

Paterson Operations Plan

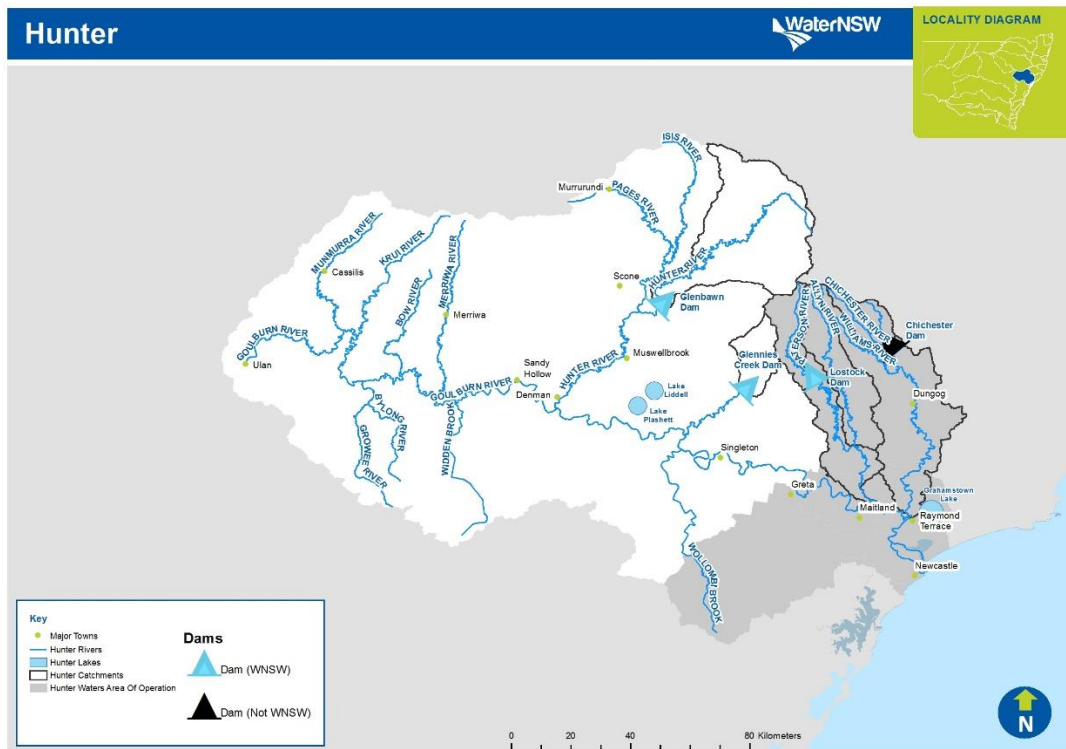
July 2019

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1. Highlights

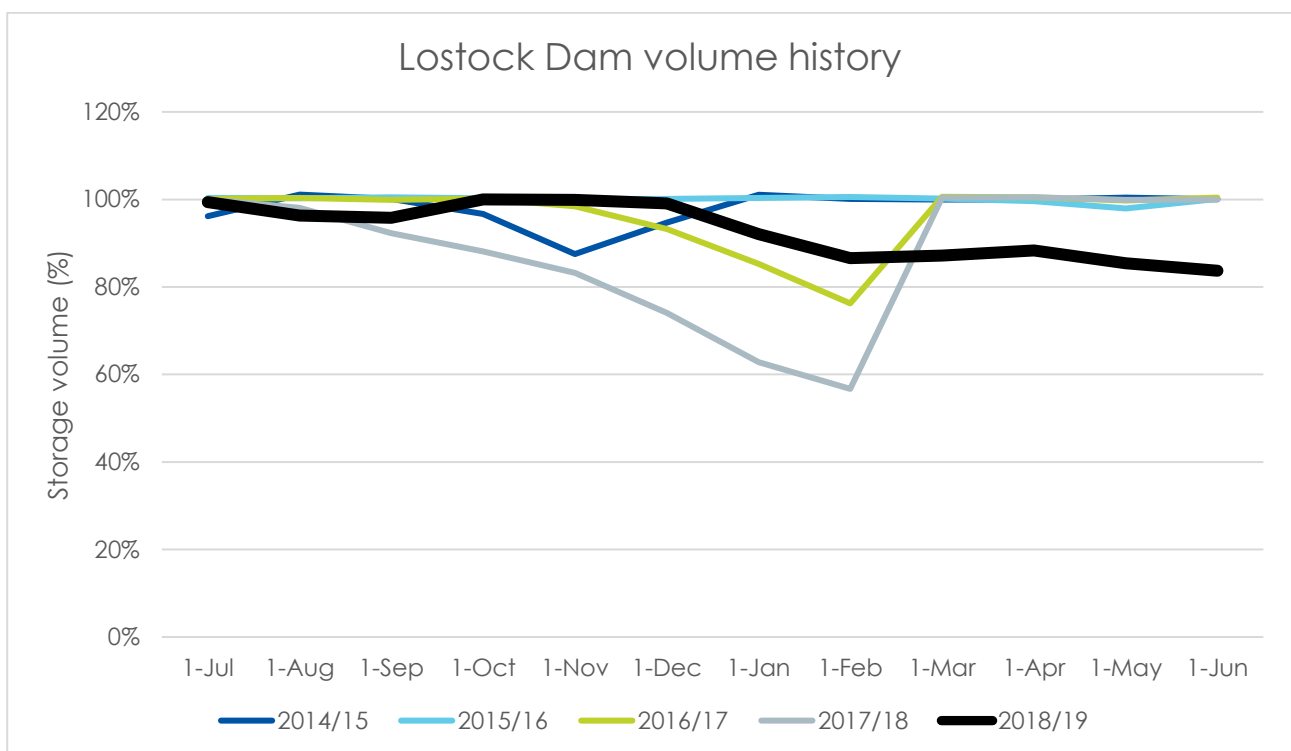
- The Paterson River Operations Plan allows for delivery of full allocations, and carryover, for all customers in 2019-20.



