

COMMUNITY INFORMATION COMMUNIQUE ISSUE 18

Management of Menindee Lakes 2015/16

2 September 2015

Key facts at a glance

- The Menindee Lakes scheme has been in NSW control since 18 February 2014.
- Remaining water is currently being managed to meet local needs only.
- Rainfall and inflows through 2015 have been helpful but limited – the severe water shortage continues and the need for contingency measures and water savings remains.
- Broken Hill's surface water supplies are assured for the remainder of 2015 and, once treatment processes are in place can be provided through to at least December 2016.
- A low flow release to the Lower Darling commenced on 23 July and will be extended to at least the end of September
- Rainfall from 23 to 25 August provided some modest inflows, primarily to the Border Rivers and Gwydir regulated river catchments. This is likely to extend low flows in the Barwon-Darling for a few weeks.
- Consultation with water user representatives, stakeholders and affected communities is continuing in the Lower Darling

Current river levels and flows (as at 2 September 2015)

Location	Height (m)	Flow (ML/d)	EC (uS/cm)	Comment - River Level
Mungindi	3.26	213	295	Falling
Collarenebri	1.78	320	238	Falling
Walgett	2.05	452	219	Falling
Brewarrina (total)	2.36	622	363	Falling
Bourke	4.15	573	372	Steady
Wilcannia	0.90	345	403	Steady
Weir 32	1.26	94	2,014	Flows managed below minimums
Burtundy	0.79	-^	911	Block bank near full

^ Flow rating not relevant due to downstream block-bank.

River operations

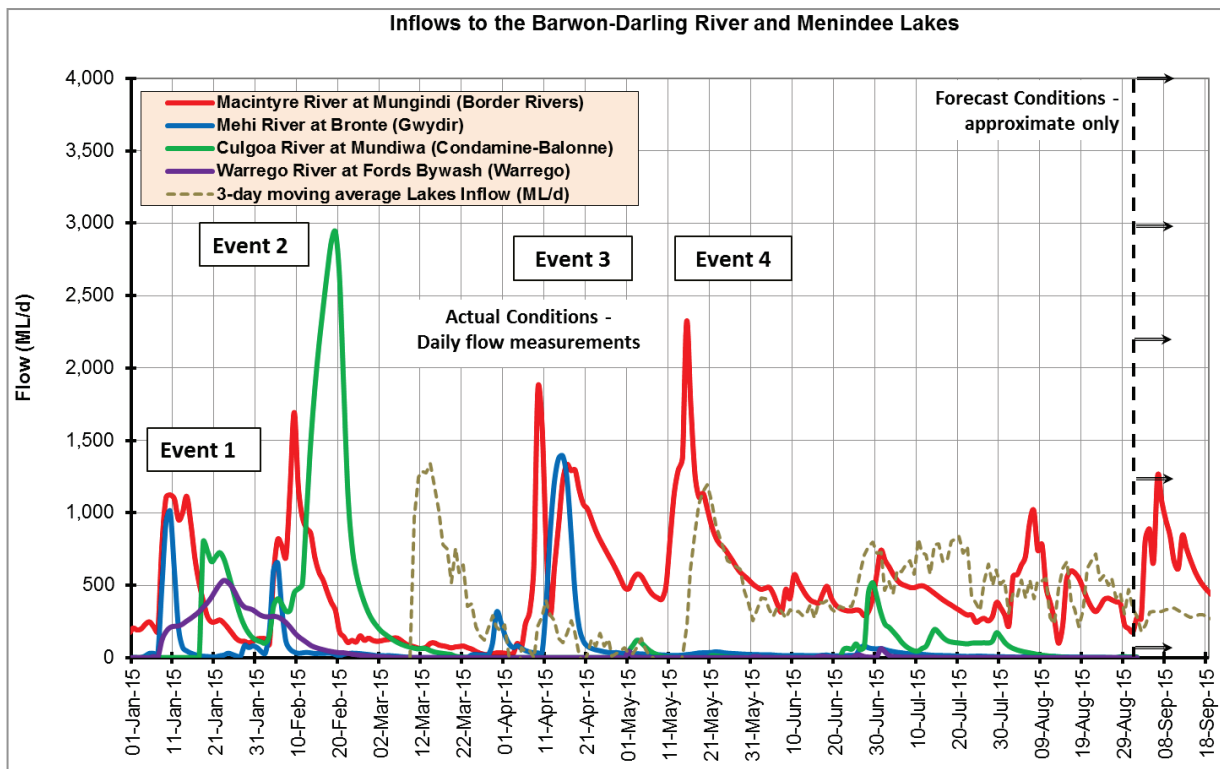
Darling River flows

The Barwon-Darling River continues to run continuously along its full length however flow rates are slowly falling due to predominantly dry conditions through August. Widespread rainfall in the catchment from 23 to 25 August resulted in some additional localised river rises. Minor inflows expected from the Border Rivers will extend low flows in the Barwon-Darling for a few weeks.

