



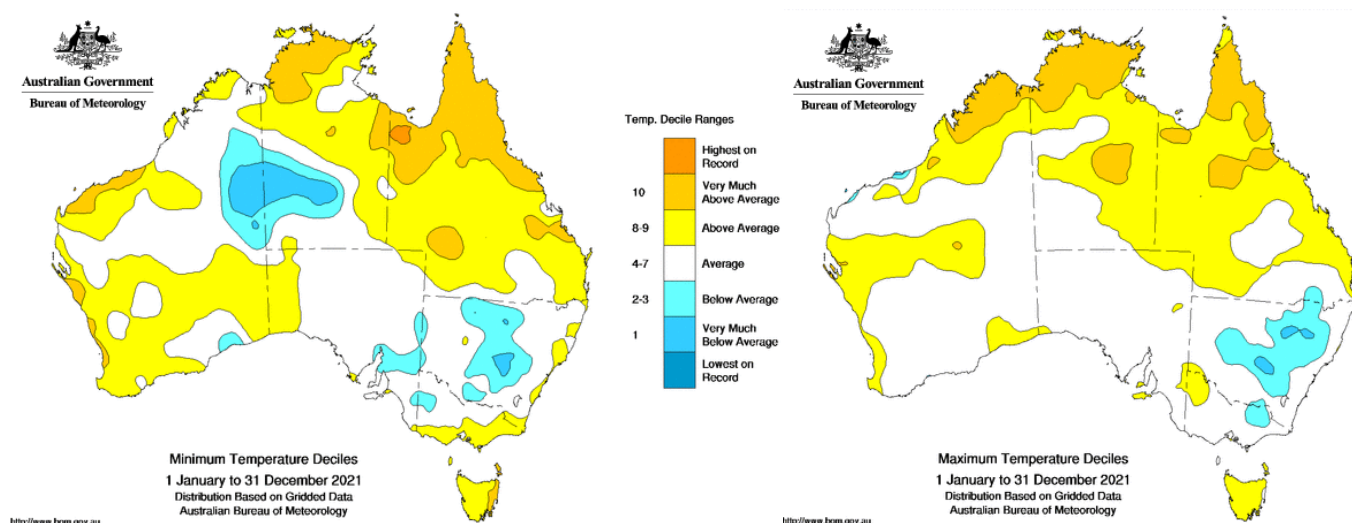
River Murray Weekly Report

For the week ending Wednesday, 19 January 2022

Trim Ref: D22/1182

Annual summary of 2021

The Bureau of Meteorology (BoM) reported that 2021 was Australia's [coolest year in nearly a decade and the wettest since 2016](#). Despite this, the national mean temperature was 0.56 °C above average and the 19th warmest year since records began in 1910. Maximum and minimum temperatures were generally near average to below average across most of the Murray-Darling Basin (Map 1 & 2).



Map 1 & 2: Maximum and Minimum temperature deciles for 2021 (Source: Bureau of Meteorology).

The La Niña event that developed during spring & summer 2021 delivered heavy rainfall and significant flooding to areas of eastern Australia. Across the Murray-Darling Basin as a whole, the calendar year of 2021 was much wetter than average. Rainfall was in the top decile for many catchments within the northern Basin, with areas of the Border Rivers catchment recording their highest yearly rainfall totals on record (Map 3). For the southern Basin, rainfall totals were also within the top decile across areas of the upper Mitta Mitta, Murray and Murrumbidgee catchments, while South Australia and western Victoria received below average rainfall.

In the northern Basin, mid-March brought the beginning of a series of rainfall events which provided significant inflows from the northern Basin into Menindee Lakes. By early May, the [Menindee Lakes reached 640 GL](#) reinstating the Menindee Lakes as a shared resource between NSW, Victoria and South Australia. As a result of continued rainfall during winter, Menindee Lakes surpassed full supply level FSL in early September. Continuing rainfall and subsequent inflows have required WaterNSW to increase releases from Menindee Lakes. Releases from Weir 32 peaked at 18,000 ML/day in late December and have continued into January 2022.

Hume Dam began the year at 1,938 GL (64% capacity) and was drawn down to 1,265 GL (42%) by early May. High inflows over winter resulted in Hume Dam effectively spilling by early September. From September through to the end of December Hume Dam spilled on several occasions, with peak releases briefly reaching 35,000 ML/day (peak inflows above 70,000 ML/day) in September.