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 last water year (2018 -19), by the end of the water year it had dropped to 84%.



3. Supplementary access

3.1 Commentary

In the Paterson River, there were three supplementary events declared in the last water year.

System	Commence	Cease	Volume pumped (ML)
Paterson	1/07/2018	4/07/2018	0
Paterson	8/10/2018	23/10/2018	0
Paterson	17/12/18	26/12/2018	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 30 June 2019.

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
Regulated river (general security)	9,565	871	9565	115	115	2008	8428
Regulated river (high security)	190	0	190	0	0	6	184
Regulated river (high security Town)	75	0	75	0	0	63	12
Supplementary water	756	0	756	0	0	20	736
Grand total	10,635	871	10635	115	115	2097	9409

Note: Volumes in the table are in ML.

4.2 2019/2020 water availability for Paterson

This information was current as 1 July 2019.

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
Regulated river (general security)	9,565	865	9,565	0	0	0	10,430
Regulated river (high security)	190	0	190	0	0	0	190
Regulated river (high security Town)	75	0	75	0	0	0	75
Supplementary water	756	0	756	0	0	0	756
Grand total	10,635	865	10,635	0	0	0	11,500

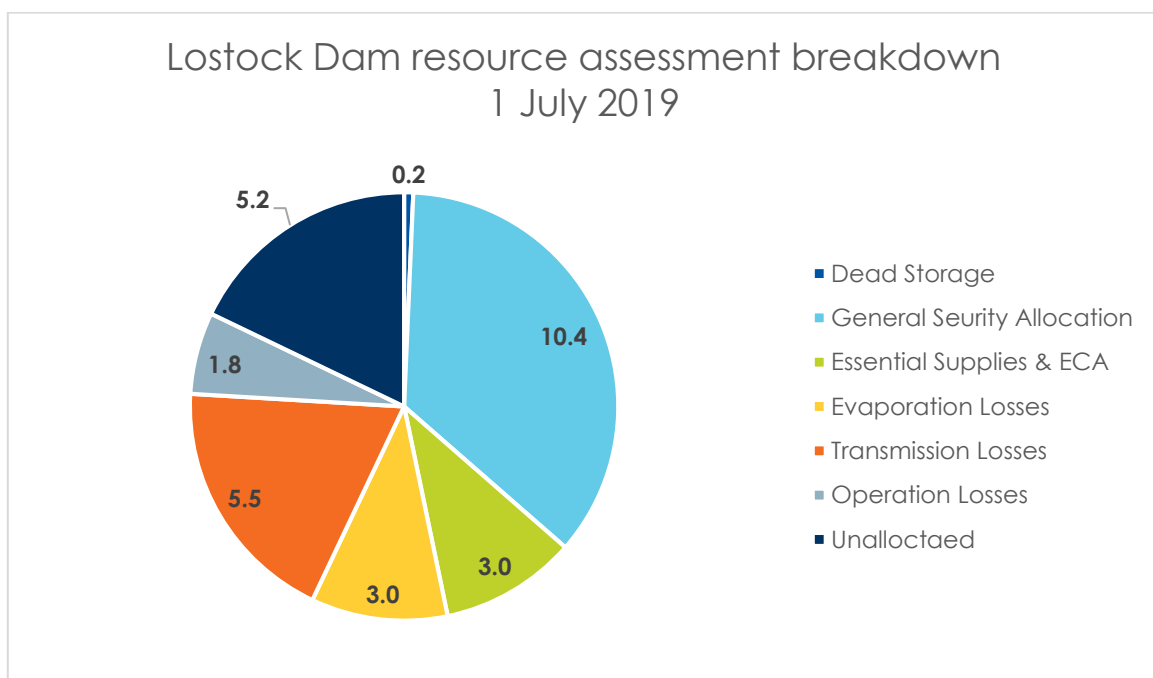
Note: Volumes in the table are in ML.

