Murray Darling Basin dissolved oxygen

Water quality update - 17 January 2022

Multiple agencies are undertaking water quality monitoring to assess dissolved oxygen conditions across NSW and identify potential risks to ecological communities. This update provides an assessment of dissolved oxygen data collected up to 17 January 2022.

Where are the main areas of concern?

There are two main areas of concern for fish health in NSW – the Barwon and Darling rivers in the north and the Murrumbidgee catchment in the south. State and Commonwealth agencies are also continuing to monitor dissolved oxygen levels in the Murray, Kolety/Edward and Lachlan rivers.

Barwon and Darling Rivers

Floodwaters from heavy rain in the Northern Murray Darling Basin during November have peaked at Bourke at around 75 GL/day and are continuing to make their way down the Darling River. The peak flow is expected to reach Menindee Lakes in the second week of February. Monitoring of the Barwon River from Collarenebri to Brewarrina shows dissolved oxygen levels have been below the critical ecological threshold of 2 mg/L but there has been improvement in recent weeks (Figure 1).

As a general guide, native fish and other large aquatic organisms require at least 2 mg/L (milligrams per litre) of dissolved oxygen to survive but may begin to suffer at levels below 4 to 5 mg/L. Despite the very low results, no major fish deaths have been reported in this area. If you see dead fish or fish starting to gasp at the water surface, please call the **NSW DPI Fisheries Hotline 1800 043 536.**

