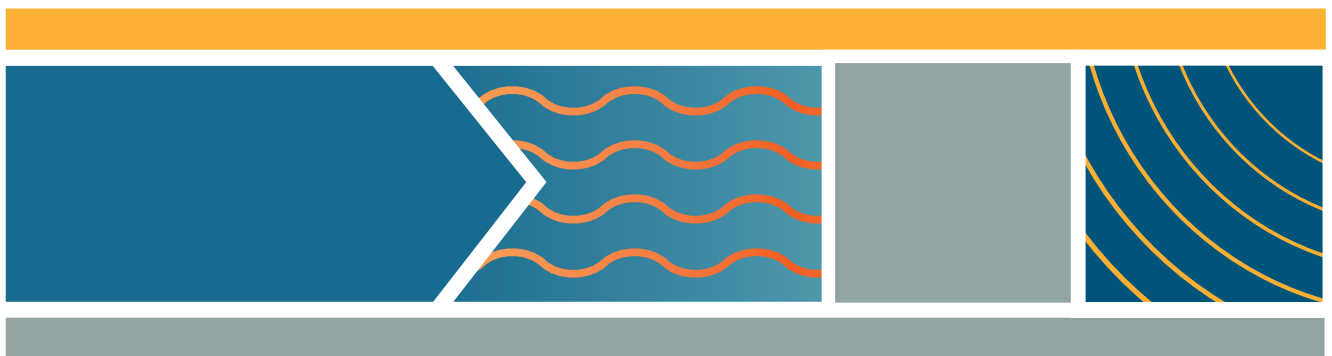


# Water sharing in the Hunter Regulated River

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 Hunter Regulated River 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. In December 2006, the Plan was suspended, as the extremely dry conditions were threatening the security of water supplies to Macquarie Generation.

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 Hunter WSP and details how water management has differed from the rules in the Plan since its suspension in 2006.

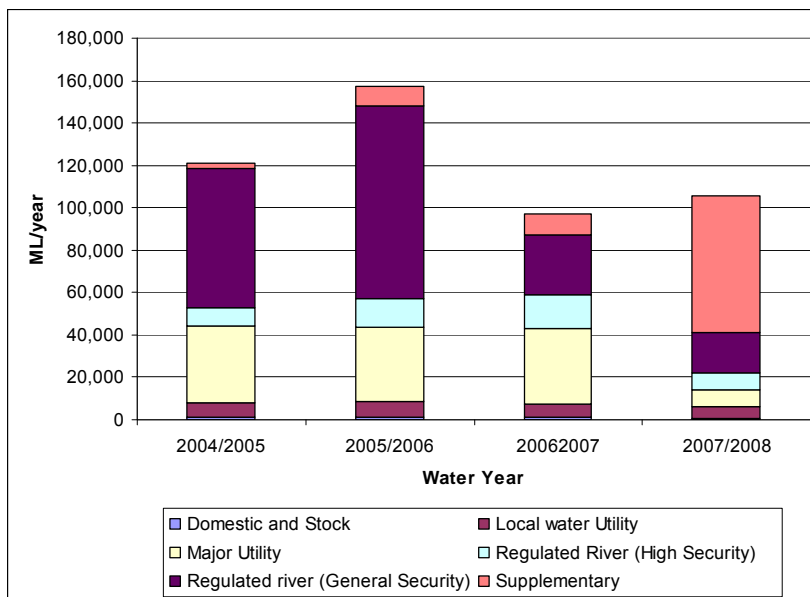
## Water for the environment

### Managing to extraction limits

The Plan establishes a long term average annual extraction limit estimated as 217,000 megalitres (ML) per year (out of an annual natural average flow estimated at 1,042,000 ML) and identifies water above this limit (approximately 80 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.

Historically, water use in the Hunter Regulated River system has been substantially lower than the limit set by the Plan as not all of the entitlement available under existing licences is fully used. The Department of Water and Energy monitors this water use on an annual basis to ensure that the Plan limit is adhered to. Since the Plan has been implemented, the maximum regulated system water use has been 157,000 ML in 2005–2006, as shown in the graph below. The Department will continue to monitor the situation. If, over time, levels of water use indicate that the long term average annual extraction is nearing the limit, the Department will use the hydrologic model to assess the situation in greater detail and determine what action is needed to bring extractions back to within the Plan limit.

**Figure 1 Hunter Regulated River Water Use 2004 to 2008**



## End of system targets

The Plan contains rules to ensure that a minimum level of flow is maintained in the Hunter River at Liddell (just upstream of the Glennies Creek junction) and Greta (near the end of the regulated river system). These flows are protected from extraction. The Plan sets out a series of seasonal target flows at both these locations. These rules are aimed at ensuring that there is connectivity throughout the river system and reintroducing a more natural flow pattern and are identified in the Plan as planned environmental water.

