Border Rivers Operations Plan

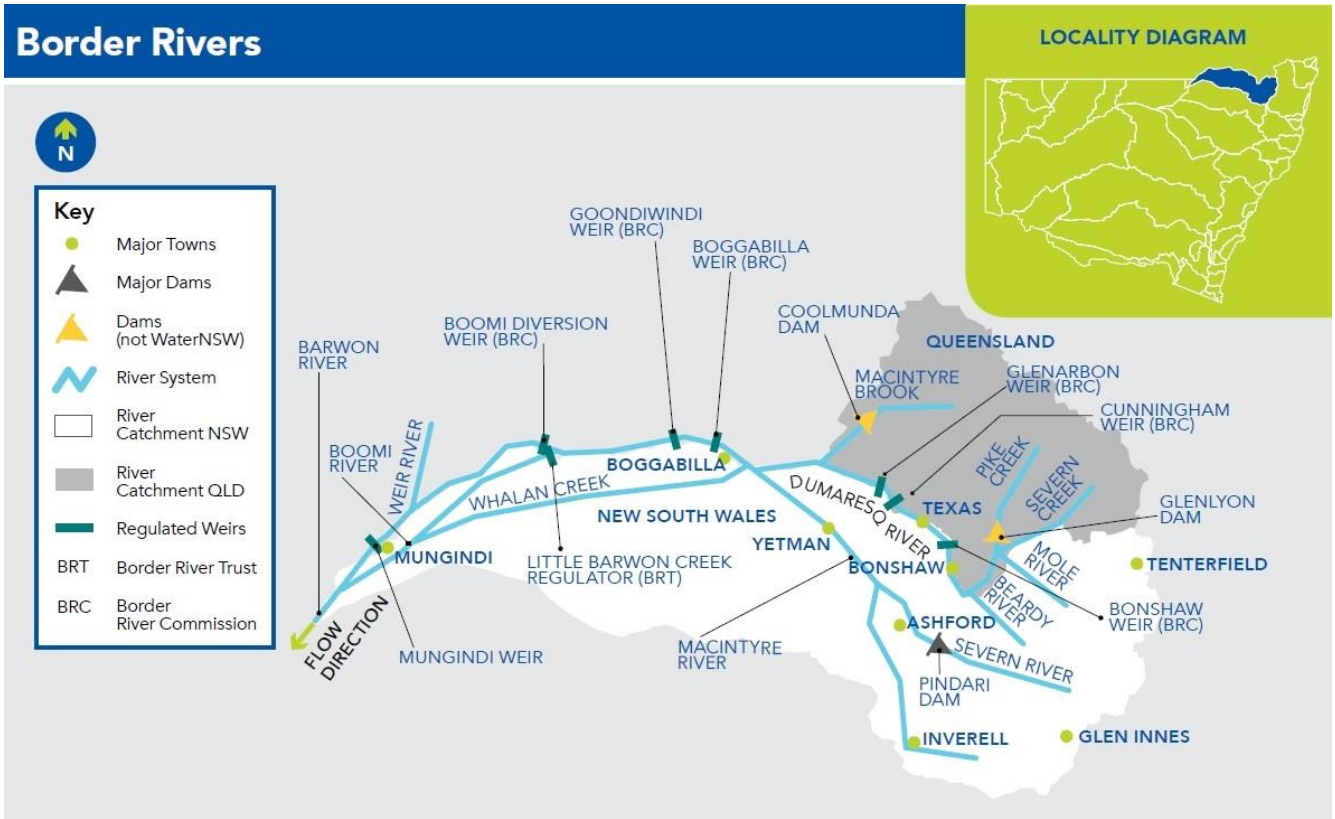
March 2019

waternsw.com.au

Contents

1. Highlights

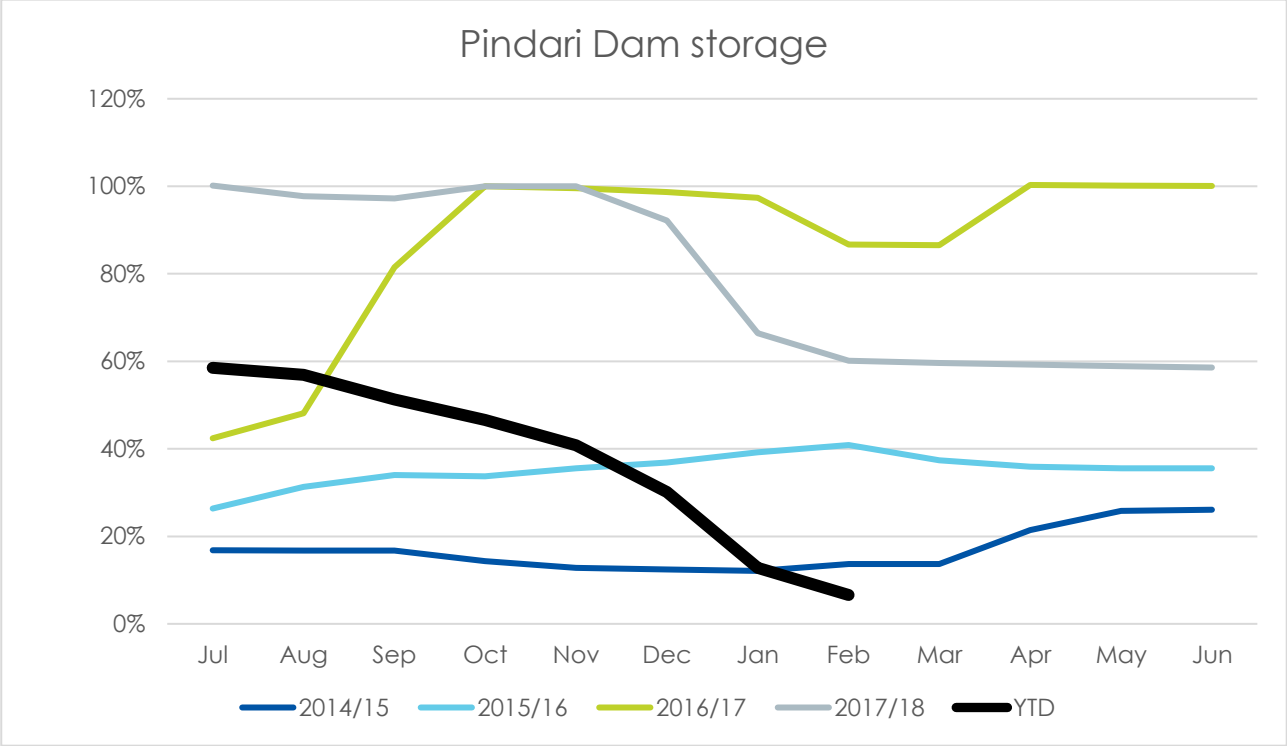
- Dry conditions continue with low inflows since February 2018.
- Due to dry conditions, orders for west of Boomi were delivered in distinct blocks throughout 2018/19 irrigation season. Final deliveries have been released.
- Supply on demand was available to the customers upstream of Boomi. Final deliveries are expected to finish before mid-March.
- Around 3.2 GL was delivered over January and February for the bi-annual Boomi replenishment flow. Future Boomi replenishment deliveries are secure under a minimum inflow sequence.
- Under a minimum inflow sequence conditions are forecast to improve prior to cessation of supply.



