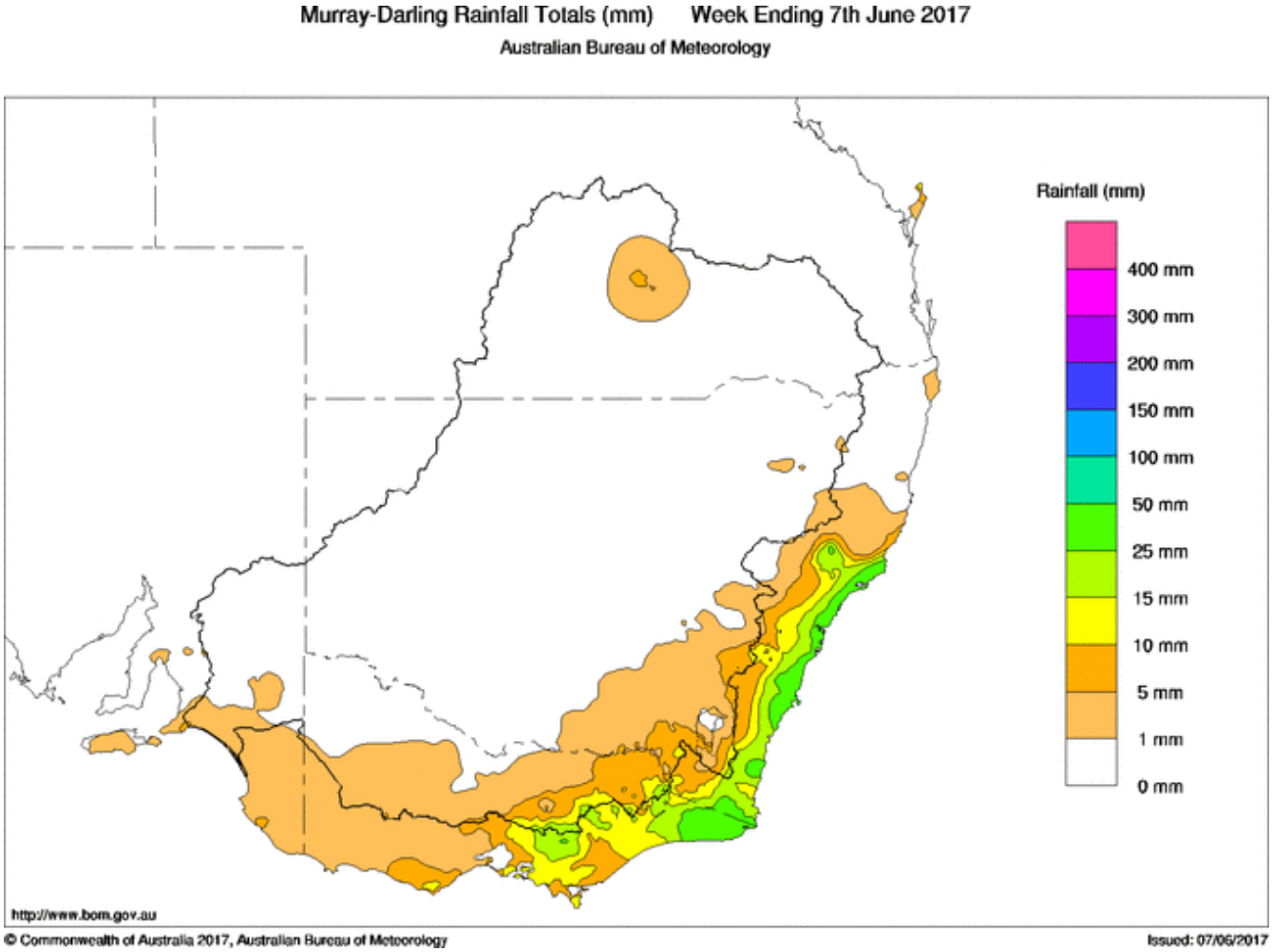
# RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 7JUNE 2017

***Trim Ref:***

## Rainfall and inflows

A strong high pressure cell moved slowly eastward during the week resulting in mostly dry conditions across the Basin. At the end of the week, a series of cold fronts and troughs tracked across the southeast producing rain in Victoria and south eastern South Australia and New South Wales, falling as snow in the higher alpine regions. The highest totals were recorded along the southern ranges (Map 1) and included 20 mm at Lake William Hovell and 17 mm at Mount Buller AWS and Woods Point. Little or no rain was recorded away from the southern ranges and southwest slopes.




