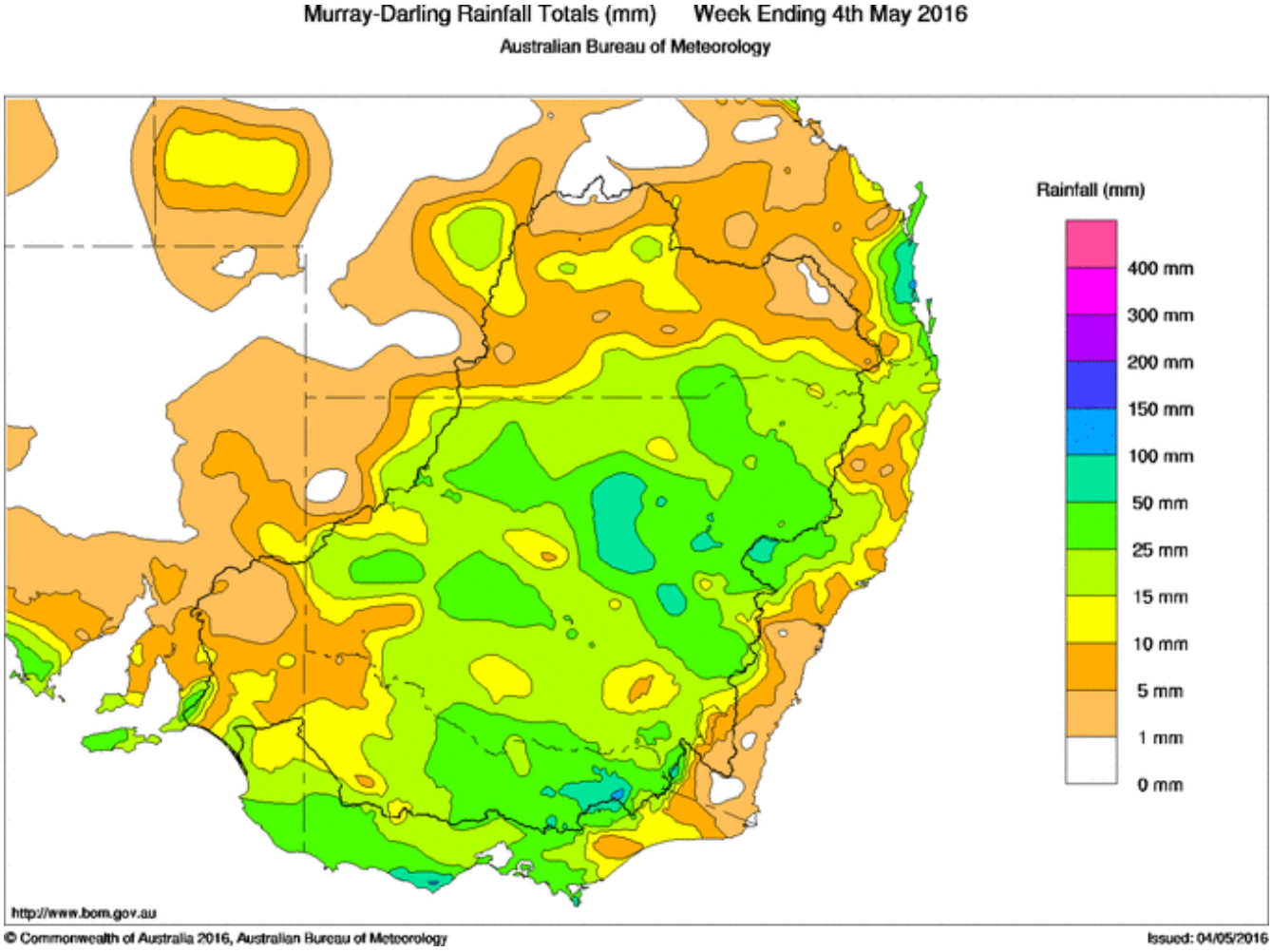
RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 4 MAY 2016

Trim Ref: D16/16234

Rainfall and inflows

The first significant weather front we have seen for some weeks brought widespread rain across the Basin this week (Map 1). The highest weekly rainfall totals were recorded in the Victorian Alps and included 125 mm at Mount Hotham, 120 mm at Mount Buffalo and 105 mm at Rocky Valley. In NSW the highest weekly rain totals were recorded around the central western slopes and plains and included 83 mm at Coonamble Airport AWS, 55mm at Nyngan, and 52mm at Coonabarabran AWS.



