



GENERAL PURPOSE WATER ACCOUNTING REPORT

# Murrumbidgee Catchment

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2020–21



Published by NSW Department of Planning and Environment

[dpie.nsw.gov.au](http://dpie.nsw.gov.au)

Title: General Purpose Water Accounting Report | Murrumbidgee Catchment

Year: 2020–21

ISSN: 2652-5011

Department reference number: PUB22/392

### **More information**

This report may be cited as NSW Department of Planning and Environment (2022) **General Purpose Water Accounting Report 2020–21: Murrumbidgee Catchment**, NSW Department of Planning and Environment.

### **Acknowledgements**

Produced by the Water Analytics team at NSW Department of Planning and Environment

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## Abbreviations

Abbreviation/acronym	Description
ARCGIS	mapping and spatial analysis platform for designing and managing solutions through the application of geographic knowledge
AWAS 1	Australian Water Accounting Standard 1
AWD	available water determination
BoM	Bureau of Meteorology
CAIRO	computer-aided improvements to river operations
DRB	Daily release balance
ECA	environmental contingency allowance
GIS	geographic information system
GPWAR	general purpose water accounting report
IQQM	integrated quantity and quality model
MDBA	Murray–Darling Basin Authority
ML	megalitres (1,000,000 litres)
ML/d	megalitres per day
MODFLOW	modular, three-dimensional, finite-difference groundwater flow model
PSV	Provisional storage volume
SILO	climatic data provision system run by the Queensland Government for the provision of both measured and modelled data
WAS	Water accounting system
WASB	Water Accounting Standards Board
WaterNSW	WaterNSW is a New South Wales Government–owned statutory corporation that is responsible for supplying the state’s bulk water needs, and operating the state’s river systems and dams
WLS	Water licencing system
WSP	water sharing plan

## Glossary

Term	Meaning
allocation	the specific volume of water allocated to water allocation accounts in each season, defined according to rules established in the relevant water plan
allocation assignments	the transfer of water between licence holder allocation accounts as a result of a trade agreement The assignment becomes part of the receiver's current year allocation account water.
allocation account	water account attached to an access licence used to track the balance of account water
available water determination (AWD)	the process by which water is made available for use and shared amongst water users who hold a water access licence It determines the volume of water that is to be added to an individual's licence allocation account.
Australian Water Accounting Standard (AWAS)	a national standard that prescribes the basis for preparing and presenting a general-purpose water accounting report (GPWAR) It sets out requirements for the recognition, quantification, presentation and disclosure of items in a GPWAR.
back-calculation	a calculation approach using a mass balance to determine an unknown variable (used to calculate storage inflows based on balancing the change in storage volume where inflow is the only unknown)
basic rights	the non-licensed right to extract water to meet basic requirements for household purposes (non-commercial uses in and around the house and garden) and for watering of stock It is available for anyone who has access to river frontage on their property.
computer-aided improvements to river operations (CAIRO)	a spreadsheet-based water balance model used for optimising river operations (orders and releases)
carryover	the volume or share component that may be reserved by a licence holder for use in the subsequent year
catchment	the areas of land that collect rainfall and contribute to surface water (streams, rivers, wetlands) or to groundwater A catchment is a natural drainage area, bounded by sloping ground, hills or mountains, from which water flows to a low point.
dead storage	the volume in storage that is generally considered unavailable for use (e.g. water level below release valves) due to access and often poor water quality
effective storage	the total volume of storage minus the dead storage component—the volume generally considered as useable
effluent	flow leaving a place or process Sewage effluent refers to the flow leaving a sewage treatment plant. An effluent stream is one which leaves the main river and does not return.
entity	a defined geographical area or zone within the accounting region Transactions and reports are produced for each entity.
end of system	the last defined point in a catchment where water information can be measured and/or reported

Term	Meaning
environmental water	<p>water allocated to support environmental outcomes and other public benefits</p> <p>Environmental water provisions recognise the environmental water requirements and are based on environmental, social and economic considerations, including existing user rights.</p>
evaporation	<p>the process by which water or another liquid becomes a gas</p> <p>Water from land areas, bodies of water, and all other moist surfaces is absorbed into the atmosphere as a vapour.</p>
evapotranspiration	<p>the process by which water is transmitted as a vapour to the atmosphere as the result of evaporation from any surface and transpiration from plants</p>
extraction	<p>the pumping or diverting of water from a river or aquifer by licensed users for a specific purpose (irrigation, stock, domestic, towns, etc.)</p> <p>The volume is measured at the point of extraction or diversion (river pump, diversion works, etc.).</p>
general purpose water accounting report (GPWAR)	<p>a report prepared according to the Australian Water Accounting Standard</p> <p>It comprises several components including a contextual statement, a statement of water assets and water liabilities, a statement of change in water assets and water liabilities, a statement of physical water flows, notes and disclosures, and an assurance and accountability statement.</p>
general-security licence	<p>a category of water access licence implemented under the <i>Water Management Act 2000</i></p> <p>This forms the bulk of the water access licence entitlement volume in NSW and is a low-priority entitlement (i.e. it only receives water once essential and high-security entitlements are met in the available water determination process).</p>
groundwater	<p>water location beneath the ground in soil pore spaces and in the fractures of rock formations</p>
high-security licence	<p>a category of water access licence implemented under the <i>Water Management Act 2000</i></p> <p>It receives a higher priority than general-security licences but less priority than essential requirements in the available water determination process.</p>
HYDSTRA database	<p>a database used by NSW Department of Planning and Environment to store continuous, time-series data such as river flow, river height, and water quality</p>
inflows	<p>surface water runoff and deep drainage to groundwater (groundwater recharge) and transfers into the water system (both surface and groundwater) for a defined area</p>
inter-valley trade	<p>trade of licence holder allocation account water via allocation assignment from one catchment to another catchment (or state)</p>
intra-valley trade	<p>trade of licence holder allocation account water via allocation assignment within the same catchment</p>
median	<p>the middle point of a distribution, separating the highest half of a sample from the lowest half</p>
non-physical transaction	<p>an accounting transaction representing a process that is not a component of the water cycle (e.g. an available water determination)</p>
physical transaction	<p>an accounting transaction representing a process of the water cycle (e.g. an extraction)</p>

