



Office of  
Environment  
& Heritage

# **Gwydir Water Resource Plan Area**

**Statement of annual environmental watering  
priorities 2015–16**

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ISBN 978 1 76039 028 0

OEH 2015/0395

July 2015

## Contents

1. Purpose of this statement.....	1
2. Gwydir Water Resource Plan Area description.....	1
3. Consultation.....	1
4. Antecedent conditions: previous watering and condition of assets .....	2
5. Forecast available water .....	5
6. Resource availability scenario and management outcomes .....	6
7. Annual environmental watering priorities.....	6
8. Cooperative arrangements for water delivery .....	8
9. Further documentation .....	9
References .....	10
Appendix A .....	11

## 1. Purpose of this statement

This statement meets the New South Wales Government's obligations to outline the annual environmental watering priorities for the Gwydir Water Resource Plan Area (WRP Area) as set out in Part 4, Division 4 of Chapter 8: Environmental watering plan of the Murray–Darling Basin Plan (MDBA 2012a).

The guidelines for the method to determine priorities for applying environmental water (MDBA 2012b) have been used to identify the environmental watering priorities for 2015–16 for the Gwydir WRP Area.

The priorities reported here are derived from the *Gwydir Valley Annual Environmental Watering Plan 2015–16*.

## 2. Gwydir Water Resource Plan Area description

The Gwydir catchment covers 26 596 square kilometres, extending from the northern tablelands to the northern plains where it joins the Barwon River. Managed environmental water is focused on the floodplain area west of Moree where the Gwydir River branches into three main systems being the Gingham watercourse, Lower Gwydir (Big Leather) watercourses and Mehi, Mallowa and Moomin systems (south).

These areas contain a mosaic of wetland types from semi-permanent marshes and waterholes to floodplain woodlands which are only inundated during large floods.

Four wetlands in the Gwydir Valley are listed under the Convention on Wetlands of International Importance (the Ramsar Convention) including, 'Windella', 'Crinolyn', 'Goddard's Lease', and 'Old Dromana' — these wetlands are known as the [Gwydir Wetlands](#) and form part of the [Gwydir Wetlands State Conservation Area](#).

The Gwydir Wetlands are located in north-western NSW downstream of Moree (Map 1). Their extent, values and water requirements are described in DECCW (2011) and MDBA (2012a). These wetlands are the Country of the local Gomeroi Aboriginal people, home of their heritage and important cultural sites. Over 160 cultural heritage sites have been recorded in the wetlands, including burial sites, scarred trees and stone artefacts. These wetlands were also known as a place of bountiful wild harvests.

## 3. Consultation

In NSW, environmental water advisory groups are the primary vehicle for stakeholder consultation on environmental water planning for a particular WRP area. In the Gwydir area, the Environmental Contingency Allowance Operational Advisory Committee (ECAOAC), formed under the Gwydir Regulated River Water Sharing Plan, provides advice on the development of the Gwydir Annual Environmental Watering Plan and seasonal issues as they arise.

The Gwydir ECAOAC has reviewed and endorsed the annual environmental watering priorities for the Gwydir WRP Area. This statement on the priorities directly reflects the watering aims, objectives and priority watering assets identified and contained within the *Gwydir Valley Annual Environmental Watering Plan 2015–16*. The Office of Environment and Heritage (OEH) website has details of the [objectives and membership of the Gwydir ECAOAC](#).

Preparation of the statement also involved consultation with the Commonwealth Environmental Water Office (CEWO).

#### **4. Antecedent conditions: previous watering and condition of assets**

Overall during the 2014–2015 season 82 700 ML of environmental water deliveries were made in the Gwydir system to benefit wetlands and river and creek systems. Environmental water deliveries from the Commonwealth Environmental Water (CEW) holdings were made into the Mallowa Creek and its wetlands and in-stream into the Mehi River and Carole Creek. Environmental water deliveries were made into the Gingham and Lower Gwydir wetlands from a combination of Environmental Contingency Allowance (ECA) and CEW holdings.

The Gingham and Lower Gwydir wetlands system received close to 60 000 ML of delivered environmental water during the period 2014–15 season. This followed a season of general system drying during the previous 2013–14 period. Environmental water deliveries commenced in September 2014, but were constrained until after harvest in November, particularly along the Gingham Watercourse delivery channels. Widespread inundation in eastern and central wetland areas was achieved by delivery end, ceasing in early March 2015. The Upper Gingham and Lower Gwydir wetlands systems received the majority of flows, with Lower Gwydir totalling 28 771 ML and Gingham totalling 31 124 ML (of which 3415 ML of flow was recorded at the lower Gingham Bridge).

