Border River Drought Operations update

20\text{th} November

Adrian Langdon
Executive Manager System Operation
36 Month Rainfall Deficiency

Australian Government
Bureau of Meteorology

Australian Rainfall Deciles
1 October 2016 to 30 September 2019
Distribution Based on Gridded Data
Australian Bureau of Meteorology

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ID code: AWAP

Issued: 03/10/2019
NSW Temperatures

Maximum Temperature Anomaly (°C) 1 October 2018 to 30 September 2019

Australian Bureau of Meteorology

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System inflows & water allocations

Northern Valleys Inflow vs Allocation (GL)

Last 10 year avg. inflow 3,435 GL
System inflows & water allocations

Murrumbidgee + Murray Inflow vs Allocation (GL)

Last 10 year avg. inflow 8,636 GL
Water Availability

**Red Number** – water available in accounts

**Blue Number** – water available in storage

[Map showing water availability across various regions with key numbers for water storage and availability.]
Pindari Dam Inflows

Last Two Years have been the 2nd and 4th driest years on record
Glenlyon Dam Inflows

Last Two Years have been the 7th and 11th driest years on record
Border River Tributary Inflows

Last Two Years have been the driest years on record
Border River combined Inflows

Last Two Years have been the lowest and 3\textsuperscript{rd} driest years on record
## Drought of Record – 24 Months

<table>
<thead>
<tr>
<th>Valley</th>
<th>Previous Drought of Record Inflows (GL)</th>
<th>Period</th>
<th>Last 24 months Inflows (GL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glen Lyon</td>
<td>7</td>
<td>1992-94</td>
<td>33</td>
</tr>
<tr>
<td>Pindari</td>
<td>45</td>
<td>1918-20</td>
<td>37</td>
</tr>
<tr>
<td>Copeton</td>
<td>53</td>
<td>1918-20</td>
<td>57</td>
</tr>
<tr>
<td>Keepit</td>
<td>57</td>
<td>2001-03</td>
<td>17</td>
</tr>
<tr>
<td>Split Rock</td>
<td>8</td>
<td>1956-58</td>
<td>5</td>
</tr>
<tr>
<td>Chaffey</td>
<td>13</td>
<td>1964-66</td>
<td>6</td>
</tr>
<tr>
<td><strong>Burrendong</strong></td>
<td><strong>169</strong></td>
<td><strong>1945-47</strong></td>
<td><strong>87</strong></td>
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<tr>
<td>Wyangala</td>
<td>138</td>
<td>2001-03</td>
<td>228</td>
</tr>
<tr>
<td>Burrinjuck</td>
<td>463</td>
<td>2008-10</td>
<td>571</td>
</tr>
<tr>
<td>Blowering</td>
<td>124</td>
<td>2006-08</td>
<td>421</td>
</tr>
</tbody>
</table>
### Drought of Record – 36 Months

<table>
<thead>
<tr>
<th>Valley</th>
<th>Previous Drought of Record Inflows (GL)</th>
<th>Drought Period (Yrs)</th>
<th>Current Drought Inflows (GL)</th>
<th>Current Drought Period Months (GL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glen Lyon</td>
<td>44</td>
<td>1992-95</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Pindari</td>
<td>142</td>
<td>1992-95</td>
<td>82</td>
<td>29</td>
</tr>
<tr>
<td>Copeton</td>
<td>218</td>
<td>1992-95</td>
<td>209</td>
<td>29</td>
</tr>
<tr>
<td>Keepit</td>
<td>157</td>
<td>1992-95</td>
<td>98</td>
<td>35</td>
</tr>
<tr>
<td>Split Rock</td>
<td>22</td>
<td>1925-28</td>
<td>21</td>
<td>35</td>
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<tr>
<td>Chaffey</td>
<td>26</td>
<td>1964-67</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td><strong>Burrendong</strong></td>
<td><strong>478</strong></td>
<td><strong>1936-39</strong></td>
<td><strong>157</strong></td>
<td><strong>33</strong></td>
</tr>
<tr>
<td>Wyangala</td>
<td>283</td>
<td>2002-05</td>
<td>315</td>
<td>34</td>
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<tr>
<td>Burrinjuck</td>
<td>756</td>
<td>2007-09</td>
<td>926</td>
<td>34</td>
</tr>
<tr>
<td>Blowingering</td>
<td>240</td>
<td>2006-09</td>
<td>599</td>
<td>34</td>
</tr>
</tbody>
</table>
Comparison of Glenlyon Drought of Record – 36 Months

Comparison of drought inflows - Glenlyon Dam
Drought commenced July 2017

Cumulative inflows in GL

No of Months

WaterNSW
Comparison of Pindari Drought of Record – 36 Months

Comparison of drought inflows - Pindari Dam
Drought commenced July 2017

- 1992 - 1995
- 1939-1942
- 1935-1938
- 1984-1987
- 2017 - 2019

Cumulative inflows in GL

No of Months

0 4 8 12 16 20 24 28 32 36

0 20 40 60 80 100 120 140 160 180
Border Flows without Storages

January 2018 onwards, almost no inflow

If there was no dam, trouble would have started early 2018 to meet critical needs, which is around 22 months.
Border Dam Situation

Natural Flows versus Regulated Flows

- Natural Inflows
- Actual Releases
Current Resources Breakdown

1 November 2019

An additional **31,020 ML** is required prior to making any new AWD.