Lake Victoria reached a low of 183 GL by the end of May before commencing filling in early May. During July, with upstream Murray flows sufficient to guarantee filling of the storage, a period of unregulated flow to South Australia commenced. This period of unregulated flow has continued into 2022 and provided a peak flow across the South Australian border of 37,500 ML/d during December.



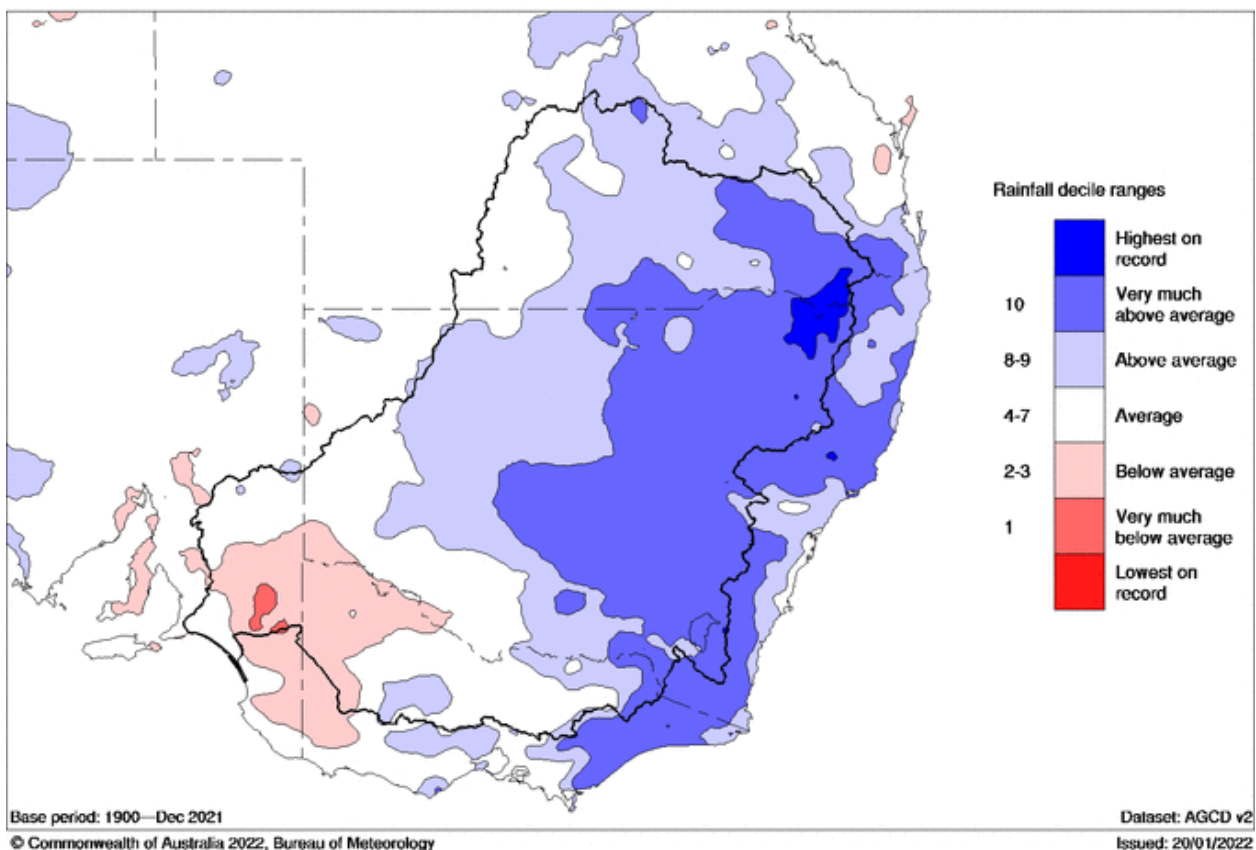
River Murray Weekly Report

There were no major releases from Dartmouth Reservoir in 2021. The storage started the year at 1,464 GL (62% capacity) and finished the year at 3414 GL (88% capacity).

River Murray system inflows (excluding Snowy, Darling, IVT and Environmental inflows) totalled 9,362 GL, within the highest 39% of years on record. These inflows boosted storage levels with MDBA active storage reaching 8,151 GL in late November, the highest since 2012. This helped drive allocation improvements with NSW Murray & lower Darling High & Low Security, Victorian High Reliability and South Australian Entitlement all reaching maximum levels.

