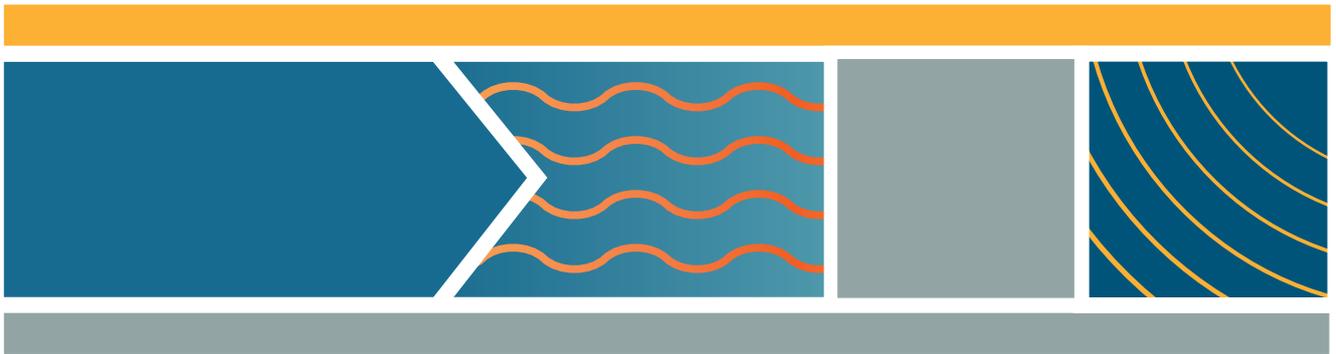


Water sharing in the Macquarie and Cudgegong Regulated Rivers

Progress report 2004 to 2008



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Progress report 2004 to 2008*

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Introduction

A water sharing plan (WSP) for the Macquarie and Cudgegong Regulated Rivers Water Source commenced on 1 July 2004. This plan contains rules for how water is shared between the environment and water users and different categories of licences. At the start of the 2007–2008 water year, the Plan was suspended due to the extremely dry conditions. Since this time, the Department of Water and Energy has put in place measures aimed at meeting critical water needs of towns, domestic and stock and industry.

In the four years from 2004 to 2008, there has been significant progress in implementing the strategies detailed in the Plan. This report summarises key activities arising from implementation of the Macquarie Cudgegong Regulated Rivers Water Sharing Plan and details how water management has differed from the rules in the Plan since its suspension in 2007 (see also critical water planning updates on the Department’s website www.dwe.nsw.gov.au).

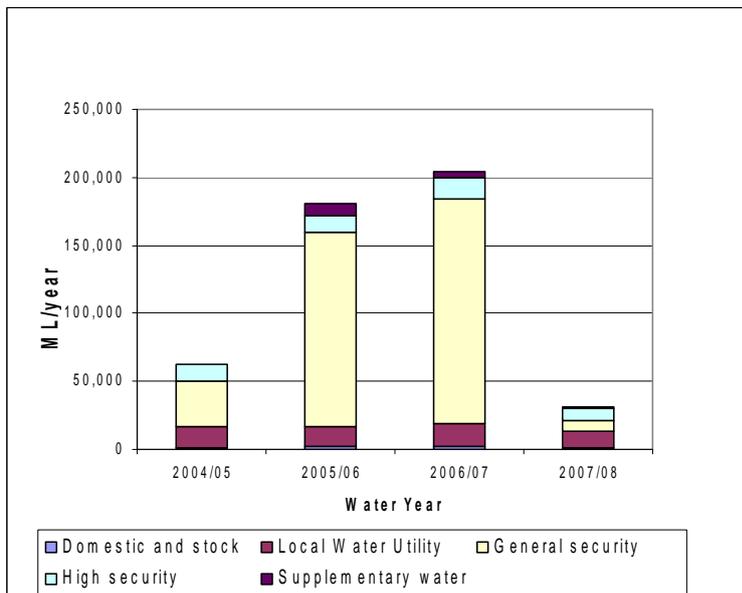
Water for the environment

Managing to extraction limits

The Plan establishes a long term average annual extraction limit estimated as 391,900 megalitres (ML) per year and identifies water above this limit (approximately 73 per cent of flows) as planned environmental water. This limit is determined by hydrologic modelling – it is not the volume of water extracted from the water source in any particular year.