**Map 1 - Murray-Darling Basin rainfall map week ending 7 June 2017. Source: Bureau of Meteorology**

Stream flows along upper Murray tributaries mostly receded with only small rises late in the week in response to the rain. The Mitta Mitta River at Hinnomunjie bridge is currently 390 ML/day and the upper Murray at Biggara is 460 ML/day. The Ovens River, measured at Rocky Point, is currently 570 ML/day.

# River operations

- Hume deliveries continue to maintain flows for native fish
- Weir pool levels to vary below full supply level at Torrumbarry, Euston and Locks 7, 8 and 9
- Flow to South Australia steady at 4,000 ML/day for 'run-of-river' salinity monitoring

The total MDBA storage increased by 57 GL this week, and total active storage is now 5,528 GL (64% capacity).

At **Dartmouth Reservoir**, the storage volume decreased by 1GL to 3,010 GL (78% capacity). The release from Dartmouth, measured at Colemans, increased briefly early in the week to around 1,200 ML/day for the purposes of electricity generation before returning to the current rate of around 200 ML/day.

At **Hume Reservoir**, the storage volume increased by 43 GL to 2,003 GL (67% capacity). Inflows this week have averaged around 8,000 ML/day. These inflows are mostly due to higher releases downstream of Khancoban Pondage from the Snowy Hydro Scheme for the purposes of electricity generation. Releases from Hume Reservoir varied between 1,500 ML/day and 2,500 ML/day this week. These releases remain above the normal minimum of 600 ML/day as additional water is delivered on behalf of environmental water holders to maintain higher base flows in the Murray for the benefit of native fish.

At **Lake Mulwala**, the pool level is currently 124.73 m AHD. The pool is expected to remain around this level over the coming week. The release downstream of **Yarrawonga Weir** is easing to around 3,800 ML/day and will vary between this rate and 4,200 ML/day in the coming weeks whilst inflows from the Kiewa and Ovens are low.

Inflows to the **Edward-Wakool** system increased in response to higher flows in the Murray this week, with flows through the Edward River and Gulpa Creek offtakes currently around 600 ML/day and 190 ML/day respectively. With the regulator gates at these structures currently clear of the water, inflows to the Edward-Wakool system can be expected to fluctuate over winter in response to the changes in river levels downstream of Yarrawonga Weir. Flow downstream of **Stevens Weir** remained around 300 ML/day for most of the week but is expected to be closer to 500 ML/day over the coming week in response to the higher inflows. The weir pool is around 4.0 m (local gauge) and will vary between 3.8 m and 4.0 m over winter to provide connectivity for fish in the Colligen and Yallakool Creeks and downstream in the Wakool River. Visit the WaterNSW website for more information.

On the **Goulburn River**, the flow at McCoys Bridge is targeting 940 ML/day, with water above the minimum flow of 350 ML/day being provided for the environment. An environmental flow pulse in the Goulburn River is currently planned for late June. More information will be provided in future weekly reports. On the **Campaspe River**, the flow at Rochester is around 50 ML/day.

At **Torrumbarry**, the weir pool level is currently at 85.7 m AHD, or 35 cm below the full supply level (FSL). In the coming weeks, as part of the weir pool variability program, the pool level will continue to be varied, with the level falling as much as 50 cm below FSL. Visit the MDBA website for more information. Diversions to National Channel continued at around 420 ML/day to supply higher flows along Gunbower Creek for the benefit of native fish. Release downstream of Torrumbarry Weir has increased slightly and is currently 3,600 ML/day.

Inflow from the **Murrumbidgee River** reached around 1,000 ML/day early in the week before receding to around 500 ML/day. Planning is currently underway to deliver a 'river fresh' along the Murrumbidgee River and Yanco Creek systems starting in early July. A flow rate of around 20,000 ML/day at Wagga Wagga is planned to improve the health of wetlands along the mid-Murrumbidgee river and to deliver instream benefits throughout the system. This event would deliver significant inflows, at within-channel rates, to the Murray later in July and into August. Further environmental benefits will accrue as the flows are passed down the Murray to South Australia.

