

Water Allocation Methodology – Richmond Regulated River Water Source

Introduction

This is a summary guide of the water allocation methodology for the Richmond Regulated River Water Source (hereafter, the Richmond River). This concise document aims to provide public information on how water is allocated according to the prescribed priority and rules given in the statutory *Water Sharing Plan for the Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2023* (hereafter, WSP).

The Water Group of the NSW Department of Climate Change, Energy, the Environment and Water (hereafter, the department) periodically allocate water to water access licence (WAL) holders after assessing available water resources. The allocation is safe, low-risk, and provided at a licence category level for each water source. The resource assessment identifies the conservative volume of water available for sharing. Water users can expect to rely on the water allocated and credited to their accounts, and plan for its use accordingly. The process of allocation is formally known as an Available Water Determination (AWD)¹. The results of the resource assessment and allocation process are advised through water allocation statements published on the department's website.

The water allocation statement announces the water allocated as a percentage of entitlement for each category of WAL. The volume of water, credited to respective WAL holder's accounts, is subject to individual account rules and limits specified in the WSP.

This summary guide presents the key components of the water resource assessment and allocation announcement, followed by an example of a past announcement (26 November 2025) on Page 10.

Water users

There are different categories of water use including environmental, basic rights as well as WAL holders. The principles and hierarchy of allocating available water to the different categories of licences and rights are prescribed in the *Water Management Act 2000* (hereafter, the Act) and the WSP. The Act states² that sharing of water from a water source must protect the water source, its dependent ecosystems, and basic landholder rights.

¹ Water Management Act (WMA) (2000), Clause 59

² WMA (2000), Clause 5(3)

At the commencement of the WSP (June 2023), the maximum volumes equivalent to full (100%) allocation to basic landholder rights and licence categories in megalitres (ML) per water year are listed below:

- | | |
|---|----------|
| • Basic landholder rights - domestic and stock ³ | 92 ML |
| • Domestic and stock ⁴ WAL | 14 ML |
| • High security (HS) ⁵ WAL | 123 ML |
| • General security (GS) ⁶ WAL | 9,531 ML |

The Supplementary WAL had zero volume⁷ at the commencement of WSP.

Opening allocation

New allocations are announced at the beginning of each water year on 1 July. This is particularly important for higher (than GS WAL) priority licences as the unused account balance of the previous year is forfeited, leaving the account empty. The following allocations are required by the WSP⁸ for higher priority users at the beginning of each water year whenever possible:

- Full (100%) allocation for domestic and stock access licences.
- Full (100%) allocation for regulated river (high security) access licences.

If a year starts with insufficient water to make these higher priority allocations, then they are met with the next available resource improvements. Only when these opening allocations have been made, can allocations then be made to GS WAL holders up to the maximum of 100% of their entitlement⁹.

Major steps in water allocation

The major steps in the resource assessment resulting in a water allocation include:

- 1) Identifying the accessible water in storages.
- 2) Add minimum (design) future inflows (into storage and in some systems from tributaries).
- 3) Deduct all existing commitments, including water for future higher priority needs.
- 4) Set aside water for system overheads, including evaporation and transmission loss.
- 5) Distribute unassigned water for allocation as directed by the WSP.

³ WSP, Clause 12(r)

⁴ WSP, Clause 15(1)(j)

⁵ WSP, Clause 15(6)

⁶ WSP, Clause 15(7)

⁷ WSP, Clause 15(8)

⁸ WSP, Clauses 16(2), 16(4)

⁹ WSP, Clause 16(3)

This can be further illustrated using Equation (1) below.

$$\text{Water for Allocation} = \text{Current Resource} + \text{Future Inflow} - \text{Commitments} - \text{System Overheads} \quad (1)$$

Water available for allocation first goes to meet any unmet opening allocations as listed earlier. Then available water is allocated to lower priority category general security WALs until full.

Every river system has its own way of arranging the line items of its balance sheet. The line items of the balance sheet for the Richmond Regulated River are shown in Table 3. In broad terms, the balance sheet reflects Equation (1), as explained next.

Current resource

The Richmond catchment is in far north NSW, with an area of over 7,000 km² from the Border Ranges in the north to Richmond Ranges in the west and south. Toonumbar Dam is the major storage in the valley, which has a capacity of 11,050 ML (Figure 1). There are two other storages in the Wilson River Catchment – Rocky Creek Dam and Emigrant Creek Dam which are operated by Rous Water to supply water for Lismore and Ballina. Toonumbar Dam stores water from a 98 km² catchment for irrigation, stock, domestic, and town water supplies and is the only main water storage used for the allocation process.