The Department updates this model with any available new information and re-runs it every year. There has been no apparent increase in irrigation development in the Macquarie since the development of the Plan and actual water use has been low due to the dry conditions (see Figure 1). The Department will continue to monitor the situation and assess the long term average annual extraction against the Plan limit.

Figure 1 Macquarie and Cudgegong Regulated Rivers water use 2004 to 2008



More natural flows in the Upper Cudgegong

The Plan contains rules for the release of a portion of inflows to Windamere Dam to attain, in combination with any downstream tributary inflows, flows between 150 and 1,500 megalitres per day (ML/day) at Rocky Water Hole. These flows are protected from extraction until they have entered the Burrendong Dam water storage. They are aimed at ensuring that there is connectivity throughout the Cudgegong River system and reintroducing a more natural flow pattern in the upper reaches below Windamere Dam. The rules are identified in the Plan as planned environmental water. In 2005–06, a total of 2,091 ML was released from Windamere Dam between July and December 2005. The storage level in Windamere Dam was drawn below 110,000 ML in June 2006. No environmental flows were released from Windamere Dam after this date as the trigger for delivery of the environmental flows ceases below this level.

Environmental releases from Burrendong Dam

The Plan establishes a water reserve [or environmental water allowance (EWA)] of 160,000 ML in Burrendong Dam for environmental outcomes in the Macquarie Marshes and in the Macquarie River downstream of the dam.

Part of this allowance (EWA1) is delivered translucently and is aimed at providing more natural flows downstream of Burrendong Dam between 1 June and 30 November and 15 March to 31 May. The other part of the allowance (EWA2) may be stored and released actively when needed for a wide range of environmental purposes, such as assisting water bird breeding, flooding of wetlands, fish passage or breeding in the Macquarie River and Macquarie Marshes.

In the 2005–06 water year, between November 2005 and January 2006, releases totalling 84,000 ML were made to support bird breeding events in the Macquarie Marshes. This figure includes releases made from both of the environmental water allowance accounts. Although the Plan includes separate rules for the use of these allowances, releases from EWA2 to date have focussed on supplementing releases made from EWA1, thus ensuring that it is of maximum benefit to the riverine environment and the Macquarie Marshes.

When water availability improves in the Macquarie and the Plan is reinstated, decisions about environmental flow releases from these dams will be made by the Department of Environment and Climate Change (DECC) on the advice of the Environmental Flows Reference Group.

Environmental flows under drought management arrangements

Although the Plan was suspended in July 2007, water has been made available to the environment in line with the rules set out in the Plan under the drought management arrangements which are currently in place.

In 2007–08 approximately 13,000 ML of water held in the Environmental Water Allowance account and carried over from 2005–06 was released in January 2008 after the suspension on carryover of account water was lifted. A total of 8,000 ML from the 2007–08 allocation for this Allowance was released in March and April 2008. These two releases provided much needed relief to the Macquarie Marshes and supported successful bird breeding events.

Adaptive environmental water

The WSP allows for licence holders to nominate their licence as Adaptive Environmental Water. Once a nomination has been processed, the entitlement cannot be used for any purpose other than environmental benefit, outlined in an Adaptive Environmental Water Use Plan.

Since 2006, DECC has purchased 17,665 shares of general security licences and 520 share supplementary access licences under the RiverBank and Wetland Recovery Programs. In early 2008 the Minister approved a Use Plan for the Macquarie Regulated River water source which sets out how these licences will be used to further the objectives of the Macquarie and Cudgegong Water Sharing Plan. These licences are linked to the RiverBank Water Use Plan for the Macquarie and Cudgegong and are nominated as Adaptive Environmental Water. In April 2008, 695 ML of Adaptive environmental Water was released, extending the benefit of the use of the Environmental Water Allowance released at this time.