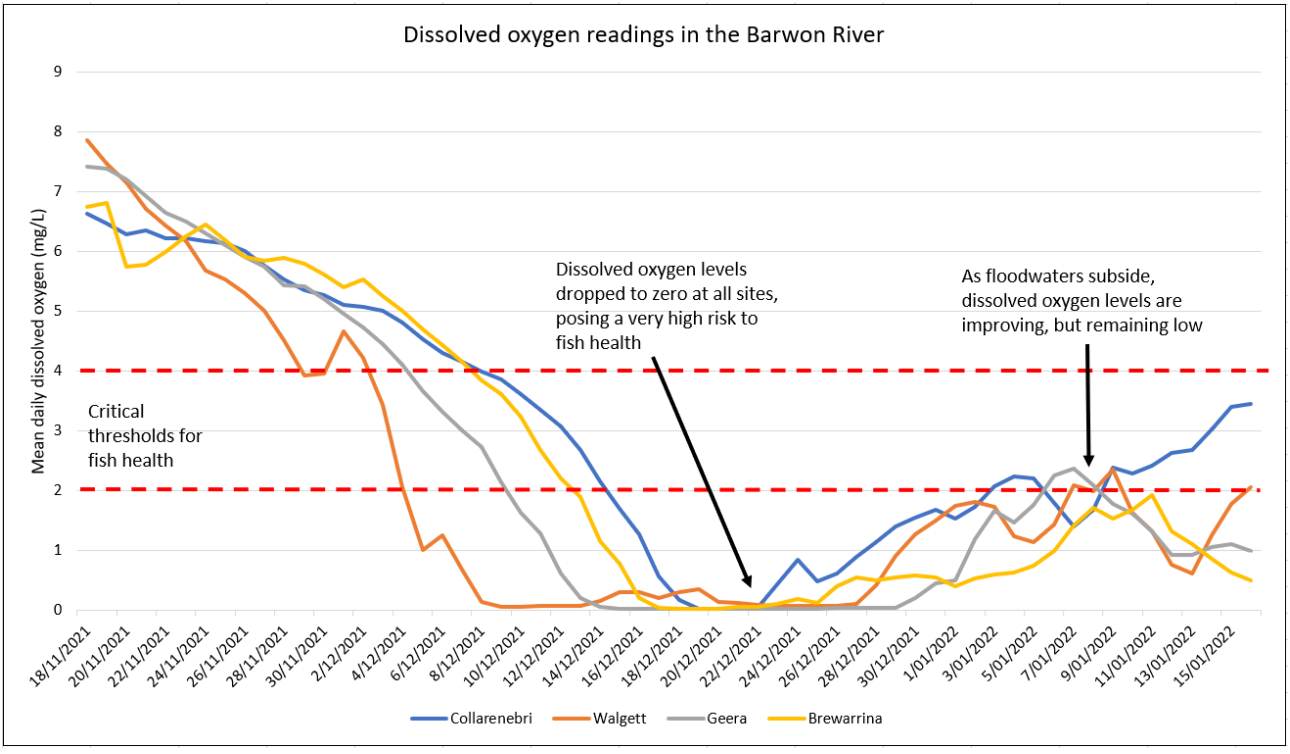

Figure 1. Mean daily dissolved oxygen (mg/L) in the Barwon River

Dissolved oxygen at Bourke and Louth dropped to very low levels but are showing signs of improvement. It is expected that dissolved oxygen at Wilcannia will continue to decline below critical levels as the deoxygenated water arrives from upstream. (Figure 2).

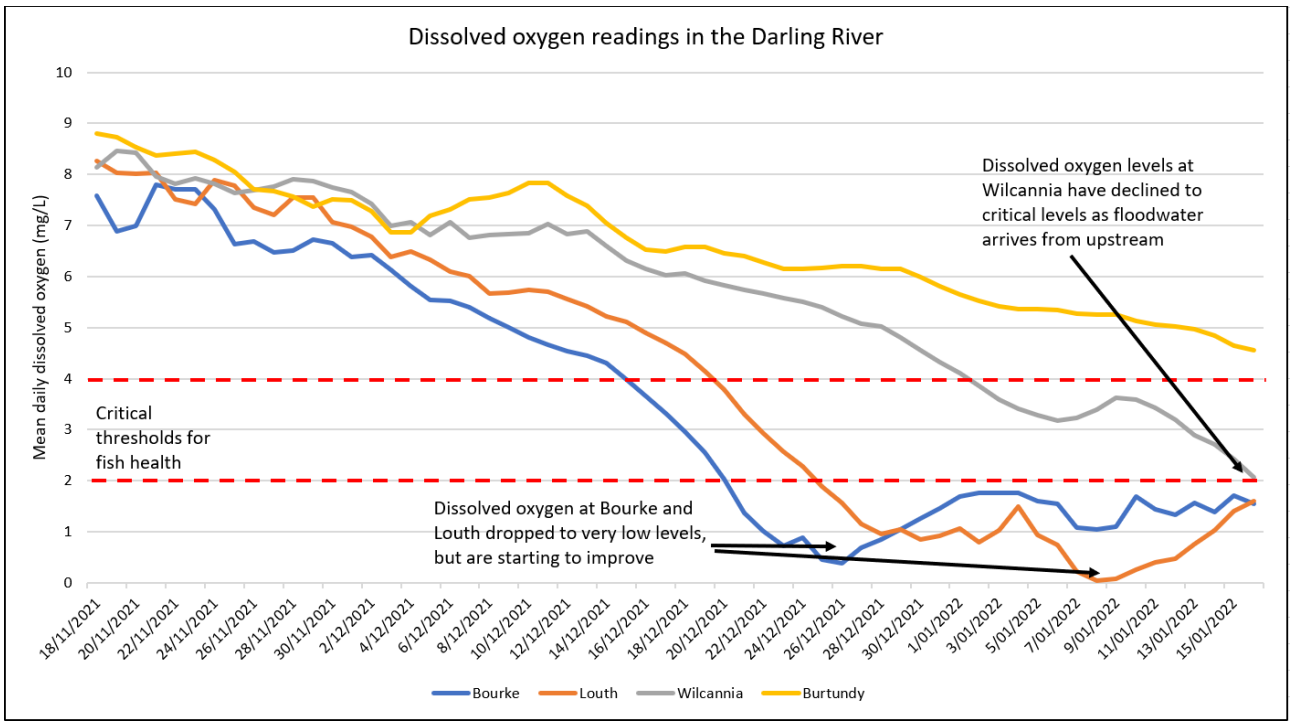

Figure 2. Mean daily dissolved oxygen (mg/L) in the Darling River

Management options to address hypoxic blackwater in the Barwon and Darling Rivers

The issue of very low dissolved oxygen extends over hundreds of kilometres of river, and it will continue to progress downstream. There are very limited options available to address a hypoxic (low oxygen) blackwater event on this scale in the Barwon and Darling rivers.

