Murray Operations Plan

July 2019
## Contents

1. **Highlights**.................................................................................................................................................3

2. **Dam storage** ...........................................................................................................................................5
   2.1 Dartmouth Dam storage ................................................................................................................................5
   2.2 Hume Dam storage ....................................................................................................................................6
   2.3 Lake Victoria storage .................................................................................................................................7
   2.4 Menindee Lakes storage .............................................................................................................................8

3. **Supplementary access**..........................................................................................................................9
   3.1 Commentary ................................................................................................................................................9
   3.2 Explanation ...................................................................................................................................................9

4. **Water availability** .....................................................................................................................................10
   4.1 2018/2019 water availability for NSW Murray as of 30 June 2019 ....................................................10
   4.2 2019/2020 water availability for NSW Murray as of 1 July 2019 (extracted on 10 July) ..........11
   4.3 Resource assessment ................................................................................................................................13
   4.4 Water Balance Notes ................................................................................................................................15
   4.5 Chances of improvement .......................................................................................................................16
   4.6 Forecast General Security allocation (per cent) ................................................................................17

5. **Rainfall** ...................................................................................................................................................18

6. **Inflows** ....................................................................................................................................................20

7. **Operational loss** ...................................................................................................................................23

8. **Storage forecast** .....................................................................................................................................25

9. **Outage planning** .....................................................................................................................................29
1. Highlights

Storage status – 26 July:

- Dartmouth Dam is 62 per cent full – falling slowly – holding 2,407,000 ML.
- Hume Dam is 33 per cent full – rising – holding 980,000 ML.
- Lake Victoria is 53 per cent full – rising – holding 362,000 ML.
- NSW share of this water is approximately 28%, 61% and 25% for these storages respectively, or 34% in total

Drought stage:

The NSW Extreme Events Policy facilitates a staged approach to managing extreme events, such as severe droughts or poor water quality events. The NSW Murray regulated river water source is in Stage 2 drought criticality, meaning drought operational planning has commenced in preparation for extreme dry conditions that may continue through 2019-20. Accordingly a Critical Water Advisory Panel will soon be formed for southern valleys to advise on drought management options.

State sharing of the Murray resource:

The monthly end of June accounts indicate that 3,950 gigalitres (GL) of total Murray resource is available in the extreme dry (99th percentile) case, of which about 2,040 GL is needed to run the system. The NSW portion of this shared resource is 630 GL based on rules in the Murray-Darling Basin Agreement. Following adjustments including trade and usage to date, the assessment results in 641 GL of water being available for NSW.

Trade

In the Murray, trade across the Barmah choke remains restricted to ‘no net trade downstream’. Downstream trade opened on 1 July with a balance of Snowy water savings volume that would not be delivered downstream, however that initial trade capacity has now been consumed and downstream trade in 2019-20 will open to the extent of the volume of any upstream trade.

The trade restriction helps to protect existing downstream entitlement holders from an increased risk of delivery shortfall due to the limited physical capacity of the Barmah Choke. Water users are encouraged to monitor the Murray-Darling Basin Authority (MDBA) website for information about the trade balance and status of trade.
Operating conditions:
- The latest Water Allocation Statement by DOI-Water confirmed that the general security allocation of zero, while Available Water Determinations (AWD) are 100% for towns and 97% for high security. Average carryover into 2018-19 was estimated to be about 31% of general security share components, while carryover into 2019-20 is estimated at a volume equivalent to 18% of share component.

Potential Blue Green Algae issues:
- Hume Dam storage is currently on green alert
- Lake Wetherill is currently on red alert, with amber alerts at Menindee Town, Weir 32, Court Nareen, Pooncarrie, Burtundy and Ellerslie.
2. Dam storage

2.1 Dartmouth Dam storage

The below figure shows the Dartmouth Dam behaviour for the 2018-19 water year compared to the last four water years.

Dartmouth Dam at 1 July 2019 was 64 per cent full – falling – holding 2,640 Gigalitres (GL). NSW share of this water is approximately 27% (713 GL).

