

Toonumbar Operations Plan

November 2018

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1. Highlights

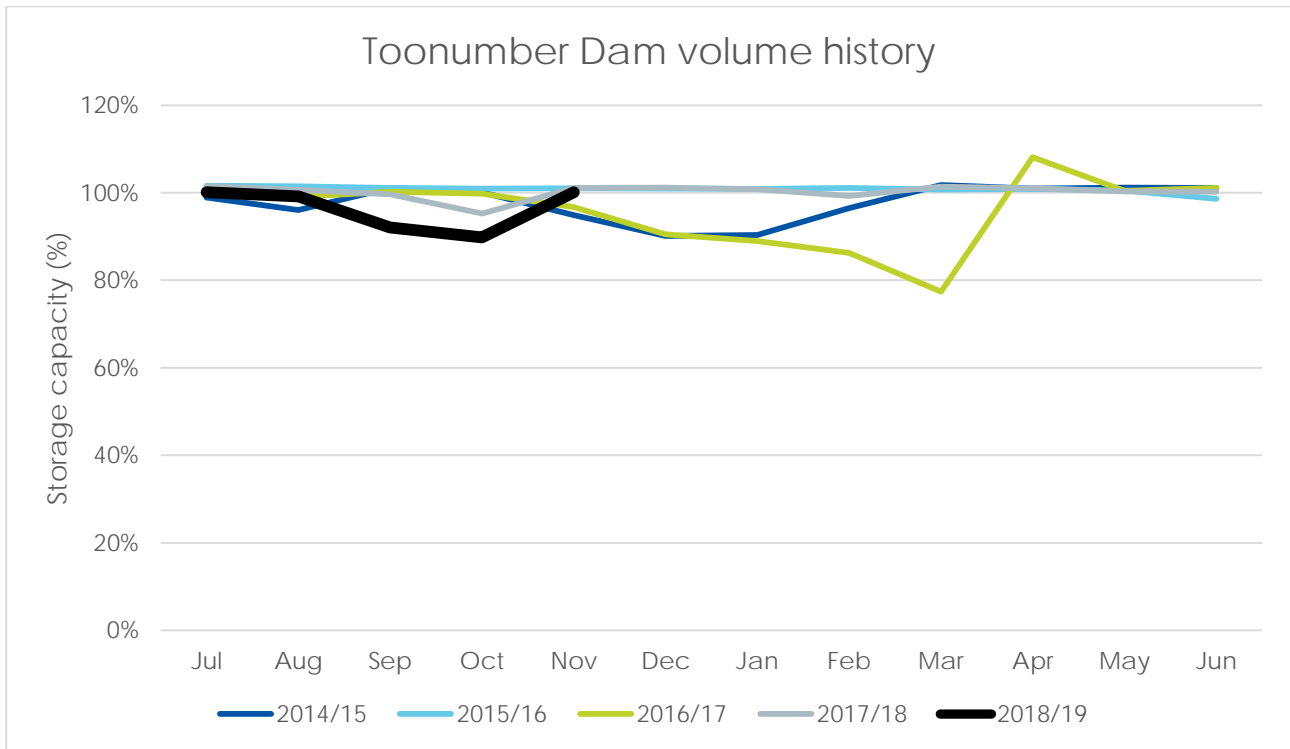
The Toonumbar Operations Plan allows for delivery of full allocations for all customers in 2018-19.



2. Dam storage

2.1 Toonumbar Dam storage

The below figure shows the Toonumbar Dam behaviour for the current water year (2018-19) and for the last four water years. The dam was around 100% full at the start of the current water year (2018 - 19) and by the end of September 2018, it has fallen slightly to about 90% and risen again to 100% in October.



3. Supplementary access

3.1 Commentary

There are no Supplementary Access licenses available under the Water Sharing Plan for the Richmond River Area.

