



# WaterNSW

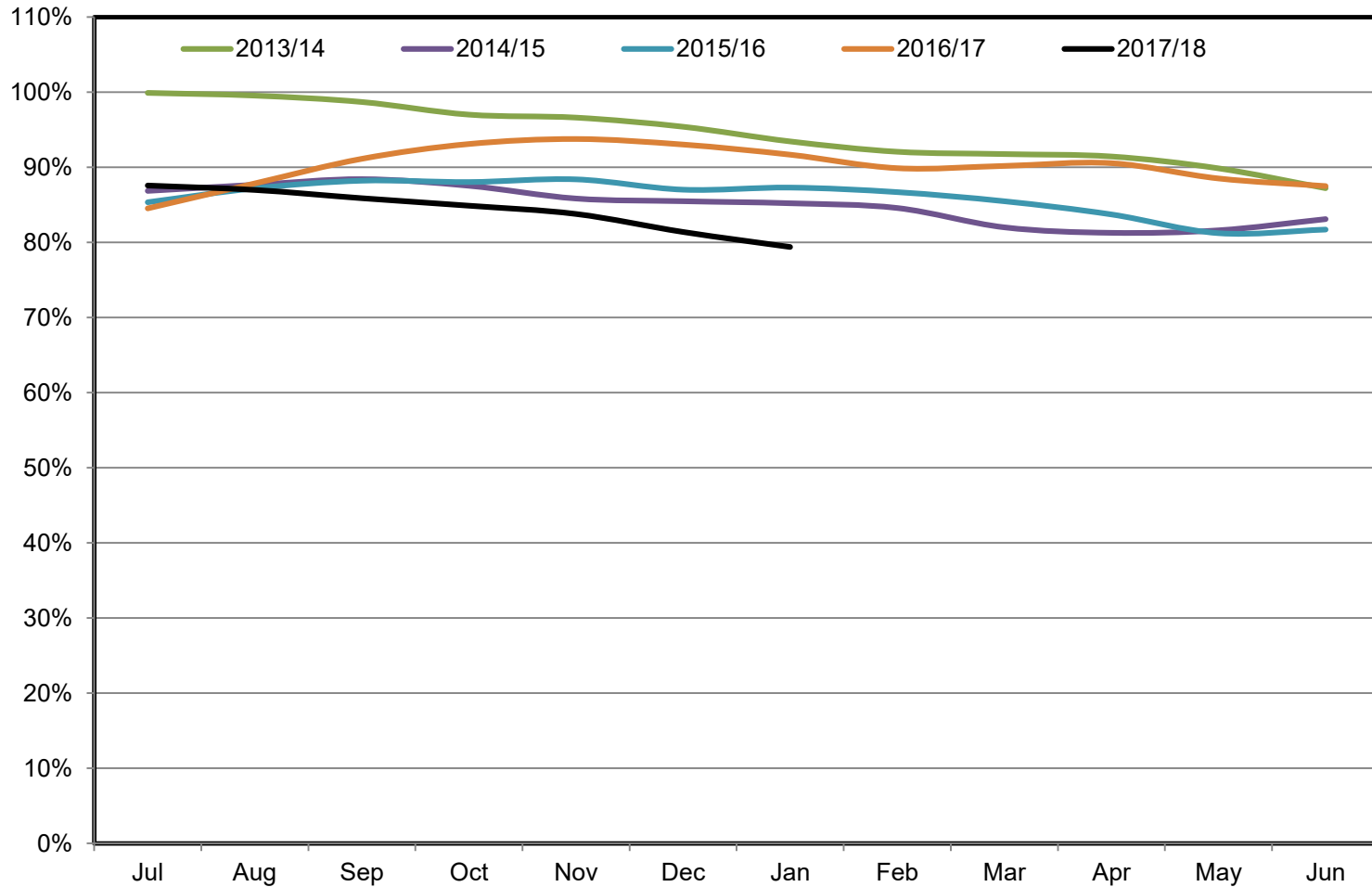
# Water Operations Report

## Hunter/Coastal Valleys

## February 2018

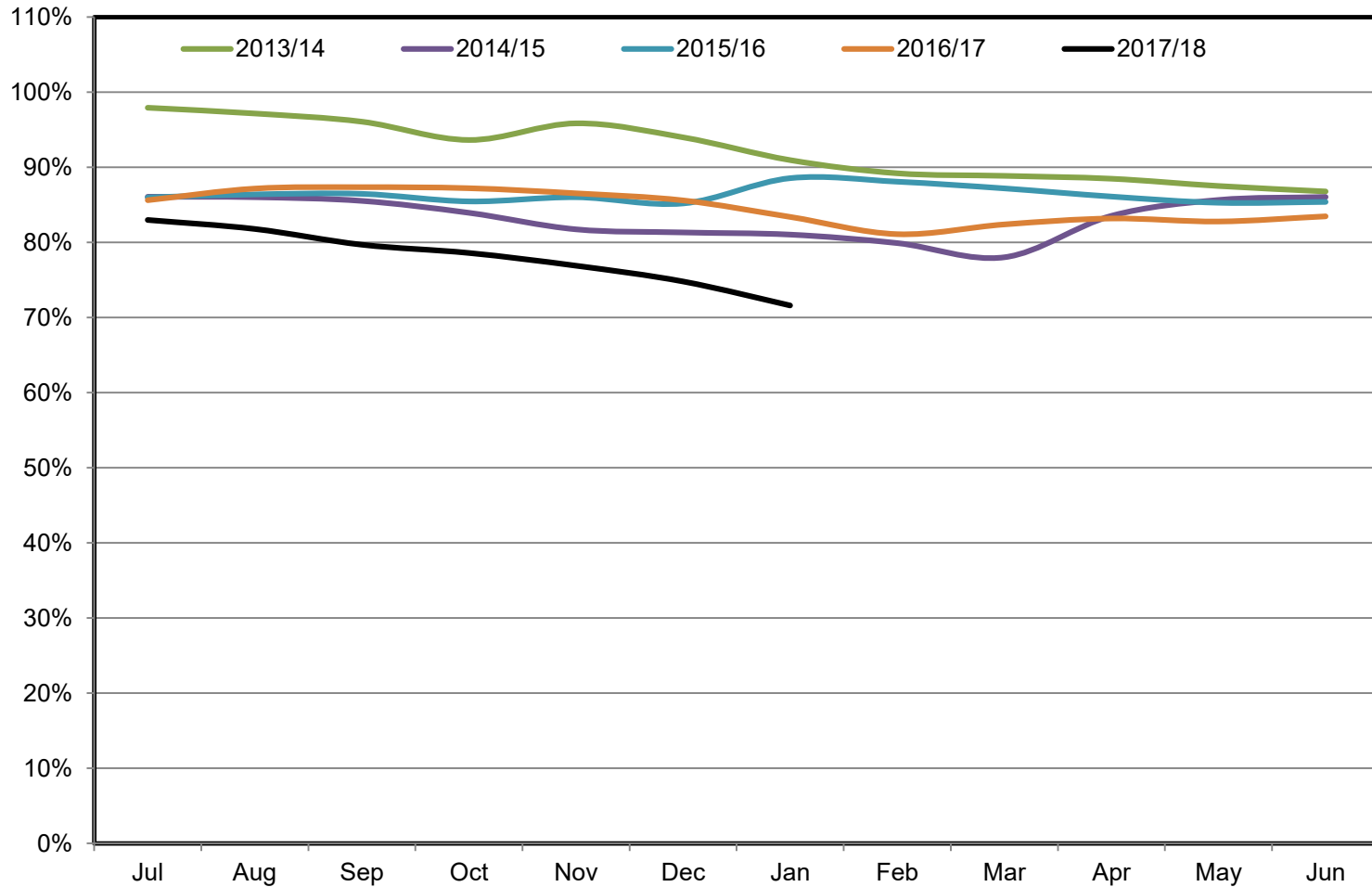
# Dam Storages

## Glenbawn Dam Storage



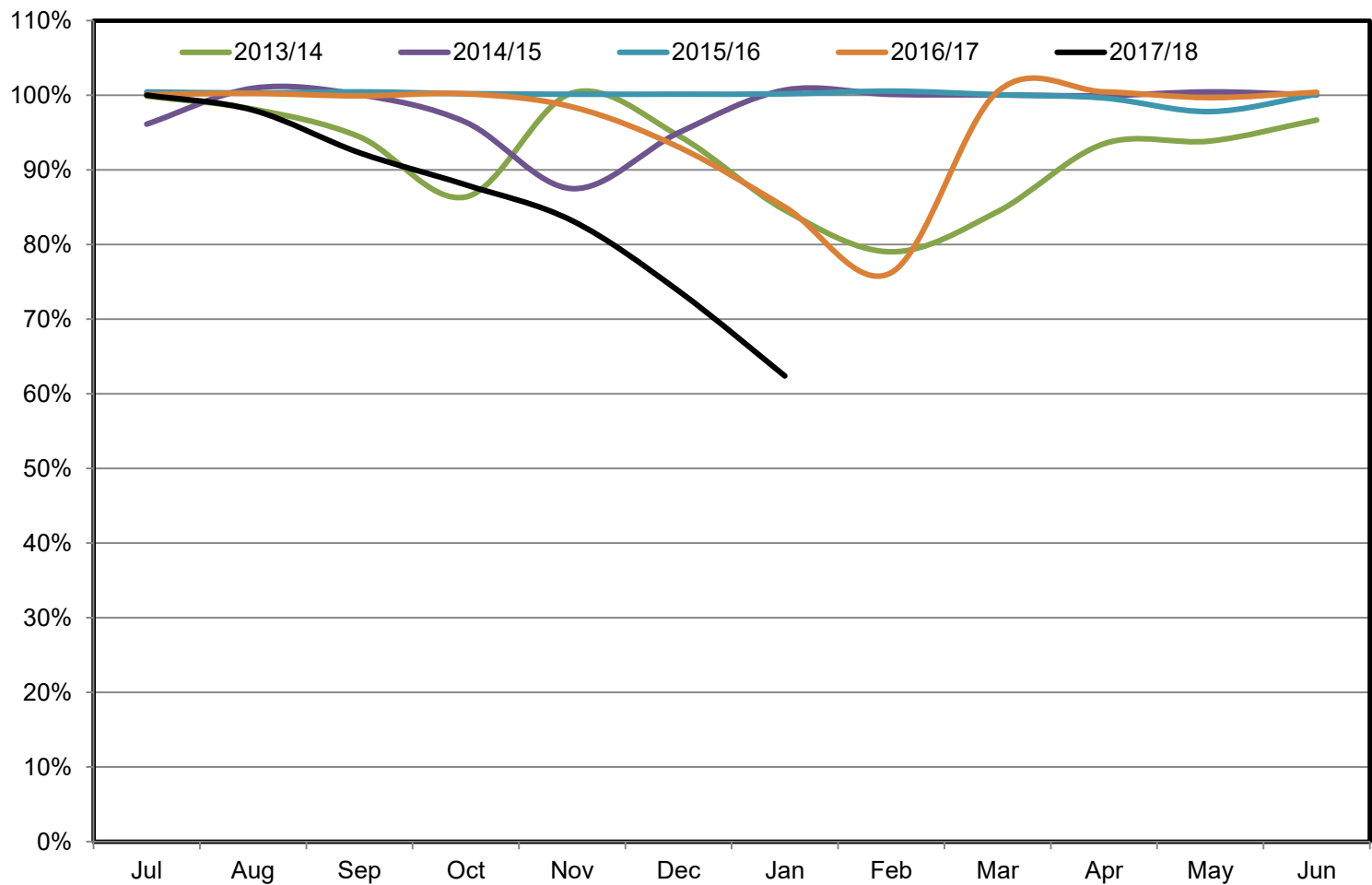
# Dam Storages

## Glennies Creek Storage



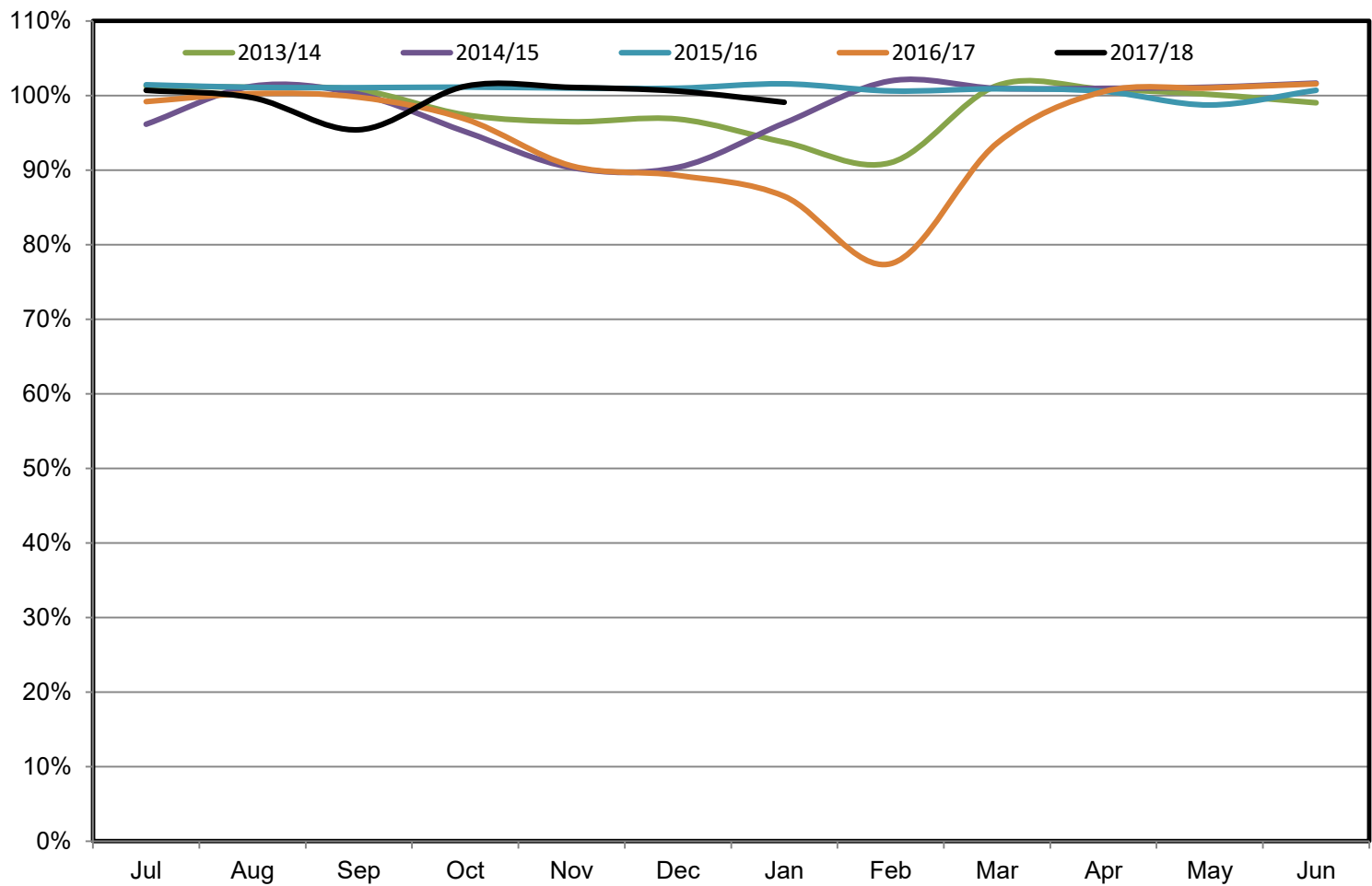
