

MANAGING THE MENINDEE LAKES IN 2002



March 2002

Information Paper No. 1

INTRODUCTION

The Menindee Lakes water storage scheme is a series of interconnected lakes in the far-west of NSW that covers an area of 453 square kilometres.

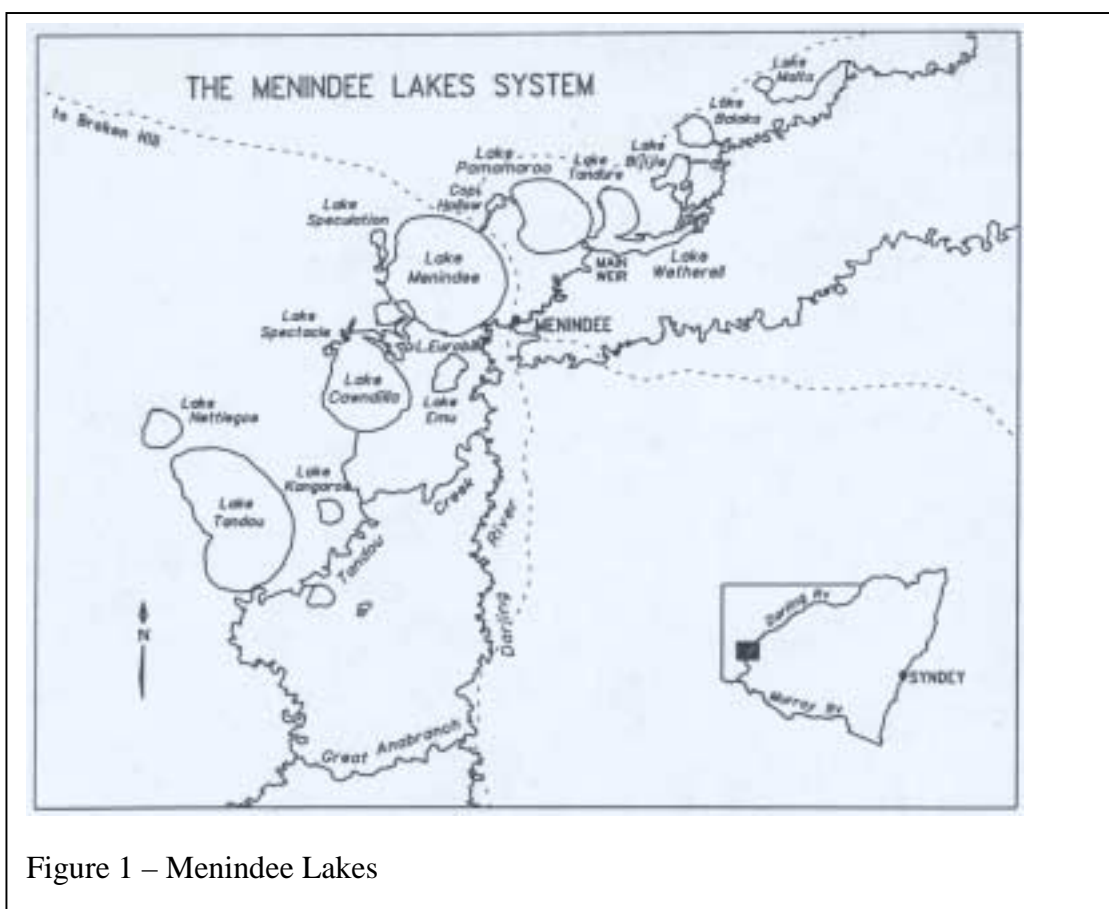


Figure 1 – Menindee Lakes

Inflows into the Menindee Lakes depends on the rainfall in the catchment areas of the Darling River and river valleys upstream of Menindee and the flows that pass from these areas into the Darling River.

The amount of water that is held in storage at any time is a factor of the inflows, how much water has been released from the lakes and how much is lost to evaporation.

The flows in the Darling River are amongst the most variable in the world, and consequently, the amount of water in the lakes will reduce significantly during extended dry periods.

WHY THE LAKE LEVELS ARE LOW

The Menindee Lakes were last surcharged following high flows in the Darling River in June 2001. Since then inflows have been below average.