From the above figure it can be seen that Dartmouth Dam was under 90% at the start of this water year. Transfers from Dartmouth to Hume in this water year totaled 1,450 GL, with the NSW transfer being 960 GL. The storage was steadily drawn down from September to May, as dry conditions persisted. The storage level increased slightly in May, before transfers to Hume recommenced resulting in a steady drawdown through June.
2.2 Hume Dam storage

The below figure shows the Hume Dam behaviour for the 2018-19 water year compared to the last four water years.

Hume Dam at 1 July 2019 was 24 per cent full – falling – holding 724 GL. NSW share of this water is approximately 62% (450 GL).

From the above figure it can be seen that Hume Dam was above 40% at the start of this water year before rising to a peak just over 50% in September. The storage volume change was due to releases for deliveries and transfers from Dartmouth. Unregulated inflows to Hume total 774 GL for this water year, to which NSW is entitled to 50% (387 GL). The storage had fallen to 13 % by end April, before rising through May and June due to transfers from Dartmouth (93 GL), unregulated inflows (160 GL) and delivery from Snowy Hydro Limited.
2.3 Lake Victoria storage

The below figure shows the Lake Victoria behaviour for the 2018-19 water year compared to the last four water years.

Lake Victoria at 1 July 2019 was 42 per cent full and rising – holding 280 GL. NSW share of this water is approximately 43% (121 GL).

From the above figure it can be seen that Lake Victoria was under 55% at the start of the water year and rose to a peak of approximately 85% in December 2018. The storage falling throughout August was an unusual occurrence and is due to the dry conditions and higher than expected demands. Lake Victoria was used to meet peak summer demands with the storage falling through summer and continuing to fall through early Autumn. Lake Victoria has been rising steadily through May and June as a result of transfers from Hume and the capture of tributary inflows.
2.4 Menindee Lakes storage

The below figure shows the Menindee Lakes behaviour for the 2018-19 water year compared to the last four water years.

![Menindee Lakes Storage](image)

From the above figure it can be seen that Lake Menindee was around 12% at the start of the water year and was just 1% of active capacity at 1 July 2019. The only remaining active capacity for the Lower Darling is in Lake Wetherell. Copi Hollow has been isolated from Lake Pamamaroo and is holding water for the purposes of town water supply for Menindee and Sunset Strip.

Releases from storage were ceased in mid-January. A small release continues to be made with the aim of maintaining the Weir 32 weir pool. Block banks in the Lower Darling have been constructed to provide drought supply, however the supplies in these banks are now almost exhausted. Inflows are required before release to the Lower Darling can recommence.
3. Supplementary access

3.1 Commentary

There have not been any supplementary events in the NSW Murray or Lower Darling since the start of the 2019/20 water year.

3.2 Explanation

No supplementary access was available since the start of the 2019/20 water year due to lack of high flow runoff events entering the system.
## 4. Water availability