4. Water availability

4.1 2018/2019 water availability for Richmond

This information was current as 1 November 2018.

| Licence category | Share component | AWD volume | Usage | Balance |
|-------------------------------|-----------------|------------|-------|---------|
| Domestic and stock (domestic) | 6 | 6 | 0 | 6 |
| Domestic and stock (stock) | 8 | 8 | 0 | 8 |
| Regulated river | 9,591 | 9,531 | 253 | 9,338 |

| | | | | |
|---------------------------------|--------------|--------------|------------|--------------|
| (general security) | | | | |
| Regulated river (high security) | 123 | 123 | 10 | 113 |
| Grand total | 9,728 | 9,668 | 263 | 9,465 |

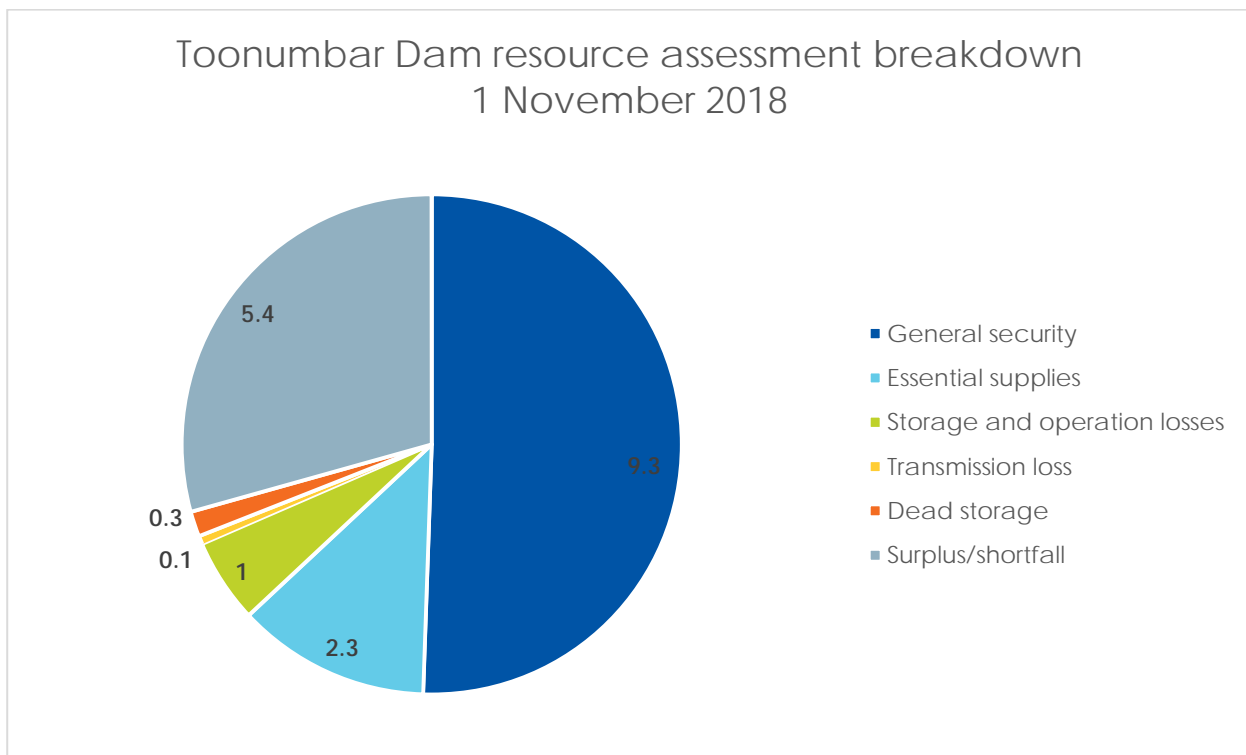
Note: Volumes in the table are in ML.

General security available water determination

| Date | AWD (ML/share) | Total |
|----------|----------------|-------|
| 1-Jul-18 | 1 | 100% |

In the current water year (2018-19), 100% AWD (Available water determination) has been announced on 1st July 2018 for all water users including General Security (GS), High Security (HS) and S&D. Carryover is not available to any license categories in the Richmond River system.

