

# Hunter Operations Plan

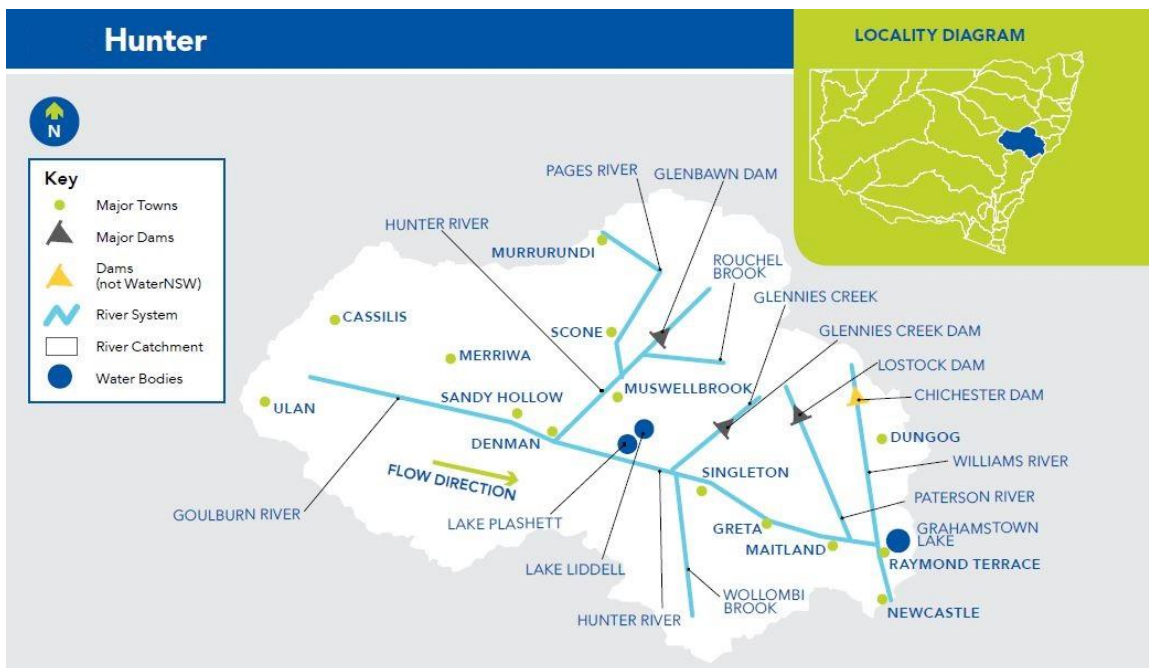
February 2019

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# 1. Highlights

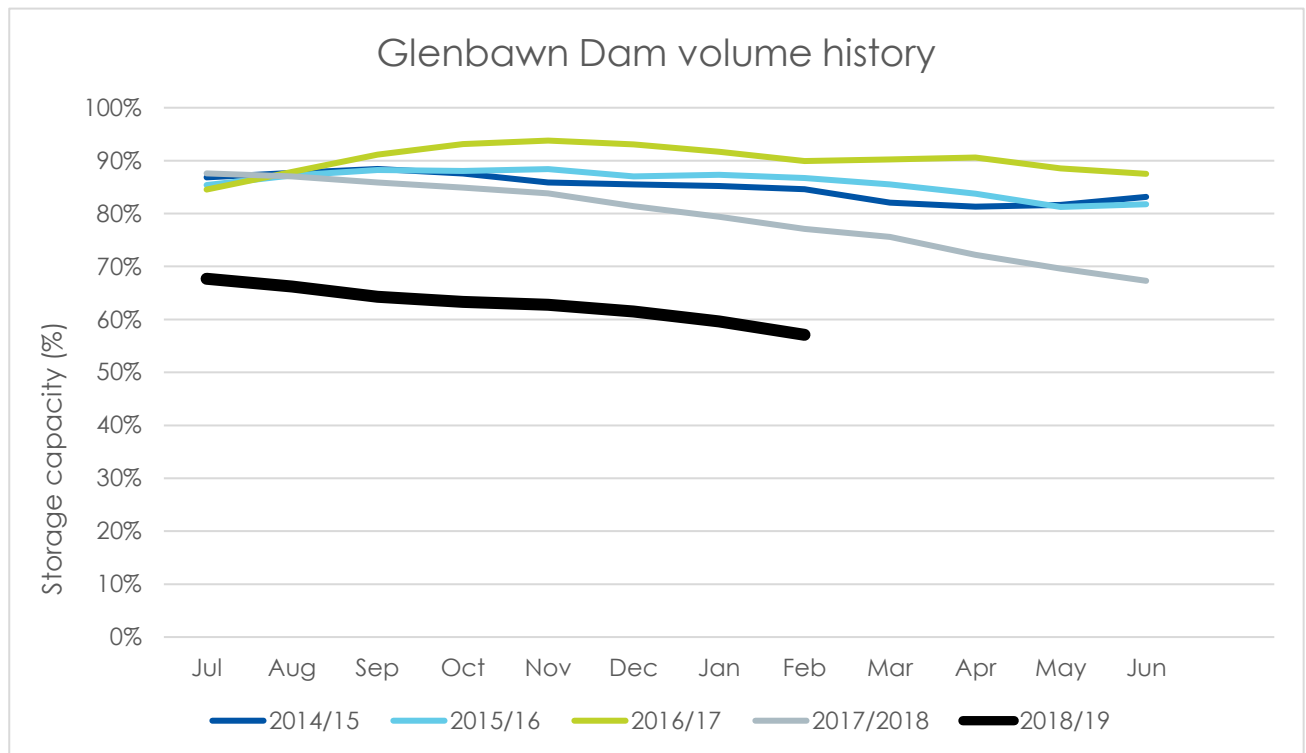
The Hunter River Operations Plan allows for delivery of full allocations, and carryover, for all customers in 2018-19.



