

# Bega / Brogo Operations Plan

November 2018

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# 1. Highlights

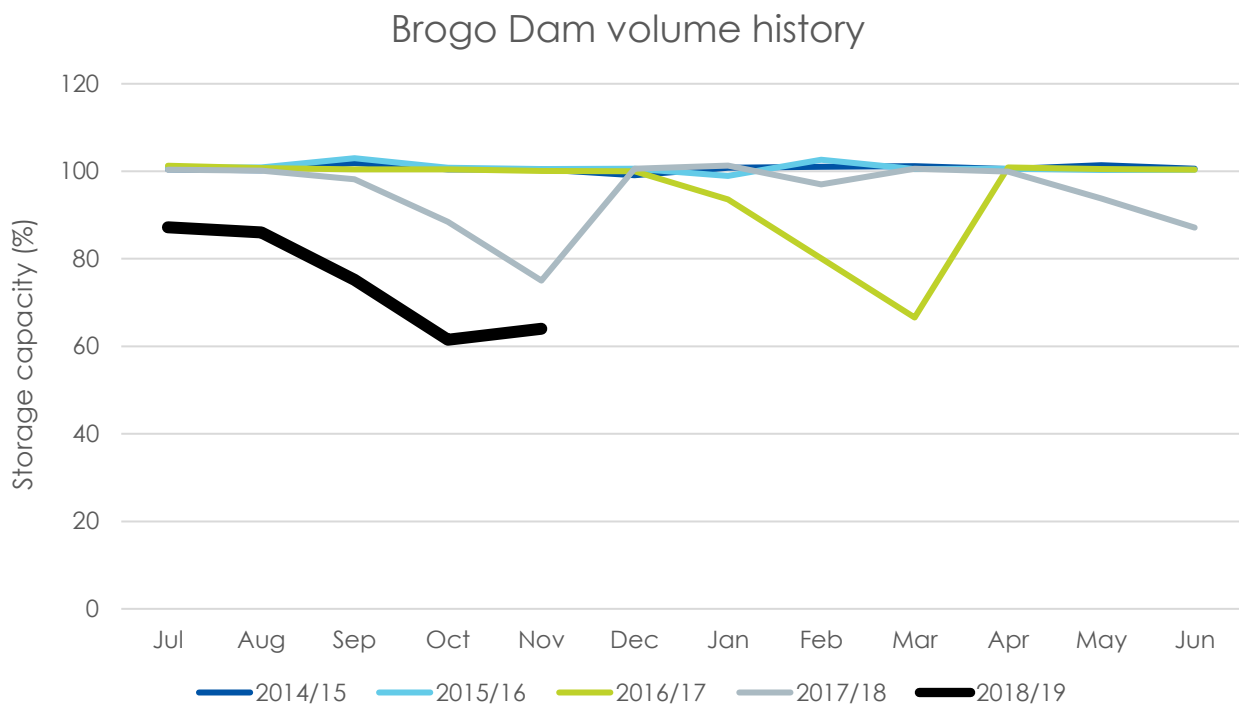
- It is planned to deliver up to 4.2 GL of general security licensed allocation under dry conditions in 2018-19.
- Demand has been consistent and with low inflows, downstream releases have continued.
- While the dam remains below 100%, releases will be managed efficiently, to maintain supplies to customers, while being as low as possible.



## 2. Dam storage

### 2.1 Brogo Dam storage

The below figure shows the Brogo Dam behaviour for the 2018-19 water year compared to the last four water years.



The dam was 100% full at the start of last water year (2017 -18) and by the end of October 2018, it is about 63% full. No significant inflow has arrived at the dam since April 2018. Therefore, the storage shows a mostly decreasing trend since then. In this current water year, the starting dam volume is lower than that of the last four years.

## 3. Supplementary access

### 3.1 Commentary

Section 2 (Bega River from the Brogo River junction to the end of the regulated river) had access to uncontrolled flows from 22/10/18 to the 24/10/18.