2. Dam storage

2.1 Pindari Dam storage

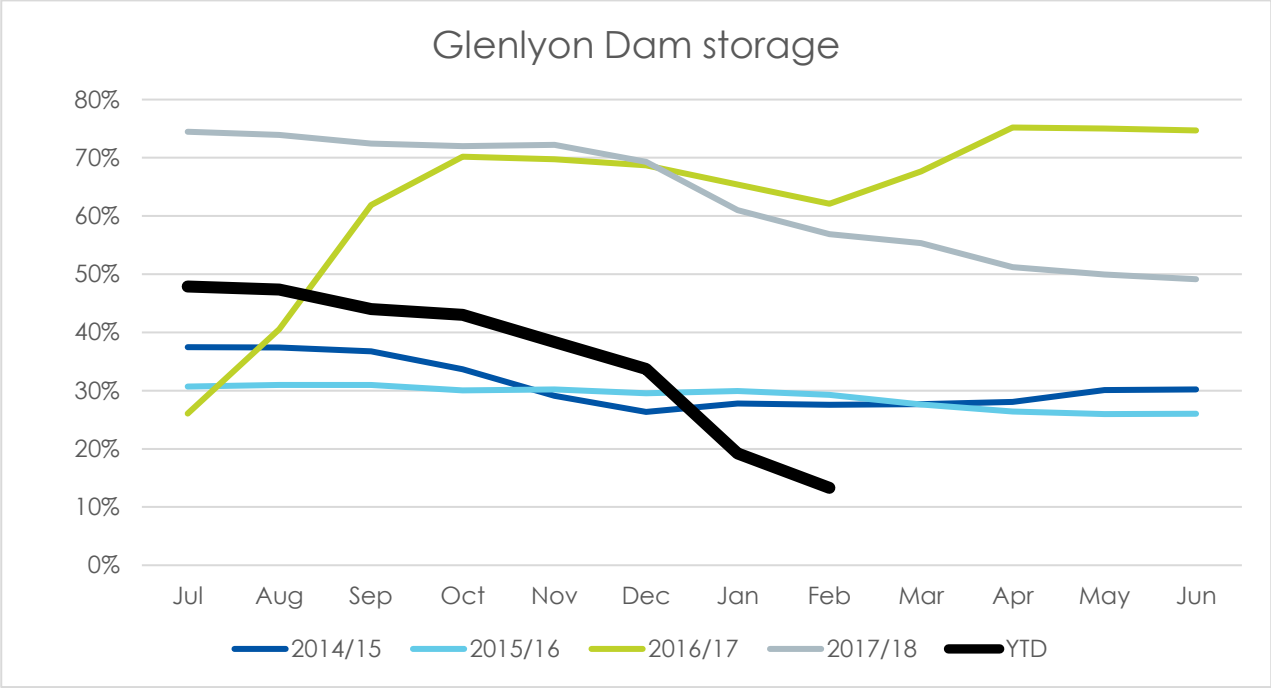
The below figure shows the Pindari Dam behaviour for the 2018-19 water year compared to the last four water years.



The dam was 59% full in July 2018 and reduced to 7% over the last eight months. No significant inflow has arrived at the dam this water year, so the storage shows a continuous decreasing trend. Releases have been made for irrigation orders and Boomi River replenishment flows.

2.2 Glenlyon Dam storage

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



Glenlyon Dam volume was around 48% at the start of the current water year and it is now close to 13%. No significant inflow has occurred from February 2018.

3. Supplementary access

3.1 Commentary

No supplementary events have occurred in this current (2018-19) water year. There were two supplementary events in the Border Rivers during 2017/18 water year; July 2017 and October 2017.

3.2 Explanation

In the Border Rivers, supplementary events commence when the flow volume entering, or expected to enter this water source over a two-day period at Goondiwindi is a minimum of 10,000 ML. No such events have occurred since October 2017.

4. Water availability

4.1 2018/2019 water availability for Border Rivers

This information was current as 28 February 2019.

Licence category	Share component	Carryover in	AWD volume	Allocation assignments in	Allocation assignments out	Usage	Balance
Domestic and stock	850	0	850	0	0	725	122
Domestic and stock (domestic)	51	0	51	0	0	3	48
Domestic and stock (stock)	100	0	100	0	0	30	70
Local water utility	640	0	640	0	0	286	354
Regulated river (general security A)	22,007	588	7,220	160	833	6,178	820
Regulated river (general security B)	241,211	139,881	0	7,094	10,303	128,411	8,213
Regulated river (high security)	1,500	0	1,500	0	400	993	106
Supplementary water	120,001	0	120,001	2,044	2,044	0	120,001
Interstate trade	0	0	0	4283	0	4283	0
Grand total	386,360	140,469	130,362	13,581	13,581	140,909	129,733

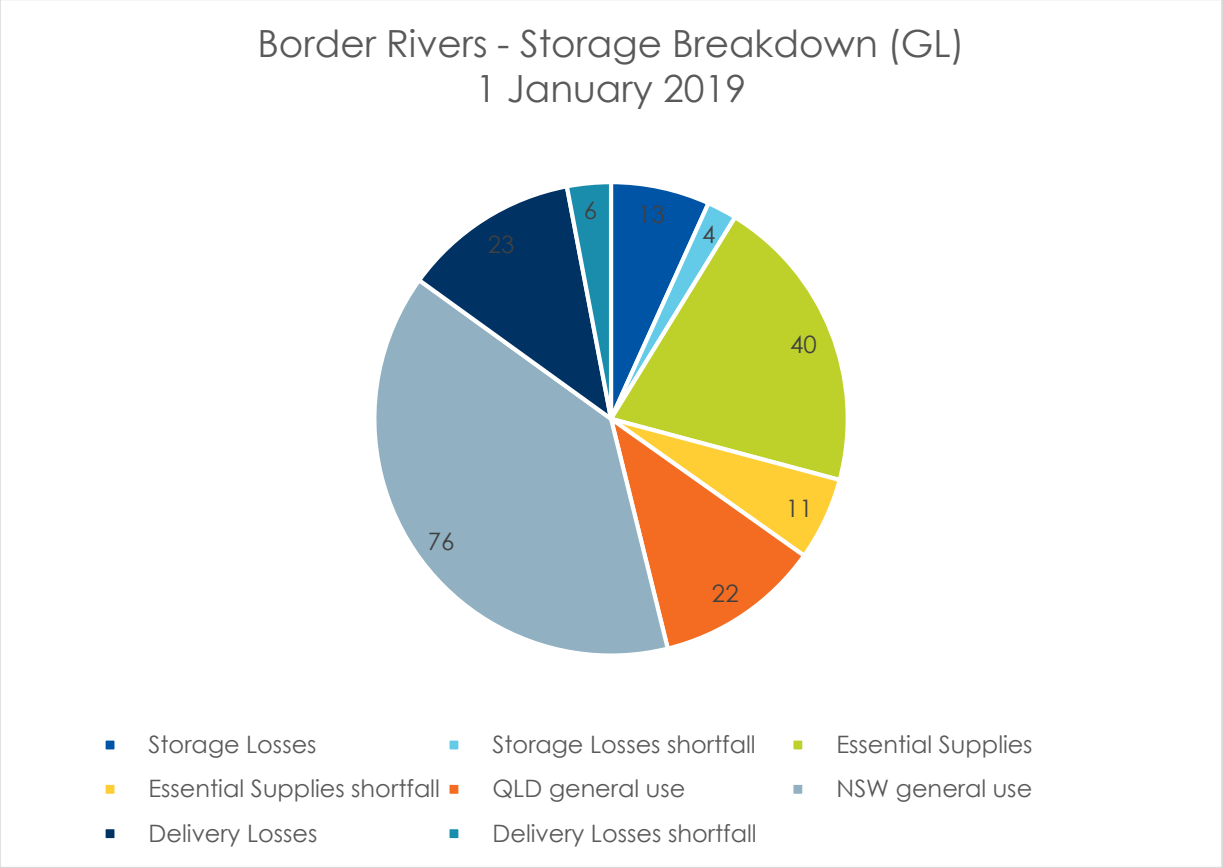
General security available water determination

