

## HIGHFIRE RISK PROJECT

# BLOW-UP FIRE EVENT (BUFE) POTENTIAL SOUTH-EAST AUSTRALIA

## --The Hierarchical Predictive Framework--

Level 1: ■; Level 2: ■

This page shows current Alerts  
for Blow-Up Fire Event  
potential.

**ISSUE DATE:**  
**12 MARCH**  
**2024.**

Current SSTA charts  
(NOAA Coral Reef Watch)  
Click maps to see at full size on NOAA site.

This is an Operational Trial.  
It is intended to be an  
intelligence product to aid in  
informed decision making, and  
should not be used in any other  
way.

Recent pyroCbs (2023b,  
Nymboida, 25 October; 2023d,  
Pilliga, 9 Dec; & 2023e,  
Pilliga, 18 Dec) were fully  
consistent with HPF Alerts.

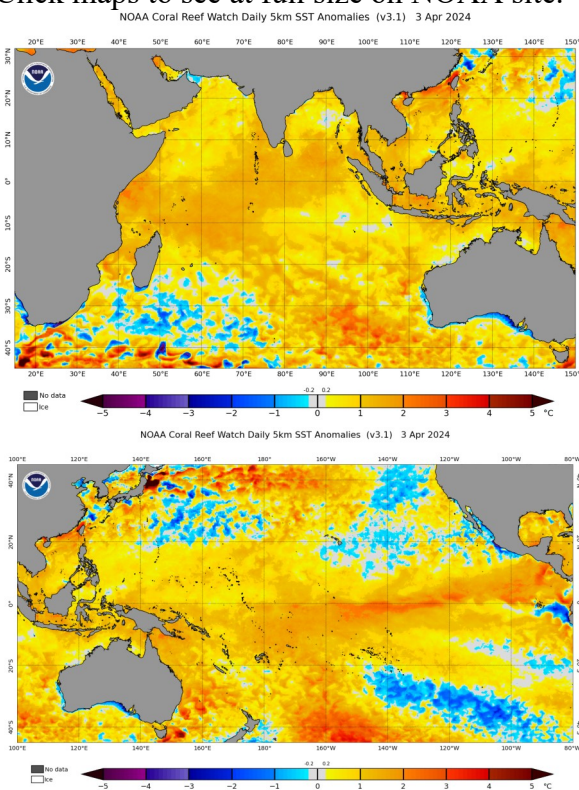
## A REQUEST

If anyone uses this draft model  
operationally, can they please  
send their results to the author:

[Rick McRae](#)



**UNSW**  
CANBERRA



# LEVEL 1 CANBERRA DIPOLE

Current Alert Status:

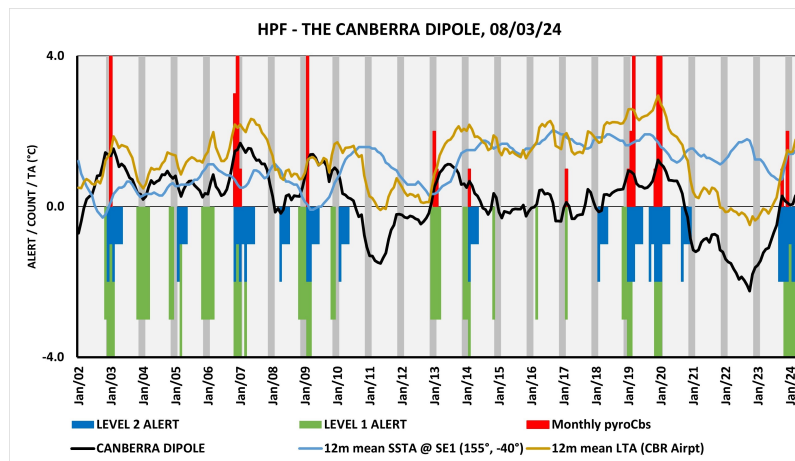


**LEVEL 1 ALERT IS IN PLACE.**

This reflects interactions between land and sea that influence synoptic patterns conducive to wildfires (or rain).

Data:

- Sea Surface Temperature Anomalies (SSTAs) - [NOAA Coral Reef Watch](#);
- Land Temperature Anomalies (LTAs) & River flows - [Bureau of Meteorology](#);
- PyroCbS - [Australian pyroCb Register](#).



[Click on image to enlarge.]

