The Menindee Lakes Scheme came into NSW control on 18 February 2014, when total storage reached 480,000 megalitres. Since then it has been managed to conserve the remaining water in the lakes for local towns, water users and the environment of the regulated lower Darling River.

During extended dry periods, the NSW Office of Water provides information about inflows and management of the lakes. This is the ninth community information paper in this series.

Flows along the Barwon-Darling continue to be very low as a result of minimal rainfall in the catchment and rising temperatures through spring. The only exception to this is the arrival of a small flow upstream of Collarenebri – the remnant of environmental watering in the Gwydir Valley. This water provided in-stream benefits and approximately one week of access for B Class licence holders on the Barwon River, between Collarenebri and Walgett, during October. These flows have also extended stream flows to Bourke for a short period, but there will be minimal improvement in flows downstream of Bourke.

September’s resource assessment indicated that Broken Hill’s forecast water supply had fallen below the critical 18 month target. As a result, contingency measures for the Lower Darling River, developed in consultation with local water users and community members, have begun to be implemented.

A range of works to improve water quality and extend access to critical water supplies are currently being developed and will be progressively implemented, as required, if dry conditions persist.

With record October temperatures in parts of NSW, including Wilcannia and Menindee, the water shortage situation is being closely monitored and restrictions on access to flows in upstream (northern) catchments remain under consideration. Consultation with water user representatives from across the northern basin will commence in coming weeks.

### Current water levels and flows (as at 12 November 2014)

<table>
<thead>
<tr>
<th>Location</th>
<th>Height (m)</th>
<th>Flow (ML/d)</th>
<th>EC (µS/cm)</th>
<th>Comment - River Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mungindi</td>
<td>2.84</td>
<td>0</td>
<td>-</td>
<td>No flow (since late July)</td>
</tr>
<tr>
<td>Collarenebri</td>
<td>1.69</td>
<td>30</td>
<td>-</td>
<td>Falling</td>
</tr>
<tr>
<td>Walgett</td>
<td>1.32</td>
<td>76</td>
<td>258</td>
<td>Falling</td>
</tr>
<tr>
<td>Brewarrina (total)</td>
<td>2.27</td>
<td>47</td>
<td>2,020</td>
<td>Falling</td>
</tr>
<tr>
<td>Bourke</td>
<td>4.04</td>
<td>160</td>
<td>739</td>
<td>Rising</td>
</tr>
<tr>
<td>Wilcannia</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>No flow (since mid October)</td>
</tr>
<tr>
<td>Weir 32</td>
<td>1.36</td>
<td>191</td>
<td>704</td>
<td>Flows to be managed below minimums</td>
</tr>
<tr>
<td>Burtundy</td>
<td>0.69</td>
<td>80</td>
<td>-</td>
<td>Steady</td>
</tr>
</tbody>
</table>
River operations

Darling River flows

Darling River inflow to Lake Wetherell effectively ceased during October. There has been no noticeable flow at Wilcannia since mid-October. A total of 3,000 megalitres of inflow has been received over the last three months, which is currently equivalent to approximately two days of evaporation from the Lakes.

Upstream flows at many locations on the Barwon-Darling River are very low or stopped, with pools now receding. Prior to the modest environmental flow from the Gwydir system, which arrived at Collarenebri on 11 October, the Barwon-Darling system was very dry throughout. Flows above Collarenebri and downstream of Bourke had ceased; however, the river at Bourke recently began flowing again as this small flow travels downstream. Whilst this water will not reach Menindee, it will provide some in-stream benefit including top-up of residual pools and some wetting of the Darling River channel.

Menindee Storage volume

Total storage at Menindee Lakes has fallen to 15 percent of capacity (260,000 megalitres). Losses, due mostly to evaporation, are increasing as temperatures rise, and totaled about 36,000 ML in October.

Evaporation rates have been very high, similar to last year (2013-14), with the Bureau of Meteorology reporting that Menindee Post Office experienced its highest October mean daily maximum temperature (30.7°C) in 102 years, which is 4°C above the average for October.

Releases to the Lower Darling totaled 6,500 ML in October.

There has been no release from Lake Wetherell; however, water levels are falling slowly as a result of evaporation. The volume reduced by 5,500 ML in October. At Lake Pamamaroo the volume has reduced by approximately 24,000 megalitres since 1 October and it now holds 109,000 megalitres.

Water currently in Lake Menindee is inaccessible (except by pumping) and without significant inflows is expected to dry-out over summer. The volume in Lake Cawndilla has fallen by about 22,000 megalitres since 1 October to be currently 88,000 megalitres.
Lower Darling operations
Since coming into NSW control and prior to reaching the critical 18-month “trigger” to protect Broken Hill’s town water supply, releases from the Lakes into the Lower Darling River were provided at seasonal minimums in accordance with the Murray and Lower Darling Regulated Rivers Water Sharing Plan.