Releases are continuing to be made from Menindee Lakes of around 20 GL per day to assist in capturing the peak inflows as they arrive. Some 400 GL of airspace capacity is currently available in the Lakes. Dissolved oxygen in the Lower Darling is currently at acceptable levels. However, when the Menindee Lakes are full and in flood operation there may be limited ability to manage the quality of the releases into the lower Darling.

The situation will continue to be monitored by WaterNSW and the Department of Planning and Environment. WaterNSW are holding Menindee Operations Community Update meetings to inform and discuss forecast inflows and planned operations for Menindee Lakes.

Murrumbidgee catchment

Dissolved oxygen levels have improved at Maude and Redbank weirs during January 2022, but they remain below 4 mg/L at Balranald weir (Figure 3). Environmental water has been used to maintain the discharge at Maude weir above 5,000 ML/day to provide an oxygenated refuge for fish further downstream where hypoxic floodwater is returning to the main channel from the floodplain.

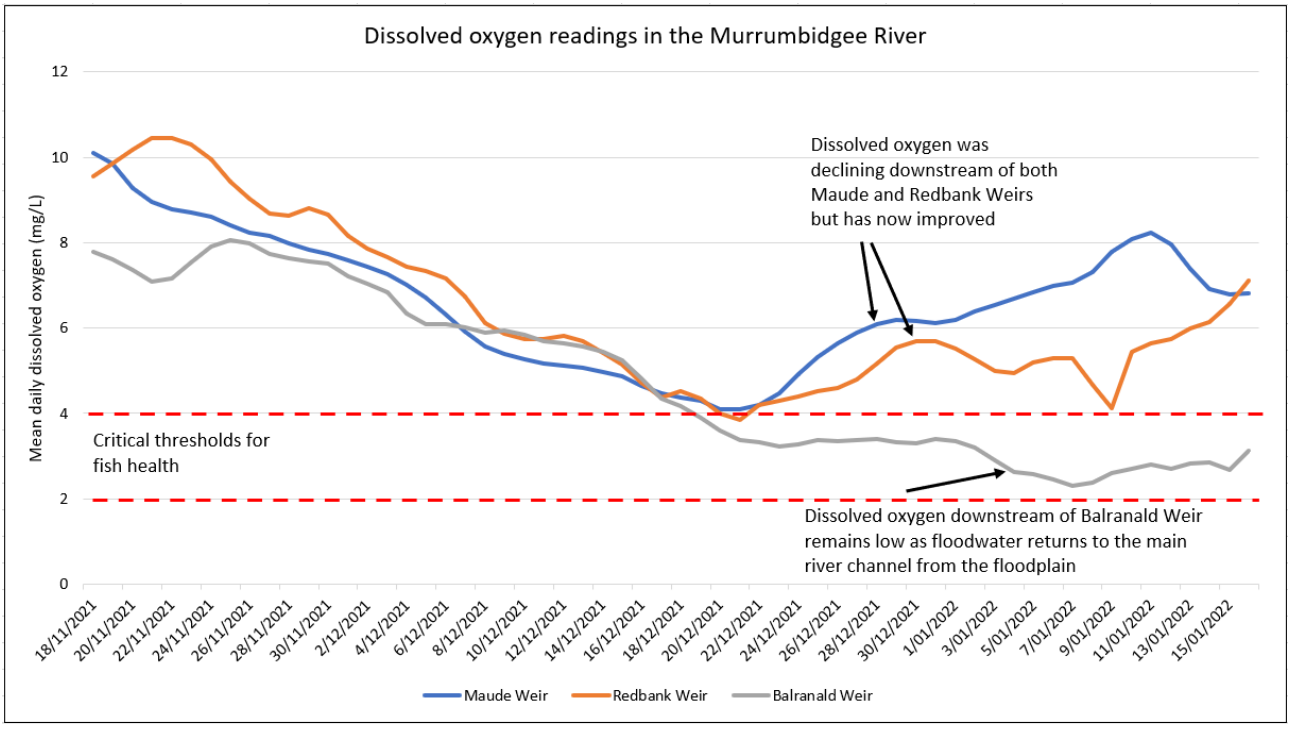

Figure 3. Mean daily dissolved oxygen (mg/L) in the Murrumbidgee River

Bundidgerry Creek

NSW Fisheries investigated reports of Murray Crayfish and shrimp emerging from Bundidgerry Creek, upstream of Narrandera. Water quality sampling was undertaken by NSW Fisheries on 10 January from Berembed Station Bridge to Rocky Waterholes. The point source was identified as Cowabbie Creek, affecting some 30 km of Bundidgerry Creek downstream to Lake Talbot. A second point source was located a further 8 km upstream of Cowabbie Creek (Figure 4) The cause of the hypoxic blackwater inflows was very heavy rainfall and subsequent runoff into Cowabbie Creek between 6 and 8 January.