ANALYSIS:

**There is a Level 1 alert in place as temperatures stay elevated and the dipole is now increasing.**

# LEVEL 2 RIVER DRYING EVENTS

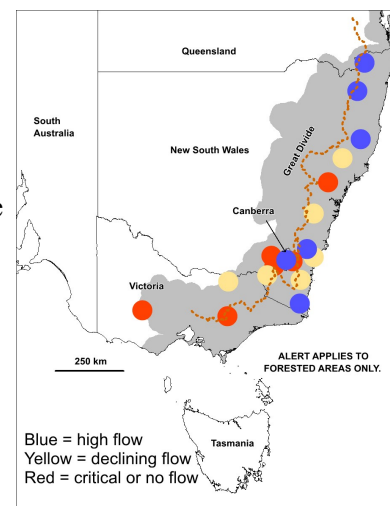
Current Alert Status:



**LEVEL 2 ALERT IS IN PLACE.**

Rivers in the region are drying out as rainfalls decrease. This indicates a real potential for a BUFE or a pyroCb during the coming month.

ANALYSIS: Four river flow sites have dried out, and five more could go dry soon. Careful monitoring is required, especially as numerical weather models are struggling with the synoptic systems currently in play. I have ignored site 2 (MacDonald River) as its flow has refused to reflect recent rain events - I suspect that the riverbed has silted up post fires.



# LEVEL 3 BLOW-UP FIRE OUTLOOK

With an alert in place, the bushfire threat in places like central Victoria is expected to include Extreme Wildfires. Operations at Level 3 require a trained FBAN or equivalent Technical Expert to use the BUFO2 model to assess the potential for a Blow-Up Fire Event during an on-going fire. This requires a series of data feeds specified in the model. It is suggested that, as dry conditions have returned, FBANs should skill-up on using the BUFO2 model.

[Click here for the BUFO2 worksheet.](#)

[Click here for a PowerPoint presentation on BUFO2, from a workshop at the AFAC21 Conference.](#)

Could anyone using the spreadsheet during the HPF trail please copy their results to us.

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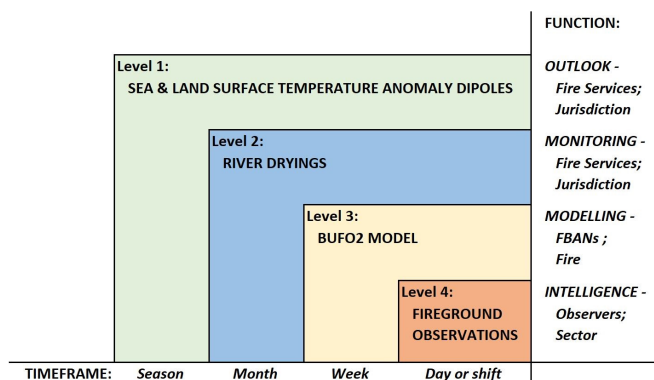


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## BASIS

This work is based on analyses of data from Black Summer.

The structure of the four-tier Hierarchical Prediction System is designed to progress into smaller-scales of timeframe and function, shifting from seasonal outlook to incident operations:



## HPF is described in a peer-reviewed paper in the October 2023 edition of the Australian Journal of Emergency Management.

### LEVEL 2 SOURCE DATA

The table and map below describe the stream flow reference sites used.



