

Lower Darling River – water quality and flow release update – 17 July 2024

Multiple agencies are monitoring water quality at Menindee and the lower Darling River to minimise the risk of further fish death events. This update provides a summary of information up to 17 July 2024.

There have been no further reports of fish deaths in the Darling River weir pool near Menindee. The minimum release required for the lower Darling River from May to October is 200 ML/day. Currently, discharge is being maintained at 400 ML/day using environmental water to make up the additional 200ML/day. The additional environmental water is aimed at providing benefits for Lower Baaka native fish populations and to help aid in the fish population recovery.

Ongoing lower water temperatures have provided an opportunity for dissolved oxygen levels to recover from those experienced earlier in 2024. Water quality monitoring is showing water temperatures are cooler and dissolved oxygen levels in the Darling River at Menindee are remaining above the critical thresholds for fish health. In response to improved dissolved oxygen results, and downgraded algal alerts from the red to amber, the volumes of water being released from Lake Wetherell and Lake Menindee will be adjusted this week (starting 15 July) to help conserve the water resource stored in the upper lakes. Changes to discharge have been implemented as follows:

- Decrease flows from Lake Wetherell Outlet 400 ML/day down to 200 ML/day, then cease to flow the following day.
- Flows will commence from the Lake Menindee Outlet at a rate of 200 ML/day, increasing by 200 ML/day the next day to maintain a flow of 400 ML/day at Weir 32.

These will remain in place at least until works to complete the removal of the old town weir have been complete. Ongoing monitoring will continue to inform operations to mitigate potential fish deaths. To report any incidents of dead fish, fish struggling or starting to gasp at the water surface, or crayfish exiting the water, please call the NSW Department of Primary Industries and Regional Development - Fisheries' Fishers Watch Phonenumber 1800 043 536 or fill in a fish kill protocol and report form (including a photo) at:

<https://www.dpi.nsw.gov.au/fishing/habitat/threats/fish-kills-2019-2020/info-sheet> or

<https://www.dpi.nsw.gov.au/fishing/compliance/report-illegal-activity> using the 'dead or dying fish' check box.

Vertical profile water quality monitoring – Darling River at Menindee

As the surface water of the river is heated by the sun, the water at the bottom of the deeper pools is often not warmed to the same temperature. During the summer months this can result in a difference in temperature between surface and bottom waters which is known as thermal stratification. This can lead to other water quality

issues such as increased algal blooms on the surface, and nearer the riverbed, low dissolved oxygen. When the thermal stratification breaks down, this water near the riverbed with low dissolved oxygen is mixed through the whole water column where it can impact on fish health.

Monitoring in the weir pool at Menindee township shows some thermal stratification between the surface and 3.0 to 4.2 meters, with thermal stratification breaking down each morning and mixing of water through the water column (Figure 1). Readings at 1.2m are currently unavailable.