### 4.1 2018/2019 water availability for NSW Murray as of 30 June 2019

<table>
<thead>
<tr>
<th>Licence category</th>
<th>Share component in</th>
<th>Carryover AWD volume in</th>
<th>Allocation assignments in</th>
<th>Allocation assignments out</th>
<th>Usage</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic and stock</td>
<td>13,748</td>
<td>13,748</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic and stock (domestic)</td>
<td>1,250</td>
<td>-3</td>
<td>1,247</td>
<td></td>
<td>844</td>
<td>401</td>
</tr>
<tr>
<td>Domestic and stock (stock)</td>
<td>2,063</td>
<td>-</td>
<td>2,063</td>
<td></td>
<td>954</td>
<td>1,109</td>
</tr>
<tr>
<td>Local water utility</td>
<td>33,497</td>
<td>-</td>
<td>33,497</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local water utility (domestic and commercial)</td>
<td>4,720</td>
<td>-</td>
<td>4,720</td>
<td></td>
<td>2,894</td>
<td>1,826</td>
</tr>
<tr>
<td>Regulated river (Conveyance)</td>
<td>330,000</td>
<td>-1,683</td>
<td>165,033</td>
<td>42,016</td>
<td>35,145</td>
<td>170,222</td>
</tr>
<tr>
<td>Regulated river (general security)</td>
<td>1,674,096</td>
<td>542,572</td>
<td>-</td>
<td>360,632</td>
<td>222,488</td>
<td>366,840</td>
</tr>
<tr>
<td>Regulated river (high security)</td>
<td>189,705</td>
<td>-653</td>
<td>183,000</td>
<td>65,629</td>
<td>125,256</td>
<td>118,500</td>
</tr>
<tr>
<td>Regulated river (high security) [Community and Education]</td>
<td>47</td>
<td>-</td>
<td>47</td>
<td>-</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>Regulated river (high security) [Research]</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Regulated river (high security) [Town Water Supply]</td>
<td>3,195</td>
<td>-</td>
<td>3,195</td>
<td>-</td>
<td></td>
<td>3,195</td>
</tr>
<tr>
<td>Supplementary water</td>
<td>252,579</td>
<td>-</td>
<td>252,513</td>
<td></td>
<td></td>
<td>252,513</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>2,504,901</strong></td>
<td><strong>540,234</strong></td>
<td><strong>659,065</strong></td>
<td><strong>468,227</strong></td>
<td><strong>383,550</strong></td>
<td><strong>693,022</strong></td>
</tr>
</tbody>
</table>

The above summary table “2018/2019 water availability for NSW Murray as of 30 June 2019” is subject to final confirmation once final meter reading for 2018/19 Water Year is completed.
### 4.2 2019/2020 water availability for NSW Murray as of 1 July 2019 (extracted on 10 July)

<table>
<thead>
<tr>
<th>Licence category</th>
<th>Share component</th>
<th>Carryover in</th>
<th>AWD volume</th>
<th>Allocation assignments in</th>
<th>Allocation assignments out</th>
<th>Usage</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic and stock (domestic)</td>
<td>13,732</td>
<td>-2</td>
<td>13,732</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>13,703</td>
</tr>
<tr>
<td>Domestic and stock (stock)</td>
<td>1,250</td>
<td>-1</td>
<td>1,250</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>1,240</td>
</tr>
<tr>
<td>Local water utility</td>
<td>2,063</td>
<td>0</td>
<td>2,063</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2,060</td>
</tr>
<tr>
<td>Domestic and stock (domestic)</td>
<td>33,497</td>
<td>-2</td>
<td>33,497</td>
<td>0</td>
<td>0</td>
<td>226</td>
<td>33,269</td>
</tr>
<tr>
<td>Domestic and stock (stock)</td>
<td>4,720</td>
<td>0</td>
<td>4,720</td>
<td>0</td>
<td>0</td>
<td>102</td>
<td>4,618</td>
</tr>
<tr>
<td>Regulated river (Conveyance)</td>
<td>330,000</td>
<td>0</td>
<td>19,998</td>
<td>11,948</td>
<td>0</td>
<td>110</td>
<td>318,36</td>
</tr>
<tr>
<td>Regulated river (general security)</td>
<td>1,674,096</td>
<td>312,108</td>
<td>0</td>
<td>16,203</td>
<td>12,391</td>
<td>12</td>
<td>315,909</td>
</tr>
<tr>
<td>Regulated river (high security)</td>
<td>189,705</td>
<td>-1,032</td>
<td>184,017</td>
<td>1,481</td>
<td>0</td>
<td>212</td>
<td>169,387</td>
</tr>
<tr>
<td>Regulated river (high security) [Community and Education]</td>
<td>47</td>
<td>0</td>
<td>47</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Regulated river (high security) [Research]</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Regulated river (high security) [Town Water Supply]</td>
<td>3,195</td>
<td>0</td>
<td>3,195</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,195</td>
</tr>
<tr>
<td>Supplementary water</td>
<td>252,468</td>
<td>0</td>
<td>252,468</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>252,468</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>2,504,773</strong></td>
<td><strong>351,072</strong></td>
<td><strong>514,987</strong></td>
<td><strong>29,632</strong></td>
<td><strong>29,586</strong></td>
<td><strong>702</strong></td>
<td><strong>867,732</strong></td>
</tr>
</tbody>
</table>