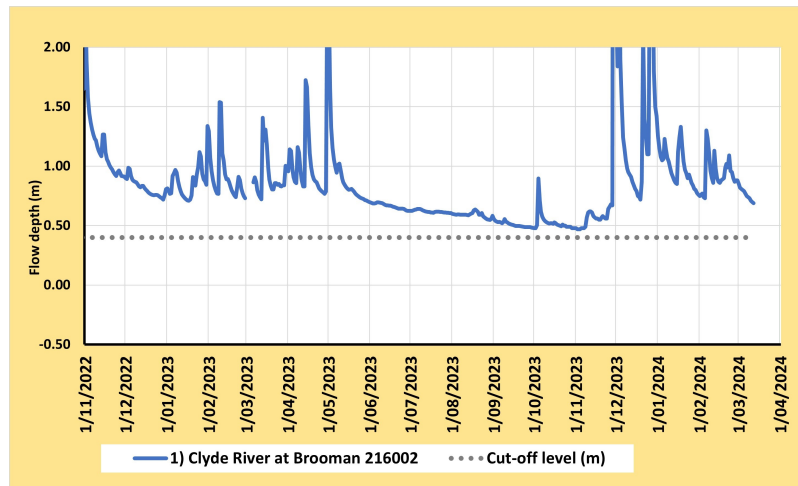
No.	Site Code	Name	Latitude	Longitude	Owner	1st date on record	Concave level (m)
1	216002	Clyde River at Brooman 216002	-35.4681	150.2394	NSW DILW	8/07/1960	0.40
2	212021	MacDonald River at Howes Valley 212021	-32.8611	150.8611	NSW DILW	9/02/1976	-0.10
3	41000261	Goobarragandra River at Mac's Crossing 41000261	-35.4183	148.4357	NSW DILW	13/06/2012	0.90
4	225219	MacAlister River at Glencairn 225219	-37.5162	146.5665	Vic DELWP	7/04/1967	0.30
5	220004	Towamba R at Towamba 220004	-37.0715	149.6593	NSW DILW	5/04/1970	0.35
6	212260	Kowmung River at Cedar Ford 212260	-33.9481	150.2431	NSW DILW	17/05/1968	0.30
7	204014	Mann River at Mitchell 204014	-29.6931	152.106	NSW DILW	10/05/1972	0.20
8	204051	Clarence River at Paddys Flat 204051	-28.7198	152.4198	NSW DILW	26/03/1976	0.55
9	207015	Hastings River at Mt Seaview 207015	-31.3683	152.2425	NSW DILW	31/05/1984	0.55
10	208001	Barrington River at Bob's Crossing 208001	-32.0284	151.4671	NSW DILW	31/01/1944	0.58
11	410535	Murrumbidgee River above Tantangara Reservoir 410535	-35.7706	148.5703	Snowy Hydro Ltd	2/05/1960	0.45
12	401554	Tooma River at Pinegrove 401014B	-36.1	148.26	Snowy Hydro Ltd	19/09/1968	0.90
13	215208	Shoalhaven River at Hillview 215208	-35.1845	149.9536	NSW DILW	6/11/1973	0.45
14	410734	Queanbeyan River at Tinderry 410734	-35.6144	149.35	Icon Water	2/08/1966	0.70
15	403221	Reedy Creek 403221	-36.3109	146.6012	Vic DELWP	11/11/1964	0.22
16	218007	Wadbilliga River at Wadbilliga 218007	-36.257	149.6926	NSW DILW	12/06/1974	0.75
17	410731	Gudgenby River at Tennent 410731	-35.5722	149.0683	Icon Water	12/11/1964	0.45
18	236219	Hopkins R at Ararat	-37.3158	142.9414	DELW&P	30/05/1989	0.075

- A new site 18 has been added - near Ararat in Victoria to represent dryness north-west of Melbourne.
- These plots are of data from the Bureau of Meteorology (BoM) and WaterNSW (<https://realtimedata.watarnsw.com.au/water.stm>).
- These sites do not reflect risk to life or property, rather they are from streams with long records that are not dammed or otherwise significantly modified, and are intended to reflect underlying hydrological dynamics. Elevated levels or concave drying trends indicate wet landscapes. Near minimum flows or low flows decaying in a convex curve

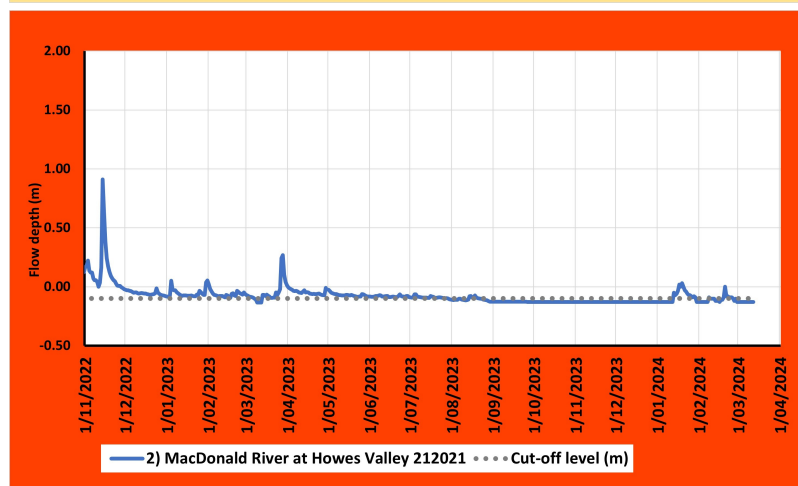
are indicators of a River Drying Event.

- Note that minimum flows are not zero flows - the value reflects the circumstances at the flow measuring station.
- Also note that many catchments burnt out during Black Summer, and this may cause anomalous flow dynamics.
- There are occasional disruptions to data provision, causing gaps in the graphs. These may be updated as datasets are updated.