Term	Meaning
regulated river	<p>a river system where flow is controlled via one or more major man-made structures such as dams and weirs</p> <p>For the purposes of the <i>Water Management Act 2000</i>, a regulated river is one that is declared by the minister to be a regulated river. Within a regulated river system, licence holders can order water against a held entitlement.</p>
share component	<p>an entitlement to water specified on the access licence, expressed as a unit share or, in the case of specific purpose licences (e.g. local water utility, major water utility and domestic and stock), a volume in megalitres</p> <p>The amount of water a licence holder is allocated as a result of an available water determination and the amount they can take in any year is based on their share component.</p>
storage	a state-owned dam, weir or other structure that is used to regulate and manage river flows in the catchment and the water bodies impounded by these structures
storage reserve	proportion of water in a storage reserved in the resource assessment process for future essential or high-security requirements (e.g. town water)
storage volume	the total volume of water held in storage at a specified time
supplementary water	unregulated river flow available for extraction under a supplementary licence
surface water	all water that occurs naturally above ground including rivers, lakes, reservoirs, creeks, wetlands and estuaries
tributary	<p>a smaller river or stream that flows into a larger river or stream</p> <p>Usually several smaller tributaries merge to form a river.</p>
ungauged catchment	<p>a catchment without a flow gauge to accurately record stream flows</p> <p>Modelled estimates must be used to approximate the contribution of ungauged catchments to the main river.</p>
water accounting	the systematic process of identifying, recognising, quantifying, reporting, assuring and publishing information about water, the rights or other claims to that water, and the obligations against that water
water assets	the physical water held in storage, as well as any claims to water that are expected to increase the future water resource (e.g. external water entering the system through inter-valley trading)
water licencing system	Database system administered by waternsw to manage NSW licence water licences, approvals and associated dealings
water liabilities	claims on the water assets of the water report entity, including water that has been allocated to licence holder accounts or environmental accounts, yet to be taken at the end of the reporting period
water sharing plan	a water management plan that defines the rules for sharing of water within a region under the <i>Water Management Act 2000</i>



## Acknowledgement of country

NSW acknowledges Aboriginal people as Australia's First Peoples practicing the oldest living culture on earth and as the Traditional Owners and Custodians of the lands and waters on which we rely.

We acknowledge the people of the Barapa Barapa, Mutthi Mutthi, Nari Nari, Nyeri Nyeri, Wadi Wadi, Wolgalu, Wemba Wemba, Weki Weki and Wiradjuri Nations hold the land and waters of the Murrumbidgee River catchment area is of spiritual, cultural, customary and economic importance.

We recognise the intrinsic connection of Traditional Owners to Country and acknowledge their contribution to the management of the Murrumbidgee River catchment landscape and natural resources.

## Director's foreword

This is the 12<sup>th</sup> annual release of the general-purpose water accounting report (GPWAR) for the Murrumbidgee Regulated River Water Source. It has been prepared for the accounting period 1 July 2020 to 30 June 2021 (the reporting period), under the Australian Water Accounting Standard 1 (WASB, 2012).

The GPWAR provides stakeholders with a consolidated, comparable and publicly accessible set of water accounting information for the water source. The information presented is also used internally for a range of water planning functions and legislative reporting obligations.

Included in the GPWAR are

- a contextual statement summarising the climatic conditions, water resources, environmental holdings, water trading market and water resource management in the water source for the reporting period
- a physical flow diagram illustrating changes in storage volumes and the associated inflows and outflows
- water accounting statements presenting the opening and closing balances, and itemised changes to these balances for available water resources (water assets), licenced allocation accounts (water liabilities) and planned environmental water accounts (water liabilities)
- disclosure notes (linked to the figures within the water accounting statements) providing detailed information of accounting components including:
  - access licence account balances
  - planned and held environmental water account balances
  - a detailed available water determination report
  - temporary trading by licence category
  - supplementary announcements and usage by river reach
  - physical inflows and outflows to the system for the water year.

While groundwater has not been directly included in this GPWAR (aside from those processes that directly affect the regulated river), annual groundwater summary reports by water source are published separately and accessible via the department's website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

As Director Water Analytics, NSW Department of Planning and Environment, I declare:

- the information presented in these accounts as a faithful representation of the management and operation of the Murrumbidgee Regulated River Water Source for the reporting period
- all data presented in this report is based on the best available information at the time of publication
- NSW Department of Planning and Environment has, to the best of its ability, prepared this GPWAR in accordance with the Australian Water Accounting Standard 1.



**Danielle Baker**

Director Water Analytics

NSW Department of Planning and Environment

## Contextual statement

The Murrumbidgee catchment covers 84,000 square kilometres of southern New South Wales. It is bordered by the Great Dividing Range to the east, the Lachlan catchment to the north and the Murray catchment to the south.

The Murrumbidgee River spans almost 1,600 kilometres, rising in the Monaro Plains near Cooma and flowing westward towards its junction with the Murray River near Balranald. The climate is extremely diverse ranging from alpine conditions in the Snowy Mountains where elevations are over 2,200 metres to semi-arid conditions on the Riverina plains where elevations are less than 50 metres.

The Murrumbidgee River is regulated by Burrinjuck Dam located near Yass at the junction of the Yass and Goodradigbee Rivers. The valley also receives water from the Snowy Mountains Scheme which is stored in Blowering Dam on the Tumut River. Downstream of Narrandera the major effluent of Yanco Creek leaves the river, feeding a series of regulated creeks that flow southwest to eventually join the Murray River. The lower end of the Murrumbidgee River is known as the Lowbidgee, a broad floodplain where the river degrades into a complex area of effluent channels and swamps.

The Murrumbidgee River flows through lands previously occupied by the Wiradjuri people, the largest Aboriginal nation in NSW. Today the Murrumbidgee catchment supports a population of approximately 520,000 people. It includes the Australian Capital Territory and national capital Canberra (314,000 people) and Wagga Wagga, the largest inland city in NSW (57,000 people). The catchment also supports numerous regional cities and towns including Cooma, Tumut, Narrandera, Griffith, Leeton, Hay and Balranald.