At **Euston Weir**, the pool level has remained around the FSL (47.60 m AHD). The pool level is expected to be varied over the coming weeks, with the level planned to decrease as much as 40 cm below FSL. The release downstream of the weir has been steady around 5,500 ML/day.

Downstream of Euston at **Hattah Lakes**, planning is underway to deliver water to refill the lakes and wetlands commencing in early July. This aims to help build upon the ecological outcomes resulting from the natural flooding that occurred in 2016, and continue to improve the ecological health of this lake system.

**Photo 1 - Emu nest at Hattah Lakes. Terrestrial animals also benefit from delivery of water to Hattah Lakes. Watering increases general floodplain productivity providing important food, habitat or both for insects, woodland birds, reptiles and mammals (Source: Mallee CMA).**

On the **Darling River**, the total storage volume in the **Menindee Lakes** decreased by 2 GL and is currently 777 GL (45% capacity). Inflows to the lakes are continuing at low rates, with the daily flow, measured at Wilcannia, relatively steady at close to 500 ML/day. Releases from Menindee Lakes to the lower Darling River at Weir 32 are continuing around 400 ML/day. This is above the normal minimum of 200 ML/day at this time of year. The additional water is being released on behalf of environmental water holders to benefit native fish in the lower Darling River. Releases from Cawndilla outlet decreased to 100 ML/day this week as the delivery of water to the **Great Darling Anabranch** for the benefit of native fish draws to a close later in June.

At the junction of the Darling and Murray rivers at **Wentworth** the flow reduced to 6,000 ML/day. Downstream of the weir, inflows from the Great Darling Anabranch are continuing to slowly recede and are currently around 600 ML/day.

At **Locks 9, 8 and 7**, the pool levels are expected to be varied over the coming weeks, with the levels planned to decrease by as much as 10, 100, and 90 cm (respectively) below the FSL. Weir pool

variability helps to restore a more natural wetting and drying cycle to riverbanks and adjacent wetlands within the influence of the weir pool.

**At Lake Victoria**, the storage volume is rising and is currently 412 GL (61% capacity). Over the coming months MDBA will manage the filling of Lake Victoria so that the storage volume peaks as late in the year as possible. This strategy aims to encourage the growth of foreshore vegetation and helps protect against erosional impacts on aboriginal cultural heritage, whilst maximising the storage available to help supply flow to South Australia during next summer and autumn.

Flow to **South Australia** reduced to 4,000 ML/day during the week and is expected to remain around this rate for another week or so. A relatively steady flow now extends all the way downstream to Lock 1 and is being targeted to facilitate 'run-of-the-river' salinity monitoring from the SA border to the lower lakes. This monitoring is typically undertaken annually and provides valuable information about the flow of saline groundwater into the River Murray. The results are used to calibrate salt modelling and help inform salt interception scheme (SIS) operations. The flow downstream at **Lock 1** is currently 3,700 ML/day.

**Photo 2 - Calm (and cool) conditions in the early morning at Lock 4 (Source: Peter Webber, SA Water)**

At the **Lower Lakes**, the 5-day average water level in Lake Alexandrina increased to 0.68 m AHD. Releases through the barrages averaged around 2,000 ML/day this week, via gates at Goolwa and Tauwitchere barrages.

**For media inquiries contact the Media Officer on 02 6279 0141**

DAVID DREVERMAN
Executive Director, River Management

## Water in Storage

**Week ending Wednesday 07 Jun 2017**

| 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 | 472.11 | 3 010 | 78% | 71 | 2 939 | -1 |
| Hume Reservoir | 192.00 | 3 005 | 186.42 | 2 003 | 67% | 23 | 1 980 | +43 |
| Lake Victoria | 27.00 | 677 | 24.66 | 412 | 61% | 100 | 312 | +16 |
| Menindee Lakes | | 1 731* | | 777 | 45% | (480 #) | 297 | -2 |
| **Total** | | **9 269** | | **6 202** | **67%** | **- -** | **5 528** | **+57** |
| Total Active MDBA Storage | | | | | | | 64% ^ | |

**Major State Storages**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Burrinjuck Reservoir | 1 026 | | 644 | 63% | 3 | 641 | +4 |
| Blowering Reservoir | 1 631 | | 1 195 | 73% | 24 | 1 171 | +61 |
| Eildon Reservoir | 3 334 | | 2 190 | 66% | 100 | 2 090 | +3 |

