



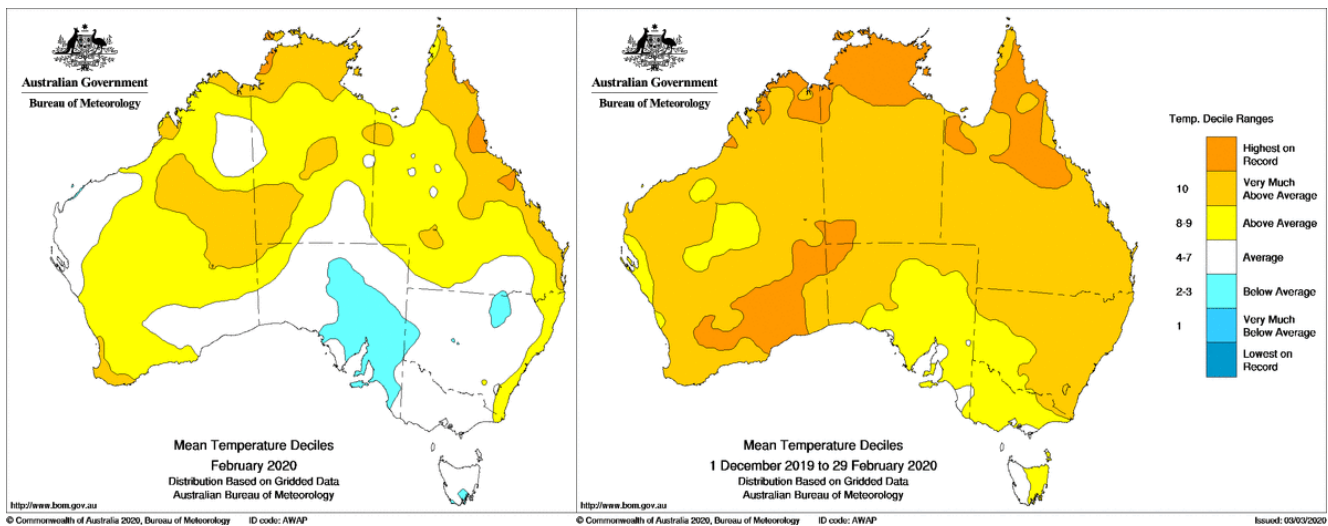
River Murray Weekly Report

For the week ending Wednesday, 4 March 2020

Trim Ref: D20/8977

Summary of summer 2019-20 conditions

The Bureau of Meteorology (BoM) reports that summer 2019-20 was Australia’s second warmest on record. For the Murray-Darling Basin, heatwave conditions were widespread in December and contributed to highest on record December mean temperatures across most of the northern Basin, while most locations in the southern Basin experienced mean temperatures in the highest 10% of historical December records. Mean January temperatures were closer to average in the south and again elevated in the north. Cooler conditions were experienced in February (Map 1), particularly in South Australia, and these cooler conditions helped ease losses such as evaporation along the Murray. Overall, mean temperatures during summer 2019-20 (Map 2) were well above average, especially in the northern Basin.

