

# Paterson Operations Plan

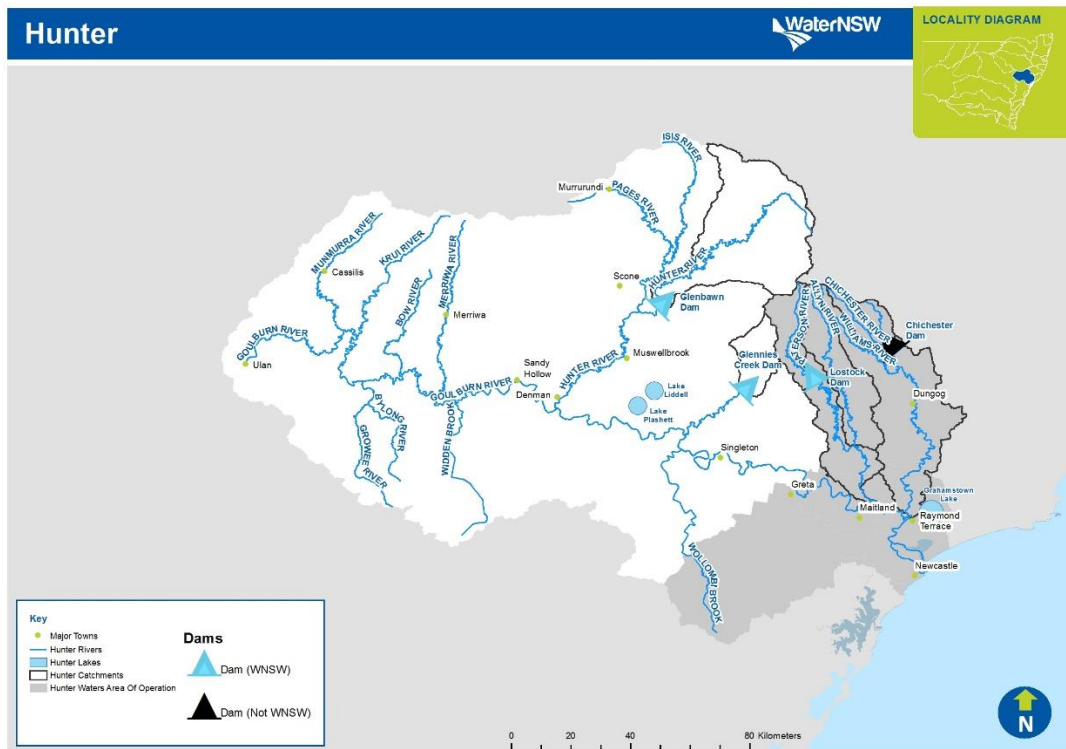
November 2018

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# 1. Highlights

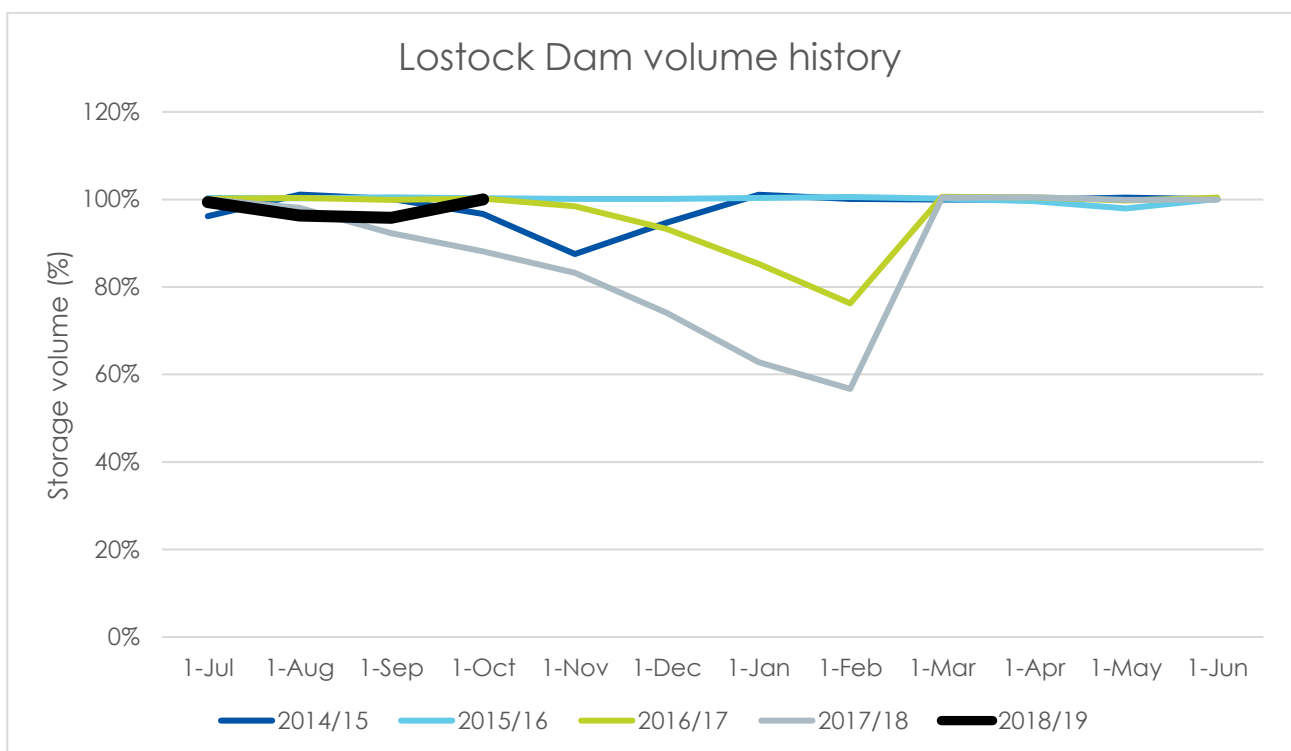
- The Paterson River Operations Plan allows for delivery of full allocations, and carryover, for all customers in 2018-19.