Clear water rights and trading

The Plan establishes rules for how water is shared between extractive users. Information on access licences, including conditions, entitlements, available water announcements and trading is available on public registers established by the Department in 2004 (web site reference www.dwe.nsw.gov.au).

Basic rights

The Plan provides for water to satisfy basic landholder rights. No access licences are required for accessing these rights. Water to meet these needs is included in State Water's operational protocols as essential requirements and delivered on top of water ordered by licence holders.

The water extracted as basic landholder rights in the regulated sections of the Macquarie and Cudgegong Rivers is usually insignificant compared to Plan's long term extraction limit. Water to meet these needs is included in State Water's operational protocols as essential requirements and delivered on top of water ordered by licence holders. During the last four years, water has been provided for basic landholder rights in all regulated sections in the Macquarie Cudgegong. The drought conditions have meant, however, that this has required considerably more resources than would generally be the case.

The Plan also provides for basic landholder rights in some unregulated effluent creeks in the form of annual replenishment flows (s. 59 in the WSP). The primary source for the annual replenishment flows are from tributary flow events. If the tributary flow events are insufficient, replenishment flows to Marra Creek, Lower Bogan River and Macquarie River below the Marshes are supplemented with releases from Burrendong Dam. The WSP ensures that as a minimum twice annual stock and domestic flows are made to the lower Macquarie River. In the other creeks nominated in the Plan for receiving replenishment flows, which cannot receive regulated flows, no water can be made available for domestic and stock use if there are no tributary flows. Crooked Creek below Mumblebone, for example, did not receive any replenishment flows in any year since the commencement of the Plan.

During the last four years, irregular deliveries of annual replenishment flows were delivered based on availability of surplus flows. This varied considerably across the creeks nominated in the Plan. In 2004–05 basic rights requirements of the creeks and lower Macquarie River were met in all but three

of the nominated creeks. In each of the subsequent three years, these requirements were met in all but two of the nominated creeks.

These basic rights requirements were supplied from combination of domestic and stock replenishment flows, local storm run-off, and from high flows in other connected systems due to rain.

Access licences

Share entitlements for access licences within the Macquarie and Cudgegong Regulated Rivers water source were estimated at the commencement of the Plan. Prior to the commencement of the Plan, the Department converted 1,449 existing licences issued under the *Water Act 1912* to new licences and approvals under the *Water Management Act 2000*.

Over the past four years, there has been very little change in the total entitlement in the Macquarie and Cudgegong water source. Although there has been a reduction in total entitlement for domestic and stock licences of 44 ML (or less than 1 per cent), there are five additional licences. The only other change during this period was a 660 ML (or 4 per cent) increase in the allocation of Bogan Shire's Local Water Utility entitlement (servicing Nyngan) due to the finalisation of an application received prior to the commencement of the Plan.

Available Water Determinations

An Available Water Determination (AWD) is the volume of water that is made available to a category of access licence. Announcements are made at the start of the water year and whenever there is an improvement in water availability.

Due to record low flows, AWD announcements for general security access licences were set at zero for significant periods since 2004. Since this time, water has only been made available to this category of licence between mid August 2004 and 30 June 2005 (cumulative AWD of 0.09 per cent per share) and for the same period in 2005 (cumulative AWD of 0.44 per cent per share). In 2007–08 after lifting the suspension on carryover allocations (in place for twelve months from 1 July 2006), there have been two small AWDs totalling 5 per cent per share announced for general security licences. At all other times, the AWD for general security licences was set at zero.

In 2007–08, as the Plan was suspended, it was possible to have different allocation regimes for the Macquarie and Cudgegong Rivers. Due to drought conditions the year started with 80 per cent allocation for high security, domestic and stock and town water supply in the Cudgegong and 50 per cent for high security and domestic and stock and 70 per cent for town water supply in the Macquarie. General security licence holders were permitted to access only 25 per cent of their carryover allocations in the Cudgegong and none in the Macquarie.