# Dam Storages

## Lostock Dam Storage



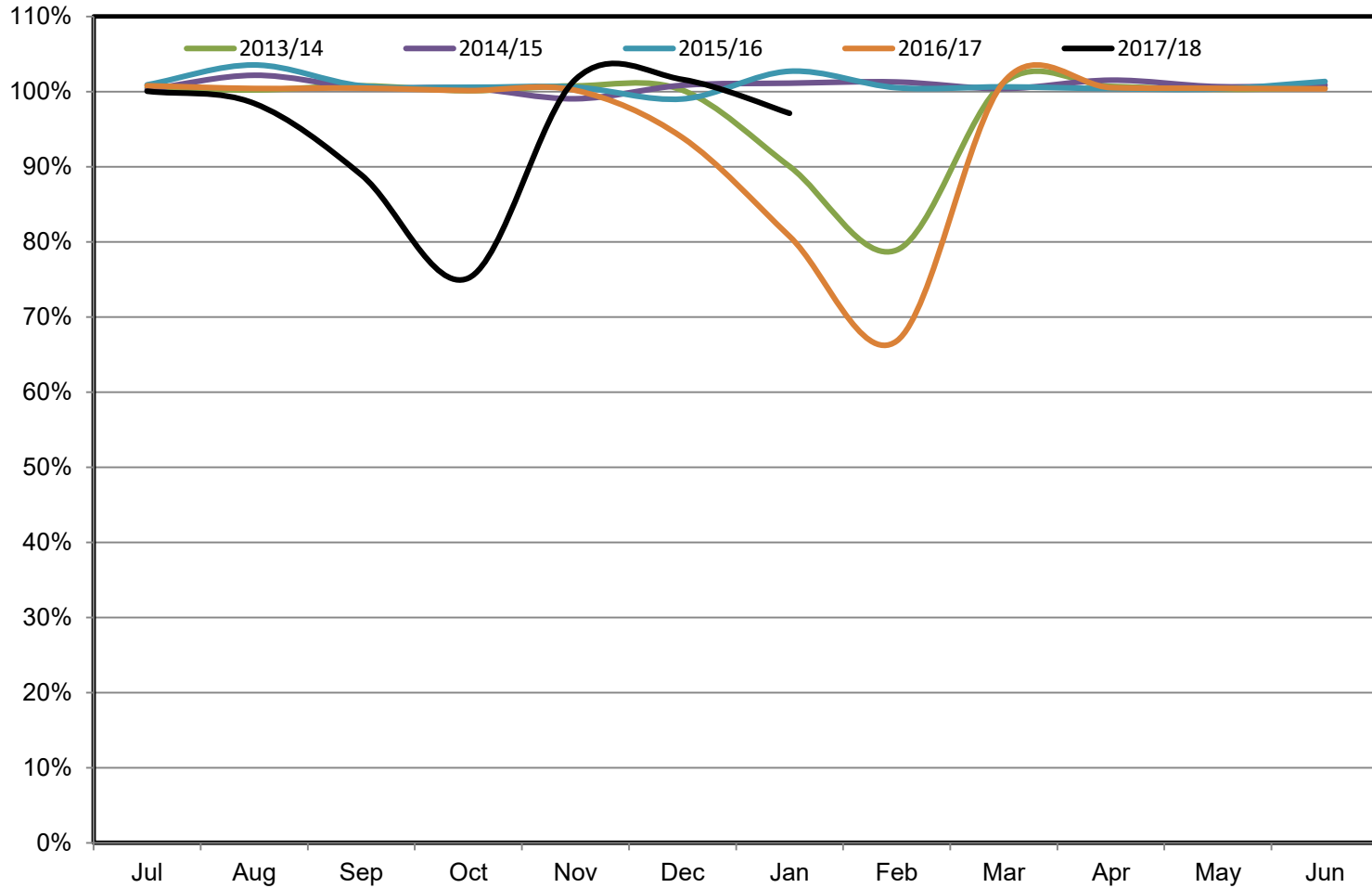
# Dam Storages

## Toonumbar Dam Storage



# Dam Storages

## Brogo Dam Storage



# Supplementary Access

System	Commence	Cease
Paterson	1/7/17	14/7/17
Hunter	1/7/17	24/7/17
Bega/Brogo	2/08/17	14/08/17
Bega/Brogo	20/11/17	22/11/17
Bega/Brogo	27/11/17	20/12/17