## 2. Dam storage

### 2.1 Lostock Dam storage

The below figure shows the Lostock Dam behaviour for the 2018/19 water year compared to the last four water years. The dam was around 100% full at the start of the current water year (2018 -19) and by end of September it has dropped to 95% before spilling in October. It is currently 100% full.



## 3. Supplementary access

### 3.1 Commentary

In the Paterson River, there have been two supplementary events declared in this current water year.

System	Commence	Cease	Volume pumped (ML)
Paterson	1/07/2018	4/07/2018	0
Paterson	8/10/2018	23/10/18	0

### 3.2 Explanation

In the Paterson River taking of water under the supplementary water access licences is only permitted when flows at Gostwyck are twice the planned environmental water requirements of the Water Sharing Plan, and the flows downstream of Lostock Dam are greater than 40 ML/day for at least 12 hours. Access to supplementary water access licenses is from tributary inflows and spills from Lostock Dam.

## 4. Water availability

### 4.1 2018/2019 water availability for Paterson

This information was current as 1 November 2018.

Licence category	Share component	Carryover in	AWD volume	Allocation assignments in	Allocation assignments out	Usage	Balance
Domestic and stock	42	0	42	0	0	0	42
Domestic and stock (domestic)	2	0	2	0	0	0	2
Domestic and stock (stock)	5	0	5	0	0	0	5
Local water utility	75	0	75	0	0	0	75
Regulated river (general security)	9,565	871	9,565	0	0	527	9,908
Regulated river (high security)	190	0	190	0	0	3	187
Supplementary water	756	0	756	0	0	0	756
<b>Grand total</b>	<b>10,635</b>	<b>871</b>	<b>10,635</b>	<b>0</b>	<b>0</b>	<b>530</b>	<b>10,975</b>