General security available water determination

Date	AWD (ML/share)	Total
1-Jul-19	1	109%

In the current water year (2019-20), 100% Available Water Determination (AWD) has been announced on 1st July 2019 for all water users including General Security (GS), High Security (HS) and Domestic and Stock (D&S). GS accounts can also carryover up to 10% of share component, and this year a volume of 865ML (9% of share component) has been carried over into 2019-20.

4.3 Resource assessment



Note: Volumes in the pie chart are in GL.

Resource Assessment	July 2019	May 2019	Jan 2018	Dec 2018	Nov 2018	Oct 2018	Sept 2018	August 2018
Storage Volume	16.9	17.8	20.01	20.1	20.2	19.5	19.5	20.1
Plus minimum inflows (storage and d/s)	12.3	0.9	1.3	1.3	2.2	3.4	4.6	7.3
Less dead storage	.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Less storage & operation loss	4.8	0.8	2.4	2.8	3.2	3.6	4	2.8
Less essential supplies	1.0	0.27	0.6	0.6	0.7	0.8	0.8	0.7
Less transmission loss	5.5	0.9	2.8	3.2	3.7	4.1	5.1	6.8
Less ECA	2	2	2	2	2	2	2	2
Less General Security	10.4	7.6	9.1	9.1	10.4	10	10.4	10.4
Allocation %	100%	100%	100%	100%	100%	100%	100%	100%

Note: Volumes in the table are in GL.

4.3.1 Significance of this resource assessment

Resource assessment at 1st of July indicates there is sufficient water to deliver all allocations including the 100% AWD announced on 1 July 2019.

Storage loss and operation loss is estimated at 4.8 GL on 1st July 2019 for the current water year. Transmission losses are the conservative estimate of the volume required to run the river under dry conditions through to June 2020 to meet all demands, which is estimated at 5.5 GL. This mostly comprises natural transmission losses as water evaporates and soaks into the river bed.

Essential supplies are estimated at 1.0GL at 1st of July which includes town water, high security licenses, S&D and minimum storage releases. Environmental Contingency Allowance (ECA) is considered 2GL for the year.

4.3.2 Resource assessment process

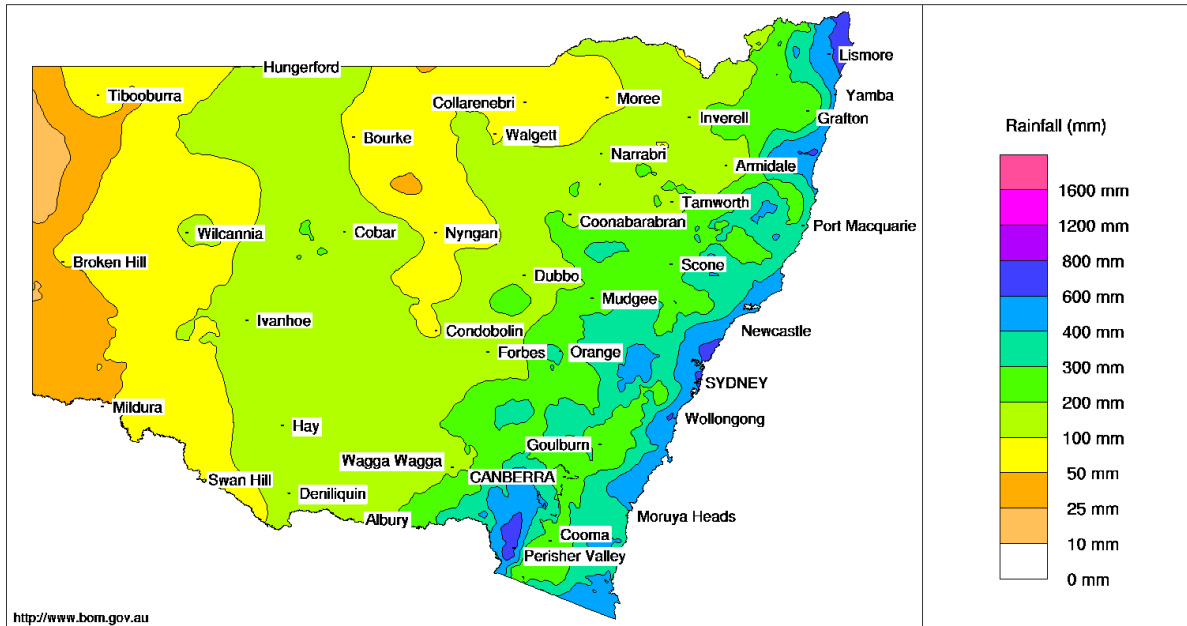
Resource Assessment is the process of calculating how much water resource is available based on the rules of the Water Sharing Plan and work approvals. This is reviewed periodically during the year, typically at the end of the month and when any significant inflow event happens.

