
Lake Brewster project is reaping benefits for water users and the environment

The quality of water delivered to the lower Lachlan Valley has improved markedly this summer as aquatic plants in the Lake Brewster outflow wetlands establish and thrive for the first time.

An initiative of the Lachlan community, and funded to the tune of \$13 million by Government and water users, the lakes were reconfigured to enhance the wetland function, improve water quality and improve the lakes water storage ability.

However, since the Project was completed in August 2010, catchment conditions have not been favourable to the critical establishment phase for aquatic plants, which was recommended as 1–2 years.

Water manager with Office of Environment and Heritage, Paul Packard said that water plants prefer small fluctuations in water levels and a slight passing flow.

“Surcharging the wetland with deeper, colder and more turbid floodwaters can drown out any water plants trying to establish by both smothering the plant root material and limiting light penetration.”

“However, this didn’t eventuate this season despite the extensive 2016 winter flooding in the Lower Lachlan and surcharging of Lake Brewster, partly due to the innovative management of WaterNSW staff and environmental water managers.”

The last remaining milestone for the project has been met and the outflow wetlands have been ‘doing the filtering job they were designed to do’ over spring and summer. The presence of a large pelican colony, which has been feeding on and removing up to a 1kg of carp per pelican per day, is likely to have assisted with aquatic plant establishment.

Aquatic plants, often called macrophytes, in the inflow and outflow wetlands essentially act like our left and right kidneys – taking up nutrients from both water column and substrate while also providing a surface on which biofilms can develop.

Mr Packard said that biofilms are effective in improving water quality as well, while the macrophytes can help reduce wave intensity and stabilise the fine clay substrate.

“As the inflow wetland is the first and last to receive water, it has been functioning as intended for several years: filtering inflows, providing seeds and wetland plant material as well as refuge habitat for fish and waterbirds.

The desirable macrophytes (Phragmites, Cumbungi, River Club Rush, Water Ribbons, Water Milfoils, and Pondweeds) are well established at the inflow wetlands on the eastern side of the lake which also provides excellent water bird habitat.

This season we can also champion the role of the outflow wetland where Water Ribbons, Red Milfoil and Spikerush have established and set seed; thereby replacing blue green algae with aquatic plants,” said Mr Packard.

Results from regular water sampling by WaterNSW along with complimentary monitoring by OEH have recorded markedly lower turbidity and blue green algae loadings in the cells where water has passed through the outflow wetlands compared to the main storage.

Mr Packard explained that oxygen levels within the outflow wetland were often supersaturated as plants take in carbon dioxide and release oxygen.

“The flow on benefit from the outflow wetlands being supersaturated is very good dissolved oxygen readings at Benson’s Drop Weir in Mountain Creek, which serves as the outlet channel for delivering water into the Lachlan River from Brewster.”

Benson’s Drop and Lake Brewster weir pool is also home to the Lachlan’s only population of Olive Perchlet (*Ambassis agassizii*).

Previously, when dissolved oxygen has dropped to very low levels or blue green algae has reached red alert levels then Lake Brewster has been taken off line to protect the riverine environment and human health.

The improved water quality is a win for the environment and for all Lachlan Valley downstream users.

The Lake Brewster project reconfiguration design improved the efficiency of the storage by reducing surface area and evaporation.

Continued functioning of the lake provides substantial benefit to the downstream community in times of extreme flood events as in March 2012 and October 2016 when flood peaks were reduced by surcharging the lake system.”

Ends

Fast Facts on the Lake Brewster project

Lake Brewster was a shallow ephemeral lake that was developed as a water storage in the mid Lachlan valley in the 1940s and 50s for drought proofing, irrigation development, and water for regional development. A lake that is considered ephemeral is a lake that is usually dry, but that fills with water for brief periods during and after rainfall or other precipitation.

The Lake Brewster Water Efficiency Project was needed because, as a water storage of the 1950s, Lake Brewster experienced high levels of evaporation, operating inefficiencies, and serious water quality problems including high turbidity, salinity and blue green algae. Serious environmental issues had become apparent such as loss of aquatic vegetation, increased carp populations and problems associated with stock grazing.

The Lake Brewster Water Efficiency Project was an initiative of the Lachlan community, with assistance from the former Lachlan Catchment Management Authority, Water NSW and the former NSW Office of Water.

It was funded to the tune of \$13 million by the NSW and Commonwealth governments with the project commissioned in 2010.

Photos – attached

Photo 1 – OEH Jo Lenehan monitoring in the western outflow wetland high ground at Lake Brewster – Photo Mal Carnegie, Lake Cowal Foundation and Bland Shire Ambassador

Photo 2 – Aerial view of western outflow wetlands showing extensive vegetation coverage Red Milfoil and Spikerush (*Eleocharis* sp.) – Photo Mal Carnegie, Lake Cowal Foundation and Bland Shire Ambassador

Photo 3 – *Vallisneria australis*, Ribbonweed, Eelweed - photo J Lenehan (OEH)

Photo 4 – OEH Carmen Amos monitoring Ribbonweed condition in inner eastern outflow wetland – Photo Mal Carnegie, Lake Cowal Foundation and Bland Shire Ambassador

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