Murray-Darling rainfall deciles 1 January to 31 December 2021

Australian Gridded Climate Data



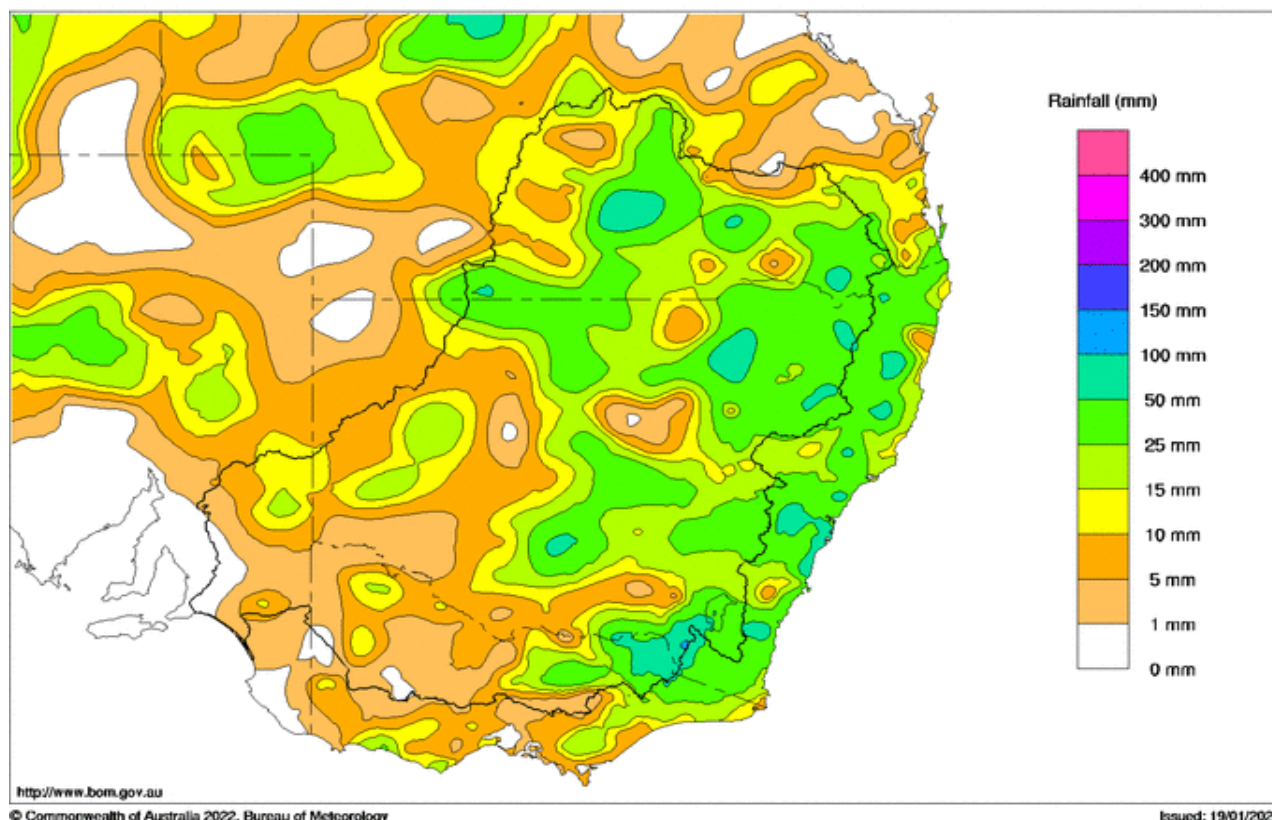
Map 3: Rainfall deciles for 2021 (Source: Bureau of Meteorology).

River Murray Weekly Report

Weekly rainfall and inflows

For the week ending 19 January 2022 (Map 6), rainfall was largely confined to the northern Basin and southeast slopes of New South Wales & north-east Victoria, with totals of 50 to 100 mm recorded. Albury in NSW recorded 69 mm in an hour and Hume Dam recorded 95 mm, this was a result of isolated storms passing over this region in the early hours Saturday Jan 15.

Murray-Darling Rainfall Totals (mm) Week Ending 19th January 2022
Australian Bureau of Meteorology



Map 6 - Murray-Darling Basin rainfall for the week ending 19 January 2022. Source: Bureau of Meteorology.

Streamflow responses were observed across the upper Murray catchment following heavy rainfall. On the upper Murray River at Jingellic, the flow reached 20,100 ML/day following rainfall and increased releases from the Snowy Hydro scheme. Inflow from the Kiewa River, measured at Bandiana, peaked near 3,100 ML/day, while the Ovens River at Peechelba peaked near of 3,700 ML/day.