### 3.2 Explanation

In the Brogo River taking of water under the supplementary water access licenses is only permitted when flow thresholds are met over the last 24 hours as per the following table:

River reach	River reach definition	Flow reference location	Flow threshold (in excess of) supplementary	Flow threshold (in excess of) uncontrolled
1A	Brogo River from the upper reaches of Brogo Dam to the North Brogo gauge (219025).	Discharge over the Brogo Dam spillway	100 ML/d	50 ML/d rising 20 ML/d falling
1B	Brogo River from the North Brogo gauge to the Angledale gauge (219025)	North Brogo gauge (219013)	100 ML/d	50 ML/d rising 20 ML/d falling
1C	Brogo River from the Angledale gauge to the Bega River junction.	Angledale gauge (219025)	100 ML/d	50 ML/d rising 20 ML/d falling
2	Bega River from the Brogo River junction to the end of the regulated river	Angledale gauge (219025) or Kanoona gauge (219032)	100 ML/d  160 ML/d	50 ML/d rising 20 ML/d falling 65 ML/d

## 4. Water availability

### 4.1 2018/2019 water availability for Brogo

This information was current as 1 November 2018.

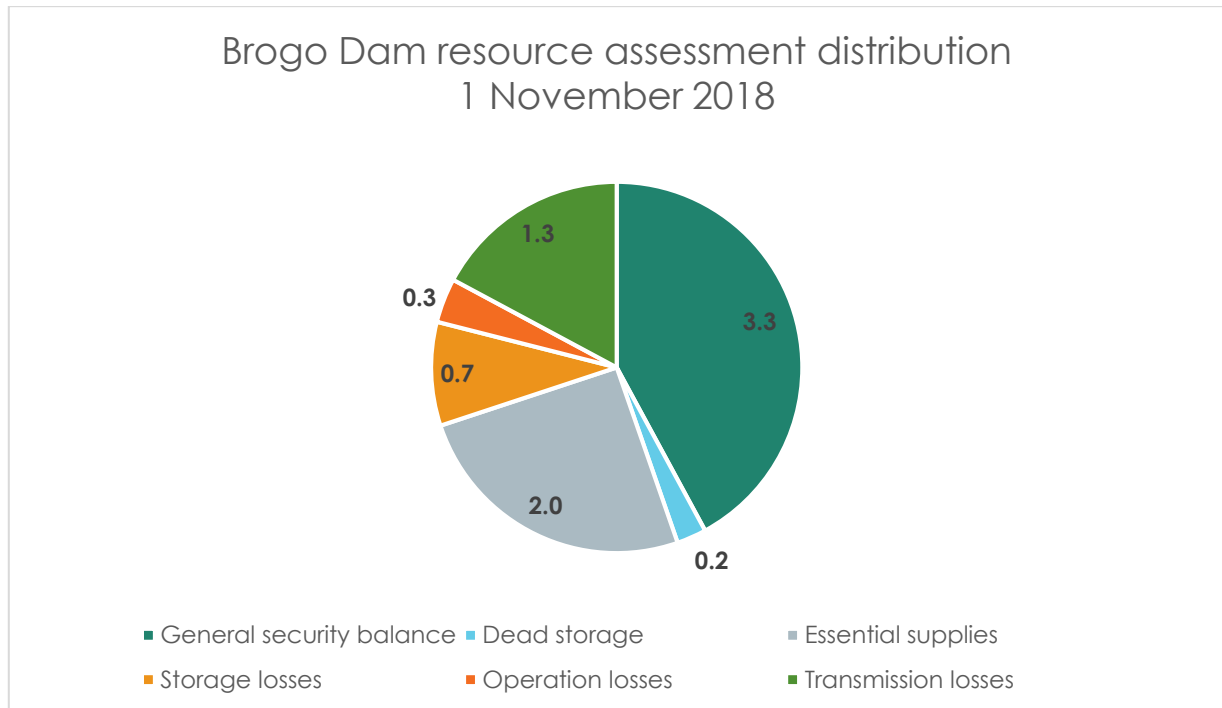
Licence category	Share component	AWD volume	Usage	Balance
Domestic and stock	32	32	6	26
Domestic and stock (domestic)	17	17	0	17
Domestic and stock (stock)	5	5	3	2
Regulated river (general security)	13,946	4,184	1,187	3,328
Regulated river (high security)	422	422	47	375
Regulated river (high security – town water supply)	700	700	93	693
Supplementary water	1,300	1,300	0	1,300
<b>Grand total</b>	<b>16,421</b>	<b>6,659</b>	<b>1,335</b>	<b>5,663</b>

### General security available water determination

Date	AWD (ML/share)	Total
1-Jul-18	0.3	30%

In this current water year, 30% Available Water Determination (AWD) has been announced on 1 July 2018 for General Security (GS). For other water users (e.g. High Security and Town Water Supply), the AWD is 100%. No carryover applies in the Brogo/Bega River Valley. The sum of account balance refers the amount of water available to the account of the users after usage. For example, High Security has 375 ML in their account, after an initial AWD of 422 ML and use of 47 ML of water so far in this water year. To the end of October, the total amount of GS water usage is 1,187 ML.

