



RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 9TH MARCH 2016

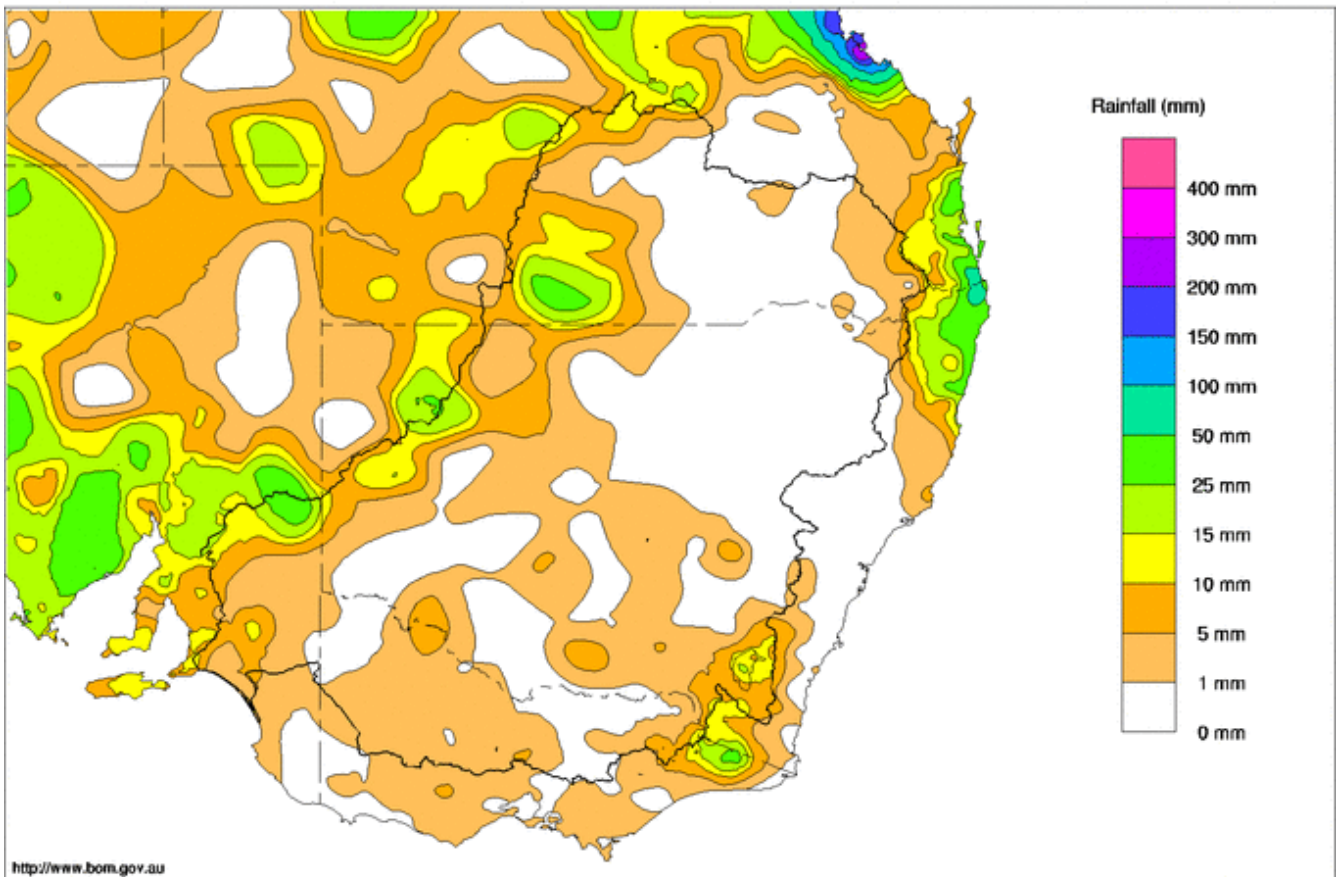
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Rainfall and inflows

A stationary high pressure system in the Tasman Sea resulted in very hot and mostly dry conditions across the Murray–Darling Basin this week, with patchy thunderstorm activity responsible for much of the notable rainfall (Map 1). In Queensland the highest falls occurred in the Warrego catchment, with Cunnamulla receiving 25 mm of rainfall and Dillalah 15 mm. In NSW the highest totals were 31 mm at Hillston on the Lachlan River and 23 mm at White Cliffs on the western edge of the Basin.