Over the coming week, the BoM [8-day rainfall outlook](#) shows rain across south-eastern Australia. Rainfall totals between 25-50 mm are possible across the Broken, Ovens, Kiewa and upper Murray River catchments.

Specific information about flows at key locations 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 on BoM's [website](#), at the WaterNSW real-time data [website](#), and in the Murray River Basin [Daily River Report](#) at the WaterNSW website. See also Victoria's DELWP water monitoring [website](#), South Australia's Water Data [website](#) and Queensland's [Water Monitoring Information Portal](#).

River Murray Weekly Report

River operations

- Air Space Management at Hume Dam continue
- Rain is forecast for coming week
- Elevated inflows from the Murrumbidgee River continue
- Higher releases from Menindee Lakes continue to manage airspace

Hume Dam operations update and post flood arrangements

Airspace management at Hume Dam has been frequent since early August. Since then, the storage has regularly been effectively spilling, with releases adjusted to maintain some airspace to help mitigate peak flows from upstream flood events, whilst also aiming to steer the storage towards full once conditions dry off. Three minor to moderate flood events in the upstream catchment have been managed through the storage during September, October and late November, with careful airspace management enabling peak flow mitigation on each occasion.

Hume Dam is currently 99% full. Inflows over the last week peaked around 24,600 ML/day before declining to the current inflow near 10,200 ML/day. Inflows are expected to recede over the coming days before further rain is forecast early next week.

With the upper Murray catchment remaining relatively wet for this time of year and the Hume storage level at 99% capacity, the potential for another storage spill remains. River Operators will continue to work closely with the BoM to assess future rain and likely streamflow responses if another forecast for significant rain arises.

Further details about [flood management](#) at Hume Dam are available on the MDBA website.

Unregulated flows

Rainfall in January reinstated a period of unregulated flow between Hume Dam and the South Australian border. Further rainfall had seen this period continue however with dry conditions forecast the potential to return River Murray reaches to regulated conditions may occur. River operators will closely monitor the coming week's forecast rain and flow responses and provide updated advice on unregulated flows in due course. Information on access to Murray supplementary water licences in NSW is available from [WaterNSW Water insights](#). General information on River Murray unregulated flows can be accessed on the MDBA [webpage](#).

Water demand

The MDBA is actively monitoring shortfall risks. A shortfall occurs when water cannot be delivered to users when and where it is needed. A delivery shortfall occurs when actual water use is higher than it was forecast to be when river water was released from storages, weeks earlier, to meet the forecast needs for irrigation and environmental water. A system shortfall occurs when the combined capacity of the system is unable to supply all downstream requirements over the full season. More information about shortfalls can be found at [Water demand \(shortfalls\) | Murray-Darling Basin Authority \(mdba.gov.au\)](#).

The risk of a **delivery shortfall** in the River Murray between Wakool Junction and the SA border over the coming week is negligible. The MDBA is continuing to monitor weather conditions and forecast demands and will continue to actively manage the risk of delivery shortfall across the high demand summer-autumn period as conditions evolve.

The risk of a **system shortfall** is currently negligible. With unregulated flows to South Australia continuing and the Menindee Lakes available as a shared resource, transfers from Hume to meet lower system demands are unlikely to be required until March at the earliest.

The MDBA, Basin state governments and their agencies have different roles and responsibilities in managing delivery shortfalls. Read more information on [delivery shortfall risks for Victorian water licence holders](#).

River Murray Weekly Report

Water quality impacts

WaterNSW have recently declared a number of red and amber alerts for **blue-green algae** in the River Murray System. Currently, a **red alert** is declared for the Hume Dam. **Amber alerts** are current for the River Murray at Corowa, Yarrawonga Weir, Mulwala Canal Offtake, Cobram, Tocumwal and Picnic Point. In the lower River Murray amber alerts are current at Euston Weir, Mt Dispersion and Buronga. Along the Edward-Wakool River system an **Amber alert** is current for Wakool River at Stoney Crossing. This information is available through [Goulburn-Murray Water](#) and [WaterNSW](#)

River operations

Over the last week **active storage** increased by 47 GL to 7,953 GL (93% capacity).

At **Dartmouth Reservoir**, the [storage](#) increased by 48 GL to 3,536 GL (92% capacity). The release, measured at Colemans gauge, continues to target the minimum rate of 200 ML/day.