During the season, even though very dry, there were small natural flows in the system directed to the Gwydir wetlands. The Lower Gwydir received an additional 2863 ML (final season total 31 634 ML) and the Gingham 4628 ML (final season total 35 752 ML).

The seasonal outcome of the Gingham flows indicate that the piping of stock and domestic deliveries in combination with closing of the open channel system, under the previous Rivers Environmental Restoration Program (RERP), has been effective in halting the continual draining of the upper Gingham wetlands areas. As flows enter the upper Gingham they disperse more widely and hold for longer, achieving a greater ecological outcome that could have been achieved in the absence of the RERP project.

However, the ability to deliver into the lower Gingham wetland areas, west of Gingham Bridge, is lesser due to the low flow rates and timing constraints further east, along the delivery channels to the core wetlands assets of the Upper Gingham.

Whilst inundation did occur west of Gingham Bridge in lower Gingham wetlands, they fell short of the far western Ramsar sites 'Crinolyn' and 'Windella'.

The stated objectives for this season's deliveries was to support, where possible, a 'whole of season' watering goal to achieve at least five to six months of continuous wetland inundation across a large portion of the remaining Gingham and Lower Gwydir wetland areas. In the context of building wetlands resilience, an additional aim was to conserve and retain the levels of wetlands vigour, restored to the system by the previous regime of seasonal watering.

Initial indications from aerial surveys and post-season vegetation monitoring are that both of the stated objectives and related aims have been achieved this season for the majority of the Gwydir Wetlands system.

Water deliveries during the 2014–15 season were also made into the Mallowa Watercourse and wetlands system, and for fish populations in the Mehi River and Carole Creek. Releases into the Mallowa system were made as part of the third year of a restoration program and were made in two periods with 1107 ML delivered during October and 8382 ML from late December to early March.

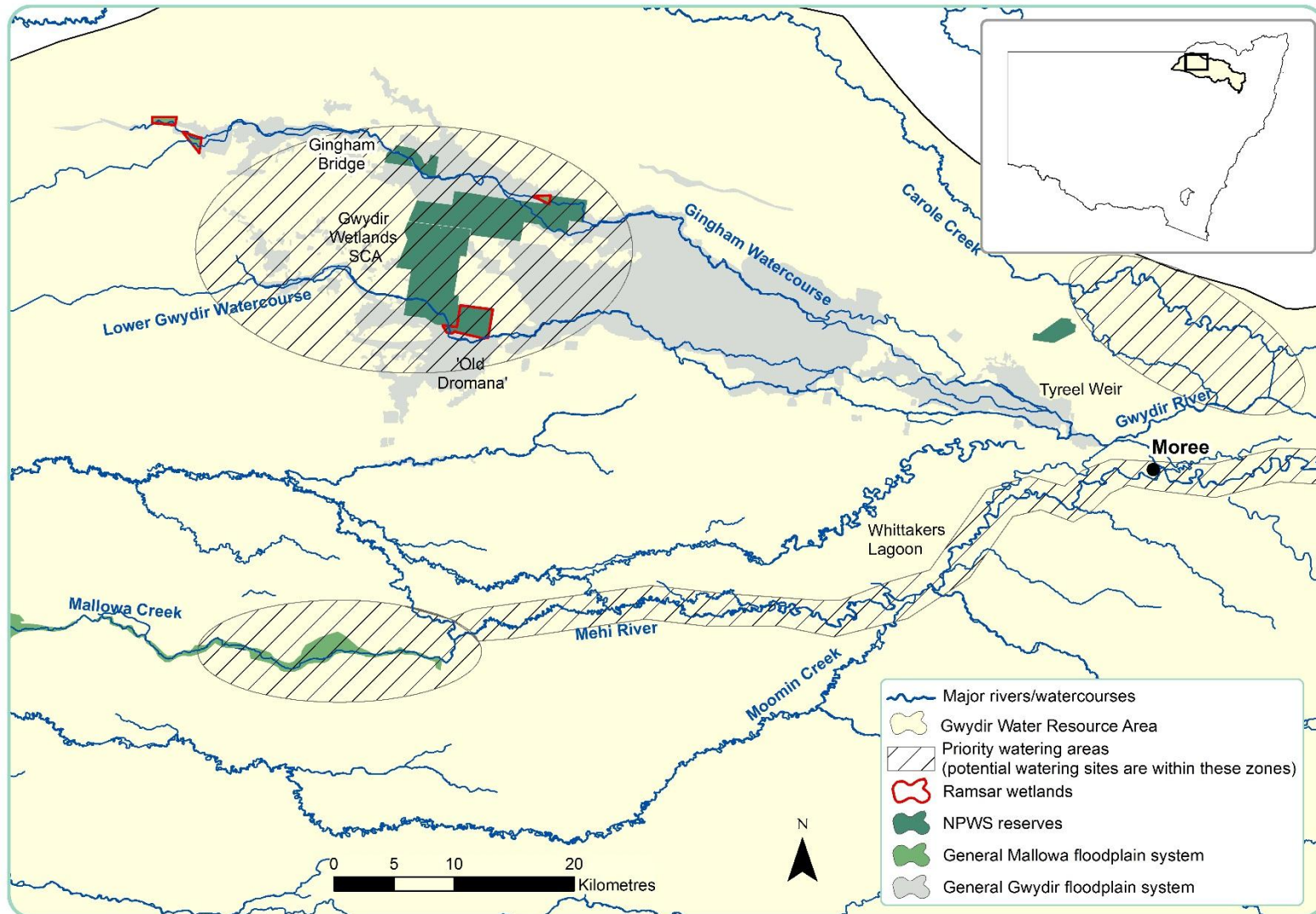
Again it was a very dry year during 2014–15 but good watering outcomes were achieved in eastern sections of the Mallowa. However, western sections experienced a lesser watering outcome and no flows reached the furthest extent of the watercourse, failing to join to the Moomin Creek system. This was partly due to the requirement for flow rates to be reduced in