Major irrigation districts have developed around Griffith, Leeton and Coleambally producing fruit, vegetables, wine, cotton and rice. Water is delivered to these areas from the river through offtakes at Beremba and Gogeldrie Weirs. Outside of these areas, the dominant agricultural land uses are grazing and dryland cropping.

Groundwater is also an important source of water for industry and agriculture in the catchment. The groundwater and surface water systems in the catchment have a range of connectivity which varies from being highly connected on a permanent or seasonal basis to being permanently disconnected. The interaction is influenced by surface and groundwater use, climate and flood frequency, significance and duration.

Supporting a complex range of natural ecosystems, the Murrumbidgee catchment contains many significant wetland habitats such as the extensive Lowbidgee wetlands and the Tuckerbill and Fivebough Swamps listed under the international Ramsar Agreement for their ecological importance. Extensive areas of riparian river red gum forest along the middle and lower reaches of the river provide valuable riparian habitat for waterbirds and a variety of threatened fauna species.

More detailed information on the catchment is available in the report *Water resources and management overview: Murrumbidgee catchment* available from the department's website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

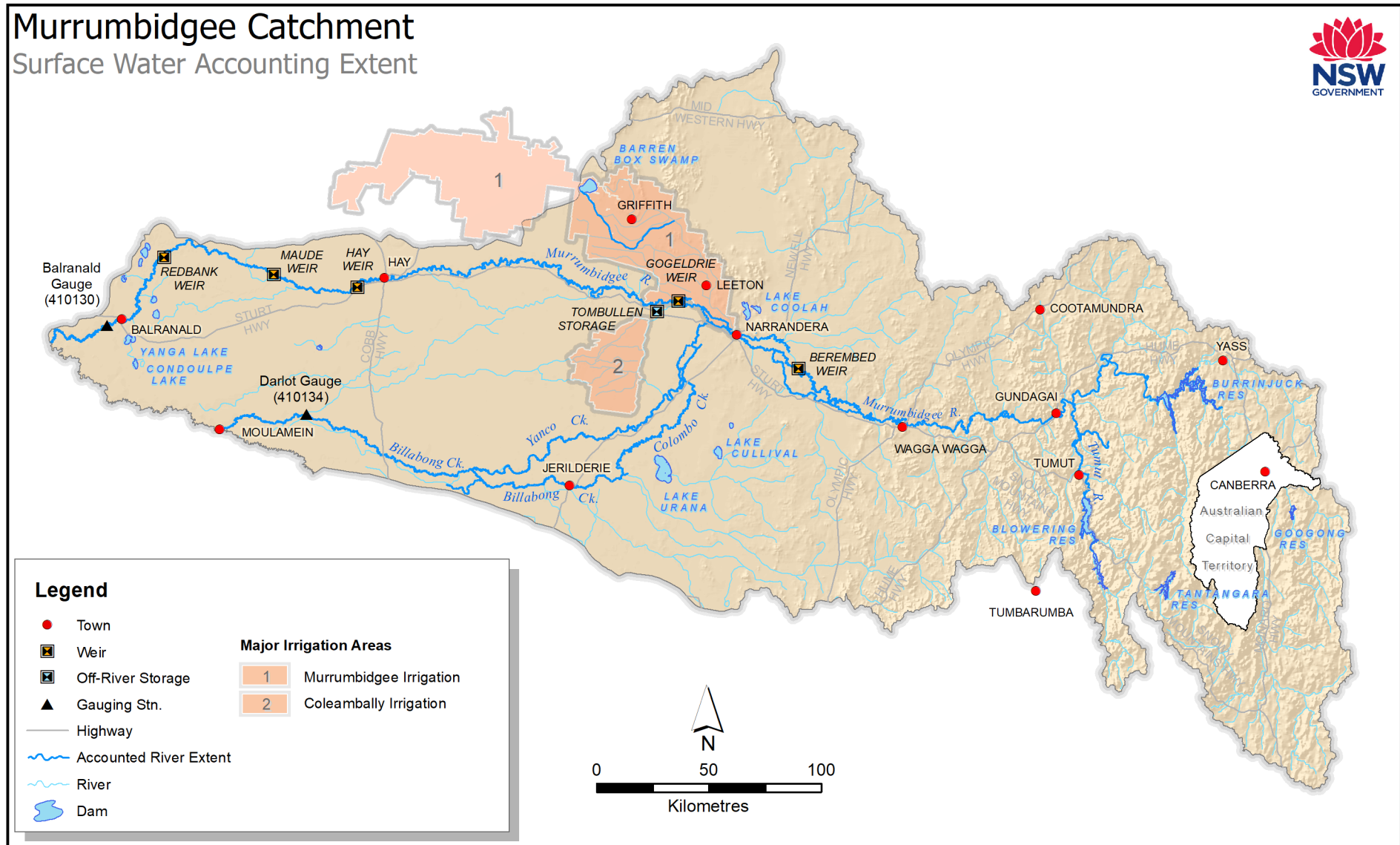
## Accounting extent

This report covers the extent illustrated in Figure 1 and details the water management associated with that area. It includes: the Tumut River from Blowering Dam to the river's confluence with the Murrumbidgee River, the Murrumbidgee River from Burrinjuck Dam to its confluence with the Murray River (downstream of Balranald), Billabong Creek to its junction with the Edward River downstream of Darlot, Yanco Creek and Colombo Creek.

A full list of the water courses considered to be part of the regulated Murrumbidgee River can be obtained in the *Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016* (see [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)).

While physical groundwater volumes that interact with the regulated river are included in GPWAR statements where possible (and any interactions not directly estimated form part of the unaccounted difference) all other groundwater flows and groundwater management are excluded from the GPWAR.