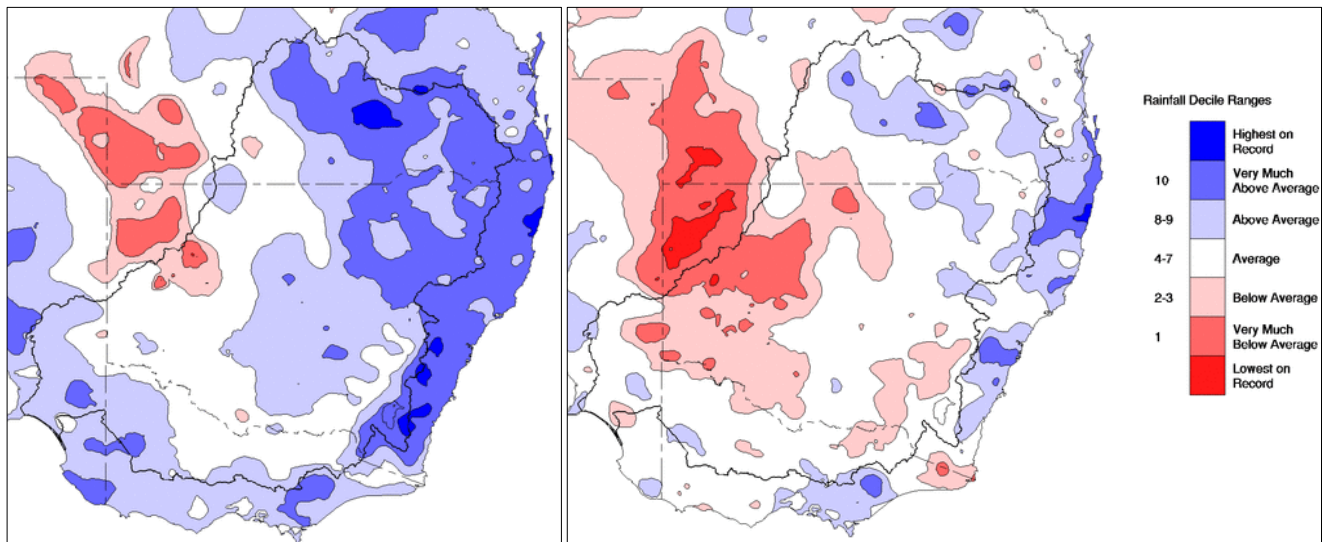


Maps 1 & 2 – Australian temperature deciles in February 2020 (left) and across summer 2019-20 (right). Source: Bureau of Meteorology.

A prolonged positive Indian Ocean Dipole that developed during winter 2019 persisted into early summer and contributed to the very dry December experienced across the Basin. Some long-awaited welcome rainfall over many parts of the Basin resulted in near average January rainfall deciles. In February, further follow-up rainfall (Map 3) in Queensland and New South Wales further boosted streamflow in Darling catchments with major flooding recorded along some tributary systems.

The BoM reports area-averaged rainfall for the Murray-Darling Basin in February of 80 mm, which is 98% above the long-term February mean. Across summer 2019-20, Basin rainfall deciles (Map 4) ranged from well above average to well below average, with area-averaged rainfall of 122 mm, 16% below the long-term mean. Critically, although significant rainfall deficiencies that have developed over the last three years have eased in some areas, on-going average to above average rain would be necessary over several months to remove these deficiencies, re-charge storage levels and bring the Basin out of drought.

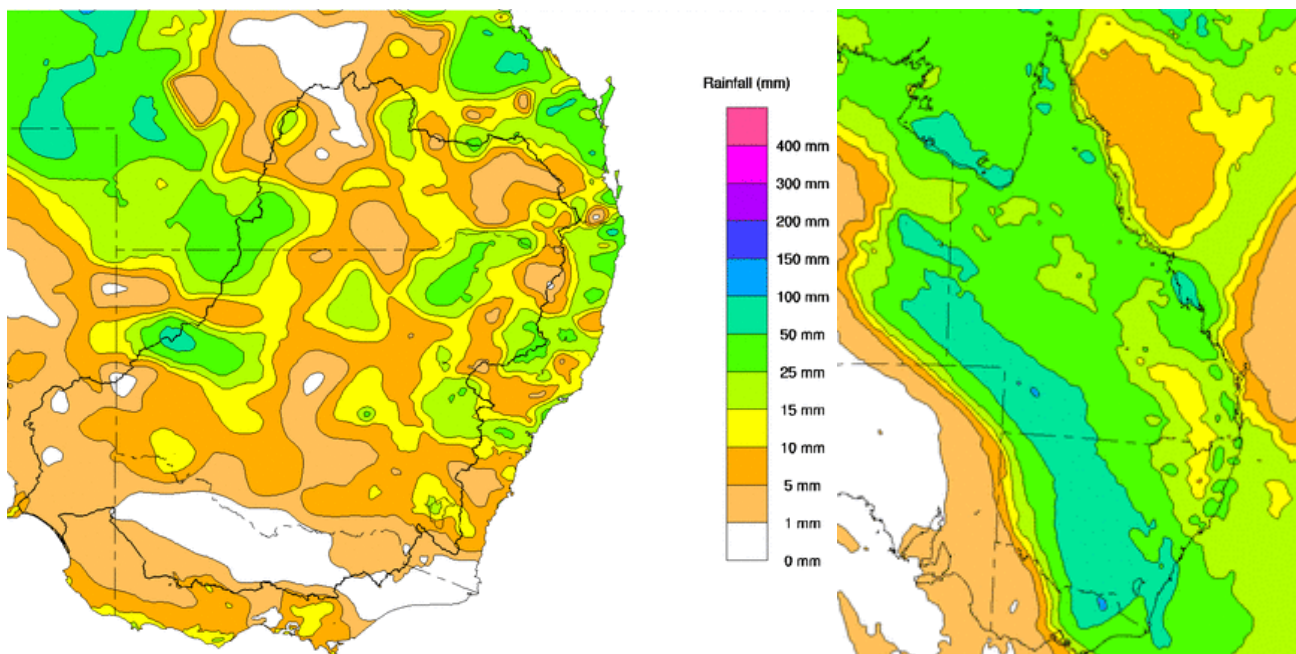
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Maps 3 & 4 – Rainfall deciles across the Murray-Darling Basin in February 2020 (left) and across summer 2019-20 (right). Source: Bureau of Meteorology.