order to facilitate works and activities being undertaken for the stock and domestic piping project at the same time as deliveries.

**Table 1: Gwydir environmental water releases – 2014–15**

Asset	Volume	Outcome and current condition
Gingham Watercourse Wetlands	31 124 ML	<p>Flows commenced late September 2014, but were halted during the harvest period and due to high daily temperatures. Deliveries then recommenced November through to March 2015.</p> <p>31 124 ML was delivered into the system, of which 9454 ML was recorded at the Gingham Bridge. Inundation in the west of the lower Gingham fell short of the far western Ramsar sites, being Crinolyn and Windella.</p> <p>Late season rainfall and small riverflows (April 2015) have assisted to retain inundation levels in the Upper Gingham.</p> <p>Where water was received, wetlands and aquatic conditions are positive and will stay so through spring and into early summer 2015. Total inundation was approximately 3685 ha by seasons end.</p> <p>31 124 ML of environmental water was delivered plus natural flows = 35 752 ML (final season total).</p>
Lower Gwydir Wetlands (Millewa)	28 771 ML	<p>Flows commenced late September 2014 and were reduced during October/November to assist farmers achieve a successful harvest. The eastern areas received five to six months of inundation, including the Big Leather Ramsar site. Western areas received three to four months of inundation including Endangered Ecological Communities in the State Conservation Area.</p> <p>Water delivered to the State Conservation Area resulted in a positive vegetation restoration response after the 2013–14 fires.</p> <p>This flow resulted in positive wetlands and aquatic conditions that will continue through spring and into early summer 2015. Total inundation was approximately 2650 ha by season's end.</p> <p>28 771 ML of environmental water was delivered plus natural flows = 31 634 ML (final season total).</p>
Mallowa Watercourse and Wetlands (off Mehi River)	9489 ML	<p>It was a good environmental outcome in the areas where water has been delivered, given the smaller than planned volume of two to four months inundation.</p> <p>The wetlands and aquatic conditions are positive and will stay so through to spring and into early summer 2015. Total inundation was approximately 930 ha by season's end.</p> <p>9489 ML of environmental water was delivered plus natural and stock and domestic flows = 11 262 ML (final season total).</p>
Mehi River (fish populations)	13 316 ML	The Mehi River, downstream of Combadello Weir, received targeted deliveries this season for beneficial in-stream and native fish outcomes.
Carole Creek (fish populations)	3656 ML	Downstream of Carole Creek off-take also received targeted deliveries this season for beneficial in-stream and native fish outcomes.
<b>Total</b>	<b>86 356 ML</b>	

<sup>1</sup> Interim volume in megalitres (ML) until otherwise confirmed



**Map 1: Annual environmental watering priority areas, Gwydir WRP Area – 2015–16**

In-stream deliveries to support ecological processes and to benefit native fish, were made during October, into both the Mehi River of 13 316 ML and Carole Creek of 3656 ML, in conjunction with other flows in these systems.

