Peel Valley Works and Drought Update

March 2020

Dungowan and Tamworth
Overview

- Introduction from Tamworth Regional Council
- Overview

- Latest drought outlook

- What has happened since we were here
  - Key actions
  - Progress on emergency drought works
  - Next steps

- New pipeline from Chaffey to Dungowan
  - Pipeline progress update
  - Expected Completion
  - What happens next

- Water carting – for domestic needs
- How to keep updated
- Next steps

- Questions
Peel / Namoi system
Drought Outlook
36 month rainfall deficiency to the end of January 2020
12 Month Temperatures

Australian Government
Bureau of Meteorology

Maximum Temperature Deciles
1 March 2019 to 29 February 2020
Distribution Based on Gridded Data
Australian Bureau of Meteorology

Temp. Decile Ranges

Highest on Record
10
Very Much Above Average
8.9
Above Average
4.7
Average
2.3
Below Average
1
Very Much Below Average
Lowest on Record
12 Month Temperatures

Mean Temperature Anomaly (°C)
1 March 2019 to 29 February 2020

Australian Bureau of Meteorology

http://www.bom.gov.au
© Commonwealth of Australia 2020, Bureau of Meteorology  ID code: AWAP
Issued: 03/03/2020
Soil moisture deficiencies
April 2018 - December 2019

Rainfall Deficiencies: 21 months
1 April 2018 to 31 December 2019
Distribution Based on Gridded Data
Australian Bureau of Meteorology

http://www.bom.gov.au
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Issued: 07/01/2020
February Rainfall
Rainfall – February 2020

Australian Rainfall Deciles
February 2020
Distribution Based on Gridded Data
Australian Bureau of Meteorology

http://www.bom.gov.au
NSW temperatures

Maximum Temperature Anomaly (°C) February 2020
Australian Bureau of Meteorology

http://www.bom.gov.au
© Commonwealth of Australia 2020, Bureau of Meteorology
ID code: AWAP
Issued: 03/03/2020
Soil moisture deficiencies
February 2020
## 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>25</td>
</tr>
<tr>
<td>Copeton</td>
<td>53</td>
<td>1918-20</td>
<td>107</td>
</tr>
<tr>
<td>Keepit</td>
<td>57</td>
<td>2001-03</td>
<td>25</td>
</tr>
<tr>
<td>Split Rock</td>
<td>8</td>
<td>1956-58</td>
<td>7</td>
</tr>
<tr>
<td><strong>Chaffey</strong></td>
<td><strong>13</strong></td>
<td><strong>1964-66</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Burrendong</td>
<td>246</td>
<td>1937-39</td>
<td>107</td>
</tr>
<tr>
<td>Hunter</td>
<td>68</td>
<td>1939-41</td>
<td>24</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>32</td>
</tr>
<tr>
<td>Pindari</td>
<td>142</td>
<td>1992-95</td>
<td>82</td>
<td>31</td>
</tr>
<tr>
<td>Copeton</td>
<td>218</td>
<td>1992-95</td>
<td>209</td>
<td>31</td>
</tr>
<tr>
<td>Keepit</td>
<td>157</td>
<td>1992-95</td>
<td>100</td>
<td>36</td>
</tr>
<tr>
<td>Split Rock</td>
<td>22</td>
<td>1925-28</td>
<td>21</td>
<td>36</td>
</tr>
<tr>
<td><strong>Chaffey</strong></td>
<td><strong>26</strong></td>
<td><strong>1964-67</strong></td>
<td><strong>19</strong></td>
<td><strong>36</strong></td>
</tr>
<tr>
<td>Burrendong</td>
<td>581</td>
<td>1944-47</td>
<td>186</td>
<td>36</td>
</tr>
<tr>
<td>Hunter</td>
<td>129</td>
<td>1939-42</td>
<td>49</td>
<td>36</td>
</tr>
</tbody>
</table>
Rain has been great but
......long way to go right across NSW!