Tuggeranong in the ACT received 14 mm, while in Victoria 11 mm of rain fell at Falls Creek. The highest total for the Basin this week was in the Murray Mallee of South Australia where Claypans had 34 mm of rainfall.

Murray-Darling Rainfall Totals (mm) Week Ending 9th March 2016
Australian Bureau of Meteorology

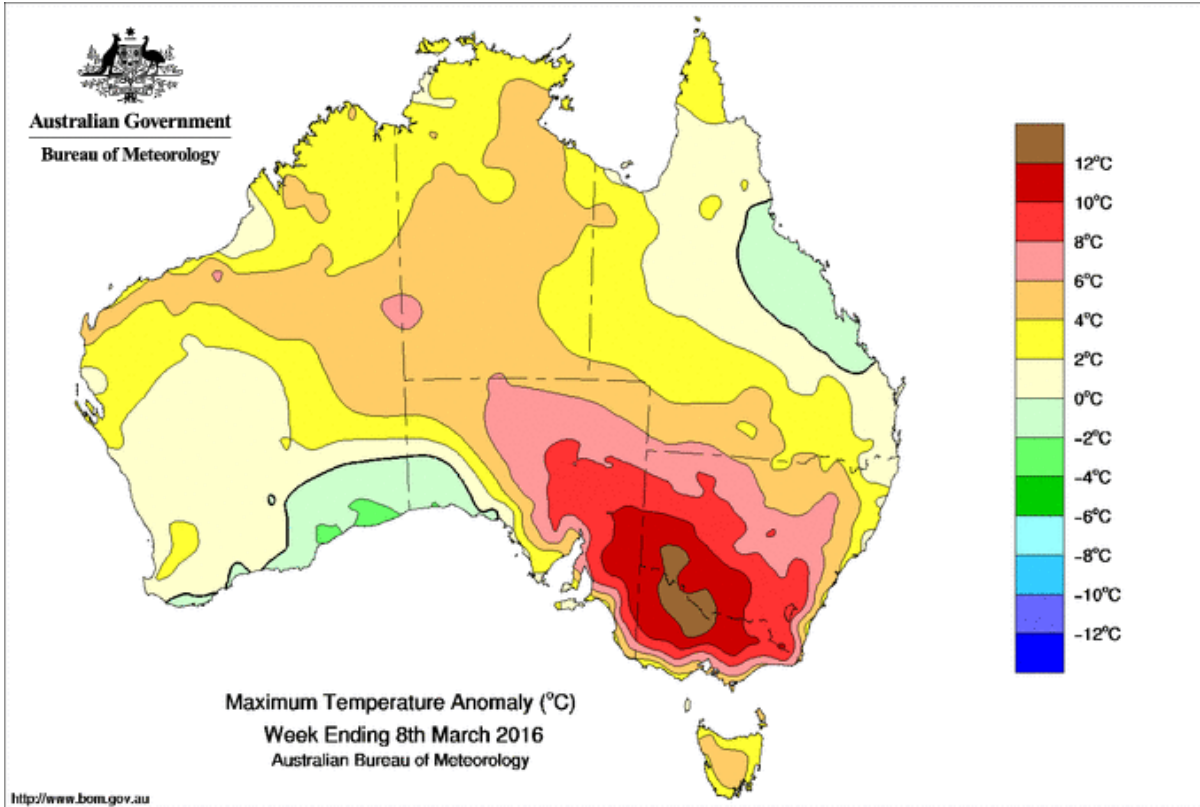


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Map 1 - Murray-Darling Basin rainfall week ending 9th March 2016 (Source: Bureau of Meteorology)

The entire Basin experienced above-average temperatures this week, with maximum temperatures exceeding 40 °C in numerous areas. The heatwave was especially prominent throughout the southern Basin with average maximum temperatures up to 12 °C above the long-term average for this time of year (Map 2). Mildura experienced its hottest March day in 74 years while Deniliquin experienced 8 consecutive days above 38 °C easily breaking the previous March record of 6 days in 1934.