## 2. Dam storage

### 2.1 Glenbawn Dam storage

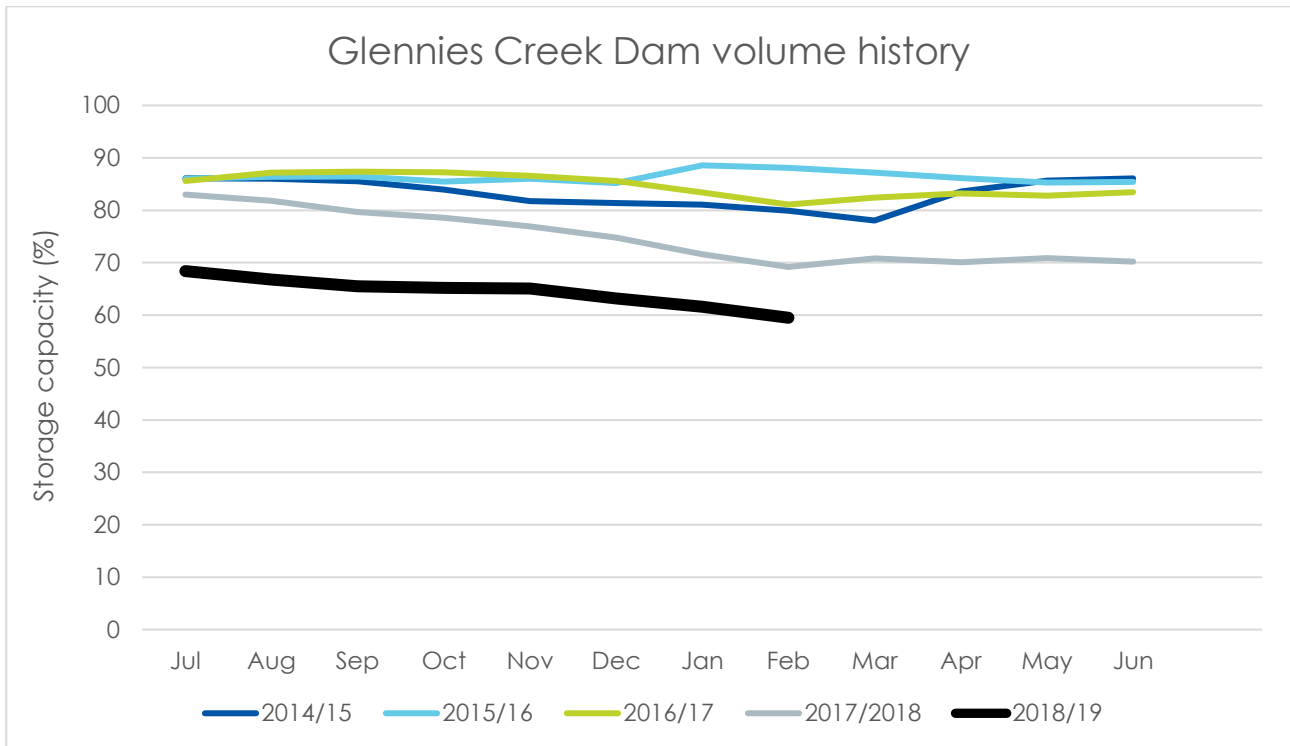
The figure below shows the Glenbawn Dam behaviour for the current water year (2018-19) and for the last four water years.



The dam was around 88% full at the start of last water year (2017 -18) and by the end of January 2019, it is about 57% full. No significant inflow has arrived at the dam over the last water year and that trend continues into the current year. Therefore, the dam shows continuous decreasing trend over the last water year and current water year. In this current water year, the dam volume is lower than that of the last four years.

## 2.2 Glennies Creek Dam storage

The figure below shows the Glennies Creek Dam behaviour for the current water year (2018-19) and for the last four water years.



The dam was around 84% full at the start of last water year (2017 -18) and by the end of January 2019, it is about 59% full. No significant inflow has arrived at the dam except two small autumn inflows. The dry conditions continue into the current year. In this current water year, the dam volume is lower than that of the last four years.

## 3. Supplementary access

### 3.1 Commentary

There has been one supplementary event in the Hunter River since the start of the 2018/19 water year.

Section	Commence	Cease	Volume Pumped (ML)
1B	24-Dec-19	26-Dec-19	
2A	24-Dec-19	26-Dec-19	
2B	24-Dec-19	26-Dec-19	48
3A	24-Dec-19	26-Dec-19	

### 3.2 Explanation

In the Hunter River, the taking of water under the supplementary water access licenses is only permitted when flow thresholds are met as per the following table:

Flow reference point number	Flow reference point	Date for which flow target applies	Flow threshold (ML/D)
1	Hunter river at Liddell gauge (210083)	1 May to 30 September	100
		1 October to 30 April	150
2	Hunter River at Singleton Gauge (210001)	1 May to 30 September	120
		1 October to 30 April	300
3	Hunter River at Greta Gauge (210064)	1 March to 31 May	80
		1 June to 31 August	146
		1 September to 30 November	122
		1 December to 28/29 February	72

Access to supplementary water access licenses is from uncontrolled flows from tributaries and water spilled from the dams.