Hume Reservoir [storage](#) decreased by 1 GL to 2,980 GL (99% capacity). Following heavy rainfall earlier in the week, the release from Hume Dam gradually increased to 19,000 ML/day to manage airspace in Hume Dam. This release maintained the flow at Doctors Point (gauge downstream of Murray & Kiewa junction) below channel capacity. Hume releases have since receded to 12,500 ML/day and further cuts are likely in coming days before possible increases to meet downstream demands. The releases will be partly achieved by opening spill gates at the dam. This action allows better oxygenated near-surface water to be released and thereby help improved dissolved oxygen readings immediately downstream of the storage, which have been low in recent weeks. This action is a trial and will be revisited next week. For more information, please refer to the recent [media release](#).

Lake Mulwala is currently at 124.85 m AHD within the normal operating range (124.6 to 124.9 m AHD). Irrigation diversions remained relatively steady across the week, even with the intermittent hot weather and localised storm activity. Irrigation diversions remained relatively steady across the week, even with the intermittent hot weather and more localized storm activity. Diversions to Mulwala Canal averaged near to 4,700 ML/day, while diversions into Yarrawonga Main Channel averaged near 820 ML/day.

Releases from **Yarrawonga Weir** increased through the week to a peak of 17,500 ML/day, due to the increase in releases from Hume and tributary inflows. With higher releases from Yarrawonga Weir, low-level over-bank flows through the Barmah–Millewa Forest are expected to continue in coming days before receding mid to late next week. Increasing the release at this time of year (mid-summer) has the potential to lead to poor water quality in some locations downstream of the Barmah-Millewa forest. In an effort to avoid these environmental risks, MDBA requested surplus water to be redirected through Mulwala Canal and escaped into the Edward River, Wakool River and Murray further downstream. This action may also help improve water quality in these systems.

Currently no environmental water is being released and the ‘fish exit strategy’ that was underway in Barmah-Millewa forest will be temporarily paused.

Flow through the **Kolety** (pronounced Kol-etch)/**Edward River** offtake averaged 1,550 ML/day, while the **Gulpa Creek** offtake averaged 660 ML/day over the last week. Diversions to Wakool Main Canal have averaged near 1,800 ML/day. The flow downstream of **Stevens Weir** increased to 2,200 ML/day this week and with return flows from the Millewa forest plus surplus water from Lake Mulwala continuing to be redirected into the Edward River via irrigation escapes, the flow downstream Stevens Weir is expected to increase over the coming days but will remain below the downstream channel capacity of 2,700 ML/day.

On the **Goulburn River**, the flow measured at [McCoy's Bridge](#) increased from 1,100 ML/day to around 2,900 ML/day. This was due to rainfall in the Goulburn catchment and is expected to recede in the coming days. Information regarding opportunities for allocation trade between the Goulburn and Murray Valleys is available at the Victorian water register [website and the Goulburn-Murray Water website](#).



River Murray Weekly Report



Photo 1: Tall sedge within the Millewa Forest. Photo: Paul Childs

The [diversion](#) to **National Channel** is currently around 1,600 ML/day. Releases from **Torrumbarry Weir** have remained steady over the week averaging 6,200 ML/day and is expected to slowly rise over coming week.

Inflow from the **Murrumbidgee River**, measured at [Balranald](#), remained above channel capacity over the past week and high flows are expected to continue in the coming week.

At **Euston Weir**, the [downstream release](#) remained steady over the last week and averaged around 18,000 ML/day. The release is expected to continue around this rate in coming week.

At **Menindee Lakes**, the storage is now slowly rising as a result of significant flows in transit along the Barwon-Darling River. The total [storage](#) volume is around 1,592 GL (92% capacity) following the recent period of surcharge. The recent airspace generated by Water NSW will help mitigate peak inflows that are expected as northern Basin flood flows arrive.

Releases to the lower Darling River (measured at Weir 32) remained at 18,000 ML/day over the last week. WaterNSW has also continued releases from Lake Cawndilla (part of Menindee Lakes) into the Great Darling Anabranch (currently around 2,000 ML/day). Weir 32 releases may be increased further in the coming weeks as inflow forecasts are revised or in response to further rainfall in the northern Basin. Further information will be provided by the [WaterNSW](#) water insights portal. Downstream on the lower Darling at Burtundy, the flow has gradually increased to 13,700 ML/day and is expected to slowly rise over the coming weeks.

River Murray Weekly Report



Photo 2: Nestrons Regulator on Nine Panel Creek fully opened Photo: Paul Childs

Over the coming months, the MDBA will continue to revise forecasts and operational plans for the volume, if any, and timing of operational water to be released from Menindee Lakes to support all water users along the River Murray System once unregulated flows cease. This process is on-going and will follow the practices agreed by the New South Wales, Victorian, South Australian and Commonwealth governments as stated in the Murray-Darling Basin Agreement and the [Objectives and Outcomes for River Operations in the River Murray System](#). These practices require State and Commonwealth agencies to provide ongoing advice on release decisions, and implications for water security, delivery efficiency, the community and environmental outcomes.