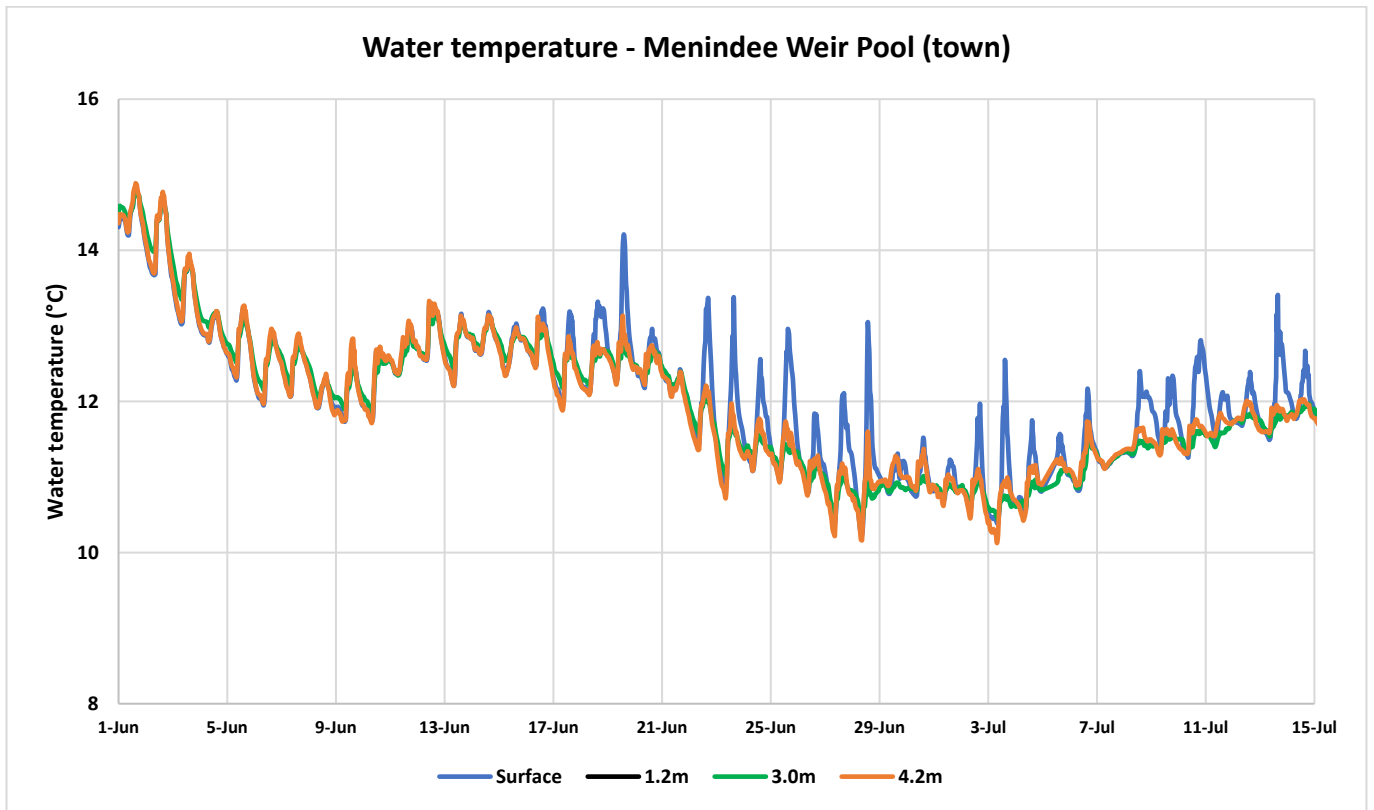


Figure 1: Water temperature (°C) continuous monitoring in the Darling River downstream of Menindee

Dissolved oxygen results from the weir pool at Menindee township (Figure 2) and further downstream of Menindee (Figure 3), show dissolved oxygen remains above the safe level for fish health of 4 mg/L. As a general guide, native fish and other large aquatic organisms require at least 2 mg/L of dissolved oxygen to survive but may begin to suffer if levels are below 4 to 5 mg/L for prolonged periods.