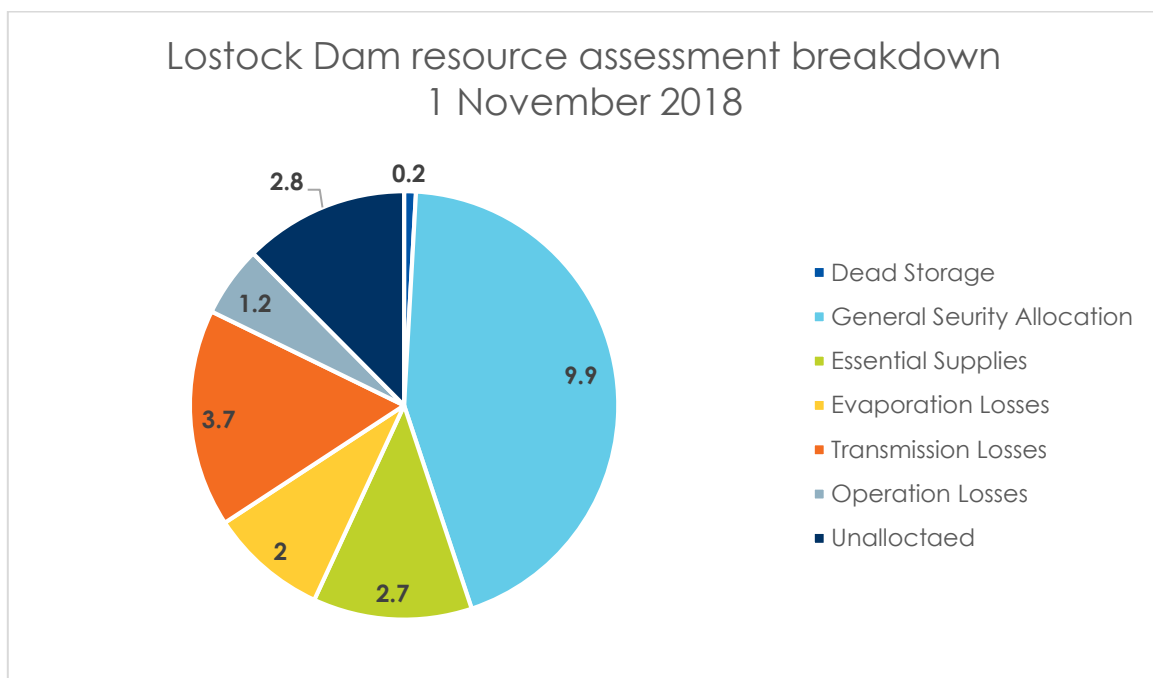
Note: Volumes in the table are in ML.

#### General security available water determination

Date	AWD (ML/share)	Total
1-Jul-18	1	109%

In the current water year (2018-19), 100% AWD (Available water determination) has been announced on 1<sup>st</sup> July 2018 for all water users including GS, High Security and Town Water Supply. GS accounts can also carryover up to 10% of share component, and this year a volume of 871ML (9% of share component) has been carried over into 2018-19.

#### 4.2 Resource assessment



Note: Volumes in the pie chart are in GL.

Resource Assessment	Nov 2018	Oct 2018	Sept 2018	August 2018	June 2018	May 2018	April 2018	March 2018	Feb 2018
Storage Volume	20.2	19.5	19.5	20.1	19.7	20.3	11.7	14.9	14.9
Plus minimum inflows	2.2	3.4	4.6	7.3	11.3	0.7	5.4	5.5	6.3
Less dead storage	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Less storage & operation loss	3.2	3.6	4.0	2.8	3.0	0.5	1.0	1.3	1.5
Less essential supplies	0.7	0.8	0.8	0.7	0.8	2	3.9	4.9	5.9
Less delivery loss	3.7	4.1	5.1	6.8	7.3	0.9	1.8	2.3	2.8
Less ECA	2	2	2	2	2	2	2	2	2
Less General Security	9.9	10	10.4	10.4	10.4	9.6	9.6	9.6	9.6
Allocation %	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Volumes in the table are in GL.

#### 4.2.1 Significance of this resource assessment

Resource assessment at 1<sup>st</sup> of November 2018 indicates there is sufficient water to deliver all remaining allocations including the 100% AWD announced on 1 July 2018, and it will remain same over the current water year. Minimum inflows are expected to be around 2.2 GL till June 2019.

Storage loss and operation loss is estimated at 3.2 GL on 1<sup>st</sup> November 2018 for the remainder months of the current water year. Delivery 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 3.7 GL in November for the remaining months in the current water year. This mostly comprises natural transmission losses as water evaporates and soaks into the river bed.



Essential supplies are estimated at 0.7 GL at 1<sup>st</sup> of November for this current water year, which includes town water, high security licenses, and S&D. Environmental Contingency Allowance (ECA) is considered 2GL for the year.