The above summary table “2019/2020 water availability for NSW Murray as of 1 July 2019” is subject to final confirmation once final meter reading for 2018/19 Water Year is completed.
### NSW Murray River Valley

<table>
<thead>
<tr>
<th>Allocation (ML/Share, %)</th>
<th>Licence Category</th>
<th>Date of Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 / 0%</td>
<td>General security</td>
<td>1 July 2019</td>
</tr>
<tr>
<td>0.97 / 97%</td>
<td>High security</td>
<td>1 July 2019</td>
</tr>
<tr>
<td>1.00 / 100%</td>
<td>Domestic and stock</td>
<td>1 July 2019</td>
</tr>
<tr>
<td>1.00 / 100%</td>
<td>Local water utilities</td>
<td>1 July 2019</td>
</tr>
<tr>
<td>0.06 / 6%</td>
<td>Conveyance</td>
<td>1 July 2019</td>
</tr>
<tr>
<td>0.18/ 18%</td>
<td>Average general security carryover</td>
<td>1 July 2019</td>
</tr>
</tbody>
</table>

- No General Security AWD has been announced in the 2019/20 water year.
- In this current water year for High Security water users the AWD is 97% while for Domestic and Stock as well as Local Water Utilities users the AWD is 100%. For conveyance the AWD is 6%.
- Average carryover into 2019-20 is 18% of general security share components.
- Further general security AWD’s are possible for this water year although heavily dependent on climate/rainfall conditions.
- The sum of account balance refers the amount of water available to the account of the users after trades and usage.
4.3 Resource assessment

NSW Murray resource distribution 2019-20 – 15 July 2019

- Total available resource - NSW’s state share of active storage volume (Hume, Dartmouth, Menindee and Lake Victoria) as assessed and accounted for under the Murray-Darling Basin Agreement at the time of the assessment plus any usable flows in transit plus assumed (99%ile) inflows for the rest of the year plus Snowy Hydro’s assured Required Annual Release (RAR) (including any flex (pre-release) from the prior year), as well as estimated usage to date. Snowy Hydro’s M1 releases to date for this water year (2019-20) is estimated to be about 198GL. NSW is in Special Accounting with South Australia (SA), details of which can be found in the MDB Agreement clauses 123-129. Special accounting is triggered when NSW is forecast unable to meet the required reserve of 1,250GL by the end of the water year to supply SA with its entitlement in the following year.

- Carryover – NSW Murray general security water users can carryover a maximum account balance of 50 per cent of their entitlement into the following water year. The account limit is 110 per cent of entitlement, meaning that account credits from allocation and/or carryover cannot exceed 110% of entitlement in any water year. The limit does not include allocation trade.

Source: NSW Murray and Lower Darling
• Primarily rules-based planned environmental water – water required to be set aside to provide for riverine environments, as per water sharing plan and other interjurisdictional agreements. In the NSW Murray this includes the Murray Additional Allowance (MAA) (about 6GL) and the Barmah-Millewa Allowance (B-MA) (now 261GL – currently 100% borrowed). It also includes River Murray Increased Flows (RMIF) in Hume, accrued as part of the Snowy Water Initiative (currently about 50GL, of which 38 GL is currently available). The total commitments to B-MA and RMIF will decrease over the water year as they are released from Hume for use. Excludes ‘licence-based’ environmental water, known as held environmental water (HEW).