4.2 Resource assessment



Note: volumes in the pie chart are in GL

| Resource Assessment | Nov 2018 | Sept 2018 | Aug 2018 | June 2018 | May 2018 | Apr 2018 | March 2018 | Feb 2018 |
|---------------------|----------|-----------|----------|-----------|----------|----------|------------|----------|
| | | | | | | | | |

| | | | | | | | | |
|-------------------------------|------|------|------|------|------|------|------|------|
| Storage volume | 11.1 | 9.9 | 10.2 | 11.0 | 10.8 | 11.1 | 11.2 | 11.2 |
| Plus minimum inflows | 7.3 | 10.1 | 13.3 | 17.8 | 17.2 | 1.4 | 2.1 | 3.3 |
| Less dead storage | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Less storage & operation loss | 1.0 | 1.2 | 1.1 | 1.0 | 1.1 | 0.2 | 0.3 | 0.4 |
| Less essential supplies | 2.3 | 2.5 | 2.6 | 2.6 | 2.6 | 1.6 | 1.9 | 2.3 |
| Less transmission loss | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 |
| Less general security | 9.3 | 9.9 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 |
| Allocation | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Note: Volumes in the table are in GL.

4.2.1 Significance of this resource assessment

The resource assessment at 1 November 2018 confirms deliverability of all remaining allocations to end of 2018-19. The assessment also indicates that there is surplus in resources of about 5.4 GL in this current water year. No new AWD is possible for 2018-19 as the Water Sharing Plan limits the cumulative AWDs to 100%.

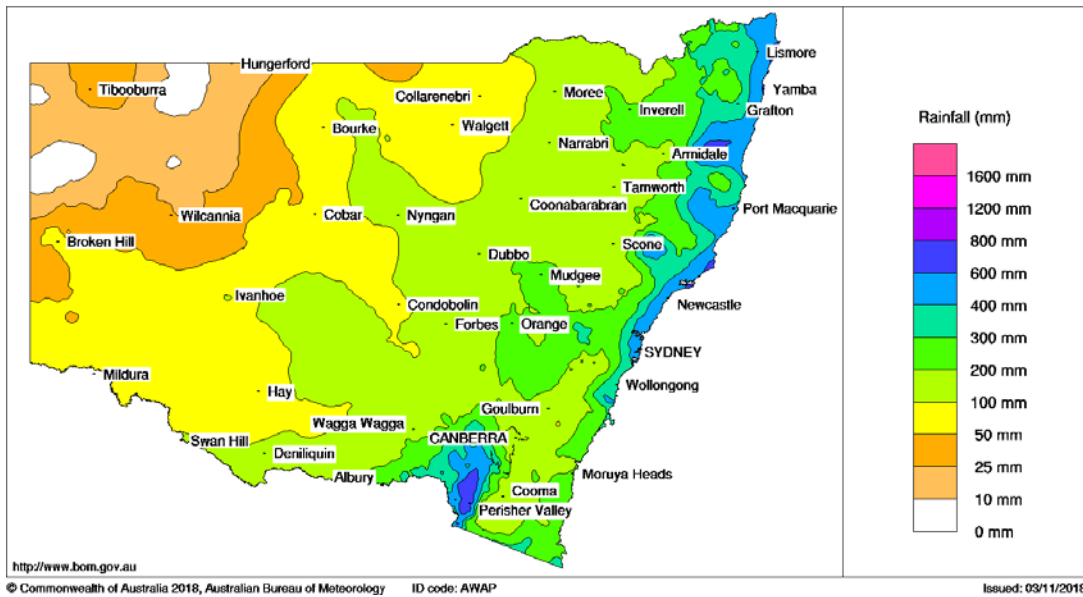
4.2.2 Resource assessment process

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 table is for the planning horizon from 1 November 2018 to 30 June 2020.