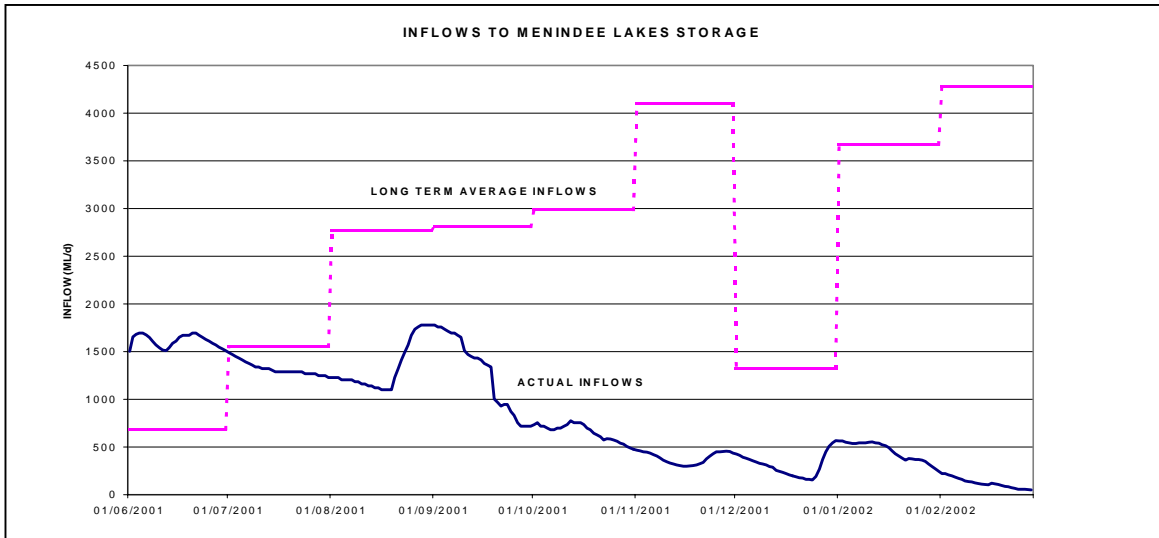


Figure 2: Wilcannia flows - June 2001 to February 2002

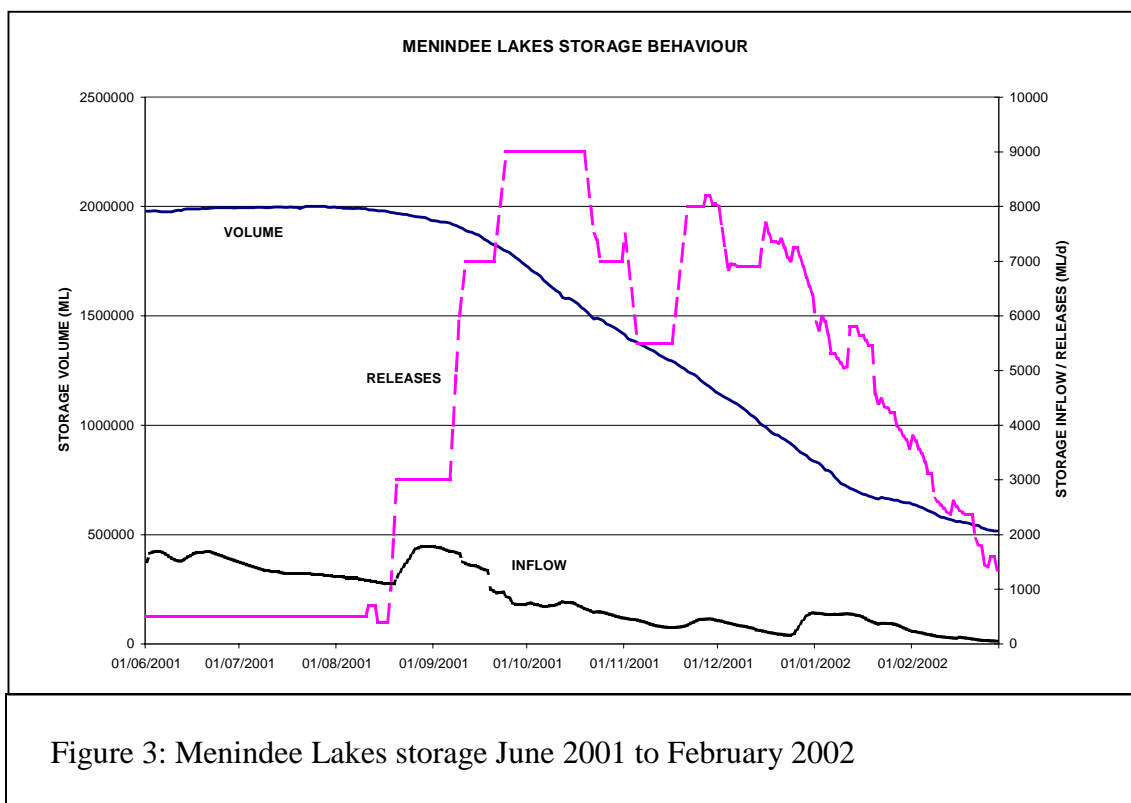
At the same time releases from the lakes have been made to meet local and downstream demands. Evaporation has also been high, especially in the spring and summer of 2001-02, which has been relatively windy.