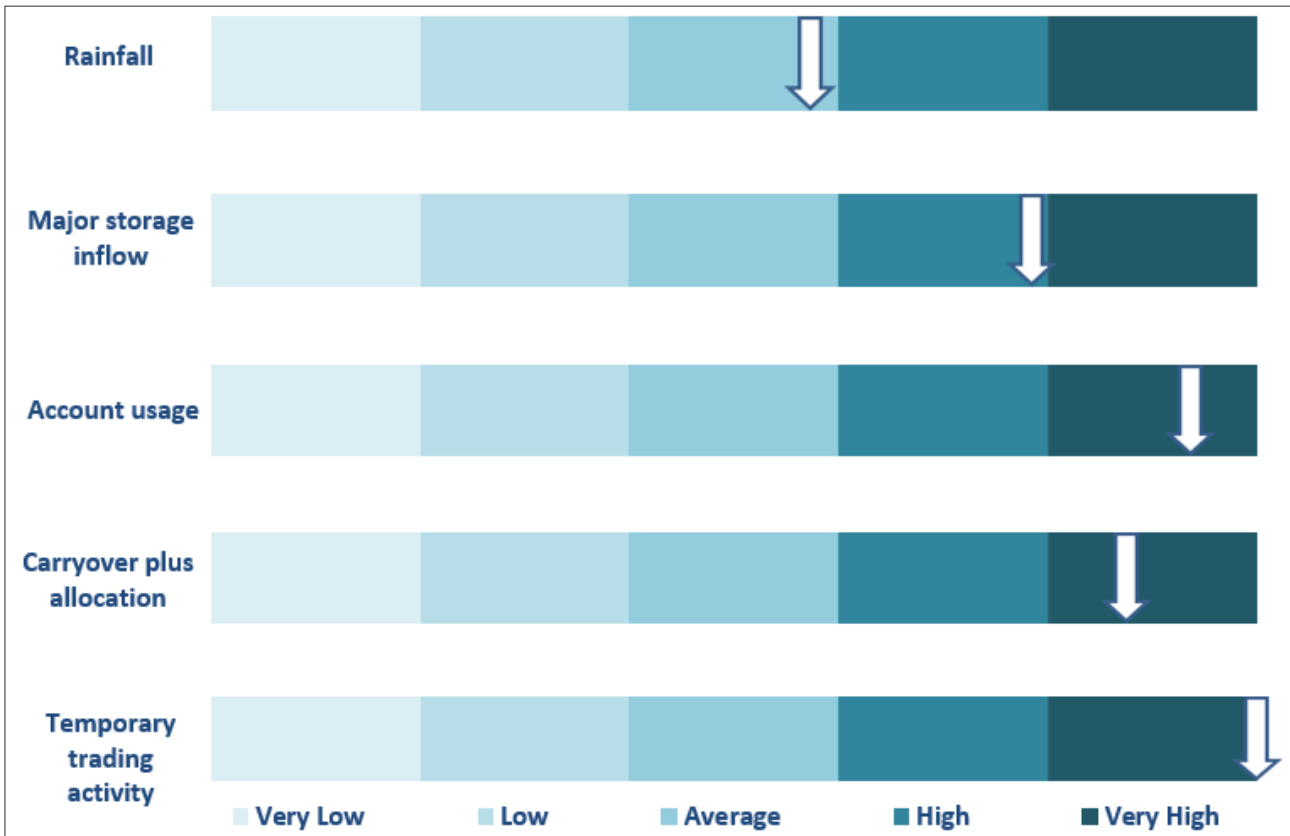
Figure 1: Surface water geographical extent of the accounts



## Snapshot

The key indicators for the reporting period relative to other years under water sharing plan management conditions are presented in Figure 2. Rainfall across the catchment was in the upper range of average while major storage inflow was comparatively high. Account usage, effective allocation (carryover plus allocation) and temporary trading activity were all in the very high range (temporary trading activity for 2020–21 was the highest under water sharing plan management conditions).

**Figure 2: 2020–21 Summary indicators for the reporting period**



## Climate

At Tumbarumba (upper catchment) 1,049 mm of rainfall was recorded in the reporting period (Table 1). Comparatively this volume of rainfall is:

- 108% of the long-term historical median rainfall for this location
- 63% of the highest annual (July-June) volume on record at the location (1,663 mm).

The majority of rainfall fell in the months of October 2020 (195 mm) and February 2021 (140 mm) (Figure 3 and Figure 4).

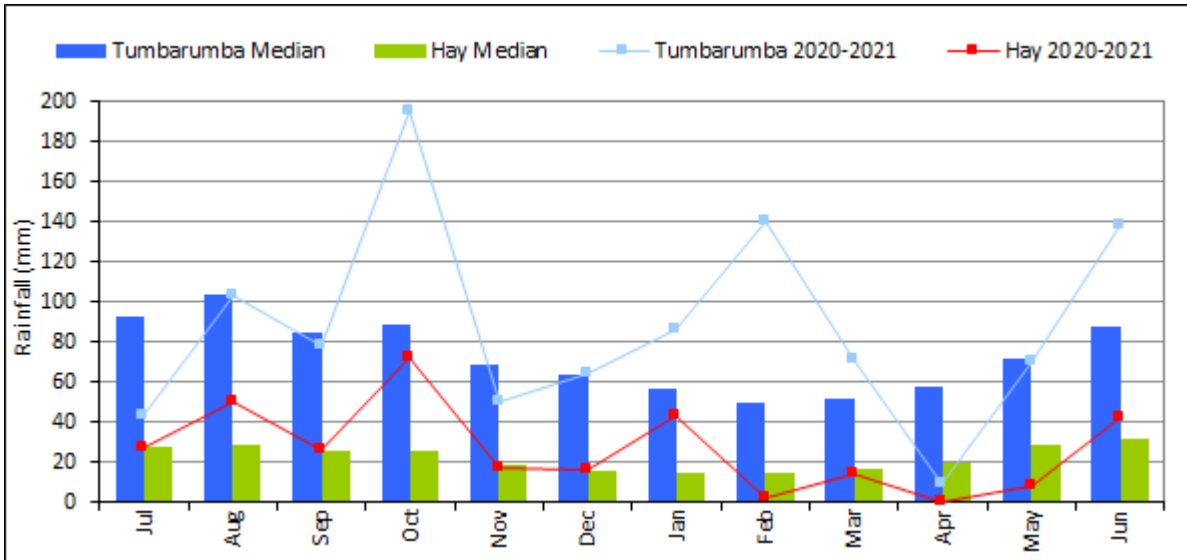
At Hay (lower catchment) 317 mm of rainfall was recorded in the reporting period (Table 2). Comparatively this volume of rainfall is:

- 92% of the long-term historical median rainfall for this location
- 36% of the highest annual (July-June) volume on record at the location (893) mm.