Figure 1 Map of the Richmond River catchment (Source: [NSW Government](#))

Future inflow

The resource assessment budgets for a future inflow which has yet to eventuate. The WSP instructs¹⁰ that enough water must be available to meet higher priority needs (see Table 2) through a repeat of the driest observed inflow period to the water source known at the commencement of the inaugural plan in 2010. Therefore, the assessment assumes that the ‘design’ drought, which delivers a small inflow volume, will start now. This statutory obligation balances the risk between allocating water for productive use against securing water in preparation of next drought.

The assessment conservatively considers only inflows to Toonumbar Dam. No use of tributary inflow is assumed for the reasons outlined next. The fast-moving coastal tributaries are difficult to predict early. The volumes of the short events are likely to be small. The rainfall that caused the tributaries to flow is likely to have dampened irrigation demand further reducing the role of the tributary flow.

The period of measured flow at Lostock Dam site has been 1892 to 2002. The derivation time stamp of this flow sequence can be traced back to 16/11/2011, but the origin of this time series is unclear. The July to June 12-month minimum inflow into the storage is 17,200 ML, observed during July 1968 to June 1969 as shown below in Table 1.

Table 1. Minimum inflow volume within 1892 to 2002 period

Months	Historical years	Minimum inflow
One water year	July 1968 to June 1969	17,200 ML

Commitments

Higher priority reserve for 12 months

Higher priority reserve is the amount of water that must be reserved in the storages for the planning horizon prior to making water available for Richmond River GS WAL holders (Table 2).

The relevant essential requirements in the Richmond River¹¹ include the followings items:

- Stock and domestic rights
- Stock and domestic WAL
- High security WAL
- Transparent releases
- Minimum storage releases

¹⁰ WSP, Clause 40B(2)

¹¹ WSP, Clauses 12(r), 15(1)(j), 15(6),15(7) 40B(1)(2)(3)(4)

Table 2. Higher priority reserve for a 12-month period (in ML)

Items	Budget	Notes
Basic landholder rights – Stock & domestic rights	92	Clause 12(r)
Domestic and stock WAL	14	Clause 15(1)(j)
High security WAL	123	Clause 15(6)
Transparent releases	365	Operator's estimate
Minimum storage release	2,000	
Total annual demand, sum of above	2,594	
Evaporation	1,100	Assumed full storage
Transmission loss	200	
Operation surplus	500	
System overhead, sum of above	1,800	See below
<i>less</i> Minimum inflow	(17,200)	See Table 1
Total reserve for next water year	Zero	

The storage reserve refers to the volume reserved for next year's higher priority demand and associated delivery losses after subtracting next year's (minimum) inflows. In this river valley, the budgeted minimum inflow for a year is 17,200 ML, which exceeds demand. This inflow will adequately meet the higher priority demands (2,594 ML) and system overheads (1,800 ML) for the upcoming and subsequent years. Therefore, no reserve is needed in Toonumbar Dam for the regulated Richmond River.

System overheads

System overheads comprise of water that is required to operate the regulated river. This includes water evaporated from the Toonumbar Dam storage, water lost at transmission, and water exiting the river for operational reason.

Storage evaporation loss

Evaporation loss accounts for the volume of water that is evaporated from the storage over the assessment horizon. Evaporation is subject to season, wind, water temperature and surface area of the storage. Evaporation loss varies and is a direct function of storage level, the time of the year and the drawdown pattern over the planning horizon. However, the assessment has been using a fixed

annual evaporation loss of 1,100 ML and prorated the volume for shorter assessment horizon. This conservative high volume assumes that Toonumbar Dam remains full all year. The department validated the prior use of this estimate, by applying historical evaporation heights¹² on a near full Toonumbar Dam surface area¹³ of 109 hectares(ha). This returned an annual average evaporation of 1,034 ML for the period of 2012-2022 and sufficiently validated the volume historically used. Therefore, the simple and conservative budget of 1,100 ML continues to be used.

Transmission loss

Transmission loss is water lost through seepage (and evaporation) in the river system when water is released from the headwater storage. The resource assessment budgets for an annual transmission loss of 200 ML. During routine monthly assessments this is reduced linearly based on the fraction of months remaining in the water year. The annual budget is based on decades of prior practice and continues to be used without any observed difficulties.

