Biggara rose from 520 ML/day to peak at 1,600 ML/day Friday morning. Flows have now fallen to 660 ML/day.

Inflow from the Kiewa River, measured at Bandiana, increased from 800 ML/day to 3,350 ML/day by Friday morning, peaking at 4,200 ML/day on Saturday morning. With no further rain, flows receded to the current rate around 1,320 ML/day. Intense rainfall in parts of the Ovens catchment resulted in a peak flow at Wangaratta around 9,800 ML/day early Friday morning, this included a peak release from Lake Buffalo of 5,000 ML/day. Flows have since receded to the current flow around 2,250 ML/day.



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River operations

- Brief increase to Yarrawonga Weir release from local inflows and tributary inflows
- Transfers from Dartmouth to Hume Reservoir to continue at reduced rates
- Significant volume of IVT water planned for delivery in January from the Goulburn Valley account
- Transfers from Hume Reservoir to Lake Victoria continue to ease

River operations

MDBA active storage increased by 16 GL this week to 4,409 GL (52% capacity).

Despite the rainfall this week, **Dartmouth Reservoir** storage volume decreased by 34 GL to 2,779 GL (72% capacity). The Dartmouth release, measured at Colemans, reduced during the week to around 5,000 ML/day in anticipation of sharp tributary responses and heavy localised rainfall that pushed the water level at Tallandoon close to channel capacity before receding. The release was subsequently increased to 6,350 ML/day to maintain flow rates as tributary flows fell away quickly. The Dartmouth release is currently around 5,600 ML/day. Assuming no further rainfall events, the release will be held steady at 4,500 ML/day over the Christmas Break. More information on the release from Dartmouth and expected Tallandoon water levels is provided in the recently issued MDBA [flow advice](#).

At **Hume Reservoir**, rainfall, tributary inflows and reduced releases resulted in Hume storage level increasing by 33 GL this week to 1,255 GL (42% capacity). In anticipation of forecast rainfall, suppressed consumptive demands and increased inflows from the Kiewa and Ovens rivers, the release was decreased to 3,500 ML/day during the week. As conditions dry off and downstream tributaries recede the release is expected to increase further in the coming week from the current rate of 11,000 ML/day.

Downstream at **Lake Mulwala** the level is currently 124.82 m AHD, which is within the normal operating range (124.7 to 124.9 m AHD). Diversions to Yarrawonga Main Channel (YMC) and Mulwala Canal decreased significantly in response to the rain, with diversions as low as 190 and 600 ML/day respectively. As rainfall cleared, diversions have increased and are currently around 500 ML/day at YMC and 1,250 ML/day at Mulwala Canal. Of the Mulwala Canal diversion, approximately 600 ML/day is water being diverted around the Barmah Choke through Murray Irrigation Limited (MIL) infrastructure and released into the River Murray (Pericoota escape), Wakool River (Wakool escape), Edward River (Edward escape) and Billabong Creek (Finley escape). Similarly, on the Victorian side around 120 ML/day continues to travel through Yarrawonga Main Channel and into the Broken Creek, again to bypass the Barmah Choke and transfer water to Lake Victoria.

At **Yarrawonga Weir** the release was increased in response to high local inflows resulting from intense local rain that quickly raised the pool level towards full supply. Releases were increased from 12,500 ML/day to 17,000 ML/day for a few hours before decreasing to 15,000 ML/day. The release was increased again to a peak of 20,500 ML/day over the weekend as additional tributary inflows from the Ovens and Kiewa Rivers flowed into Lake Mulwala. As this inflow peak receded, releases were reduced again, with the current release around 11,000 ML/day. Flows are expected to remain around this rate for a few more days before receding towards 9,500 ML/day around the New Year. Downstream of Yarrawonga, additional Barmah-Millewa forest regulators have been opened by forest managers to pass this flow pulse and to ensure river levels remain within channel through the Barmah Choke and at Picnic Point.

As the release from Yarrawonga is eased further towards 9,500 ML/day, the regulators to the forest will be closed in stages which will provide a signal native fish to move off the floodplain and return to the river. It is expected that by 2 January, subject to no further rain events, all forest regulators will be closed and the release from the weir will be held steady at 9,500 ML/day

Downstream on the Edward-Wakool system, flows through the **Edward River** and **Gulpa Creek** offtakes are currently near 1,530 ML/day and 350 ML/day respectively. Return flows from the Millewa Forest plus flows from Edward River and Gulpa Creek are combining to produce a flow of around 3,500 ML/day on the Edward River at Toonlook.