Weekly rainfall and inflows

For the week ending 4 March 2020, the majority of Basin rainfall was recorded in Queensland and New South Wales (Map 5). Late in the week, the remnants of ex-tropical cyclone Esther interacted with a low-pressure trough stretching from Queensland south over New South Wales and Victoria. Widespread rain developed from this system with some localised heavy totals including 120 mm at Fowlers Gap, on the western edge of the Basin. As this weather system continues to develop and move south and east over coming days, substantial falls are forecast by the BoM to continue over much of the Basin (Map 6). Flow responses and impacts from this rain system will be reported in next week's weekly report.



Maps 5 & 6 – Rainfall across the Murray-Darling Basin for the week ending 4 March 2020 (left) and the rainfall forecast for 4 – 7 March. Source: Bureau of Meteorology.

With little rainfall over Murray catchments during the past week, upper Murray tributaries remained near low summertime baseflows. However, given the forecast rainfall the BoM has issued a Flood Watch for parts of the southern Basin including north-east Victoria and the Murrumbidgee and Tumut Rivers in New South Wales. Flood

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Watches and any potential Flood Warnings are available through the [BoM website](#). Specific information about flows at key locations in the upper Murray catchment including [Hinnomunjie Bridge](#) on the upper Mitta Mitta River, [Biggara](#) on the upper Murray, [Bandiana](#) on the Kiewa River as well as [Peechelba](#) on the Ovens River can be found at the MDBA's [River Murray data](#) webpage. Up-to-date river data for sites in the upper Murray can also be found at Bureau of Meteorology's (BoM) [website](#) and in the Murray River Basin daily river report at the WaterNSW [website](#).

River operations

- Widespread significant rainfall forecast for coming days
- Lower flows expected along the Murray during autumn
- Blue-green algae warnings:
 - Red Alert for Hume
 - Amber Alerts along much of the Murray downstream of Hume.
 - Red Alerts for blue-green algae continue in Menindee Lakes and lower Darling
- Reduced IVT deliveries from Goulburn and Murrumbidgee valleys

Water quality impacts

The MDBA and State Constructing Authorities are continuing to monitor water quality in areas affected by recent bushfires in the upper Murray catchments. The recent bushfires in these areas have not impacted any MDBA operated structures nor impacted releases from storages.

As significant rainfall is forecast across bushfire affected areas in the upper Murray catchment, it is likely water quality will deteriorate in some locations as ash and sediment is washed into water courses following rain. Further fish deaths could result. Several fish deaths have already occurred in the upper Murray following recent rain. The extent and timing of water quality or aquatic impacts depends on the location of burnt catchment as well as the intensity and duration of rainfall events.

For information on current water quality and any impacts to your water supply, contact your retail water supplier.

Blue-green algal alerts remain in place at several locations in the River Murray system. A red alert remains for Hume Dam, Lake Wetherell and the lower Darling at Burtundy. Amber alerts are widespread along much of the Murray and Edward-Wakool system. It is important that water users regularly keep up-to-date with algal alerts, notices and health warnings. This information can most readily be accessed through [Goulburn-Murray Water](#) (GMW) and [WaterNSW](#).