The updated [Annual Operating Outlook](#) (End October 2021) has been published and is available on the MDBA website. Updates will also be provided in future Weekly Reports as plans and release decisions are revised. More information on Menindee Lakes management is available in a [webinar](#) hosted by the MDBA.

Over the last week, the downstream **Wentworth Weir** flow held steady around 28,000 ML/day. Flows are expected to remain relatively steady in the coming week.

At **Lock 9** the pool level has targeted up to 100mm below FSL. This was due to works being performed within the Lock 9 pool. A return to FSL is expected by the end of next week. At **Lock 8**, the weir pool has returned close to FSL over the last two weeks. The continued high flows have resulted in the temporary removal of the **Lock 7** weir, as per standard high flow management at the weir. The weir will be reinstated when higher flows subside.

The [storage](#) at **Tar-ru/Lake Victoria** is at 76%. Inflows and outflows from Tar-ru/Lake Victoria are being managed to lower the storage volume in accordance with the Lake Victoria Operating Strategy (LVOS) as specified in the [Objectives and Outcomes for River Operations in the River Murray System](#), due to continuing high flows upstream. The LVOS aims to stabilise the lake foreshore and protect cultural heritage sites by encouraging the growth of native

River Murray Weekly Report

vegetation. To help achieve this, operations aim to reduce the length of time the foreshore vegetation is inundated. The storage level will be managed to maximise water availability by the end of the current unregulated flow event.

The flow to **South Australia** averaged 28,100 ML/day as unregulated flows continue. Flows is expected to remain relatively steady at the current rate near 27,000 ML/day in the coming week.

Additional Dilution Flow (ADF) to South Australia continues to be triggered. The current unregulated flows into South Australia mean that no additional releases from storage are needed to meet ADF at the current point in time. For information on ADF and the ADF triggers please refer to [Objectives and Outcomes for River Operations in the River Murray System](#) (pages 79-80).

The **Lower Lakes** 5-day average water level is 0.81 m AHD. Barrage releases are continuing as unregulated flows reach the lower lakes. For further information on barrage releases and South Australia's Entitlement flow, see the South Australian Department for Environment and Water Weekly [Department for Environment and Water | Barrage flow data available at the click of a button.](#)

For media inquiries contact the Media Officer on 02 6279 0141

ANDREW KREMOR

A/g Executive Director, River Management



Australian Government



River Murray Weekly Report

Water in Storage

Week ending Wednesday 19 Jan 2022

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	480.99	3 536	92%	71	3 465	+48
Hume Reservoir	192.00	3 005	191.87	2 980	99%	23	2 957	-1
Lake Victoria	27.00	677	25.65	519	77%	100	419	-10
Menindee Lakes		1 731*		1 592	92%	(480 #)	1 112	+10
Total		9 269		8 627	93%	--	7 953	+47
Total Active MDBA Storage							93% ^	

Major State Storages

Burrinjuck Reservoir	1 026	966	94%	3	963	-28
Blowering Reservoir	1 631	1 564	96%	24	1 540	-13
Eildon Reservoir	3 334	2 871	86%	100	2 771	-11

* 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 Jan 2022

Storage	Active Storage (GL)	Weekly Change (GL)	Diversions (GL)	This Week	From 1 May 2021
Lake Eucumbene - Total	1 851	+11	Snowy-Murray	+12	480
Snowy-Murray Component	841	+11	Tooma-Tumut	+3	272
Target Storage	1 520		Net Diversion	9	208
			Murray 1 Release	+16	813

Major Diversions from Murray and Lower Darling (GL) *

New South Wales	This Week	From 1 July 2021	Victoria	This Week	From 1 July 2021
Murray Irrig. Ltd (Net)	23.4	491	Yarrowonga Main Channel (net)	5.4	90
Wakool Sys Allowance	3.8	6	Torrumbarry System + Nyah (net)	0.2	216
Western Murray Irrigation	1.3	15	Sunraysia Pumped Districts	4.8	69
Licensed Pumps	10.7	147	Licensed pumps - GMW (Nyah+u/s)	2.5	17
Lower Darling	14.1	174	Licensed pumps - LMW	18.6	268
TOTAL	53.3	833	TOTAL	31.5	660

* 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 Unregulated flows.