Since June 2001, releases from the Menindee Lakes have been made for the following purposes:

➤ Releases for MDBC purposes (to Sth. Aust / Lake Victoria)	1,090,000 megalitres
➤ Releases for NSW purposes (Town water / irrigation / Anabranh)	88,000
➤ Evaporation and seepage losses	512,000
Total use / loss	1,690,000
Total inflows (During the same period)	228,000

Since June 2001 the diversion of water for consumptive use plus losses through seepage and evaporation has been greater than inflows.

Consequently, the volumes stored in the Menindee Lakes has reduced over the past 10 months since June 2001, from maximum surcharge capacity of 1,998,000 megalitres (119%) to the current capacity, at 5.3.2002, of 500,260 megalitres (29.8%).



HOW MUCH WATER IS IN THE LAKES NOW ?

At 5 March 2002, the total volume of water stored in the Menindee was 500,260 megalitres.

- Lake Wetherell 116,660 megalitres 43% capacity
- Lake Pamamaroo 20,720 7%
- Lake Menindee 110,690 16%
- Lake Cawndilla 252,190 45%

Total volume 500,260 megalitres

Releases from the lakes are currently;

- 350 megalitres per day from Lake Menindee to the Darling River
- 700 megalitres per day from Lake Cawndilla – 500ML/d to the Anabranch
200ML/d to Tandou Ltd.

WHY ARE THE TOP LAKES LOW

There are two main reasons that Lake Wetherell and Pamamaroo are low;

- 1) Each year, wherever possible, releases are made from Lake Wetherell to ensure that water is taken off the floodplain to maintain the health of the vegetation, and reduce the potential for algal blooms.

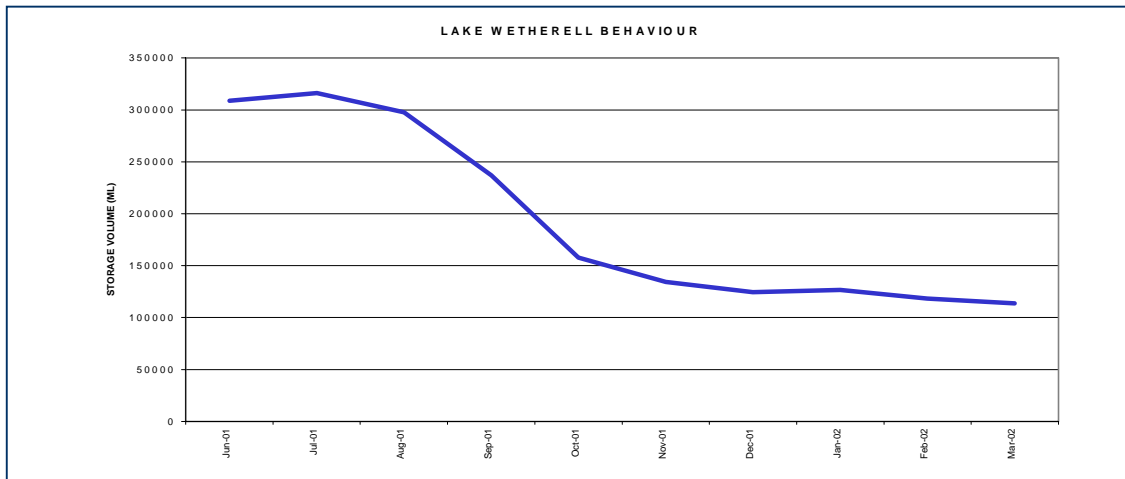


Figure 4: Lake Wetherell capacity – June 2001 to present

- 2) While releases for downstream use are made from Lake Menindee and Lake Cawdilla wherever possible, the daily flows required often exceed the capacity of the Menindee outlet regulator and water must be provided from either Lake Wetherell and/or Lake Pamamaroo.