Environmental water was released to increase flow and flush the hypoxic water from Bundidgerry Creek to protect the aquatic life. On 12 January, affected Murray Crayfish were temporarily relocated to Narrandera Fisheries Centre by NSW Fisheries staff. Fish deaths were recorded, with up to 100 fish affected, including Murray Cod, Golden Perch, Bony Herring, Australian Smelt and alien Carp and Redfin Perch.

Figure 4. Cowabbie Creek inflow (left) and second point source upstream of Cowabbie Creek (right), 10 January 2022 (source NSW Fisheries)

Monitoring shows that an improvement in the quality of the water flowing in from Cowabbie Creek, combined with the implemented management actions, has led to improved dissolved oxygen in Bundidgery Creek (Table 1). Location of monitoring sites is shown in Figure 5.

Table 1. Dissolved oxygen monitoring results from Bundidgery Creek - 10 to 14 January (NSW Fisheries)

Date	Cowabbie Ck	7 mile	5 mile	Rocky Waterhole
10/01/2022	2.3	1.6	1.3	1.0
11/01/2022	2.1	1.6	0.9	0.3
13/01/2022	1.6	4.02	2.65	0.65
14/01/2022	4.5	4.22	3.66	2.88

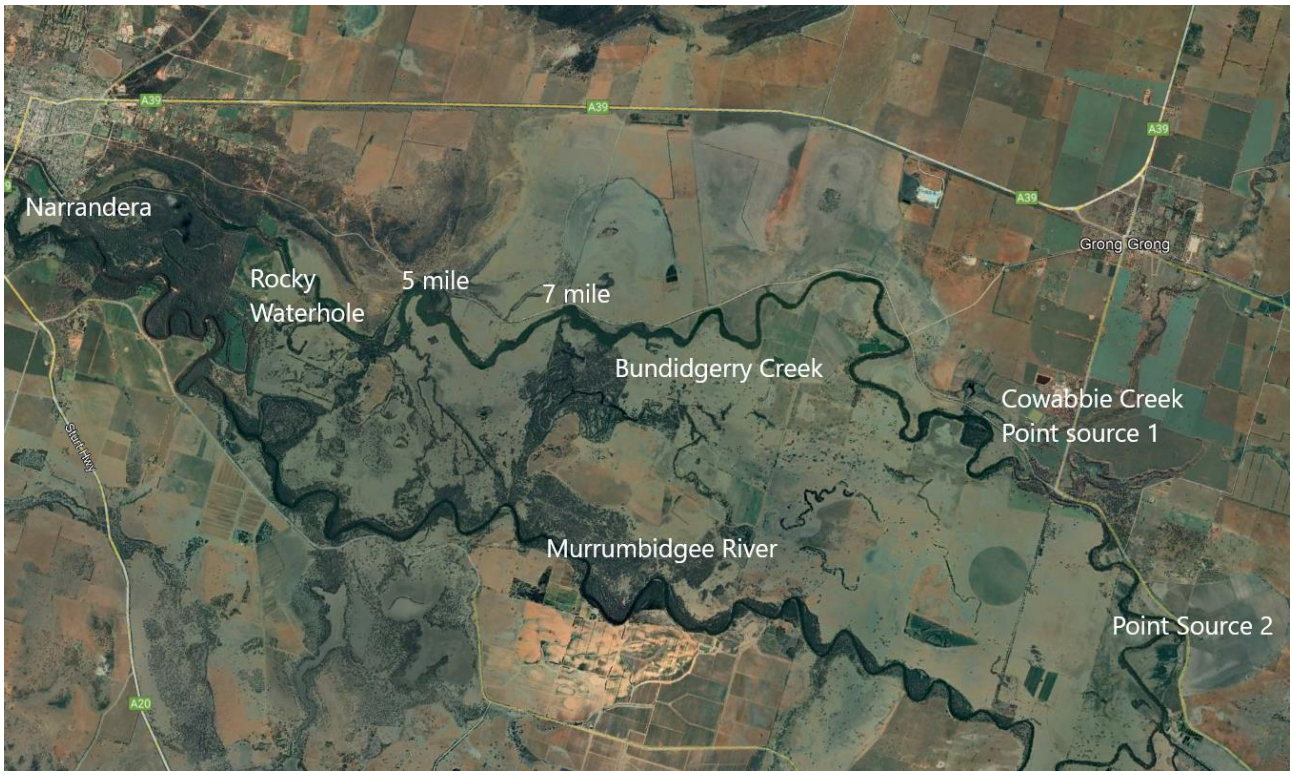

Figure 5. Location of dissolved oxygen monitoring sites in Bundidgerry Creek

Other areas of concern in NSW

State and Commonwealth agencies are continuing to monitor dissolved oxygen levels in the Murray, Kolety/Edward and Lachlan rivers.

The Commonwealth Environmental Water Office and Department of Planning and Environment – Environment, Energy and Science are working with WaterNSW to identify areas where water may need to be delivered to provide an oxygenated refuge to address low dissolved oxygen.

Weather forecast

The Bureau of Meteorology eight-day total rainfall forecast (Figure 6) indicates the highest falls over the coming week will be on the Far North Coast with decreasing falls toward the south of NSW. The predicted totals are unlikely to result in major flooding, however isolated thunderstorms may result in localised flooding. The long-term rainfall outlook for February is for average conditions for most of NSW, with an increased chance of above average falls along the coast.

Bureau of Meteorology rainfall maps are available at: www.bom.gov.au/jsp/watl/rainfall/pme.jsp