Entitlement this month	217.0 *	
Flow this week	195.9	(28 000 ML/day)
Flow so far this month	586.7	
Flow last month	966.2	

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

	Current	Average over the last week	Average since 1 August 2021
Swan Hill	80	80	80
Euston	-	-	-
Red Cliffs	180	180	130
Merbein	190	190	130
Burtundy (Darling)	350	340	330
Lock 9	240	230	160
Lake Victoria	170	170	130
Berri	270	270	170
Waikerie	260	260	190
Morgan	250	250	200
Mannum	280	270	210
Murray Bridge	280	270	220
Milang (Lake Alex.)	350	350	530
Poltalloch (Lake Alex.)	380	370	370
Meningie (Lake Alb.)	1 390	1 170	1 470
Goolwa Barrages	490	500	900



River Levels and Flows

Week ending Wednesday 19 Jan 2022

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	-	-	-	910	F	3 470	3 820
Jingellic	4.0	2.23	208.75	9 250	F	12 730	10 270
Tallandoon (Mitta Mitta River)	4.2	1.66	218.55	1 170	F	1 250	1 540
Heywoods	5.5	3.19	156.82	15 270	F	16 580	7 680
Doctors Point	5.5	3.25	151.72	19 580	F	21 060	11 500
Albury	4.3	2.30	149.74	-	-	-	-
Corowa	4.6	3.93	129.95	23 100	F	20 420	11 830
Yarrowonga Weir (d/s)	6.4	2.53	117.57	17 550	R	13 770	9 990
Tocumwal	6.4	2.97	106.81	16 110	R	13 150	10 660
Torrumbarry Weir (d/s)	7.3	2.12	80.67	6 100	F	6 280	5 440
Swan Hill	4.5	1.26	64.18	6 350	S	6 010	5 560
Wakool Junction	8.8	3.67	52.79	10 820	R	10 560	11 630
Euston Weir (d/s)	9.1	2.96	44.80	18 220	R	17 960	19 300
Mildura Weir (d/s)	-	-	-	17 120	F	17 290	18 810
Wentworth Weir (d/s)	7.3	4.42	29.18	28 070	F	28 110	30 790
Rufus Junction	-	5.88	22.81	27 770	R	27 980	31 400
Blanchetown (Lock 1 d/s)	-	1.86	-	24 580	F	27 100	31 150
Tributaries							
Kiewa at Bandiana	2.8	1.94	155.17	1 890	F	2 190	2 750
Ovens at Wangaratta	11.9	8.58	146.26	2 180	F	2 640	3 140
Goulburn at McCoys Bridge	9.0	2.51	93.93	2 890	R	1 700	1 040
Edward at Stevens Weir (d/s)	5.5	2.13	81.90	2 190	S	2 020	1 420
Edward at Liewah	-	3.27	58.65	2 950	R	2 750	2 830
Wakool at Stoney Crossing	-	1.57	55.06	830	F	880	1 230
Murrumbidgee at Balranald	5.0	6.04	62.00	11 290	F	11 520	11 390
Barwon at Mungindi	6.1	3.58	-	1 650	R	2 530	4 630
Darling at Bourke	9.0	12.07	-	66 870	F	71 840	66 600
Darling at Burtundy Rocks	-	5.93	-	13 660	S	13 540	13 170

Natural Inflow to Hume	20 530	21 100
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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	-0.04	-	No. 7 Rufus River	22.10	+0.71	+3.55
No. 26 Torrumbarry	86.05	+0.00	-	No. 6 Murtho	19.25	+0.03	+1.55
No. 15 Euston	47.60	+0.08	-	No. 5 Renmark	16.30	+0.01	+1.32
No. 11 Mildura	34.40	+0.08	+0.69	No. 4 Bookpurnong	13.20	+0.01	+2.23
No. 10 Wentworth	30.80	+0.06	+1.78	No. 3 Overland Corner	9.80	+0.05	+1.55
No. 9 Kulnine	27.40	-0.05	+1.32	No. 2 Waikerie	6.10	-0.01	+1.64
No. 8 Wangumma	24.60	+0.17	+1.99	No. 1 Blanchetown	3.20	+0.03	+1.11