Once the “trigger” was met in early September 2014, the Office of Water introduced emergency contingency measures that involved reducing releases below the normal minimum flows from Monday 8 September 2014 to further extend resource availability.

Operational responsibility for daily releases during this contingency period has been passed over to State Water. Flows are being managed on a day-to-day basis, to maintain a small visible flow for as long as possible in the lower reaches of the Lower Darling. Whilst these low flows will still provide for water use along the Darling River, water users along the Lower Darling are requested to liaise closely with State Water representatives.

Water Quality
The salinity (electrical conductivity) of Lake Wetherell remains high, having retained high levels of salt from previously captured inflows. In late-October 2014, salinity within Lake Wetherell ranged from 1,100 to 2,300 EC. Lake Pamamaroo has recently recorded salinity readings of between 600 and 700 EC. This is where releases to the Lower Darling will be made from until water is no longer available. In the Lower Darling current readings are approximately 700 EC at Weir 32. Salinity is expected to increase under low flow conditions as temperatures increase and water levels fall.

The Copi Hollow supply will ensure usable water quality for Broken Hill. However, desalination is likely to be required for the last of the Copi Hollow water, around October 2015, and certainly once the Lake Wetherell water is needed.

For advice on the management of saline water for irrigation please contact DPI Agriculture’s Jeremy Giddings 03 50 198421 or Western Local Land Services Greg Moulds 03 50 219460.

Poor quality water and natural outbreaks of algae can be expected in water bodies under trickle/no flow conditions, particularly as temperatures increase. However, there is no ‘flushing’ water available to help alleviate conditions or disperse algal outbreaks.
Forecast operations and water availability

In order to ensure that water users can rely on supplies beyond the approaching summer for stock, permanent plantings and critical human needs only, releases from storage will continue to be risk-managed below recommended minimums. Incidental in-stream environmental outcomes will accrue only through the delivery of essential water – there is insufficient water for specific environmental watering.

Operating guidelines were developed with the community during the last drought to identify triggers for when contingency measures should be stepped-up in response to deteriorating conditions.

A Critical Water Advisory Committee for the Lower Darling re-convened in September and has been providing advice on prioritisation and management of potential water shortages. A separate advisory committee for the northern Barwon-Darling area will meet shortly. These committees will facilitate the exchange of information about current issues, conditions and outlooks, and provide local advice to the NSW Office of Water about river and flow management options.

If dry conditions persist, river flows will most likely cease below Menindee Lakes (Weir 32) during autumn, and water orders will only be accepted for town water supply, domestic and stock, and permanent plantings. The water sharing plan will continue to apply, with high security entitlements unable to carry account water into 2015-16, but likely to get some allocation on 1 July 2015, and general security able to carryover in accordance with the water sharing plan rules, but unlikely to get any new allocation.

It will also mean that temporary trade within the valley can continue; however, buyers must be aware of the deliverability restrictions – only water orders that can be met within the minimum operational releases can be delivered, meaning that not all water in accounts is necessarily deliverable.

The operations described below are separated into three key time periods for planning purposes.

Summer 2014/15

1. **Managing flows below seasonal minimums.** Flow releases will be managed to meet minimum demands while ensuring a visible flow beyond Burtundy. Releases will be modified up or down depending on weather and river conditions at the time. State Water is now responsible for making day-to-day releases to maximise water use efficiency, while avoiding a cease-to-flow situation in the Lower Darling. To assist in this active management of releases to the Lower Darling, increased hydrometric monitoring of flows is being undertaken to improve information on flows.
and losses under these extremely low flow conditions. As a result, a new low flow rating has been developed for Burtundy and work is continuing on the same for Poocanie.

2. **Transfers to Copi Hollow.** Construction of a bank between Copi Hollow and Lake Pamamaroo is now complete, with pumping from Lake Pamamaroo to Copi Hollow storage (maximum about 12,000 ML) now imminent. This will allow the relatively good quality water currently in Lake Pamamaroo to augment Broken Hill town supply. This pumping measure primarily protects the quality of water set aside in Copi Hollow for town water purposes, but also marginally improves available volumes in storage. It is expected that Copi Hollow will support Broken Hill’s water supply until late 2015.

3. **Transfers to Lake Wetherell channel.** Construction of another block bank will commence on the western channel connecting Lake Tandure and Lake Wetherell. This will allow the large, shallow Tandure storage to be separated from the deeper, more storage-efficient Lake Wetherell, which essentially comprises the Darling River channel. Pumping of water from Lake Tandure is expected to commence no later than mid-January to maximise the potential savings (reduced evaporation losses) and extend supplies for an extra 4-6 weeks.