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Diversion into Wakool Main Canal averaged 70 ML/day, and Wakool, Yallakool and Colligen offtakes continue to pass around 50, 400 and 420 ML/day respectively to help boost transfers to Lake Victoria and the lower system. The flow in the Edward River downstream of Stevens Weir is now targeting around 2,600 ML/day.

On the Murray, the flow at **Barmah** is fairly steady near 10,700 ML/day, which includes water returning to the River Murray from Barmah Forest channels and wetlands. Flows around this rate are expected to rise over the coming days as the flow pulse from Yarrawonga Weir arises before slowly receding.

Inflow to the Murray from the **Goulburn River**, measured at McCoys Bridge, increased this week as a small IVT pulse is delivered to the Murray. The current flow is around 2,870 ML/day at McCoys and is expected to peak in the coming days around 3,000 ML/day before receding back to around 1,500 ML/day by the end of the week. Flow is then likely to increase again in early January if hot and dry conditions lead to an overall increase in system demands. On the **Campaspe River** at Rochester, the flow reached 160 ML/day this week before receding to the current flow of about 110 ML/day and is expected to recede further towards 70 ML/day in the coming weeks. A portion of the flow in the Broken, Goulburn and Campaspe is being delivered to the Murray from the Inter Valley Trade (IVT) account. Over coming months, significant volumes of IVT water are [likely to continue](#) to be delivered from the Goulburn Valley account. The MDBA will continue to work closely with the Goulburn Broken Catchment Management Authority and Goulburn-Murray Water to try and limit as much as practicable, the impact of these flows on the Lower Goulburn Channel vegetation. Information regarding current opportunities for allocation trade between the Goulburn and Murray valleys is available at the [Victorian water register website](#).

National Channel diversions reduced this week to around 1,300 ML/day as rainfall softened demands. The release from **Torrumbarry Weir** increased to the current flow around 11,250 ML/day. The release is expected to increase to around 12,200 ML/day in the coming days before gently receding.

Inflow from the **Murrumbidgee River**, measured at Balranald, averaged 370 ML/day and is expected to slowly fall towards the end of system target of 250 ML/day. The [Murrumbidgee IVT balance](#) is currently 2.4 GL, restricting the MDBA from calling water from this valley to help meet Murray system demands.

At **Euston**, the weir pool is planned to be gradually surcharged over the next week or two to target a level around 10 cm above full supply level (FSL). This action will provide a measure of additional water that can be used to help meet potential demand spikes during the peak summer demand period. The downstream release reached 12,700 ML/day as diversions along the river dropped away with the rain. Flows above 11,000 ML/day are likely during the coming week.

The **Menindee Lakes** storage volume decreased by 5 GL to 84 GL (5% capacity). A red level warning (high alert) for blue-green algae is current for Lake Wetherell, Lake Pamamaroo, Copi Hollow, Lake Cawndilla and the Darling River at Menindee. More information is available at the WaterNSW [website](#). WaterNSW continues to manage the Menindee Lakes in accordance with the [Lower Darling Annual Operations Plan](#). As part of drought contingency measures, WaterNSW has installed four temporary block banks across the lower Darling below Pooncarie near Jamesville, below Burtundy near Ashvale, and upstream of Pooncarie at Court Nareen and Karoola. Water held in these pools will assist in maintaining supply to domestic, stock and permanent plantings along the lower Darling. The release from Weir 32 averaged around 310 ML/day whilst water is available in Lake Pamamaroo to deliver water to these two block banks. Given the drought conditions affecting much of New South Wales, water restrictions have been placed on lower Darling customers. For more information, refer to the WaterNSW [Media Release](#).

At **Wentworth Weir**, operations continue to target a pool level of around 10 cm above FSL to assist pumpers in the upper reaches of the Darling arm of the weir pool. The downstream release also increased during the week and is currently near 11,400 ML/day. Flows are expected to ease in the coming days.