River operations

Initial information on expected water availability for the 2020-21 water year was published mid-February by South Australia ([Statement – River Murray Water Availability Early Advice](#)), NSW in the [Water allocation statements](#) and Victoria ([Northern Victorian Resource Manager releases 2020/21 seasonal determination outlook](#)).

In the past week MDBA total active storage reduced by 39 GL to 2,343 GL (28% capacity) (Figure 1). Murray System inflows (excl. Snowy, Darling, inter-valley trade and environmental tributary inflows) have continued to track well below the long-term average (see plot on last page of this report).

At **Dartmouth Reservoir**, the [storage](#) decreased by 11 GL to 1,791 GL (46% capacity). Transfers from Dartmouth Reservoir to Hume Reservoir have been necessary since June 2019 to ensure sufficient volume was in Hume to meet River Murray System demands including requirements at Lake Victoria. River Murray System conditions have improved in recent weeks and rain is forecast. As such, system demands including forecast requirements for Lake Victoria have reduced and are expected to reduce further during autumn. Transfers from Dartmouth to Hume have started to be reduced. Over the last week the [release](#) from Dartmouth, measured at Colemans, has slowly reduced from near 2,500 ML/day to 850 ML/day and will ease further in coming days. Looking ahead, over the coming month a flow of approximately 600 ML/day at Tallandoon is likely to be targeted to help facilitate pumping access for landholders in the lower Mitta Mitta River.



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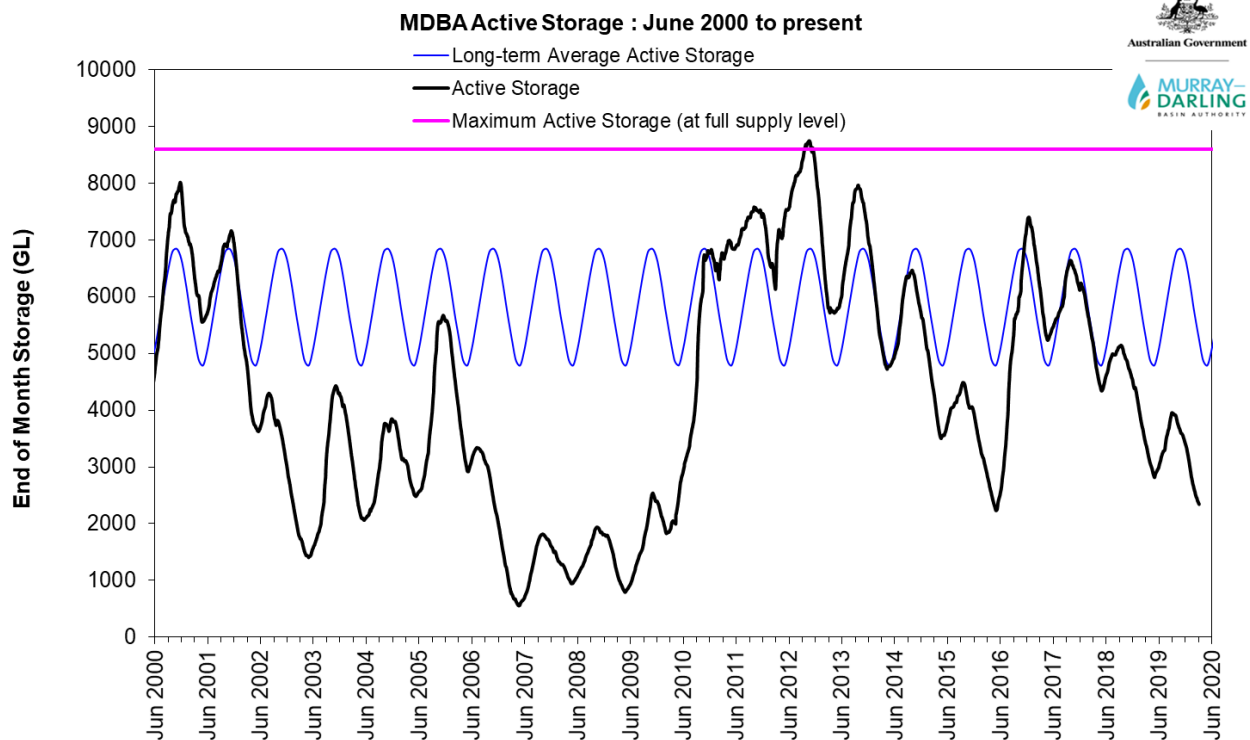


Figure 1 – MDBA Active storage since June 2000.