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

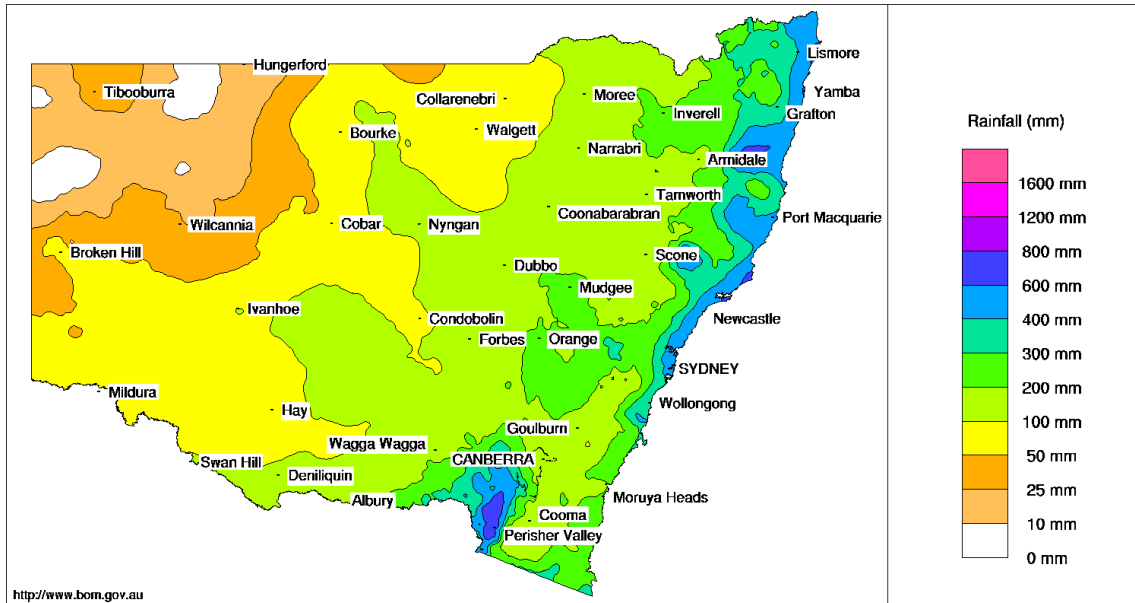
Resource Assessment is the process of calculating how much water resource is available based on the rules of the Water Sharing Plan and work approvals. This is reviewed periodically during the year, typically at the end of the month and when any significant inflow event happens.

From the above resource assessment summary table, the latest resource assessment has been done on 1<sup>st</sup> of November 2018. Planning horizon for this resource assessment is November 18 to July 20. For this current water year, total resource available is the sum of Lostock storage volume and the minimum expected inflow over remainder of the year. From the resource assessment summary table, it can be seen that total available resource is  $20.2 + 2.2 = 22.4$  GL. The sum of commitments for the current water except GS from the above summary table is  $0.2 + 3.2 + 0.7 + 3.7 + 2 = 9.8$  GL. Therefore, the amount of water available for GS users is  $22.4 - 9.8 = 12.6$  GL, which is higher than the GS share entitlements plus any carryover for this year, which indicate the system has sufficient water to supply 100% AWD announced for the current water year