* 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 06 Jun 2017

| Storage | Active Storage (GL) | Weekly Change (GL) | Diversion (GL) | This Week | From 1 May 2017 |
|---|---|---|---|---|---|
| Lake Eucumbene - Total | 1 557 | -48 | Snowy-Murray | +40 | 194 |
| Snowy-Murray Component | 794 | -35 | Tooma-Tumut | +4 | 4 |
| Target Storage | 1 240 | | Net Diversion | 36 | 190 |
| | | | Murray 1 Release | +43 | 211 |

## Major Diversions from Murray and Lower Darling (GL) *

| New South Wales | This Week | From 1 July 2016 | Victoria | This Week | From 1 July 2016 |
|---|---|---|---|---|---|
| Murray Irrig. Ltd (Net) | -0.1 | 903 | Yarrawonga Main Channel (net) | 0 | 240 |
| Wakool Sys Allowance | 0.1 | 35 | Torrumbarry System + Nyah (net) | 0.6 | 424 |
| Western Murray Irrigation | 0.1 | 25 | Sunraysia Pumped Districts | 0.3 | 96 |
| Licensed Pumps | 0.7 | 252 | Licensed pumps - GMW (Nyah+u/s) | 0 | 41 |
| Lower Darling | 1.4 | 116 | Licensed pumps - LMW | 1.5 | 303 |
| **TOTAL** | **2.2** | **1331** | **TOTAL** | **2.4** | **1104** |

* 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 | 90.0 * |
| Flow this week | 31.2 |
| Flow so far this month | 31.2 |
| Flow last month | 221.2 |

(4 500 ML/day)

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

| | Current | Average over the last week | Average since 1 August 2016 |
|---|---|---|---|
| Swan Hill | 110 | 130 | 120 |
| Euston | 140 | 130 | - |
| Red Cliffs | 180 | 180 | 170 |
| Merbein | 180 | 180 | 170 |
| Burtundy (Darling) | 650 | 630 | 590 |
| Lock 9 | 230 | 230 | 220 |
| Lake Victoria | 240 | 240 | 200 |
| Berri | 340 | 340 | 290 |
| Waikerie | 440 | 430 | 360 |
| Morgan | 460 | 480 | 360 |
| Mannum | 520 | 510 | 370 |
| Murray Bridge | 500 | 490 | 330 |
| Milang (Lake Alex.) | 560 | 560 | 510 |
| Poltalloch (Lake Alex.) | 560 | 570 | 390 |
| Meningie (Lake Alb.) | 1 740 | 1 740 | 1 770 |
| Goolwa Barrages | 920 | 1 240 | 1 120 |