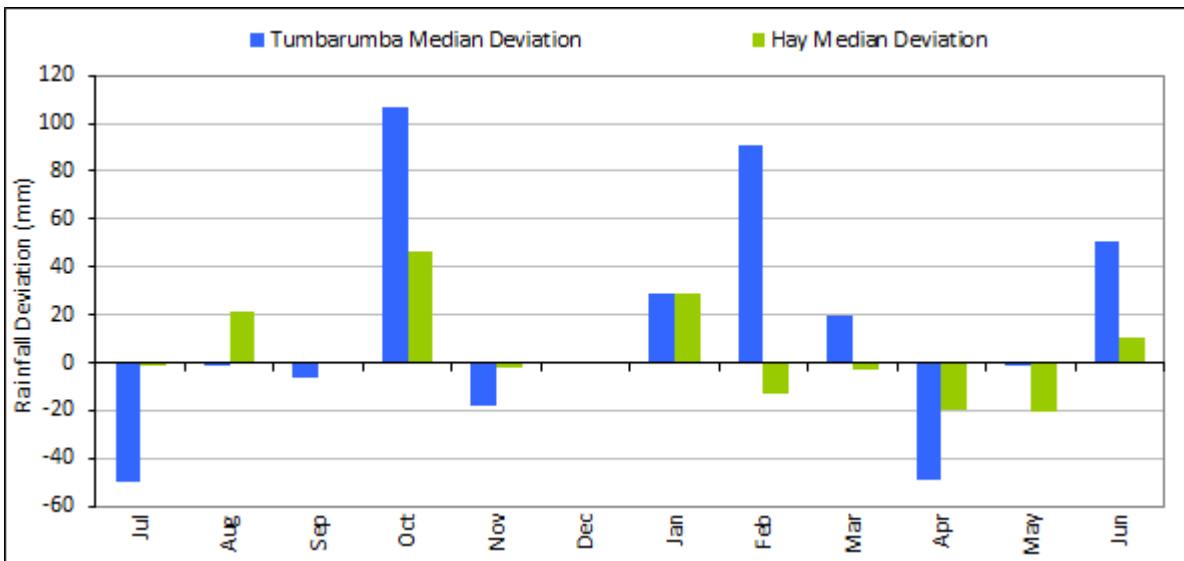
The majority of rainfall fell in August 2020 (50 mm) and October 2020 (72 mm) (Figure 3 and Figure 4).

A spatial comparison of rainfall in the reporting period against a longer term comparison period is presented Figure 5 (reporting period) and Figure 6 (average annual rainfall 1961–90), indicating moderately higher than average conditions across the majority of the catchment with the exception of the western area around Hay being below average.

**Figure 3: Monthly rainfall compared to historical median at Tumbarumba and Hay**



**Figure 4: Deviation from historical median rainfall at Tumbarumba and Hay**



**Table 1: Monthly rainfall and historical monthly statistics at Tumbarumba<sup>1</sup>—measurements in millimetres**

Tumbarumba	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
<b>2020–21</b>	<b>43.2</b>	<b>103.4</b>	<b>78.2</b>	<b>195.1</b>	<b>50.6</b>	<b>64.0</b>	<b>85.8</b>	<b>140.4</b>	<b>71.0</b>	<b>9.2</b>	<b>70.6</b>	<b>137.8</b>	<b>1049.3</b>
Historical Mean	104.0	106.3	89.6	95.0	75.2	70.8	62.9	54.6	66.2	65.8	82.4	101.7	976.1
Historical Median	93.1	104.1	84.8	88.7	68.4	63.8	56.5	49.7	51.6	58.1	71.3	87.4	969.8
Historical Lowest	14.2	8.6	9.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	6.0	523.6
Historical Highest	254.6	246.6	225.3	259.7	240.2	212.4	203.2	252.2	260.4	224.6	295.4	322.1	1663.2
Highest year	1985-86	1938-39	1959-60	1975-76	2010-11	1918-19	1896-97	2010-11	1905-06	1973-74	1941-42	1922-23	1955-56

**Table 2: Monthly rainfall and historical monthly statistics at Hay<sup>1</sup>—measurements in millimetres**

Hay	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
<b>2020–21</b>	<b>27.1</b>	<b>50.1</b>	<b>26.2</b>	<b>71.9</b>	<b>16.8</b>	<b>16.2</b>	<b>43.4</b>	<b>1.8</b>	<b>13.7</b>	<b>0.3</b>	<b>8.0</b>	<b>41.9</b>	<b>317.4</b>
Historical Mean	30.6	32.0	30.6	34.6	26.7	27.2	27.7	28.1	28.6	28.2	34.8	35.5	363.6
Historical Median	27.3	28.7	25.8	25.7	18.8	15.9	14.8	14.7	16.8	19.9	28.8	31.2	344.2
Historical Lowest	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	142.1
Historical Highest	100.8	107.5	105.9	150.2	152.2	152.4	191.2	203.7	199.7	151.2	133.5	115.6	892.5
Highest year	1955-56	1888-89	1902-03	1974-75	1911-12	1991-92	1973-74	1972-73	1955-56	1973-74	1987-88	1922-23	1973-74

<sup>1</sup> Long-term statistics are derived from the Bureau of Meteorology—climate data online. The data presented is collected from stations '72043—Tumbarumba Post Office' and '75031—Hay (Miller Street)'. Historical statistics uses data from June 1886 to June 2021 for Tumbarumba and June 1881 to June 2021 for Hay.