# 5. Rainfall

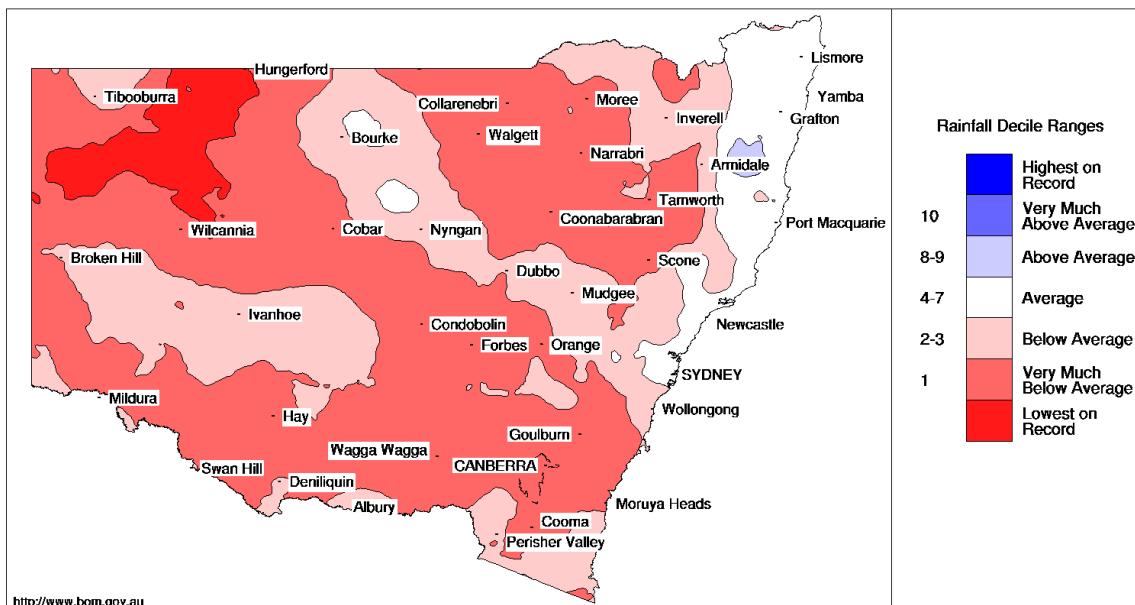
## 5.1 6-month rainfall

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

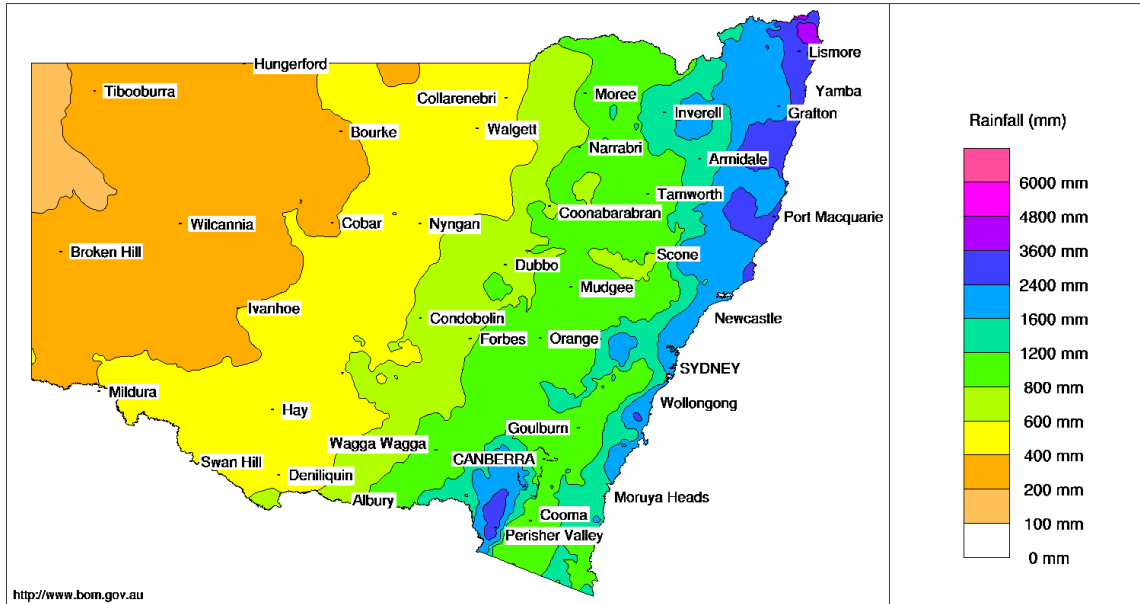


http://www.bom.gov.au © Commonwealth of Australia 2018, Australian Bureau of Meteorology ID code: AWAP Issued: 03/11/2018

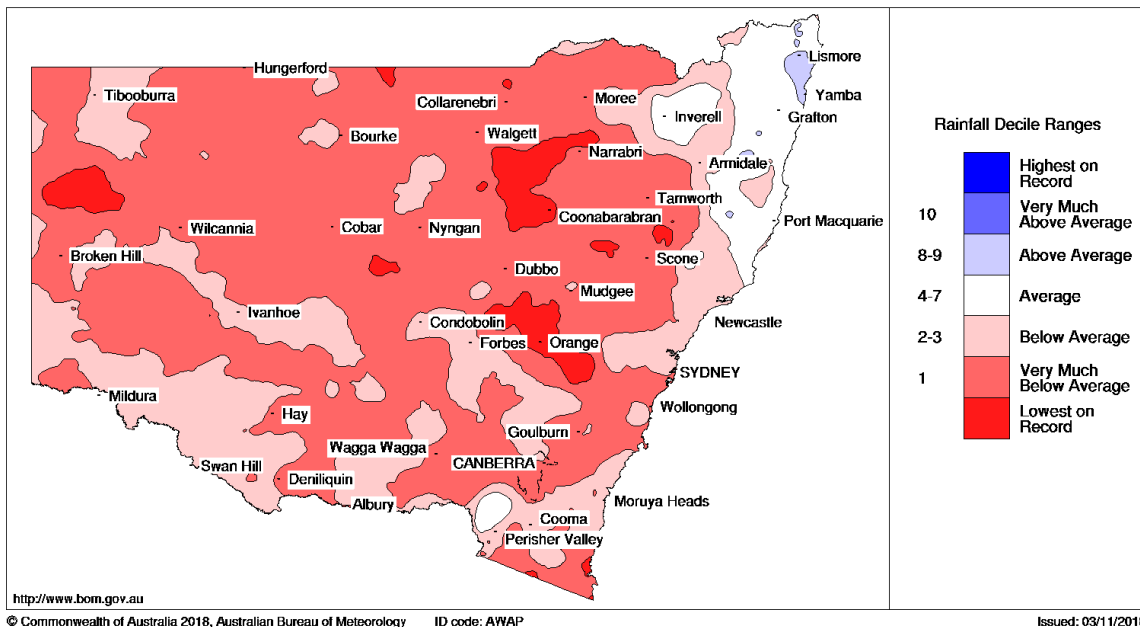
From the above figures the last 6-month total rainfall lies in the range of 300 to 600 mm, which is in the average range.