Date	AWD (ML/share)	Total GS A Class (%)	Total GS (%)
01/07/2018	0.23*	23.0	1.8
10/10/2018	0.098*	32.8	2.7

*General Security A class licences only

- From the last water year 2017-18, 140,469 ML of water has been carried over in General Security accounts (combined A and B). In this current water year (2018-19), total water usage till 28 February 2019 is 140,909 ML of which 138,872 ML is general security usage.
- In this current water year, a 23% Available Water Determination (AWD) has been announced on 1st July 2018 for general security A class licences. This was increased by 9.8% on 10 October 2018 to a total of 32.8%, which is equivalent to 2.7% of total general security shares. No allocation has been made for General Security B class licences. For other water users (e.g. high security and town water supply), the AWD is 100%.

4.2 Resource assessment



4.2.1 Significance of this resource assessment

The last BRC approved resource assessment at 1 January 2019 indicates that there is a shortfall of 20.8 GL. Therefore, a minimum 20.8 GL of inflow is required before any AWD announcement is possible.

4.2.2 Resource assessment process

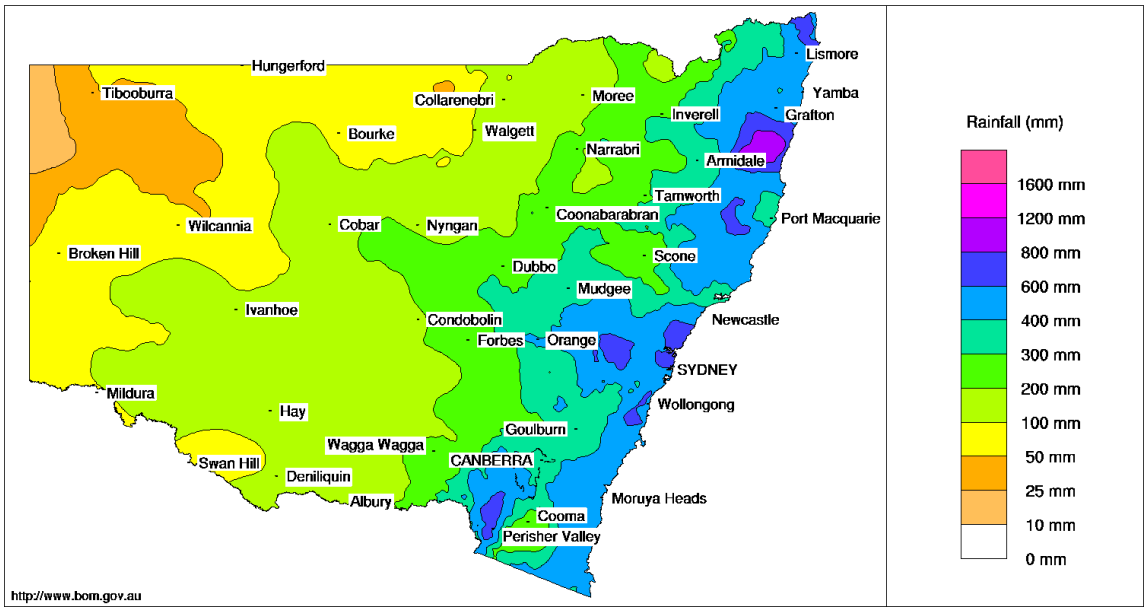
Resource Assessment is the process of calculating how much water is available based on the water sharing rules. This is done periodically during the year, typically at the end of the month and when any significant inflow event happens. The planning horizon for this resource assessment is 24 months. This resource assessment is from January 2019 to December 2020. The minimum inflow sequence also considers the period from January 2019 to December 2020. At the 1st of January, the total resource available is the sum of the Pindari storage volume, NSW's share of Glenlyon storage and the minimum expected inflow over the planning horizon. Commitments for the planning horizon are subtracted to find the remaining available resource for AWD announcements. Currently the total commitment is higher than the available resource and the shortfall is about 20.8 GL. No significant inflow was recorded since the last assessment. Therefore, no additional allocation is possible.

5. Rainfall

5.1 6-month rainfall

New South Wales Rainfall totals (mm) 1 September 2018 to 28 February 2019

Australian Bureau of Meteorology



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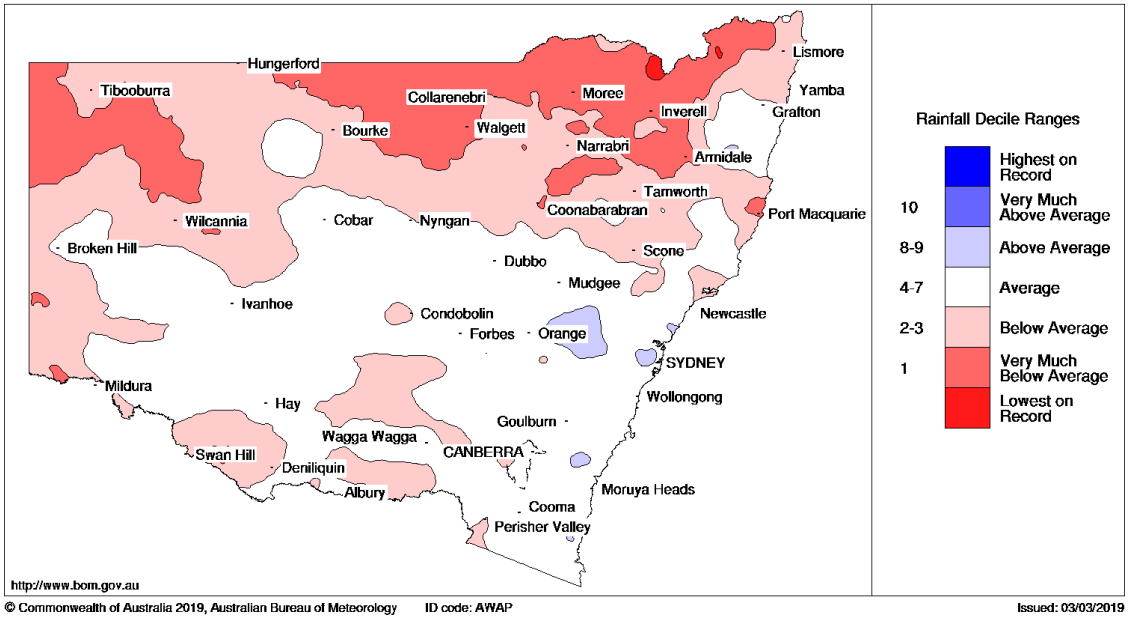
New South Wales Rainfall Deciles 1 September 2018 to 28 February 2019