At **Hume Reservoir**, the [storage](#) decreased by 25 GL to 484 GL (16% capacity). This week the Hume release gradually reduced from around 7,000 ML/day to 5,800 ML/day in response to reduced irrigation demand and anticipated rainfall. While releases are likely to reduce further in coming days, the extent of reductions will largely depend on the impact rainfall has on both irrigation demand and inflows downstream of Hume.

At **Lake Mulwala**, the pool [level](#) is currently 124.76 m AHD which is within the normal operating range between 124.6 and 124.9 m AHD. This week diversions from the weir pool reduced further to very low rates. At Yarrowonga Main Channel, diversion fell from 540 to 240 ML/day. Diversion into Mulwala Canal reduced from 500 to 250 ML/day, partially in response to the cessation of system transfers through Murray Irrigation Limited (MIL) infrastructure via Perricoota Escape.

Across the week the release from **Yarrowonga Weir** varied between 6,500 and 7,200 ML/day. Unless there are significant streamflow responses in the Ovens and Kiewa from the forecast rain, the Yarrowonga release is expected to remain around this rate over the coming week before likely being reduced further in coming weeks. Current BoM flood warnings suggest tributary flow responses in the coming days have the potential to push Murray flows higher than the current Yarrowonga target. However, these potential higher flows would be short-lived unless heavy rainfall continued. The MDBA encourages community members including river pumpers to contact their local water supply agency in the first instance regarding pump or other access issues that may result from decreasing water levels over the coming weeks.

Flows through the **Edward River** offtake have eased to around 1,400 ML/day. Flow through the **Gulpa Creek** offtake is currently near 190 ML/day. Downstream along the Edward River, approximately 30 ML/day is passing through the Wakool offtake regulator, 200 ML/day through Yallakool Creek offtake and 160 ML/day into Colligen Creek. At Stevens Weir, the downstream flow averaged 1,050 ML/day and may reduce slightly in the coming week.

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Flow in the **Goulburn River**, measured at McCoys Bridge, gradually fell from 1,100 ML/day to below 900 ML/day and a similar rate is expected to be targeted over the coming fortnight. For March 2020, up to 35 GL of IVT may be called from the Goulburn system, although this is likely to be revised down following the forecast rain. The delivery of IVT from the Goulburn System is being managed in consultation with Goulburn-Murray Water (GMW) and Goulburn Broken Catchment Management Authority (GBCMA) to deliver flows at rates that strive to limit environmental impacts to the lower Goulburn River. Information regarding opportunities for allocation trade between the Goulburn and Murray Valleys is available at the Victorian water register [website](#). Small volumes of IVT are also being delivered via the Broken Creek.

[Diversions](#) to National Channel from the Torrumbarry weir pool have continued near 1,200 ML/day and the **Torrumbidgee Weir pool** remains at the Full Supply Level (FSL) of 86.05 m AHD. Recent flow reductions from Yarrowonga Weir and the Goulburn River resulted in the flow downstream of Torrumbarry Weir decreasing this week from 5,900 ML/day towards 4,500 ML/day.

Inflow from the **Murrumbidgee River**, measured at [Balranald](#), slowly reduced from around 1,400 ML/day to near 1,100 ML/day as the delivery of Murrumbidgee IVT subsides. Further reductions may occur this week with the delivery of Murrumbidgee IVT expected to cease later this month. The [Murrumbidgee IVT balance](#) is currently below 60 GL and trade into and out of the valley is open. Further information on expected IVT deliveries from the Murrumbidgee is provided by [WaterNSW](#).

At **Euston**, the [weir pool level](#) is targeting FSL. Over the past week the [downstream release](#) eased slightly to around 8,800 ML/day and will fall further over the coming week.

The **Menindee Lakes storage** is approximately 5 GL (less than 1% capacity). WaterNSW continues to manage the Menindee Lakes in accordance with the [Lower Darling Annual Operations Plan](#).