## 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

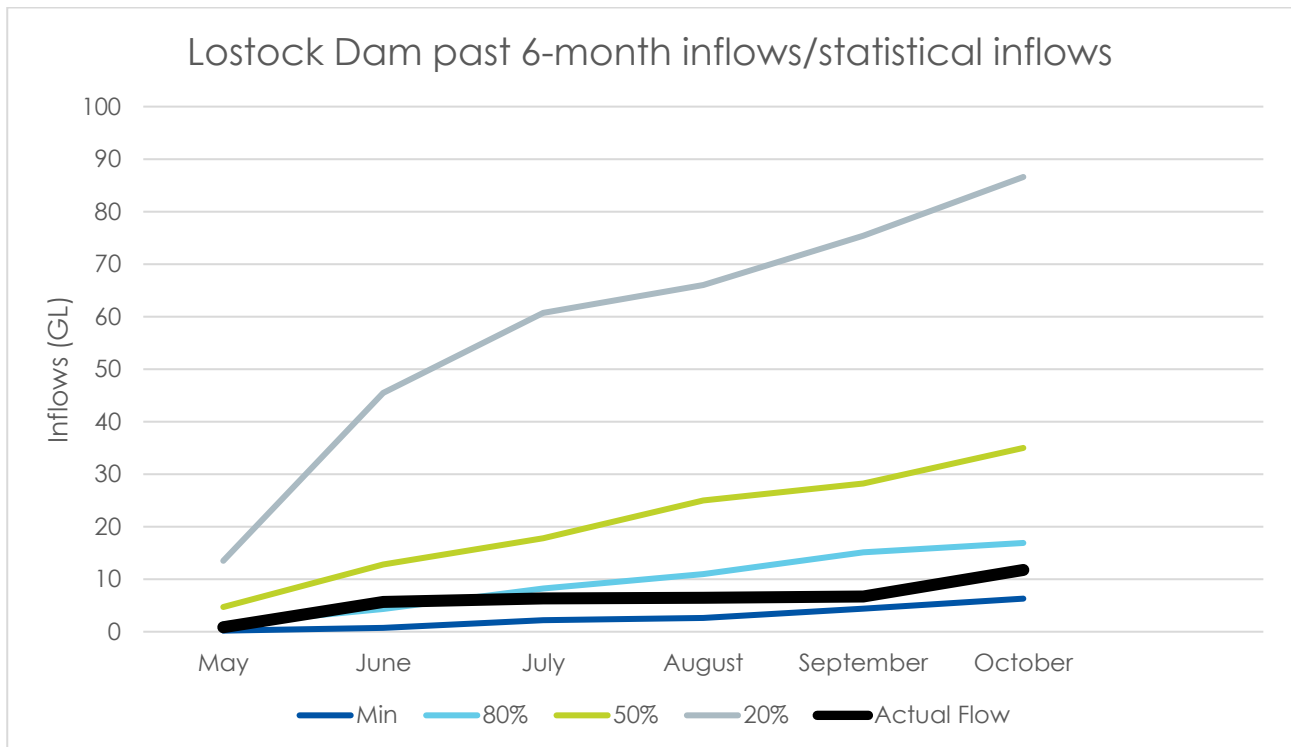


From the above figures the last 24-month total rainfall lies in the range of 1600 to 2400mm, which is below average.