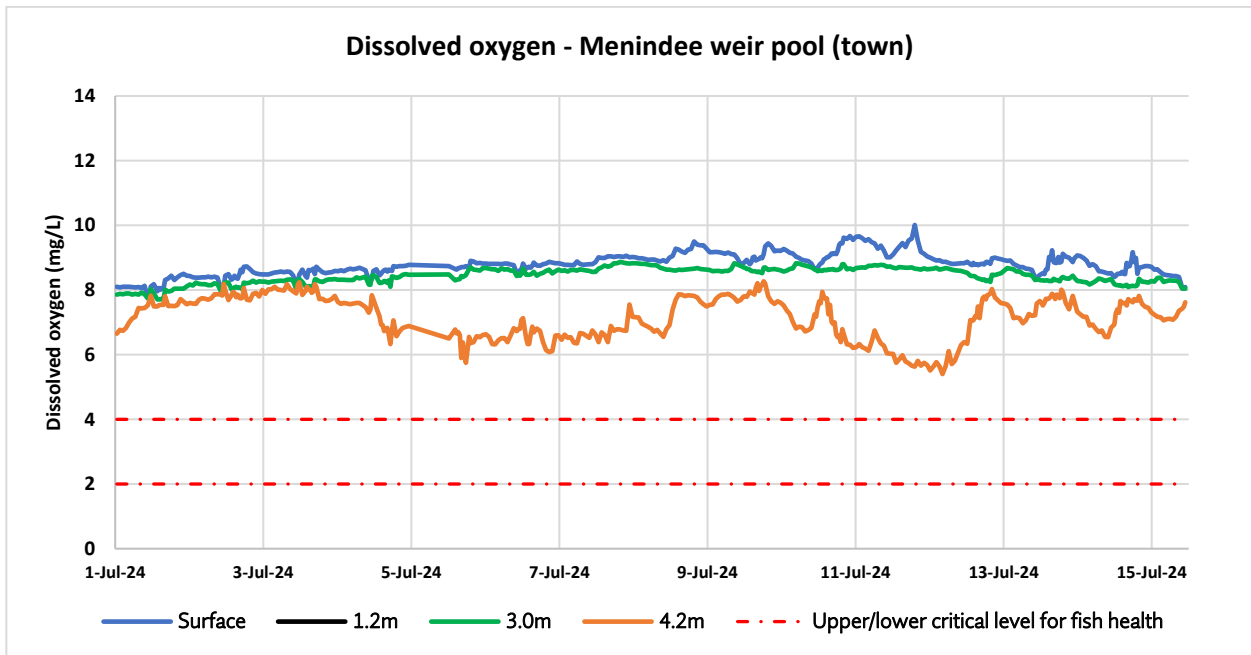


Figure 2: Dissolved oxygen (mg/L) continuous monitoring in the Darling River at Menindee