Map 2 - Murray-Darling Basin maximum temperature anomaly for the week ending 8th March 2016 (Source: Bureau of Meteorology)

Given the lack of catchment rainfall and the very hot conditions, stream flows in the upper Murray catchment have continued to recede from already low levels. On the upper Mitta Mitta River at Hinnomunjie bridge, the flow decreased further to 130 ML/day, whilst on the upper Murray at Biggara, the flow receded slightly to 180 ML/day. The Ovens River at Wangaratta continues to experience low flows and has averaged only 150 ML/day this week.

River operations

- Heatwave along the Murray
- Blue-green algae bloom at numerous locations along the Murray

Red alerts for blue-green algae have been expanded upstream to include Hume Reservoir and downstream to Barham and on the Edward Wakool the red alert extends to Moulamein. More information is available from the [MDBA website](#) as well as [Goulburn Murray Water](#) and [NSW DPI](#).

There are many competing objectives that governments and MDBA consider when managing the River Murray system. A good example of competing objectives is the current algae blooms and increased recreation period over Easter and school holidays versus the need to conserve water for entitlement holders. With Easter approaching and high temperatures and red alert algal levels persisting, MDBA is aiming to keep river flows as high as practicable in the coming weeks. With falling storages and States advising of the likelihood of low opening water allocations for 2016-17, we also need to operate as efficiently as possible to maximise the volume of water held in Hume and Dartmouth Dams at the end of the season. Details on our current and recent approaches to managing algae are provided as appropriate below.

At **Dartmouth Reservoir**, the storage volume decreased only 7 GL to 1,703 GL (44% capacity) this week as the releases from Dartmouth, measured at Colemans, are low at 600 ML/day. The release is forecast to remain low throughout autumn as bulk transfers to Hume are no longer required based on the current forecast for Hume levels.



Inflows into Hume at **Jingellic** on the upper Murray averaged over 5,000 ML/day this week due to releases from the snowy scheme through Khancoban Pondage. However, releases from the dam averaged over 12,000 ML/day this week resulting in the **Hume** storage volume decreasing by 46 GL to 929 GL (31% capacity), see photo 1 below. It is worth noting that the transfers of water made from Dartmouth to Hume this season, and in recent years, have been aimed at avoiding Hume storage falling to the very low levels observed in 2009 and 2010 in order to minimise the risk of an extensive algal bloom in Hume Dam. Storage is currently considerably higher than at this time in 2009 (259 GL) and 2010 (516 GL).

Despite the heatwave, diversions increased only slightly from **Lake Mulwala**. Yarrawonga Main Channel diversion averaged around 1,100 ML/day while diversions through Mulwala Canal averaged around 2,400 ML/day. Small volumes continue to be diverted through the Mulwala Canal and escaped into the Edward River to meet flow targets in the Edward-Wakool system. Releases from **Yarrawonga Weir** are currently 8,100 ML/day (compared with an estimated natural flow downstream of Yarrawonga Weir of just 700 ML/day) in response to system demands. We are currently aiming to keep flows at, or even above, this rate throughout the Easter period.



Photo 2 - Hume reservoir near Huon, 6 March 2016 (Source: Alastair McKenzie-McHarg)

Downstream of Yarrawonga around 1,900 ML/day is flowing into the **Edward-Wakool** system via the Edward and Gulpa offtakes while diversions to Wakool Main Canal are averaging 300 ML/day. Further downstream on the Edward River, reductions to the release at **Stevens Weir** were delayed this week given the algal conditions and are currently 1,500 ML/day.

At Rices Weir on the **Broken Creek** the flow is around 300 ML/day and largely comprises Goulburn inter-valley trade water and Commonwealth Environmental Water. Environmental water entering the



Murray from the Broken Creek will be used again in Gunbower Creek before contributing to the flow across the South Australia border after a few weeks travel time.

On the **Goulburn River**, the flow at McCoys Bridge will rise this week as an environmental pulse begins to pass through. Flow is expected to reach over 3,000 ML/day next week before peaking at around 4,500 ML/day the following week.

On the **Campaspe River** at Rochester, flow is currently 30 ML/day. The flow is expected to begin increasing with a small pulse starting next week and peaking at around 120 ML/day.

At **Torrumbarry Weir**, the downstream flow is currently around 5,000 ML/day with National Channel diverting around 2,700 ML/day from the weir pool. The flow into the weir pool will increase next week with the addition of the Goulburn pulse but the flow increase downstream of the weir will be influenced by the volume of water diverted to National Channel.