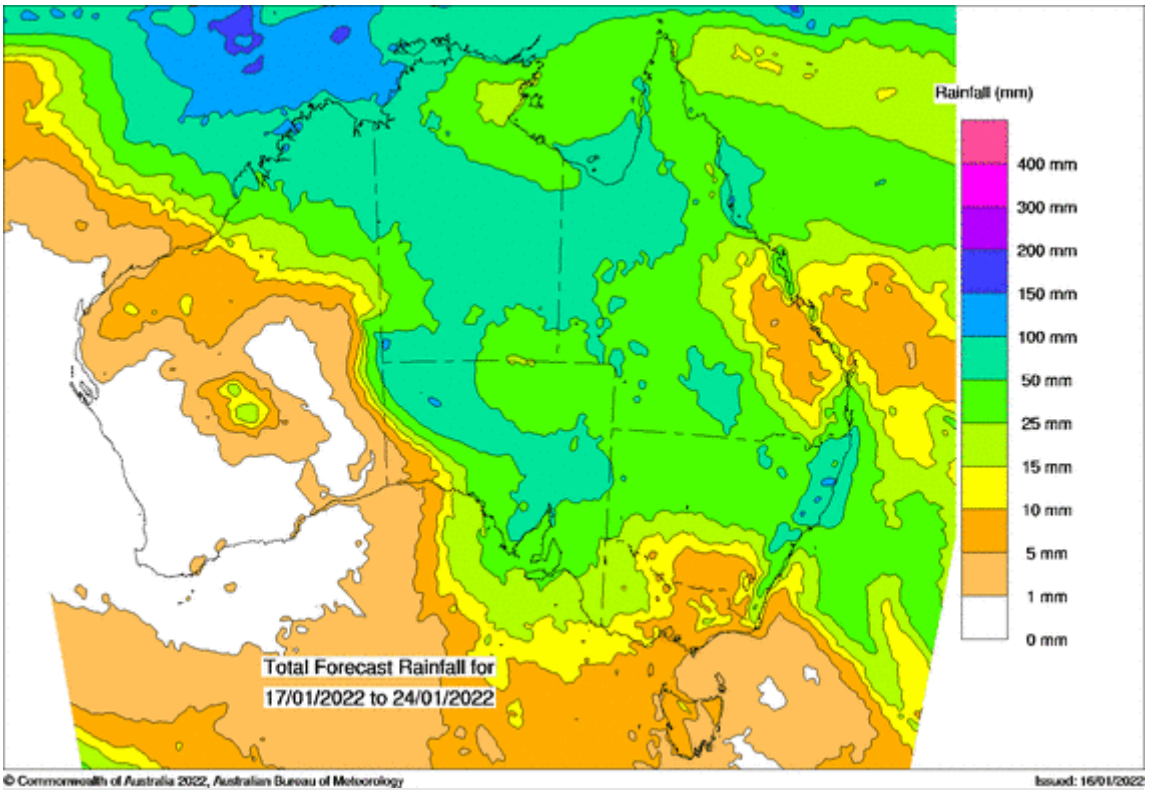

Figure 6. Eight-day rain forecast from 17 to 24 January

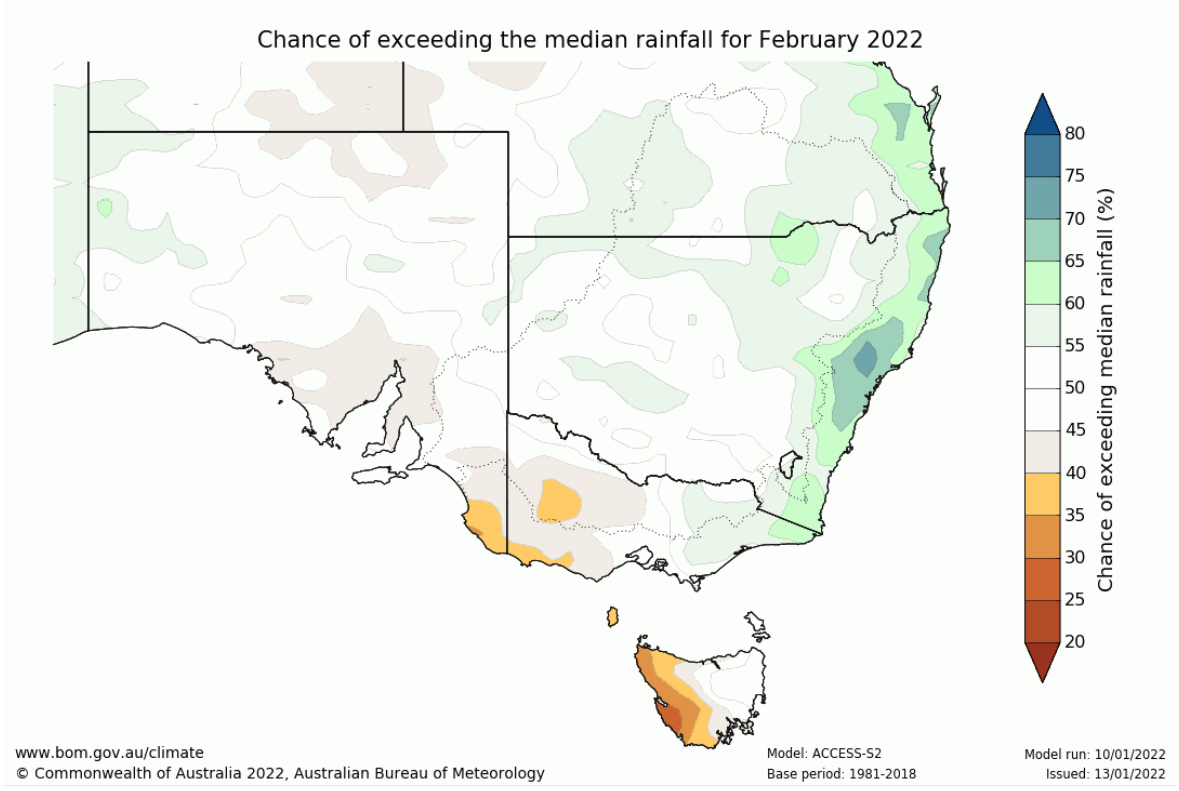

Figure 7. Chance of exceeding median rainfall for February in South Eastern Australia

Additional information

NSW and Commonwealth agencies will continue to monitor weather and river conditions in all valleys over summer.

To notify the department of potential blackwater events email waterqualitydata@dpie.nsw.gov.au or to report dead fish or fish starting to gasp at the water surface call the NSW DPI Fisheries Hotline 1800 043 536.

Further information on blackwater events can be found at the DPIE Water website https://www.industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery/blackwater

or the MDBA website https://www.mdba.gov.au/publications/mdba-reports/water-management-101-factsheets