

# Fish deaths in Menindee

---

The following information is provided to answer key questions raised by the community.

---

---

## Town water supply and quality and clean-up

### Is the drinking water safe?

Yes. Essential Water has increased sampling and testing of drinking water to ensure it continues to meet the Australian Drinking Water Guidelines.

Essential Water use laboratories certified to Australian standards and NSW Health reviews the results. Results of recent testing confirm the quality had not been impacted by event and therefore safe for customers to drink.

There is no need for community concern as there are multiple viable solutions to maintain water supply to the Menindee township and surrounds, if alternatives are required. The frequency of water quality testing has been increased, which will ensure immediate action if a switchover for supply is required.

### What is the NSW Health advice on the drinking water?

Advice from NSW Health is that the drinking water supply in Menindee township is safe to drink and continues to meet all health-related Australian Drinking Water Guidelines (the Guidelines) values.

The supply of drinking water in Menindee is the responsibility of Essential Water. Essential Water participates in the NSW Health Drinking Water Monitoring Program. The council submits weekly microbiological and twice-yearly chemistry samples to a NSW Health laboratory for analysis. The sampling has increased during this time.

For any households that do not have access to the treated town water supply, they may need to consider an alternative source such as having treated water transported to their property or putting in place an additional treatment step, such as filtration and disinfection, to maintain water quality.

### What if I rely on water direct from the river?

Additional supply via water carting is available to residents in the Main Weir pool whose properties ordinarily rely on the river for water supply. Those residents can contact Central Darling Shire Council for advice and/or assistance by phoning (08) 8083 8900.

### Will water be carted beyond the weir pool?

No. Most homes should have a rainwater tank for household use. If there are homes without access to clean rainwater, water can be ordered from your local water carting firm.

### **Are there health guidelines to provide advice for people using water from rivers?**

Yes. NSW Health advise that surface water from farm dams, rivers and creeks should not be used for drinking or cooking without appropriate treatment. This applies to any location in NSW, not just Menindee.

Surface water may be acceptable for non-potable uses such as washing clothes, irrigation, gardening, toilet-flushing, but we recommend that water used for bathing is at least disinfected before use.

NSW Health warns that heavy rainfall and flooding increases the risk of contaminated water which could contain disease causing micro-organisms, chemicals or algal blooms, entering surface waters such as rivers and creeks. Blue-green algae may cause skin irritation. Water quality may be affected during drought as flow and the amount of water is reduced.

Further information can be found on the NSW Health website.

### **What progress has been made on the clean-up?**

Planning and assessments for clean-up efforts, which will include operations to remove as many dead fish as possible in priority areas, are ongoing.

A contractor with specialised skills and equipment arrived at Menindee on Tuesday afternoon with work commencing on the river on Wednesday morning. An additional contractor arrived in Menindee on Thursday to join the clean-up effort,

The clean-up efforts are being assisted by Fire and Rescue NSW, who have been on the ground since Tuesday conducting assessments and preliminary works ahead of the on-water activities.

Further information on this aspect of the operation will be made available as it comes to hand.

### **How long will it take to clean up the fish kill?**

There are many variables which could impact how long this clean-up effort takes including weather, road access, contractor availability, whether another fish kill occurs etc.

Be assured the NSW Government and Council are fully committed to the ongoing clean-up effort.

Two Fire and Rescue NSW trucks and specialist HAZMAT crews have deployed large rubber 'booms' in the river, which are 200m long, sink to a depth of 40cm and float on top of the water, which will assist with vessel operations.

This will have a significant impact on the number of fish we will be able to remove and the speed in which we do it.

Obviously, we will be required to close sections of the river to facilitate the work, so operators of boats and other watercraft should seek advice before heading out and otherwise obey directions from emergency and maritime services.

Once removed, the fish will be transported away from town for disposal as landfill.

## Monitoring and ongoing management of this hypoxic blackwater event

### What actions have been taken to help the current situation?

NSW and Commonwealth Government agencies have been closely monitoring conditions and taking active steps where possible to alleviate pressure on the system.

While mitigation options in these circumstances are limited, we are working closely with partner agencies to ensure the water releases into the Darling River have the best chance of achieving better dissolved oxygen levels, to reduce the likelihood of further fish kills.

Targeted releases of higher quality water from Lake Pamamaroo began flowing to the lower Darling Baaka River as soon as our monitoring detected dissolved oxygen levels approaching those critical to fish health.