Further downstream, inflows into the Murray from the lower **Murrumbidgee River** are around 800 ML/day at Balranald. This flow is expected to increase this week with an increase in IVT water reaching the Murray. This water will meet demands along the Murray before contributing to the entitlement flow to South Australia.

At **Euston Weir**, the flow has receded further this week to 6,000 ML/day due to the combination of reduced upstream Murray flows and continued high irrigation demands during sustained hot and dry conditions.

At **Menindee Lakes** the storage volume decreased by 2 GL to 52 GL (3% capacity).

At the confluence of the Darling and Murray Rivers at **Wentworth**, the flow is around 4,300 ML/day and slowly decreasing. The weir pool remains around 10 cm above full supply level to assist water users on the Lower Darling arm of the weir pool.

As part of the ongoing weir pool variability trial, **Lock 8** is 60 cm below full supply level and **Lock 7** is 25 cm below full supply level. The trial to restore a more natural wetting and drying cycle is being conducted by the MDBA in cooperation with the NSW Department of Primary Industries, Water NSW, SA Water and the Mallee Catchment Management Authority.

As expected, **Lake Victoria** was drawn down further this week to a total storage volume of 327 GL (48% capacity). The Lake Victoria outlet continues to supplement the low flows at Wentworth to meet **South Australia's** current daily target of 6,500 ML/day. This target is forecast to remain steady over the coming weeks before increasing at the end of the month when the Goulburn environmental pulse arrives.

At the **Lower Lakes**, the 5-day average water level in Lake Alexandrina decreased 2 cm this week to 0.58 m AHD with releases from the barrages averaging 2,300 ML/day.

For media inquiries contact the Media Officer on 02 6279 0141

DAVID DREVERMAN
Executive Director, River Management



Water in Storage

Week ending Wednesday 09 Mar 2016

MDBA Storages	Full Supply Level	Full Supply Volume (GL)	Current Storage Level	Current Storage		Dead Storage (GL)	Active Storage (GL)	Change in Total Storage for the Week (GL)
	(m AHD)		(m AHD)	(GL)	%			
Dartmouth Reservoir	486.00	3 856	444.89	1 703	44%	71	1 632	-7
Hume Reservoir	192.00	3 005	178.16	929	31%	23	906	-46
Lake Victoria	27.00	677	23.83	327	48%	100	227	-25
Menindee Lakes		1 731*		52	3%	(- -) #	0	-2
Total		9 269		3 011	32%	--	2 765	-79
Total Active MDBA Storage							33% ^	

Major State Storages

Burrinjuck Reservoir	1 026	429	42%	3	426	-34
Blowering Reservoir	1 631	538	33%	24	514	+32
Eildon Reservoir	3 334	1 291	39%	100	1 191	-45

* 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 08 Mar 2016

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2015
Lake Eucumbene - Total	1 772	n/a	Snowy-Murray	+37	558
Snowy-Murray Component	905	n/a	Tooma-Tumut	+5	157
Target Storage	1 410		Net Diversion	32	402
			Murray 1 Release	+36	755

Major Diversions from Murray and Lower Darling (GL) *

New South Wales	This Week	From 1 July 2015	Victoria	This Week	From 1 July 2015
Murray Irrig. Ltd (Net)	10.9	310	Yarrowonga Main Channel (net)	6.6	182
Wakool Sys Allowance	2.2	56	Torrumbarry System + Nyah (net)	18.2	374
Western Murray Irrigation	0.8	17	Sunraysia Pumped Districts	3.4	93
Licensed Pumps	5.3	150	Licensed pumps - GMW (Nyah+u/s)	1.5	34
Lower Darling	0.3	9	Licensed pumps - LMW	3.1	256
TOTAL	19.5	542	TOTAL	32.8	939

* 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 the delivery of additional environmental water.