Operational loss

Operational loss is an unavoidable part of river operation. In a hypothetical water delivery scenario with perfect control, the end of the river should exactly discharge the minimum flow rate or simply stop flowing if there is no end-of-system flow target. Note that weather patterns, river losses and water user's behaviour may change rapidly. The timely ability of operators to respond to these changes determines the volume exiting river system during regulated periods. This is called operational loss.

On 1 July each year the resource assessment allows for an operational surplus of 500 ML for the next 12 months. During routine monthly assessments this is reduced linearly based on the fraction of months remaining in the water year. This annual budget is based on decades of prior practice and continues to be used without any observed difficulties.

¹² From WaterNSW Realtime daily evaporation from 2012 to 2022.

¹³ Surface area using Google earth image of 7/3/2023 when the dam was 11,057 ML or 100% full.

Water allocation example of 26 November 2025

The Table 3 shows the water allocation computations behind the statement published on 26 November 2025. This is an example of the resource assessment where all the entitlement including general security allocations received their maximum allocation for the 2025–26 water year. The assessment returned a surplus of approximately 5,685 ML, which contribute to future system reliability.

Table 3. Detailed allocation computation for 26 November 2025

Assessment items as of 1/11/25	(ML)	(ML)	Balance (ML)
Available storage and inflow		18,000	
Toonumbar Dam active storage volume (as at 1/11/25)	10,700		
Minimum storage inflows (11/25 to 6/26)	7,300		
			18,000
Losses (11/25 to 06/26)		1,200	
Evaporation from Toonumbar Dam	734		
Transmission	133		
Operation	333		
			16,800
Higher priority use balances as of 1/11/25		1,768	
Basic landholder rights	61		
Domestic and stock	13		
High security account balance	118		
Transparent releases	243		
Minimum storage release	1,333		
Higher priority reserve for 2026-27	0		
			15,032
General security balance as of 1/11/25		9,347	
Surplus for allocation (or deficit)			5,685

Disclaimer

Allocations are based on a very conservative future inflow budget. However, during extended dry periods, inflow may be less, and delivery losses could be higher than that budgeted, creating a shortfall in being able to meet the allocated resources. The management of an allocation deficit during extreme drought is beyond the scope of this summary guide. Readers are referred to the NSW Extreme Events Policy for details.

The routine water allocation computation, while broadly following this guideline, is subject to wider hydrological considerations not covered in this summary document. This is a guide only and subject to improvements and changes over time. Water users should use this information with caution and are encouraged to seek their own expert advice as needed.

Version History

First edition	July 2021	V Gupta
This edition	March 2026	L Elangovan, K Redpath, S Chowdhury

© State of New South Wales through Department of Climate Change, Energy, the Environment and Water 2026. The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users should ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate departmental officer or the user's independent adviser.

ANNEX

WATER ALLOCATION STATEMENT EXAMPLE

26 November 2025

26 November 2025

Richmond Regulated River Water Source

Water allocation update

There is **no change to allocations** in the Richmond Regulated River Water Source. The general security (GS) account balance is about 9,347 megalitres (ML), averaging 98% of entitlement, with minimal usage. This statement is to provide an update on the regulated river resource conditions.

All the higher priorities and GS licence categories received their maximum opening allocation of 100% on 1 July 2025.

The current resource assessment has returned a surplus of 5,685 ML. However, since all licences have already been fully allocated, this surplus remains unassigned. It will instead improve allocation reliability for the 2026–27 water year.

This resource assessment is based on information to 31 October 2025.

Current allocation

26 November 2025	Allocation increment	Average account balance
General security	-	98%

Water allocation in 2025–26

Date	Licence category	Increment	Total 2025–26
1-Jul	Domestic and stock	100%	100%*
1-Jul	High security	1.0 ML/unit share	1.0 ML/unit share*
1-Jul	General security	1.0 ML/unit share	1.0 ML/unit share*