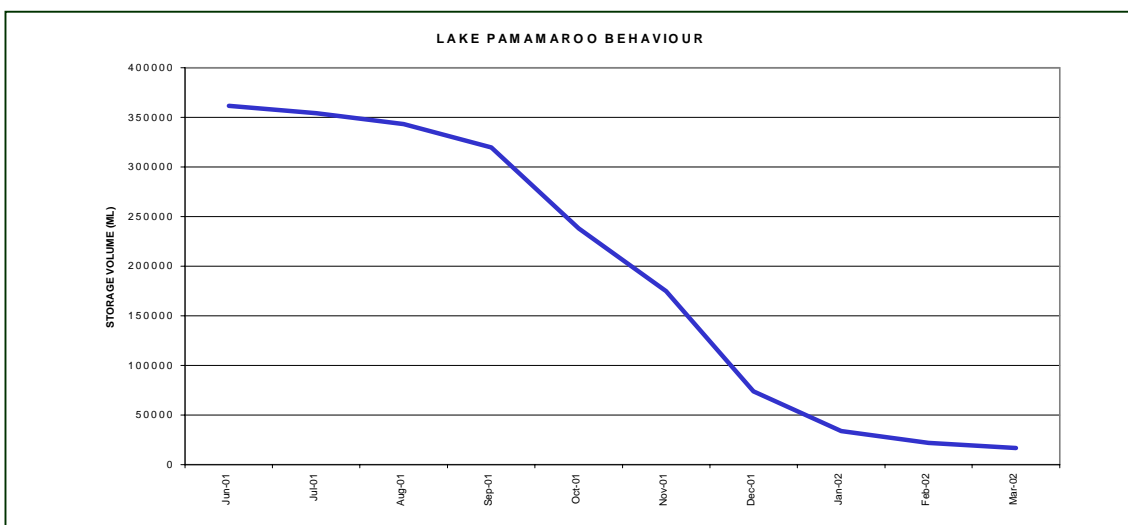


Figure 5: Lake Pamamaroo capacity – June 2001 to present

HOW WILL THE REMAINING WATER BE MANAGED ?

When the total volume of water stored in the Menindee Lakes reaches 480,000 megalitres, the NSW Department of Land and Water Conservation (DLWC) manages the lakes for NSW use only.

The Murray-Darling Basin Commission (MDBC) cannot call on water from the lakes for interstate requirements until the volumes increase to 640,000 megalitres.

It is expected that the volumes in the Menindee Lakes will reduce to 480,000 megalitres during March 2002

Until June 2002, DLWC will use the water to meet all NSW requirements including;

- ❑ town water supply to Broken Hill, Menindee, Sunset Strip and Pooncarie
- ❑ stock and domestic supply
- ❑ irrigation demand in the Lower Darling valley and Tandou
- ❑ the annual replenishment flow to the Great Anabranh

At the end of June, the DLWC will review the inflows and assess any restrictions to consumptive use that may be required.

HOW WILL FUTURE INFLOWS BE MANAGED ?

- ❑ Any inflows passing into the Menindee Lakes in the coming months will be stored in Lake Pamamaroo.
- ❑ If conditions stay dry the Department will use the opportunity to undertake maintenance works on the main weir and Lake Wetherell outlet.
- ❑ Only if inflows are forecast to exceed the full supply capacity of these lakes will water be diverted into Lake Menindee and Cawndilla.

WHAT IS THE PROBABILITY OF FUTURE INFLOWS ?

During any extended dry period, it may be expected that some flows will pass into the Menindee Lakes.

By using computer models that can simulate historical flows and compare these with current levels of development, the probability of inflows can be determined.