Entitlement this month	186.0 *
Flow this week	51.4
Flow so far this month	68.7
Flow last month	266.4

(7 300 ML/day)

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

	Current	Average over the last week	Average since 1 August 2015
Swan Hill	70	70	70
Euston	-	-	-
Red Cliffs	110	100	120
Merbein	110	100	120
Burtundy (Darling)	1 730	1 680	1 170
Lock 9	110	120	130
Lake Victoria	210	210	210
Berri	190	180	210
Waikerie	210	220	270
Morgan	240	240	280
Mannum	300	300	320
Murray Bridge	320	330	340
Milang (Lake Alex.)	900	910	790
Poltalloch (Lake Alex.)	700	820	660
Meningie (Lake Alb.)	2 020	2 040	2 070
Goolwa Barrages	1 400	1 430	1 180



River Levels and Flows

Week ending Wednesday 09 Mar 2016

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	-	-	-	6 210	F	5 250	5 440
Jingellic	4.0	1.91	208.43	5 980	R	5 610	5 400
Tallandoon (Mitta Mitta River)	4.2	1.46	218.35	650	S	660	1 190
Heywoods	5.5	3.16	156.79	12 670	R	12 190	13 340
Doctors Point	5.5	2.84	151.31	13 030	S	12 680	13 810
Albury	4.3	1.87	149.31	-	-	-	-
Corowa	4.6	2.61	128.63	11 620	R	12 300	12 980
Yarrowonga Weir (d/s)	6.4	1.40	116.44	8 120	S	8 670	9 010
Tocumwal	6.4	2.02	105.86	8 540	F	9 130	9 040
Torrumbarry Weir (d/s)	7.3	1.78	80.33	5 180	R	4 710	5 670
Swan Hill	4.5	0.95	63.87	4 380	S	4 670	5 680
Wakool Junction	8.8	2.57	51.69	6 150	F	6 810	7 950
Euston Weir (d/s)	9.1	1.28	43.12	6 000	F	6 410	7 580
Mildura Weir (d/s)	-	-	-	5 620	F	5 940	7 100
Wentworth Weir (d/s)	7.3	2.84	27.60	4 370	S	4 770	6 140
Rufus Junction	-	3.47	20.40	6 340	R	7 010	9 050
Blanchetown (Lock 1 d/s)	-	0.62	-	4 530	S	5 150	6 940
Tributaries							
Kiewa at Bandiana	2.8	0.72	153.95	170	F	340	320
Ovens at Wangaratta	11.9	7.69	145.37	140	S	150	150
Goulburn at McCoys Bridge	9.0	1.35	92.77	700	S	690	660
Edward at Stevens Weir (d/s)	5.5	1.62	81.40	1 510	S	1 500	1 750
Edward at Liewah	-	2.32	57.70	1 630	F	1 900	2 310
Wakool at Stoney Crossing	-	1.38	54.87	340	S	340	360
Murrumbidgee at Balranald	5.0	1.23	57.19	820	R	630	510
Barwon at Mungindi	6.1	3.15	-	30	R	30	40
Darling at Bourke	9.0	4.10	-	370	F	630	1 050
Darling at Burtundy Rocks	-	0.55	-	0	F	0	0

Natural Inflow to Hume	210	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
Yarrowonga	124.90	-0.13	-	No. 7 Rufus River	22.10	-0.22	+1.18
No. 26 Torrumbarry	86.05	+0.00	-	No. 6 Murtho	19.25	+0.01	+0.04
No. 15 Euston	47.60	+0.00	-	No. 5 Renmark	16.30	+0.03	+0.21
No. 11 Mildura	34.40	+0.02	+0.09	No. 4 Bookpurnong	13.20	+0.03	+0.66
No. 10 Wentworth	30.80	+0.07	+0.20	No. 3 Overland Corner	9.80	+0.03	+0.19
No. 9 Kulnine	27.40	+0.02	-0.58	No. 2 Waikerie	6.10	+0.04	+0.07
No. 8 Wangumma	24.60	-0.60	-0.13	No. 1 Blanchetown	3.20	-0.07	-0.13

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.58
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Barrages