Even in the absence of additional rainfall, small inflows to Menindee Lakes will continue to arrive as the upstream catchment slowly drains. Since March 2015 when the Darling River was last dry, inflows have totaled 76,000 megalitres, with a further 10,000 to 20,000 megalitres anticipated into the Lakes over the next couple of months.

These small volumes of water are more than offsetting the reduced winter evaporation losses and have filled the natural river channel within Lake Wetherell. Also Lake Tandure is now fully connected to Lake Wetherell with both storages rising together slowly. Pumping infrastructure at Lake Wetherell has been temporarily relocated to higher ground.

The relative contributions of the main inflow events to the Barwon-Darling River during 2014/15 are summarised in the following chart and table.



Menindee storage volume

Total storage at Menindee Lakes stopped falling in May when releases ceased, evaporation rates reduced with the cooler weather, and some inflows arrived from upstream. The Lakes currently hold 103,000 megalitres (5.9 per cent of total capacity), having recovered from a minimum of 63,000 megalitres.

There was a net improvement of 7,000 megalitres in May, 10,000 megalitres in June, 14,000 megalitres in July, and another 5,000 megalitres in August.

Evaporation rates were slightly less than average in July and August, with maximum temperatures slightly below average at Menindee.

Continuous releases to the Lower Darling ceased at the end of April to preserve the remaining supplies in storage for high priority needs. Water flowing into the system has allowed a low flow release to recommence to the Lower Darling without compromising Broken Hill's water security. A domestic and

stock replenishment flow commenced on 23 July at 200 ML/d and has since been extended at lower flow rates. It is expected that these releases will continue until at least the end of September.

Inflows are being captured in Lake Wetherell over the winter while evaporation is at its lowest. It has been necessary to temporarily relocate pumping infrastructure to higher ground but it will be returned if necessary so that water can be moved to the most efficient storage over summer.

Inflow Contributions to the Barwon-Darling River

System	Volume (ML)	Proportion
Warrego	11,000	37%
Condamine-Balonne 1	6,000	20%
Border Rivers 1	10,000	33%
Gwydir 1	3,000	10%
TOTAL (first event)	30,000	
Condamine-Balonne 2	30,000	60%
Border Rivers 2	17,000	34%
Gwydir 2	3,000	6%
TOTAL (second event)	50,000	
<i>Total inflow to Menindee</i>	<i>17,500</i>	<i>First two events</i>
Border Rivers 3	35,000	70%
Gwydir 3	10,000	20%
Weir/Moonie	5,000	5%
TOTAL (third event)	50,000	
Border Rivers 4	23,000	100%
<i>Inflow to Menindee</i>	<i>22,000</i>	<i>Third & fourth events</i>
<i>Additional Inflow</i>	<i>36,000</i>	<i>Recent low inflows</i>
<i>Forecast Inflow</i>	<i>10,000 to 20,000*</i>	<i>Expected to arrive over coming months.</i>

* Forecast figures

Lake Pamamaroo only holds essentially 'dead storage', meaning that the remaining water cannot flow by gravity through its outlet. Unless new inflows of the order of 200,000 megalitres are received, enough to fill Lakes Wetherell and Tandure, it is likely that Lake Pamamaroo will become completely dry over summer.

Lakes Menindee and Cawndilla are already dry and will be the last to refill once new inflows arrive. The upper storages will be filled first before any water is directed to these two large lower lakes that can each hold about 630,000 megalitres.

Copi Hollow has slowly fallen to about two-thirds full and is being kept partitioned to protect its better quality water for town water supply.