The **Lock 9** weir pool is currently targeting around 10 cm below FSL and at **Lock 8**, the weir pool is currently targeting 50 cm below FSL. The **Lock 7** weir pool is being gradually returned to FSL over the coming weeks and is currently around 10 cm below FSL.



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The **Lake Victoria** storage volume increased by 17 GL to 569 GL (84% capacity) as additional flow from rainfall along the river was captured in the lake. It is anticipated that the storage will plateau close to this level over Christmas as the higher flows from upstream are offset by the expected increase in demands.

Flow to **South Australia** is currently targeting 7,300 ML/day. The flow to South Australia for this week consists of Entitlement flow, traded water and environmental water previously released from Hume Reservoir. Flow across the border will continue increasing over the coming fortnight to peak around 11,800 ML/day as a rise is delivered on behalf of environmental water holders for the benefit of native fish.

Across the border the in-channel rise in Chowilla wetland recently finished and has resulted in good vegetation outcomes and attracted a range of waterbirds to waterholes (Photo 2) and shallow lagoons (Photo 3).



Photo 2: Coppermine Waterhole, Chowilla wetland showing good vegetation responses following the in-channel rise (Photo courtesy Jan Whittle)

The 5-day average water level in the **Lower Lakes** remained steady this week at 0.70 m AHD. When conditions allow, environmental water is being released through the barrages to maintain connectivity between Lake Alexandrina and the Coorong estuary. Barrage releases have prioritised Tauwitchere and Goolwa and all fishways remain open. For more information see the South Australian Department for Environment and Water's latest [River Murray flow report](#).

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Photo 3: Shallow water across the Werta Wert wetlands western lagoon in Chowilla wetland attracted large numbers of water birds (Photo courtesy Jan Whittle)

**There will be no Weekly Report issued for the week ending Wednesday, 26th December 2018.
The next report will cover the two week period ending Wednesday, 2nd January 2019 and will be
available from Friday, 4th January 2019.**

For media inquiries contact the Media Officer on 02 6279 0141

ANDREW REYNOLDS
Executive Director, River Management



Australian Government



River Murray Weekly Report

Water in Storage

Week ending Wednesday 19 Dec 2018

MDBA Storages	Full Supply Level (m AHD)	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)
				(GL)	%			
Dartmouth Reservoir	486.00	3 856	467.90	2 779	72%	71	2 708	-34
Hume Reservoir	192.00	3 005	181.03	1 255	42%	23	1 232	+33
Lake Victoria	27.00	677	26.09	569	84%	100	469	+17
Menindee Lakes		1 731*		84	5%	(- -) #	0	-5
Total		9 269		4 687	51%	--	4 409	+12
Total Active MDBA Storage							52% ^	

Major State Storages

Burrinjuck Reservoir	1 026	457	45%	3	454	+24
Blowering Reservoir	1 631	795	49%	24	771	+15
Eildon Reservoir	3 334	1 909	57%	100	1 809	-2

* 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 18 Dec 2018

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2018
Lake Eucumbene - Total	891	n/a	Snowy-Murray	+2	500
Snowy-Murray Component	521	n/a	Tooma-Tumut	+4	169
Target Storage	1 510		Net Diversion	-3	332
			Murray 1 Release	+7	640

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)	2.7	211	Yarrawonga Main Channel (net)	1.2	117
Wakool Sys Allowance	0.4	20	Torrumbarry System + Nyah (net)	0.1	281
Western Murray Irrigation	0.3	9	Sunraysia Pumped Districts	1	50
Licensed Pumps	2.9	87	Licensed pumps - GMW (Nyah+u/s)	1	15
Lower Darling	0.1	5	Licensed pumps - LMW	4.6	167
TOTAL	6.4	332	TOTAL	7.9	630

* 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	217.0 *	
Flow this week	50.8	(7 300 ML/day)
Flow so far this month	139.9	
Flow last month	203.1	

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

	Current	Average over the last week	Average since 1 August 2018
Swan Hill	80	80	70
Euston	-	-	-
Red Cliffs	80	80	110
Merbein	80	80	110
Burtundy (Darling)	880	880	780
Lock 9	90	90	120
Lake Victoria	140	140	160
Berri	170	160	210
Waikerie	240	250	270
Morgan	270	280	290
Mannum	350	350	330
Murray Bridge	410	410	370
Milang (Lake Alex.)	910	1 140	890
Poltalloch (Lake Alex.)	740	770	740
Meningie (Lake Alb.)	1 570	1 580	1 470
Goolwa Barrages	2 610	2 920	2 740