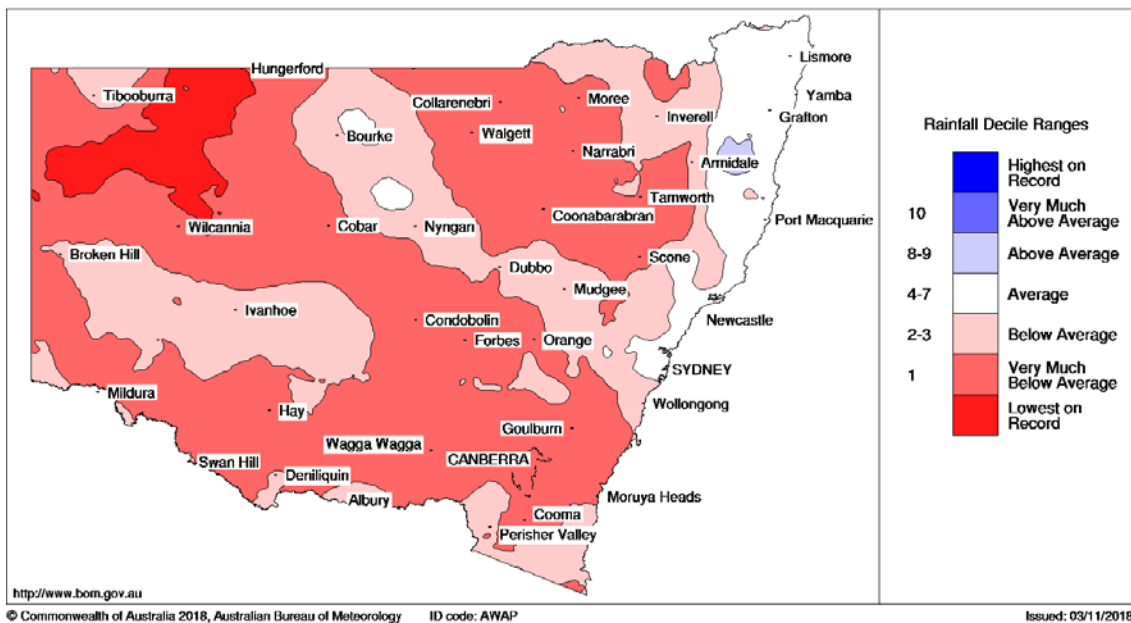
5. Rainfall

5.1 6-month rainfall

New South Wales Rainfall totals (mm) 1 May to 31 October 2018
Australian Bureau of Meteorology



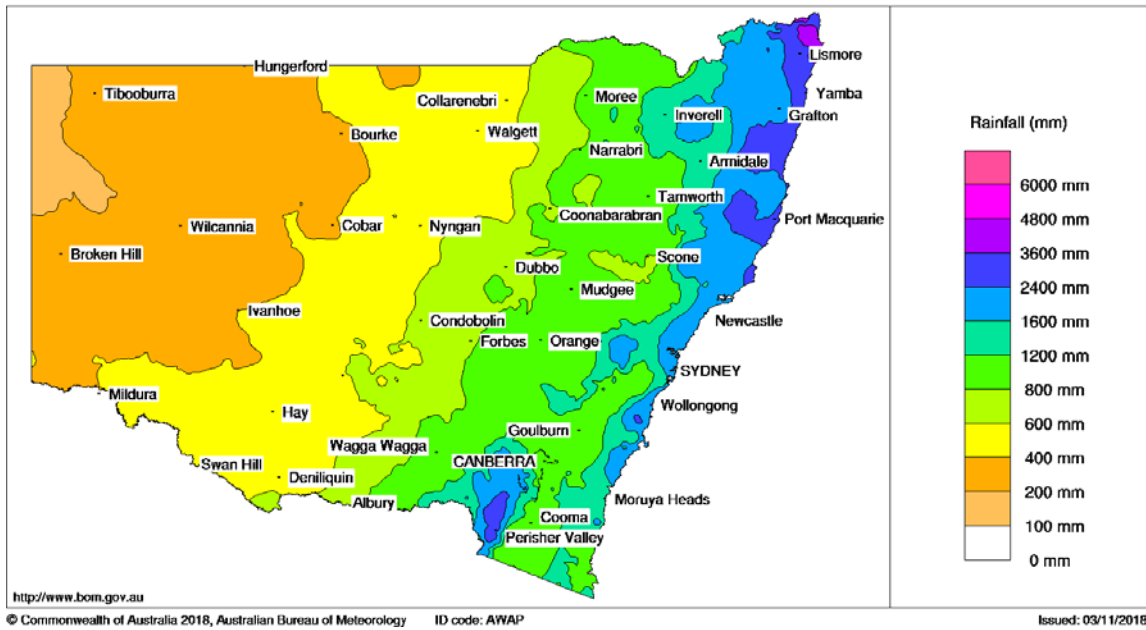
New South Wales Rainfall Deciles 1 May to 31 October 2018
Distribution Based on Gridded Data
Australian Bureau of Meteorology