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.81
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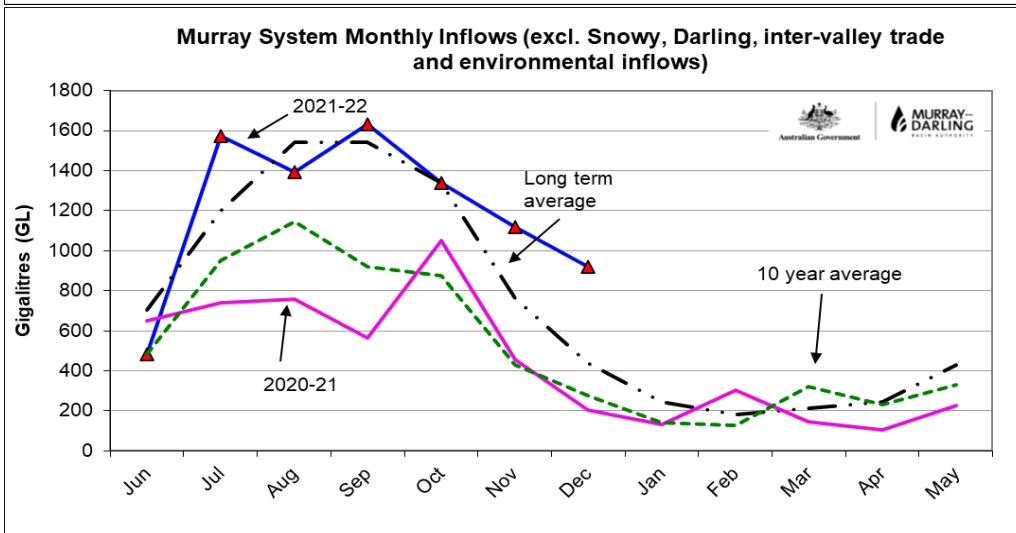
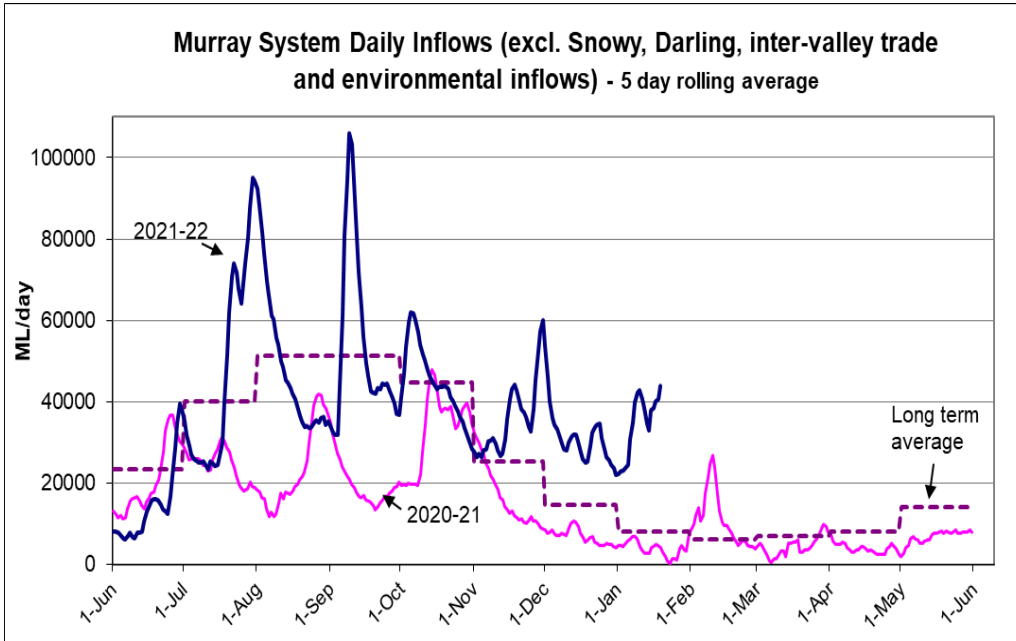
Barrages

Fishways at Barrages

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.88	3	-	Open	Open	-
Mundoo	26 openings	0.81	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	1	-	Open	-	-
Ewe Island	111 gates	-	6	-	-	-	Open
Tauwichee	322 gates	0.81	60	Open	Open	Open	-

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





State Allocations (as at 19 Jan 2022)

NSW - Murray Valley

High security	100%
General security	110%

Victorian - Murray Valley

High reliability	100%
Low reliability	72%

NSW - Murrumbidgee Valley

High security	100%
General security	100%

Victorian - Goulburn

High reliability	100%
Low reliability	0%

NSW - Lower Darling

High security	100%
General security	100%

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 : [Department for Environment and Water | Current allocations](http://www.environment.sa.gov.au/department-for-environment-and-water/current-allocations)