## 4.2 Resource assessment



Resource Assessment	Nov 2018	Oct 2018	Sept 2018	May 2018	April 2018
Storage Volume	5.7	5.5	6.75	7.7	7.7
Plus minimum inflows	1.7	1.8	2.1	2.6	1.8
Less dead storage	0.2	0.2	0.2	0.2	0.2
Less storage & operation loss	1.1	1.2	1.3	1.5	2.0
Less essential supplies	2.0	2.2	2.5	2.7	2.9
Less transmission loss	1.3	1.5	1.7	1.8	2.0
Less General Security	3.3	3.3	3.9	4.0	4.0
Allocation	30%	30%	30%	30%	30%

### 4.2.1 Significance of this resource assessment

The current resource assessment at 1 November 2018 indicates that the announced 30% general security AWD will not be increased in this month. Minimum inflows are expected to be 1.7 GL till June 2019.

Transmission losses are the conservative estimate of the volume required to run the river under dry conditions through to June 2019 to meet all demands, which is estimated at 1.3 GL for the remaining months in the current water year. This mostly comprises natural transmission losses as water evaporates and soaks into the river bed.

As at 1 November 2018, essential supplies are estimated at 2 GL for the remainder of the current water year, which includes town water, high security licenses, environmental water allowance and S&D. Storage and operation losses are estimated at 1.1 GL for the rest of the year. Based on the resource assessment currently there is a shortfall in inflows of more than 0.5 GL for a new AWD.

#### **4.2.2 Resource assessment process**

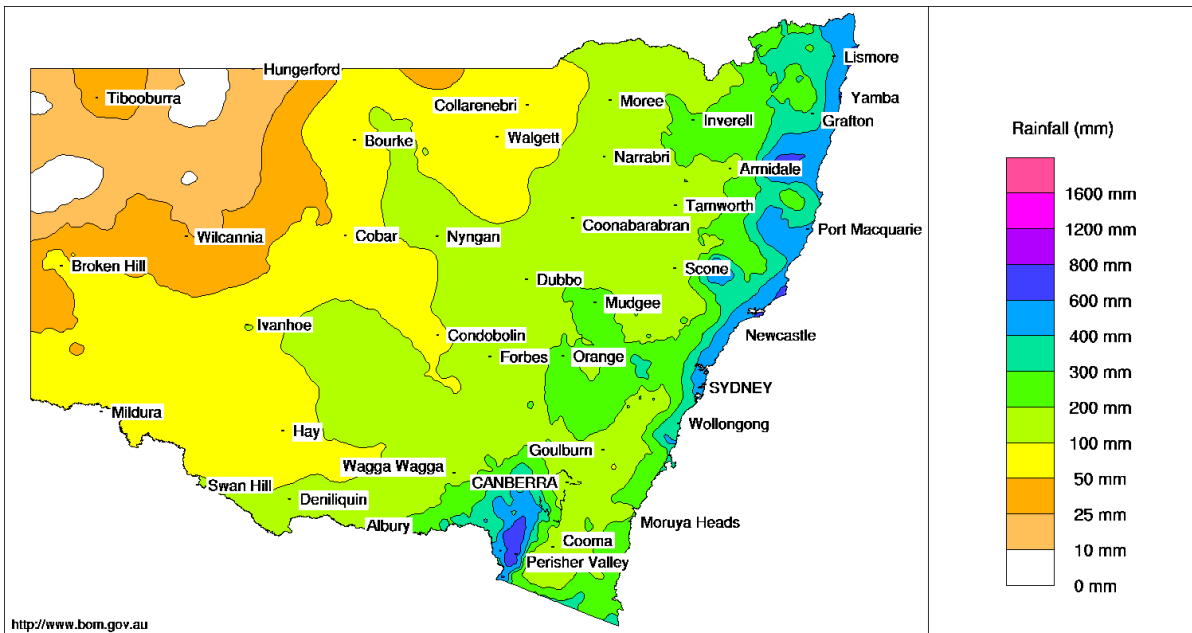
Resource assessment is the process of calculating how much water resource is available based on the rules of the Water Sharing Plan (WSP). This is reviewed periodically during the year, typically at the end of the month and when any significant inflow event happens. The above resource assessment table is for the planning horizon from 1 November 2018 to 30 June 2020.