4. **Reinstatement of two block banks within the Lower Darling river channel.** These will be similar to those used in 2006/07 to support critical needs during the Millennium drought. They will allow control and passage of flows of up to 100 ML/day and create pools of water for stock, permanent plantings and critical human needs only. When continuous flow to the Lower Darling ceases, periodic releases from Menindee will be made to replenish the pools formed by the banks. The banks will be installed and ready for operation when continuous release to the Lower Darling ceases. They can be removed at short notice if necessary.


**Autumn-2015**

1. **Cease continuous delivery to the Lower Darling.** When the combined total storage in Lakes Wetherell and Pamamaroo reduces to about 50,000 megalitres, continuous releases below Weir 32 will stop. The remaining water in storage will be used to supply critical needs including essential town water, stock and domestic purposes and permanent plantings only, for as long as possible. Only periodic replenishment pulses will be released to the Lower Darling.

2. **Establishment of a water treatment facility at Menindee** to enable increasingly salty supplies in the Menindee Lakes to be used for potable (drinking water) purposes. Investigations are currently being undertaken to install desalination units which, in combination with other pre-treatment processes, are capable of producing high quality water. This equipment will be needed later in 2015 to treat poor quality surface water (the last of the Copi Hollow water and then the Lake Wetherell water) and any potential (saline) groundwater supplies.

3. **Continue work to prove groundwater resources** and thereby provide another contingency measure to help prevent Broken Hill from running out of water.

**Summer 2015/16**

1. **Critical human needs supplied from Lake Wetherell** or supplemented by a local groundwater source. Water treatment will be required in either case. Current forecasts indicate that, if no further inflows are received, critical supplies can be maintained from resources in the Lakes for at least another 14 months, until the end of January 2016.

Despite all the contingency measures and water savings initiatives being invested at Menindee, it is still considered essential to plan for restricting access to unregulated stream flows in the upper Darling Basin to help prevent Broken Hill from running out of water. Consultation with water user representatives from northern valleys upstream of Menindee will commence in the near future.
Darling River Flows shows how the volume in the Menindee Lakes is now expected to reduce.

The above forecast conditions incorporate the following assumptions:
- No further inflow during the assessment period
- 2013-14 (high) evaporation losses from Menindee storage and no explicit allowance for seepage
• Storage releases averaging 175 ML/d to end April 2015 – around 150 ML/d at Weir 32.
• From May 2015, releases reduced to 40 ML/d to provide water to Weir 32 (pool) only. Cease to flow conditions downstream of Weir 32, apart from periodic replenishment flows as practicable.
• Forecast demand at Tandou met from Lake Cawndilla only.
• Access to dead storage in Lake Cawndilla via pumps where necessary.
• Priority of release to meet the minimum flow requirements (at Weir 32) to the Lower Darling:
  o Pamamaroo outlet; then
  o Wetherell outlet

The above scenario is being regularly reviewed and revised as additional, potentially more stringent, water conservation measures become necessary.

<table>
<thead>
<tr>
<th>Location</th>
<th>Storage volume</th>
<th>Water level (m AHD)</th>
<th>Outlet flow (ML/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>ML</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Wetherell</td>
<td>32</td>
<td>61,000</td>
<td>59.36</td>
</tr>
<tr>
<td>Lake Pamamaroo (incl. Copi Hollow)</td>
<td>39</td>
<td>109,000</td>
<td>57.92</td>
</tr>
<tr>
<td>Copi Hollow</td>
<td>19</td>
<td>2,300</td>
<td>57.92</td>
</tr>
<tr>
<td>Lake Menindee</td>
<td>&lt;1</td>
<td>1,300</td>
<td>55.00</td>
</tr>
<tr>
<td>Lake Cawndilla</td>
<td>14</td>
<td>87,600</td>
<td>54.52</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>261,200</td>
<td>570</td>
</tr>
</tbody>
</table>

Menindee Lakes: Key information at 12 November 2014

Inflow trigger
Planning scenarios conservatively assume that no inflows to the Lakes are received. However, it is likely that some inflows will occur over the next 12 months that will improve the current storage situation. If sufficient water is received into the storages, some easing of restrictions may be possible; however, the priority will be to improve water supply security for Broken Hill.

In order to revert to normal operations, the Menindee Lakes must recover to such an extent that Broken Hill can be assured, under the standard planning scenario, of at least 21 months of forward supply. It is estimated that this would require approximately 200 to 250 gigalitres of inflow to the Lakes this summer.

Communications
This Community Information Communiqué will be issued each month until water availability at Menindee significantly improves. However, more frequent updates will be provided if necessary.

Where do I go for additional information?

NSW Office of Water: Bunty Driver T 0407 403234 or visit the website www.water.nsw.gov.au

State Water Customer helpdesk on T 1300 662 077

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (November 2014). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user’s independent adviser.

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