Lower Darling operations

A year ago, at the end of August 2014, DPI Water (formerly the NSW Office of Water) started introducing contingency measures including reducing releases below the normal minimum flows. Since 1 May 2015, water has only been available below Weir 32 from existing weirs and the pools behind the two constructed block banks in the Lower Darling River: one at Jamesville and one at Lower Burtundy. Water from these pools can only be used for town, stock and domestic needs, and for survival of permanent plantings. No access to water for annual crops is permitted.

Ongoing inflows allowed a small replenishment flow to be provided to the Lower Darling between Weir 32 and the block bank pools from 23 July 2015. This decision was made based on an assessment of (i) the remaining supply in the Lakes and any inflows in transit, (ii) the requirements of Broken Hill and other critical needs, (iii) the location of remaining supply in Wetherell and Tandure (particularly its vulnerability to evaporation) and (iv) an assessment of the water needs for high priority purposes in the Lower Darling.

The replenishment flow provides riparian access for domestic and stock water users who have been without a flow since May. This initial release will continue at low rates until at least early spring, however it cannot be extended over summer without additional inflows to Menindee Lakes.

The total volume of the release between 23 July and the end of September is expected to be less than 10,000 megalitres. This will provide multiple benefits along the upper reaches of the Lower Darling river, which has been amongst the hardest hit by this extended dry period.

Conditions and water availability will continue to be monitored closely. Consultations will continue with downstream water users to identify the best time for topping-up of the block bank pools, aiming to avoid the heat of summer. Any domestic and stock water users who are unable to access water from pools are advised to **continue making alternative arrangements for the summer when pool replenishment flows cannot be guaranteed.**

Drought assistance

On 18 June 2015 Minister Blair announced an initial \$52.3 million to secure emergency water supplies for Broken Hill as part of Restart NSW.

The NSW Government is also providing a \$300 million drought package focused on supporting primary producers in NSW to become more resilient and better prepared for future drought conditions.

In addition, the NSW Government is providing funding for councils as part of its Country Town Emergency Water Cartage and Infrastructure Scheme to assist with town water supply needs. Currently arrangements are in place with the Central Darling Shire, and residents not on the town water supply system around Menindee can contact the shire to arrange water carting for domestic needs. The NSW government is also funding carting of water for residents in the Wentworth Shire

More information on new drought support arrangements is available at the Department of Primary Industries website: <http://www.dpi.nsw.gov.au/agriculture/emergency/drought/support>

Water quality

Despite the increased risks of poor water quality due to the low or no flow conditions, water quality upstream and within the Lakes is still quite good overall. All measured parameters are within acceptable levels, apart from salinity, however low dissolved oxygen levels were recorded at depth at one location within Lake Wetherell. There are no reports of toxic blue-green algae in any of the Menindee storages. Water users should be vigilant, particularly for domestic purposes, and continue to watch for algae alerts.

The initial release from the low flow starting 23 July was reported to be of poor water quality below Weir 32. This was likely to be caused by the mobilisation of organic material and reconnection of stagnant pools as flows within the channel were restarted. Now that connectivity has been restored in the upper section of the Lower Darling, the risk of water quality problems is reduced. If flows cease again over summer, any initial flush as flows restart is expected to be of poor quality with a high concentration of sediments and low dissolved oxygen levels.

The salinity of Lake Wetherell is still relatively high, however readings in recent weeks have continued to fall to below 1,500 EC. Now that Lake Tandure and Lake Wetherell are connected, salinity readings within each of the storages are similar. Current inflows have lower salinity than the Lakes themselves, less than 500 EC so there may be further improvements to water quality in Lake Wetherell in the coming weeks.