These flows have generally been delivered in line with the Plan rules since the commencement of the Plan. Prior to the Plan suspension, State Water ensured compliance with the targets by releasing additional water, ensuring targets were usually met by 10 ML or more. As a result of concerns from water users, the operating conditions for State Water were amended, such that it should aim to achieve the targets more closely, with a payback system introduced if flows temporarily failed to meet the targets set in the Plan. Since these new compliance targets have been introduced, there have been a number of months when State Water has not been able to achieve the monthly targets and, in these cases, targets were increased in the following months.

Under the critical water planning process, which is in place whilst the WSP has been suspended, the end of system target at Greta were reduced from the 95 percentile seasonal flows to the 98 percentile seasonal flows in 2007–08.

Table 1 shows the flow targets for the past four years for both locations specified in the WSP.

**Table 1** End of System flow targets

	Liddell	Greta	
	WSP target (ML/day)	WSP target (ML/day)	Target 2007–08 (ML/day)
<b>Summer</b>	17	36	15
<b>Autumn</b>	18	40	22
<b>Winter</b>	56	73	47
<b>Spring</b>	38	61	30

This decision was taken following a major flood in the Hunter system in June 2007 which meant that the estuary had received good flows, whilst General Security users had received a zero per cent allocation. The end of system targets specified in the Plan were reinstated on 1 July 2008.

## Environmental releases from Glenbawn and Glennies Creek Dams

The Plan establishes water reserves (or environmental contingency allowances) of 20,000 ML per year in both Glenbawn and Glennies Creek Dams.

Releases may be made from these reserves when needed to assist in management of water quality problems (eg. algal blooms, salinity, or chemical spills) or for more general environmental purposes (eg. fish migration).

When water availability improves in the Hunter and the Plan is reinstated, decisions about the use of these environmental contingency allowances will be made by the Department of Environment and Climate Change (DECC).

There have been no environmental releases from either of these reserves since the Plan commenced in July 2004.

## Protecting a proportion of medium to high flows

Flow variability, important for river health, is enhanced in the Hunter WSP via rules which limit extraction of medium and high flows to 50 per cent of the flow when access to uncontrolled flows or by supplementary access licence holders is announced. In addition, plan rules ensure that on an annual basis, 70 per cent of high flows should reach the estuary.

Since December 2006, when the Plan was suspended, these limits on extraction were altered to allow all supplementary users access to additional water to offset the severe restrictions on allocations from the dams. Under these new arrangements, 37 per cent of daily flows and 65 per cent of annual flows are protected from extraction by all users during periods of access by supplementary water users. Over the past four years these limits on extraction were generally complied with. Details of access by supplementary water users are included on page 3 of this report.

## 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.

As at 30 June 2008, there were no access licences nominated as adaptive environmental water in the Hunter regulated water source.

## 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](http://www.dwe.nsw.gov.au)).

### Basic rights

The Plan provides for water to satisfy basic landholder rights. No access licences are issued for these. In the Hunter, water extracted by basic rights holders is very small when compared to the Plan's extraction limit. Water to meet these needs is included in State Water's operational protocols for the delivery of water ordered by licence holders.

Sufficient supplies have been maintained at all times in storage for Basic Rights users. However, dry conditions during the course of the Plan have meant that at times, flows have ceased for short periods.

### Access licences

Share entitlements for access licences within the Hunter regulated river water source were estimated at the commencement of the Plan. Prior to the commencement of the Plan, the Department converted 1,342 existing licences issued under the *Water Act 1912* to new licences and approvals under the *Water Management Act 2000*.

The only change in entitlement in the Hunter water source since 2004 was an increase of 46 ML (or almost 21 per cent) in domestic and stock licences arising from new licences issued under the rules of the Plan. This is a very small proportion of the overall plan limit of 217,000 ML.

### Available Water Determinations

An Available Water Determination (AWD) is the volume of water that is made available to a category of access licence. Initial determinations are made at the start of the water year (1 July), and further determinations may be made during the year to increase the volume of water available, provided climatic conditions and the provisions of the Plan allow. In 2007–08, for example, the July assessments revealed that there was insufficient water to make any determination for General Security licences, and High Security licences were allowed a 0.75 ML per share AWD. By August, 2007, improved conditions resulted in another AWD. Subsequent announcements in response to catchment flows and greater water availability resulted in a cumulative allocation of 1.0 ML per share for both General and High Security users by February 2008. No further AWDs were made for these classes of water as the WSP prevents AWDs of greater than 1.0 ML per share for these classes of licence.