Access to uncontrolled flows by regulated river (high security) access licences and regulated river (general security) access licences is permitted only when AWDs for high security and general security licences are less than 100%.

## 4. Water availability

### 4.1 2018/2019 water availability for Hunter

The information was correct as 1 February 2019

Licence category	Share component	Carryover in	AWD volume	Allocation assignments in	Allocation assignments out	Usage	Balance
Domestic and stock	1,569	0	1,561	0	0	101	1,467
Domestic and stock (domestic)	145	0	145	0	0	0	145
Domestic and stock (stock)	103	0	103	0	0	21	82
Local water utility	10,832	0	10,832	0	0	4501	6,330
Major utility (power generation)	36,000	21,574	36,000	0	0	13,982	43,593
Regulated river (general security)	128,544	25,835	127,815	6,539	7,408	33,900	119,713
Regulated river (high security)	21,740	4,108	21,737	1,599	730	7,000	15,608
Supplementary water	48,519	0	48,502	0	0	48	48,471
<b>Grand total</b>	<b>247,452</b>	<b>51,517</b>	<b>246,695</b>	<b>8,138</b>	<b>8,138</b>	<b>59,553</b>	<b>235,410</b>

Notes: volumes in the table are in ML

#### General security available water determination

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

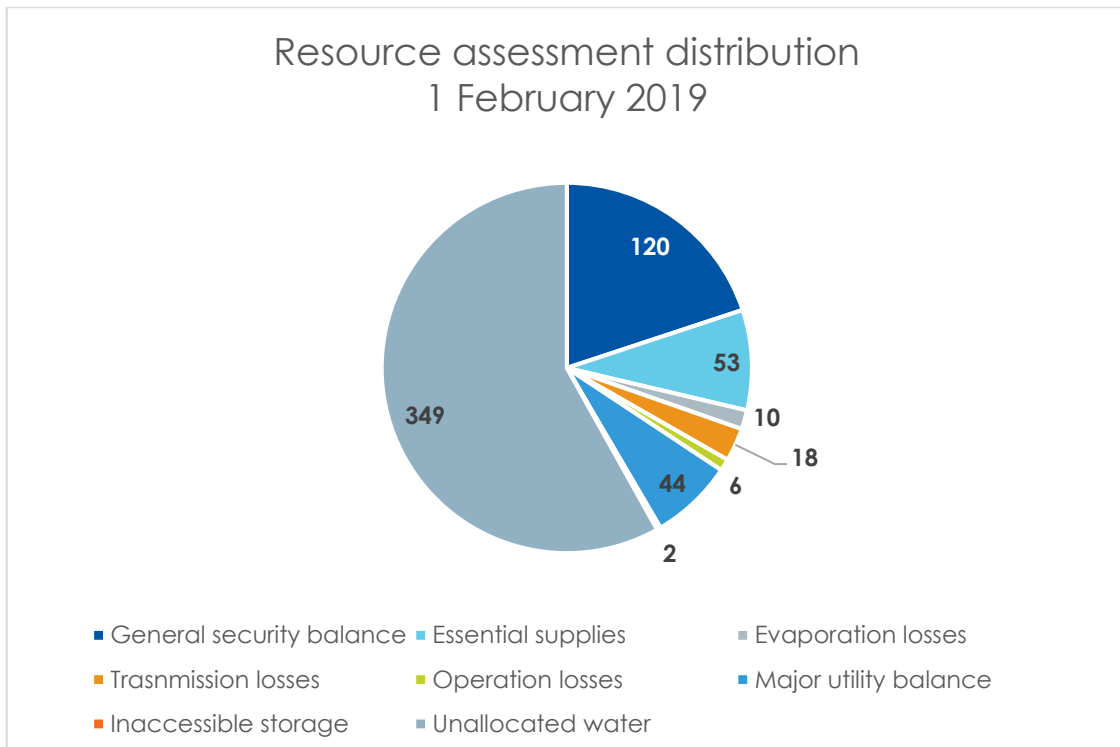
A total of 26,023 ML of General Security (GS) water has been carried forward into 2018-19, which is equivalent to 20% of GS share component. General security licences are allowed to carryover up to 25% of their remaining balances from one year to the next.

In the current water year (2018-19), 100% AWD (Available water determination) has been announced on 1st July 2018 for all water users including GS, High Security, Town Water Supply and Major Utility.

The sum of account balance in the table refers to the amount of water remaining in accounts as of 31 January 2019 after trade and use. For example, Local Water Utility (LWU) has 6,330 ML of water in their account, they have used 10,832 – 6,330 = 4,501 ML of water so far in this current water year.

To date in the current water year, the total amount of GS water usage is 33,900 ML and Major Utility usage is 13,982 ML.

## 4.2 Resource assessment



Note: volumes in the pie chart are in GL.



<b>Hunter resource assessment</b>	<b>1/2/2019</b>
Storage volume	597.26
Plus minimum inflows (Storage and d/s)	5.2
Less dead storage	2
Less storage & operation loss	16.25
Less essential supplies	52.6
Less major utility	43.6
Less transmission loss	17.5
Less general security	119.7
Allocation	100%

#### **4.2.1 Significance of this resource assessment**

Resource assessment at 1<sup>st</sup> of February 2019 indicate that there is sufficient water in storage to deliver the 100% AWD announcement in 2018-19. Combined minimum inflows are expected to be around 5.2 GL until 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 17.5 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.

Essential supplies are estimated at 52.6 GL at 1st of February for the remainder months of the current water year, which includes town water, high security licenses, environmental water allowance and S&D categories. Storage evaporation and operational losses are estimated at 16.25 GL for the remaining months of the current water 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. This is reviewed periodically during the year, typically at the end of the month and when any significant inflow event happens.