Recent rainfall events in the northern Basin have produced welcome streamflow responses in the Barwon-Darling system with flows now approaching Wilcannia on the Darling River. Current forecasts by [WaterNSW](#) indicate a volume in the order of 215-240 GL may reach Menindee Lakes from mid-March. Although these rainfall events have continued to deliver large flow responses along some upstream tributaries, due to the very dry conditions and long travel times there is significant uncertainty in the volume that will reach Menindee Lakes.

Despite recent rainfall and streamflow responses, in the many parts of NSW drought conditions persist with extensive [water restrictions](#). Links to drought services and assistance can be also accessed via the MDBA [drought webpage](#).

At **Wentworth Weir**, the [pool level](#) is currently targeting 10 cm above FSL to assist pumpers in the upper reaches of the Darling River arm of the weir pool whilst there is no inflow from the Darling River. The downstream release is near 6,600 ML/day and expected to reduce over the coming fortnight.

The **Lock 9** weir pool level is targeting FSL to 10 cm below FSL. At **Locks 8 and 7**, the weir pool levels are being varied as part of the weir pool variability program. Currently, Lock 8 is targeting a level between 90 and 100 cm below FSL and Lock 7 is targeting a level between 50 and 60 cm below FSL.

At **Lake Victoria**, the storage volume reduced by 3 GL to 262 GL (39% capacity).

The [flow to South Australia](#) is currently targeting 6,100 ML/day and is anticipated to remain near this rate for most of March. This flow comprises the delivery of South Australia's monthly Entitlement, net trade into the state and environmental water. For more information on South Australia's Entitlement flow, see the South Australian Department for Environment and Water's latest [River Murray flow report](#).



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The **Lower Lakes** 5-day average water level decreased by 2 cm this week 0.57 m AHD. Releases have recently been occurring through fishways and a small release through Tauwitchere barrage. For information on barrage releases see the South Australian [Department for Environment and Water Weekly River Murray Flow Report](#).

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 04 Mar 2020

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	447.04	1 791	46%	71	1 720	-11
Hume Reservoir	192.00	3 005	173.30	484	16%	23	461	-25
Lake Victoria	27.00	677	23.16	262	39%	100	162	-3
Menindee Lakes		1 731*		5	0%	(- -) #	0	-0
Total		9 269		2 542	27%	- -	2 343	-39
Total Active MDBA Storage							28% ^	

Major State Storages

Burrinjuck Reservoir	1 026	355	35%	3	352	-1
Blowering Reservoir	1 631	637	39%	24	613	+11
Eildon Reservoir	3 334	1 234	37%	100	1 134	-16

* 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 Mar 2020

Storage	Active Storage (GL)	Weekly Change (GL)	Diversions (GL)	This Week	From 1 May 2019
Lake Eucumbene - Total	831	-16	Snowy-Murray	+10	374
Snowy-Murray Component	492	-3	Tooma-Tumut	+3	195
Target Storage	1 410		Net Diversion	7	178
			Murray 1 Release	+9	544

Major Diversions from Murray and Lower Darling (GL) *

New South Wales	This Week	From 1 July 2019	Victoria	This Week	From 1 July 2019
Murray Irrig. Ltd (Net)	2.2	118	Yarrowonga Main Channel (net)	2.5	95
Wakool Sys Allowance	2.4	41	Torrumbarry System + Nyah (net)	0.2	222
Western Murray Irrigation	0.5	21	Sunraysia Pumped Districts	2.2	94
Licensed Pumps	3.1	106	Licensed pumps - GMW (Nyah+u/s)	0.2	15
Lower Darling	0.0	1	Licensed pumps - LMW	12.4	331
TOTAL	8.2	287	TOTAL	17.5	757

* 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 includes monthly Entitlement plus the delivery of environmental and traded water.