## 5. Forecast available water

The Bureau of Meteorology (BOM) has indicated a strengthening El Niño in the Topical Pacific that is having a drying impact on eastern Australia. The climate outlook can be viewed at the [BOM website](#).

Forecasts therefore indicate a generally drier and warmer-than-normal winter in eastern Australia. The proactive whole of system watering that occurred during the 2014–15 season has provided a positive wetland state which should remain until early spring 2015, when daily temperatures will begin to rise and the growth of wetland species will also take off again.

It is also possible, based on longer term predictions, that the drier conditions will remain so throughout the wetlands growing season from September 2015 to April 2016. Water predictions for the coming water year resulted in a scenario for medium water availability (Table 2).

The figures given in Table 2 have not been adjusted for possible future trade. OEH periodically trades water allocation to cover a proportion of water use charges associated with NSW environmental water holdings (EWH). The volume of environmental water traded in a WRP area is determined by the price in the local market and the targeted level of cost recovery. OEH manages the trade of NSW EWH based on basin-wide environmental water demand and trading opportunities, with consideration of equity between WRP areas over time.

**Table 2: Anticipated environmental water availability – Gwydir WRP Area**

Account	Maximum volume	Current available <sup>1</sup>	Volume expected to be available at 1 July 2015 <sup>2</sup>
<b>Planned environmental water allowances</b>			
Environmental contingency allowance	45 000–90 000 ML	58 370 ML	58 370 ML <sup>3</sup>
<b>NSW environmental water holdings</b>			
General security	17 092 ML	1345 ML	1345 ML
Supplementary <sup>4</sup>	3140 ML	3140 ML	Event-dependent
<b>Commonwealth environmental water</b>			
General security	89 525 ML	23 529 ML	23 529 ML
Supplementary <sup>4</sup>	19 100 ML	19 100 ML	Event-dependent

<sup>1</sup> As at June 2015 (contingent on available water determinations made throughout the upcoming water year).

<sup>2</sup> In addition to 'current available', the forecast annual long-term return is 41% for General Security and 43% for supplementary under a median resource availability scenario.

<sup>3</sup> 15 000 ML will be set aside to provide support to bird breeding events if required.

<sup>4</sup> Supplementary access depends on the announcement of supplementary water releases.



## 6. Resource availability scenario and management outcomes

The resource availability scenario (RAS) is based on surface water availability and antecedent conditions (Appendix A: Table A1). In the Gwydir Wetlands and Mallowa Creek systems, the antecedent conditions are median (due to the substantial watering over the past seasons) and the forecast water availability is also median, so the RAS is moderate.

Given that conditions may turn drier later in the year, a dry RAS should also be considered. With the RAS moderate moving to dry, the management outcome for the water year is to firstly maintain the ecological health and resilience of wetlands and then to ensure that in the event of dry conditions the environmental assets will be maintained to support basic functions and resilience (Appendix A: Table A2).

## 7. Annual environmental watering priorities

The Gwydir Environmental Flows Committee (ECAOAC) has proposed that no proactive watering should occur during 2015–16, given the extensive watering that occurred in this system during the 2014–15 season. This approach acknowledges that naturally drying phases are an important part of wetlands system functioning.

**Gwydir Wetlands:** However, in the event that substantial rainfall and river flows do occur during the early part of the season (July–October 2015), which result in an announced Supplementary Flow Event, a delivery may be made into the system. These deliveries may total up to 10 GL for the period in addition to water taken under Supplementary Licensed allocation held by the Commonwealth and NSW Governments (see Table 3).

Consideration will be given to the winter wheat crop harvest, based on advice from landholders and regular contact with these stakeholders.

**Table 3: Gwydir watering site priorities – 2015–16**

Location/ target	Sites	Volume estimated	Rationale, timing and duration
Mallowa Creek and Wetlands (off Mehi River)	Mallowa Creek downstream of Mehi River off-take and Mallowa regulator.	Up to 5000 ML General Security. Up to 5000 ML Supplementary Licence.	Nil proactive watering. Reactive to upstream natural flow triggers only (supplementary event announcements, mimic unregulated event – July–October 2015).
Fish communities and aquatic health within the Mehi River system	Primary target: Tarelaroi Regulator (gauging station 418044) to Gundare Regulator (gauging station 418059). Secondary target: Gundare regulator to Mehi River near Collarenebri (gauging station 418055).	Nil allocation in response to dry/dry conditions and nil/minimal allocations. Note: Under improved moderate/high allocations there may be flows for aquatic communities during the 2015–16 season.	As per committee endorsement, nil deliveries during 2015–16 seasons under dry/dry scenario. In the moderate/high scenario the specific timing, size and hydrographic nature of flow deliveries will be developed when natural flow triggers are met for those systems.

