

**Temporary Closure of Lake Bonney
Frequently Asked Questions And Answers
Issue 3: 31 August 2007**

1. Is Lake Bonney going to be temporarily disconnected from the River Murray?

Yes. The trigger for disconnection (less than 50 per cent allocation) was activated in June 2007. This meant that the South Australian Government could proceed with a referral to the Commonwealth Government under the *Environment Protection and Biodiversity Conservation Act 1999*. The Commonwealth Government formally advised South Australia of its approval on 24 August 2007. As a result, temporary disconnection will proceed as quickly as possible. It is expected that construction of the earthen bank will commence by mid-September and be completed by early-October 2007.

A pipeline will also be constructed to provide a permanent alternative water supply to people currently extracting water from the lake. Due to its size, construction of the pipeline will not commence until early October and is expected to take three months to complete. In the interim, if necessary, temporary water supply will be provided.

2. Why is Lake Bonney being disconnected?

There are two main reasons for temporarily disconnecting Lake Bonney and both are related to the drought in the Murray-Darling Basin. Firstly, the State Government has looked at the feasibility and impacts of closing a number of wetlands and backwaters along the River Murray to reduce the amount of water lost to evaporation. With continuing low flows it is essential that we keep the small amount of water we are receiving in a smaller area to minimise the amount of water lost through evaporation. Lake Bonney's surface water area is about 1 700 hectares and annual evaporation from the lake is about 29 000 megalitres (or 29 000 million litres). During summer, evaporation can be 170 to 200 megalitres (or 170 to 200 million litres) per day. Closing the lake can save a large volume of water to meet critical rural and urban needs during the drought. Already 27 regulated wetlands and two unregulated wetlands have been blocked off from the main river channel, saving in excess of 15 000 megalitres (or 15 000 million litres) in evaporation to date (15 000 megalitres during 2006-07 water use year and 2 000 megalitres during July and August 2007).

Secondly, if River Murray levels drop because of continuing low inflows into South Australia, Lake Bonney would begin to drain back into the river until the level of the lake dropped to the point where it would no longer be connected to the river channel. While river authorities are confident weir pool levels can be maintained throughout the 2007-08 water use year, the current low gradient on the river due to low flows can result in the draining of some wetlands back into the river for short periods of time due to wind action. Recent salinity readings in Chambers Creek indicate that this has already happened with Lake Bonney. Temporary closure of the lake will prevent any further drainage of saline and nutrient rich water from the lake back into the river.

3. Once Lake Bonney is temporarily disconnected, will there be great reductions in water levels, and will this cause blue-green algae or large-scale fish kills?

A 12-month closure of Lake Bonney would not result in a great reduction in the lake's water level and area. Modelling, based on detailed bathymetric data of Lake Bonney, indicates that a 12-month closure would result in a 5 per cent reduction in the Lake's total surface area. Given the large volume of water that is likely to be retained in the lake after 12 months, fish scientists from the South Australian Research and Development Insititute (SARDI) advise that a major fish kill would be very unlikely. Fish will retreat to the deeper parts of the lake, that would still be around 3.5m deep, even after 12 months.

Blue-green algae do not directly impact fish unless de-oxygenation also occurs. It is likely that wave and wind action across the lake will help to reduce the risk of blooms by providing sufficient movement to maintain oxygen levels. However, regardless of whether the lake is disconnected or not, there are a number of conditions that could increase the risk of algal blooms. For example, heat waves or periods of extreme hot weather of more than 3-4 days could trigger the formation of persistent thermal stratification (elevated water temperatures). Also, rain events resulting in localised run-off could deliver nutrients into the lake (in particular phosphorus) that could cause a bloom.

4. Will there be odours from mud exposed by receding water levels?

Detailed sediment sampling and analysis have been undertaken by CSIRO Land and Water to assess the risk of acidification at Lake Bonney. The report indicated that acidification would not be a serious problem at Lake Bonney and that localised hot spots could be treated easily by the application of lime to the soil.

Sampling was carried out at Lake Bonney on 23 and 24 July 2007, incorporating lake and shoreline soils. Soils were inspected at 39 sites and 97 samples were collected. Although pyrite was present in Lake Bonney soils, laboratory testing showed very little change in pH when exposed to oxygen. This means that there is a reduced risk of smells and, if they do occur locally, they can be managed by the addition of lime.

5. When will the lake be reconnected to the River Murray?

An extensive monitoring program will be undertaken during the temporary closure. A standardised protocol for monitoring has been developed by the Murray-Darling Freshwater Research Centre (MDFRC) and adopted by the Murray-Darling Basin Commission. Monitoring will include parameters such as water quality, surface water salinity, dissolved oxygen, acidification, vegetation health, and fish.

In addition, nine groundwater monitoring bores are being installed and will provide information on changes in depth to groundwater indicating changes in hydraulic gradient and groundwater salinities.

Reconnection will be recommended if monitoring shows that changes are occurring that could result in long-term deterioration of the lake. If there are no indications of

such changes, the site will be reconnected when South Australia returns to normal minimum Entitlement Flow.

6. Will the future reconnection of Lake Bonney cause changes to the lake's ecosystem?

Ideally, reconnection would be managed by the gradual opening of a regulating structure. Given that the initial structure at Lake Bonney will be an earthen bank, the ability to manage refill will be limited. To minimise any potential damage, the bank will be breached in stages to allow flows to enter the lake more gradually.