River Levels and Flows

Week ending Wednesday 19 Dec 2018

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	-	-	-	550	F	1 140	3 160
Jingellic	4.0	1.34	207.86	2 110	F	3 720	3 610
Tallandoon (Mitta Mitta River)	4.2	2.82	219.71	6 120	F	6 860	7 490
Heywoods	5.5	2.73	156.36	11 400	R	6 630	14 790
Doctors Point	5.5	2.78	151.25	12 510	R	9 280	15 100
Albury	4.3	1.78	149.22	-	-	-	-
Corowa	4.6	1.88	127.90	7 270	S	9 630	16 540
Yarrawonga Weir (d/s)	6.4	1.81	116.85	11 060	F	15 630	14 280
Tocumwal	6.4	3.14	106.98	16 330	F	14 780	13 900
Torrumbarry Weir (d/s)	7.3	3.38	81.92	10 810	R	9 880	9 420
Swan Hill	4.5	1.88	64.80	10 560	R	10 230	9 690
Wakool Junction	8.8	4.07	53.19	12 590	F	12 430	12 020
Euston Weir (d/s)	9.1	2.19	44.03	12 170	F	12 130	10 980
Mildura Weir (d/s)	-	-	-	12 160	F	11 260	9 810
Wentworth Weir (d/s)	7.3	3.15	27.91	11 400	F	10 620	7 990
Rufus Junction	-	3.50	20.43	6 520	R	6 670	6 430
Blanchetown (Lock 1 d/s)	-	0.77	-	6 240	S	4 980	3 940
Tributaries							
Kiewa at Bandiana	2.8	1.59	154.82	1 320	R	2 290	620
Ovens at Wangaratta	11.9	8.68	146.36	2 240	F	4 230	470
Goulburn at McCoys Bridge	9.0	2.50	93.92	2 870	R	1 650	790
Edward at Stevens Weir (d/s)	5.5	2.38	82.15	2 600	F	2 600	2 620
Edward at Liewah	-	2.84	58.22	2 300	S	2 330	2 470
Wakool at Stoney Crossing	-	1.69	55.18	840	S	860	890
Murrumbidgee at Balranald	5.0	0.62	56.58	310	F	370	330
Barwon at Mungindi	6.1	2.86	-	0	F	0	0
Darling at Bourke	9.0	3.07	-	0	F	0	0
Darling at Burtundy Rocks	-	0.61	-	10	F	10	10

Natural Inflow to Hume	6 390	4 020
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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	-0.08	-	No. 7 Rufus River	22.10	+0.12	+1.20
No. 26 Torrumbarry	86.05	-0.03	-	No. 6 Murtho	19.25	-0.01	+0.12
No. 15 Euston	47.60	-0.08	-	No. 5 Renmark	16.30	+0.01	+0.23
No. 11 Mildura	34.40	-0.01	+0.45	No. 4 Bookpurnong	13.20	+0.06	+0.78
No. 10 Wentworth	30.80	+0.09	+0.51	No. 3 Overland Corner	9.80	+0.07	+0.33
No. 9 Kulnine	27.40	-0.07	-0.35	No. 2 Waikerie	6.10	+0.09	+0.28
No. 8 Wangumma	24.60	-0.48	+0.28	No. 1 Blanchetown	3.20	+0.09	+0.02