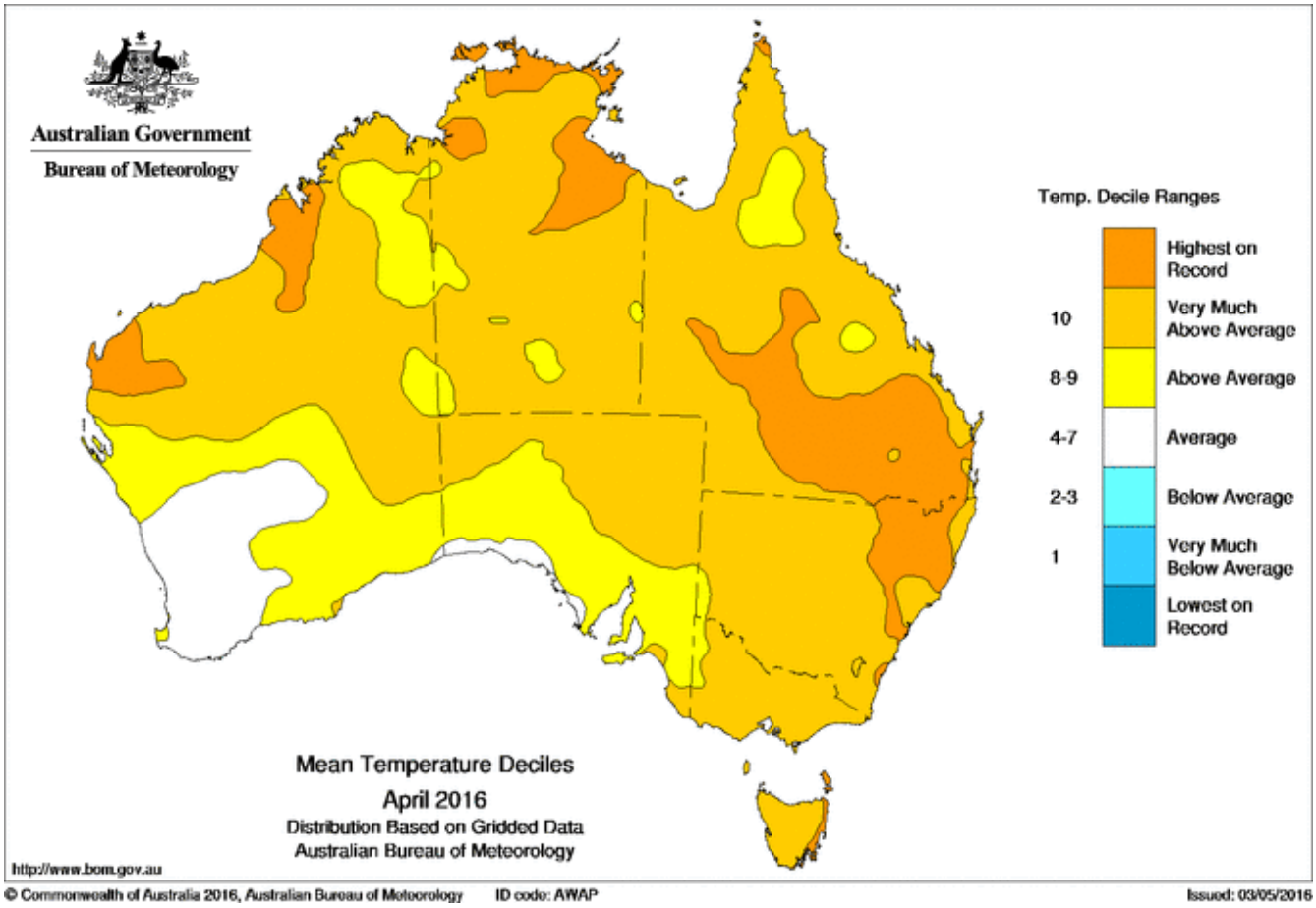
Map 1 - Murray-Darling Basin rainfall for the week ending 4 May 2016 (Source: Bureau of Meteorology).

Streamflow responses in the upper Murray tributaries remained relatively low following the rain this week, however this was not unexpected considering the very dry state of the catchments. Of note, the Ovens River at Rocky Point peaked at only 450 ML/day despite over 100 mm of rain in the upper catchment. On the upper Murray, Biggara peaked at 600 ML/day, while Hinnomunjie Bridge on the upper Mitta Mitta River peaked at 1,200 ML/day.

However, additional rain forecast by the Bureau of Meteorology (BoM) over the coming week brings the potential for further catchment wetting and an increase in flow rates. BoM is now issuing daily streamflow forecasts for a number of upper Murray tributaries and these are able to be viewed at the BoM website.

April 2016 Summary

Weather conditions across the Murray–Darling Basin during April were dominated by continuing warmer than average temperatures (Map 2). BoM has reported that Queensland recorded their warmest April on record, and both Victoria and NSW recorded their second highest April mean daily temperature on record.