# 5. Rainfall

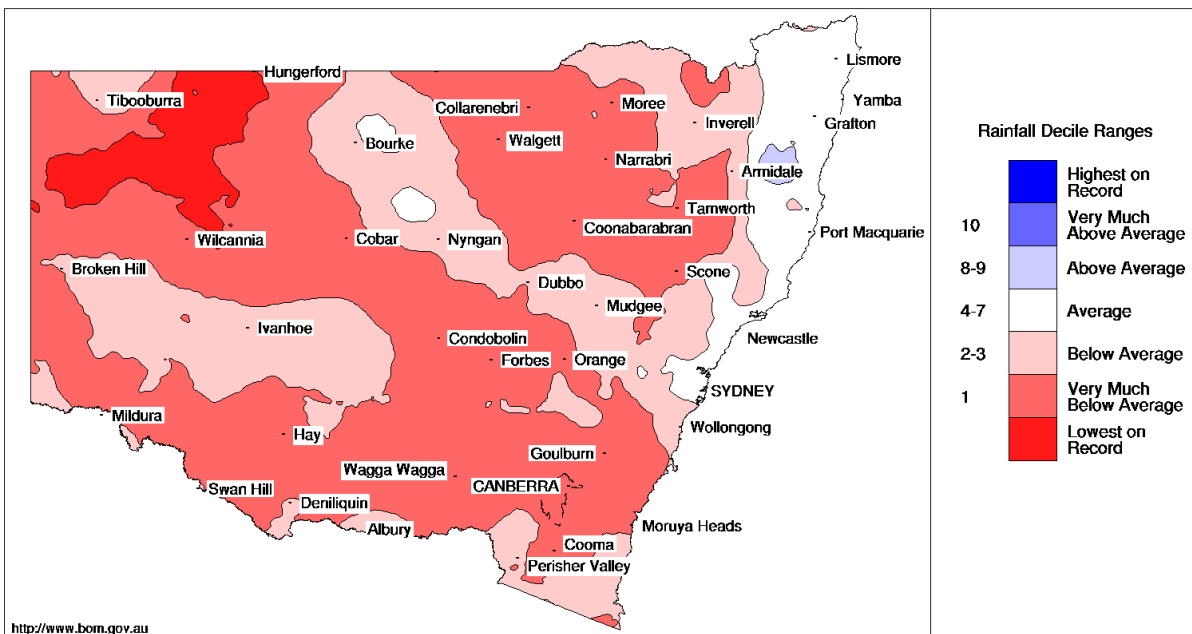
## 5.1 6-month rainfall

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



http://www.bom.gov.au © Commonwealth of Australia 2018, Australian Bureau of Meteorology ID code: AWAP Issued: 03/11/2018