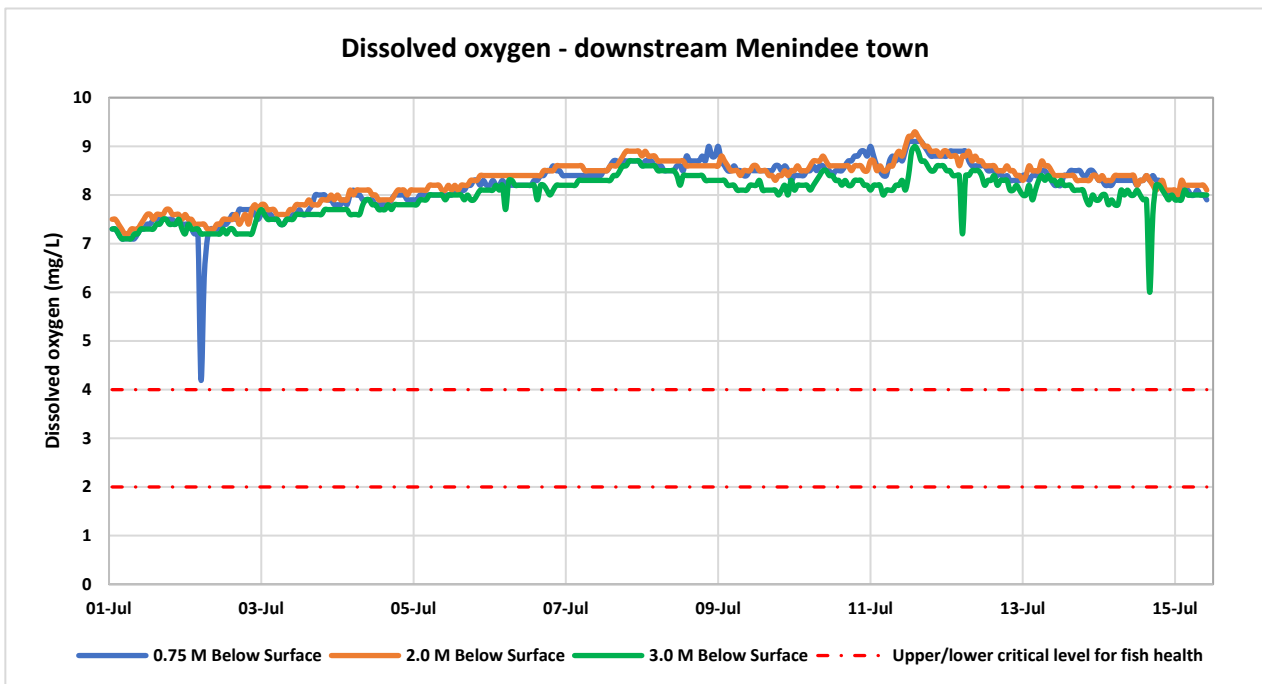


Figure 3: Dissolved oxygen (mg/L) continuous monitoring in the Darling River downstream of Menindee

In addition to the release of oxygenated water from Lake Wetherell, water temperatures compared to the beginning of June have reduced as air temperatures cool. The amount of dissolved oxygen water can hold increases with decreasing water temperature. The process of bacteria breaking down organic material in the river slows down as water temperature decreases, which uses up less oxygen. The combination of these two processes is providing an opportunity for dissolved oxygen levels to recover.

With the improvements in water quality in Menindee Lakes and the lower Darling River, WaterNSW have resumed normal operations with flows coming out of Lake Menindee. Water quality monitoring will be maintained and reviewed to guide operations, aiming to prevent potential fish deaths.

Fish death summary

In the past week to 17 July there have been no reports of dead fish in the Darling River at Menindee.

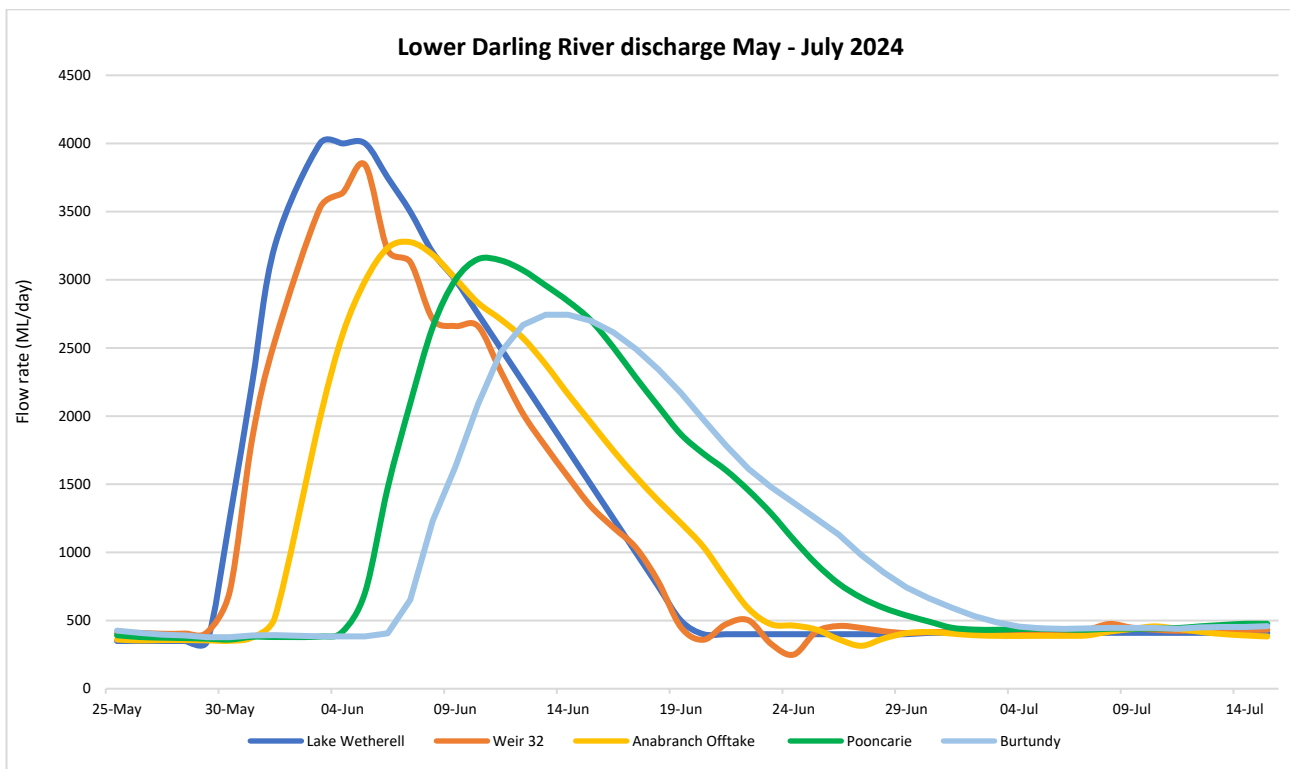
What is being done?

