Namoi River Drought Operations update

20th November

Adrian Langdon
Executive Manager System Operation
36 Month Rainfall Deficiency

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

http://www.bom.gov.au
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Issued: 03/10/2019
System inflows & water allocations

Northern Valleys Inflow vs Allocation (GL)

Last 10 year avg. inflow 3,435 GL

- GS_Irrigation
- GS_Env
- Remaining Flows
- Last 10 year avg. inflow
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
Split Rock Dam Inflows

Last Two Years have been the driest and 5th driest years on record
Keepit Dam Inflows

Last Two Years have been the driest years on record
Namoi River Tributary Inflows

Annual Namoi Tributary Inflows

Last Two Years have been the driest and 3rd driest years on record
Namoi River Combined Inflows

Last Two Years have been the 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>
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<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>
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<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>
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<tr>
<td>Burrendong</td>
<td>169</td>
<td>1945-47</td>
<td>87</td>
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<tr>
<td>Wyangala</td>
<td>138</td>
<td>2001-03</td>
<td>228</td>
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<tr>
<td>Burrinjuck</td>
<td>463</td>
<td>2008-10</td>
<td>571</td>
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<tr>
<td>Blowering</td>
<td>124</td>
<td>2006-08</td>
<td>421</td>
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</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>
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<tr>
<td>Pindari</td>
<td>142</td>
<td>1992-95</td>
<td>82</td>
<td>29</td>
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<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>
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<tr>
<td>Split Rock</td>
<td>22</td>
<td>1925-28</td>
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<td>35</td>
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<tr>
<td>Chaffey</td>
<td>26</td>
<td>1964-67</td>
<td>19</td>
<td>35</td>
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<tr>
<td>Burrendong</td>
<td>478</td>
<td>1936-39</td>
<td>157</td>
<td>33</td>
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<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>
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<tr>
<td>Blowingering</td>
<td>240</td>
<td>2006-09</td>
<td>599</td>
<td>34</td>
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</tbody>
</table>
Comparison of Split Rock/Keepit Drought of Record – 36 Months

Comparison of drought inflows - Split Rock and Keepit combined
Drought commenced July 2017
Namoi flows without storages

January 2017 onwards, almost no inflow

If there was no dam, trouble would have started mid 2017 to meet critical needs, which is around 30 months
Namoi Dam Situation

Namoi Natural Flows Versus Actual

- Natural Inflows
- Actual Flows

Comparison of Chaffey Drought of Record – 36 Months

Comparison of drought inflows - Chaffey Dam
Drought commenced July 2017

- 1937 - 1940
- 1964-1967
- 2004 - 2007
- 2013 - 2016
- 2017 - 2019

Cumulative inflows in GL vs No of Months
Peel flows without storages

1st of Jan 2017, dam volume was 102 GL, through which water is supplying to GS, HS, S&D till now

Year-17-18, irregular inflow upstream, which was not enough to meet even Tamworth’s min demand

From 1st of Jan 18 onwards, almost no inflow

If there was no dam, trouble would have started since early 2017 to supply for Tamworth. Council and irrigators, which is around 33 months

Tamworth council min demand: 20 ML/d
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 Upper Namoi?

<table>
<thead>
<tr>
<th>Cease to supply from Split Rock Dam</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Case - until reach to deep Storage</strong></td>
<td></td>
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<tr>
<td><strong>Stage 1 - Change in Water Availability (i.e. reduction in GS carryover from 100% to 75%)</strong></td>
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<td>Impact of Stage 1 on reaching deep Storage</td>
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<tr>
<td><strong>Stage 2 - Stop supplying minimum release regularly (0.3 GL/month), instead pulse in every two months, only for Manilla town water</strong></td>
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<tr>
<td>Impact of Stage 2 on reaching deep Storage</td>
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<tr>
<td><strong>Stage 3 - Split Rock deep storage access (3.2 GL)</strong></td>
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<tr>
<td>Impact of Stage 3 on cease to flow</td>
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<tr>
<td><strong>Alternatives for High security and BLR need in place</strong> Users to have alternate source in place.</td>
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</tbody>
</table>

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

**Under Drought of Record and SDR will NOT cease to flow**

**Acceptable Serviceability Criteria against lowest recorded inflow 2 years**

**Current availability with approach against lowest recorded inflow**

**Upper Namoi Supply Risk**

**Key focus is to manage water operations to extend supply**

Updated on 13 Nov 2019
Assessment based on 31st Oct 19 data
## Day Zero – What is the Forecast Peel?

