



How water is shared in the regulated NSW Murray Valley

October 2015

Introduction

Water in the River Murray and related water storages is shared between NSW, Victoria and South Australia under the Murray-Darling Basin Agreement. The NSW water share is then allocated for consumptive use and the environment under the *Water Sharing Plan for the NSW Murray and Lower Darling Regulated Rivers Water Sources 2003*.

It is the responsibility of the Murray Darling Basin Authority (MDBA) to estimate the amount of water available in the system including future inflows, less system losses (such as evaporation and seepage), and less existing commitments (such as operational requirements, reserves and each State's obligation to South Australia). The remaining water is then divided between NSW and Victoria according to the rules in the Murray-Darling Basin Agreement.

It is then the responsibility of the DPI Water to allocate the NSW water share according to the water sharing plan. During severe water shortages, the water sharing plan may be suspended, during which time the priorities for NSW water sharing are undertaken in accordance with the *Water Management Act 2000* and the Basin Plan.

This factsheet provides an overview of how water availability is determined in the NSW Murray Valley and how water is shared in line with the water sharing plan.

Determining starting allocations at the beginning of the year

At the start of the new water year, which commences on 1 July, the MDBA calculates the minimum volume of water that will be available for use during the coming year. This includes:

- How much water is available in the storages, within weir pools, the river channel, and undelivered inter-state trade balances, plus
- A minimum natural inflow into storages expected during the year that can be allocated for regulated use, plus
- Minimum required annual releases (RAR) by Snowy Hydro Limited into Hume Dam via its power stations at Khancoban, minus
- The volume required to run the river, including transmission losses, evaporation losses and critical reserves, minus
- South Australia's (SA) entitlements under the Agreement.

Based on the Agreement rules, the remaining water balance is then divided between NSW and Victoria.

The opening water allocations on 1 July are based on the minimum volume of water that can be confidently made available and delivered across the entire year to NSW licensed water users and the environment.

The determination of water availability is deliberately very conservative, but there are a number of variables that can affect, and in some cases, reduce allocations including:

- The experience of a new 'worst-drought', as was the case in 2006/07, where inflows were below the previously recorded minimums.
- The volume needed to run the river, which may exceed historical requirements during extended dry periods due to rising transmission and evaporation losses.
- The timing of releases from Snowy Hydro Limited (SHL), which is not known to MDBA in advance. Arrangements under the Snowy Water Licence also enable SHL the flexibility to deliver greater than their Required Annual Release in any year – this is then reduced from their required releases in the following year.

From the estimated water volume available to NSW, DPI Water then allocates shares to consumptive users and the environment based on the water sharing plan. This includes allocating to the following access licence categories:

- Town water supply and domestic and stock water.
- General security carryover.
- Progressively to high security licence holders and the conveyance licence category.
- Progressively to the Barmah-Millewa Allowance. This volume may be borrowed when general security allocation is less than 30 per cent. Once conditions have improved and general security allocations increase to above this level, the borrowed volume must be paid back.
- Progressively to general security accounts, including incremental improvements to conveyance.
- Progressively to planned environmental water, including Murray Additional Environmental Allowance, Lower Darling Environmental Contingency Allowance, and the reserve for critical human needs of the next water year.

Using the order of priority in the water sharing plan, each licence category is allocated water up to a maximum of 1 megalitre (ML) per share, the equivalent of 100 per cent allocation for each category. A full distribution to all water allocation categories of 100 per cent allocation is shown in Figure 1 below.

Typically, the volume of water available for allocation to general security use at the beginning of the water year (1 July) is low. This will increase throughout the year as inflows that are higher than forecast minimums occur and are captured within the storages.

Resource Distribution - NSW Murray & Lower Darling 100 per cent allocation scenario