Figure 5: Annual rainfall for the reporting period

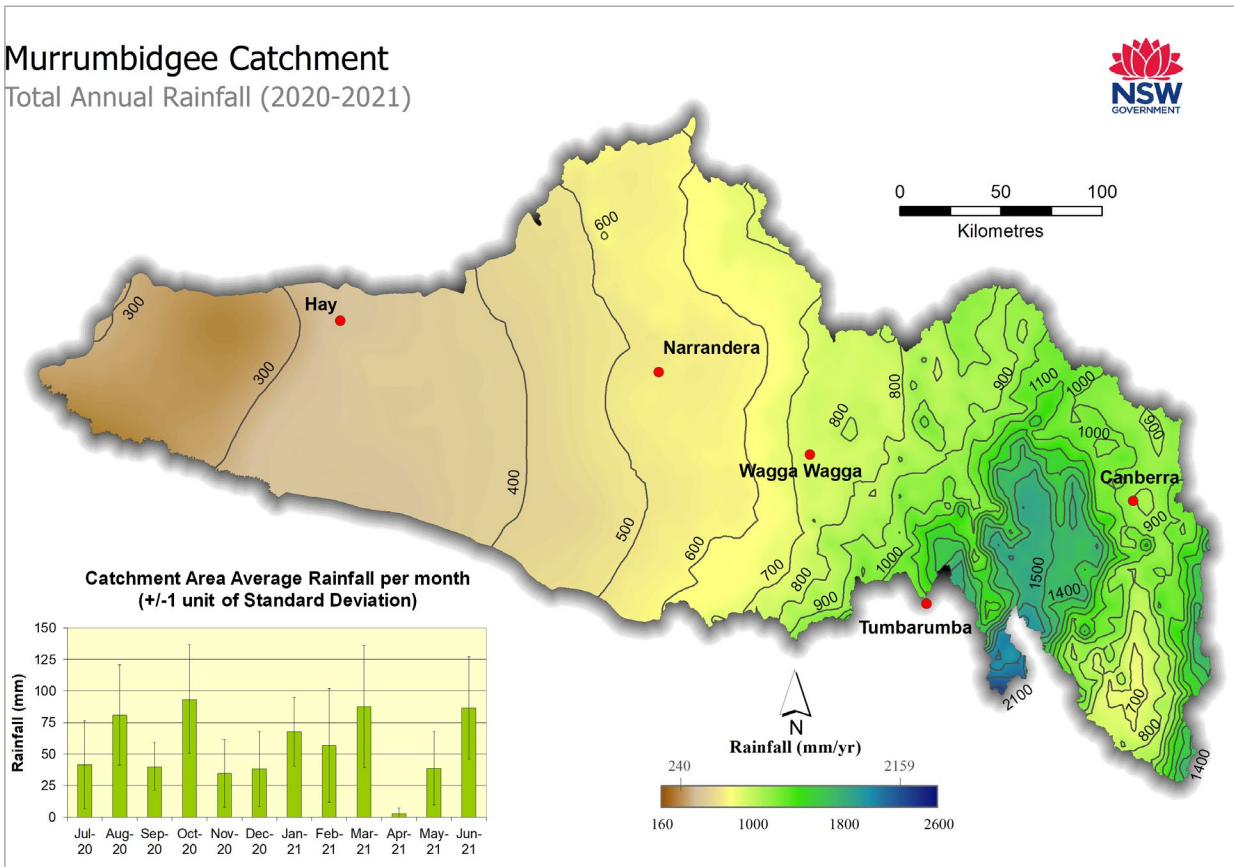
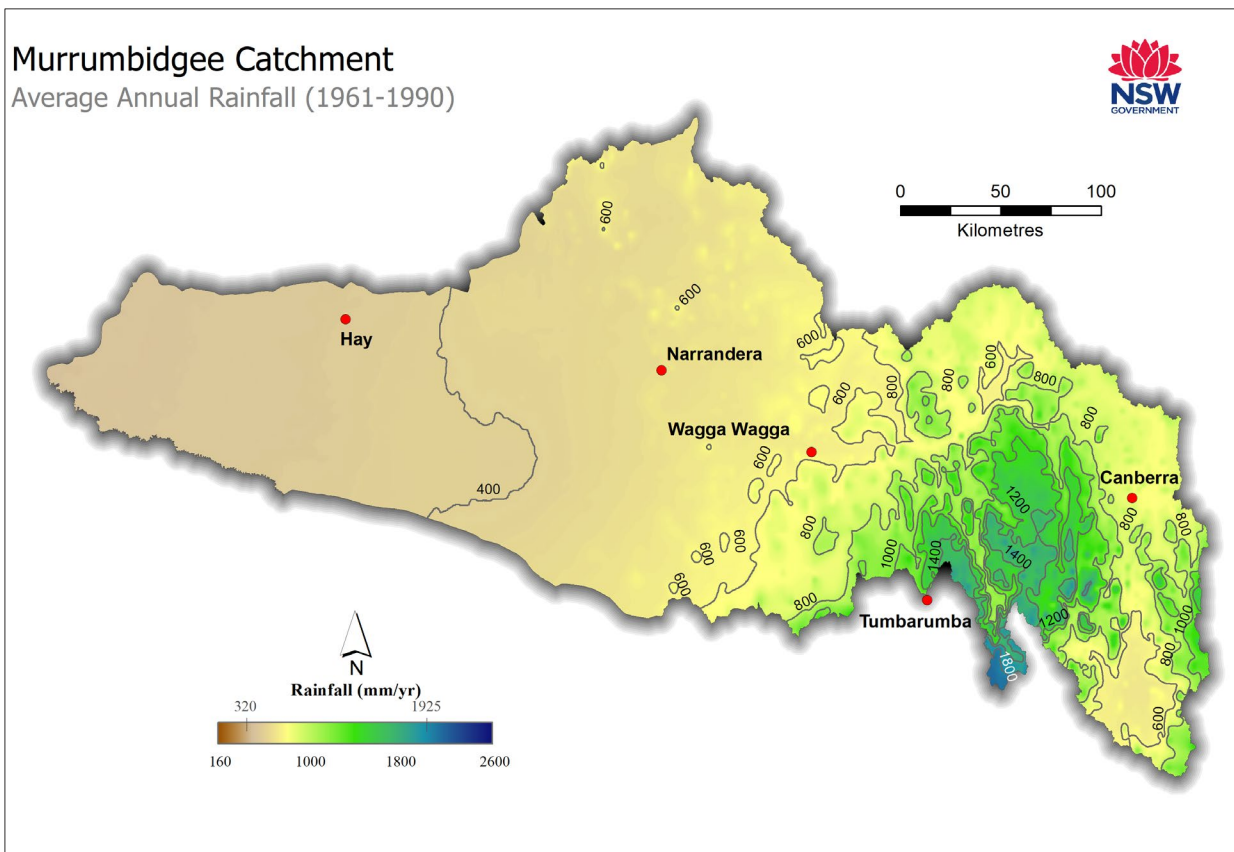


Figure 6: Average annual rainfall (1961–90)



## Dam inflows

Historically, the long-term average annual flow (inflow) at the Burrinjuck Dam site has varied significantly cycling through prolonged periods of wet and dry flow regimes. Broadly, the data (Figure 7) illustrates predominantly:

- dry conditions 1900 to 1950
- wet conditions 1950 to 1990
- dry conditions 1990 to present.