From the above resource assessment summary table, the latest resource assessment has been done on 1st of July 2019. Planning horizon for this resource assessment is July 19 to June 20. For this current water year, total resource available is the sum of Lostock storage volume and the minimum expected dam and usable downstream inflows over remainder of the year. From the resource assessment summary table, it can be seen that total available resource is $16.9 + 12.3 = 29.2$ GL. The sum of commitments for the current water except GS from the above summary table is $0.2 + 4.8 + 1.0 + 5.5 + 2 = 13.5$ GL. Therefore, the amount of water available for GS users including carryover is $29.2 - 13.5 = 15.7$ 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 January to 30 June 2019
Australian Bureau of Meteorology



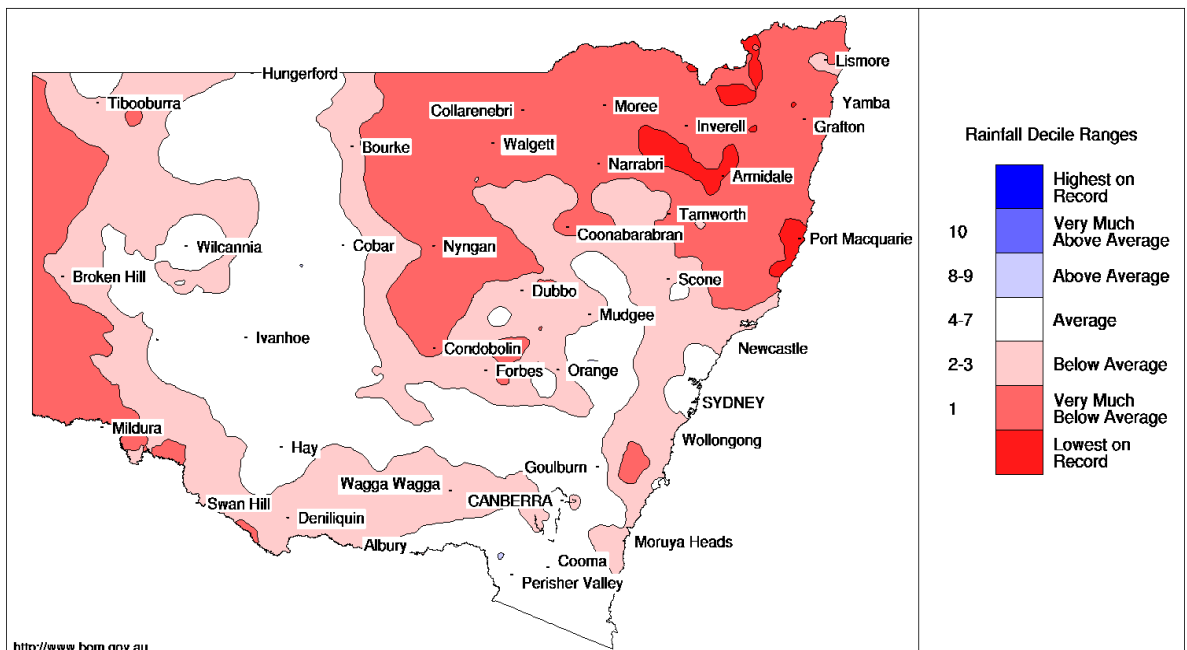
<http://www.bom.gov.au>

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New South Wales Rainfall Deciles 1 January to 30 June 2019