On Sunday (19 March), there were reports of large-bodied natives (e.g. Golden Perch), struggling or dead downstream of the Menindee outlet, where up until very recently the dissolved oxygen was adequate. Agencies acted quickly to increase the flows on Sunday afternoon from 2,900 megalitres per day up to 4,000 megalitres per day.

Readings indicated the dissolved oxygen levels improved and it's believed many fish have been saved as a result. However, dissolved oxygen levels from Main Weir to Menindee Creek, and further downstream remain a major concern and there is still a risk of more fish deaths.

Water is being delivered to reduce the risk of further fish deaths by maintaining releases of better quality water from the Menindee Lakes and providing water between Main Weir and Weir 32. To try and maintain the flow of better quality water in the Darling River through Menindee township and reduce the risk of further fish deaths, releases from the Lake Pamamaroo outlet will continue.

Releases from Lake Menindee will also continue, to dilute the low oxygen water coming past Menindee town, and to maintain higher dissolved oxygen levels downstream of Weir 32. The discharge will also attempt to maintain flow velocity that research has shown provides conditions that are less favourable for harmful algal bloom formation. Ongoing monitoring will identify if the operations achieve the desired results.

We are very aware of the importance of balancing water releases to improve environmental outcomes, while also maximising water storage for future needs.

### Why has it taken so long to fix this blackwater problem?

Hypoxic blackwater is a naturally occurring phenomenon which will eventually pass once enough carbon has been broken down in rivers. State and commonwealth agencies have been closely monitoring the situation since October last year. There are a number of factors at play that have likely drawn out this blackwater problem between the weirs.

Despite the releases of good quality water from Pamamaroo and Menindee, we believe the decomposing fish, fish which remain in the river and the warm temperature of the water is reducing the effectiveness of the releases.

### **Operations plan – what are the options being considered?**

If monitoring indicates dissolved oxygen levels are improving, releases from the top lakes could be scaled back to conserve water storage.

We could release even more water, however, if flows from the top lakes are increased, this could push water with low dissolved oxygen beyond Menindee outlet and make the dissolved oxygen in this stretch of the river even worse.

The option of releasing a ‘flushing flow’ or ‘pulse’ from the top lakes carries a high risk of moving the poor quality water downstream and making the quality of the water after Menindee Creek and Weir 32 worse. Flushing would also require significant quantities of water. The amount of water in the storage also needs to be protected/balanced against water security needs heading into potentially drier years.

The multi-agency working group believes the best option currently is to continue with the management actions presently in place, reviewing their effectiveness.

### **What is the long-term environmental effect on the ecosystem?**

Despite short-term effects on aquatic organisms, the floods which lead to blackwater are an essential and valuable part of the long-term health of river, floodplain and wetland ecosystems, particularly after prolonged drought. These events help break down organic material which supply additional nutrients to drive the overall production of river and wetland systems. In the long-term, native fish, waterbirds and other organisms benefit from the increased production that boosts food supplies and supports breeding cycles.

### **Why aren't embargos being put on the upstream irrigators such as cotton growers?**

Embargoes are used in severe droughts to protect critical water supplies, for example for towns including for critical human needs.

Currently, a temporary water restriction would only be considered if storage levels fell below 195GL of active storage in the top lakes.

At present, the lakes are sitting at 91.3%, and water is available for release, so water quantity is not the issue here.

The issue is water quality, specifically low dissolved oxygen. This is a natural phenomenon, exacerbated by high temperatures, and the number of fish in the river.

Embargoing upstream irrigators would have no benefit for the management of this current issue. Currently there is ample water in river systems for sharing. The limited options to mitigate impacts are currently being implemented.

### **Why is the water quality between the two bridges in town (Menindee) poor?**

Monitoring on 22 March showed dissolved oxygen levels in the Darling River from the railway bridge, through Menindee town and down to the junction with Menindee Creek, is below fish health thresholds. This is a direct result of the current Hypoxic (Blackwater) event occurring in this section of the river. Options to improve water quality in this section is limited to the current upstream water releases. Monitoring is on-going.

### **Should flows from Lake Pamamaroo be stopped if it's not helping dissolved oxygen levels very much?**

No. If flows from Lake Pamamaroo stopped now there is a greater chance of even more mass fish deaths in this section of the river. Maintaining flows in the short-term is important to try and improve the dissolved oxygen levels.