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

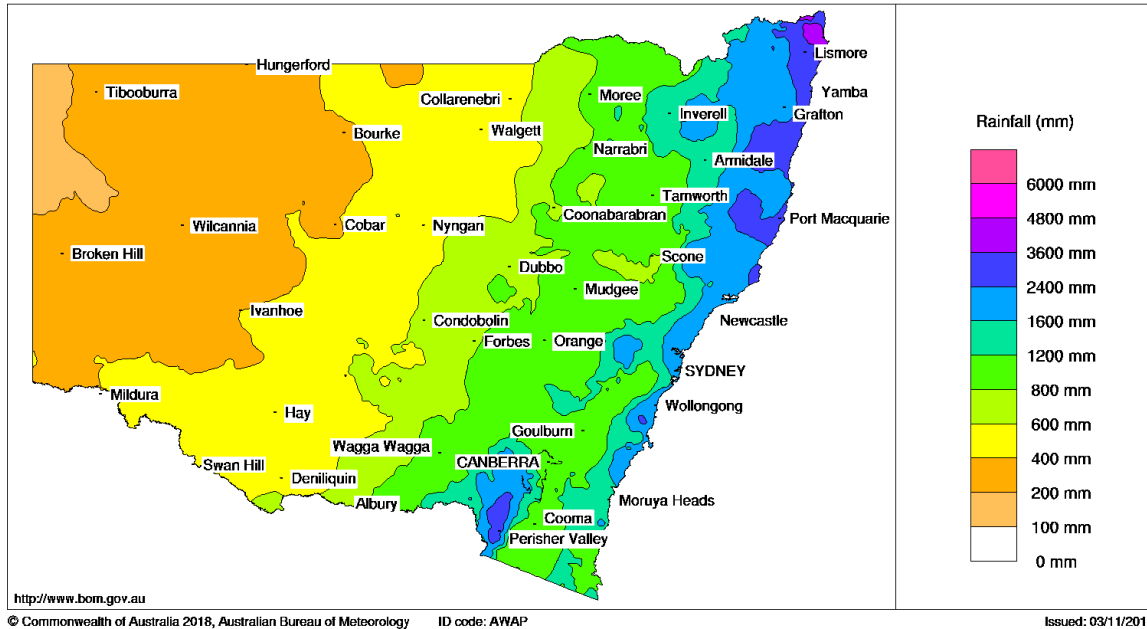


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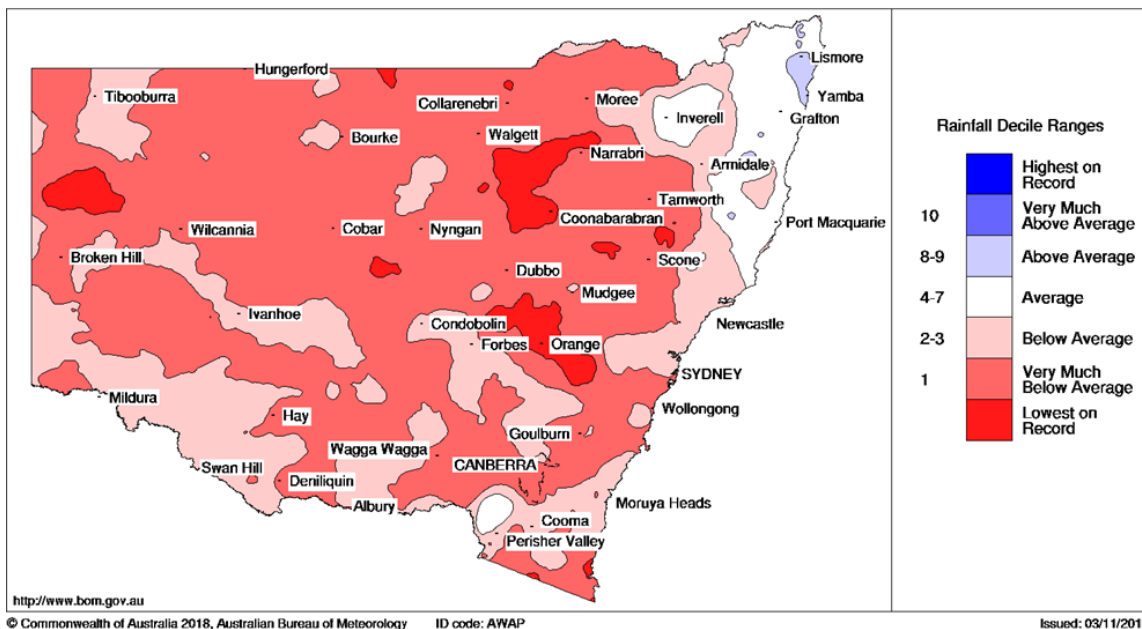
As indicated in the above figures the last 6-month total rainfall lies in the range of 100 to 200 mm, which is very much below average (average 6-month total rainfall is around 600 mm)