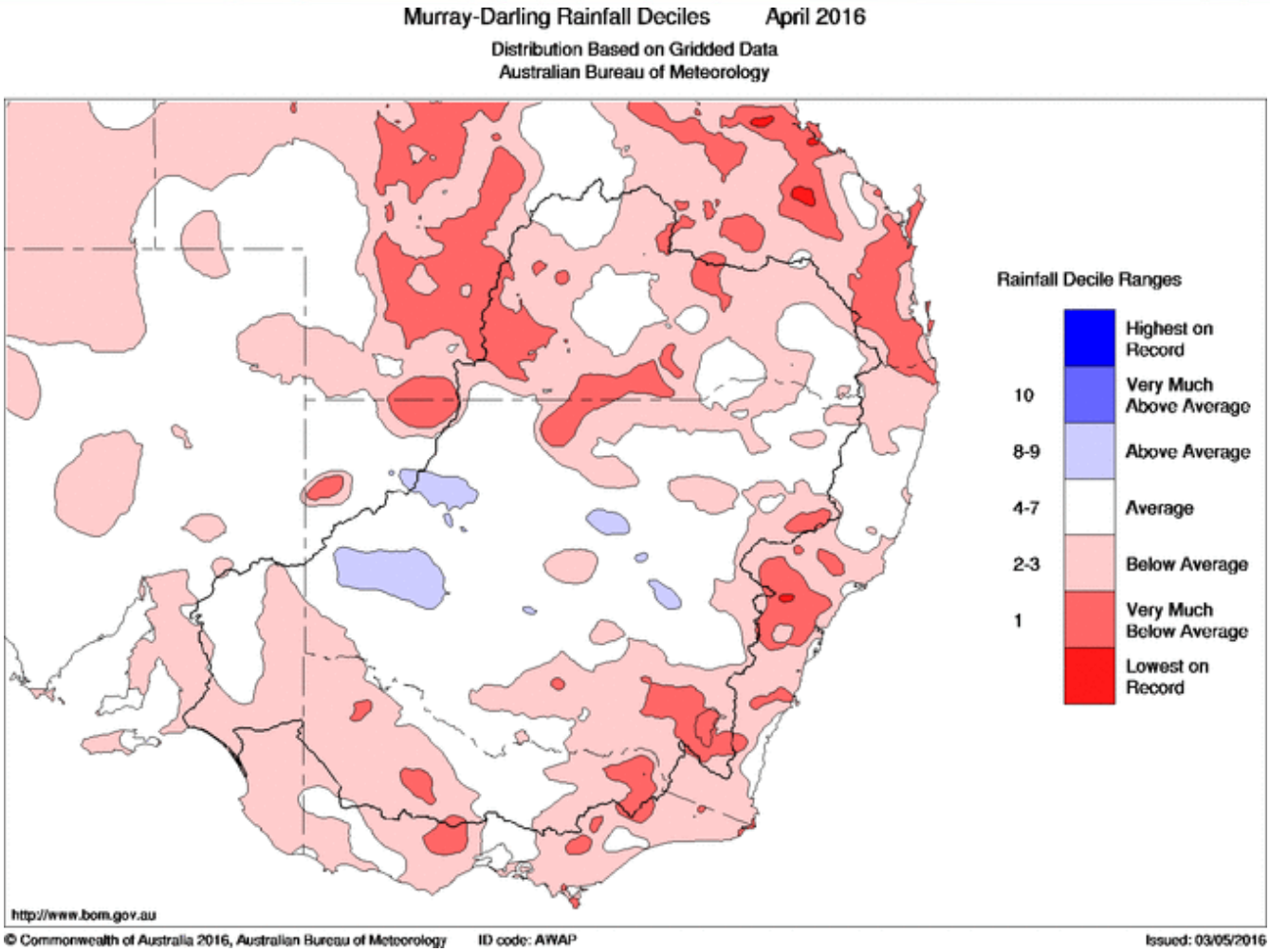


Map 2 – Mean daily temperature deciles across Australia for April 2016 (Source: Bureau of Meteorology).

Monthly rainfall totals varied across the Basin relative to long-term averages; although for the most part, totals were average to below average. 'Very much below average' rainfall was recorded in the southeast along the ranges and in Queensland (Map 3).

Across the Basin as a whole, the Bureau of Meteorology has reported area-averaged rain for April totalling 12.1 mm. The total was 68% below the long-term monthly mean and it was the 22nd driest April observed during the past 117 years of record.

River Murray System inflows during April (excluding Snowy Scheme, Darling River and managed environmental inflows) totalled around 60 GL. This is well below the month's long-term average of 250 GL (see the graph on page 9). In comparison with the historical record since 1891, only about 3% of previous Aprils have recorded lower inflows than April 2016.



Map 3 - Murray-Darling Basin rainfall deciles for April 2016 (Source: Bureau of Meteorology).

Estimated evaporation losses from MDBA storages for April 2016 are reported in Table 1. Evaporation is estimated by multiplying the surface area of the storage by the net evaporation. Net evaporation is derived by subtracting the rainfall recorded at the storage from this calculated evaporation. Evaporative losses have continued to reduce as would be expected when moving into the cooler and shorter days of autumn.