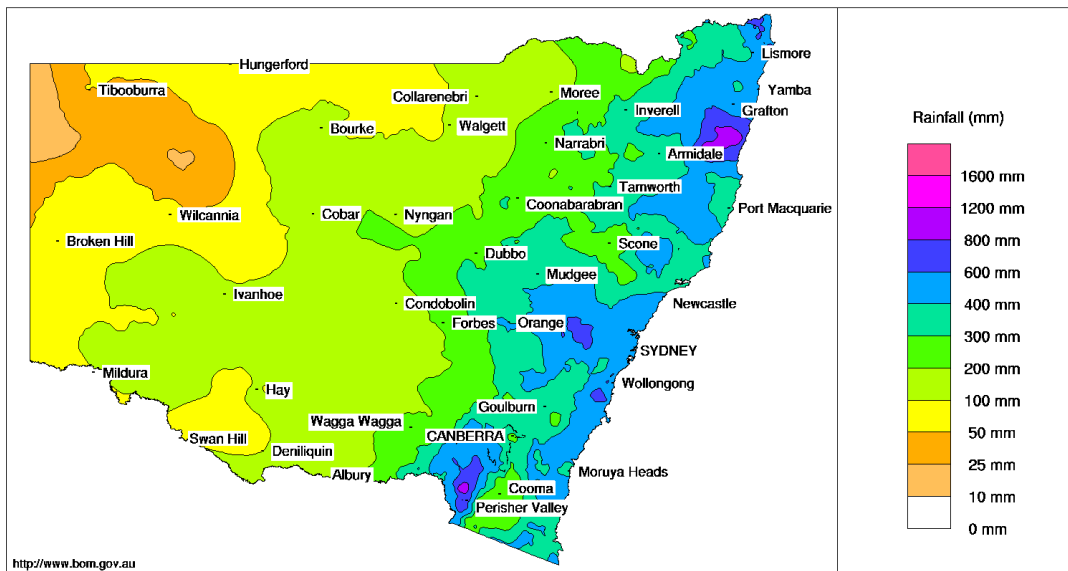
For this current water year, total resource available is the sum of Glenbawn and Glennies storage volume and the minimum expected inflow to the dam and usable inflows in the downstream over the year. From the resource assessment summary table, it can be seen that the total available

resource is 600.46GL. The sum of commitments for the current water from the above summary table is  $2 + 16.25 + 52.6 + 43.6 + 17.5 + 119.7 = 251.6$  GL. Therefore, the amount of unallocated water is  $600.46 - 251.6 = 348.86$  GL.

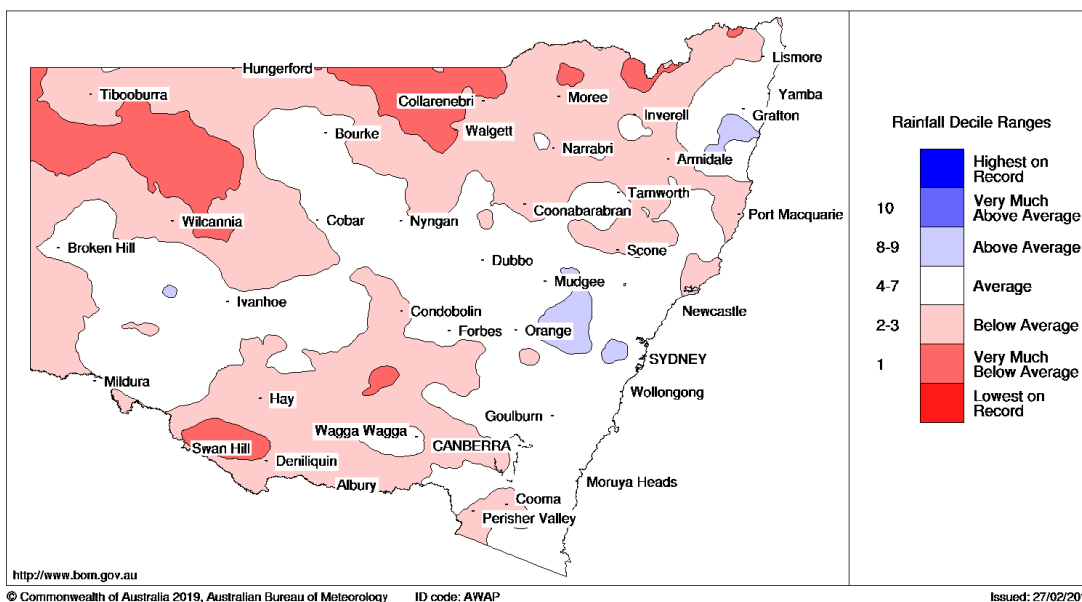
# 5. Rainfall

## 5.1 6-month rainfall

New South Wales Rainfall totals (mm) 1 August 2018 to 31 January 2019  
Australian Bureau of Meteorology