# 2017/18 Water Availability

## Hunter River



Licence Category	Share		AWD Volume	Carryover In	Allocation Assignments	Allocation Assignments		Usage
	Component	Balance				In	Out	
DOMESTIC AND STOCK	1,545	1,435	1,545	0	0	0	110	
DOMESTIC AND STOCK [DOMESTIC]	145	145	145	0	0	0	0	
DOMESTIC AND STOCK [STOCK]	98	90	98	0	0	0	8	
LOCAL WATER UTILITY	10,832	5,413.6	10,832	0	0	0	5,418.4	
MAJOR UTILITY [POWER GENERATION]	36,000	63,327.4	36,000	32,400	0	0	5,072.6	
REGULATED RIVER (GENERAL SECURITY)	127,023	119,397.2	126,790	30,663.6	4,721.5	4,191.2	38,748.8	
REGULATED RIVER (HIGH SECURITY)	21,740	17,699.1	21,740	5,137.3	1,018.7	1,500	3,562	
SUPPLEMENTARY WATER	48,519.2	48,519.1	48,519.1	0	0	0	0	
<b>GRAND TOTAL</b>	<b>245,902.2</b>	<b>256,026.4</b>	<b>245,669.1</b>	<b>68,200.9</b>	<b>5,740.2</b>	<b>5691.2</b>	<b>52,919.8</b>	

General Security Available Water Determination		
Date	AWD ML/Share	Total %
1-Jul-17	1	100%



# 2017/18 Water Availability

## Paterson River



Licence Category	Share Component	Balance	AWD Volume	Carryover In	Allocation Assignments	Allocation Assignments		Usage
						In	Out	
DOMESTIC AND STOCK	42	42	42	0	0	0	0	0
DOMESTIC AND STOCK [DOMESTIC]	2	2	2	0	0	0	0	0
DOMESTIC AND STOCK [STOCK]	5	5	5	0	0	0	0	0
REGULATED RIVER (GENERAL SECURITY)	9,565	8,686.5	9,565.1	951.1	100	150	1,779.7	
REGULATED RIVER (HIGH SECURITY)	190	237	190	0	50	0	3	
REGULATED RIVER (HIGH SECURITY)[TOWN WATER SUPPLY]	75	75	75	0	0	0	0	
SUPPLEMENTARY WATER	755.9	755.9	755.9	0	0	0	0	
<b>GRAND TOTAL</b>	<b>10,634.9</b>	<b>9,803.4</b>	<b>10,635</b>	<b>951.1</b>	<b>150</b>	<b>150</b>	<b>1,782.7</b>	

General Security Available Water Determination		
Date	AWD ML/Share	Total %
1-Jul-17	1.0	100%

# 2017/18 Water Availability

## Richmond Regulated River



Licence Category	Share Component	Balance	AWD Volume	Carryover In	Allocation Assignments	In	Allocation Assignments Out	Usage
DOMESTIC AND STOCK [DOMESTIC]	6	6	6	0	0	0	0	0
DOMESTIC AND STOCK [STOCK]	8	8	8	0	0	0	0	0
REGULATED RIVER (GENERAL SECURITY)	9,231	8,945.2	9,231	0	0	0	285.8	
REGULATED RIVER (HIGH SECURITY)	123	113	123	0	0	0	10	
<b>GRAND TOTAL</b>	<b>9,368</b>	<b>9,072.2</b>	<b>9,368</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>295.8</b>	

General Security Available Water Determination		
Date	AWD ML/Share	Total %
1-Jul-17	1.0	100%

# 2017/18 Water Availability

## Bega/Broggo River



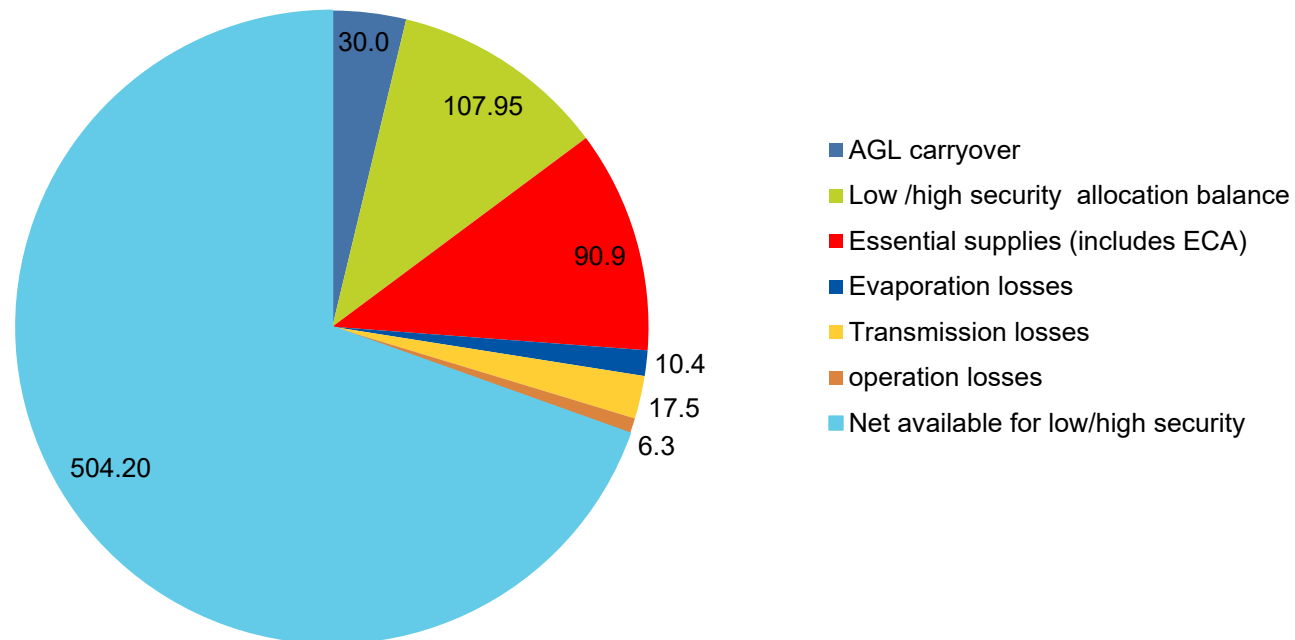
Licence Category	Share Component	Balance	AWD Volume	Carryover In	Allocation Assignments	Allocation Assignments		Usage
						In	Out	
DOMESTIC AND STOCK	32	26	32	0	0	0	0	6
DOMESTIC AND STOCK [DOMESTIC]	16.5	10.5	16.5	0	0	0	0	6
DOMESTIC AND STOCK [STOCK]	5	5	5	0	0	0	0	0
REGULATED RIVER (GENERAL SECURITY)	13,883	7,865	9,718.1	0	0	0	0	1,889.6
REGULATED RIVER (HIGH SECURITY)	421.5	314.9	421.5	0	0	0	0	106.6
REGULATED RIVER (HIGH SECURITY)[TOWN WATER SUPPLY]	700	543.3	700	0	0	0	0	156.7
SUPPLEMENTARY WATER	1,300	1,078	1,300	0	0	0	0	222
<b>GRAND TOTAL</b>	<b>16,358</b>	<b>9,842.7</b>	<b>12,193.1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,386.9</b>

General Security Available Water Determination		
Date	AWD ML/Share	Total %
1-Jul-17	0.45	45%
7-Dec-17	0.25	70%
9-Feb-18	0.05	75%