Table 1: Monthly evaporation figures for MDBA storages

Storage	*Approximate (net) evaporative loss in April 2016 (GL)	Average storage volume in April 2016 (GL)	Percentage evaporative loss in April 2016
Dartmouth	2	1673	0.1
Hume	6	650	0.9
Lake Victoria	8	236	3.4
Menindee Lakes	2	51	4.5

* Evaporative loss from storage = surface area of the storage x net evaporation. Net evaporation = measured evaporation

River operations

- Total active storage on the rise!
- Red alerts for blue-green algae are expected to be lifted on the River Murray between Hume and Corowa in the coming week but remain in place downstream to Lock 9
- Releases from Dartmouth and Hume storages reduce to minimum flow rates
- Torrumbarry and Euston weir pool levels reducing to 40 cm and 30 cm (respectively) below full supply level during May

Red alerts for blue-green algae are expected to be lifted on the River Murray between Hume storage and Corowa in the coming week but remain in place downstream to Lock 9. The alerts apply to the main channel of the river as well as many anabranches and connected lakes and wetlands. Non-toxic blue-green algae has also been detected in South Australian reaches of the Murray. More information is available from NSW DPI, Goulburn Murray Water, SA DEWNR and the MDBA website.

Following rain over the weekend, and with widespread rain forecast for the coming week, irrigation demand has all but ceased for the 2015-16 water year. In response, releases from upper Murray storages have been reduced to minimums. Whilst Dartmouth, Hume and Lake Victoria storages are a little lower than this time last week, all three storages had begun to rise by week's end.

MDBA total storage decreased by 18 GL this week, with the active storage now 2,239 GL (27% capacity). This is approximately 1,300 GL less than this time last year and at a similar volume as was experienced at the end of the irrigation seasons in 2004 and 2010, see Figure 1. Measures introduced following the Millennium Drought, including increased system reserves, the capacity for South Australia to 'bank' water, and expanded carryover arrangements for individual entitlement holders, has resulted in higher storage levels than would previously have been seen. These arrangements will have improved overall water security for 2016-17 and will be particularly valuable should low inflows persist in the coming season.