Entitlement this month	186.0 *	
Flow this week	40.7	(5 800 ML/day)
Flow so far this month	22.9	
Flow last month	218.4	

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

	Current	Average over the last week	Average since 1 August 2019
Swan Hill	70	80	70
Euston	-	-	-
Red Cliffs	-	-	50
Merbein	90	90	90
Burtundy (Darling)	-	-	1 220
Lock 9	90	100	100
Lake Victoria	120	150	120
Berri	140	140	140
Waikerie	210	210	210
Morgan	220	220	220
Mannum	240	240	260
Murray Bridge	270	270	280
Milang (Lake Alex.)	960	940	860
Poltalloch (Lake Alex.)	880	900	820
Meningie (Lake Alb.)	1 920	1 890	1 760
Goolwa Barrages	2 380	2 310	2 000



River Levels and Flows

Week ending Wednesday 04 Mar 2020

	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)				
River Murray							
Khancoban	-	-	-	3 270	F	1 590	2 410
Jingellic	4.0	1.52	208.04	3 300	R	2 660	3 350
Tallandoon (Mitta Mitta River)	4.2	1.66	218.55	1 160	F	1 730	2 430
Heywoods	5.5	2.52	156.15	5 980	R	6 710	7 780
Doctors Point	5.5	2.31	150.78	7 210	R	8 090	9 160
Albury	4.3	1.35	148.79	-	-	-	-
Corowa	4.6	1.74	127.76	6 670	F	7 290	8 520
Yarrowonga Weir (d/s)	6.4	1.21	116.25	7 160	R	6 740	7 120
Tocumwal	6.4	1.67	105.51	6 170	R	6 240	6 860
Torrumbarry Weir (d/s)	7.3	1.73	80.27	4 570	F	5 040	6 880
Swan Hill	4.5	1.15	64.07	5 610	F	6 440	7 760
Wakool Junction	8.8	2.88	52.00	7 570	F	8 460	9 140
Euston Weir (d/s)	9.1	1.58	43.42	8 760	F	9 150	9 050
Mildura Weir (d/s)	-	-	-	8 010	F	7 970	7 710
Wentworth Weir (d/s)	7.3	2.88	27.64	6 650	S	6 650	6 500
Rufus Junction	-	3.34	20.27	5 790	R	5 470	6 290
Blanchetown (Lock 1 d/s)	-	0.63	-	3 650	R	2 830	4 390
Tributaries							
Kiewa at Bandiana	2.8	0.73	153.96	170	F	230	310
Ovens at Wangaratta	11.9	7.72	145.40	170	R	160	210
Goulburn at McCoys Bridge	9.0	1.42	92.84	870	F	930	1 540
Edward at Stevens Weir (d/s)	5.5	1.29	81.06	1 020	F	1 050	1 400
Edward at Liewah	-	2.20	57.58	1 500	F	1 670	1 960
Wakool at Stoney Crossing	-	1.35	54.84	350	R	340	370
Murrumbidgee at Balranald	5.0	1.48	57.44	1 060	F	1 280	1 450
Barwon at Mungindi	6.1	3.47	-	770	F	1 460	4 340
Darling at Bourke	9.0	5.78	-	12 780	R	11 870	7 630
Darling at Burtundy Rocks	-	0.50	-	0	F	0	0

Natural Inflow to Hume	30	390
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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	-0.14	-	No. 7 Rufus River	22.10	-0.53	+1.03
No. 26 Torrumbarry	86.05	-0.00	-	No. 6 Murtho	19.25	-0.01	+0.06
No. 15 Euston	47.60	-0.01	-	No. 5 Renmark	16.30	+0.03	+0.21
No. 11 Mildura	34.40	+0.03	+0.25	No. 4 Bookpurnong	13.20	+0.07	+0.61
No. 10 Wentworth	30.80	+0.10	+0.24	No. 3 Overland Corner	9.80	+0.06	+0.21
No. 9 Kulnine	27.40	-0.04	-0.82	No. 2 Waikerie	6.10	+0.07	+0.18
No. 8 Wangumma	24.60	-0.95	-0.32	No. 1 Blanchetown	3.20	+0.07	-0.12