## River Levels and Flows

## Week ending Wednesday 07 Jun 2017

| 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 | - | - | - | 5 840 | F | 6 440 | 4 980 |
| Jingellic | 4.0 | 1.98 | 208.50 | 6 580 | F | 7 270 | 5 930 |
| Tallandoon ( Mitta Mitta River ) | 4.2 | 1.39 | 218.28 | 580 | R | 790 | 600 |
| Heywoods | 5.5 | 1.77 | 155.40 | 2 400 | R | 2 040 | 2 480 |
| Doctors Point | 5.5 | 1.86 | 150.33 | 2 870 | R | 2 630 | 2 870 |
| Albury | 4.3 | 0.96 | 148.40 | - | - | - | - |
| Corowa | 4.6 | 0.93 | 126.95 | 2 650 | F | 3 380 | 2 870 |
| Yarrawonga Weir (d/s) | 6.4 | 0.74 | 115.78 | 4 000 | R | 4 110 | 3 590 |
| Tocumwal | 6.4 | 1.37 | 105.21 | 3 790 | F | 3 810 | 3 380 |
| Torrumbarry Weir (d/s) | 7.3 | 1.45 | 80.00 | 3 610 | R | 3 360 | 3 270 |
| Swan Hill | 4.5 | 0.90 | 63.82 | 3 690 | R | 3 630 | 4 110 |
| Wakool Junction | 8.8 | 2.35 | 51.47 | 4 650 | F | 4 790 | 5 650 |
| Euston Weir (d/s) | 9.1 | 1.28 | 43.12 | 5 500 | R | 5 590 | 6 120 |
| Mildura Weir (d/s) | | - | - | 6 370 | F | 6 500 | 6 790 |
| Wentworth Weir (d/s) | 7.3 | 2.83 | 27.59 | 5 960 | S | 6 230 | 6 710 |
| Rufus Junction | - | 2.99 | 19.92 | 3 580 | R | 3 930 | 5 600 |
| Blanchetown (Lock 1 d/s) | - | 0.65 | - | 3 700 | R | 4 370 | 5 810 |
| **Tributaries** | | | | | | | |
| Kiewa at Bandiana | 2.8 | 1.12 | 154.35 | 690 | R | 820 | 500 |
| Ovens at Wangaratta | 11.9 | 8.06 | 145.74 | 740 | S | 860 | 770 |
| Goulburn at McCoys Bridge | 9.0 | 1.54 | 92.96 | 1 040 | S | 990 | 950 |
| Edward at Stevens Weir (d/s) | 5.5 | 0.99 | 80.76 | 650 | F | 350 | 300 |
| Edward at Liewah | - | 1.04 | 56.42 | 520 | F | 600 | 760 |
| Wakool at Stoney Crossing | - | 1.54 | 55.03 | 710 | F | 760 | 810 |
| Murrumbidgee at Balranald | 5.0 | 0.87 | 56.83 | 490 | F | 740 | 440 |
| Barwon at Mungindi | 6.1 | 3.41 | - | 530 | R | 530 | 620 |
| Darling at Bourke | 9.0 | 4.21 | - | 850 | R | 740 | 770 |
| Darling at Burtundy Rocks | - | 0.80 | - | 300 | S | 300 | 320 |

| | | |
|---|---|---|
| Natural Inflow to Hume | 2 450 | 4 200 |

(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 | -0.17 | - | No. 7 Rufus River | 22.10 | +0.04 | +0.67 |
| No. 26 Torrumbarry | 86.05 | -0.34 | - | No. 6 Murtho | 19.25 | +0.02 | -0.02 |
| No. 15 Euston | 47.60 | +0.01 | - | No. 5 Renmark | 16.30 | +0.00 | +0.09 |
| No. 11 Mildura | 34.40 | -0.02 | +0.09 | No. 4 Bookpurnong | 13.20 | +0.01 | +0.48 |
| No. 10 Wentworth | 30.80 | +0.00 | +0.19 | No. 3 Overland Corner | 9.80 | +0.01 | +0.18 |
| No. 9 Kulnine | 27.40 | -0.07 | +0.00 | No. 2 Waikerie | 6.10 | +0.04 | +0.02 |
| No. 8 Wangumma | 24.60 | +0.00 | +0.09 | No. 1 Blanchetown | 3.20 | -0.10 | -0.10 |

## Lower Lakes FSL = 0.75 m AHD

| | |
|---|---|
| Lake Alexandrina average level for the past 5 days (m AHD) | 0.68 |