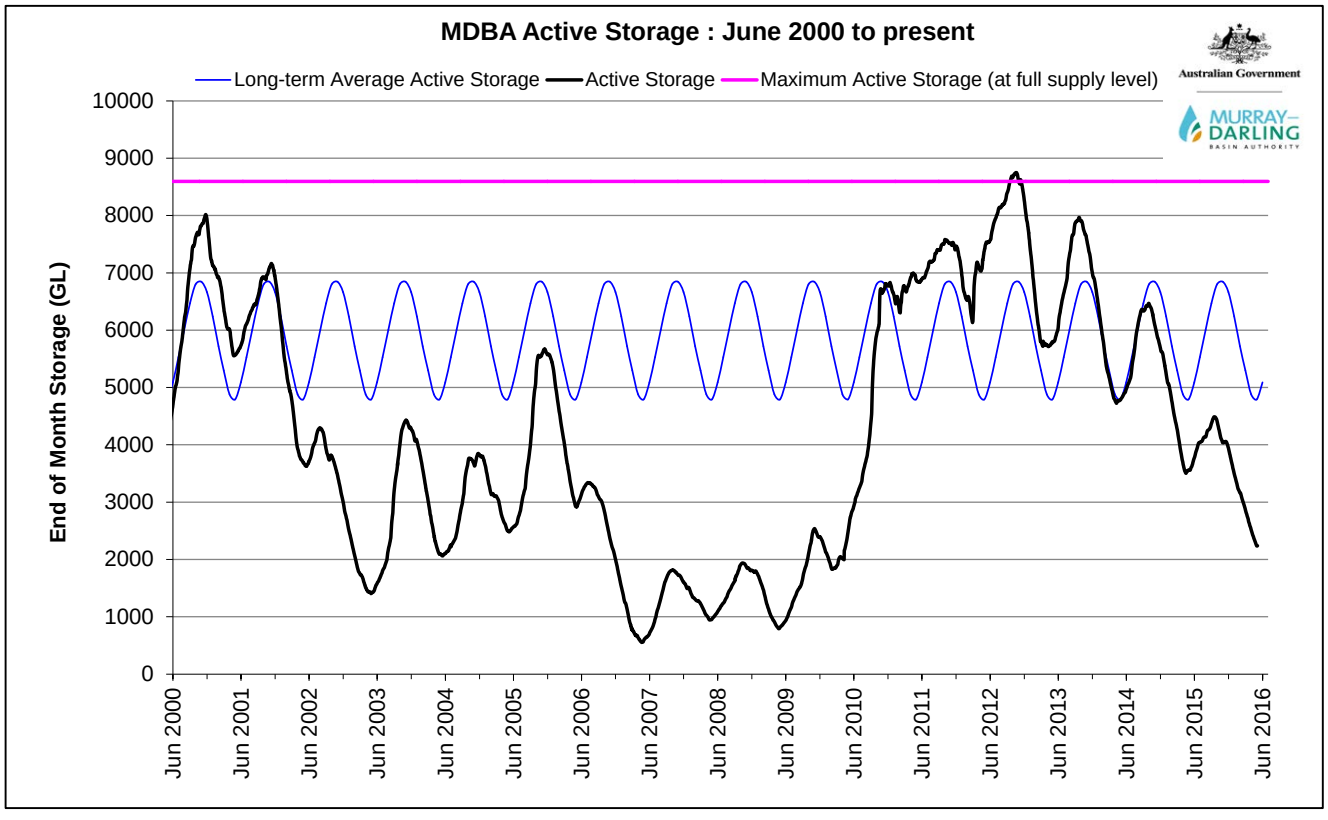


Figure 1 – Murray-Darling Basin active storage 2000 until present.

At **Dartmouth Reservoir**, the storage volume fell to a low of 1,662 GL before increasing to 1,665 GL (43% capacity) at the end of the week. The release from Dartmouth, measured at Colemans, was reduced to the minimum rate of 200 ML/day over the weekend.

Photo 1 - Dartmouth storage at 43% capacity exposing the top of the high level inlet tower – bottom right of photo (28 April 2016). Photo: Adam McLean, MDBA.

At **Hume Reservoir,** the storage volume fell to a low of 550 GL before increasing to 553 GL (18% capacity) at the end of the week. Releases from Hume were gradually reduced over the week to the minimum release of 600 ML/day (on Thursday, 5 May 2016).

At **Lake Mulwala** the diversion to Yarrawonga Main Channel ceased during the week in response to recent and forecast rainfall, while the diversion at Mulwala Canal reduced to around 800 ML/day. Murray Irrigation Limited will close the Mulwala Canal off-take on 9 May, however diversions to Mulwala Canal may cease before this date depending on the impact of forecast rainfall. The downstream release from **Yarrawonga Weir** continues to be gradually reduced as overall system demands downstream continue to decline. The release is currently 4,700 ML/day and expected to reduce further over the coming days.

On the **Edward-Wakool** system, total inflow from the Murray via the Edward River and Gulpa Creek offtakes has remained steady at about 1,100 ML/day. The flow rate is expected to gradually decrease later in the coming week in response to falling river levels in the Murray and the offtake gates are planned to be raised clear of the water to allow unimpeded fish passage. Once this occurs, flow into the Edward system will be unregulated and will vary in response to the flow in the River Murray. At **Stevens Weir,** WaterNSW has advised that the weir pool level will fall gradually over the coming weeks in preparation for the annual winter drawdown. However the exact timing of the drawdown has yet to be finalised. For more information see the attached WaterNSW customer notice. Downstream at **Stevens Weir** the release has averaged close to 600 ML/day. Diversions through the Wakool Main Canal decreased from around 300 to 150 ML/day.

On the **Goulburn River**, the flow at McCoys Bridge increased slightly following recent rain from around 700 ML/day to 850ML/day. Small volumes of additional environmental water continue to boost the flow a little above the normal end of system target flow for this time of year.

At **Torrumbarry Weir**, the pool level is currently 10 cm below the full supply level (FSL). The pool level is planned to be lowered further to around 40 cm below FSL later in May. See the attached media release for more information. Diversions to National Channel are now being wound back in response to recent and forecast rain, ahead of the upcoming completion of the irrigation season in mid-May. The current diversion is around 1,000 ML/day and is expected to reduce to around 500 ML/day during the coming week. In response to the reduced diversion, the flow downstream of the weir has risen this week from around 5,000 to 6,000 ML/day.

Further downstream, inflows to the Murray from the **Murrumbidgee River** at Balranald have remained steady at around 350 ML/day. The flow is expected to increase to around 500 ML/day over the next two weeks as WaterNSW lowers Redbank Weir to undertake essential maintenance works.

Downstream at **Euston Weir**, flows are slowly rising, with the current flow at 5,900 ML/day. The weir pool level is currently 47.36 m AHD, which is 24 cm below the full supply level (FSL). A pool level down to 47.30 m AHD, or 30 cm below FSL is currently being targeted. This action is being undertaken as part of the on-going weir pool level variability trial.

At the **Menindee Lakes**, the storage volume remains very low at about 49 GL (3% capacity).

At the confluence of the Darling and Murray Rivers at **Wentworth**, the flow has increased to 4,900 ML/day and is expected to continue to rise during the coming week. The weir pool has been held around 10 cm above full supply level during the irrigation season to assist water users on the Lower Darling arm of the weir pool, but will return to the FSL in the coming week due to reduced demand.