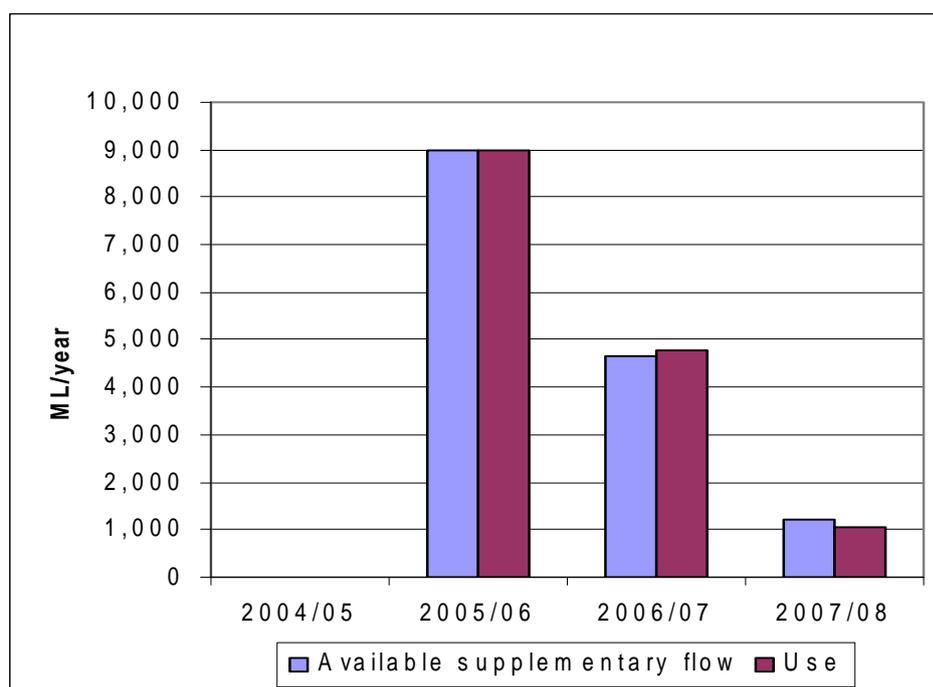
With rain and inflows in the late December to January period, all high security allocations were increased to 100 per cent per share and the suspension of access to carryover allocations was lifted. These arrangements, made it possible to maintain essential supplies such as town water supplies, domestic and stock water and water for the critical industries such as permanent plantings and mines.

Supplementary water access

The Plan details rules for water extraction under supplementary water access licences in the Macquarie and Cudgegong Regulated Rivers Water Source. Since the implementation of the WSP, there have been three supplementary events in the Macquarie River—one in each year except for 2004–05. In each of these supplementary water announcements between 12 per cent and 20 per cent of the total flow event was made available for extraction. No supplementary events have been announced in the Cudgegong River

Figure 2 shows details of extraction under supplementary water licences since 2004.

Figure 2 Macquarie Regulated River Supplementary Water Access 2004 to 2008



Water markets

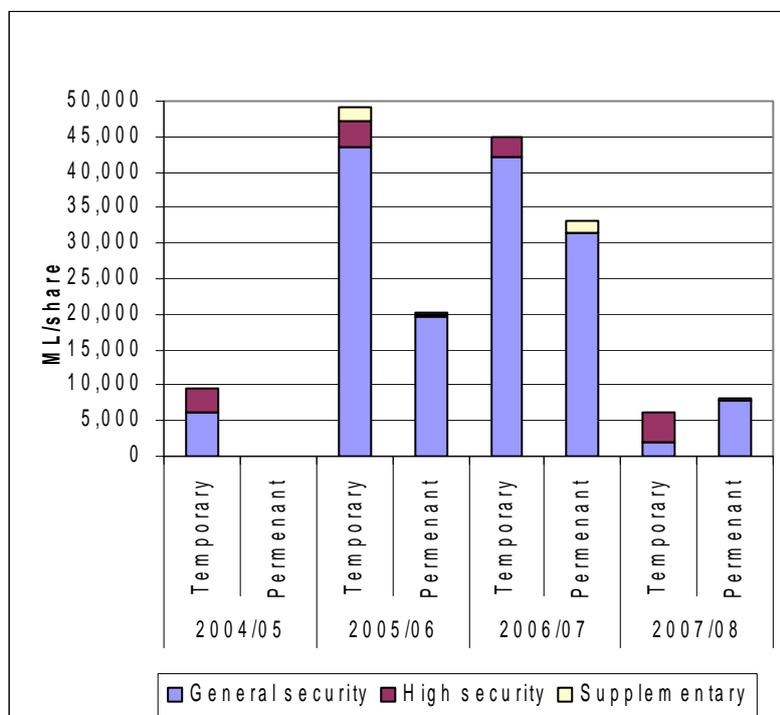
Temporary transfers of water licences were introduced in New South Wales in regulated streams in 1983–84 and permanent trades in 1989.