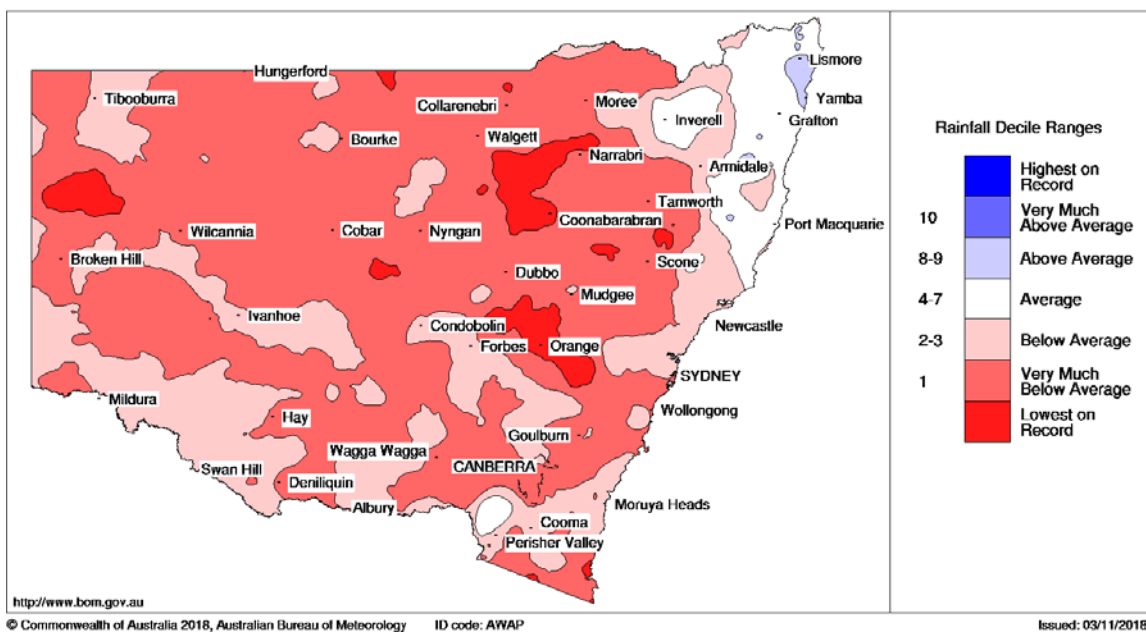
From the above figures the last 6-month total rainfall lies in the range of 200 to 400mm, which is below average (average 6-month total rainfall is around 600 mm).

5.2 24-month rainfall

New South Wales Rainfall totals (mm) 1 November 2016 to 31 October 2018
 Australian Bureau of Meteorology



New South Wales Rainfall Deciles 1 November 2016 to 31 October 2018
 Distribution Based on Gridded Data
 Australian Bureau of Meteorology