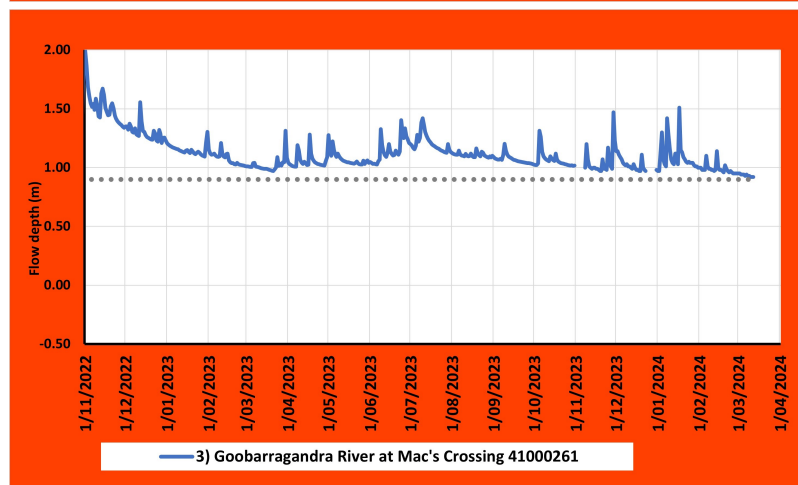
1. Clyde R at  
Brooman (site ID  
216002)  
Min. level = 0.40 m.



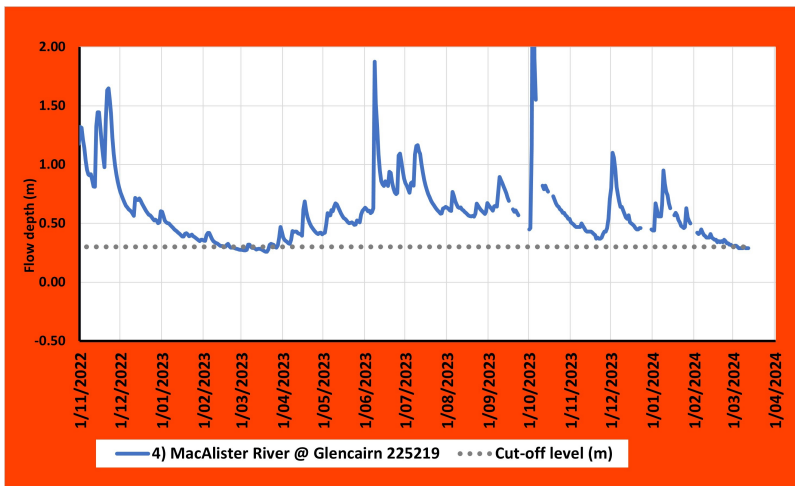
2. Macdonald R at  
Howes Valley (site  
ID 212021)  
Min. level = -0.10  
m.  
This site has  
questionable data -  
the river is notorious  
for silting up after  
major wildfires.



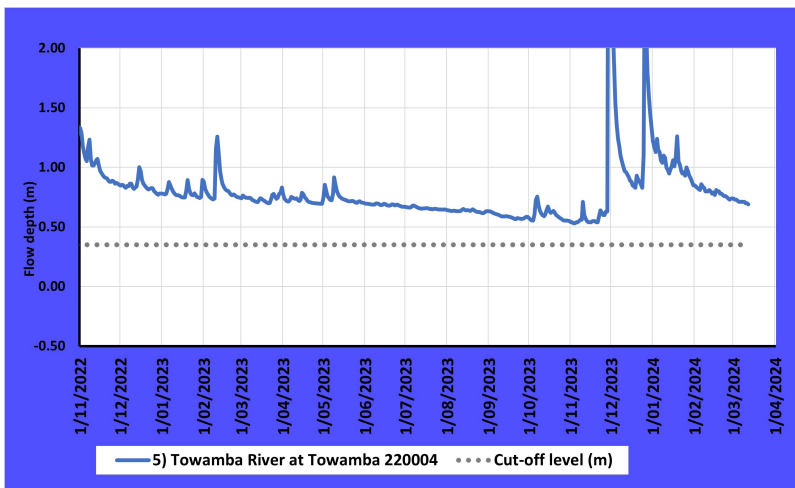
3. Goobarragandra  
R at Macs Crossing  
(site ID 41000261)  
Min. level = 0.90 m.