Distribution Based on Gridded Data

Australian Bureau of Meteorology



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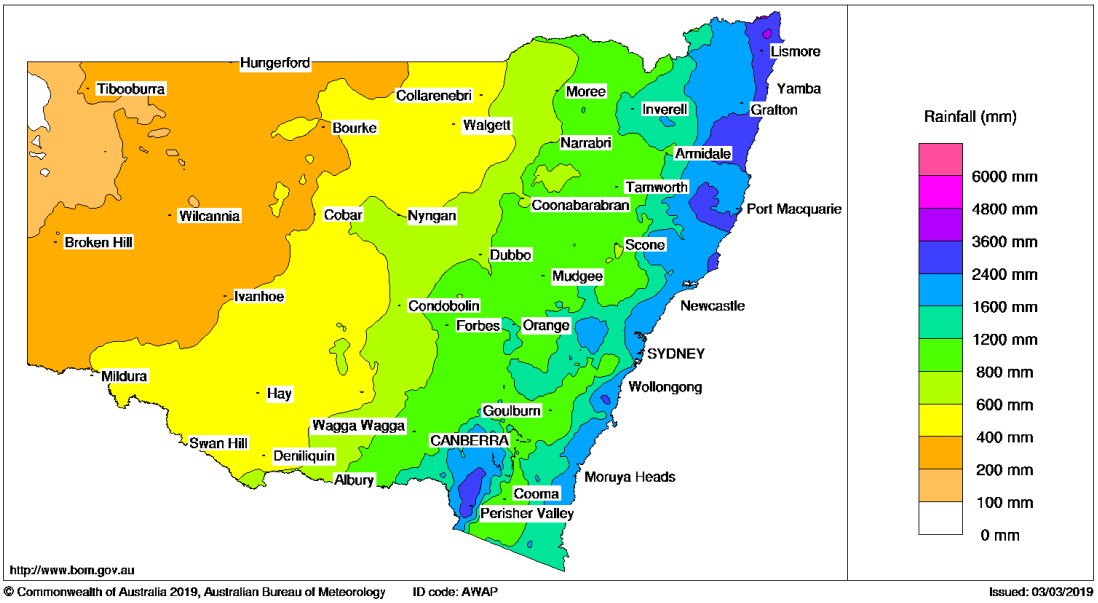
The above figures indicate that rainfall varies across the catchment. During last 6-months, total rainfall lies is in the range of 100 to 400mm which is very much below average.

5.2 24-month rainfall

New South Wales Rainfall totals (mm) 1 March 2017 to 28 February 2019

Australian Bureau of Meteorology



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New South Wales Rainfall Deciles 1 March 2017 to 28 February 2019

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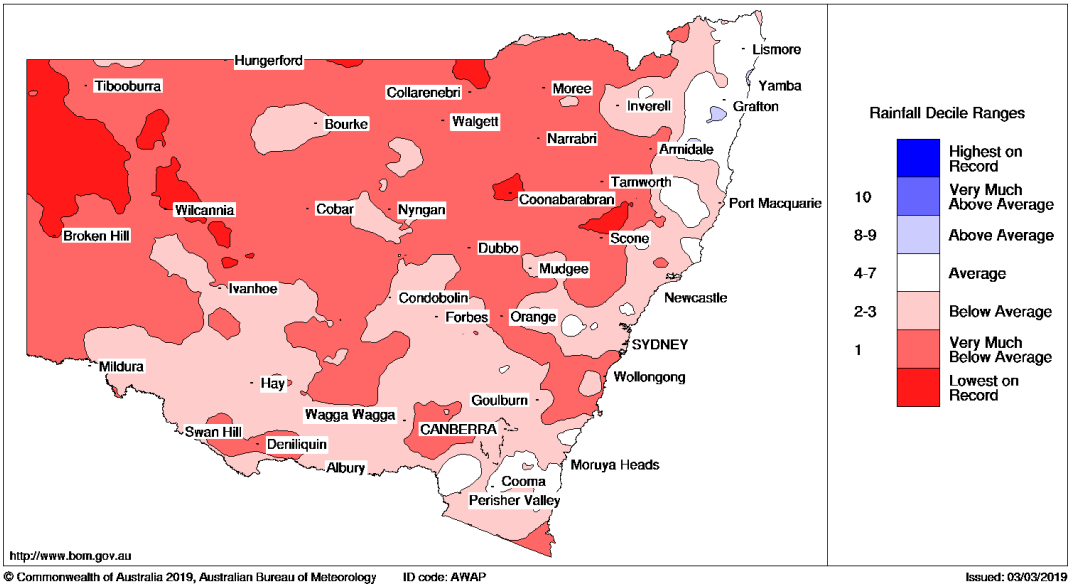

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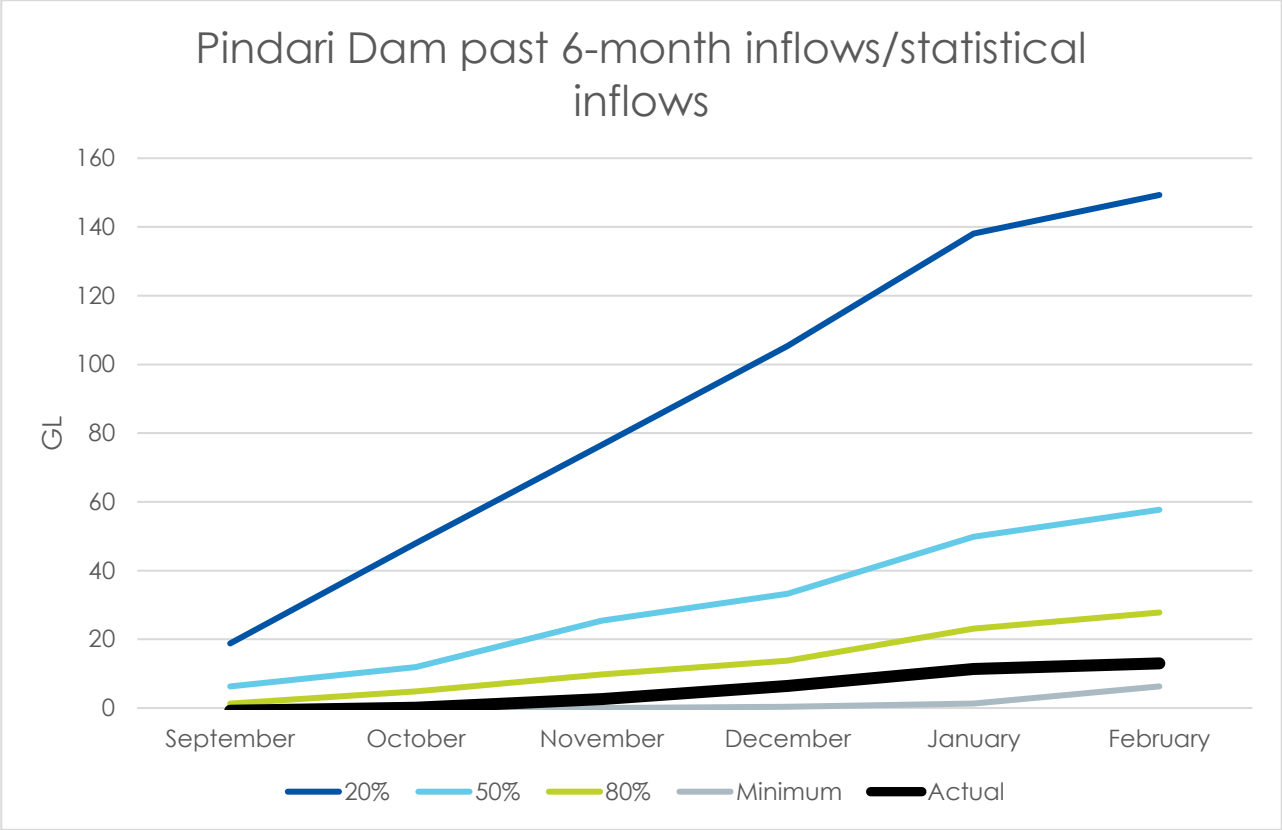
During the last 24-months, total rainfall lies is in the range of 600 to 1600mm which is below to very much below average.