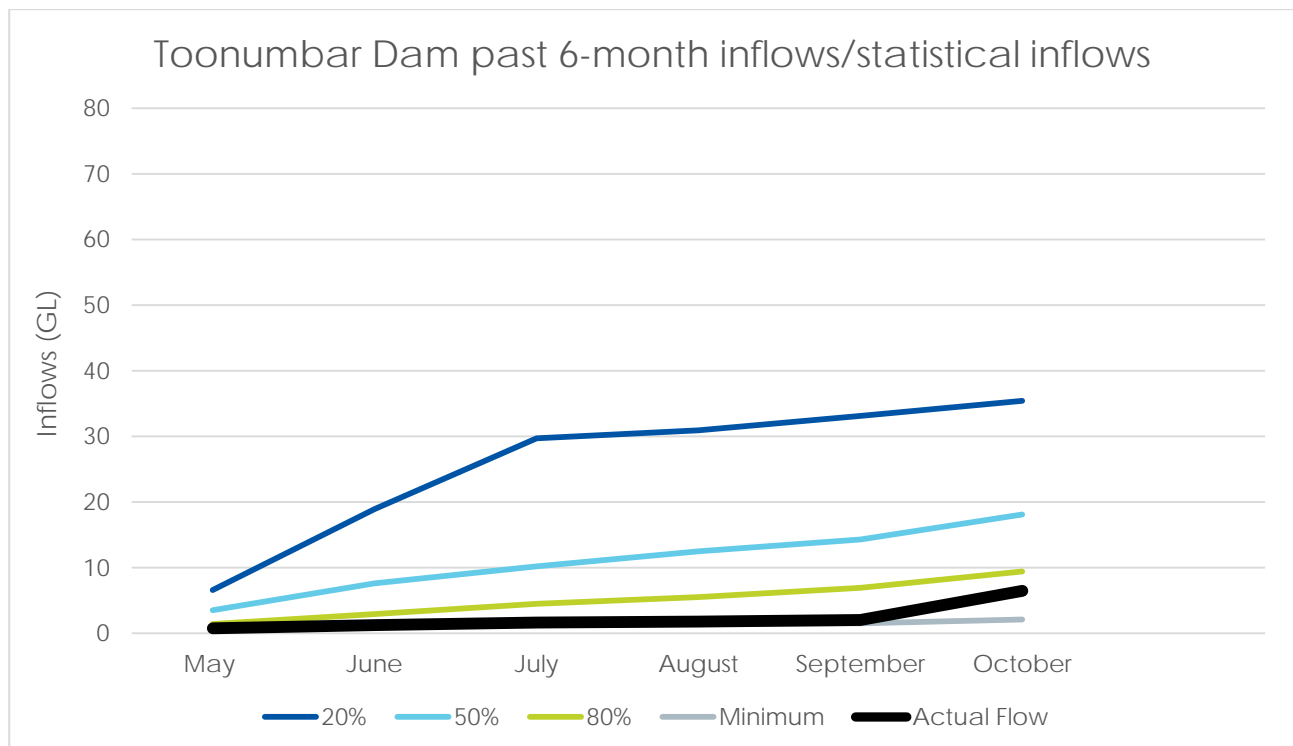


From the above figures the last 24-month total rainfall lies in the range of 1600 to 2400mm, which is below average.