## 6. Inflows

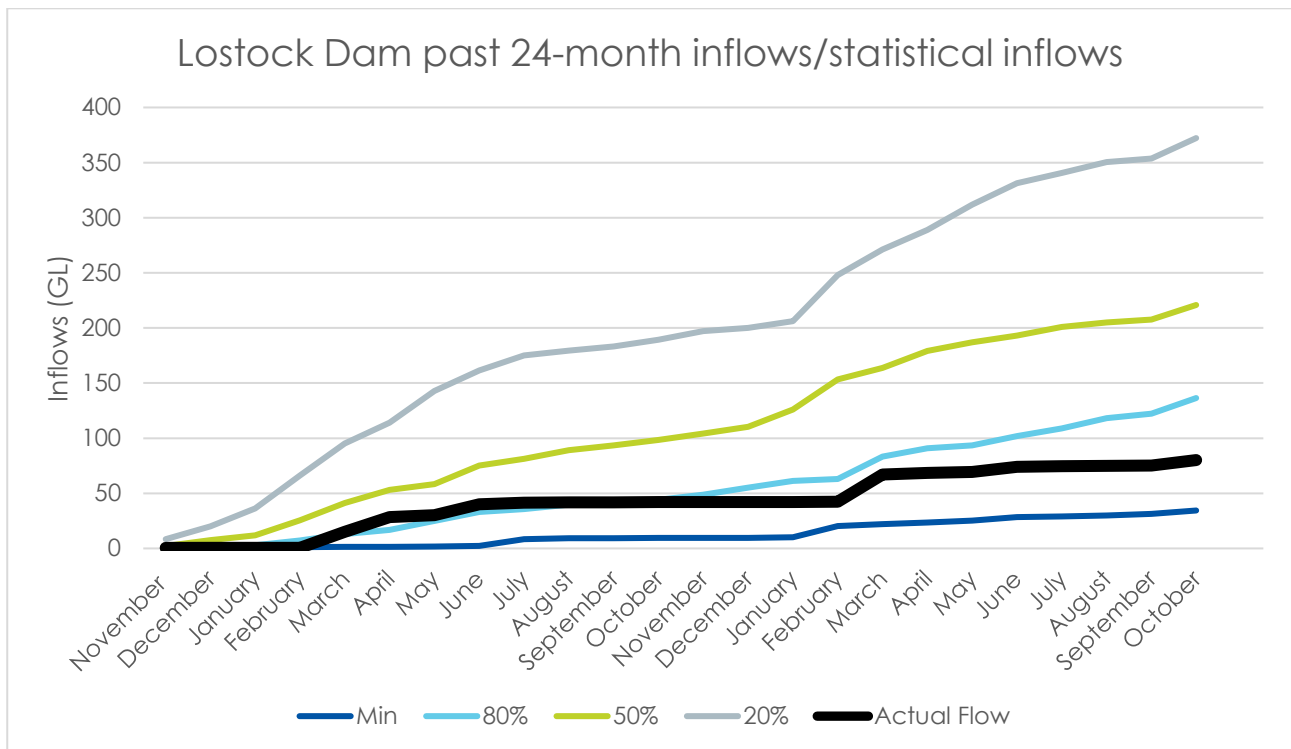
### 6.1 Lostock Dam inflows

#### 6.1.1 Lostock Dam past 6-month inflows/statistical inflows



Inflows are consistent with rainfall over the past 6-month period. Actual inflow for 6 months is around 12 GL, currently between the minimum and 80<sup>th</sup> percentiles.

### 6.2.2 Lostock Dam past 24-month inflows/statistical inflows



Inflows are consistent with rainfall over the past 24-month period. Actual inflow for the 24 months is 80 GL, currently in between the minimum and 80<sup>th</sup> percentiles.

### 6.3 Downstream tributary inflows

There have been no significant downstream tributary inflows in this current year (2018 – 19).