For the reporting period, the inflow to Burrinjuck Dam was 1,847,505 megalitres (Figure 8), which is:

- 191% of the long-term median annual inflow (967,000 megalitres per year)
- comparatively high to the historical record, exceeding 78% of years on record (1890–91 to 2020–21).

The inflow ends a 3-year sequence of below-mean inflow for this storage.

The maximum mean daily inflow rate for the reporting period was 88,837 megalitres, occurring on 10 August 2020 (Figure 9).

Daily inflow figures for Blowering Dam (which receives regulated inflows from the Snowy Mountains Scheme) are presented in Figure 10.

## Storage volume

### Burrinjuck

- Volume at the commencement of the reporting period was 447,095 megalitres or 44% of full supply capacity (Figure 11).
- Volume held at the end of the reporting period was 985,570 megalitres or 96% of full supply capacity.
- The maximum volume held during the reporting period was 985,570 megalitres or 96% of full supply capacity on 30 June 2021.

### Blowering

- Volume at the commencement of the reporting period was 935,804 megalitres or 57% of full supply capacity (Figure 12).
- Volume held at the end of the reporting period was 1,568,331 megalitres or 96% of full supply capacity.
- The maximum volume held during the reporting period was 1,568,331 megalitres or 96% of full supply capacity on 30 June 2021.

Figure 7: Long-term annual flow upstream of Burrinjuck Dam cumulative deviation from the mean

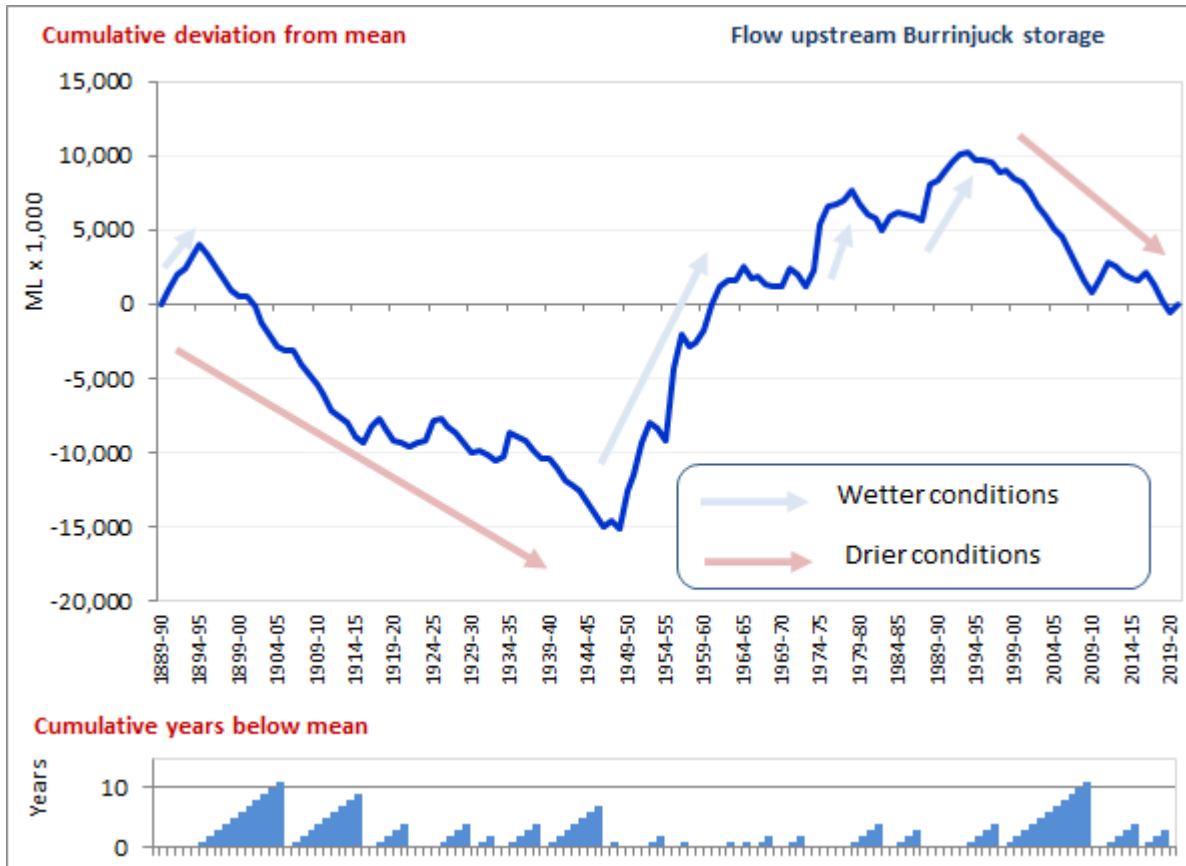


Figure 8: Long-term inflows to Burrinjuck Dam against mean and reporting year inflow