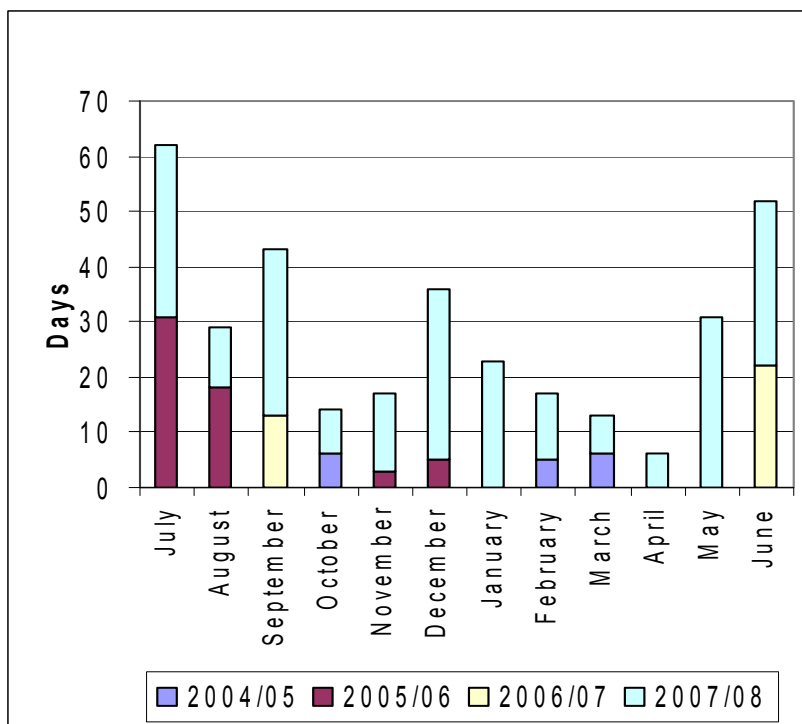
Access to full entitlements was announced for all categories of licences in 2004–05, 2005–06 and 2007–08 except for supplementary access licences, which were able to access 0.2 ML per share in 2004–05, 0.3 ML per share the following year and 1.9 ML per share in 2007–08. (Note that the Plan allows Supplementary access AWDs to exceed 1.0 ML per share).

The dry conditions in 2006–2007 resulted in cumulative AWDs for general security of 0.35 ML per share, 0.92 ML per share for high security licences and 0.3 ML per share for supplementary water access licences.

## Supplementary water access

The Plan details rules for water extraction under supplementary water access licences in the Hunter water source. As access by these licence holders is dependent upon climatic conditions, very few opportunities for supplementary access were available during the first three years of the WSP. In 2004–2005, access was available for a total of 18 days spread across three announcements. In 2005–2006, there were five announcements of access covering a total of 57 days. In 2006–07, there were two announcements of access covering a total of 24 days. On two occasions, covering a total of eleven days in September 2006, additional access was given to supplementary access licence holders in the Lower Hunter. During 2007–2008, supplementary water access events were much more frequent and longer lasting. Some access was granted in all months during this water year. During some events, access was restricted to supplementary access licence holders in nominated sections of the Hunter Regulated River. Due to localised flows, additional access was given to some licence holders in the lower Hunter (zone 2B in the WSP) in July (10 days), September/October (10 days) and November (8 days) and in the mid Hunter (zones 1B, 2A and 3A in the WSP) in November (6 days). Figure 2 shows the periods of announced access by supplementary water users over the past four years.

**Figure 2 Hunter Regulated River Supplementary Water Access 2004 to 2008**



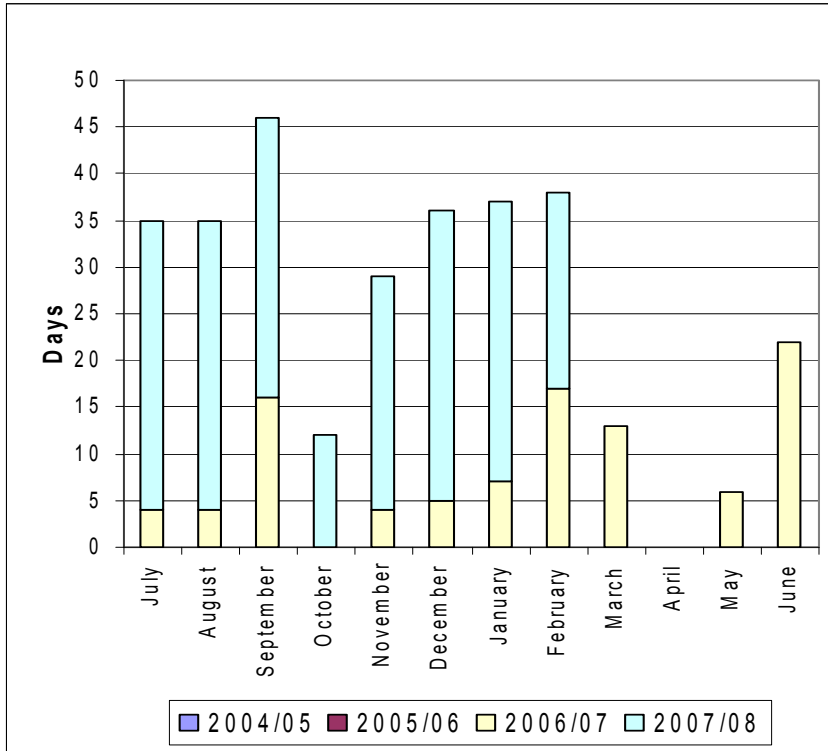
## Access to uncontrolled flows

The WSP also contains rules for access to medium and high flows by general security licence holders without debit to their water account during periods of low allocation, provided all environmental, basic landholder rights and high security users' needs have been met. This is known as access to uncontrolled flows.