As at end of Feb 2020
### Table 2 Determining the stage of criticality for water quantity extreme events

<table>
<thead>
<tr>
<th>Criticality</th>
<th>Evidence base for surface water</th>
<th>Evidence base for groundwater</th>
<th>Broad intent of measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1</strong></td>
<td>Can deliver all account water under normal river operations practices.</td>
<td>Groundwater levels remain within acceptable ranges, with annual recovery as expected given rainfall/recharge events</td>
<td>Provide certainty for water use planning.</td>
</tr>
<tr>
<td>Normal management</td>
<td></td>
<td></td>
<td>Long term water security and emergency/drought contingency planning</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
<td>Unable to deliver 100% of high priority account water and maximum expected use of general security under normal river operations practices.</td>
<td>Unacceptable groundwater level and/or pressure declines potentially or actually impacting on groundwater availability to high priority GDEs, BLRs and/or LWUs.</td>
<td>Operational measures in the current water year to reduce transmission losses and prevent potential future failure to supply water in accounts (surface water) Limit potential impacts in local areas via dealings restrictions and potential local area access restrictions (groundwater).</td>
</tr>
<tr>
<td>Emerging drought/water shortage</td>
<td></td>
<td>Drawdown to levels that could lead to aquifer subsidence</td>
<td>Drought response readiness (LWUs)</td>
</tr>
<tr>
<td><strong>Stage 3</strong></td>
<td>Only able to deliver restricted high priority demands and restricted remaining general security account water.</td>
<td>Continuing unacceptable groundwater level or pressure declines Unacceptable drawdown impacts on ‘efficiently constructed’ BLR bores (i.e. levels below the pump or deeper than the bore).</td>
<td>Restricting access to account water, restricting trade, and suspending some WSP rules in addition to increased operational measures to prevent potential future failure to supply water in accounts (surface water). Restrict access from bores in all affected areas. Drought management/restrictions (LWUs).</td>
</tr>
<tr>
<td>Severe drought/water shortage</td>
<td></td>
<td>Evidence of aquifer compaction</td>
<td></td>
</tr>
<tr>
<td><strong>Stage 4</strong></td>
<td>Only able to deliver restricted town water supply, stock and domestic and other restricted high priority demands.</td>
<td>Water level declines pose a risk to long term availability of the groundwater resources - subsidence, and/or mobilisation and induced flow of poorer water quality Access by ‘efficiently constructed’ BLR bores significantly impacted</td>
<td>Suspension of some WSP rules. Severe restrictions required to prioritise remaining supplies for critical human water needs (surface water and groundwater). Avoidance of permanent damage to aquifers (compaction or salinization). Emergency drought management measures/restrictions (LWUs).</td>
</tr>
<tr>
<td>Critical drought/water shortage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
State drought policy – updated

WaterNSW

Extreme Events Policy

Legend

Criticality Level
- Stage 1 Normal Operations
- Stage 2 Emerging Drought
- Stage 3 Severe Drought
- Stage 4 Critical Drought

Data Source:
ESRI Basemap
NSW DFI Spatial Services
Murray-Darling Basin Authority
© NSW Department of Industry
WAMS, 27600
Dept of Planning, Industry & Environment | Water
Compilation Date: 20/03/2020
The latest data

INFOWWS and RELEASES
Peel system inflows

- Chaffey Dam inflow
- D/s Tribs
- Chaffey Dam inflow (avg)
- D/s Tribs(avg)

Inflow (GL)

Peel Valley Inflow and Storage Volume

1st of Jan 2017, dam volume was 102 GL

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 till March

If there was no dam, water supply issues would have occurred from early 2017

Tamworth council min demand: 20 ML/d
Chaffey Dam Inflows

- Actual Monthly Inflow (GL)
- Mean Monthly Inflow (GL)
Where the Water Went

- Customers
- End of System
- Evap from Dam
- River Losses
Peel End of System Flows 2017 to 2020

Peel Flows 2017-2020

River Flow (ML/Day)

Storage Volume (ML)

Environmental Release

27mm Rain

70mm Rain

80mm Rain

Chaffey Releases

Carrolls Gap

Chaffey Dam

Axis Title
End of System Flows

Peel End of System Flows 2018-19

81 mm Rain

40 mm Rain

40 mm Rain
Chaffey to Tamworth
Peel River gains and losses since 2001

Transmission Losses/Gains (Peel River, Chaffey to Tamworth section)
Groundwater table
ENSO Outlook: INACTIVE
Drought forecast summary

- While there has been good rain – over 90% of the State is still drought declared.