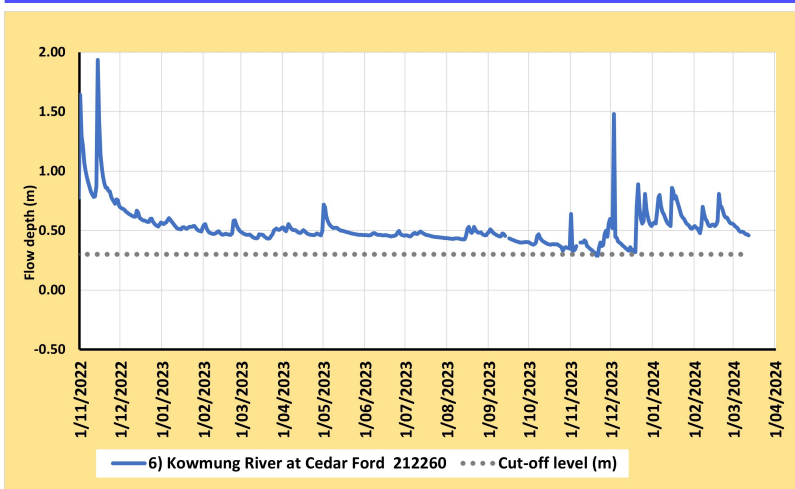
4. Macalister R at  
Glencairn (site ID  
225219)  
Min. level = 0.30 m.



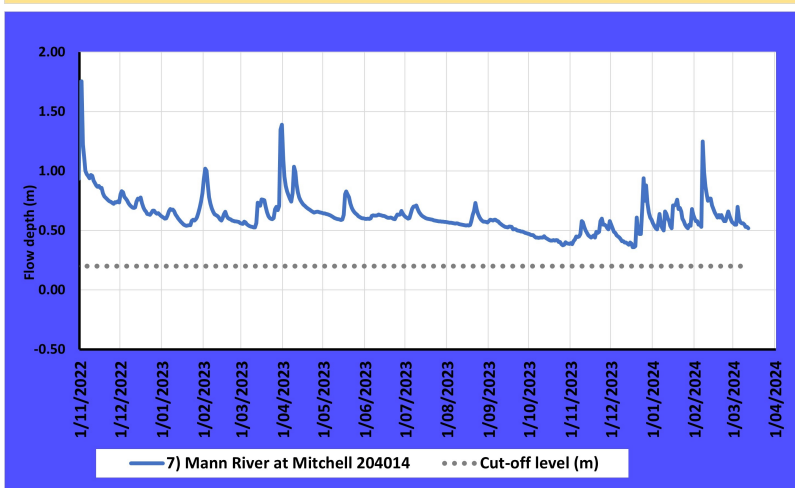
5. Towamba R at  
Towamba (site ID  
220004)  
Min. level = 0.35 m.



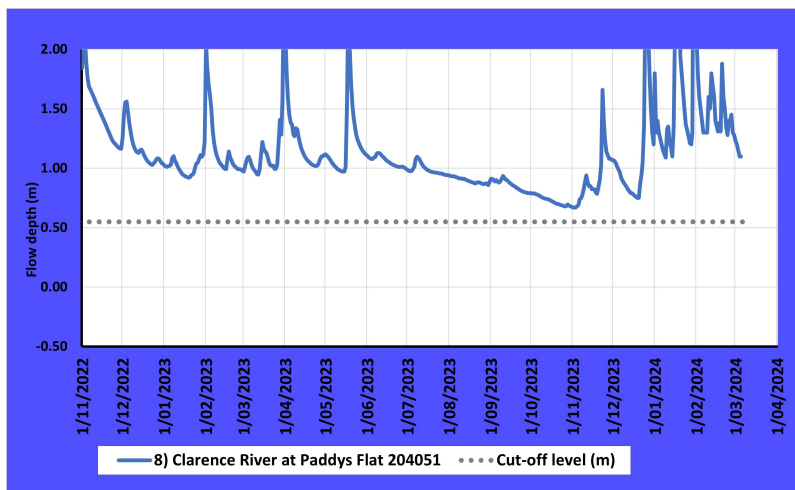
6. Kowmung R at  
Cedar Ford (site ID  
212260)  
Min. level = 0.40 m.



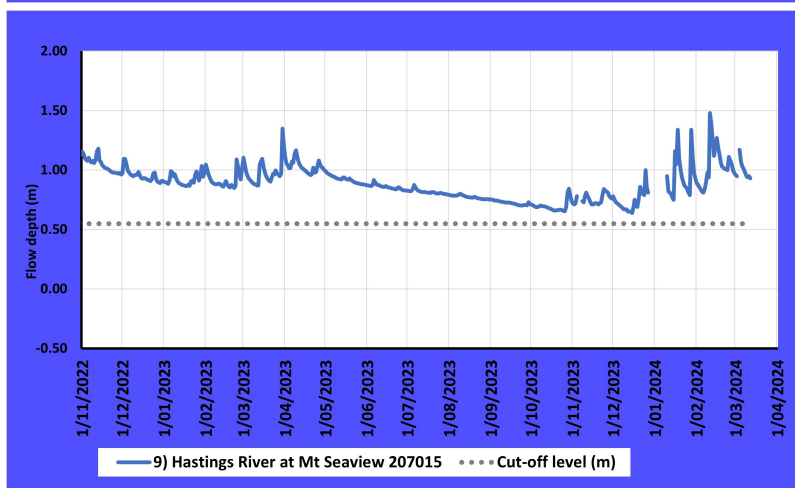
7. Mann R at  
Mitchell (site ID  
204014)  
Min. level = 0.20 m.