• The Water Sharing Plan for the New South Wales Murray and Lower Darling Regulated Rivers Water Sources 2016 has subcategories of high security licenses in the Murray Water Source. High security subcategory licences under Part 7 Division 2 Clause 46(2) that are present in the Murray include community and education, research, and town water supply. At the commencement of each water year, these licences are to receive 100% allocation, while remaining high security licences are to receive 97% allocation. For the purposes of this water allocation statement, the high security town water supply allocation volume has been grouped as “Towns, S&D”.

• Conveyance entitlement – a category of access licence originally issued to Irrigation Corporations to facilitate delivery of water through their channel systems. Allocation to this category is prescribed in the water sharing plan and is a function of current high and general security allocation.

• Wakool Loss – a conveyance volume necessary for NSW to operate the Edward-Wakool system. Normally up to 70 GL, currently 35 GL available. This will accrue as a priority before summer

• Reserves – required primarily under statutory plans, up to 61GL; set aside for critical human needs in accordance with Clause 11.03 of the Basin Plan

• Held environmental water (HEW) – water administered by environmental water holders is reported here, with the associated portions of general security allocation and carryover also identified in the above pie chart. This reporting of held environmental water is limited to only NSW entitlements, reporting of credits to accounts (not usage or trade), and estimated to be 0GL of GS, 24GL of HS, 3GL of conveyance allocation and 35GL of GS carryover. These entitlements are held and/or managed either singly or jointly by various environmental holder groups, including the NSW Office of Environment and Heritage (OEH), The Living Murray (TLM) and the Commonwealth Environmental Water Holder (CEWH). Details on environmental holdings can be found on individual agency websites.

• 2020-2021 high priority needs on 1 July 2020 - volume set aside to cover high priority needs on 1 July 2020, for ‘Year 2’, including potential carryover
4.4 Water Balance Notes

Supply Distribution and Remaining Commitments – The volumes in the categories shown are only those relating to NSW’s share of the resource, at the end of the preceding month. The categories include the following:

- Water in storage: Volumes in the dams at the end of the previous month. (Excludes water in storage unavailable to NSW under the water sharing arrangements of the Murray Darling Basin Agreement).
- Estimated use since 1 July: Estimated NSW usage to-date, reconciled periodically with hydrographic updates (meter readings).
- Forecast inflows: NSW’s share of forecast inflows into the River Murray System based on assumed extremely dry future conditions (includes Snowy Hydro’s guaranteed inflows for the water year, and Murrumbidgee end of system flows).
- Murrumbidgee IVT: Total Murrumbidgee system water bought by Murray system users that is yet to be delivered, as reported in the Murrumbidgee IVT account balance.
- Evaporation: Water set aside for evaporation for the remainder of the year. This reduces as the year progresses.
- River losses upstream of SA: Water budgeted for transmission losses from the River Murray system upstream of the South Australian border for the remainder of the year. Generally reduces as the water year progresses.
- SA non-dilution entitlement: Water to supply South Australia’s entitlement flow, as required under the Murray Darling Basin (MDB) Agreement. Reduces as water year progresses.
- SA dilution flow: Water to provide South Australia’s dilution and conveyance component of flow, as required under the MDB Agreement. Reduces as the year progresses, unless Additional Dilution Flow (ADF) is triggered.
- MDB Agreement required reserves: Includes conveyance reserve and minimum reserve to be set aside for use in the next water year, as required by the MDB Agreement in clause 102D and 103, respectively.
- Water available for allocation: NSW’s bulk share of the resource that can be assigned to NSW Murray entitlement holders based on the water sharing plan. Allocation of this volume is provided in the above table and pie chart.

Source: NSW Murray and Lower Darling

4.5 Chances of improvement

The chances of improved general security allocation in the NSW Murray, based on a repeat of historical inflows, are provided in the following table under a variety of conditions. The forecast from July is based on all available historical data as this is historically the most likely time to receive inflows. Note that this gives a better outlook than using just the driest one third of years on record (dry tercile).

Historically, droughts have a higher likelihood of breaking in the winter/spring seasons than any other season, and therefore there is a possibility that the current drought may break or ease in the coming months. However, if this does not occur, the forecasting will change from using all available data to
using the driest third of all years (dry tercile), as was the case in the 2018-19 water year on the back of a dry winter in 2018.