Flow releases into the lower Darling

In May 2024, the Basin states agreed to undertake the first trial to protect environmental water flowing from the northern to the southern Murray Darling Basin. Under the trial arrangements, environmental flows will be shepherded through the remaining length of the Murray Darling system.

The trial utilised held environmental water that was protected in the Northern Basin under active management rules. These rules have been in place since 2020. The trial is expected to last for 12 months, from May 2024 until June 2025. This recent release from Lake Wetherell was the first to be undertaken as part of this trial.

The inflow of a large volume of better quality, turbid water from the Northern Basin had improved water quality conditions in Lake Wetherell. The release from Lake Wetherell commenced on 29 May, increasing to a peak of 4,000 ML/day on 1 June. The peak reached the Weir 32 flow gauging station on 5 June (3,857 ML/day), and then the Great Darling Anabranch offtake on 7 June (3,289 ML/day), Pooncarie on 10 June (3,167 ML/day) and Burtundy on 11 June (2,752 ML/day) (Figure 4). By the end of June, the majority of the pulse had past the Burtundy gauging station.



Figure

4: Discharge along the lower Darling River (ML/day)

The inflow of turbid water from the Northern Basin had made the conditions in Lake Wetherell less favourable for blue-green algae growth, resulting in algal numbers dropping from the red to amber recreational alert warning level on 10 May (**Error! Reference source not found.**). By 28 June, all sites in the lower Darling River had been downgraded to the green or nil alert level indicating the release had successfully flushed algae from the system. Due to weather conditions and access issues, water samples could not be collected at Lake Pamamaroo centre, causing the red alert levels to remain in place for longer. To reduce an algal alert level from red to amber, two consecutive lower laboratory results are required.

Table 1: Recreation warning levels for algae monitoring sites in Menindee Lakes and the lower Darling River, February to July 2024. The box highlights the week of the start of the release.

Site	23-Feb	1-Mar	8-Mar	15-Mar	22-Mar	29-Mar	5-Apr	12-Apr	19-Apr	26-Apr	3-May	10-May	17-May	24-May	31-May	7-Jun	14-Jun	21-Jun	28-Jun	5-Jul	
Lake Wetherell 1	Red	Red	Red	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Lake Wetherell 2	Red	Red	Red	Green	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Lake Wetherell 3	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Lake Wetherell 4	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Lake Pamamaroo outlet	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Lake Pamamaroo centre	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Lake Menindee	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Broken Hill pump station	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Weir 32	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Tolarno	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Pooncarie	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Burtundy	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Ellerslie	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Tapio	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
u/s Pomona	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Pomona Boat ramp	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red

Key: Nil/Low alert Green alert Amber alert Red alert

As the flush moved downstream and into the Murray River towards South Australia, some water was diverted into Lake Victoria, to mitigate potential impacts of the trial. Monitoring and data collection was then conducted by SA Water Corporation.