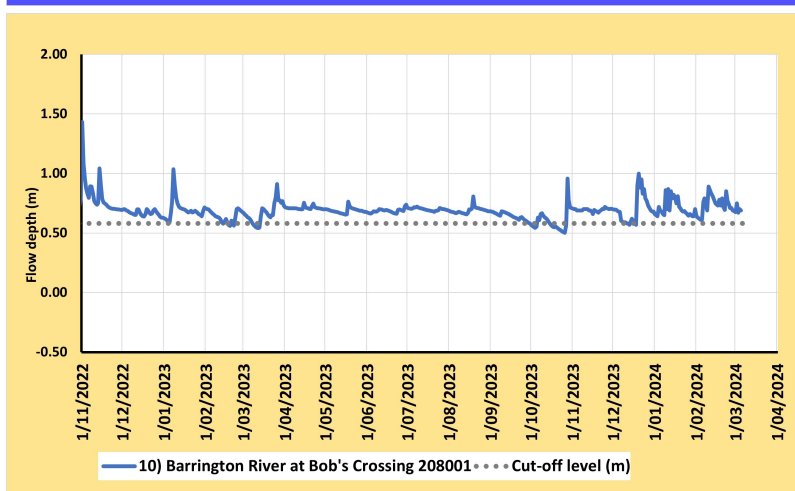
8. Clarence R at  
Paddys Flat (site ID  
204051)  
Min. level = 0.55 m.



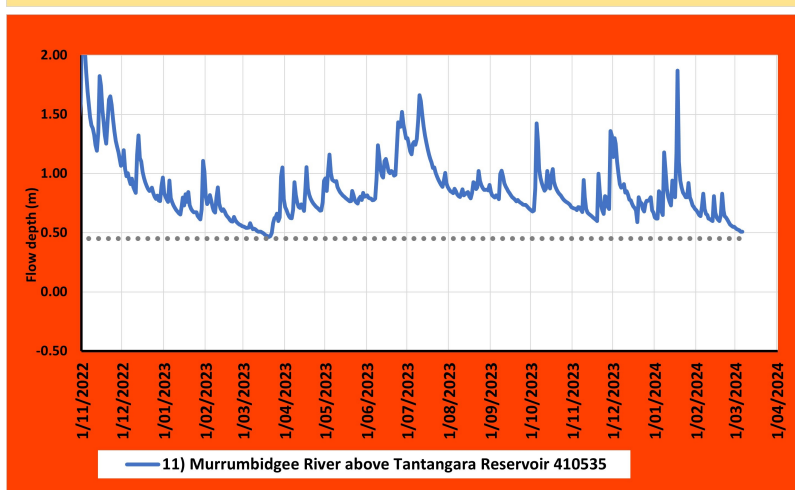
9. Hastings R at Mt  
Seaview (site ID  
207015)  
Min. level = 0.55 m.



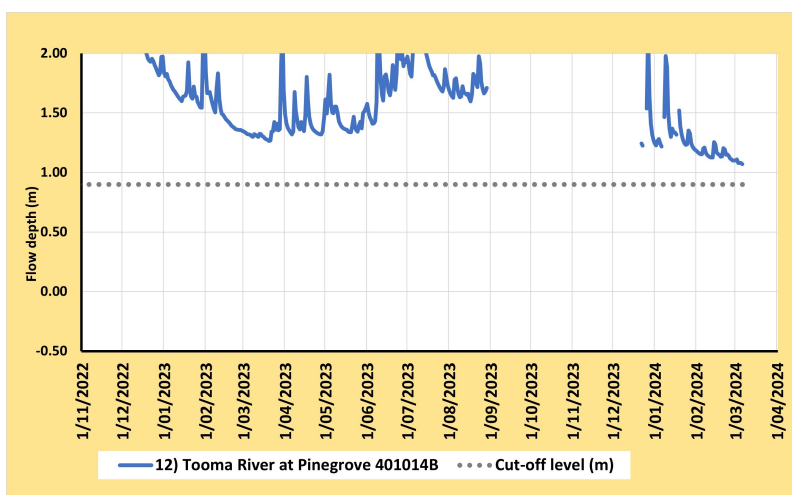
10. Barrington R at  
Bobs Crossing (site  
ID 208001)  
Min. level = 0.58 m.