At **Lake Victoria**, the storage volume fell to a low of 213 GL before increasing to 215 GL (32% capacity). The storage volume is expected to continue rising over the coming weeks. The flow into **South Australia** is currently around 3,000 ML/day.

At the **Lower Lakes**, the 5-day average water level in Lake Alexandrina reduced 3 cm to 0.55 m AHD. Over the weekend the remaining two gates at Tauwitchere Barrage were closed to limit the reverse flow of seawater into Lake Alexandrina due to the very large swells and high tides currently being experienced.

For media inquiries contact the Media Officer on 02 6279 0141

DAVID DREVERMAN
Executive Director, River Management

Water in Storage

Week ending Wednesday 04 May 2016

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	443.95	1 665	43%	71	1 594	-2
Hume Reservoir	192.00	3 005	174.15	553	18%	23	530	-15
Lake Victoria	27.00	677	22.66	215	32%	100	115	-2
Menindee Lakes		1 731*		49	3%	(- -) #	0	-0
Total		**9 269**		**2 482**	**27%**	**- -**	**2 239**	**-18**
Total Active MDBA Storage							27% ^	

Major State Storages

Burrinjuck Reservoir	1 026		331	32%	3	328	-5
Blowering Reservoir	1 631		773	47%	24	749	+35
Eildon Reservoir	3 334			0%	100	- 100	-0

* 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 May 2016

Storage	Active Storage (GL)	Weekly Change (GL)	Diversion (GL)	This Week	From 1 May 2016
Lake Eucumbene - Total	1 389	-29	Snowy-Murray	+7	6
Snowy-Murray Component	762	n/a	Tooma-Tumut	0	0
Target Storage	1 290		Net Diversion	7	6
			Murray 1 Release	+9	3

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)	6.8	454	Yarrawonga Main Channel (net)	1	247
Wakool Sys Allowance	1.7	83	Torrumbarry System + Nyah (net)	4.5	505
Western Murray Irrigation	0.2	20	Sunraysia Pumped Districts	0.6	104
Licensed Pumps	n/a	198	Licensed pumps - GMW (Nyah+u/s)	0.9	42
Lower Darling	n/a	10	Licensed pumps - LMW	5.4	280
TOTAL	**8.7**	**765**	**TOTAL**	**12.4**	**1178**

* 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	93.0 *
Flow this week	23.3
Flow so far this month	11.7
Flow last month	159.5

(3 300 ML/day)

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

	Current	Average over the last week	Average since 1 August 2015
Swan Hill	60	60	70
Euston	90	80	-
Red Cliffs	120	120	120
Merbein	120	130	120
Burtundy (Darling)	1 780	1 770	1 290
Lock 9	110	110	120
Lake Victoria	210	190	210
Berri	240	220	210
Waikerie	270	260	270
Morgan	230	220	270
Mannum	260	260	310
Murray Bridge	290	280	330
Milang (Lake Alex.)	870	880	810
Poltalloch (Lake Alex.)	600	530	670
Meningie (Lake Alb.)	2 230	2 150	2 110
Goolwa Barrages	5 960	2 480	1 260

River Levels and Flows

Week ending Wednesday 04 May 2016

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	-	-	-	610	F	1 650	1 940
Jingellic	4.0	1.29	207.81	1 690	F	1 920	3 110
Tallandoon (Mitta Mitta River)	4.2	1.30	218.19	400	F	650	680
Heywoods	5.5	1.77	155.40	1 530	F	4 540	10 260
Doctors Point	5.5	1.71	150.18	2 360	F	5 090	10 770
Albury	4.3	0.87	148.31	-	-	-	-
Corowa	4.6	1.23	127.25	3 860	F	6 670	10 420
Yarrawonga Weir (d/s)	6.4	0.89	115.93	4 700	F	5 920	6 730
Tocumwal	6.4	1.65	105.49	6 120	F	6 720	7 320
Torrumbarry Weir (d/s)	7.3	2.04	80.59	6 090	R	5 590	4 510
Swan Hill	4.5	1.17	64.09	5 840	R	5 170	4 080
Wakool Junction	8.8	2.61	51.73	6 330	R	5 670	4 620
Euston Weir (d/s)	9.1	1.26	43.10	5 890	R	5 310	4 220
Mildura Weir (d/s)		-	-	5 270	F	4 670	4 230
Wentworth Weir (d/s)	7.3	2.84	27.60	4 870	R	4 040	3 470
Rufus Junction	-	2.85	19.78	2 810	R	2 960	3 970
Blanchetown (Lock 1 d/s)	-	0.55	-	1 910	R	2 330	3 570
Tributaries							
Kiewa at Bandiana	2.8	0.99	154.22	520	F	310	170
Ovens at Wangaratta	11.9	7.90	145.58	380	F	250	130
Goulburn at McCoys Bridge	9.0	1.43	92.85	850	R	770	800
Edward at Stevens Weir (d/s)	5.5	0.83	80.60	600	F	570	590
Edward at Liewah	-	1.22	56.60	640	S	620	600
Wakool at Stoney Crossing	-	1.41	54.90	390	S	370	320
Murrumbidgee at Balranald	5.0	0.67	56.63	340	F	340	390
Barwon at Mungindi	6.1	3.14	-	20	F	20	10
Darling at Bourke	9.0	3.79	-	0	F	0	0
Darling at Burtundy Rocks	-	0.55	-	0	F	0	0