### **What happens if the continued release of higher quality water into the river doesn't have any positive impact?**

The operational response is a trade-off between water quality downstream and water security and continuing to make releases will need to be reviewed.

### **Is there still water available to NSW to solve the problem?**

Yes, and the situation is continually being assessed. NSW and Commonwealth Government agencies are continuing to work closely in terms of monitoring conditions, as well as determining best courses of action and taking action.

### **What water quality monitoring is being undertaken?**

Various agencies are monitoring dissolved oxygen and water temperature, with both remote monitors and field samples, with occasional field data on pH and electrical conductivity levels. The NSW Environment Protection Authority (EPA) has conducted toxicology and pesticides tests for water samples collected by Water NSW this week.

NSW Government agencies, including WaterNSW, have significantly boosted on-ground water quality monitoring in recent weeks as the risk of fish deaths from hypoxic blackwater increased.

### **What are you doing about real time dissolved oxygen levels monitoring?**

New equipment that can provide remote real-time data on dissolved oxygen levels is ready to be installed in various locations across the state, including at Weir 32.

Current high flows have made installing these sensors impossible. Work will get underway as soon as water levels have sufficiently receded.

### **Was online flow data absent for the period during the peak flooding and the lead up to the fishkill?**

A number of gauges in the vicinity of Menindee lakes were impacted by significant flooding in the last months of 2022, and the data taken offline as a result.

The affected gauges needed to be recalibrated on-site to ensure accuracy before returning to service, a process that was delayed by the widespread flooding across the region, which restricted access to some sites.

The Weir 32 gauge in question was returned to function on 13 March and provided data in the lead up to the mass fish kill on March 17.

The proximity of gauges to flooding rivers means they are vulnerable to physical damage and/or data distortion as a result of high flows.

Hundreds of gauges in the WaterNSW network were impacted in this way due to extensive flooding across regional NSW throughout 2022.

Where the outage occurs in a critical location, manual gauge readings take place where possible, for the benefit of key government agencies.

### **There is evidence of alligator weed in the river. Has this contributed to the hypoxic blackwater?**

The NSW Government has found no evidence of alligator weed in the Menindee system despite an investigation by Local Land Services in partnership with WaterNSW and Central Darling Shire Council last year. Read more here: <https://www.abc.net.au/news/2022-11-09/alligator-weed-reports-in-menindee-lakes-system-debunked/101631026>

There are similar looking plants such as dock weed or knotweed in the river but these are native. Along with all other organic matter, these are contributing to taking the oxygen out of the water.

---

## **Impacts on fish**

### **Are any live fish being rescued?**

Yes. NSW DPI Fisheries are on hand and have been rescuing a small number of large body native fish. They have been assisted by volunteer groups, including OzFish Unlimited in these activities. Crews remain on the river in the downstream section of the Lower Darling Baaka assessing water quality and monitoring conditions for dead and distressed fish, This work will continue where possible.

### **Will there be further fish deaths?**

We anticipate this is possible should current water and weather conditions persist. To support native fish outcomes, targeted releases are being made to enhance downstream water quality.

### **Are the Local Aboriginal Community representatives involved in the decision being made about the management of this event?**

We understand that fish death events are distressing to the community, particularly our First Nations peoples.

Aboriginal Affairs NSW is represented in the EOC and actively contribute to the ongoing operation.

NSW Police Force's Aboriginal Community Liaison Officers are on the ground engaging with the local Aboriginal community on various aspects of the emergency operation.

The EOC has received valuable information, advice and feedback from the local Aboriginal community and appreciates their contributions.

We welcome information from local residents, which is why we have already hosted two community town halls to provide opportunities for direct face-to-face information sharing between the agencies involved in the EOC and community members.

NSW Government agencies have been in regular contact with the community through a variety of channels, including the Department of Planning and Environment's weekly community communique

and detailed water quality available online: <https://www.industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery/blackwater>

### **How will you remove the carp from the river?**

The NSW Government is supportive of the implementation of the National Carp Control Plan. Further questions on the plan should be directed to the Federal Department of Agriculture, Fisheries and Forestry.