It is important to note that these estimates are indicative improvements only and are not guaranteed allocations. Estimates may change based on weather variability, water management decisions and other events. This means water users should use this information with caution and at their own risk, as it projects many months ahead. The reliability of the outlook is expected to improve as the forecast period reduces.

4.6 Forecast General Security allocation (per cent)

(Any carryover water can be added to these indicative allocations)

<table>
<thead>
<tr>
<th>NSW Murray River Valley</th>
<th>Potential Inflow Conditions</th>
<th>1 Sep 2019</th>
<th>1 Nov 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>99 chances in 100 (extreme) (99%)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>9 chances in 10 (very dry) (90%)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3 chances in 4 (dry) (75%)</td>
<td>0</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>1 chance in 2 (mean) (50%)</td>
<td>0^</td>
<td>30^</td>
<td></td>
</tr>
</tbody>
</table>

Note 1: Estimated values indicative only, not guaranteed and subject to change based on actual events unfolding.
Note 2: Statistical values reflect NSW share of inflows, not whole of system inflows.
Note 3: Multi-history modelling using all years. Assumes 99% inflow conditions through 2019-20 and GS carryover of 18%.

^ Extreme dry baseline additionally includes Murrumbidgee end of system flows.

^ By September, under median (50th percentile) inflow conditions, Conveyance allocation is likely to be about 110 GL.

* Barmah-Millewa Allowance payback commences.

4.6.1 Significance of this resource assessment

The current resource assessment at 15 July 2019 indicates that there is no general security AWD announcement in this month.

4.6.2 Resource assessment process

The resource assessment is the process of calculating how much water is available based on the rules of the Water Sharing Plan (WSP). This is done at the end of the month and when any significant
inflow event happens. The above resource assessment information is for the planning horizon from 15 July 2019 to 30 June 2020.

5. Rainfall

5.1 6-month rainfall

The above figures show that the last 6-month total rainfall is within the below average to average for the most of NSW and Victoria. Northern NSW and Queensland have seen conditions very much below average.
5.2 12-month rainfall

The above figures show that the last 12-month total rainfall is within the below average range for most of the NSW Murray catchment.
6. Inflows

6.1 Dartmouth Dam inflows

6.1.1 Dartmouth Dam - past 6-month inflows/statistical inflows

Inflows are consistent with rainfall trends over the past 6-month period, with Dartmouth catchment being one of the few places to receive near average rainfall totals. Actual inflow for the 6 months was driven by May and June inflows (101 GL) with the 6-month total of 146 GL which is consistent with 50th percentile inflows (147 GL); the minimum inflow is 43 GL.

6.2.2 Dartmouth Dam - past 12-month inflows/statistical inflows
Inflows are consistent with rainfall trends over the past 12-month period. Actual inflow for the 12 months is 489 GL which is slightly better than 90$^{th}$ percentile inflows (450 GL); the minimum inflow is 166 GL.

6.2 Hume Dam inflows

6.2.1 Hume Dam - past 6-month inflows/statistical inflows

Inflows are less than the rainfall trends over the past 6 months period, likely due very dry catchment conditions experienced over the previous 12 to 18 months. Actual inflow for the 6 months is 225 GL (160 GL May & June) – consistent with 90$^{th}$ percentile inflows (221 GL); the minimum inflow is 69 GL.

6.2.3 Hume Dam - past 12-month inflows/statistical inflows

Inflows are consistent with rainfall trends over the past 12 months. Actual inflow for the 12 months is 774 GL which is slightly better than 95$^{th}$ percentile inflows (602 GL); the minimum inflow is 124 GL.
6.3 Downstream tributary inflows

6.3.2 Total tributary - past 6-month inflows/statistical inflows

Inflows significantly exceed rainfall trends over the past 6 months period. Actual inflow for the 6 months is 772 GL which is slightly better than 50th percentile inflows (678 GL); the minimum inflow is 190 GL.