Distribution Based on Gridded Data
Australian Bureau of Meteorology



<http://www.bom.gov.au>

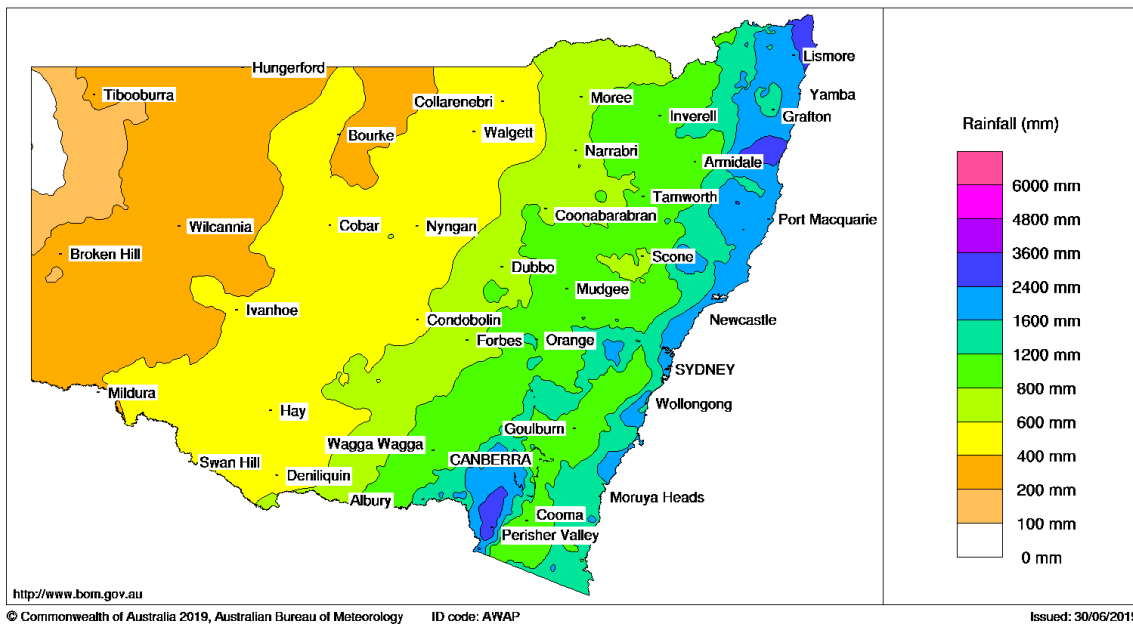
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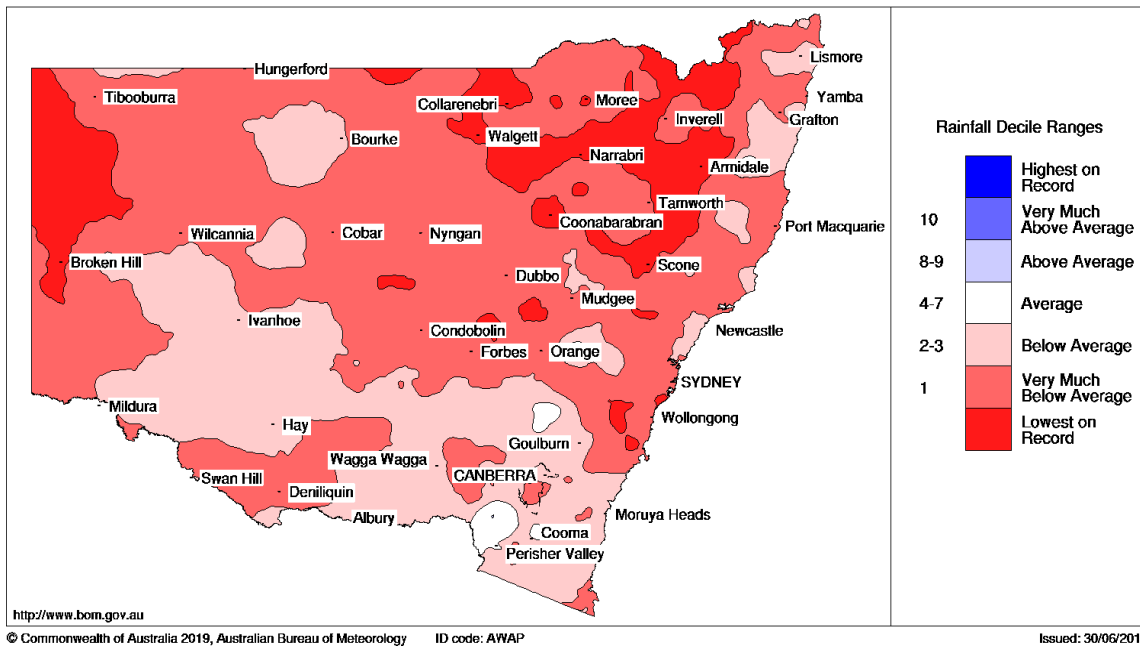
From the above figures the last 6-month total rainfall lies in the range of 300 to 600 mm, which is in the average range.