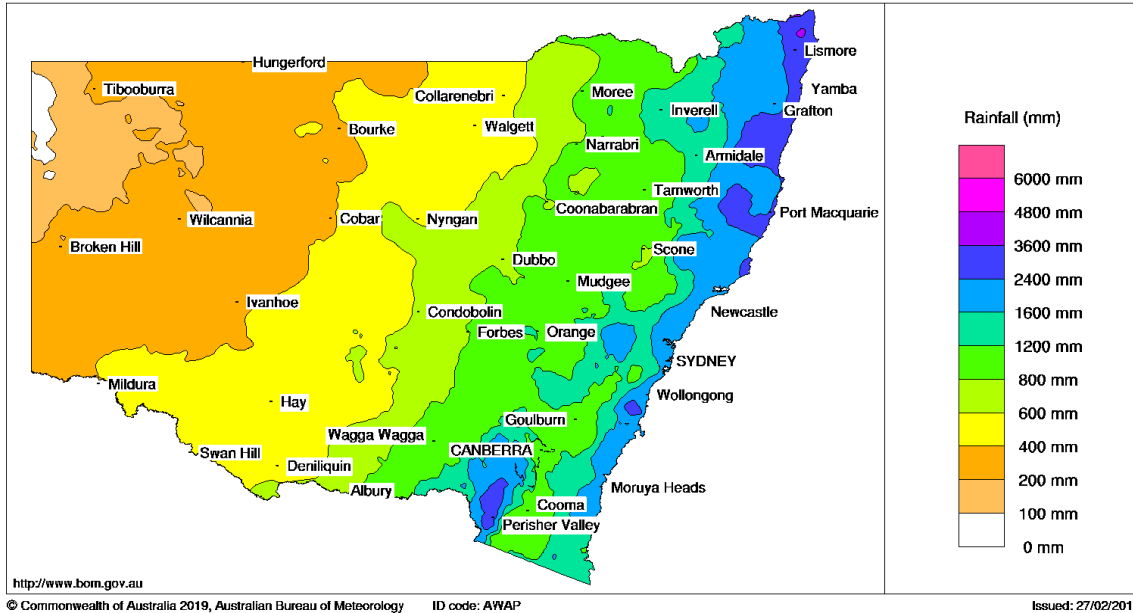
New South Wales Rainfall Deciles 1 August 2018 to 31 January 2019  
Distribution Based on Gridded Data  
Australian Bureau of Meteorology



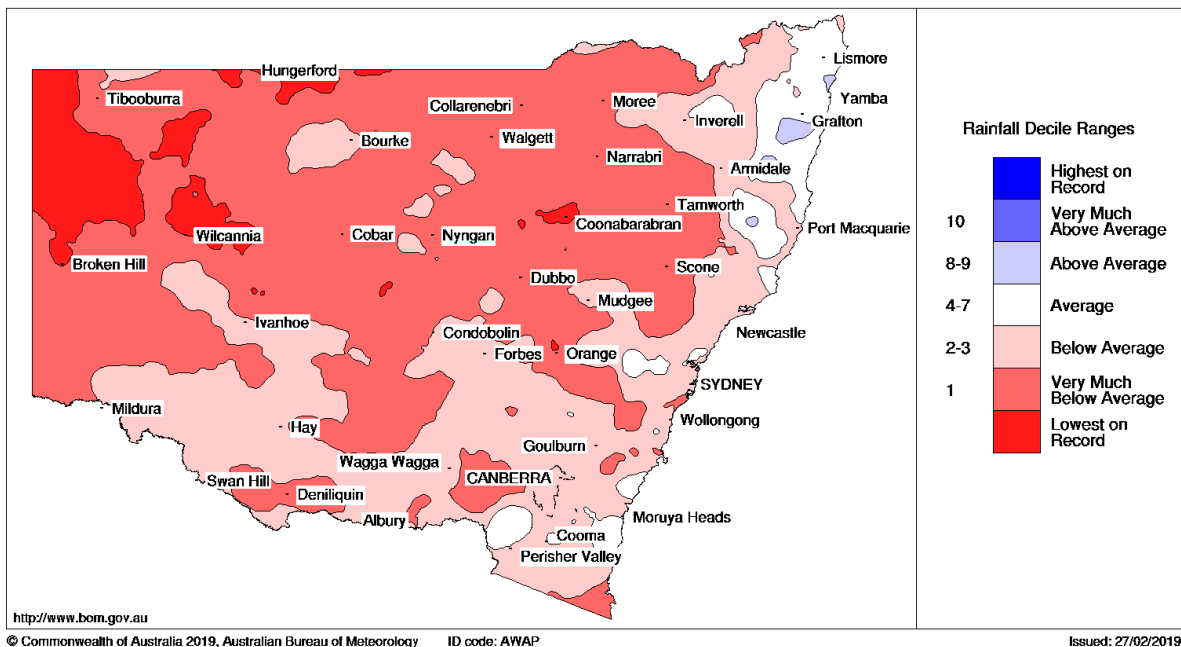
The last 6-month total rainfall lies in the range of 200 to 300 mm, which is in the average to below average range.

## 5.2 24-month rainfall

New South Wales Rainfall totals (mm) 1 February 2017 to 31 January 2019  
Australian Bureau of Meteorology



New South Wales Rainfall Deciles 1 February 2017 to 31 January 2019  
Distribution Based on Gridded Data  
Australian Bureau of Meteorology