6.3.3 Total tributary - past 12-month inflows/statistical inflows

Inflows are consistent with rainfall trends over the past 12-month period. Actual inflow for the 12 months is 2327 GL which is slightly greater than 75th percentile inflows (2266 GL); the minimum inflow is 575 GL.
7. Operational loss

6.4 Operational losses for 2018-19

Operational loss is water above that which could reasonably be expected to pass end-of-the-system gauge as the last point on Murray River being supplied with regulated flow (dam releases and controlled tributary inflows – not supplementary flows).

The table below shows that total sales and environmental delivery, including end of system flow requirement (1494 GL) and operational loss (16 GL).
## NSW Murray cumulative totals for 2018-2019

<table>
<thead>
<tr>
<th>Dates</th>
<th>Sales + environmental delivery + EOS</th>
<th>Operational surplus Actual</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>61</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>July-Aug</td>
<td>208</td>
<td>2</td>
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</tr>
<tr>
<td>July-Sep</td>
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</tr>
<tr>
<td>July-Oct</td>
<td>494</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>July-Nov</td>
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<td>2</td>
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<td>July-Dec</td>
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<tr>
<td>July-Jan</td>
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<tr>
<td>July-Feb</td>
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<tr>
<td>July-Mar</td>
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<td>July-Apr</td>
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<td>July-May</td>
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<tr>
<td>July-Jun</td>
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</tbody>
</table>
8. Storage forecast

8.1 Dartmouth Dam storage forecast

The above figure provides a range of scenarios that may occur at Dartmouth Dam under different inflow conditions through to June 2020. The chart demonstrates that only under wettest forecast conditions would the dam be likely to fill up to 85% of storage capacity. Under the dry scenarios, Dartmouth will be drawn on to transfer water to Hume Dam to ensure summer demands can be met.
8.2 Hume Dam storage forecast

The above figure provides a range of scenarios that may occur at Hume Dam under different inflow conditions through to June 2020. The chart demonstrates that under a wet inflow scenario the dam would reach approximately 90%, essential there is only a 1 in 4 chance of this occurring. Under all scenarios, Hume Dam will be drawn on to meet system demands.

Under the driest scenarios the storage could fall below 10%. In essence the chart shows that there is a 10% chance of this occurring, and a 90% of the storage ending the season higher than this.
8.3 Lake Victoria storage forecast

The above figure provides a range of scenarios that may occur at Lake Victoria under different inflow conditions through to June 2020. The chart demonstrates that the storage will only fill under near average conditions or wetter this water year. Under all scenarios, Lake Victoria will be drawn on to meet system demands.

Under all scenarios, the storage is likely to meet the Lake Victoria operating strategy and of May storage target.

8.4 Menindee Lakes storage forecast

A storage forecast is provided in the Water Operations / Lower-Darling Operations Plan.
8.5 Next 3 months scenario from the BOM forecast

The Bureau of Meteorology seasonal outlook for August to October, issued 25 July 2019, indicates that rainfall conditions are generally likely to be below average in the valley over this period.
9. Outage planning

<table>
<thead>
<tr>
<th>Item</th>
<th>Time</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Hume Dam</td>
<td>N/A</td>
<td>Valve Refurbishment – access to power station reduces risk of supply restrictions. WaterNSW working with MDBA to assess delivery risk and maintenance schedule</td>
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<tr>
<td>Mulwala weir</td>
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<td>None</td>
</tr>
<tr>
<td>Torrumbarry weir</td>
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</tr>
<tr>
<td>Stevens weir</td>
<td>September - October</td>
<td>Painting of the super structure. The works process is planned to utilise a bulk head for gate painting.</td>
</tr>
<tr>
<td>Euston weir</td>
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<td>None</td>
</tr>
<tr>
<td>Wentworth weir</td>
<td>N/A</td>
<td>None</td>
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</tbody>
</table>

More information