# 2017/18 Water Availability Hunter River system



## Hunter Valley - Resource Assessment breakdown (GL) 1 February 2018

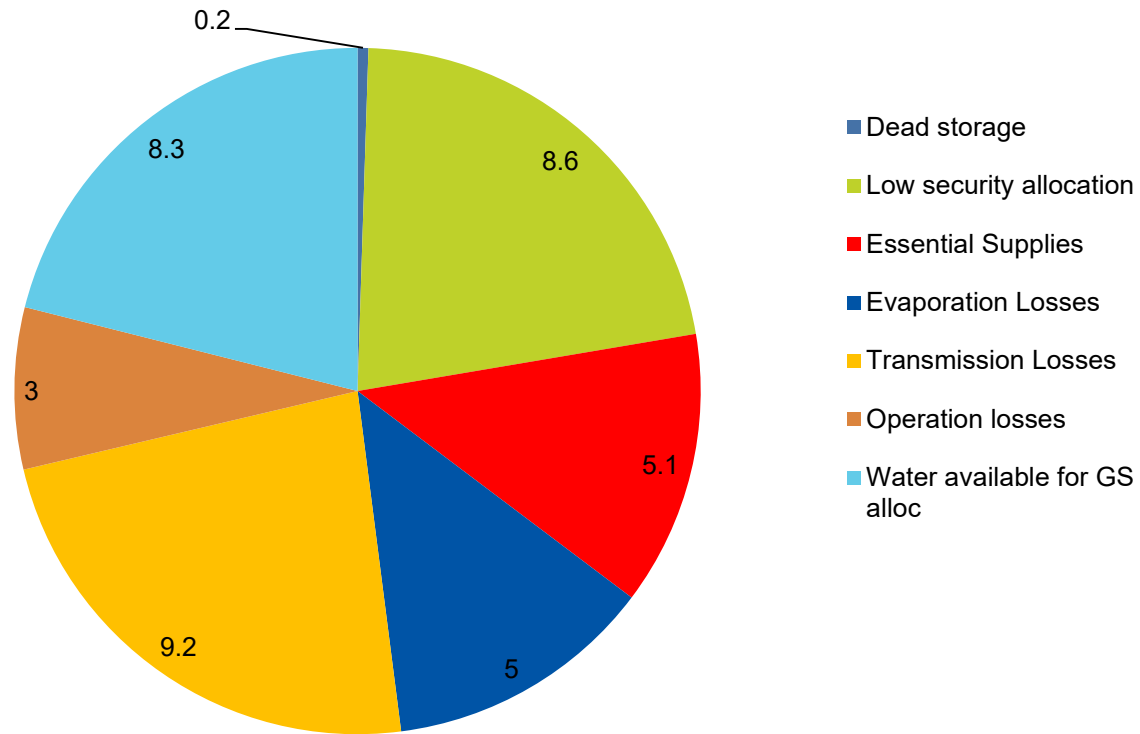


# 2017/18 Water Availability

## Lostock system



### Lostock Dam Resource assessment breakdown (GL) 1 February 2018

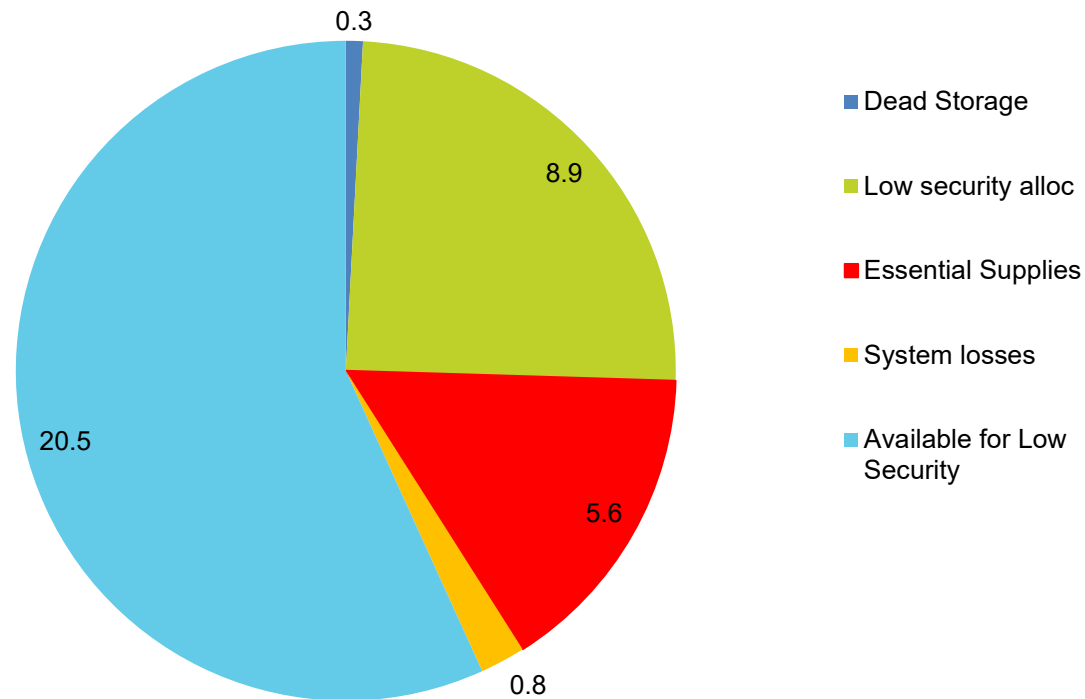


# 2017/18 Water Availability

## Richmond Regulated system



### Toonumbar Dam Resource Assessment breakdown (GL) 1 February 2018

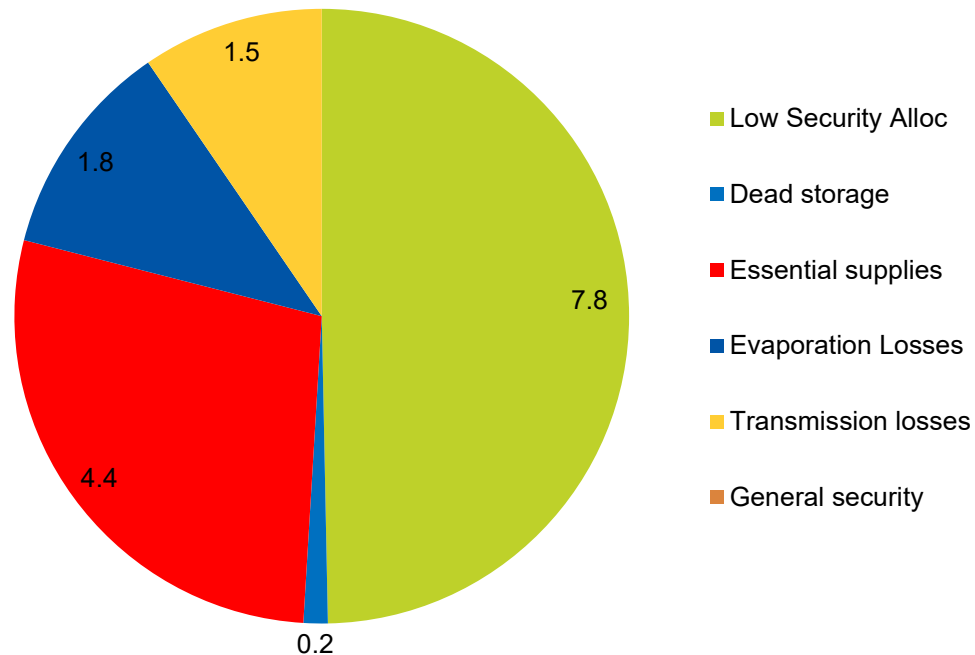


# 2017/18 Water Availability

## Bega/Brogo system



### Brogo Dam Resource Assessment breakdown 1 February 2018



# Resource Assessment



Hunter Resource Assessment	1/02/2018	1/01/2018	1/12/2017	1/11/2017	1/10/2017	1/09/2017	1/08/2017	1/07/2017	1/06/2017	1/05/2017	1/04/2017	1/03/2017	1/02/2017
Storage Volume	797.6	821.9	879.0	859.4	869.7	883.8	891.6	892.8	871.8	914.3	910.0	903.9	923.0
plus Minimum Inflows	2.6	4.5	10.6	10.6	13.6	26.4	24.5	26.9	2.4	2.4	2.4	2.3	13.6
less Dead Storage	2	2	2	2	2	2	2	2	2	2	2	2	2
less Storage loss	10.4	12.5	16.7	17.0	19.0	19.4	22.9	25.0	2.0	2.1	6.3	8.3	10.4
less Essential Supplies	193.7	197.3	206.1	206.1	209.2	213.6	219.1	219.1	207.8	210.5	214.5	214.5	224.7
less delivery loss	17.5	21.0	28.0	31.0	32.7	47.5	52.3	57.0	18.5	18.5	25.5	29.0	57.0
less General Security	127.3	127.3	127.3	127.4	127.4	127.4	127.4	127.4	127.4	127.4	127.4	127.4	127.4
Allocation %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



# Resource Assessment

Paterson Resource Assessment	1/02/2018	1/01/2018	1/12/2017	1/11/2017	1/10/2017	1/09/2017	1/08/2017	1/07/2017	1/06/2017	1/05/2017	1/04/2017	1/03/2017	1/02/2017
Storage Volume	14.9	14.9	16.7	17.7	18.7	19.8	20.2	20.3	19.8	20.3	20.2	15.5	17.2
plus Minimum Inflows	5.5	6.3	2.2	2.2	3.4	4.6	7.3	11.3	3.4	2.4	3.4	3.4	3.4
less Dead Storage	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
less Storage loss	1.3	1.5	2.0	2.0	2.3	2.5	2.8	3.0	0.3	0.5	0.8	1.0	2.3
less Essential Supplies	6.9	7.9	9.9	9.9	10.9	11.9	1.4	1.5	0.6	3.6	4.1	4.2	4.2
less delivery loss	2.3	2.8	3.7	4.9	5.5	6.1	6.7	7.3	0.7	1.2	1.2	2.3	3.1
less ECA	2	2	2	2	2	2	2	2	2	2	2	2	2
less General Security	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
Allocation %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

# Resource Assessment



Richmond Resource Assessment	1/02/2018	1/01/2018	1/12/2017	1/11/2017	1/10/2017	1/09/2017	1/08/2017	1/07/2017	1/06/2017	1/05/2017	1/04/2017	1/03/2017	1/02/2017
Storage Volume	10.9	11.2	11.2	11.2	10.5	11.0	11.1	11.2	11.1	11.1	11.1	9.1	10.2
plus Minimum Inflows	4.6	6.1	7.3	7.3	10.1	14.6	16.5	17.2	6.3	6.3	6.3	6.3	6.3
less Dead Storage	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
less Storage loss	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.1	1.3	1.3	1.2	1.8
less Essential Supplies	2.6	2.9	3.5	3.5	3.8	4.0	4.3	3.8	2.3	4.3	4.3	5.2	6.8
less delivery loss	0.3	0.4	0.5	0.4	0.6	0.8	1.0	1.2	3.5	3.5	3.5	3.5	3.5
less General Security	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Allocation %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