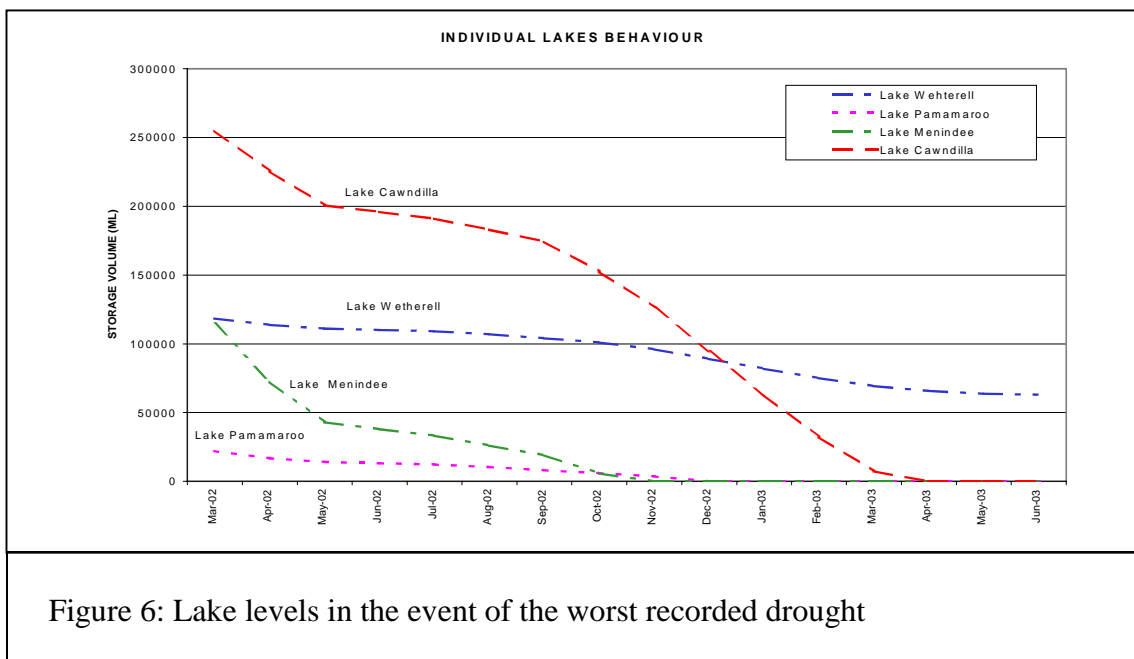
Looking in the short term, the MDBC has determined the probability of inflows into the Menindee Lakes until the end of October 2002. There is;

- 50% chance of capacity increasing to 640,000 megalitres (approx 40%)
- 30% chance of capacity increasing to 1,200,000 megalitres (approx 70%)
- 20% chance of capacity increasing to 1,998,000 megalitres (maximum surcharge)

WHAT IF INFLOWS DO NOT OCCUR ?

The worst drought in recent history, where inflows can be modelled occurred between March 1919 and July 1920.

By simulating these as the worst possible conditions, the levels in the lakes will continue to reduce. Figure 6 illustrates how the lakes would dry down under these circumstances.



WATER QUALITY

As flows reduce, both into the Menindee Lakes and through the reduction of releases from the lakes, it may be expected that water quality concerns increase, particularly regarding increasing salinity and the incidence of blue-green algae blooms.

The DLWC undertakes regular monitoring of the water quality in each of the lakes and in the Darling River downstream. Results of monitoring in the past weeks have shown an increase in blue-green algae concentrations and should these continue to rise, the Department will manage any blooms as best we can. This will be in consultation with water users, particularly Australian Inland Energy and Wentworth Council, which provides water supplies to Broken Hill, Menindee, Sunset Strip and Pooncarie.

POTENTIAL FOR FISH KILLS

The small upstream lakes that form part of Lake Wetherell are not regulated and are connected to the Darling River when full, without any impediments to fish passage.

Large native fish in those lakes, Malta, Balaka, Bijiji and Tandure, will move back to the river as the levels reduce and are not trapped when levels fall and the lakes become isolated, although some smaller native fish will be trapped and eaten by birds. Research undertaken by the Murray-Darling Freshwater Research Centre confirms this.

Carp, however, do not move back to the river as freely as native fish and do become trapped.

DLWC staff surveyed the recent fish kills identified in Lake Malta on the 18th of February and only large dead carp were identified.

However, when the storage scheme was constructed in the 1950's and 60's there was no consideration of fish passage and fish will become trapped in the larger lakes, Pamamaroo, Menindee and Cawndilla. When the levels in these lakes fall below critical levels where the temperature increases and dissolved oxygen reduces, fish kills may be expected.

There is sufficient water in Lake Pamamaroo, Menindee & Cawndilla to maintain native fish populations through winter and spring 2002.

If there are no inflows into these larger lakes in the coming months, DLWC will work with NSW Fisheries who will decide the best strategy to manage the remaining fish populations.



DLWC survey
dead carp at Lake
Malta – 18.2.2002

OTHER ENVIRONMENTAL ISSUES

There is a perception that reduced water levels is bad for the lakes and riverine environment. However, the lakes have been filling and drying for tens of thousands of years and native species are well adapted for this.

Generally, the draw down of the lakes is beneficial to the natural environment and not a disaster, although native fish and water quality issues do need to be closely monitored and carefully managed.



Murray Region