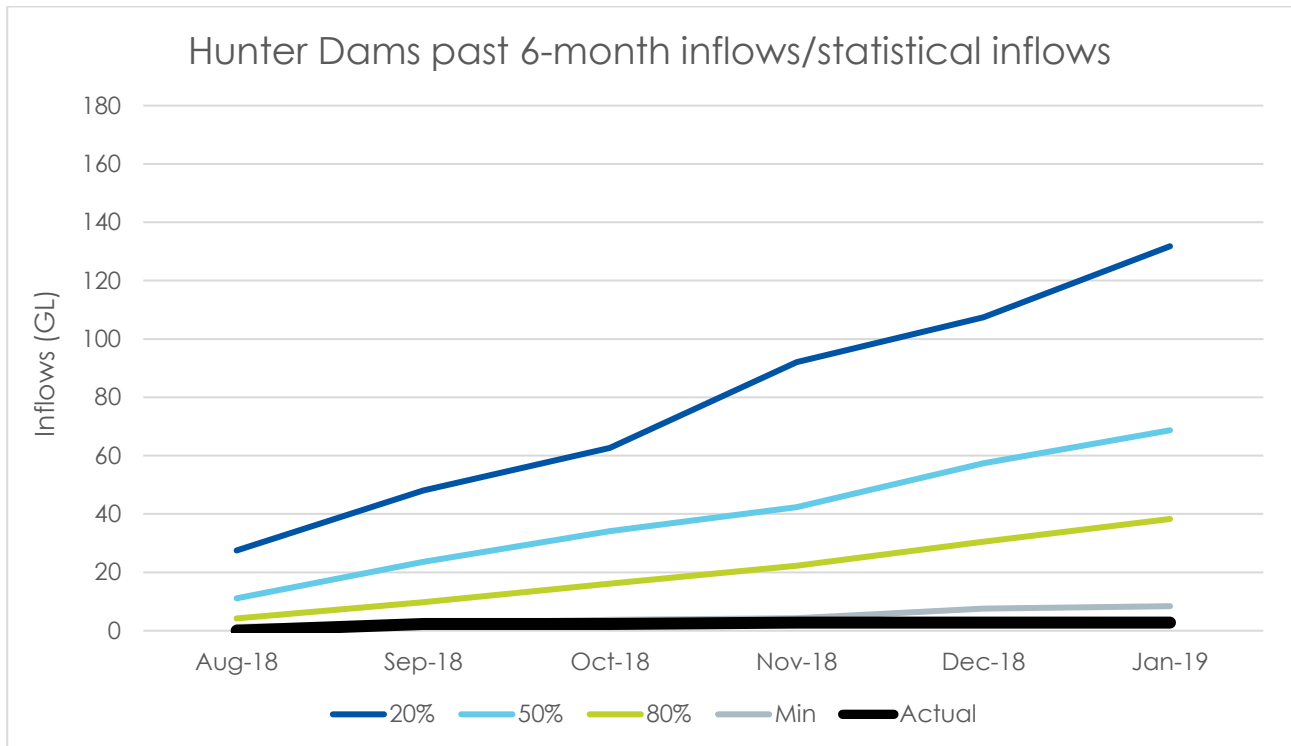


Rainfall in the last 24-months lies in the range of 1600 to 2400 mm, which is below average.

## 6. Inflows

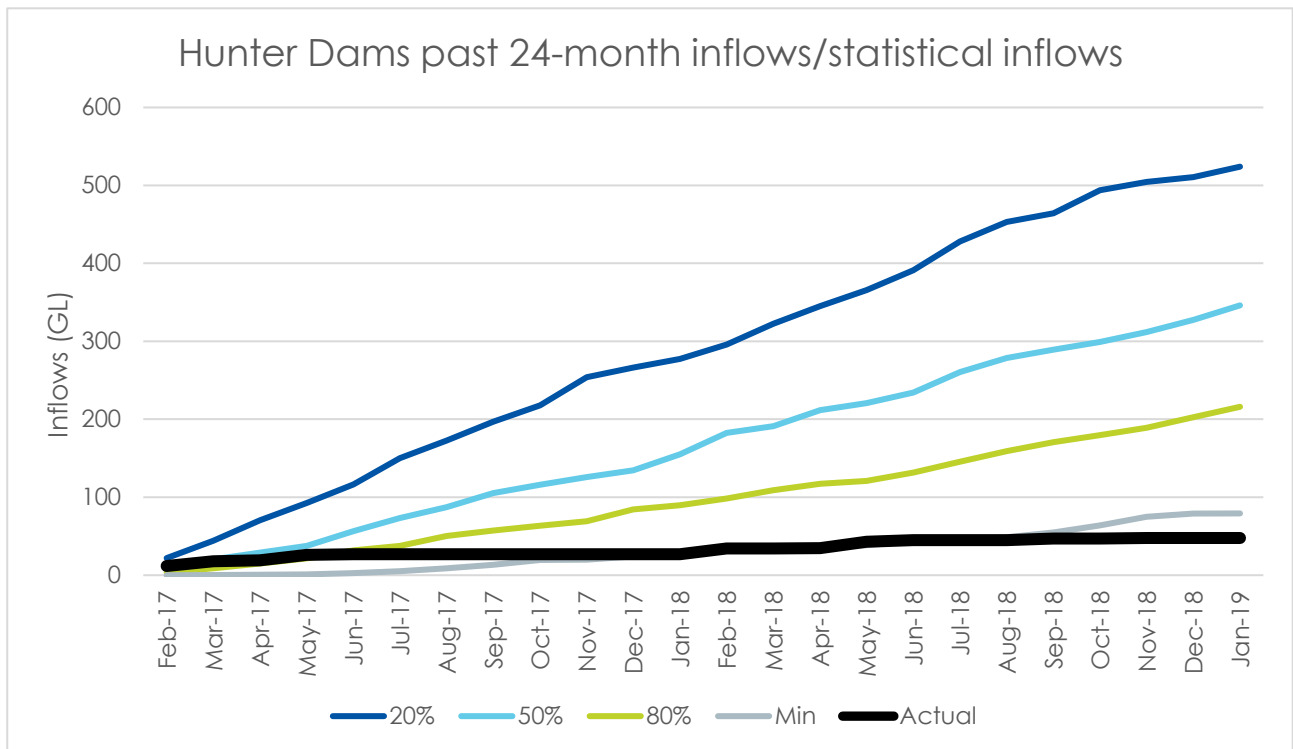
### 6.1 Hunter Dam inflows

#### 6.1.1 Past 6-month inflows/statistical inflows



Inflows are consistent with rainfall over the past 6-month period. Actual inflow for 6 months is around 2.7 GL.