**Border River Resource Assessment**

- QLD Share (Glenlyon only) (7.94 GL)
- QLD Delivery Loss (0 GL)
- NSW Storage Loss (combined) (2.96 GL)
- NSW Essential Supplies (20.83 GL)
- NSW Delivery Loss (0 GL)
- NSW General Security (4.62 GL)
Day Zero - What are the facts?

If it does not rain again and critical drought works are not completed – there could be a day zero for the region.

Measures being undertaken by WaterNSW in conjunction with Local Councils are planned extend supplies.
## Day Zero – What is the Forecast?

### Table of Cease to supply in Border Rivers Valley

<table>
<thead>
<tr>
<th>Stage</th>
<th>Impact</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case - until cease to flow in Boggabilla Weir</td>
<td>Zero inflow</td>
<td>2019 July-Dec</td>
</tr>
<tr>
<td>Stage 1 - Cease Boomi Replenishment flows and nothing downstream of Boggabilla</td>
<td>Ceases to flow</td>
<td>2020 July-Dec</td>
</tr>
<tr>
<td>Stage 2 - Bulk transfer from Glenlyon to Boggabilla Weir</td>
<td>Ceases to flow</td>
<td>2021 July-Dec</td>
</tr>
<tr>
<td>Stage 3 - Bulk transfer Pindari to Boggabilla Weir</td>
<td>Ceases to flow</td>
<td>2022 July-Dec</td>
</tr>
<tr>
<td>Stage 4 - i. Blockbanks near Ashford ii. Pulse release from Pindari iii. Stop minimum release from Pindari</td>
<td>Ceases to flow</td>
<td>2023 July-Dec</td>
</tr>
</tbody>
</table>

### Key:
- **Zero inflow**
- **Recent observed inflow - past two years repeated (SDR 1)**
- **Drought of Record**

### Water Resource:
- Water Resource is made up from multiple storages
- Updated on 13 Nov 2019
- Assessment based on 31st Oct 19 Data

### Key Risk:
- Key risk is to manage water operations to extend supply without restricting too much water

### Acceptable Serviceability Criteria:
- Against lowest recorded inflow
- 2 years

### Min Benefit that Mitigation Works have
- 12 Months

### Access Pindari Deep Storage
- Install blockbanks near Ashford, Suspension of WSP, and suspension of the requirements of minimum release from Works Approval

### Lachlan Supply Risk
- Currently operating with no GS and carry over of GS @ 50% from previous years

### Current availability with approach against lowest recorded inflow
- Key risk is to manage water operations to extend supply without restricting too much water
Storage Depletion Curve
Based on End of October 2019 Assessment

Glenlyon Dam forecast volume

Storage capacity (GL)

- Dead Storage
- SDR1 (Nov 17-Oct 19)
- Zero Inflow
- Drought of Record (Pre-2004)
- SDR2 (Repeat drought of record-Yearly)
- Actual
Storage Depletion Curve
Based on End of October 2019 Assessment

Pindari Dam forecast volume

- Dead Storage
- SDR1 (Nov 17 - Oct 19)
- Zero Inflow
- Drought of Record (Pre-2004)
- SDR2 (Repeat Drought of Record_Yearly)
- Actual

Storage capacity (GL)

Drought Management Overview

- No further releases from Glenlyon or Pindari dams apart from critical human needs (town water supply) are planned until conditions improve significantly.
- Boggabilla Weir pool was filled in October and is expected to provide water to Boggabilla and Goondiwindi until March 2020.
- No deliveries downstream of Goondiwindi
- No delivery from dam releases for Boomi replenishment flow.
- Deliveries downstream of Goondiwindi will be made from tributary flows where possible.
- 31GL of inflows is required before further allocations are made.
Principles for managing tributary flows

- Inflows upstream of Boggabilla weir up to approximately 5GL will be captured and stored in Boggabilla weir to extend supply for critical human needs.
- Inflows above the volume able to be stored in Boggabilla weir, up to supplementary triggers (10GL over two days at Goondiwindi) will be utilised for instream stream requirements to Mungindi. This is likely to be up to a maximum of 9GL.
- If it is clear water will reach and fill Mungindi weir, up to 25% of the flow as measured at Boomi will be diverted to the Boomi River (permitted under the IGA).
- Tributary Inflows sharing will be dependent upon meeting critical human needs both downstream in the Border River but also the need to meet critical human needs in the Barwon Darling.
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