- Recent rain events have been predominately below most regional storage catchments.

- Outlook from BOM was for drier than average conditions and above average temperatures. However latest forecast suggest some normalisation of weather and forecasts of average temps and rainfall.

- Three weeks of good rainfalls doesn’t break a “worst on record” 3 year drought.

- Soil Moisture deficits have improved.
So what does all this mean for Chaffey Dam storage levels, water for critical human needs and Peel River flows?
Peel Valley storage forecast

Peel Valley forecast storage volume

- **July 2019**: Nil access to GS & ECA, 0.682 GL/month TWS & HS demand
- **Early June 21**: Cease to Flow
- **Apr 21**: Deep storage access

Storage capacity (GL)

- **Dead Storage**
- **Zero Inflow**
- **Actual**

Timeline:
- Jan-19 to Jul-21
Storage forecast

Chaffey Dam - forecast storage volume (chance of exceedance)

- Minimum 99% COE
- DRY 80% COE
- Median 50% COE
- WET 20% COE
- No Inflow
- Actual
Temporary weir and new permanent pipeline

Carl Butcher – Manager Major Projects
PEEL RIVER DROUGHT WORKS

Stage 1
Temporary Weir

Stage 2
Permanent Pipeline
Project Update

Key Facts

• This project will ensure Tamworth does not run out of water based on current low inflow patterns.

• Even under zero inflow patterns – will ensure we extend water for critical human needs from months to well into next year.

• Give confidence and certainty as far as practical in current drought conditions.

• Had this project not been funded by the NSW Government and delivered by WaterNSW, Tamworth could have been in a very serious situation within months.

• We have avoided that situation.
Project Update

Key Facts

• More than 17.5kms of a new permanent pipeline has been laid – 90% complete

• Project has injected more than $1.3 million into the community, engaged 30 local businesses and recruited a workforce comprising one-third of local workers including tradesmen, truck drivers, fencers and heavy machine operators.

• The temporary weir, pipeline and pumps have been operational since December 2019

• WaterNSW is working closely with Tamworth Regional Council, Department Planning, Infrastructure and Environment (Water), Department of Primary Industries (Fisheries).
Stage 1
Temporary Weir Construction
Stage 1
Temporary Weir Construction
Temporary Pumpstation
PEEL RIVER DROUGHT WORKS

STAGE 2
New permanent pipeline
Stage 2 – Permanent pipeline

Stage 2 – Construction of a permanent pipeline

- 18.2 km permanent pipeline from Chaffey Dam to Dungowan Town (and connecting to the existing pipeline owned by TRC.)
- The majority of the route is along existing road easements and land within the Chaffey Dam property boundary.
- Community consultation with neighbouring landholders.
- Pipeline was sized to meet Tamworth’s future growth.
Stage 2 – Pipeline Construction
Stage 2 – Pipeline Construction
Stage 2 – Pipeline Construction
Stage 2 – Pipeline Construction
Key Challenge - Time

Traditional timeline for a project such as this

Total Project Delivery Time = 2 to 2.5 Years

- Initiation – 3 months
- Resource allocation – 3 months
- Stakeholder Coordination, Design and Scope Development – 6 Months
- Funding and Approvals – 3 Months
- Planning and Environmental Approvals – 9 Months
- Route Selection, Land Identification and Acquisition – 12 Months
- Tender – 3 Months
- Procurement – 3 Months
- Detailed Design – 3 Months
- Construction – 6-9 Months
- Commission – 1-2 Months
- Project Close – 1-2 Months