6. Inflows

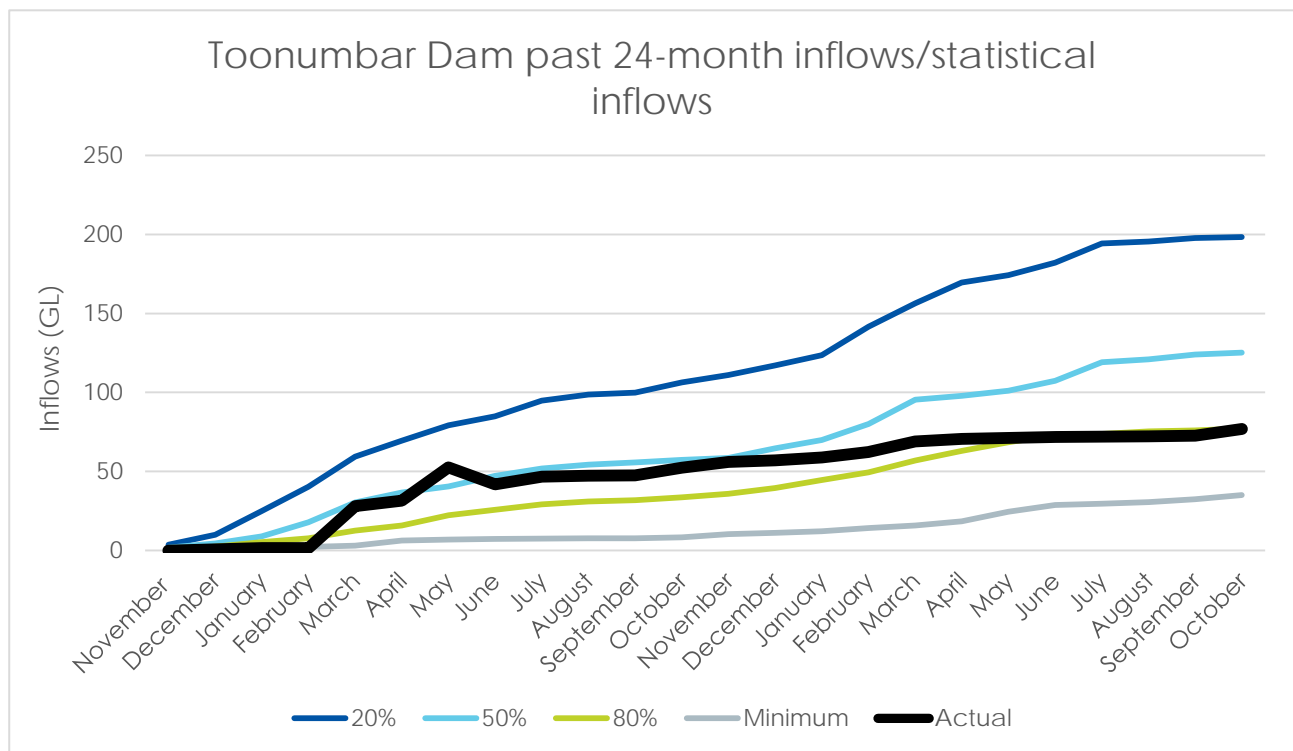
6.1 Toonumbar Dam inflows

6.1.1 Toonumbar Dam past 6-month inflows/statistical inflows



Inflows are consistent with rainfall over the past 6 months period. Actual 6 month inflows were around 6.5 GL which lies in between 80th percentile and minimum inflow conditions.

6.1.2 Toonumbar Dam past 24-month inflows/statistical inflows



In the last 24 months, only around 76 GL of inflows were recorded which is close to the 80th percentile inflow condition.

6.3 Downstream tributary inflows

There are no significant downstream tributary inflows in this water year.

