Watering Requirements

The watering requirements and watering history of the nationally and regionally significant wetlands are summarised below. This summary helps the decision-making process by matching available environmental water with the requirements of each wetland and time since last appropriate watering.

Note: Lake Brewster and Lake Cargelligo have not been included in this table due to the complexities of water use and management required for these two wetlands.

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,,,Nationally, Significant, Wetlands,,

Wetland, **Guage no.**, **Gauge height (m)**, **Discharge (ML/d)**, **Date; Duation of last inundation**, **Volume required (ML)**, **Condition**, **Delivery constraints**
Cumbung: Reed Bed, 412005, 0.5–0.67; 1.1 for significant response, 275–661; 713 for significant response, 2010/11; >6 months, 5000 to 30 000, Poor, Levees
Cumbung: Lignum Lake, 412005, 1.1, 713, 2010/11, 25 000 to 30 000, Unknown,,
Cumbung: Marrool Lake, 412005,1.1, 713, 2010/11, 25 000 to 30 000, Unknown,,
Lake Cowal, 412036, 7.2, 14 500, 2010/11,,Moderate–good, Large volumes required; delivery difficult
Booligal Wetlands, 412005, 2.1 (BB); 0.47(CTF), 2500 (BB); 236 (CTF), 2010/11; ~6 months, 12 000 to 57 000, Moderate–good, Delivery between Dec–March inefficient
Lake Merrimajeel, 412005, ,1570, 2010/11; >6 months, 500, Moderate, Delivery between Dec–March inefficient
Murrumbidgil Swamp, 412005,,1560, 2010/11; >6 months, 3500, Poor–moderate, Delivery between Dec–March inefficient
Cuba Dam, 412039, 1.07, 1500 (with Gonowlia Weir open), 2010/11; >6 months, 4000, Moderate, Delivery between Dec–March inefficient
Merrowie Creek (Cuba Dam to Chillichil), 412039, 1.07 (3.1 required at Willandra Weir), 1500 (with Gonowlia Weir open), 2010/11; >6 months, 6000, Moderate, Delivery between Dec–March inefficient
Lachlan Swamp, 412005,, 850, 2010, up to 20 000, Moderate, Delivery between Dec–March inefficient

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Guage no. and name: 412005=Booligal Weir, 412036=Jemalong Weir, 412039=Hillston Weir

CTF=Commence-to-flow; BB=Block Bank

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,,,Regionally, Significant, Wetlands,,

Wetland, **Guage no.**, **Gauge height (m)**, **Discharge (ML/d)**, **Date; Duation of last inundation**, **Volume required (ML)**, **Condition**, **Delivery constraints**
Baconian Swamp, 412045, 1.46, 600, 2010, 4800, Poor–moderate, Piggy-backing EW best option for delivery
Burrawang West Lagoon, Bumbuggan Creek,, 340, 2010/11; semi-permanent, 420 to fill system, Good, Some drying required to increase environmental value
Horseshoe Lagoon, , , , , , Unknown, Unknown
Lake Ita, 412005,,600, 2011 (partial filling); weeks, 6000 to 14 400, Moderate, Specific release to Ita is not an option due to high CTF
Moon Moon Swamp, 412005, 0.85, 2000, 2010; 2 months, 1980, Moderate, Significant losses occur to Willandra Crk; Middle Crk; and Merrowie Crk
Upper Merrowie Creek, 412039, 1.07, 1500 (with Gonowlia Weir open), 2010; 4 months, 3000, Moderate, Delivery between Dec–March inefficient
Wilga Lagoon, 412004, 3.14 (wet); 3.82–4.085 (dry), 12 983 (wet); 17 211 (dry), 2010,, Moderate–good, Unknown
Willandra Creek, 412038, 1.17 (with regulator closed), 2400, 2010/11; 4–6 months, 3000 (regulated section); 9000 (downstream of Willandra NP), Moderate, Currently lower CTF than under natural conditions
Yarnel Lagoon, Wallaroi Creek,,,2010; 4 months, 360 to fill, Good, Yarnel Management Plan to be taken into account

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[/table]

Guage no. and name: 412004=Cottons Weir, 412005=Booligal Weir, 412038=Willandra Weir, 412039=Hillston Weir, 412045=Corrong Weir

CTF=Commence-to-flow; Willandra NP=Willandra National Park, EW=environmental water

Fish Passage

Native fish need a variety of habitat types to complete their life cycle and therefore rely on free movement or passage within rivers. Key native species such as Murray cod, golden perch and silver perch are known to travel long distance through inland waterways, often migrating hundreds of kilometres. Impeding fish passage through the construction of dams, weirs, floodgates and waterway crossings can negatively impact native fish by:

- Interrupting spawning or seasonal migrations;
- Restricting access to preferred habitat, available food resources and breeding partners;
- Reducing genetic flow between populations;
- Increasing susceptibility to predation and disease through aggregation below barriers;

- Fragmenting previously continuous communities; and
- Disrupting downstream movement of adults and impeding larval drift through the creation of still water (lentic) environments.

Natural flow regimes are essential in maintaining connectivity between upstream and downstream reaches and adjacent riparian and floodplain habitats. Instream structures that span the whole channel can impede natural flows, acting as physical and hydrological barriers to fish movement and isolating upstream and downstream habitats. The delivery of environmental water may also provide an opportunity to drown out these instream structures, in particular, instream weirs. The Lachlan River has many fixed crested weirs along it length which prevent fish from travelling up and down the river except when larger flows submerge these weirs and allow fish to cross (NSW DPI 2006). The pulsing of environmental flows or the piggy-backing of environmental flows on operational or unregulated flows can be used to drown out some weirs, while also ensuring that property and infrastructure are not damaged. Drown-out is most effective during spring–summer when native fish are more likely to migrate and should occur for a number of days or weeks if possible.

Weir Drown Out Volumes

The daily volumes required to drown out some instream weirs on the Lachlan River are listed below.

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Weir, **Discharge Volume**
Cottons Weir (Forbes), 9250 ML/d
Condobolin Weir, 3800 ML/d
West Condobolin Weir, 3800 ML/d
Willandra Weir, 8500 ML/d
Hillston Weir, 4750 ML/d
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