### 6.1.2 Past 24-month inflows/statistical inflows



Inflows are consistent with rainfall over the past 24-month period. Actual inflow for the 24 months is 47 GL.

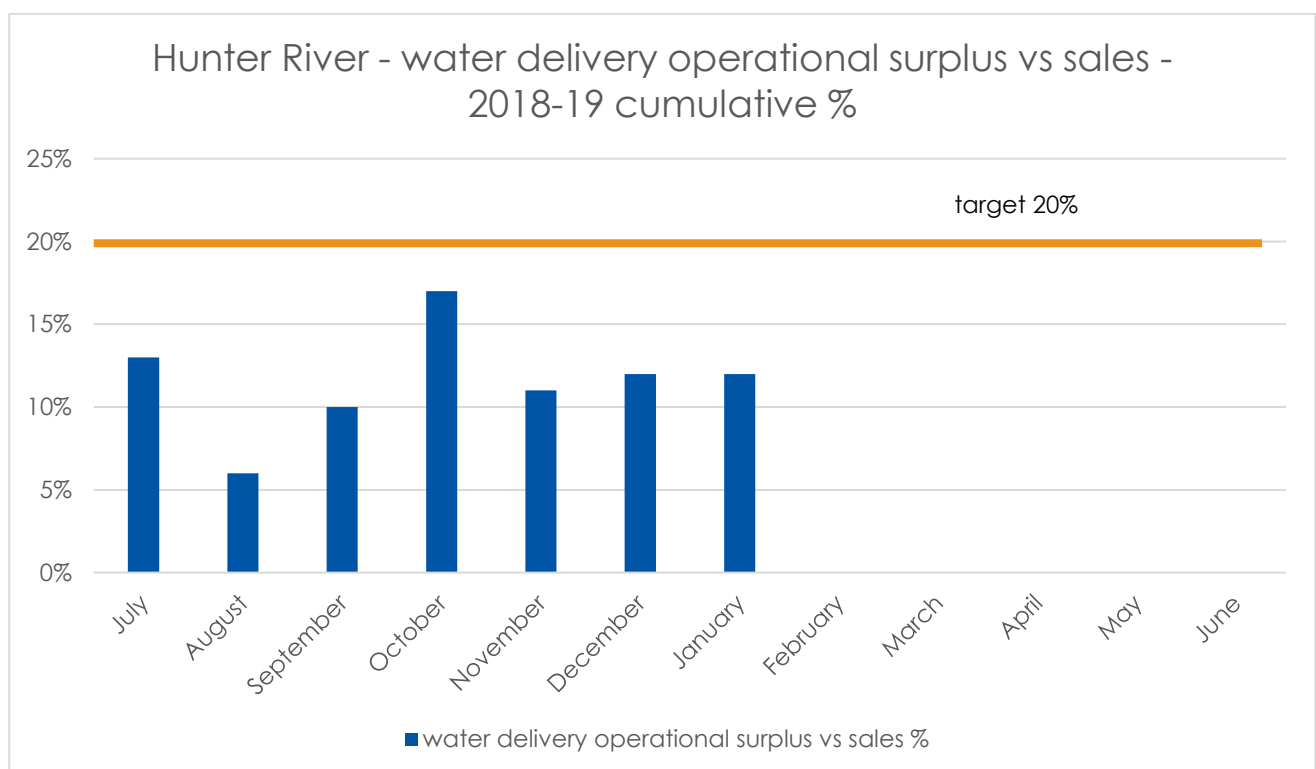
### 6.2 Downstream tributary inflows

There have been two small events in the Goulburn River with a total volume around 7GL tributary inflows in this current year (2018 – 19).

## 7. Operational surplus

### 7.1 Operational surplus for Hunter

Operational surplus is water above that which could reasonably be expected to pass the last extraction point being supplied with regulated flow (dam releases and controlled tributary inflows – not supplementary flows). The following table and graph show the operational loss over the last seven months in water year, 2018-19. The cumulative operational loss over the seven months was around 12% of deliveries, which is below the corporate target level of 20%.



Note: For the table above, regulated licenced is included in sales

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**Hunter cumulative totals**

<b>Dates</b>	<b>Sales + environmental delivery</b>	<b>Operational surplus</b>	<b>Actual</b>	<b>Target</b>
July	8,855	1,108	13%	20%
July-Aug	18,300	1,187	6%	20%
July-Sep	19,086	1,955	10%	20%
July-Oct	24,801	4,228	17%	20%
July- Nov	39,212	4,399	11%	20%
July- Dec	55,393	6,389	12%	20%
July-Jan	56,106	6,785	12%	20%