Flows from Lake Cawndilla into the Great Darling Anabranch

The delivery of Commonwealth environmental water from Lake Cawndilla to the Great Darling Anabranch has been winding down since July 7, 2024. In discussion with Great Darling Anabranch landholders, flows have temporarily paused over winter to primarily assist downstream landholders to reinstate block bank structures on the adjacent anabranch lakes. Environmental water releases are planned to recommence again from Lake Cawndilla in September 2024 to continue to support native fish movement, other animals and plants. The releases will be dependent on lake volumes and allocation availability.

Blue-green algae

WaterNSW undertake routine blue green algae monitoring in Menindee Lakes and in the Darling River. Alert warnings are declared where algal cell numbers exceed the triggers identified in the Guidelines for Managing Risk in Recreational Waters (NHMRC 2008).

The most recent results indicate an amber alert warning for recreational use in Lake Tandure, Lake Pamamaroo, Copi Hollow, and Lake Menindee. There are also multiple green alert warnings in the lower Darling River at Tapio and Pomona ([Algae Alerts NSW map - WaterNSW](#)).

When a red alert warning is in place, people should avoid recreational activities that brings them into contact with the water and drinking untreated water. At the amber alert warning level, blue-green algae may be multiplying in numbers but remains suitable for recreational use. The water may have a green tinge and musty or organic odour. The water should be considered unsuitable for potable use and alternative supplies or prior treatment of raw water for domestic purposes should be considered. The water may also be unsuitable for stock watering. Water users should use caution and avoid water where signs of blue-green algae are present. A green alert indicates blue-green algae occur naturally at low numbers. At these concentrations, algae would not normally be visible, however some species may affect taste and odour of water even at low numbers and does not pose any problems for recreational, stock or household use.

Darling-Baaka flood recovery program

The Darling-Baaka flood recovery program is a comprehensive river health monitoring program that extends the NSW Government's incident response to the floods and fish kill disasters that occurred in early 2023.

The program is coordinated by the Environment Protection Authority as the lead agency for the NSW Environmental Services Functional Area. It will be delivered until June 2025, extending on the incident response sampling already undertaken this year.

Through the River Health Project, Department of Climate Change, Energy, the Environment and Water – Biodiversity, Conservation and Science have installed 5 telemetered loggers which collect real-time data on water quality in the project area. You can access the real time data online via [Dashboard - Darling Barka River Health Program \(tago.run\)](#)

Weather outlook

Refer to the [Bureau of Meteorology website](#) for the latest forecasts.

Additional information

To notify the NSW Department of Climate Change, Energy, the Environment and Water of potential blackwater events email: waterqualitydata@dpie.nsw.gov.au

To view community updates issued, visit [Community updates and frequently asked questions | Water \(nsw.gov.au\)](#)

To report dead fish, fish struggling or gasping at the water surface, or crayfish leaving the water please call the NSW DPIRD Fisheries Phoneline 1800 043 536 or fill in a fish kill protocol and report form at: <https://www.dpi.nsw.gov.au/fishing/habitat/threats/fish-kills-2019-2020/info-sheet>

Information on recent fish deaths is available at: [Fish kills in NSW](#). When reporting, please include the name of the river/waterbody, location and date of your observation and provide photographs. If possible, please also record what species are affected and an estimate of number of each species observed.

Monitoring data from the monitoring buoys installed by the NSW Department of Climate Change, Energy, the Environment and Water for the Darling-Baaka flood recovery program is available online via [Dashboard - Darling Barka River Health Program \(tago.run\)](#).

Monitoring data from the monitoring buoys installed by WaterNSW and operational updates are available on their Water Insights web page ([WaterInsights - WaterNSW](#)).

Further information on blackwater events can be found at the NSW Department of Climate Change, Energy, the Environment and Water website at: <https://www.industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery/blackwater>

Additional information is also available on the Murray-Darling Basin Authority website at: <https://www.mdba.gov.au/publications/mdba-reports/water-management-101-factsheets>

Water quality data collected after the fish deaths at Menindee is available on the Environment Protection Authority web page at: <https://www.epa.nsw.gov.au/working-together/community-engagement/updates-on-issues/menindee-fish-kill>

To report suspected algal blooms see the [WaterNSW website](#).