The implementation of the WSP has involved removal of barriers to the efficient operation of these water markets, facilitating more efficient and better informed trades. Key mechanisms include clear rules for trading (in the WSP), the separation of the water licence from the land title in 2004, and the establishment by DWE of public registers in 2004, showing the volume and price paid for access licences. Figure 3 shows details of water licence trades from 1 July 2004 to 30 June 2008 within the Macquarie and Cudgegong Regulated Rivers Water Source. Volumes shown for temporary trades are for temporary allocation assignments (where water in a licence holder's account is sold, but ownership of the licence retained). Permanent trades include sales of the licence entitlements and share component of licences. Variations between those years are mostly related to climatic conditions and the volume of water made available to different licence categories and area and type of crop planted.

In 2004–05 four licences with a total share entitlement of 23 ML were permanently traded.

Between 1 July 2007 and 3 January 2008, assignment of allocations (temporary transfers) from the Cudgegong to the Macquarie River, allowed under the WSP, was suspended due to drought conditions. During this time, transfers were allowed within the Cudgegong and Macquarie valleys.

Figure 3 Macquarie and Cudgegong Regulated Rivers access licence dealings 2004 to 2008



Water source operation

The Plan includes a number of provisions relating to the operation of the water source which are aimed at ensuring that environmental impacts are managed and water is shared between water users. These provisions relate to replenishment flows for basic rights holders, water delivery and channel capacity constraints, rates of change to storage releases, transfer of bulk water between storages, dam operation during spilling and floods and rules relating to the management of airspace in the storages. They are implemented by State Water as part of their day to day operations.

In 2004–05, a total of approximately 14,332 ML was transferred from Windamere Dam to Burrendong Dam to satisfy water requirements in the Macquarie River downstream of Burrendong Dam. It was intended to transfer a total of about 70,000ML between August 2004 and March 2005, however, due to rainfall and resulting inflows to Burrendong Dam, the releases ceased in October 2004. The flow regime during the bulk water transfer was modified to mimic a past flood hydrograph with a peak flow of about 1,300 ML per day. No bulk water transfers were made in any other year since the commencement of the Plan.

Monitoring

The effectiveness of the Macquarie plan in achieving its objectives will be assessed by 2014. The Department has developed methods for long term monitoring of plans to support this assessment (see www.dwe.nsw.gov.au for more information on the ecological monitoring).

In the Macquarie and Cudgegong valleys this ecological monitoring program has focussed on monitoring and modelling the effectiveness of the environmental flows rules as whole, which are mostly influenced by Environmental Water Allowance in the Macquarie Marshes, and high volume transfers from Windamere to Burrendong Dam in the Cudgegong River, know as the Bulk Water Transfer (BWT). This includes:

- Monitoring and modelling responses to flow within the internationally significant Macquarie Marshes since 1999. For example, observing the abundance of Water Couch (*Paspalum distichum*), which is a performance indicator for environmental flows in the Water Sharing and
- Assessing the effects of the Bulk Water Transfer on the ecological health of the Cudgegong River

The review of the WSP's effectiveness will also consider the economic and social elements of the Plan's objectives. To this end, key indicators for monitoring of the irrigation sector have been identified and a survey conducted in 2006 to establish baseline information for ongoing assessment.

Plan amendments

The Plan allows for a number of changes to be made to it. No amendments have been to the Plan since its commencement.