Lower Gwydir and Gingham wetlands system	<p>Lower Gwydir order of filling: Old Dromana Ramsar subsite; marsh club-rush reed-bed stands (Old Dromana and Belmont); Wondoona Waterhole.</p> <p>Gingham Watercourse order of filling: Jackson Paddock on The Gully; Talmoi, Tillaloo and Baroona lagoons; Westholme; Bunnor east and Goddard's Lease Ramsar subsite; Gingham Waterhole; Glendara lignum stand; Little, Racecourse and Pear Paddock lagoons; Boyanga Waterhole; Old Boyanga; Curragundi and Molladree; and the Crinolyn and Windella Ramsar subsite.</p>	<p>Up to 10 000 ML</p> <p>General Security</p> <p>Up to 14 100 ML Supplementary Licence.</p>	<p>Nil proactive watering.</p> <p>Reactive to upstream natural flow triggers only (supplementary announcements, mimic unregulated event – July–October 2015).</p>
Gwydir River drought refuge pools	<p>Gwydir River downstream of Copeton Dam to Tareelaroi Weir.</p> <p>Tareelaroi Weir to Tyreel Weir.</p> <p>Tyreel Weir downstream to Raft.</p> <p>Tyreel regulator downstream to Millewa Gauge.</p>	<p>Up to 8000 ML general security or environmental contingency allowance.</p>	<p>During periods of extreme river drying, environmental deliveries may be made to river drought refuge sites and/or larger refuge pools to prevent them from drying down completely and provide connectivity downstream.</p> <p>The provision of these low flows during extreme dry periods will facilitate fundamental functioning of the Gwydir River aquatic ecosystem.</p>
Mehi River drought refuge pools	<p>Tareelaroi regulator downstream to Gundare Regulator.</p>	<p>Portion of volume above general security or environmental contingency allowance.</p> <p>(as per above)</p>	<p>During periods of extreme river drying, environmental deliveries may be made to river drought refuge sites and/or larger refuge pools, to prevent them from drying down completely and provide connectivity downstream.</p> <p>The provision of these low flows during extreme dry periods will facilitate fundamental functioning of the Mehi River aquatic ecosystem.</p>
Whitakers Lagoon	<p>Delivery made via neighbouring cotton property owner, pump and channel system. Pumping costs may apply.</p>	<p>Up to 70 ML</p>	<p>A delivery is planned into the Whittaker's Lagoon, possibly early in the season (September–October 2015), of up to 70 ML to fill this isolated remnant lagoon.</p>

Note: Volumes attributed to usages are estimates only.

All environmental water deliveries into either the Lower Gwydir, Gingham or Mallowa wetlands will acknowledge local farming land uses at the time of delivery. The aim will be to minimise disturbance to floodplain farming activities as much as is practicably possible.

**Mallowa Creek:** Similar to the Gwydir, given that the Mallowa Watercourse has received a succession of water deliveries, from the flooding in 2011–12, followed by three seasonal waterings, the restoration program for this system is now complete. Therefore, no proactive watering will occur during 2015–16. This approach acknowledges the natural drying phases that are an important part of wetlands system functioning.

However, in the event that substantial rainfall and river flows do occur during the early part of the season (July–October 2015), which result in an announced Supplementary Flow Event, a delivery may be made into the system. These deliveries may total up to 5 GL for the period in addition to water that may be taken under Supplementary Licensed allocations. Consideration will be given to the winter wheat crop harvest, based on advice from landholders.

**Mehi River:** Recent (early results) sampling, undertaken in the Mehi River system during April 2015, indicated limited fish recruited, that could be attributed to early season 2014-15 delivered fish flows. As a result, the Gwydir ECAOAC decision was to not provide flows in support of the aquatic ecology and native fish in the Mehi River system. Ultimately this committee approach acknowledged the potential to carry-over more water for use at a later season under the dry/dry scenario. However, under improved moderate/high allocations there may be flows for aquatic communities during the 2015–16 season.