6. Inflows

6.1 Pindari Dam inflows

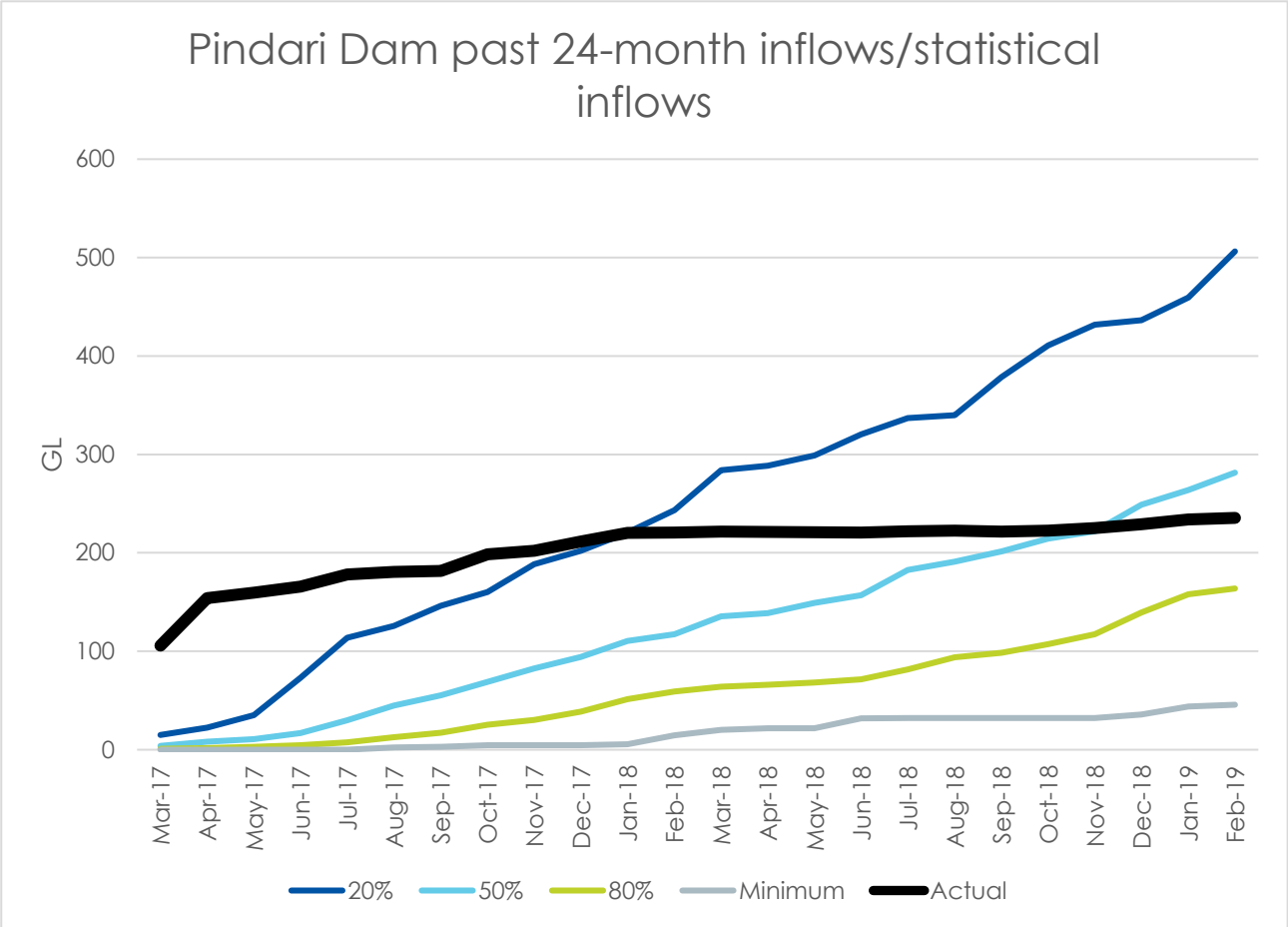
6.1.1 Pindari Dam past 6-month inflows/statistical inflows



Above figure shows the last 6 months inflow to the Pindari Dam compared to statistical inflows. The estimated inflow for the last 6 months is around13 GL[1] which is close to 95th percentile inflow (13.5 GL). The minimum recorded inflow for a 6 month period starting from September is 6.3 GL.

[1] Inflows are estimated based on a standard water balance formula using storage volume differences, evaporations and releases. Upstream gauge flow and rainfall indicate that there is very little to no inflow into the dam during last few months. WaterNSW is currently reviewing the calculation procedures to identify the source of recent overestimated inflow figures.