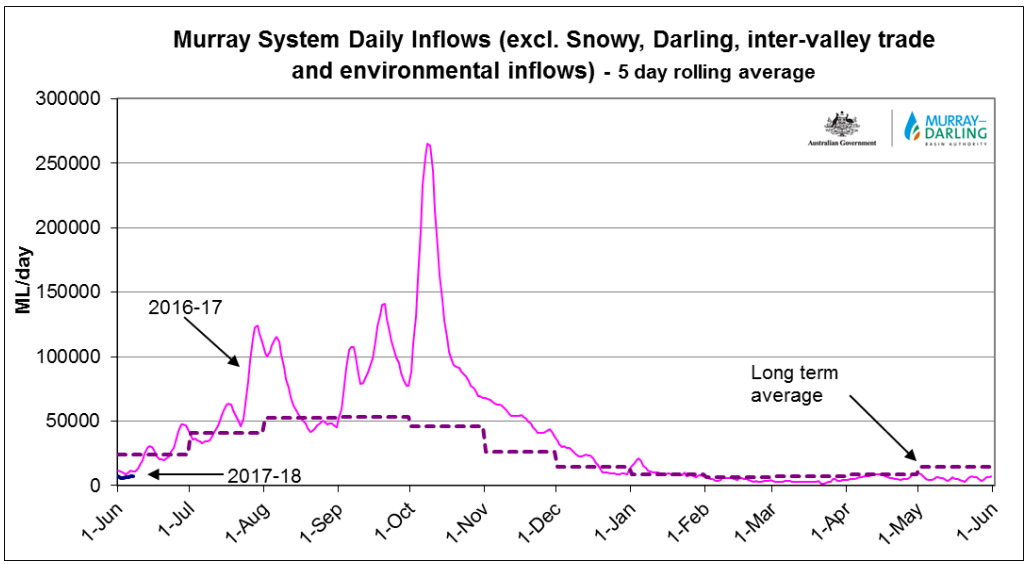
## Barrages

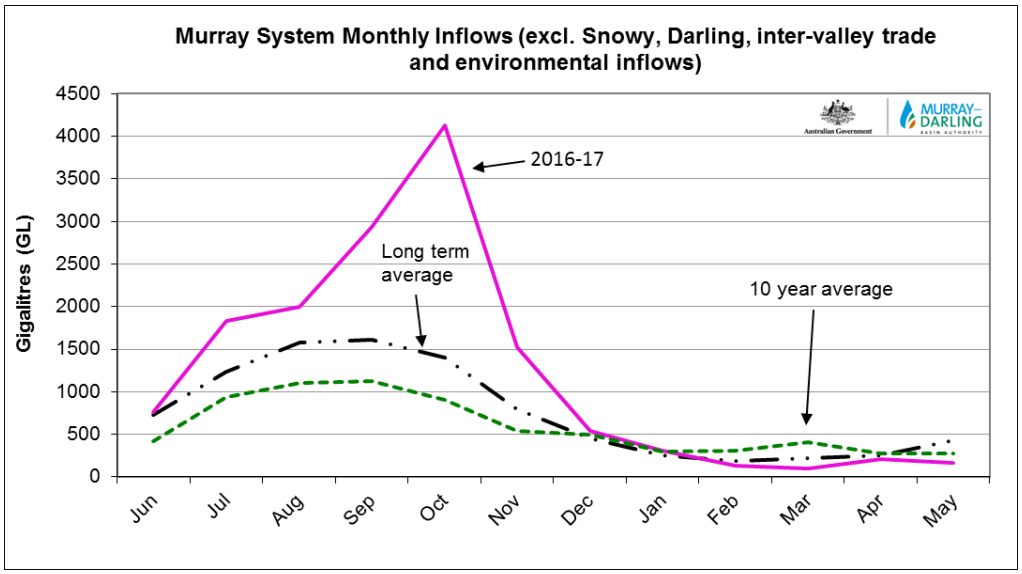
Fishways at Barrages

| | Openings | Level (m AHD) | No. Open | Rock Ramp | Vertical Slot 1 | Vertical Slot 2 | Dual Vertical Slots |
|---|---|---|---|---|---|---|---|
| Goolwa | 128 openings | 0.71 | 2 | - | Open | Open | - |
| Mundoo | 26 openings | 0.67 | All closed | - | - | - | Open |
| Hunters Creek | - | - | - | - | Open | - | - |
| Boundary Creek | 6 openings | - | 1 | - | Open | - | - |
| Ewe Island | 111 gates | - | All closed | - | - | - | Open |
| Tauwitchere | 322 gates | 0.68 | 3 | Open | Open | Open | - |

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

**Week ending Wednesday 07 Jun 2017**




## State Allocations (as at 07 Jun 2017)

**NSW - Murray Valley**

| | |
|---|---|
| High security | 100% |
| General security | 100% |

**Victorian - Murray Valley**

| | |
|---|---|
| High reliability | 100% |
| Low reliability | 5% |

**NSW – Murrumbidgee Valley**

| | |
|---|---|
| High security | 100% |
| General security | 100% |

**Victorian - Goulburn Valley**

| | |
|---|---|
| High reliability | 100% |
| Low reliability | 0% |

**NSW - Lower Darling**

| | |
|---|---|
| High security | 100% |
| General security | 100% |

**South Australia – Murray Valley**

| | |
|---|---|
| High security | 100% |

NSW : http://www.water.nsw.gov.au/water-management/water-availability
VIC : http://nvrm.net.au/seasonal-determinations/current
SA : http://www.environment.sa.gov.au/managing-natural-resources/river-murray