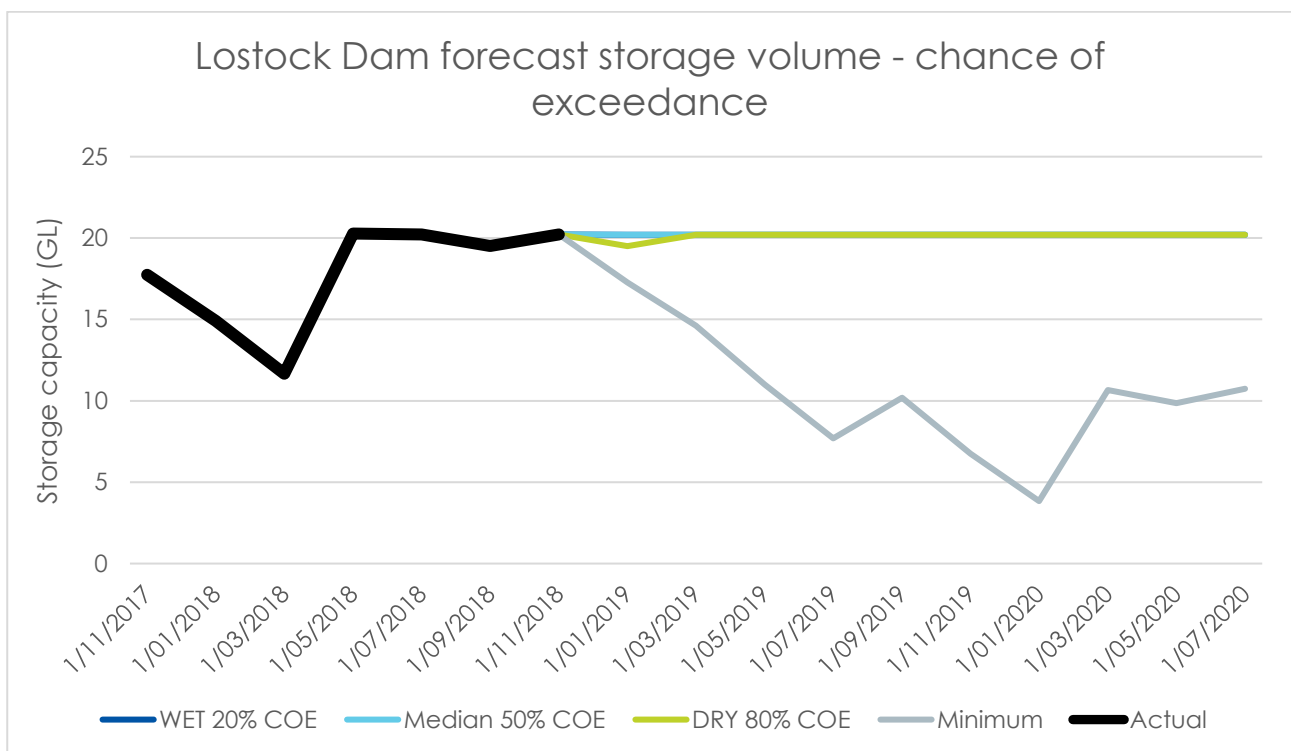
## 7. Operational losses

### 7.1 Operational losses for Lostock Dam

N/A

## 8. Storage forecast

### 8.1 Lostock storage forecast



Above figure demonstrate the possible scenarios of Lostock Dam until August 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 would be around 2.6 GL at the end of January 2020 and may reach to 10.7 GL at the end of June 2020. The minimum inflow condition assumes that all remaining general security allocations would be used by the end of the water year. 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.

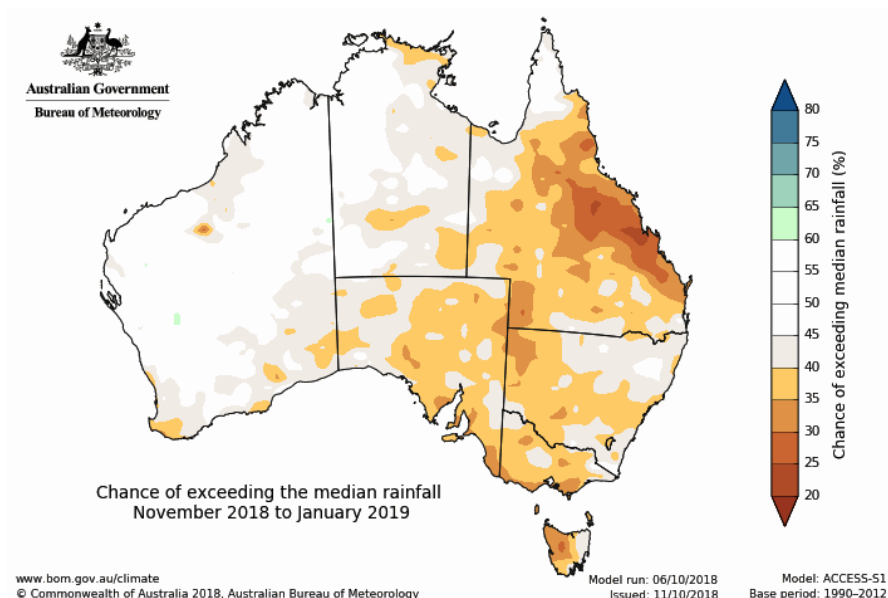
## 9. Outage planning

Item	Time	Description
Lostock Dam	N/A	None

## 10. Prognosis

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

	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	100%	100%	100%
6-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 that has been done on 1<sup>st</sup> July 2018 of 100%.

## More information

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