## 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

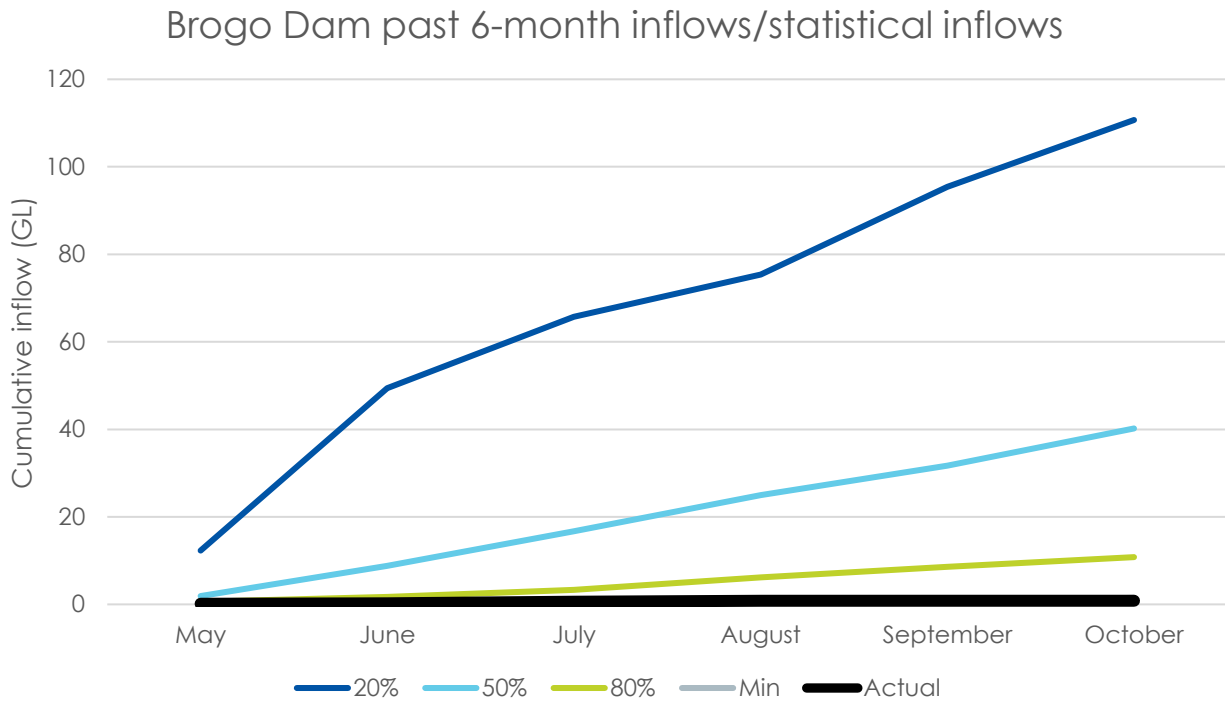


Rainfall in the last 24-months lies in the range of 1200 to 1600mm, which is below average.