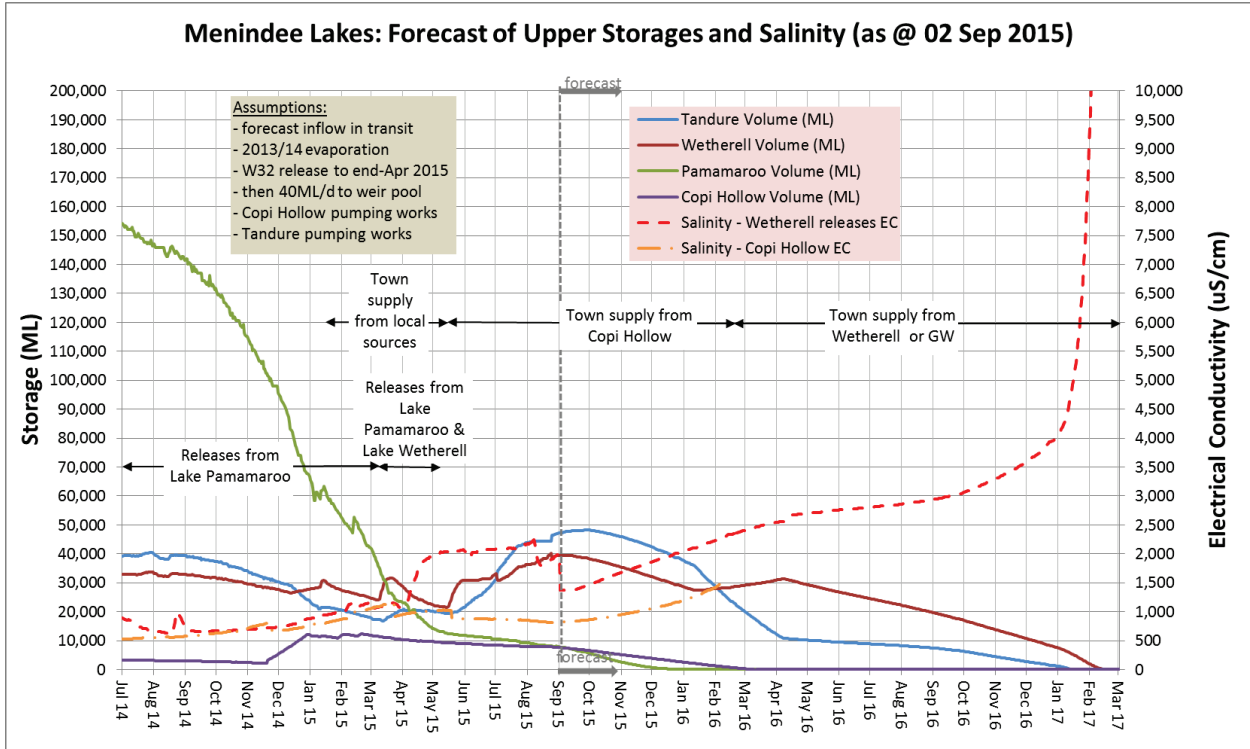
Salinity of remnant water in Lake Pamamaroo remains below 1,500 EC, while Copi Hollow salinity is still below 1,000 EC. Supply for Broken Hill is being sourced from Copi Hollow.

In the Weir 32 weir pool, current salinity readings have increased slightly to approximately 2,000 EC.

Advice on the management of saline water for irrigation is available from DPI Agriculture. For further information please contact Jeremy Giddings (03) 5019 8421.

Landholders can track salinity levels in real-time via the DPI Water website:
<http://www.water.nsw.gov.au/realtime-data/default.aspx>

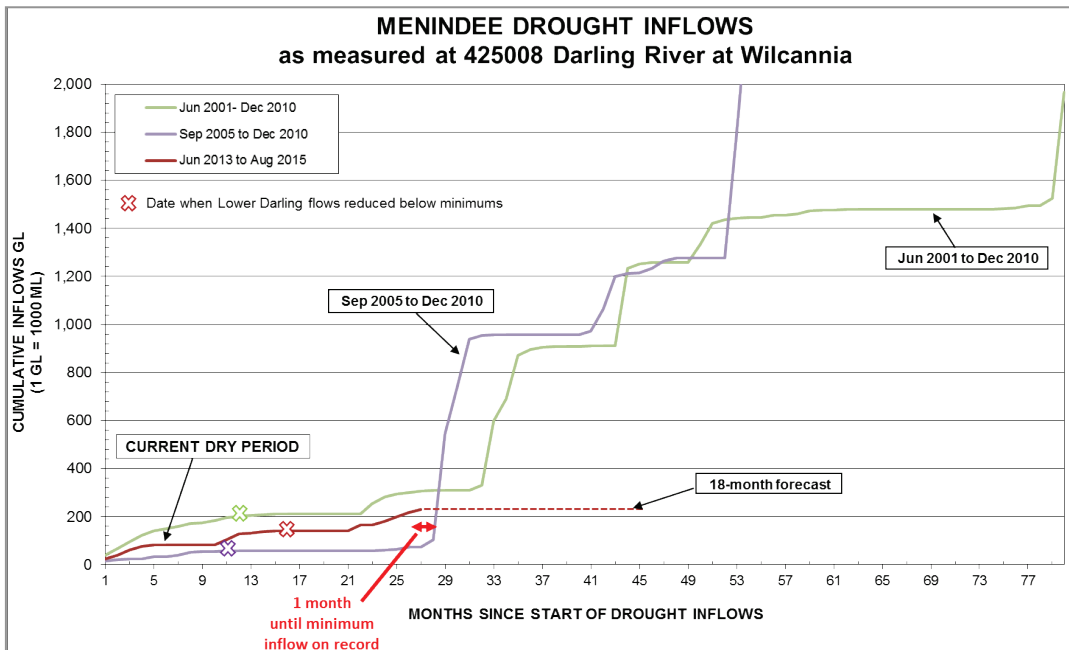
For more information on algae management in NSW, refer to the DPI Water website:
<http://www.water.nsw.gov.au/water-management/water-quality/algal-information>



