Lower Darling June 2018

- Introduction
- Current System Update
- Operations 2016-18
- Forecast Operation
  - Releases and storage levels
  - Water Quality
  - Block Banks, Pooncarie Weir
- General Business
Timeline of Consultation

• WaterNSW monthly teleconferences in July 2016
• Pooncarie meeting - Aug 2016
• Tulney Pt – incl MDBA – Jan 2017
• Lesson Learned Buronga - Jun 2017
• Fortnightly teleconferences June 2018
Current System Status

- Wetherell + Tandure – 41 GL
- Pamamaroo + Copi Hollow – 129 GL
- Menindee – 0 GL
- Cawndilla – 35 GL

- Total Storage – 205 GL
- Active Lower Darling – 170 GL
Current System Status

- Small inflow resulting from E-water event from Border Rivers and Gwydir River
  - 23 GL release
  - 2.6 GL inflow estimated total 3 – 3.5 GL
- Releases from Pamamaroo Outlet
- Weir 32 flow target 140 ML/day
Distribution of Water 2016/17
2016/17 L Darling outcomes and demand pushed to Lower Lakes
Distribution of Water

- Lower Darling Customers
- MDBA - Murray Delivery
- Lower Darling riparian
- Environmental Water Customer
- Planned Environment
- Evaporation

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume (GL)</th>
<th>Legend</th>
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<tbody>
<tr>
<td>2016/17</td>
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<td>541</td>
<td>Evaporation</td>
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<td>Environmental Water Customer</td>
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<td>318</td>
<td>Lower Darling riparian</td>
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<tr>
<td></td>
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<td>MDBA - Murray Delivery</td>
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<td>8</td>
<td>Lower Darling Customers</td>
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<td>390</td>
<td>Evaporation</td>
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<td>Lower Darling Customers</td>
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</tbody>
</table>
2017/18 L Darling outcomes and demand pushed to Lower Lakes

Darling River Flows and Menindee Storage Volume

- Approaching 480GL negotiated lower rate of call for MDBA - extended time above 480 GL improving the ratio of water held in Wetherell + Pamamaroo against that held in Cawndilla + Menindee
- E-water delivery continued at Weir 32 from 22 Nov to 15 Dec 2017
- 15 December 2017 - 480 GL total storage
- 15 December 2017 - Weir 32 reduced below WSP requirements
- 28 March 2018 - Cawndilla Outlet releases cease
- 1 July 2017 - e-water delivery continues at low rates
- 1 Oct - 21 Nov 2017 - MDBA call - 38 GL

Weir 32 Release
Cawndilla Release
Evaporation (30 day moving avg)
Total System Storage Volume
Extent of supply under zero inflow scenario
Supply maintained under historical minimum inflow scenario
Operational Outcomes for L Darling

- Restarting Lower Darling and flushing poor quality water out of the system.
- Lower Darling Cod and Golden Perch breeding event in 2016/17
- Anabranch water event and Golden Perch redistribution
- Shaping the MDBA release to maximise Menindee outlet use and reduce water on the flood plain
- Reduced MDBA release rate when approaching 480 to maximise water in upper storages (307GL left in top storages)
12 Month Rainfall

Murray-Darling Rainfall Deciles 1 June 2017 to 31 May 2018

Distribution Based on Gridded Data
Australian Bureau of Meteorology

Rainfall Decile Ranges

- Highest on Record
- Very Much Above Average
- Above Average
- Average
- Below Average
- Very Much Below Average
- Lowest on Record

http://www.bom.gov.au
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ID code: AWAP
Issued: 21/06/2018
12 Months Temperature
Barwon Darling Inflows since May 2017

Blue total inflows in to tributaries
Red Outflows from tributaries

67GL arrived in May to July 2017
Inflows

- The last 12 month inflow sequence in the lowest 6%ile
- If no inflows between now and December will result in the lowest inflow sequence since the 1970s
Drought Management

• To date the following drought management actions have been implemented:
  – Reduce releases at Weir 32 below minimum sharing plan requirements – action on going since 15 December 2017.
  – Separation of Lake Tandure and Lake Wetherell and pumping from Tandure to Wetherell, to reduce surface area of the storage.
Drought Management

• Drought management measures yet to be implemented include:
  – Separation of Copi Hollow from Lake Pamamaroo and pumping from Pamamaroo to Copi Hollow, to reduce surface area and provide water quality outcomes for Broken Hill town water supply.
  – Reverse osmosis water treatment for Broken Hill Town Water supply
  – Construction of in river storage downstream of Pooncarrie for drought supply for permanent planting with high security entitlement
  – Cease to flow downstream Weir 32
<table>
<thead>
<tr>
<th>Event</th>
<th>Base Case – No Inflow</th>
<th>Scenario 1 - Drought Inflow Sequence</th>
<th>Scenario 2 – 80% Inflow Sequence</th>
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</thead>
<tbody>
<tr>
<td>Tandure pumping</td>
<td>Commenced 26 March – temporarily ceased with inflow</td>
<td>Commenced 26 March – temporarily ceased with inflow</td>
<td>Commenced 26 March – temporarily ceased with inflow – further pumping may not be required</td>
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<tr>
<td>Pumping to Copi Hollow</td>
<td>25 Aug 2018 (EC ~800µS/cm)</td>
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<tr>
<td>Filling of Lower Darling block banks to secure supply</td>
<td>15 July 2018</td>
<td>15 July 2018</td>
<td>15 July 2018</td>
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<tr>
<td>Lower Darling Cease to Flow</td>
<td>27 December 2018</td>
<td>May not be required</td>
<td>May not be required</td>
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<tr>
<td>Switch Supply to Copi Hollow (depending upon EC level in Wetherell)</td>
<td>13 Dec 2018</td>
<td>13 Dec 2018</td>
<td>May not be required</td>
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<tr>
<td>Broken Hill Supply Fail – Groundwater Required</td>
<td>Mid-September 2019</td>
<td>Secure to end of forecast period 1 July 2020</td>
<td>Secure to end of forecast period 1 July 2020</td>
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</tbody>
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