- Business case and financial approvals

CRITICAL PATH ACTIVITIES

- Planning and approvals
- Route selection
- Acquiring land and access

Market Engagement

Execution phase
Key Challenge - Time

Total Project Delivery Time = 9 Months

- Initiation – 3 months
- Resource allocation – 3 months
- Stakeholder Coordination, Design and Scope Development – 6 Months
- Planning and Environmental Approvals – 9 Months
- Route Selection, Land Identification and Acquisition – 12 Months
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- Detailed Design – 3 Months
- Construction – 6-9 Months
- Commission – 1-2 Months
- Project Close – 1-2 Months

Current progress
- 90% complete
- More than 17.5 km of Pipe Laid
- Pump station almost completed
- Hydro testing to start late March

Future progress
- Start commissioning late March / Early April
- 3-5 Day cut over period between River and Pipeline
- Mechanical completion is scheduled for mid March with water being pumped to Tamworth at this time.
Stage 2 – Permanent pipeline

Key dates and facts

• Construction work started December

• During December the community saw significant works i.e. trenching, equipment along the route at multiple points

• “Water On” from late April 2020.
What we committed to last time we were here

• Updated Q&A from this weeks sessions, maps and timeline will be available on line and hard copy by 25th October. **Completed**

• Next Community information sessions will be late February/early March 2020. **Now underway**

• WaterNSW to update Tamworth Water Taskforce Oct meeting. **Completed**

• Site preparations will start after Dungowan Show. **Completed**

• Keeping you updated via our website, social media and local media. **Completed**
Jewry Street Weir

• A decision on Jewry St Weir was deferred from Oct 19 to Feb 2020

• WaterNSW has reviewed the need for this given progress to date on new pipeline and effectiveness of the block bank at Dungowan

• Given the outcomes achieved to date – we will NOT be progressing the Jewry St Weir.

• Once the pipeline is completed and operational, we see no future need for a blockbank weir at Jewry St to secure water for critical human needs.
**Domestic Water Carting Rebate**

A rebate of $2,000 will be provided to assist eligible applicants with the costs of carting water or installing associated infrastructure to support domestic water supplies.

The rebate will apply to occupiers of properties who typically access water from regulated river flows for domestic supplies but where flows have now ceased as a drought contingency measure. Occupiers of properties with direct river frontage or domestic and stock access licences in eligible locations, may apply for the rebate from ServiceNSW

<table>
<thead>
<tr>
<th>River system</th>
<th>Eligible locations</th>
</tr>
</thead>
</table>
| Macquarie              | • Macquarie River downstream of Warren Weir  
                        • Regulated sections of Crooked Creek and Duck Creek, and Gunningbar Creek downstream of Gunningbar Weir  
                        • Sections of Marra Creek, Lower Bogan River and Lower Macquarie River that receive replenishment flows from the regulated river system |
| Peel                   | Peel River downstream of Dungowan Weir                                                                                                                                                                           |
| Lower Darling          | Darling River downstream of Weir 32                                                                                                                                                                               |
| NSW Border Rivers      | • Macintyre River downstream of Goondiwindi Weir  
                        • Sections of Boomi River that receive replenishment flows from the regulated river system                                                                                                                                 |
| Lower Namoi            | • Namoi River downstream of Keepit Dam  
                        • Sections of Pian Creek that receive replenishment flows from the regulated river system                                                                                                                                 |
| Upper Namoi            | Namoi River between Manilla Weir and Keepit Dam                                                                                                                                                                   |
More Information

Bores
For specific inquiries about stock and domestic bores (Basic landholder rights bores) email waterregnorth@waternsw.com.au
Nicole Gleeson-Lendon’s (02) 9849 9960

The WNSW general inquiry number – 1300 662 077
Customer.Helpdesk@waternsw.com.au

Early Warning network Registration
(ewn)- Via registration forms available here tonight.