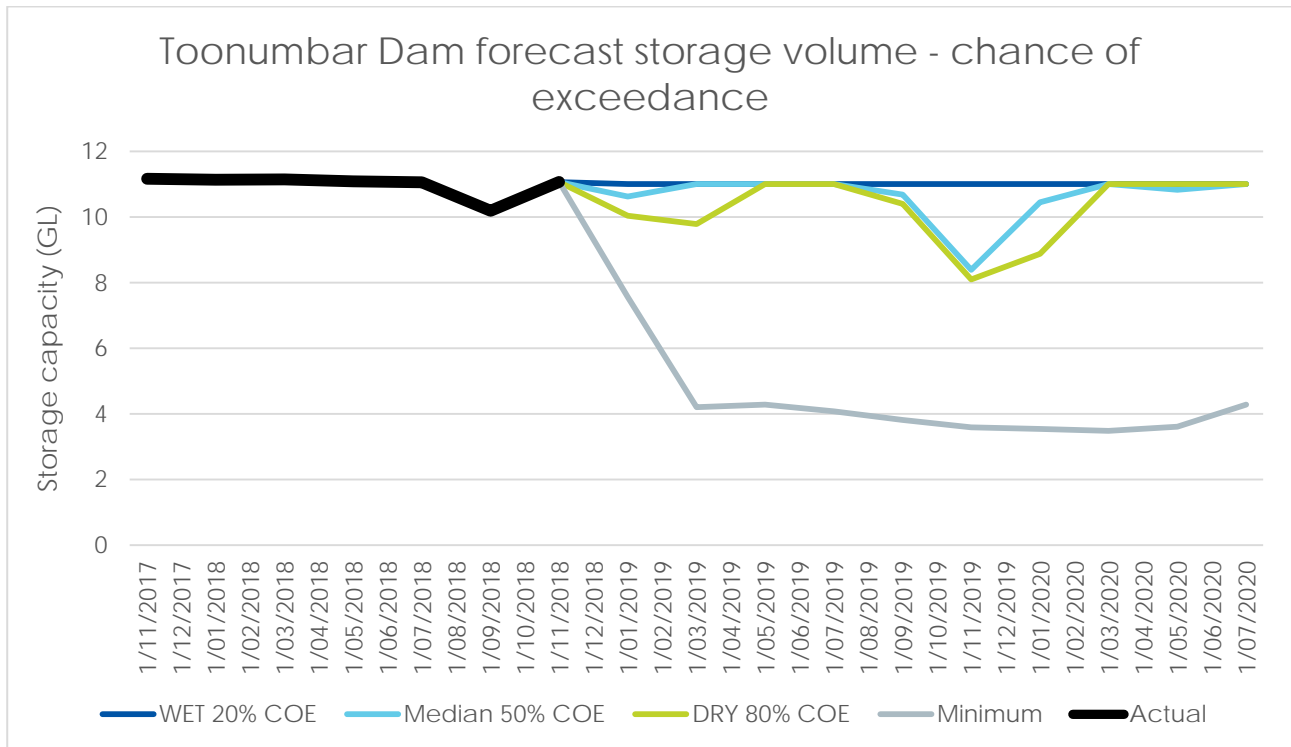
7. Operational losses

7.1 Operational losses for Toonumbar Dam

N/A

8. Storage forecast

8.1 Toonumbar storage forecast



Assessment done end of October 2018.

The above figure demonstrates the possible scenarios of Toonumbar Dam until October 2020. The scenarios are based on different expected inflow conditions. For example, with 20th, 50th and 80th percentile inflow the dam may be full (100%) at the end of June 2019. With the minimum inflow conditions, the dam would be around 4 GL by the end of June 2019. The Chance of Exceedance (COE) in the figure refers to the chance of exceeding inflows and storage levels in the time frame. For example, Wet 20% COE indicate that there is only a 20% of chance that the dam volume will be greater than the projected level, and there is 80% chance that the dam volume will be less than the projected level.

9. Outage planning

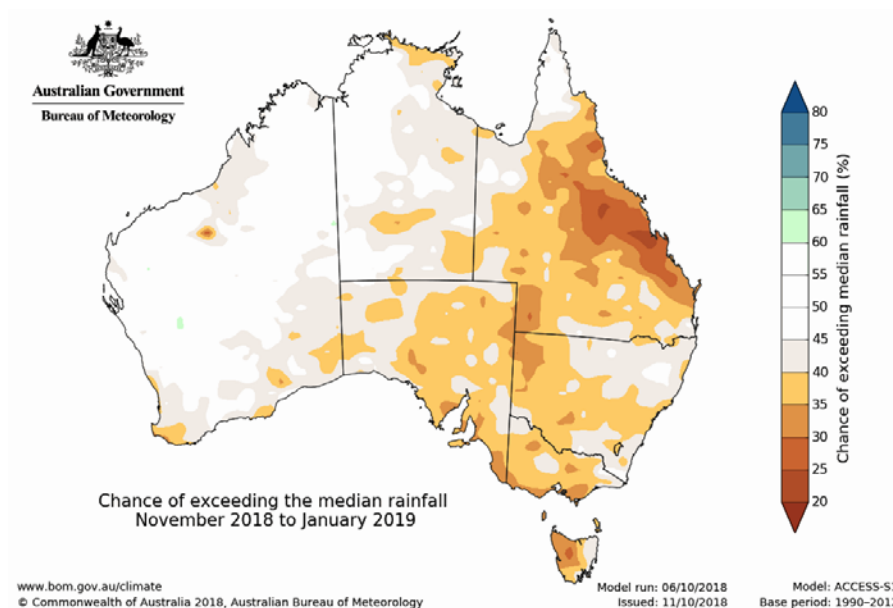
| Item | Time | Description |
|---------------|------|-------------|
| Toonumbar Dam | N/A | None |

At this time there are no planned outages that will affect the delivery of water to customers.

10. Prognosis

The chances of improved General Security Allocation, based on different inflow scenarios are as follows:

| | Dry (80 th percentile inflows) | Average (50 th percentile inflows) | Wet (20 th percentile inflows) |
|--------------------------------|---|---|---|
| 3-month forecast to 31-Jan -19 | 100% | 100% | 100% |
| 8-month forecast to 31-Jun -19 | 100% | 100% | 100% |



The above table shows that even in the dry condition, there will be no adverse impact on announced AWD for 2018-19 of 100%.

More information

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