Historical inflow comparison

Inflows to the Menindee Lakes, as measured by flows at Wilcannia, continue to be historically very low and are approaching the extended dry periods experienced during the Millennium drought. The cumulative inflow recorded in the 27 months since 1 June 2013 is approximately 230 gegalitres (GL).

This is less than that received from the 27 months beginning in June 2001. **If no more significant inflows are received in September** apart from the water currently in transit, then total cumulative inflows will be less than in any 2.5-year period recorded during the Millennium drought (see chart below) – **meaning a new record low-flow period** will have been established.

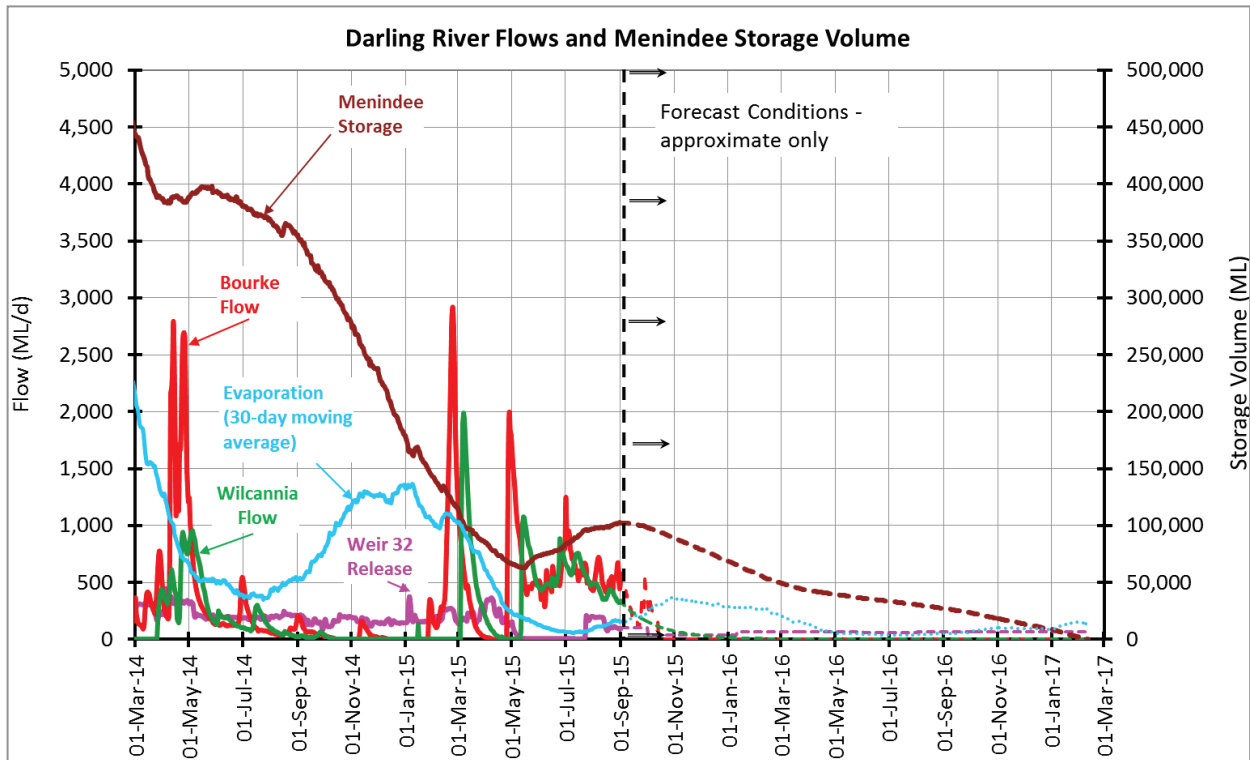


Forecast operations and water availability

Releases to the Lower Darling can be continued until at least the end of September, however the remaining resources in Menindee Lakes cannot yet support continuous releases over summer without affecting Broken Hill's water security. The volume of water in the pools behind the block banks at Lower Burtundy and Jamesville will be regularly assessed and top-up water made available as far as possible, balancing water supply security and avoiding the risks and potential losses through the heat of summer.

Any inflows from rainfall in the catchment will be closely monitored. Contingency measures will be progressively eased as any improvements in stored resources and inflows-in-transit allow.

Account water for domestic, stock and high security (permanent plantings) will be increased as required and water availability permits.



The above forecast conditions incorporate the following assumptions:

- No further inflow during the assessment period, aside from a forecast of current flows in transit;
- A repeat of 2013-14 (high) evaporation losses from Menindee storage;
- Release of low flows to end September, then storage 'leakage' of about 40 ML/d to maintain the town/Weir 32 (pool) only. Generally cease-to-flow conditions downstream of Weir 32 (October onward) apart from a replenishment flow/s as practicable; and
- Broken Hill demand met from Copi Hollow, and then from Lake Wetherell.

The above scenario is being regularly reviewed and will be revised if any changes to the water conservation measures are required.

What happens if improvements occur?

Planning scenarios conservatively assume that, aside from any water in transit, no further inflows to the Lakes will occur over the next 18 months. However, it is quite likely that some inflows will occur that will assist the current storage situation. If sufficient water is received into storage, some easing of restrictions may be possible; however, the priority will be to consolidate surface water supply security for Broken Hill.

Historically, contingency measures are lifted when at least 200,000 to 250,000 megalitres is in the Menindee system, which is enough stored surface water to restore Broken Hill's town water security to 21 months supply under normal operation of the Lakes system. For comparison, inflows since March 2015 may deliver a total of around 80,000 to 100,000 megalitres. The above target is less significant now that