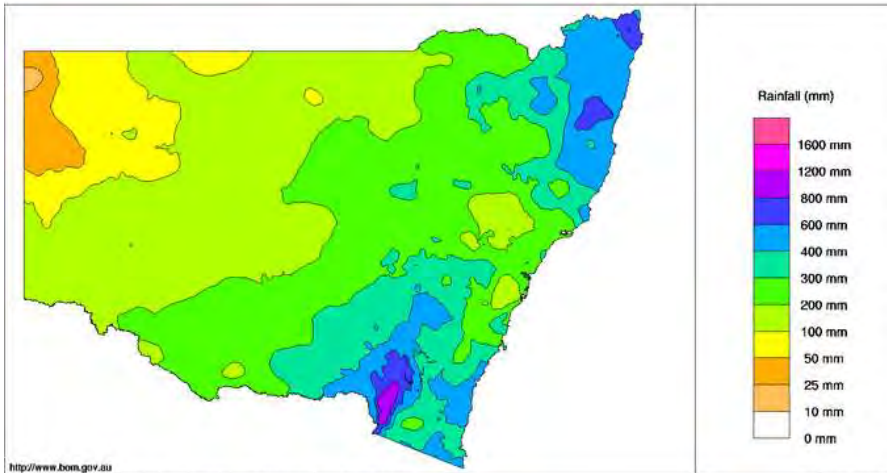
# Resource Assessment



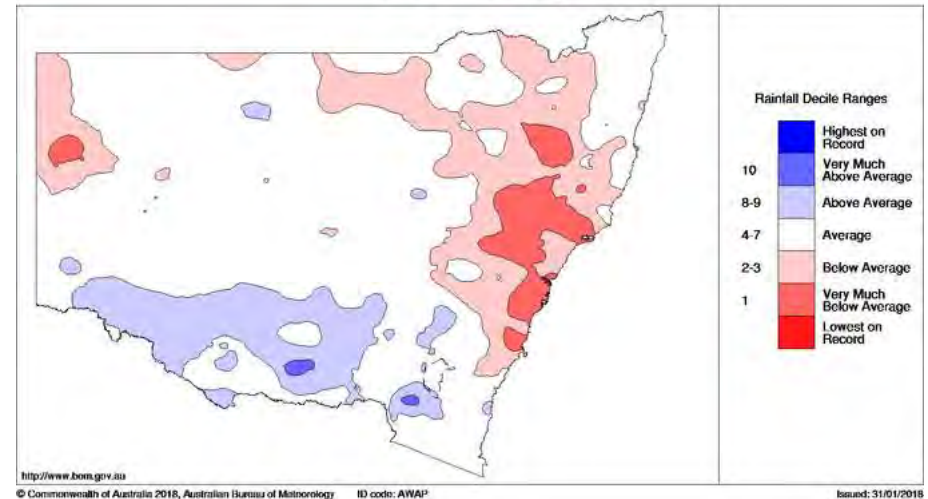
Bega/Brogo Resource Assessment	1/02/2018	1/01/2018	1/11/2017	1/10/2017	1/09/2017	1/08/2017	1/07/2017	1/06/2017	1/05/2017	1/04/2017	1/03/2017	1/02/2017
<b>Storage Volume</b>	8.7	8.7	6.6	7.9	8.9	9.0	9.0	9.0	9.0	9.1	6.7	7.2
<b>plus Minimum Inflows</b>	1.1	1.1	2.0	2.1	2.4	2.9	2.8	0.3	0.3	0.3	0.3	0.8
<b>less Dead Storage</b>	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>less Storage loss</b>	0.5	0.6	0.7	0.8	0.9	1.0	1.1	0.3	0.3	0.3	0.4	0.5
<b>less Essential Supplies</b>	2.0	2.4	2.2	2.5	2.7	2.6	4.9	0.5	0.6	0.7	1.0	1.1
<b>less delivery loss</b>	1.0	1.3	1.6	1.9	2.1	2.3	2.5	0.2	0.4	0.6	0.9	1.0
<b>less General Security</b>	9.5	9.5	6.3	6.3	6.3	6.3	6.3	9.8	9.8	9.8	6.4	6.4
<b>Allocation %</b>	75%	70%	45%	45%	45%	45%	45%	70%	70%	70%	46%	46%

# 6 Month Rainfall

New South Wales Rainfall totals (mm) 1 August 2017 to 31 January 2018  
Australian Bureau of Meteorology

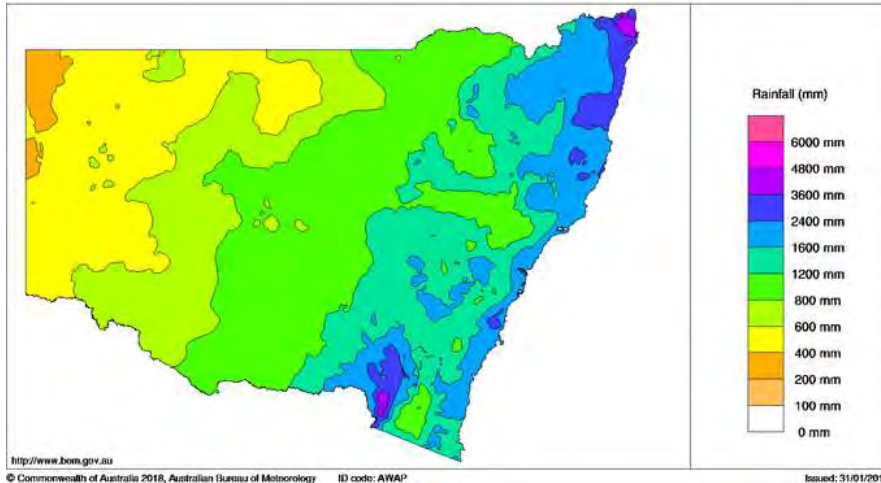


New South Wales Rainfall Deciles 1 August 2017 to 31 January 2018  
Distribution Based on Gridded Data  
Australian Bureau of Meteorology

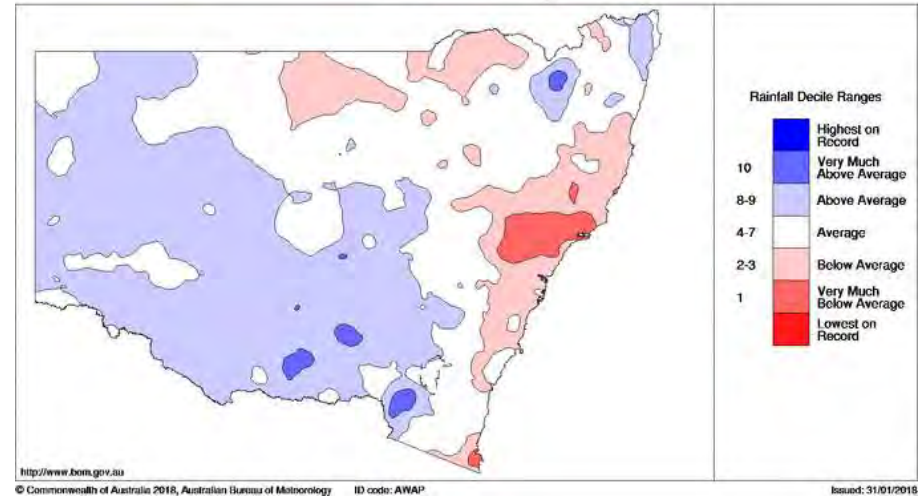


# 24 Month Rainfall

New South Wales Rainfall totals (mm) 1 February 2016 to 31 January 2018  
Australian Bureau of Meteorology

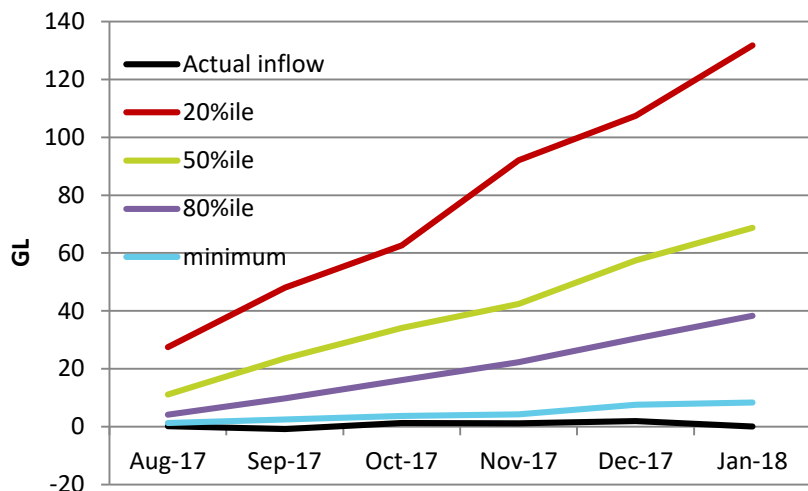


New South Wales Rainfall Deciles 1 February 2016 to 31 January 2018  
Distribution Based on Gridded Data  
Australian Bureau of Meteorology



# Hunter Dam Inflows

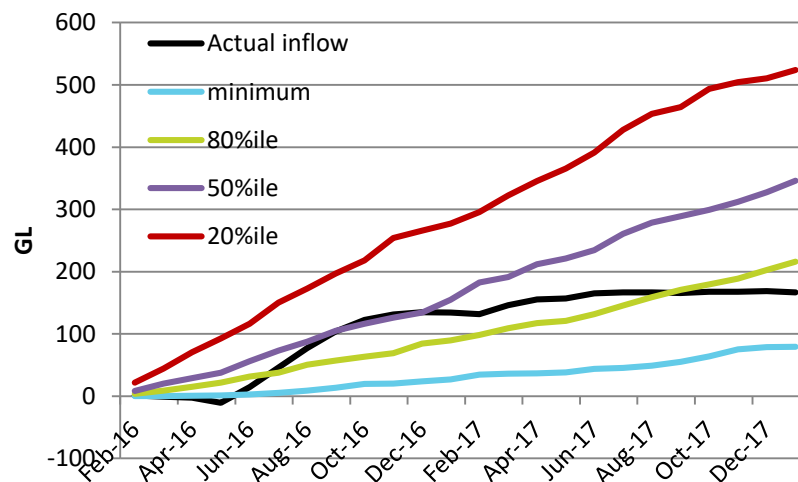
Glenbawn/Glennies past 6 months cumulative inflow/statistical inflows



Inflows are consistent with rainfall over the past 6 month period. Actual inflow for the 6 months is 0 GL: while the minimum is 8.4 GL.