## 6. Inflows

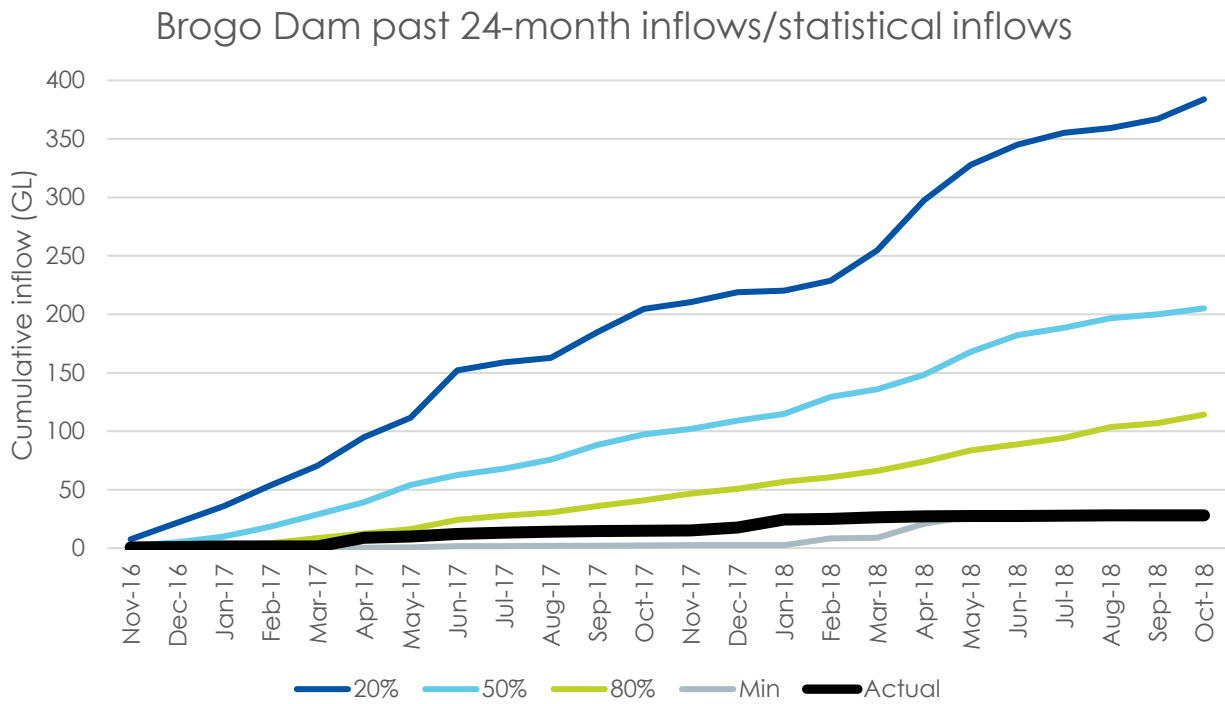
### 6.1 Brogo Dam inflows

#### 6.1.1 Brogo past 6-month inflows/statistical inflows



Inflows are consistent with rainfall over the past 6 months period. Actual inflows for last 6 months were only around 0.8 GL which is around the minimum observed/historical inflow.

### 6.1.2 Brogo past 24-month inflows/statistical inflows



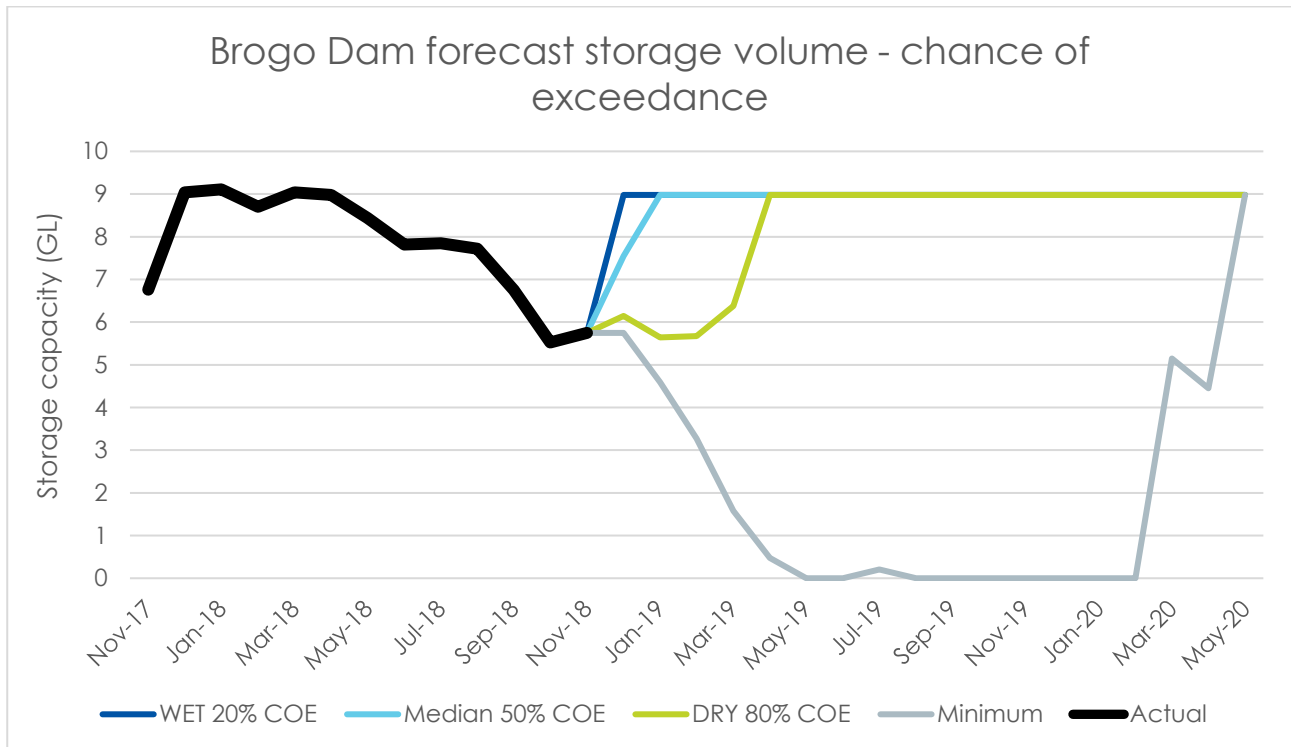
Inflows are consistent with rainfall over the past 24 months period. Due to dry conditions in the last 24 months only around 28 GL of inflows were recorded which is following minimum inflow conditions.

### 6.2 Downstream tributary inflows

There are no significant downstream tributary inflows in this current water year (2018-19).