alternative emergency supplies will be able to assure potable water for Broken Hill if the surface water supply runs out.

Improvement in storage reserve and water availability will be broadly prioritised as follows:

- maintain/extend surface water supply for towns, domestic, stock, permanent plantings
- increase allocation to town, domestic, stock and high security licences
- restore (low) continuous flow to the Lower Darling
- ease restrictions on water usage
- provide allocation to general security access licence holders

Inter-valley trade will not resume until total system storage reaches at least 640,000 megalitres.

Future works

Spring 2015

1. **Establishment of desalination facilities** to enable increasingly salty supplies in the Menindee system to be used for potable (drinking water) purposes. Preparations for installation of desalination units are currently underway at Broken Hill which, in combination with existing pre-treatment processes, will be capable of producing high quality water (satisfying the Australian Drinking Water Standards). This equipment will be needed early in 2016 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.
2. **Continue preparations for constructing emergency groundwater works** to ensure groundwater supplies can be made available for Broken Hill if dry conditions persist through 2016.
3. **Work on feasibility studies of long term water security and savings options.**

Summer and Autumn 2015/16

1. **Critical human needs supplied from Lake Wetherell.** Current forecasts indicate that, if no further inflows are received beyond those currently occurring, critical supplies can be maintained through 2016 from resources in the Lakes, until about January 2017.

Short term water demand and Long term options

Following depletion of Lake Wetherell, water will be sourced from shallow bores in the bed of Lake Menindee and the Tallyawalka Creek channel which will be treated. These shallow bores are part of the short term emergency supply solution until such time as a long term solution is agreed and implemented.

Currently, the expected capacity from these short term shallow bores is likely to exceed 4 years from the date when Lake Wetherell runs out.

A number of options are being reviewed for feasibility and cost benefit as part of the development of the long term solution business case.

The options include those proposed through the Broken Hill Community Consultative Committee (CCC) and others submitted up to April 2015.

The NSW Government will work closely with the community on the development of the business case and the long term options to secure Broken Hill's water.

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?

DPI Water: Bunty Driver T 0407 403 234 or visit the website www.water.nsw.gov.au

Water NSW: Tony Webber T 0428 613 478

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