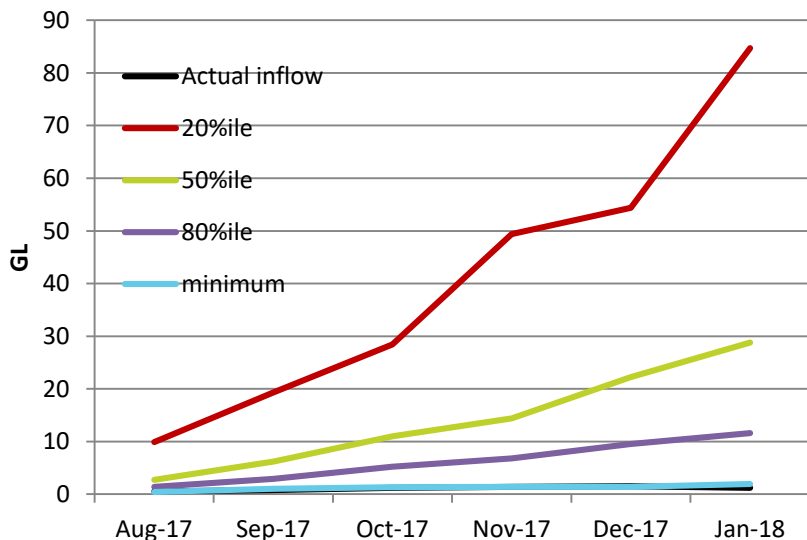
Inflows are consistent with rainfall over the past 24 month period. Actual inflow for the 24 months is 167 GL just below the 90<sup>th</sup> percentile(171 GL): while the minimum is 79 GL.

Glenbawn/Glennies past 24 months cumulative inflow/statistical inflows



# Lostock Dam inflows

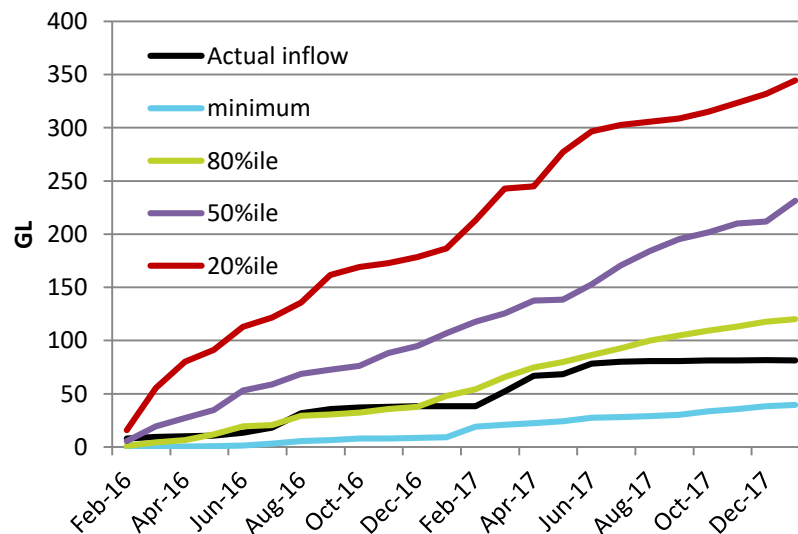
Lostock past 6 months cumulative inflow/statistical inflows



Inflows are consistent with rainfall over the past 24 month period. Actual inflow for the 24 months is 81 GL just above 95<sup>th</sup> percentile(80 GL): while the minimum is 40 GL.

Inflows are consistent with rainfall over the past 6 month period. Actual inflow for the 6 month period is 1.2 GL just below minimum of 1.9 GL.

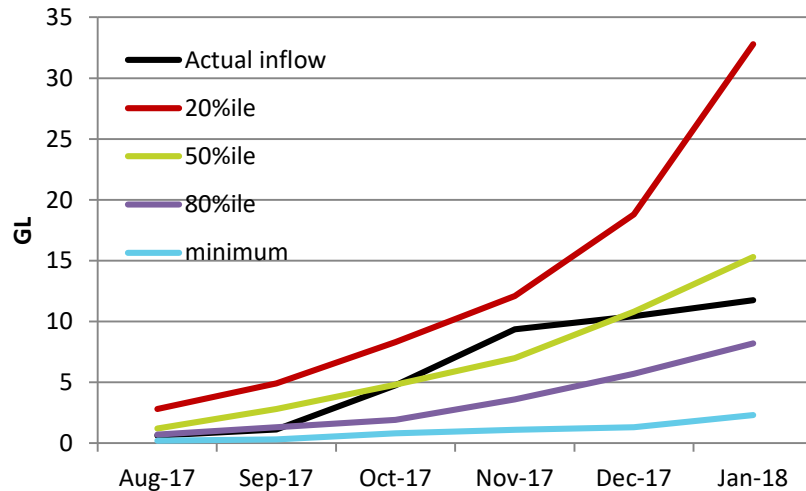
Lostock past 24 months cumulative inflow/statistical inflows



# Toonumbar Dam Inflows



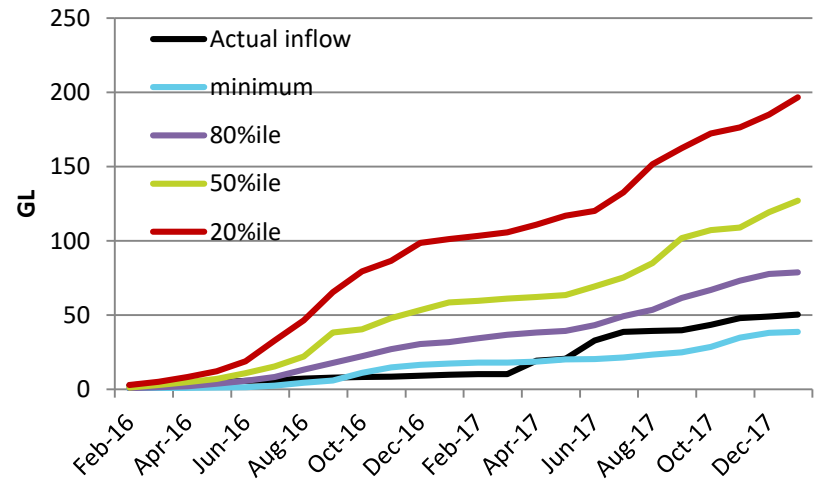
**Toonumbar past 6 months cumulative inflow/statistical inflows**



Inflows are consistent with rainfall over the past 6 month period. Actual inflow for the 6 months is 12 GL in line with the 70<sup>th</sup> percentile inflows (11 GL); while the minimum is 2 GL.

Inflows are consistent with rainfall over the past 24 month period. Actual inflow for the 24 months is 50 GL, just below 95<sup>th</sup> percentile inflows (58 GL); while the minimum is 39 GL.

**Toonumbar past 24 months cumulative inflow/statistical inflows**

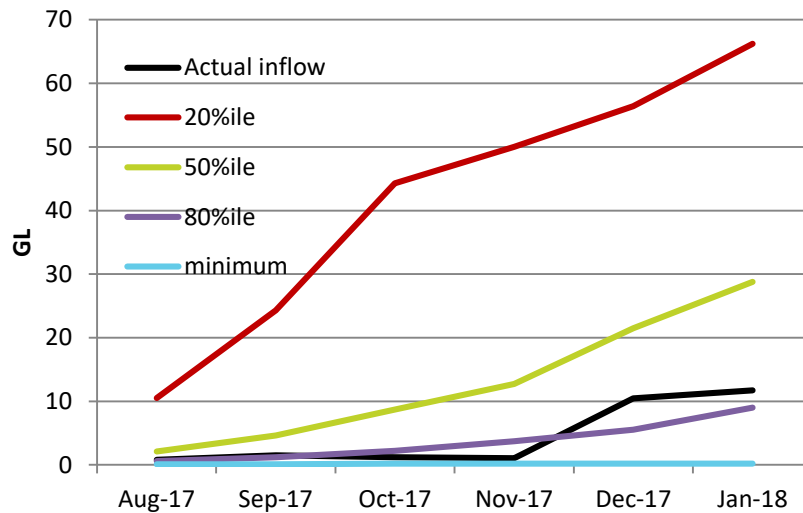




# Brogo Dam Inflows



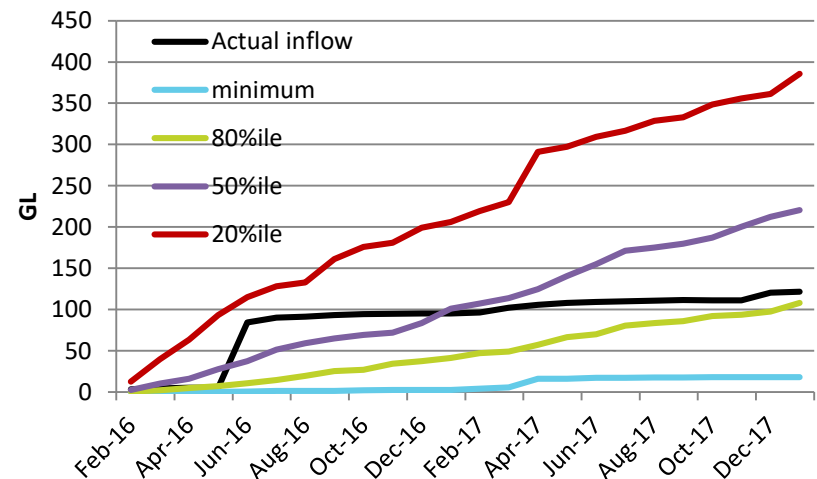
Brogo past 6 months cumulative inflow/statistical inflows



Inflows are consistent with rainfall over the past 24 month period. Actual inflow for the 6 months is 12 GL just above 80<sup>th</sup> percentile inflows (9 GL); while the minimum is 0.2 GL.