6.1.2 Pindari Dam past 24-month inflows/statistical inflows

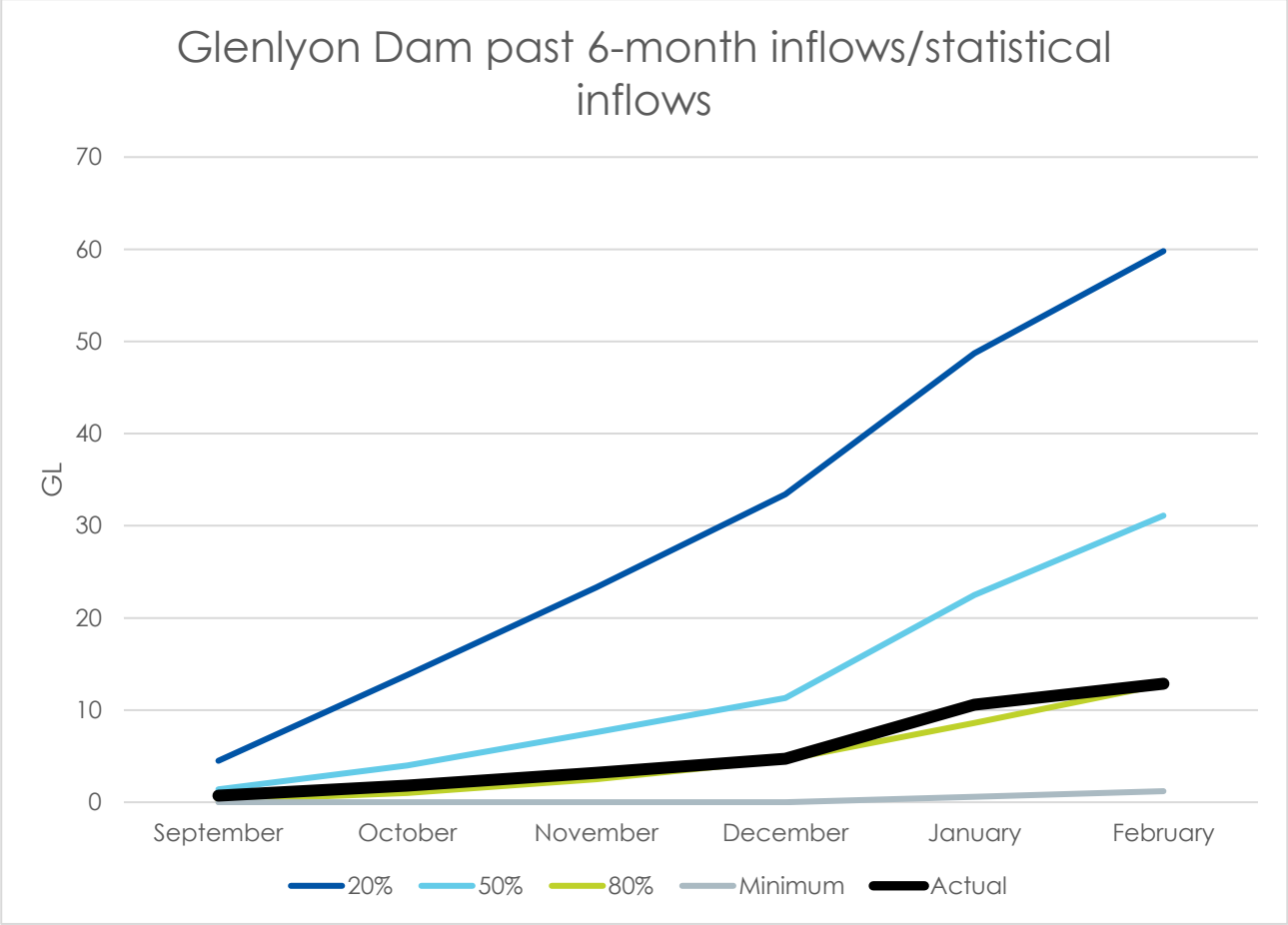


Above figure shows the last 24 months inflow to the Pindari Dam compared to statistical inflows. Estimated inflow for the last 24 months is 236 GL[2] which is above the 60th percentile inflow (227 GL). The minimum recorded inflow for a 24 month period starting from March is 46 GL.

[2] Inflows are estimated based on a standard water balance formula using storage volume differences, evaporations and releases. Upstream gauge flow and rainfall indicate that there is very little to no inflow into the dam during last few months. WaterNSW is currently reviewing the calculation procedures to identify the source of recent overestimated inflow figures.

6.2 Glenlyon Dam inflows

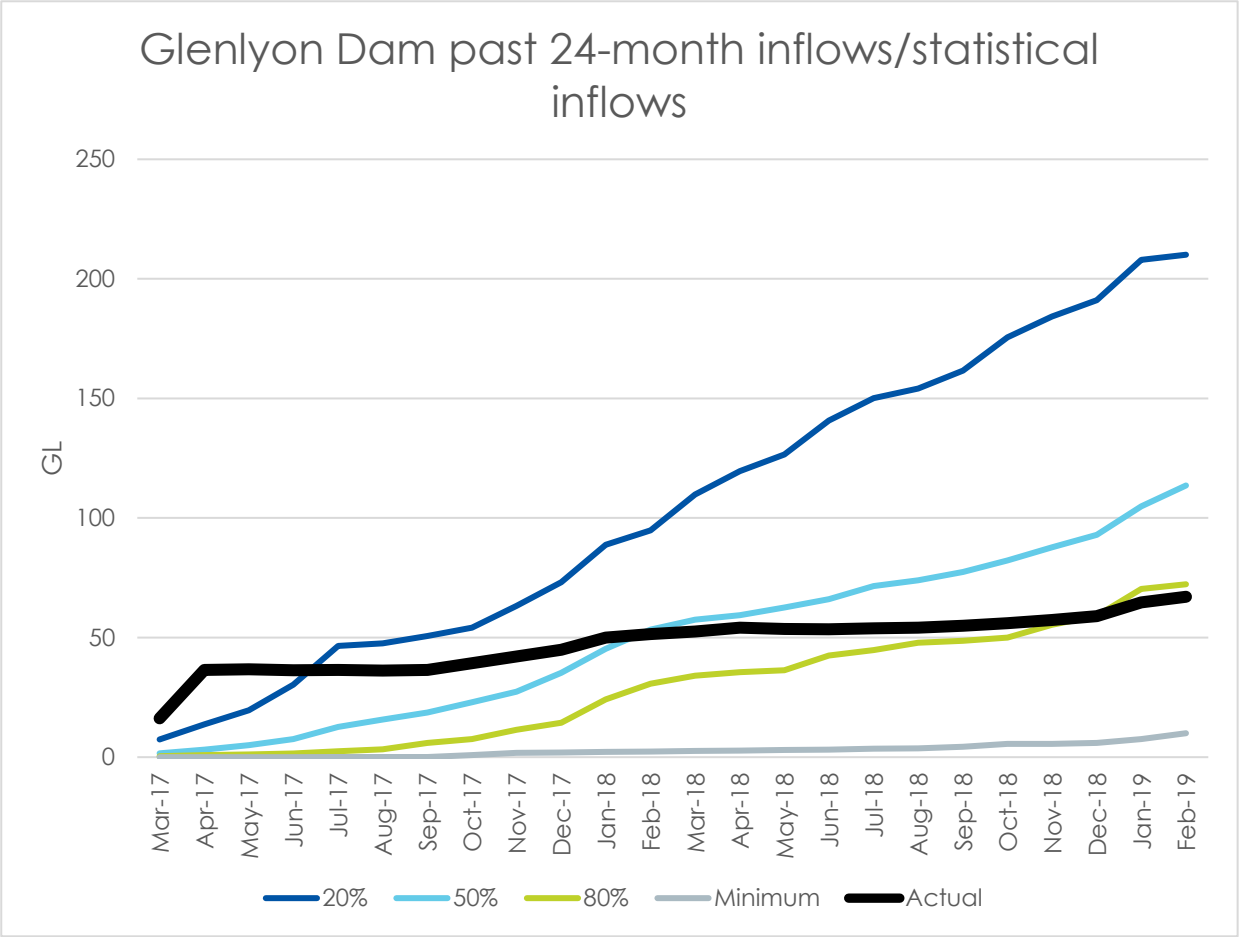
6.2.1 Glenlyon Dam past 6-month inflows/statistical inflows



Above figure shows the last 6 months inflow to the Glenlyon Dam compared to statistical inflows. Estimated inflow for the 6 months is around 13 GL[3] which is above the 80th percentile inflow (12.8 GL) while minimum is 1.2 GL.

[3] Inflows are estimated based on a standard water balance formula using storage volume differences, evaporations and releases. Upstream gauge flow and rainfall indicate that there is very little to no inflow into the dam during last few months. WaterNSW is currently reviewing the calculation procedures to identify the source of recent overestimated inflow figures.

6.2.2 Glenlyon Dam past 24-month inflows/statistical inflows



Above figure shows the last 24 months inflow to the Glenlyon Dam compared to statistical inflows. Estimated inflow for the 24 months is around 67 GL[4] which is below the 80th percentile inflow (72 GL); while the minimum is 10 GL.