---

## **Causes of mass fish deaths**

### **Why did a mass fish death happen?**

The fish deaths are believed to be attributed to hypoxic blackwater, a naturally occurring phenomenon which causes extremely low dissolved oxygen levels. The scale of this event has been exacerbated by recent hot weather and significantly increased numbers of fish, having had two years of ideal breeding conditions, in the system as floodwaters recede.

### **Why were the lessons of the 2019 fish kill not adopted to prevent this happening again?**

The 2019 fish death event was directly related to prolonged no flows from upstream as a result of intense drought conditions. Potential mitigating factors identified at the time include maintaining low-level flows during the times of acute water shortage, and more severe restrictions on extractive use in the upper reaches of the river system.

The current expert consensus is that the 2023 event is related to the extensive flooding experienced across the region in the latter half of 2022. As a result, issues associated with low flow volumes and the scarcity of water are not relevant to the current suspected root causes.

### **Did the way WaterNSW manage the flood event at the end of last year cause this?**

No. The scale of the most recent flooding event is almost unprecedented, both in terms of magnitude of water and the amount of organic matter washed into the river channel as the flood waters receded.

For a natural event such as this, there are very few operational steps that can be taken to prevent them from occurring.

WaterNSW – as the operator of the Menindee Lakes system – continues to work closely with agency partners to manage water quality impacts to the best of its ability with the limited operational actions available to combat the range of issues associated with the near-record flooding in the Lower Darling over the past 18 months.

### **Is the operation of weir 32 a possible factor in the fish deaths?**

No. Weir 32 is a fixed crest structure – literally a pile of rock. It has no ability to release water, or be opened or closed. The weir is also approximately 40km *downstream* of the Menindee weir pool. Most importantly, weir 32 has a fish passage structure to allow upstream migration of fish.

## Communication

### Are there community meetings being held?

Police, experts and community leaders held town hall meetings on 21 and 24 March 2023 to provide the Menindee community with an update on multi-agency operations in response to fish kills in the lower Darling-Baaka River.

Those in attendance were provided the most up-to-date information on the operation, including water supply and clean-up efforts.

Representatives from the EOC will include the Police Commander, experts from the NSW Department of Planning and Environment, NSW Department of Primary Industries, WaterNSW, Essential Water, as well as the Central Darling Shire Council.

Another community meeting is expected to be held in the week of 27 March 2023.

### Which organisations are involved in managing the situation?

An Emergency Operations Centre (EOC) has been activated to coordinate multi-agency operations in response to a large-scale fish death event in the lower Darling-Baaka River.

State Emergency Operations Controller, Deputy Commissioner Emergency Management Peter Thurtell, requested the establishment of the EOC to:

- Ensure fresh and clean water supply is maintained to the Menindee township and properties surrounding the Main Weir pool
- Coordinate the removal and disposal of the fish.

Regional Emergency Operations Controller, Assistant Commissioner Brett Greentree, will oversee the EOC and support the emergency response by:

- NSW Department of Planning and Environment
- NSW Department of Primary Industries
- WaterNSW
- Central Darling Shire Council
- NSW Fire and Rescue
- NSW Health
- EPA

The EOC is based in Menindee as a central hub where experts monitor the situation in real-time, coordinate operational activities of responding and supporting agencies, and ensure critical information is disseminated to the public.

### Where else can I find information?

Information about the monitoring, management and maintenance of water quality, including detailed community updates from the Department of Planning and Environment, is available online: [www.industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery/blackwater](http://www.industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery/blackwater)



Observations of changes to water, including struggling fish or deaths can be reported directly to DPI Fisheries on 1800 043 536.

For more information about fish kills, as well as recent reports of observations and causes, visit: [www.dpi.nsw.gov.au/fishing/habitat/threats/fish-kills](http://www.dpi.nsw.gov.au/fishing/habitat/threats/fish-kills)

These types of events can be distressing to members of the community, and anyone who requires health, welfare or other support can contact local community support services. A comprehensive list of services can be located online:

[www.service.nsw.gov.au/transaction/customer-support-service-infoxchange-service-seeker](http://www.service.nsw.gov.au/transaction/customer-support-service-infoxchange-service-seeker)

Information about suspected criminal activity or concerns in relation to community safety can be provided to Crime Stoppers: 1800 333 000 or [nsw.crimestoppers.com.au](http://nsw.crimestoppers.com.au). Information is treated in strict confidence. The public is reminded not to report information via NSW Police social media pages.