## 7. Storage forecast

### 7.1 Brogo storage forecast



Above figure demonstrates the possible scenarios of Brogo Dam until June 2020. The scenarios are based on different expected inflow conditions. For example, with 20<sup>th</sup> percentile inflow the dam may be full (100%) all the time. With the minimum inflow conditions, the dam may require drought contingency measures at the start of May 2019, but it would be full at the end of April 2020.

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.

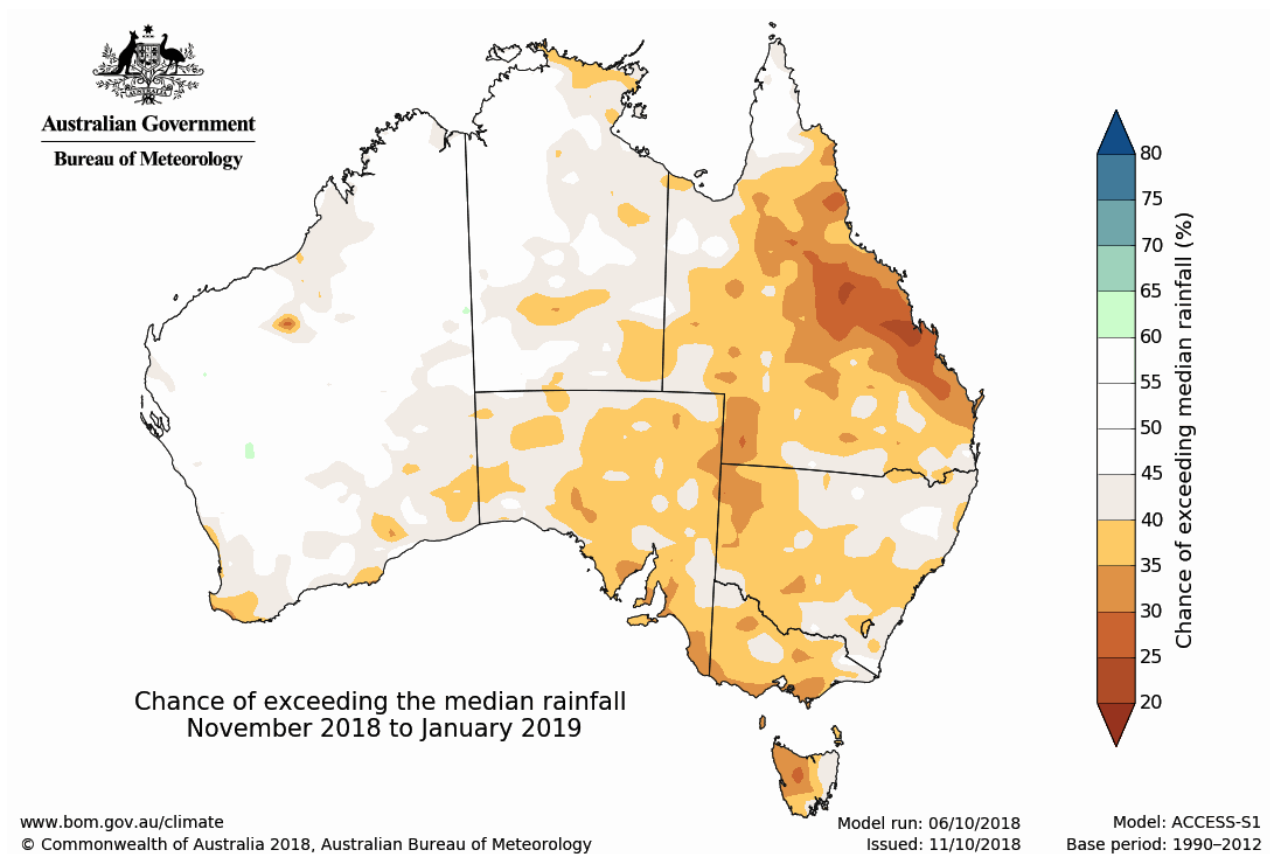
## 8. Outage planning

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

## 9. Prognosis

To be updated:

	Dry (80 <sup>th</sup> percentile inflows)	Average (50 <sup>th</sup> percentile inflows)	Wet (20 <sup>th</sup> percentile inflows)
3-month forecast to 31-Jan -19			
8-month forecast to 30-Jun -19			



## More information

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