5.2 24-month rainfall

New South Wales Rainfall totals (mm) 1 July 2017 to 30 June 2019
Australian Bureau of Meteorology



New South Wales Rainfall Deciles 1 July 2017 to 30 June 2019
Distribution Based on Gridded Data
Australian Bureau of Meteorology

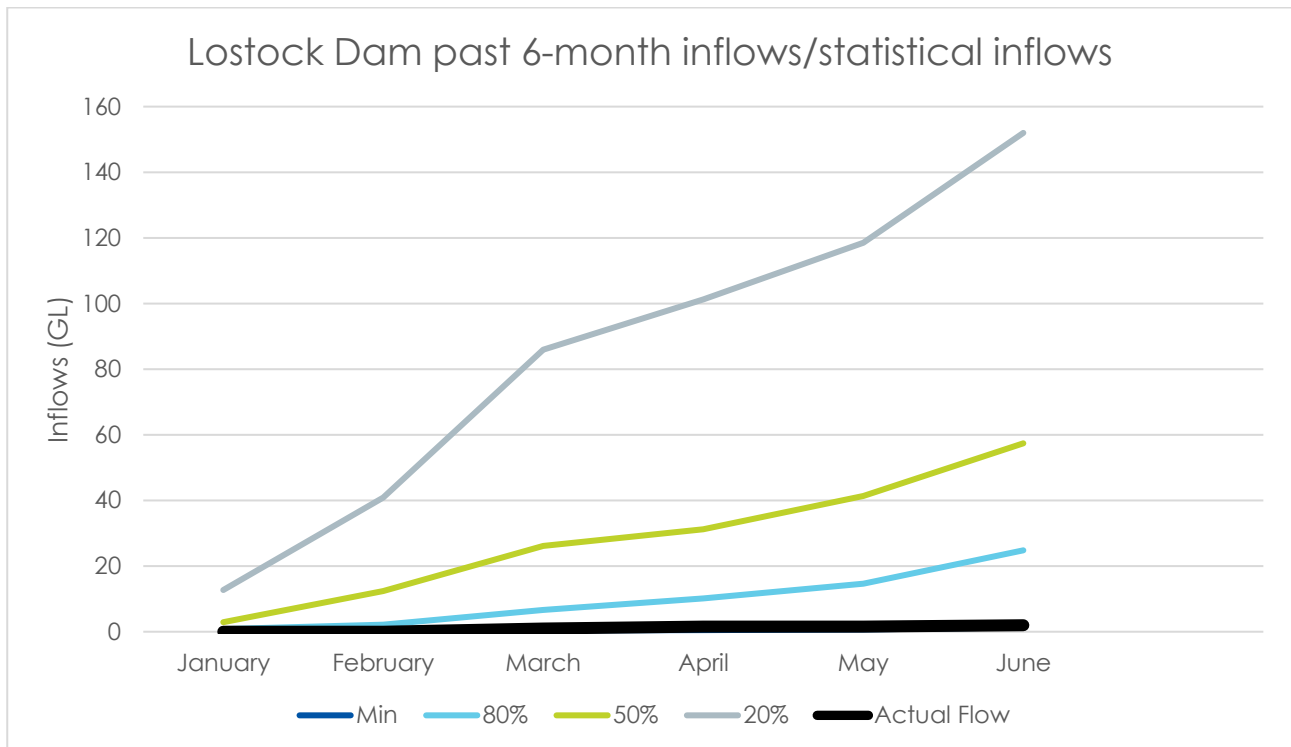


From the above figures the last 24-month total rainfall lies in the range of 1600 to 2400mm, which is below average.