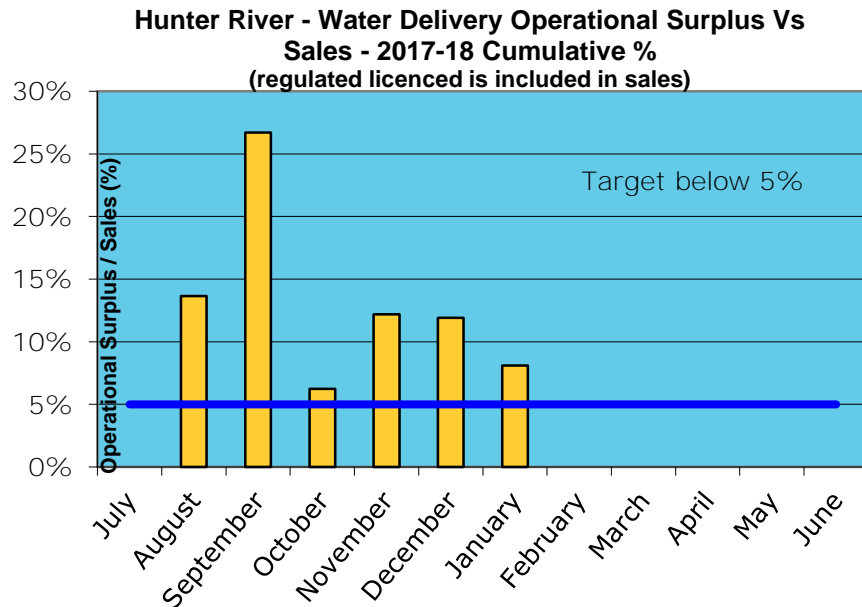
Inflows are consistent with rainfall over the past 24 month period. Actual inflow for the 6 months is 12 GL just above 80<sup>th</sup> percentile (9 GL), while the minimum is 0.2 GL.

Brogo past 24 months cumulative inflow/statistical inflows



# Operational Loss

Operational surplus is water above that which could reasonably be expected (*flow about 20 ML/day*) 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*).

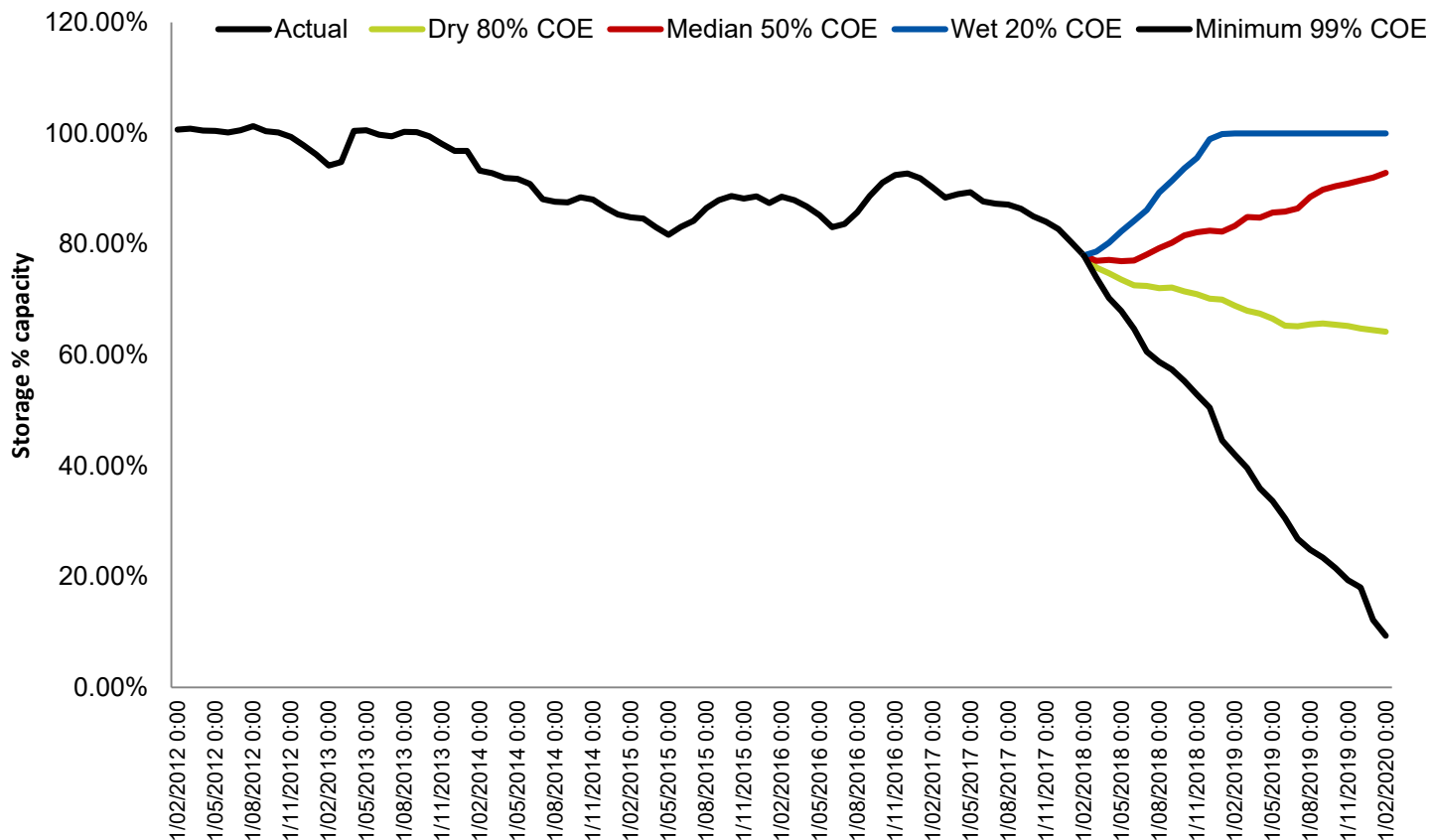


Hunter Cumulative Totals				
	Sales + Environmental delivery	Operational Surplus	Actual	Target
July	1,551	0	0%	5%
July-Aug	2,772	378	14%	5%
July-Sep	3,479	929	27%	5%
July-Oct	19,400	1,209	6%	5%
July-Nov	20994	2,560	12%	5%
July-Dec	33297	3,963	12%	5%
July-Jan	51413	4,163	8%	5%
July-Feb			0%	5%
July-Mar			0%	5%
July-Apr			0%	5%
July-May			0%	5%
July-Jun			0%	5%