### Cease to supply from Chaffey dam to Tamworth

| Year | July | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2019 |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2020 |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2021 |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2022 |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

1. **Base Case** - until cease to flow

- **Stage 1** - Blockbanks installed and operational at Dungowan Village, emergency pumping

2. **Impact on Tamworth Supply** - Stage 1
   - Blockbanks and Pump

3. **Impact on Tamworth Supply** - Stage 2
   - Pipeline Chaffey to Dungowan pipeline

### Other Supporting works

- Alternatives for High security and BLR need
  - Users to have alternate source in place. See below

- Tamworth Block banks and storage in place

### Key:

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

Under zero inflow pipeline Stage 3, 2.4GL deep storage is utilised (Stage 4)

Alternatives to surface water for high security users (chicken farms etc) and BLR users need to be in place - Water carting, groundwater

Losses in full river under do nothing scenario estimated at 13.1GL per year (reassessed as most current anticipated maximum loss)

### Acceptable Serviceability Criteria against lowest recorded inflow

- **2 years**

### Current availability with approach against lowest recorded inflow

- **> 2 years**

- **13 Months Benefit that Mitigation Works have**

- **Potential Benefit that Mitigation Works will have with some Peel Supply Risk**

- **Key focus is to save as much water as possible to extend availability. Failure to implement will lead to major issues**

- **Under SDR2 and Drought of Record DOES NOT CEASE TO FLOW**

- **Considering use of dead storage as well, cease Apr 22**

- **Considering use of dead storage as well, cease Aug 21**

- **Ceases to flow**
Storage Depletion Curve
Based on End of October 2019 Assessment
Drought Management Overview

- No further releases from Keepit Dam without downstream inflows to assist in delivery to critical human needs or high security requirements.
- Consideration may be given to a Keepit releases for critical human needs or high security users should Keepit level reach approximately 20GL – it is expected that this would provide relief to users only from Keepit to Narrabri.
- Releases for general security delivery to Upper Namoi users from Split Rock Dam will be monitored, and continue as long as possible.
- Potential water conservation measures are being investigated – this includes block releases for Upper Namoi users.
- 98.01GL of inflow is required to make up current bulk account shortfalls.
Peel – river to cease to flow downstream of Dungowan from the end of November with water for Tamworth pumped into the supply pipeline from Dungowan Dam to Tamworth.

Environmental Flow of 30 ML/week set aside to be managed with fisheries and environmental agencies to maintain refuge habitat.

Chaffey to Tamworth pipeline to commence construction prior to Christmas with aim to have pipeline operational by March.

Once pipeline is operational an adaptive management plan need to be developed to ensure refuge habit along the Peel is maintained.
Principles for managing tributary flows

- Inflows will be assessed on a case by case basis, and will likely be utilised in the following manner
- Inflows approximately 1GL to 7GL – likely to be passed to Walgett in the main Namoi River
- Inflows 7GL to 14GL – a flow to Walgett in the Namoi River and attempt to run the Pian Creek replenishment flow
- Inflows 14GL to 18GL – a flow to Walgett in the Namoi River, run the Pian replenishment flow and capture up to 4GL excess in Mollee and Gunidgera Weirs for later use (hierarchy of needs)
- Inflows above 18GL – will be accessed based on the criticality of supply in downstream connecting systems
To keep updated

Visit the website at:  waternsw.com.au/drought

For information on the **Namoi Valley** including water availability reports and drought reports go to:
waternsw.com.au/supply/drought-information/regional-nsw/Namoi-valley

For information on the **Peel Valley** including water availability reports and drought reports go to:
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