6. Inflows

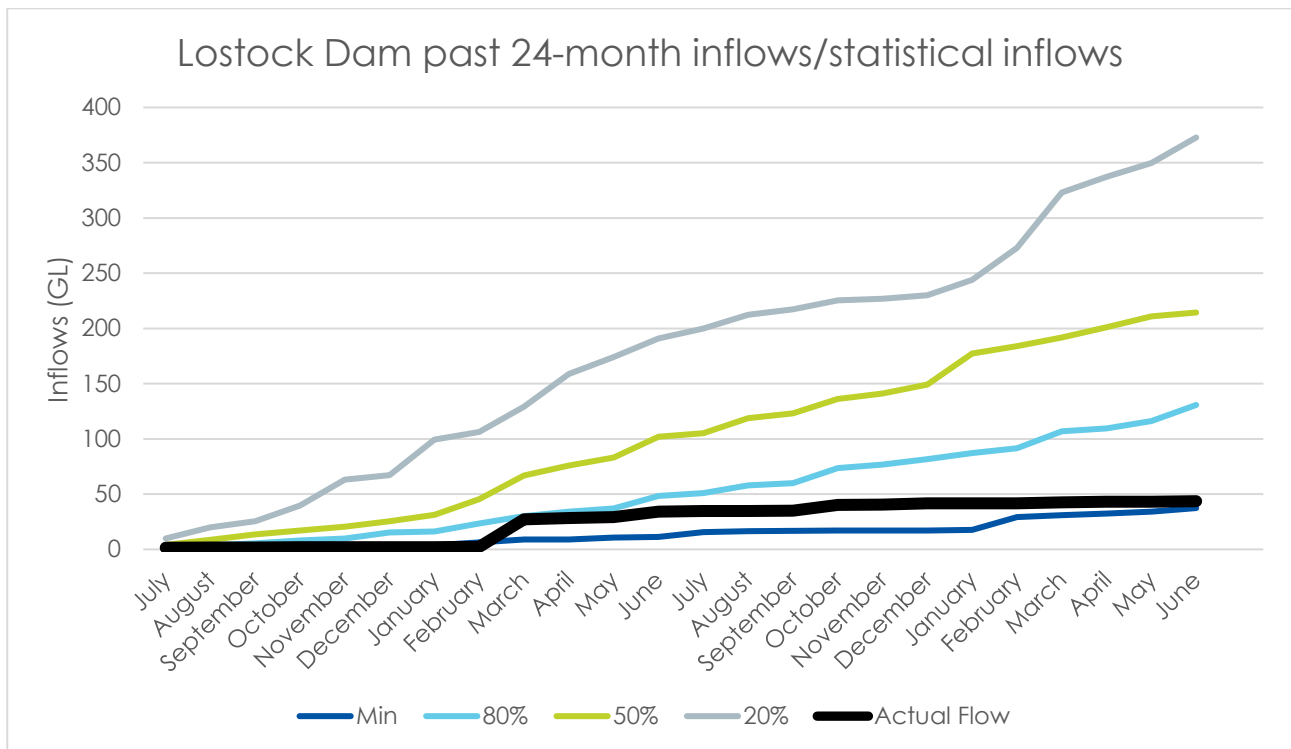
6.1 Lostock Dam inflows

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 1.97 GL, between the minimum and 80th 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 43 GL, between the minimum and 80th percentiles.

6.3 Downstream tributary inflows

There were no significant downstream tributary inflows in the past year (2018 – 19).