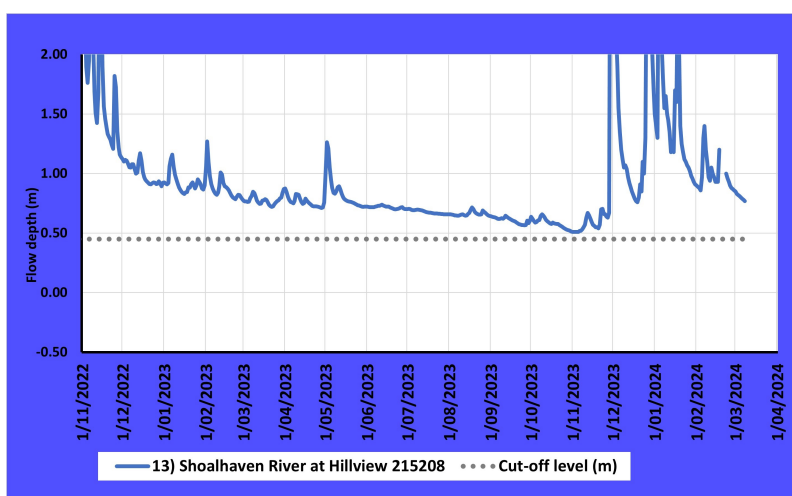
11. Murrumbidgee R  
above Tantangara  
Reservoir (site ID  
410535)  
Min. level = 0.45 m.



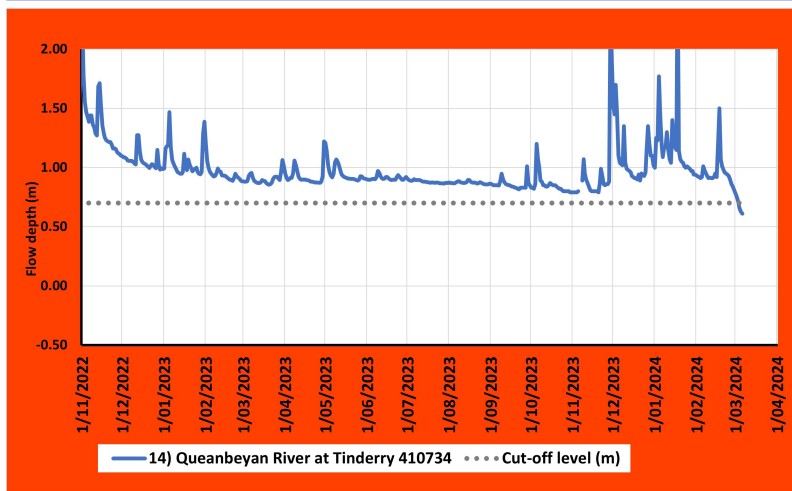
12. Tooma River at Pinegrove (site ID 401014B)  
 Min. level = 0.88m.  
 The Federal Government has gazetted the previously used site (Tooma R above Tooma Reservoir, site ID 401554) as a Commercially Sensitive Site under the Water Regulations 2008. It has been removed from this site.