Lower Lakes FSL = 0.75 m AHD

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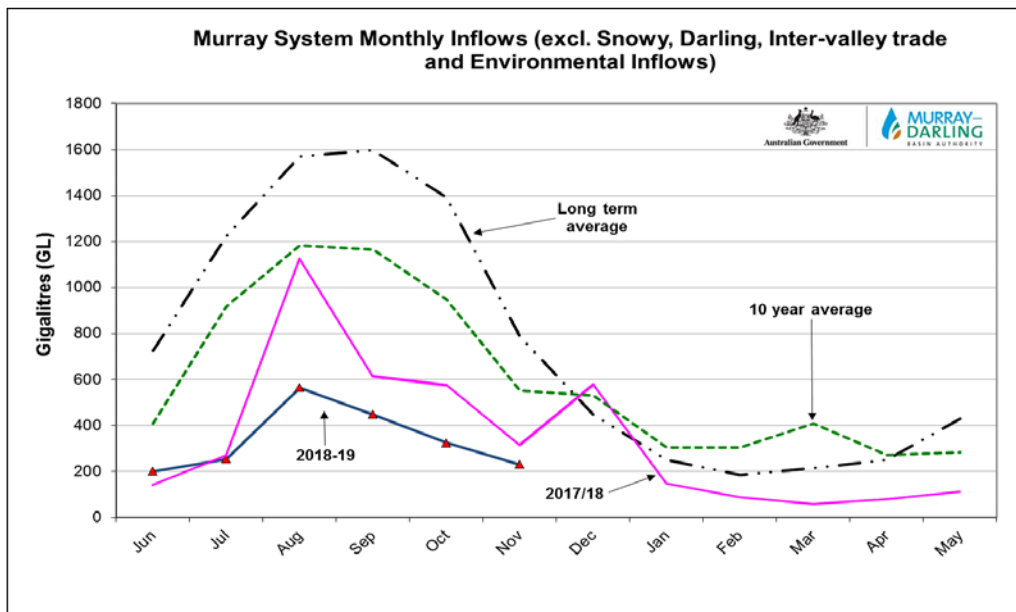
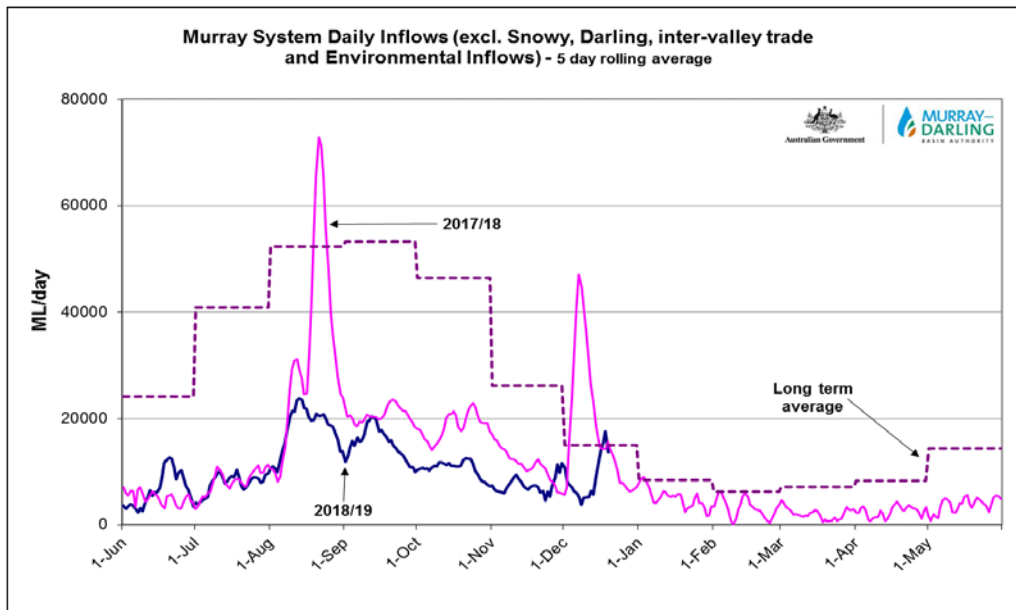
Barrages

Fishways at Barrages

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.78	1	-	Open	Open	-
Mundoo	26 openings	0.60	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	1	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwichee	322 gates	0.65	1	Open	Open	Open	-

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





State Allocations (as at 19 Dec 2018)

NSW - Murray Valley

High security	97%
General security	0%

Victorian - Murray Valley

High reliability	100%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	7%

Victorian - Goulburn Valley

High reliability	93%
Low reliability	0%

NSW - Lower Darling

High security	100%
General security	0%

South Australia - Murray Valley

High security	100%
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NSW : <https://www.industry.nsw.gov.au/water/allocations-availability/allocations/summary>

VIC : <http://nvrn.net.au/seasonal-determinations/current>

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