Fishways at Barrages

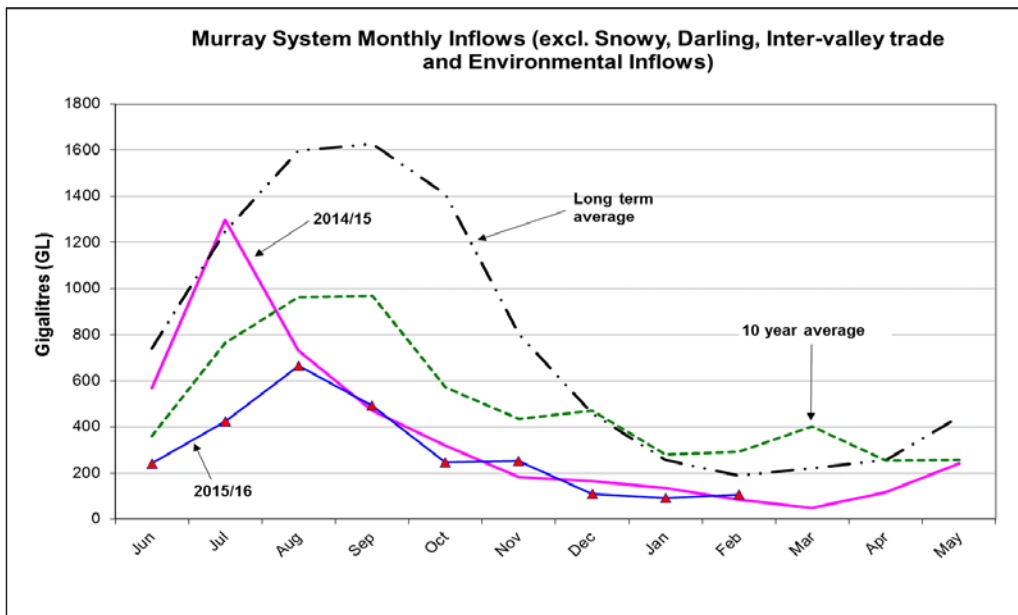
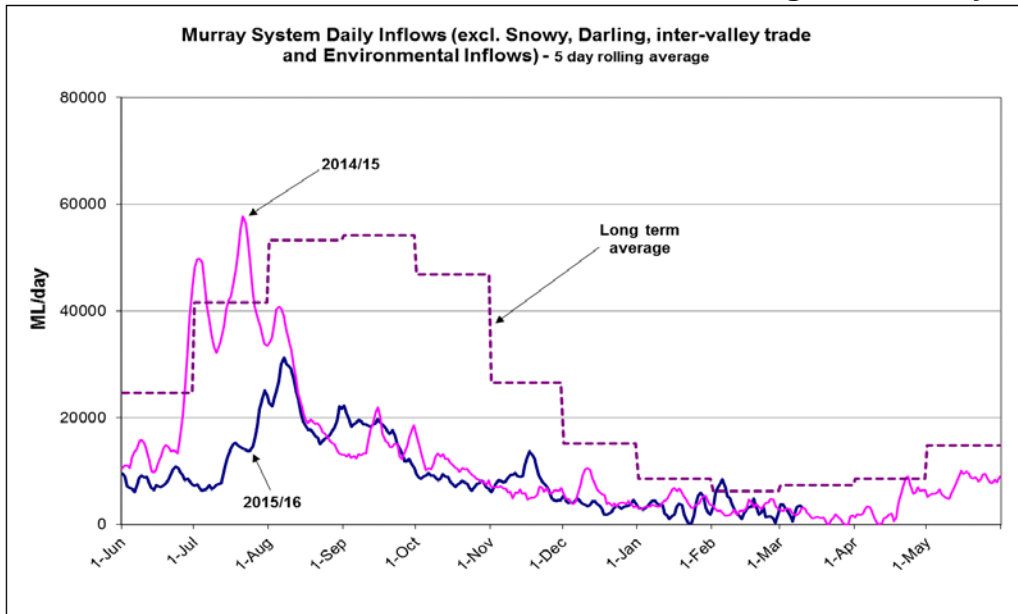
	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.54	All closed	-	Open	Open	-
Mundoo	26 openings	0.46	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwicheere	322 gates	0.42	8	Open	Open	Open	-

* Mundoo Barrage Dual vertical slots are currently under construction.

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



Week ending Wednesday 09 Mar 2016



State Allocations (as at 09 Mar 2016)

NSW - Murray Valley

High security	97%
General security	23%

Victorian - Murray Valley

High reliability	100%
Low reliability	0%

NSW - Murrumbidgee Valley

High security	95%
General security	37%

Victorian - Goulburn Valley

High reliability	90%
Low reliability	0%

NSW - Lower Darling

High security	75%
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/Water-allocations/Water-allocations-summary/water-allocations-summary/default.aspx>

VIC : <http://www.nvrn.net.au/allocations/current.aspx>

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