13. Shoalhaven R at Hillview (site ID 215208)  
 Min. level = 0.45 m.

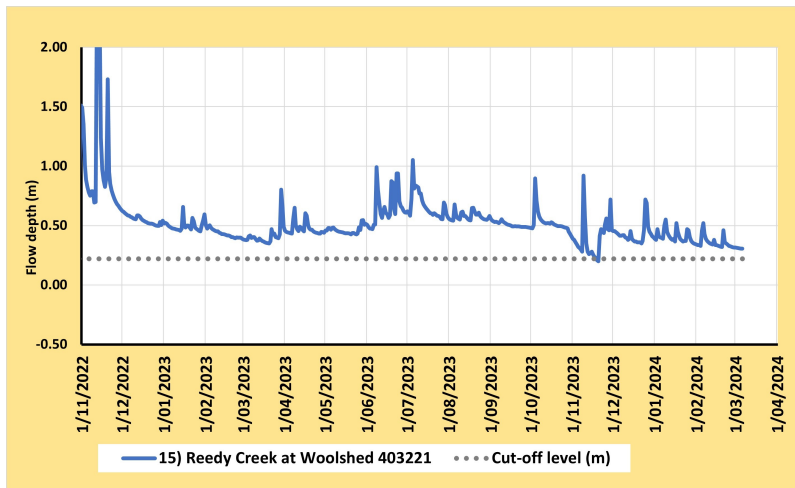


14. Queanbeyan R at Tinderry (site ID 410734)  
 Min. level = 0.70 m.

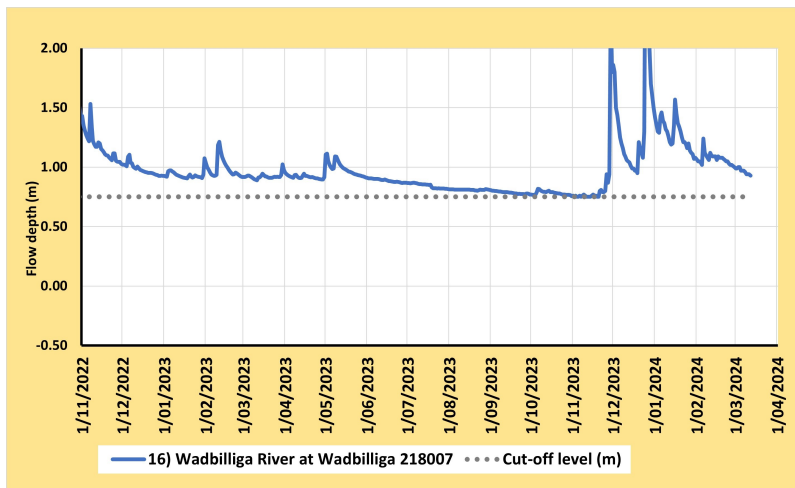




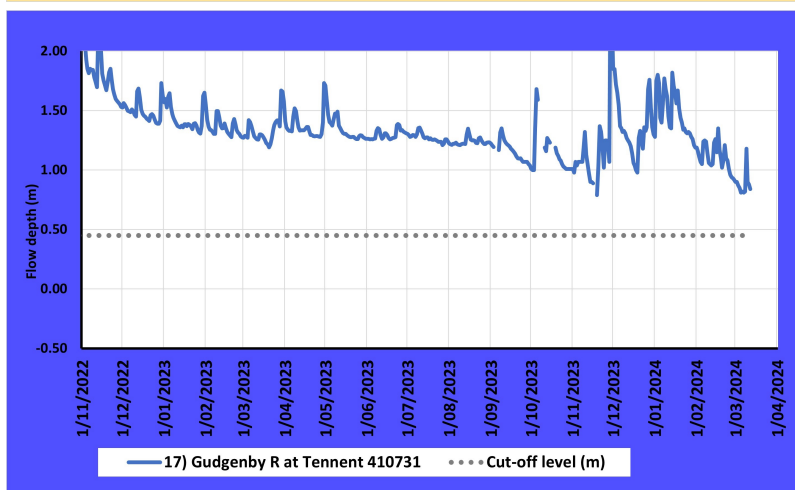
15. Reedy Creek  
(site ID 403221)  
Min. level = 0.22 m.



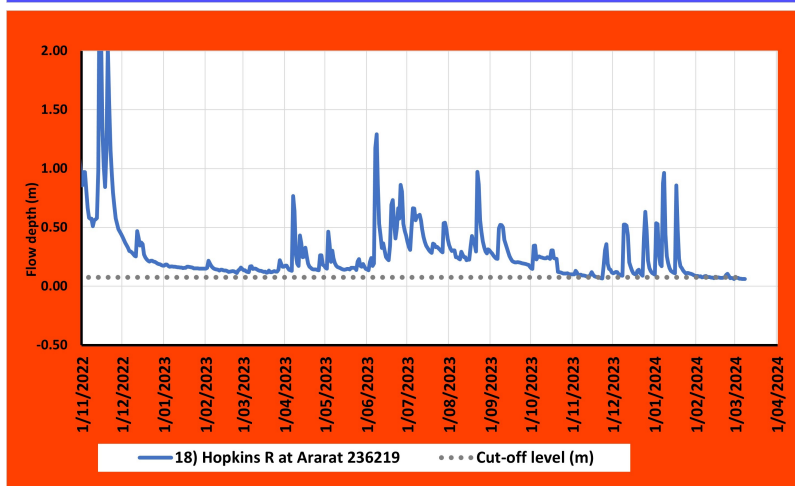
16. Wadbilliga R at  
Wadbilliga (site ID  
218007)  
Min. level = 0.75 m.



17. Gudgenby R at  
Mt Tennent (site ID  
410731)  
Min. level = 0.45 m.



18. Hopkins R at  
Ararat (site ID  
236219)  
Min. level = 0.075  
m.



# ARCHIVE

[End of September](#)

[2023](#)

[End of October](#)

[2023](#)

[Early December](#)

[2023](#)

[End of December](#)

[2023](#)

[Early January 2024](#)

[End of January 2024](#)

[Middle of February](#)

[2024](#)

[End of February](#)

[2024](#)