During the first two years of the Plan, no access to uncontrolled flows was announced as the AWDs for this category of licence was set at the maximum of 1.0 ML per share. In 2006–2007 and the early part of 2007–2008, however, the cumulative AWD for general security was less than the 0.75 ML per share trigger set in the Plan for these rules (0.35 ML per share in 2006–2007 and 0.48 ML per share

for July to December 2007). Access to uncontrolled flows during most of the announcements during 2006–2007 was limited to licence holders in the lower Hunter (zone 2B). Figure 3 shows the periods of announced access to uncontrolled flows by general security water users over the past four years.

**Figure 3 Hunter Regulated River access to uncontrolled flows 2004 to 2008**



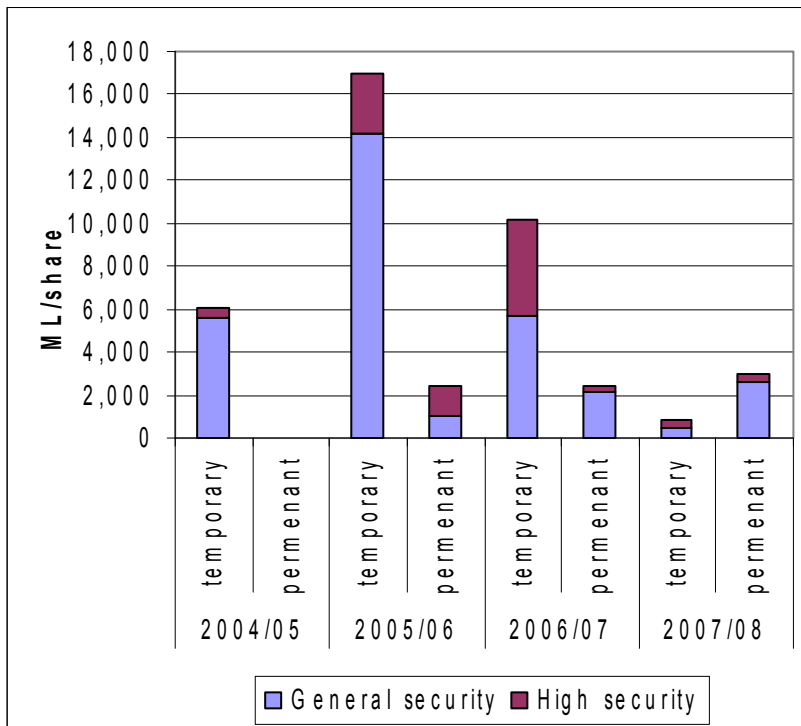
## Water markets

Temporary transfers of water licences were introduced in NSW in regulated streams in 1983–1984 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 4 shows both temporary and permanent trades in the Hunter Regulated River Water Source between 2004 and 2008.

Variations between those years are mostly related to climatic conditions and the resultant availability of water to the various licence categories.

Supplementary water licences were only traded in 2007–2008, when licences totalling 150 shares were permanently traded in four separate transactions. The absence of trades in this licence category prior to this is due to the limited water made available to this category of licence in the first three years of the Plan.

**Figure 4 Hunter Regulated River access licence dealings 2004 to 2008**

## Monitoring

The effectiveness of the Hunter 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](http://www.dwe.nsw.gov.au) for more information on the ecological monitoring).

In the Hunter this ecological monitoring program has focussed on monitoring and modelling the effectiveness of the environmental allowances in Glenbawn and Glennies Creek Dams for algal suppression and flushing and improving instream ecological condition, and refining operational rules for these allowances. The other major element of the ecological monitoring has investigated the rules aimed at protecting a proportion of higher flows (supplementary events) and maintaining minimum flows and end of system flows. This work has focussed on modelling the effect of environmental water provisions on the estuary inflows and its effect on the salinity wedge, monitoring water quality (nutrient loads and carbon) transmission to the estuary and its effect on productivity, and a range of other estuarine work including fish larval studies and primary productivity studies (algae).

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 made to the Plan since its commencement. A number of operational amendments made during the period of plan suspension may be considered as future amendments to the Plan at the expiry of the Plan period.