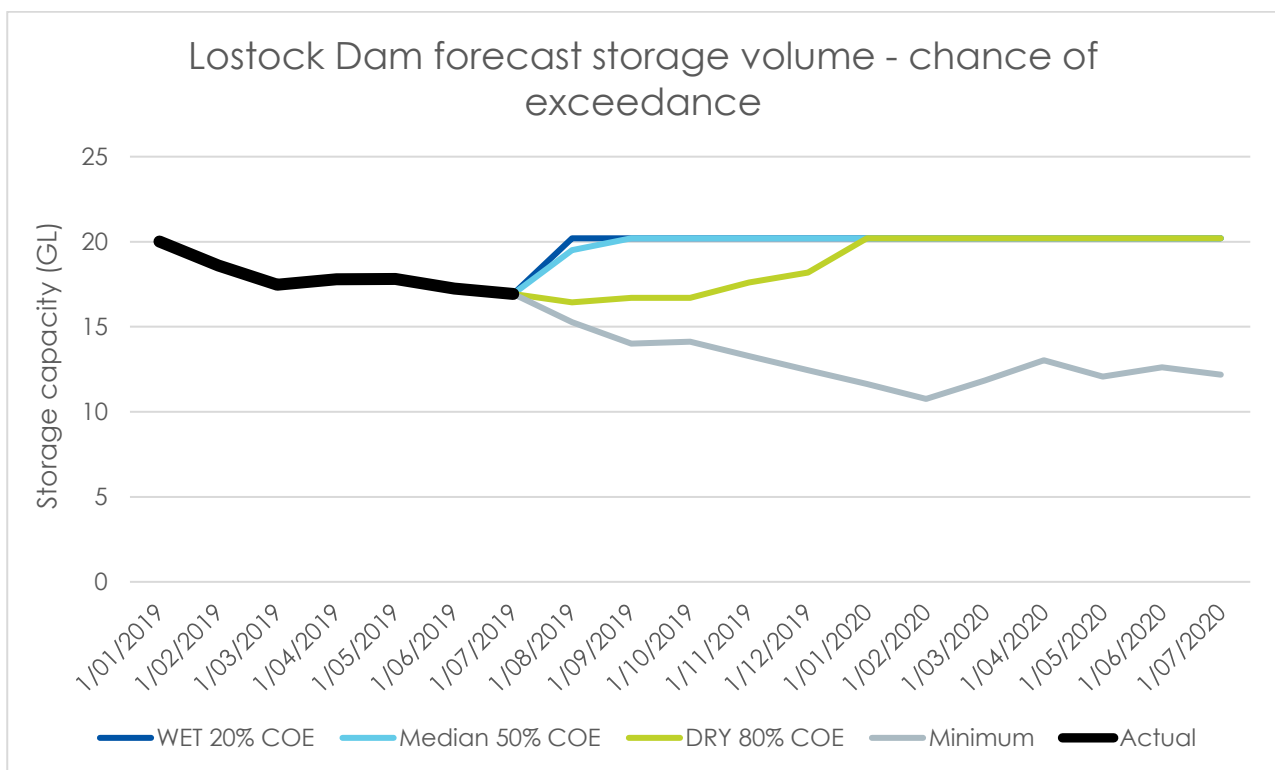
7. Operational surplus

7.1 Operational surplus for Lostock Dam

N/A

8. Storage forecast

8.1 Lostock storage forecast



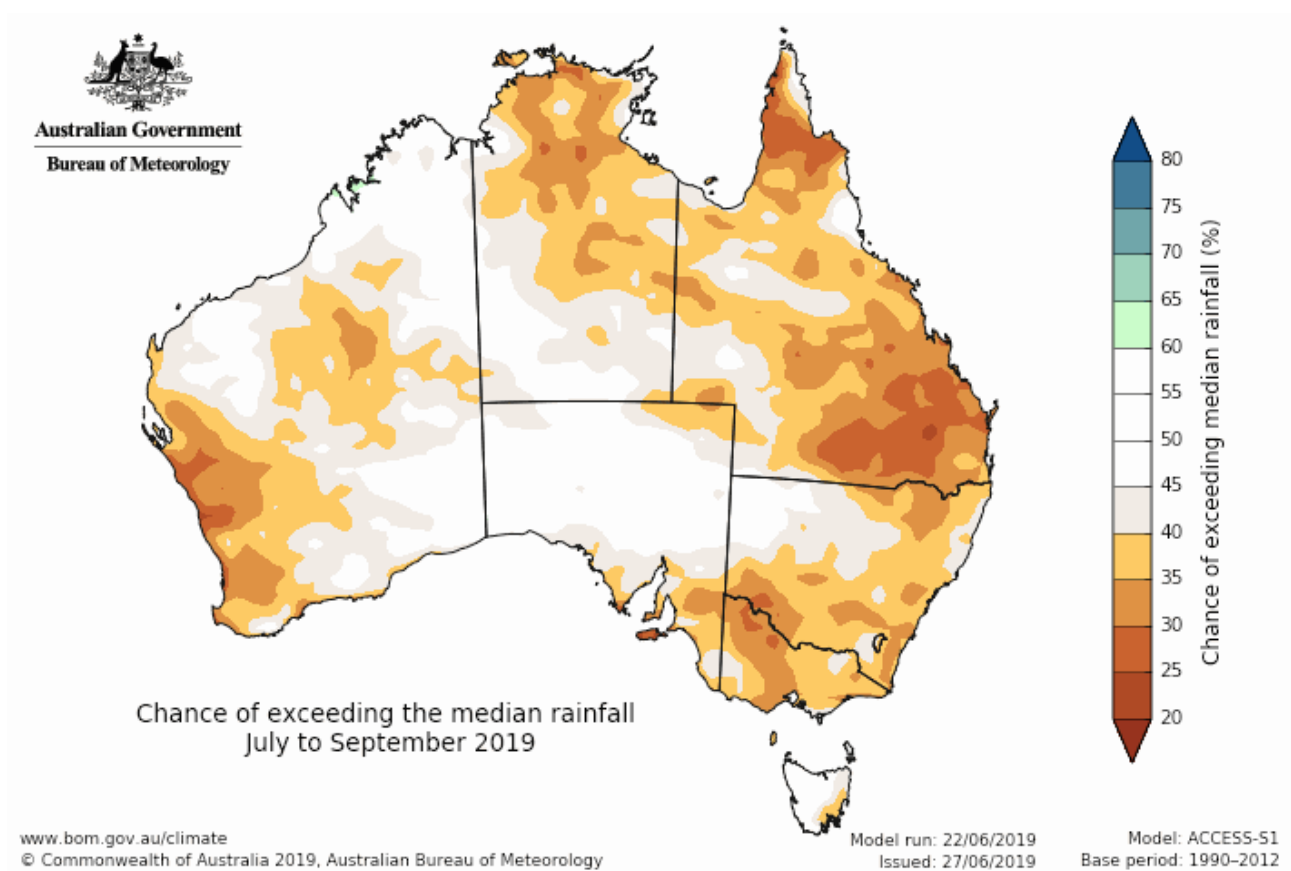
Above figure demonstrate the possible scenarios of Lostock Dam until end of June 2020. The scenarios are based on different expected inflow conditions. With the minimum inflow conditions, the dam would be around 12.2 GL by June 2020. The minimum inflow condition assumes that all remaining general security 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

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



The above figure shows an increased likelihood of drier than average rainfall over the next three months.

More information

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