Natural Inflow to Hume	1 210	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	-0.05	-	No. 7 Rufus River	22.10	+0.05	+0.54
No. 26 Torrumbarry	86.05	-0.10	-	No. 6 Murtho	19.25	-0.06	+0.01
No. 15 Euston	47.60	-0.24	-	No. 5 Renmark	16.30	+0.04	+0.12
No. 11 Mildura	34.40	+0.07	+0.13	No. 4 Bookpurnong	13.20	+0.08	+0.21
No. 10 Wentworth	30.80	+0.08	+0.20	No. 3 Overland Corner	9.80	+0.02	+0.10
No. 9 Kulnine	27.40	+0.01	-0.05	No. 2 Waikerie	6.10	+0.03	+0.01
No. 8 Wangumma	24.60	-0.03	+0.08	No. 1 Blanchetown	3.20	-0.07	-0.20

Lower Lakes FSL = 0.75 m AHD

Lake Alexandrina average level for the past 5 days (m AHD)	0.55

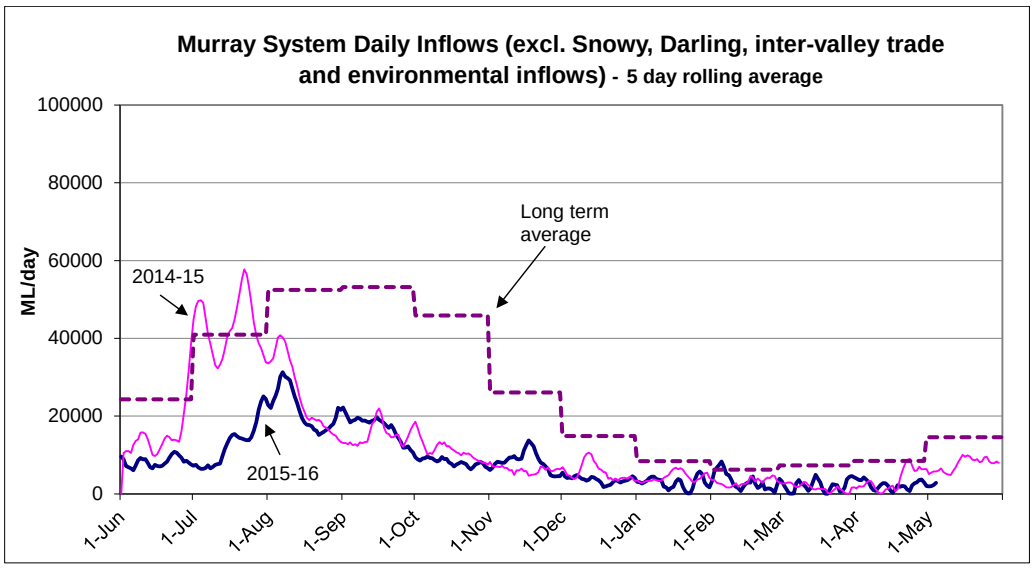
Barrages

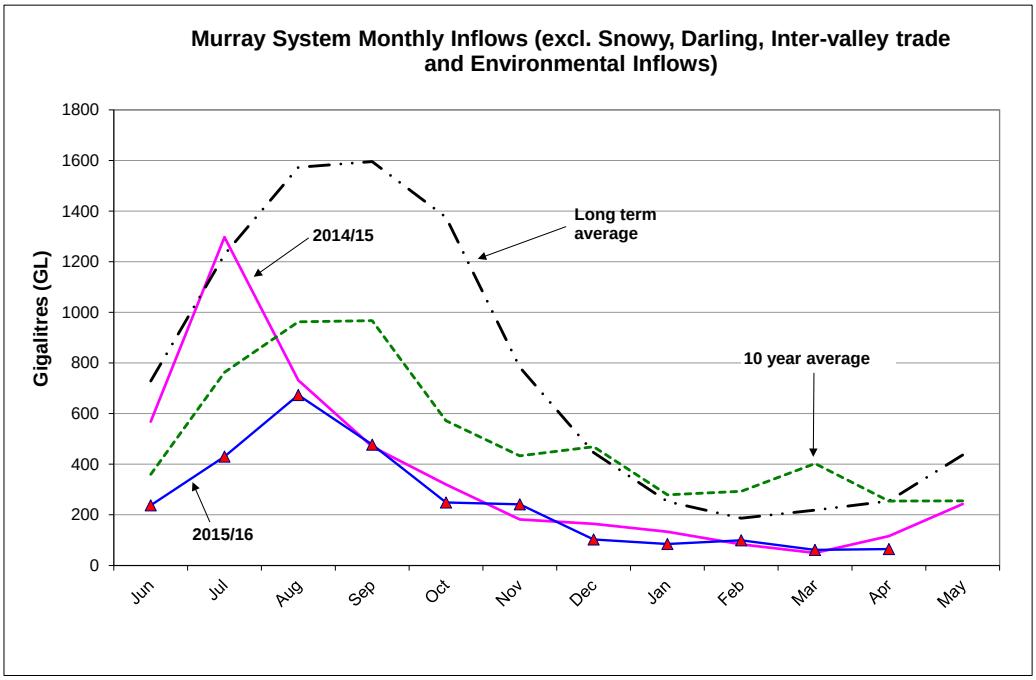
Fishways at Barrages

	Openings	Level (m AHD)	No. Open	Rock Ramp	Vertical Slot 1	Vertical Slot 2	Dual Vertical Slots
Goolwa	128 openings	0.55	All closed	-	Open	Open	-
Mundoo	26 openings	0.51	All closed	-	-	-	Open
Hunters Creek	-	-	-	-	Open	-	-
Boundary Creek	6 openings	-	All closed	-	Open	-	-
Ewe Island	111 gates	-	All closed	-	-	-	Open
Tauwitchere	322 gates	0.54	All closed	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 04 May 2016





State Allocations (as at 04 May 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	80%
General security	0%

South Australia – Murray Valley

High security	100%

NSW : http://www.water.nsw.gov.au/Water-management/Water-availability/Water-allocations/Water-allocations-summary/water-allocations-summary/default.aspx
VIC : http://www.nvrm.net.au/allocations/current.aspx
SA : http://www.environment.sa.gov.au/managing-natural-resources/river-murray

MEDIA RELEASE

Friday 6 May 2016

Upcoming changes to Torrumbarry weir pool

The Torrumbarry weir pool level will vary over the coming months. Landholders and river users are advised to adjust their activities, pumps and moorings accordingly and boat owners should note they are responsible for the safety of their vessel.

From mid-May, the Torrumbarry weir pool will be gradually lowered to be up to 40 centimetres below full supply level.

The weir pool will then be gradually raised again to around full supply level for the beginning of the irrigation season in August.

Variations to the Torrumbarry Weir pool were once common, however in recent years the weir pool level has been held relatively constant at full supply level.

Reinstating variability at Torrumbarry Weir aligns with a broader trial to restore a more natural wetting and drying cycle at weir pools along the River Murray including locks 7-9 and 15.