6.3 Downstream tributary inflows

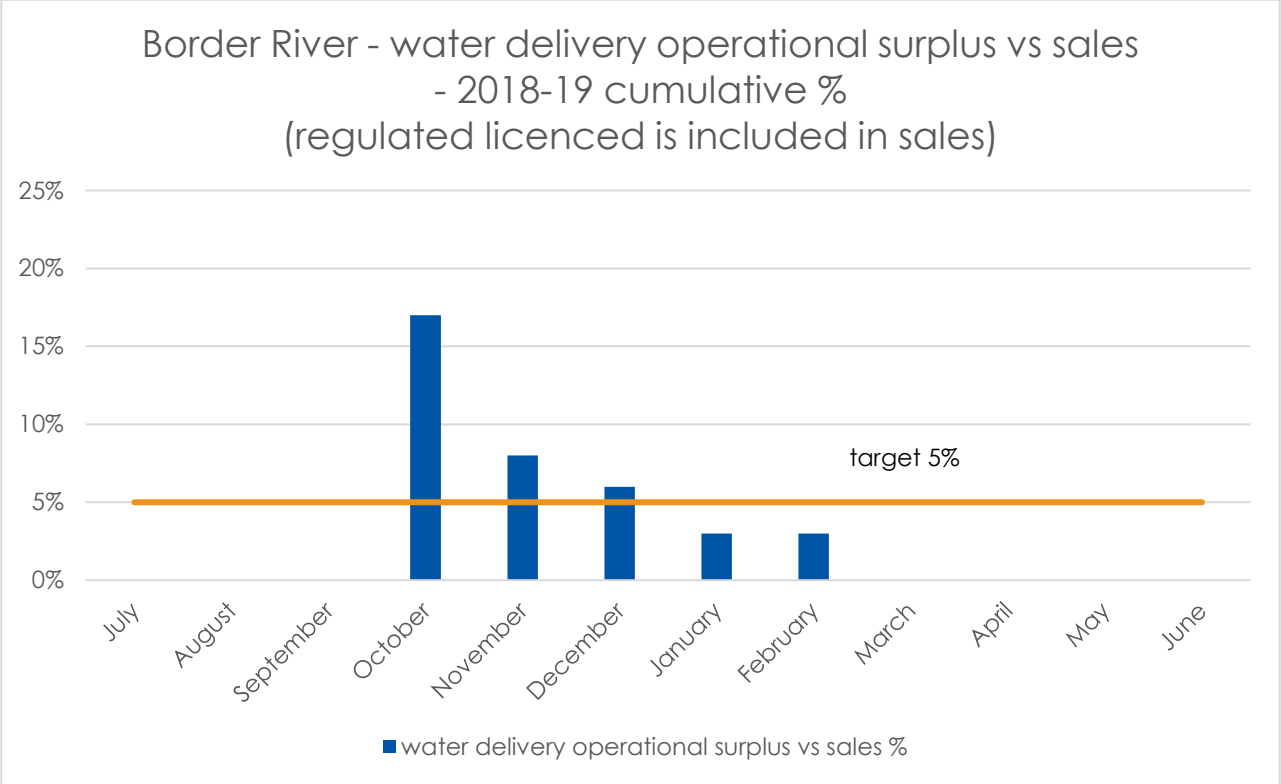
No significant downstream tributary inflows have been recorded during this water year (July 2018 to February 2019). The total amount of tributary flow recorded during this time is about 3.7 GL

[4] Inflows are estimated based on a standard water balance formula using storage volume differences, evaporations and releases. Upstream gauge flow and rainfall indicate that there is very little to no inflow into the dam during last few months. WaterNSW is currently reviewing the calculation procedures to identify the source of recent overestimated inflow figures.

7. Operational surplus

7.1 Operational surplus for 2018-19

Operational loss is water above that which could reasonably be expected to pass the last extraction point on each given river/creek being supplied with regulated flow (dam releases and controlled tributary inflows – not supplementary flows). For the Border Rivers catchment, the last extraction point is Mungindi.

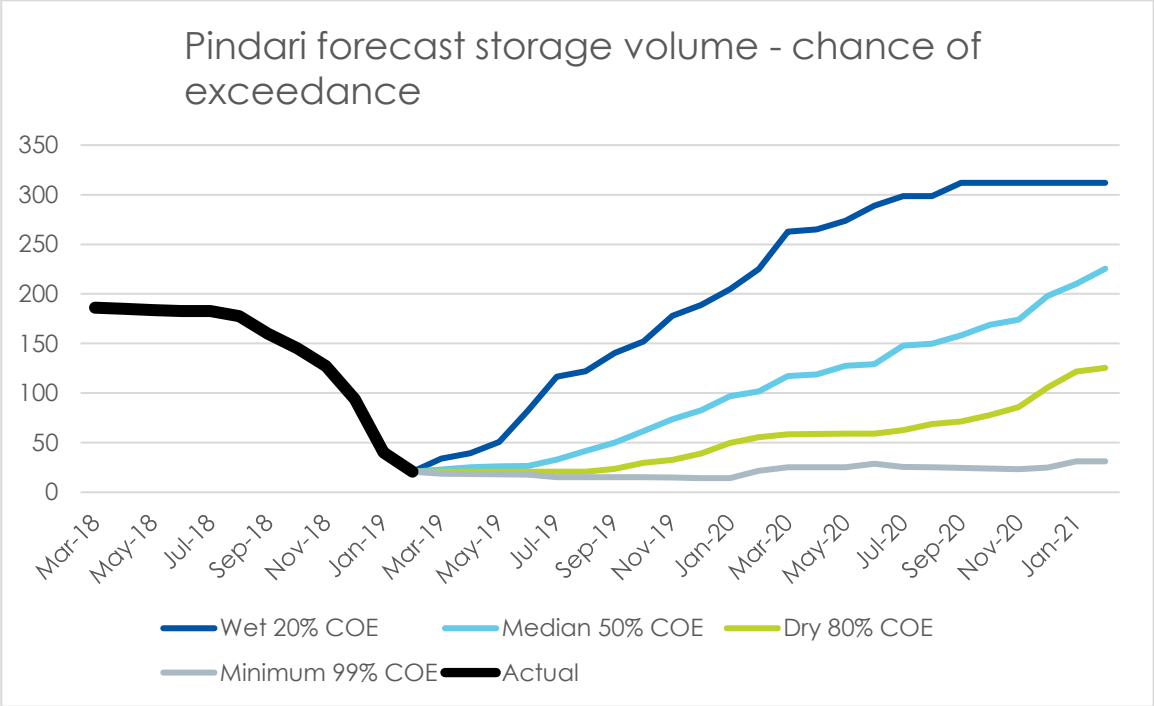


Border cumulative totals				
Dates	**Sales + environmental delivery (ML)**	**Cumulative Operational surplus (ML)**	**Actual Monthly Operational Surplus**	**Target Monthly Operational Surplus**
July	100	0	0%	5%
July-Aug	2,617	0	0%	5%
July-Sep	4,516	0	0%	5%
July-Oct	18,516	3,139	17%	5%
July-Nov	43,030	3,291	8%	5%
July-Dec	62,700	3,533	6%	5%
July – Jan	117,368	3,846	3%	5%
July – Feb	135,810	4527	3%	5%