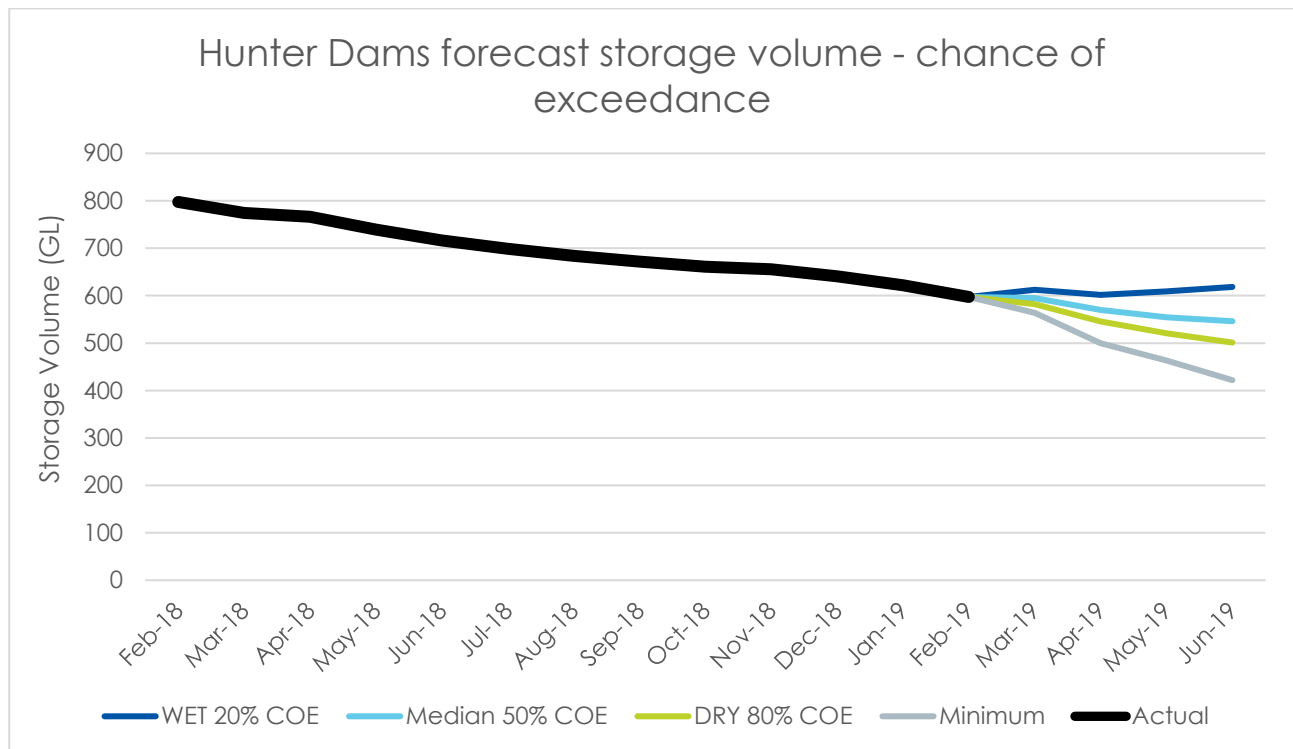
**Explanation:**

Represents volume of flows in excess of 'End of System' flow targets at Liddell or Greta as required in the Water Sharing Plan.



## 8. Storage forecast

### 8.1 Hunter Dams storage forecast



The above figure demonstrates the possible scenarios of the Hunter Storages (Glenbawn and Glennies Creek Dams) until June 2019. The scenarios are based on different expected inflow conditions. For example, with 20th percentile inflow the dams may be at around 618 GL volume at the end of June 2019. With the minimum inflow conditions, the dams would be holding 421 GL at the end of June 2019.

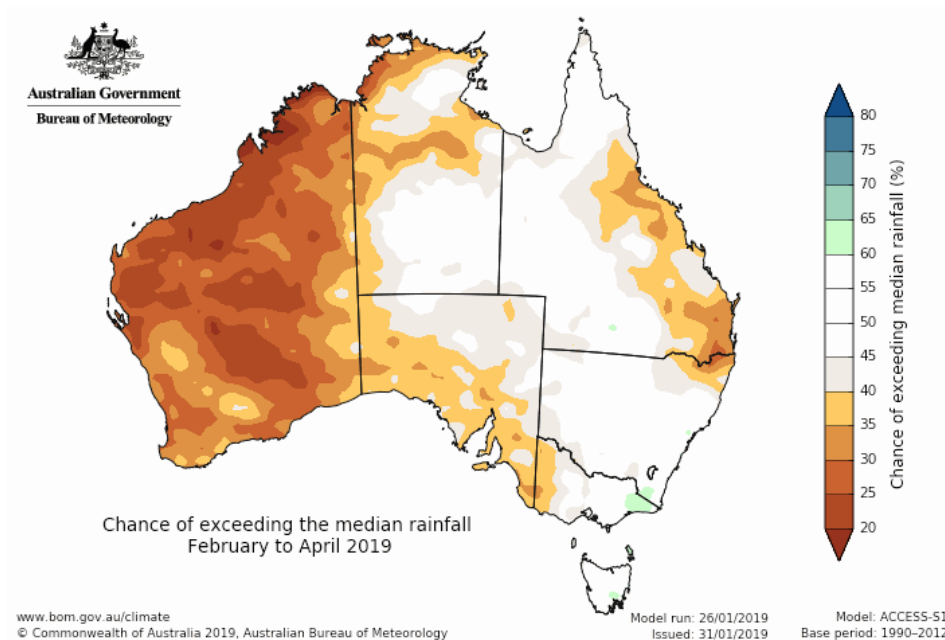
The Chance of Exceedance (COE) in the figure refers to the chance of exceeding inflows and storage levels in the time frame. For example, Wet 20% COE indicate that there is only a 20% of chance that the dam volume will be greater than the projected level, and there is 80% chance that the dam volume will be less than the projected level.

## 9 Outage planning

Item	Time	Description
Glenbawn Dam	N/A	None
Glennies Creek Dam	N/A	None

## 10. Prognosis

All licence category available water determinations have reached their limit of 100%.



### More information

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