**Whittakers Lagoon:** A delivery is planned into Whittakers Lagoon, possibly early in the season (September–October), of up to 70 ML to fill this isolated remnant lagoon.

**River Drying and Low Flows:** Under very dry conditions and very low river flows, environmental water deliveries (up to 8 GL) may be made to provide low connecting flows to key refuge pools in the Gwydir and upper Mehi River sections.

**Environmental Water Reserves:** All unused environmental water is held in Copeton Dam to meet future environmental watering needs. The ECAOAC has recently undertaken specific water planning to ensure that all water reserves are best utilised to support key water dependant assets for the period 2015–16 through to 2017–18, given a dry/dry scenario of seasons occurring over the next two–three years. The Gwydir ECAOAC have committed to reviewing its future water use for the environment in line with their annual planning phase and as conditions and water availability change. Individual watering events are approved and implemented via the current [NSW environmental water planning and operational framework](#).

## 8. Cooperative arrangements for water delivery

OEH is the leading environmental manager for NSW and coordinates environmental watering with advice from the relevant environmental water advisory group in each WRP area. OEH has negotiated cooperative arrangements with the Commonwealth Environmental Water Office and WaterNSW to maximise the benefits of environmental water use in NSW.

OEH has also developed strong partnerships with Local Land Services, irrigator groups and landholders to ensure the efficient and effective delivery of environmental water. In some circumstances, this may include the use of private infrastructure to water wetland targets and cooperative changes to land management to ensure desired ecological responses to watering are achieved.

## **9. Further documentation**

Reporting on water used throughout the 2015–16 watering season will be included in OEH's *Environmental Water Use in NSW: Outcomes 2015–16* and also in the Commonwealth's *Annual Report 2015–16: Commonwealth environmental water*, available in late 2016.

## References

DECCW 2011, *Gwydir Wetlands: Adaptive Environmental Management Plan – Synthesis of information projects and actions*, NSW Department of Environment, Climate Change and Water, Sydney,  
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## Appendix A

**Table A1: Determining the resource availability scenario**

Surface water availability	Antecedent conditions				
	Very dry	Dry	Median	Wet	Very wet
Very low	Very dry	Very dry	Dry	Dry	n/a
Low	Very dry	Dry	Dry	Moderate	Wet
Median	Dry	Dry	Moderate	Wet	Wet
High	Dry	Moderate	Wet	Wet	Very wet
Very high	n/a	Moderate	Wet	Very wet	Very wet

Source: Modification of table in 'Guidelines for the method to determine priorities for applying environmental water' in the Murray–Darling *Basin Plan* (MDBA 2012b), using ranges for water availability and antecedent conditions rather than the percentile ranges (15 points in each band) used in the plan.

**Table A2: Management outcomes for each resource availability scenario**

	Resource availability scenario				
	Very dry	Dry	Moderate	Wet	Very wet
<b>Management outcomes</b>	<p><b>Avoid irretrievable loss of, or damage to, environmental assets</b></p>	<p><b>Ensure environmental assets maintain their basic functions and resilience</b></p>	<p><b>Maintain ecological health and resilience</b></p>	<p><b>Improve the health and resilience of water-dependent ecosystems</b></p>	<p><b>Improve the health and resilience of water-dependent ecosystems</b></p>
	<p>Avoid critical loss of species, communities and ecosystems. Maintain critical refuges Avoid irretrievable damage or catastrophic events. Allow drying to occur, where appropriate, but relieve severe unnaturally prolonged dry periods.</p>	<p>Support the survival and viability of threatened species and communities. Maintain environmental assets and ecosystem functions, including allowing drying to occur, consistent with natural wetting-drying cycles. Maintain refuges.</p>	<p>Enable growth, reproduction and small-scale recruitment for a diverse range of flora and fauna. Promote low-lying floodplain–river connectivity. Support medium-flow river and floodplain functions.</p>	<p>Enable growth, reproduction and large-scale recruitment for a diverse range of flora and fauna. Support high-flow river and floodplain functions.</p>	<p>Enable growth, reproduction and large-scale recruitment for a diverse range of flora and fauna. Support high-flow river and floodplain functions.</p>

Source: Modification of table in 'Guidelines for the method to determine priorities for applying environmental water' in the Murray–Darling *Basin Plan* (MDBA 2012b), with the objective — Promote higher floodplain–river connectivity — removed from the wet and very wet scenarios.