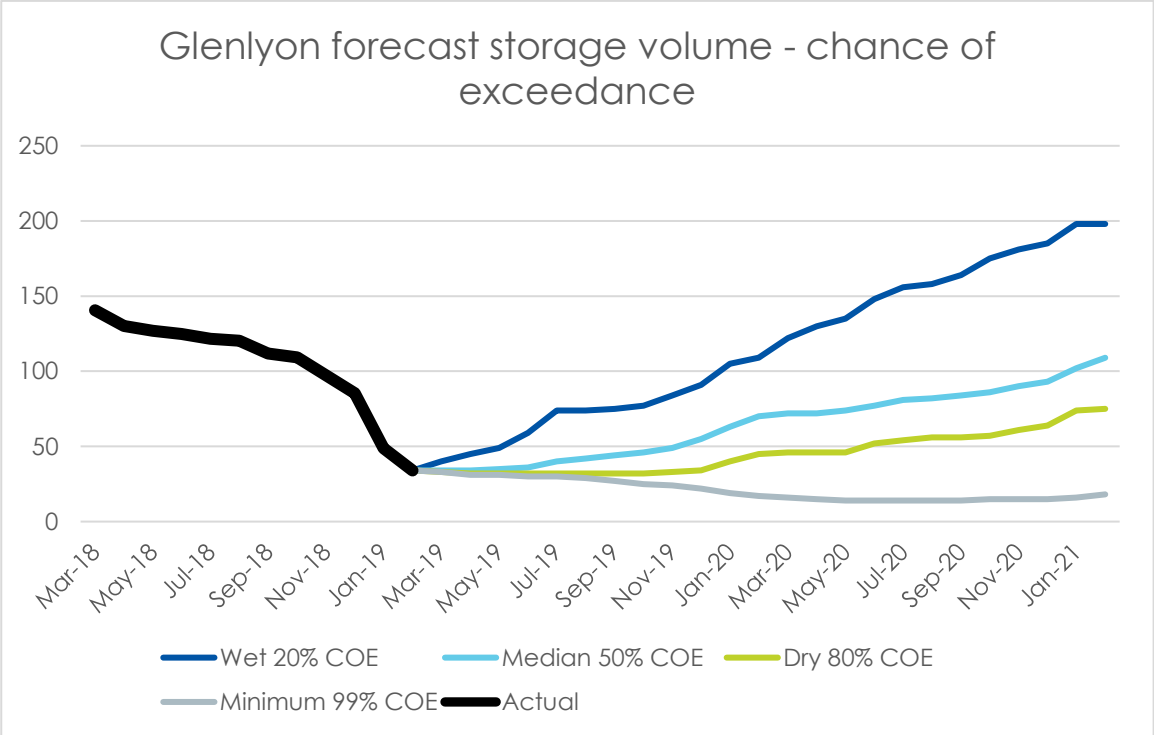
8. Storage forecast

The storage of Pindari is solely for NSW users and the storage of Glenlyon Dam is shared between New South Wales and Queensland in the ratio 57:43 respectively. The below figure demonstrates the possible scenarios for Pindari and Glenlyon Dam until February 2021. The scenarios are based on different expected inflow conditions. For example, with the 20th percentile inflow, Pindari Dam may be full (100%) at the end of Sep 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, the wet 20% COE indicates that there is only a 20% of chance that the dam volume will be greater than the projected volume, and there is an 80% chance that the dam volume will be less than the projected volume.

8.1 Pindari storage forecast



8.2 Glenlyon storage forecast



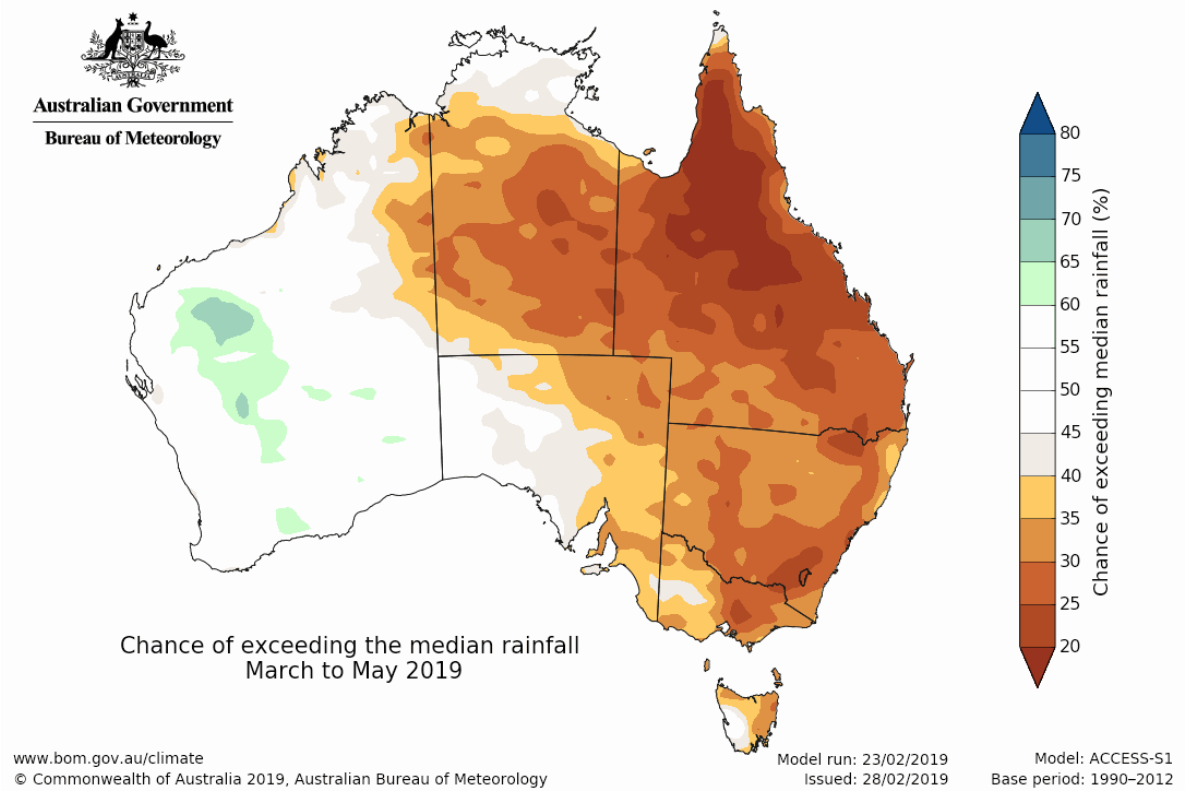
9. Outage planning

Item	Time	Description
Pindari Dam	Details to be advised	Valve replacements
Glenlyon Dam	N/A	None
Boggabilla weir	N/A	None

10. Prognosis

Possible General Security Allocations based on different inflow scenarios are as follows:

	Extremely dry (minimum inflows)	Dry (80th percentile inflows)	Average (50th percentile inflows)	Wet (20th percentile inflows)
3-month forecast to 31-May -19	0%	0%	0%	7.5%
6-month forecast to 31-Aug -19	0%	0%	9.5%	40.0%



The inflows for last 6 months were below the 95th percentile inflows for Pindari and above the 80Th percentile for Glenlyon. Under the minimum inflow sequence and 80th percentile sequence, no additional AWD is likely for the next 6 months. If the catchment receives 50th percentile inflow, there is a chance of a 9.5% AWD by the end of Aug 2019. With high inflow conditions (i.e. 20th percentile inflow), an AWD of 7.5% can be expected within the next 3 months or a 40% AWD by the end of Aug 2019.

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