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.57
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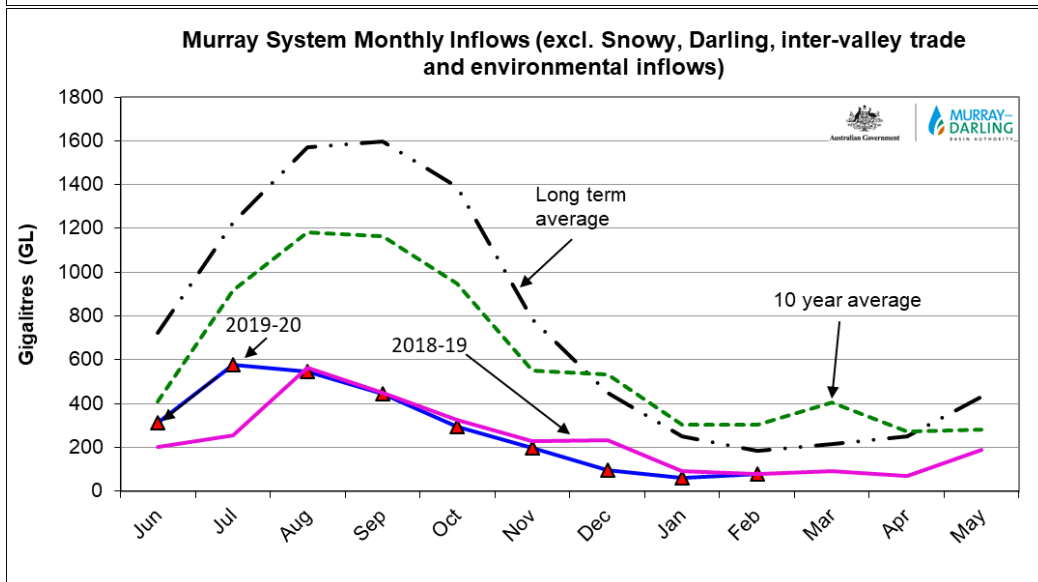
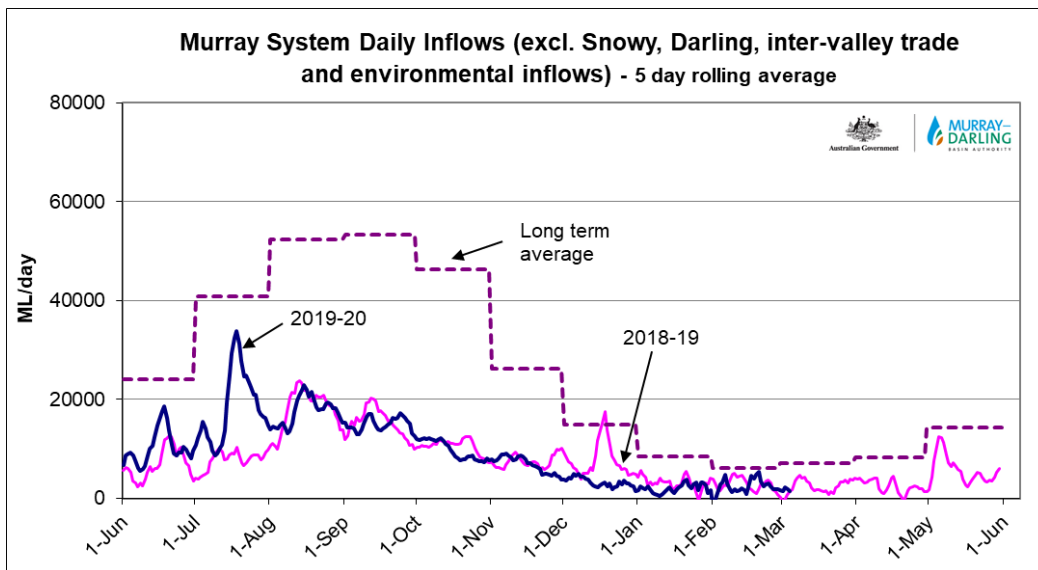
Barrages

Fishways at Barrages

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.56	All closed	-	Open	Open	-
Mundoo	26 openings	0.54	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwichee	322 gates	0.55	1	Open	Open	Open	-

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





State Allocations (as at 04 Mar 2020)

NSW - Murray Valley

High security	97%
General security	0%

Victorian - Murray Valley

High reliability	59%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	6%

Victorian - Goulburn Valley

High reliability	73%
Low reliability	0%

NSW - Lower Darling

High security	30%
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 : <https://nvrn.net.au/seasonal-determinations/current>

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