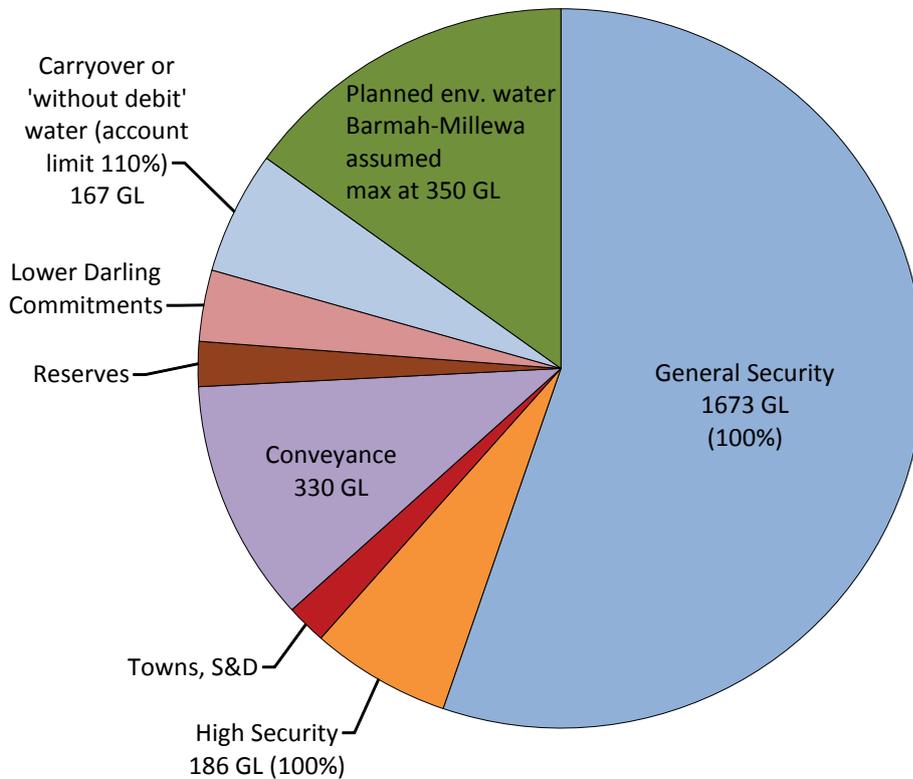


Figure 1- Indicative resource distribution under a 100 per cent allocation scenario (October 2015)

Increasing allocations and supplementary flow

As the water year progresses, regular assessments of water availability are undertaken. Improvements, usually due to greater than minimum inflows and less than forecast transmission losses, allow for allocations to be increased incrementally and volumes credited to access licence accounts.

Inflows from the Snowy Scheme are a special case for the Murray Valley. As mentioned above, an annual Required Annual Release volume is provided by the Scheme. In drier periods, when the full required release cannot be physically delivered due to lack of inflows, the Required Annual Release at the start of the water year may be reduced. The reduction, referred to as the Dry Inflow Sequence Volume, is periodically assessed during the year and gradually decreases if inflows improve, meaning better water availability.

The Barmah–Millewa Forest icon¹ site lies along the Murray and is the largest river red gum forest in Australia. Up to 50,000 ML² of water (subject to conditions) is set aside in the NSW Murray each year as high security water for the Barmah-Millewa Allowance. This water is used to maintain the long-term health of this floodplain forest by restoring seasonal inundation. The maximum credit that may be held in the NSW Barmah Millewa Allowance at any one time is 350,000 ML. It can also be 'borrowed' for consumptive use when allocations are low. Once inflow conditions have improved and general security allocations have reached 30 per cent, the Barmah-Millewa Allowance borrow must be paid back before any further increase in general security allocations occurs.

¹ There are six icon sites located along the River Murray, protected for their ecological significance. The Barmah-Millewa is also considered a wetland of International Importance under the Ramsar Convention and it is an Important Bird Area (IBA).

² This represents NSW's share. Victoria has an equal contribution to the Barmah-Millewa Allowance.

Once high security entitlements reach 97 per cent, any further improvements are dependent upon general security entitlement holders reaching the same level, up to the maximum of 100 per cent.

When flows occur that are in excess of downstream water needs, which cannot be re-regulated and are not considered necessary to meet environmental needs, DPI Water is able to announce periods of Supplementary Access. During these periods:

- General security licence holders may pump water 'without debit' if general security allocations are less than or equal to 60 per cent, and if the sum of the licence holder's carryover, plus general security allocation is less than 100 per cent (or 1 ML/share).
- Supplementary licence holders can access this water. The supplementary category of licence is credited with 100 per cent allocation (1 ML per share) at the commencement of the water year, and the holder can use up to this amount during declared events as required. Those holding both supplementary and general security licences must nominate which licence they wish to divert water against.

DPI Water undertakes monthly assessments. During critical times of the year or after significant rainfall events, more frequent assessments and announcements can be made. Supplementary water announcements may be issued at any time of the month, in response to particular events.

The dams have a lot of water – so why aren't allocations higher?

Allocations for consumptive water use in the NSW Murray Valley are not just a function of how much water is, or can be, stored in Hume and Dartmouth Dams, the Menindee Lakes or Lake Victoria. These factors have been described in detail above.

Situations that may include large volumes in the dams and seemingly low NSW allocations include:

- A large carryover balance.
- A larger proportion of water stored by Victoria than NSW. For example, this may occur if Victorian tributaries are supplying large inflows to the system, or if Victoria is using its available water at a slower rate than NSW.

How can I access more water if general security allocations are low?

Murray general security licence holders can also access water through:

- **Without debit water** - general security licence holders may pump water 'without debit' during a period of announced Supplementary Access if general security allocations are less than or equal to 60 per cent, and if the sum of the licence holder's carryover, plus general security allocation, is less than 100 per cent.
- **Trade / Dealings** – the trading of water between licence holders is formally referred to as 'water dealings', commonly referred to as water trading.

To meet a short-term requirement, a licence holder may wish to purchase water available under this year's water allocation. This is referred to as a water allocation assignment dealing (also known as 'temporary trade').

A licence holder may also wish to purchase additional permanent shares to add to an existing licence. This is referred to as purchase of a share assignment (also known as 'permanent trade').

Water allocation assignment dealings in the Murray are managed by WaterNSW and share assignment dealings are managed by DPI Water. Refer to <http://www.water.nsw.gov.au/water-licensing/dealings-and-trade> for additional details.

Account management

What is the maximum volume of water I can use this season?