The trial is being conducted by the Murray–Darling Basin Authority (MDBA) in cooperation with NSW, Victorian and South Australian state agencies and environmental water holders.

The MDBA will issue further advice if there are any significant changes to this plan. Information will also be available on the MDBA website.

River users wanting more information on river heights can contact the MDBA on (02) 6279 0100 or receive updates in the River Murray weekly report.

Live river data for the River Murray system can be seen at http://livedata.mdba.gov.au

ENDS

For more information, contact the MDBA Media office at media@mdba.gov.au or 02 6279 0141

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Customer notice

Stevens Weir to be drawn down

03 May 2016

WaterNSW today announced that the annual lowering of Stevens Weir pool will commence no earlier than Tuesday 10 May 2016.

High algal levels are still being recorded through the Wakool River, Yallakool Creek and Colligen-Neimur River systems. This has raised concerns about the timing of the winter drawdown, and the water quality within these systems over winter.

The drawdown of Stevens weir pool is a regulatory requirement, and facilitates important winter maintenance of Stevens weir pool and other river regulating infrastructure at Wakool River regulator, Yallakool Creek regulator, and Colligen Creek weir.

WaterNSW is therefore giving careful consideration as to the exact timing of the drawdown, but it will not commence prior to 10 May 2016.

WaterNSW expects the weir pool upstream of Stevens Weir and the level at the Deniliquin gauge will fall gradually in the coming weeks in preparation for the winter draw down commencement.

Subject to weather conditions and system requirements, the Edward River gauge height at Deniliquin could fall from its present level 1.87 metres to 0.4 metres and possibly below.

WaterNSW customers, boat owners, landholders and other river users are advised to make early preparations for the draw down, monitor water levels closely and be aware of snags and other obstructions that may appear while water levels are low.

WaterNSW customers in the Edward – Wakool system should make preparations for low river levels, particularly the Wakool River, Yallakool Creek and Colligen Creek where diversions will cease as a result of the weir pool draw down.

River users requiring further information should contact the WaterNSW customer helpdesk on 1300 662 077.

Authorised by

Vincent Kelly

Water System Operations Manager South

Reference: D2015/1234

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