* Maximum allowed

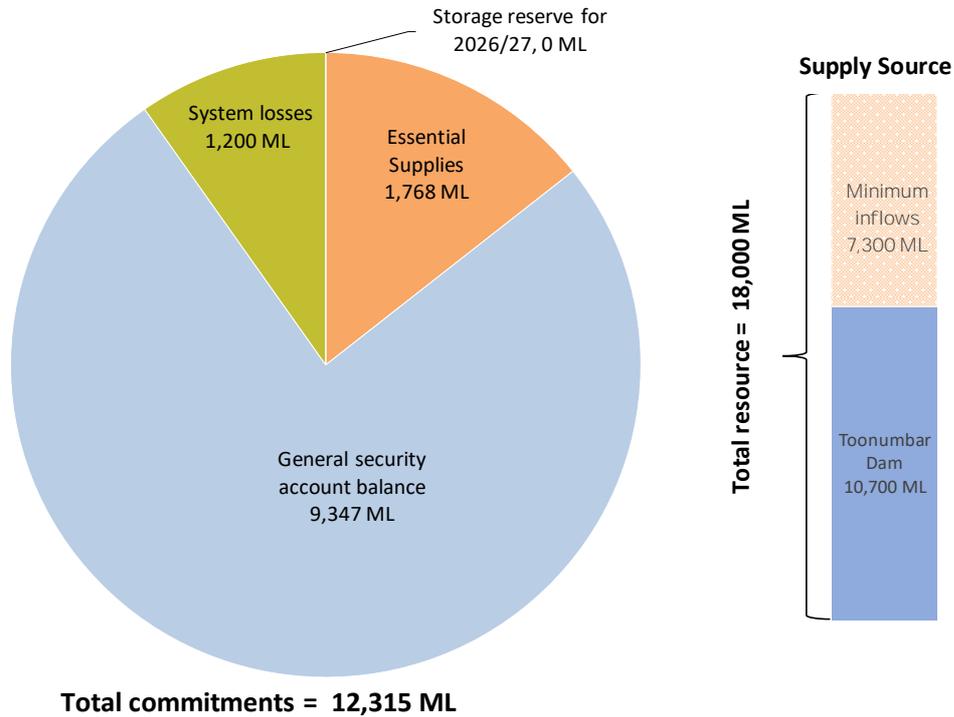
Resource assessment data sheet

Resource distribution – (November 2025 to June 2026)	Volume (ML)
Toonumbar Dam active storage volume ¹	10,700
Minimum storage inflows ²	7,300
<i>less</i>	
Basic land holder rights	61
Domestic and stock balance	13
Transparent releases	243
Minimum storage releases	1,333
High security balance	118
General security balance	9,347
System losses (evaporation, transmission, operation) ³	1,200
Storage reserve for 2026–27 ⁴	0
<i>equals</i>	
Surplus (or deficit) ⁵	5,685

Notes:

- (1) Toonumbar Dam as at 31 October 2025, capped at active full supply volume. Higher volumes of storage surcharge and spill are not counted as available resource for allocation.
- (2) Minimum inflow is budgeted from November 2025 to June 2026.
- (3) Storage evaporation, system transmission, and operational losses are pro-rated across the remaining months of the water year.
- (4) Storage reserve is the water set aside to meet future system losses plus essential requirements net of minimum inflows. In this case, the budgeted minimum inflows are sufficient to cover the essential supply and system loss requirements for 2026–27 and beyond.
- (5) Surplus (or deficit) of available water after accounting for all commitments. As all relevant accounts are allocated to their maximum limit, this volume remains unallocated, improving the allocation reliability for the next water year.

Resource Distribution as at 31 October 2025 Richmond Regulated River Water Source



Water sharing plan rules

This statement includes plain language information on the plan rules relevant to water allocation below. This is based on our knowledge and understanding at the time of writing. Water users should verify the information as required before making any water management decisions.

- Domestic and stock licences, and high security licences are to receive an allocation of 100% of their share component at the start of the water year.
- General security access licences receive allocations after all higher priority access licences have received their maximum (100%) allocation. Allocation to general security users in a year cannot exceed 100% of their entitlement.
- No licence category in this water source can carryover any unused balance into the next water year.

Useful links

- Water allocation statement – The water allocation statement for all water sources is available at the following link: [Water allocation statements | NSW Government Water](#)

- Water allocation dashboard – The dashboard on water availability and allocations for regulated river water sources is available at the following link: [Allocations dashboard | NSW Government Water](#)
- Water Sharing Plan – The water sharing plan for this water source can be accessed via the following link: [Water Sharing Plan for the Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2023](#)

Further information

All accounts received their maximum allocation for this water year. Routine water allocation statements ceased and have been replaced with occasional updates.

Subscribe [here](#) to receive water allocation statements and email updates from Water Group of the department.

You can also follow the department on Twitter: [@NSWDCCEEW_Water](#)

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