A licensed general security water user in the NSW Murray Valley can use up to **110 per cent**; namely 1.1 ML per share, of their licensed entitlement in any one water year, July to June. This is referred to as the account limit.

Water 'usage' includes water diverted for consumptive purposes **and any water traded out**.

Therefore, the maximum usage of 110 per cent of entitlement can be made up of carryover water and/or allocation water and/or supplementary water diverted under the 'without debit' provision and/or any water traded out.

Will I lose my carryover?

The maximum allowable carryover for general security entitlement holders in the Murray valley is **50 per cent of entitlement**.

Under the water sharing plan, **water licence holders can use up to 110 per cent of entitlement each year (excludes water traded in)**. Usage can be made up of carryover, allocation, 'without debit' water or water traded out. Total water use in a single year cannot exceed 110 per cent of entitlement unless additional water is purchased. As allocation is increased, **any carryover water that will cause a licensed water user's account to exceed 110 per cent of entitlement will be forfeited and replaced with allocation water**.

Carryover could be considered similar to insurance. This water is set aside first at the commencement of the water year on 1 July. Allocations are then made commensurate to water availability and in accordance with the water sharing plan. In dry years, when allocations are low and account limits are not reached, carryover can be very useful. In years of favourable water allocations when accounts would be full in any case, carryover is less useful.

What are the chances of further allocations increases during a water year?

It is highly likely that general security allocation in the NSW Murray Valley will increase as the irrigation season progresses, due to the following:

- It is usual that natural inflows will exceed the near 'worst case' historical flow sequence used in the assessment of future inflows, making more water available as the year progresses.
- It is usual that forecast losses are worse than actual, thereby yielding extra water as the year progresses.
- As the season progresses, volumes will be released from the dams to meet demands and subsequent inflows can be stored and allocated.
- As general security accounts with carryover and/or 'without debit' (supplementary) diversions reach their limits of 110 per cent of entitlement, and then smaller additional volumes of available water can produce larger allocation announcements as there are fewer unfilled accounts that can receive water.

NSW takes a risk-based approach, and provides allocations based on existing water in storage and a near 'worst case' inflow condition which has a 1 per cent probability of occurring (excludes the Millennium Drought). This ensures that water orders can almost certainly be filled. Additional information is also given in monthly allocation announcements available on the DPI Water website to allow water users to estimate the likelihood of potential future allocations, and thereby assume an acceptable business risk profile.

The Bureau of Meteorology's (BOM) seasonal outlook, as well as likely future allocations under near 'worst case' (1 per cent chance of occurring), very dry (10 per cent chance), dry (25 per cent chance), average (50 per cent chance) and wet (75 per cent chance), inflow conditions are provided on a monthly basis.

Glossary of commonly used terms

Access licence

Allows the licence holder a share of the available water in the water source in proportion to the number of shares (entitlement) held. An access licence is separate from the approvals to use the water or to construct and operate the works to extract the water (e.g. pump, dam). Access licences do not have to be renewed. Refer also to Water Access Licence (WAL).

Account limits

The limit placed on the crediting and debiting of water accounts in accordance with the water sharing plan (currently 110 per cent for general security accounts in the Murray).

Allocation

This is the water volume declared by DPI Water to be available to a water user, normally expressed as a proportion or share of a licensed entitlement (percentage or volume (ML) per share). An analogy is that this is the amount of water to be placed in a water user's 'bucket'.

Available Water Determination (AWD)

Commonly known as an allocation announcement. These are made periodically by DPI Water after undertaking an assessment of available resources. It results in water accounts of associated water access licences being credited with a volume of water.

Carryover

That unused account water that is brought forward into the new water year, from 30 June to 1 July. Currently in the NSW Murray, a maximum of 50 per cent may be carried over.

Entitlement

The share of the water resource, and its associated volume, which a holder is authorised to take under a water licence. An analogy is that this is the size of the water user's 'bucket'.

General security licence

A licence for which the available water varies from year to year with climate (rainfall), normally used for irrigating annual crops.

Gigalitre (GL)

One thousand megalitres (ML) or one billion litres.

High security licence

A licence for which allocation is provided (up to 97 per cent in the Murray) before allocation is assigned to general security licences. High allocations are usual for this licence category, apart from exceptional (drought) circumstances. Usually used for high value crops, permanent plantings, industries and towns.

Megalitre (ML)

One million litres (about one Olympic sized swimming pool), or 1,000 cubic metres.

Supplementary water

Known as uncontrolled flow in the *Water Management Act 2000*, this is flow that cannot be regulated or stored for future use, and cannot be used to meet a particular entitlement or purpose (formerly referred to as off-allocation water). Once a supplementary event is declared by DPI Water, it becomes opportunistic water that can be diverted by supplementary licence holders and, under certain conditions, 'without debit' by general security licence holders.

Without debit water

Water diverted by general security entitlement holders during declared supplementary flow events. Up to 100 per cent of licensed entitlement can be taken as 'without debit' water. 'Without debit' water can convert to debit water depending on carryover and subsequent allocation announcements during the year. It can be considered 'an advance' on possible future allocation announcements.

More information

www.water.nsw.gov.au

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