End of system flows for the year, Greta 23,900 ML, Gostwyck 10,465 ML

# Storage Forecast

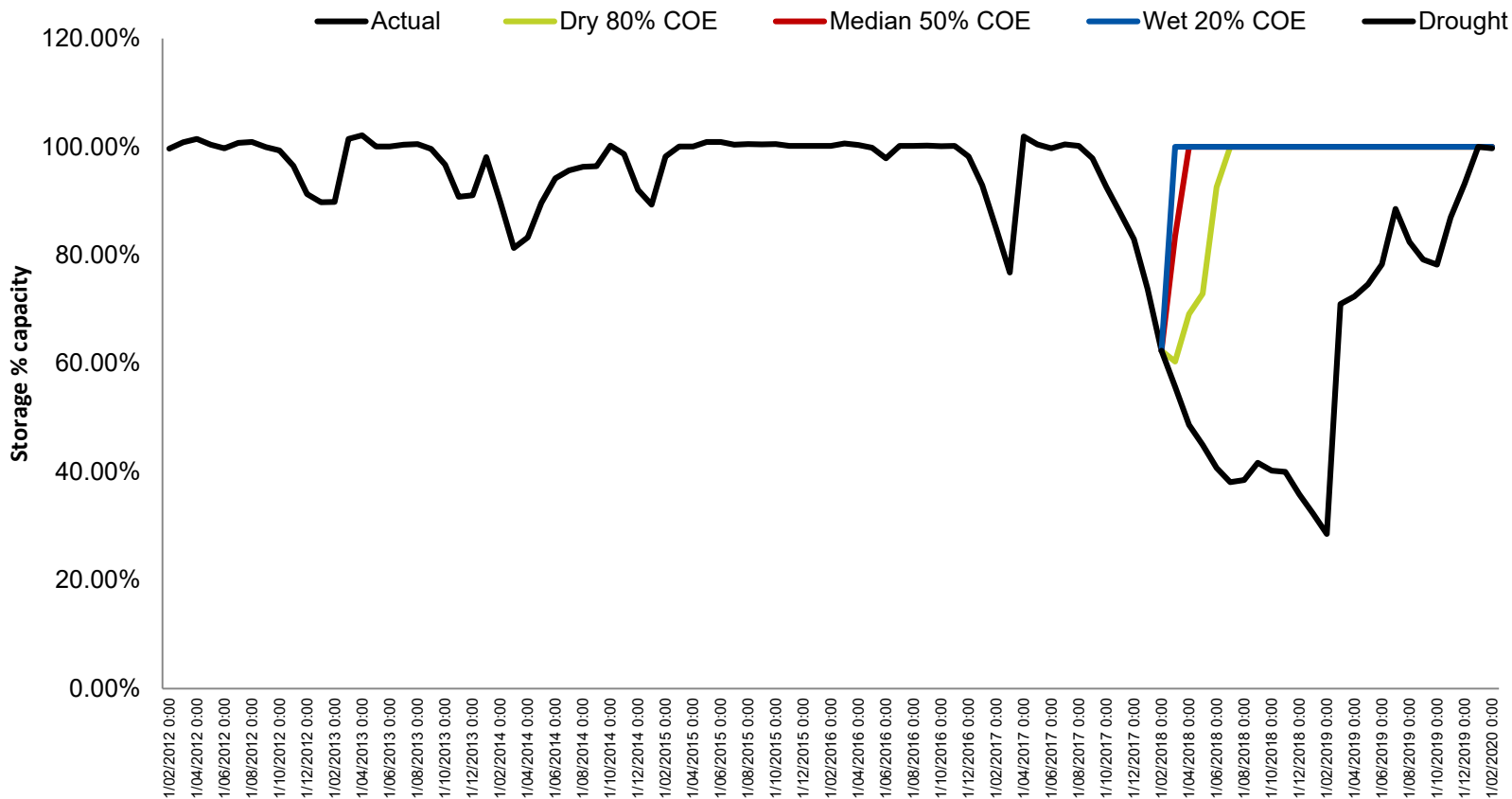
Hunter Dams - Forecast Storage Levels %



**Expected deliveries of 120 GL throughout 2017/18 under minimum conditions.**

# Storage Forecast

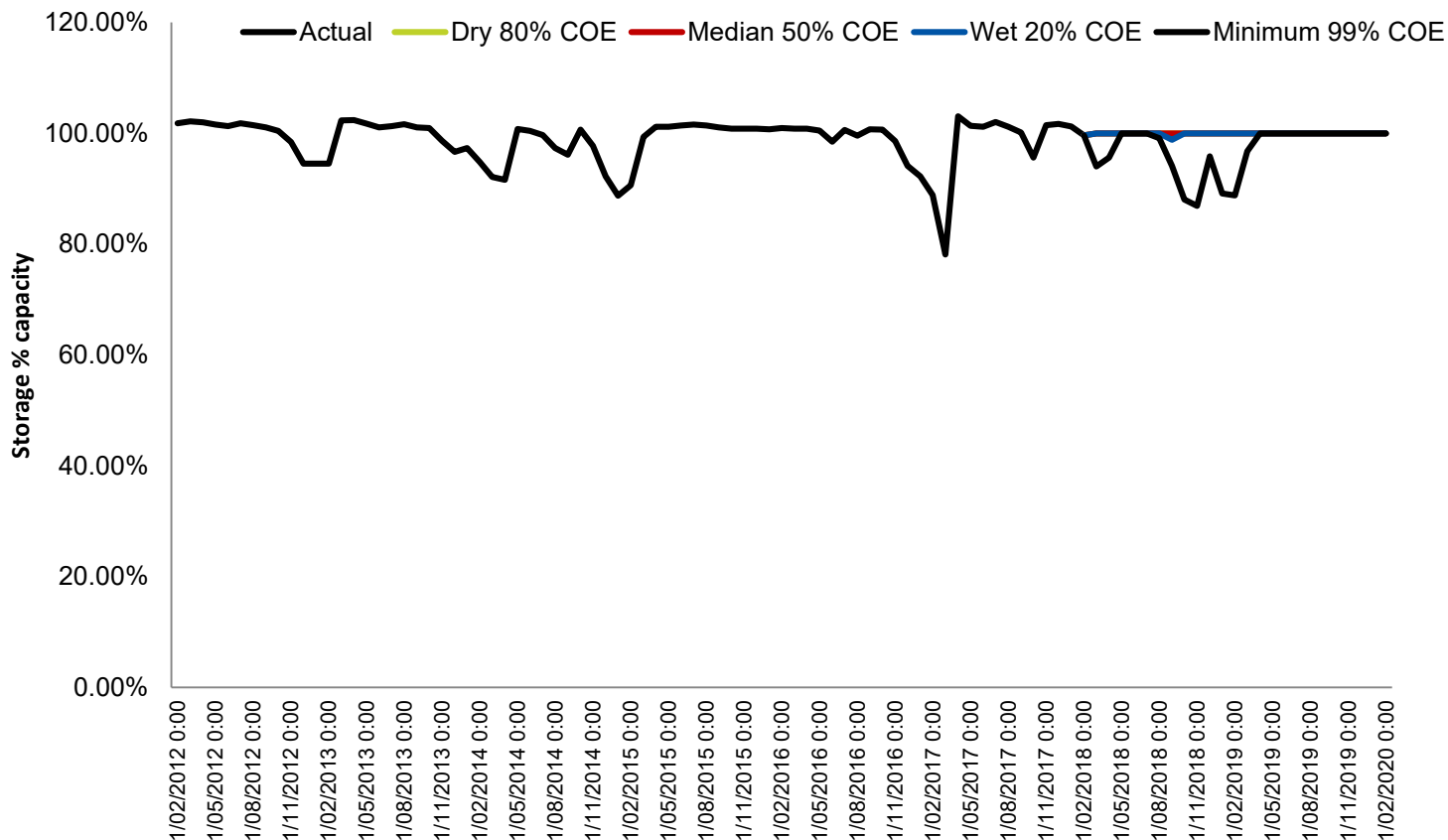
Lostock Dam - Forecast Storage Level



**Expected usage of up to 4 GL throughout 2017/18 under minimum conditions.**

# Storage Forecast

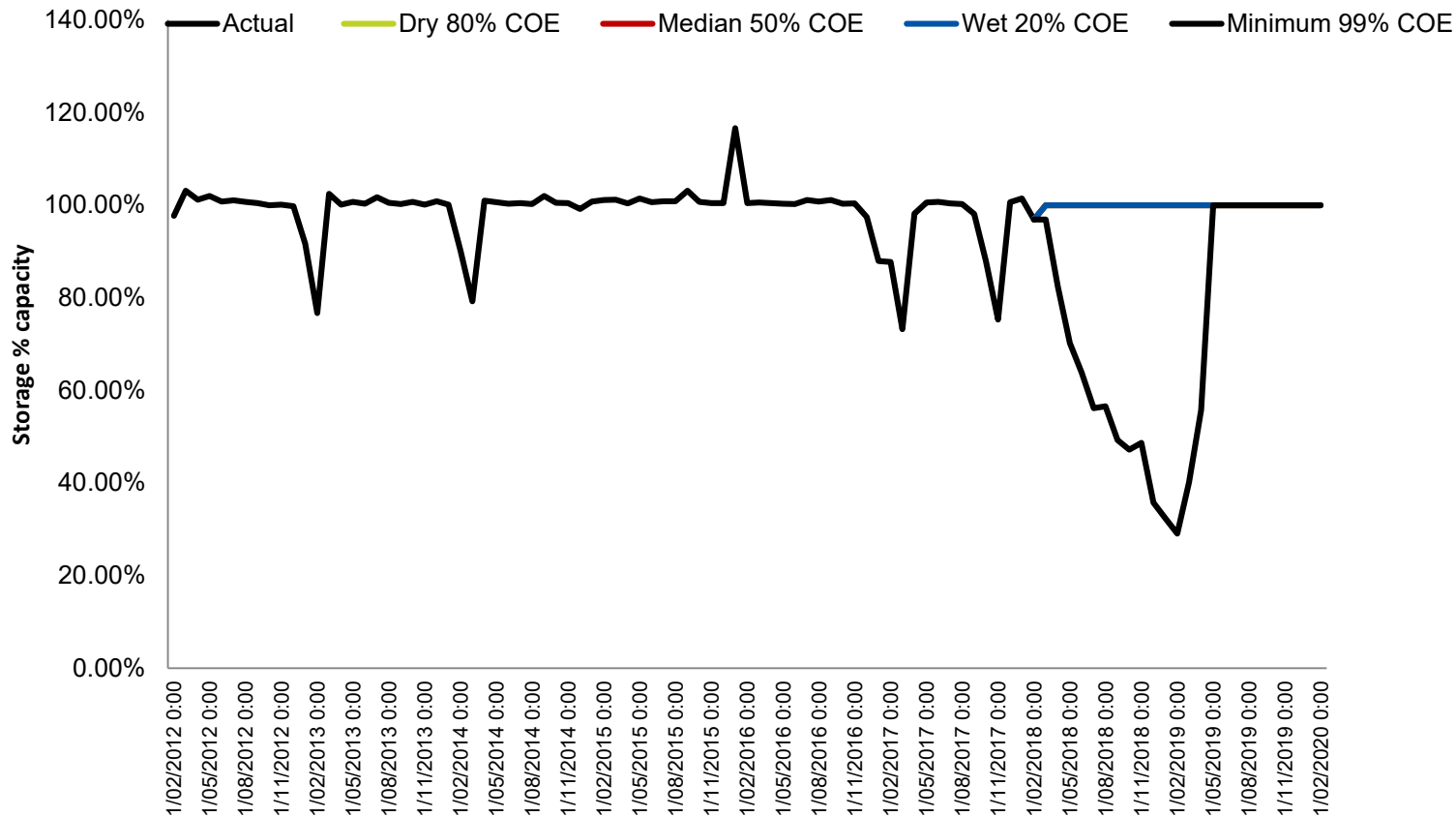
Toonumbar Dam- Forecast Storage Level



**Expected deliveries of 0.8 GL throughout 2017/18 under minimum and dry conditions.**

# Storage Forecast

Brogo Dam - Forecast Storage Levels



**Expected deliveries of 5 GL throughout 2017/18 under minimum and dry conditions.**

# System Operations Plan



- **Hunter Valley (Glenbawn/ Glennies)**
  - Continue to reduce operational surplus and implement water order strategy otherwise Operations as normal, though lower river conditions may be present. 100% allocation.
- **Lostock**
  - Operations as normal. 100% allocation. Dry conditions, continue to reduce operational surplus.
- **Richmond**
  - Operations as normal. 100% allocation
- **Brogo/Bega**
  - Operations as normal. 75% allocation. Have been dry conditions, but recently have seen some improvement. Continue to reduce operational surplus.

# Prognosis

## Chances Of Improvement

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

Potential Inflow Conditions	General Security AWD (%)									
	Hunter		Paterson		Richmond		Bega/Brogo			
	1-Mar-18	1-Jul-18	1-Mar-18	1-Jul-18	1-Mar-18	1-Jul-18	1-Mar-18	1-Jul-18	1-Mar-18	1-Jul-18
Extremely Dry (99% inflows: 99 chances in 100)	100	100	100	80	100	100	100	75	11	
Dry (80% inflows: 80 chances in 100)	100	100	100	100	100	100	100	75	45	
Average (50% inflows: 50 chances in 100)	100	100	100	100	100	100	100	75	45	
Wet (25% inflows: 25 chances in 100)	100	100	100	100	100	100	100	75	45	