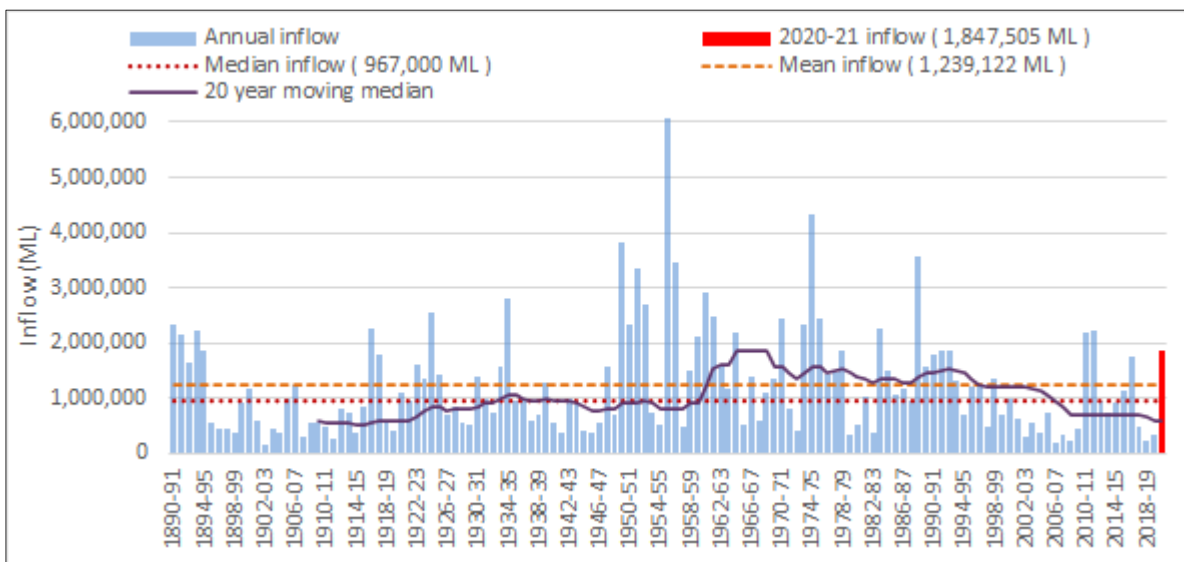


Figure 9: Daily inflows to Burrinjuck Dam and rainfall (reporting period)

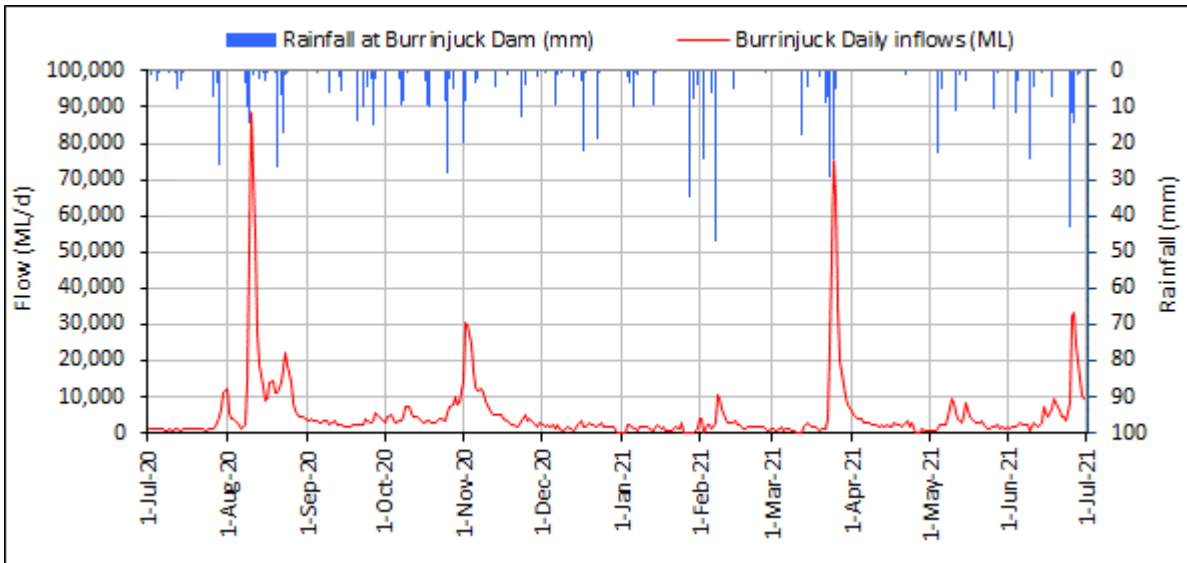


Figure 10: Daily inflows to Blowering Dam and rainfall (reporting period)

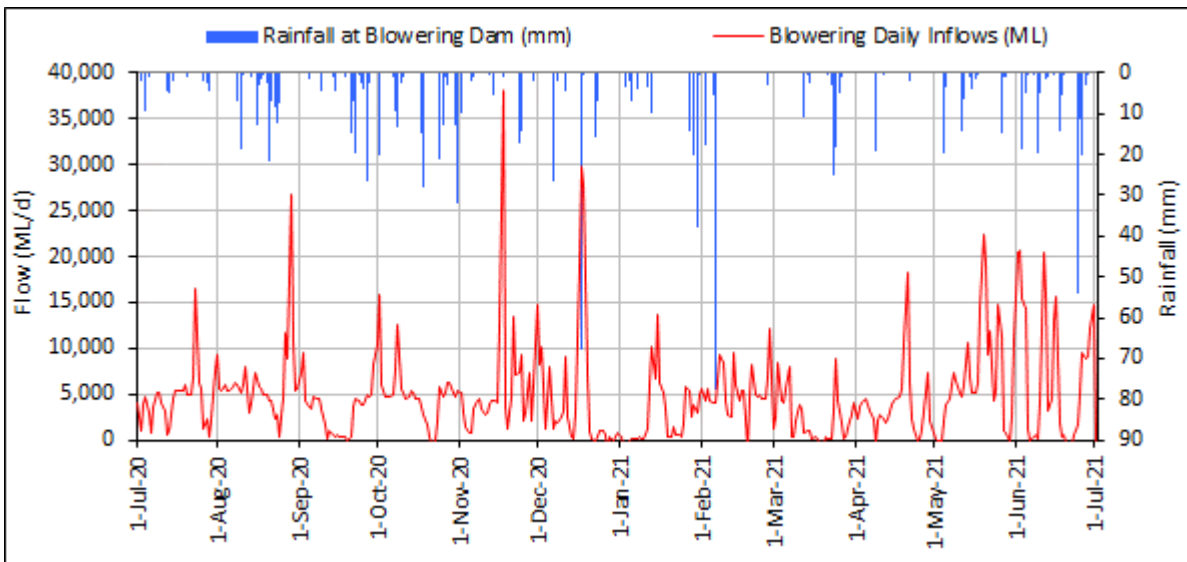


Figure 11: Burrinjuck Dam storage volume and percentage full

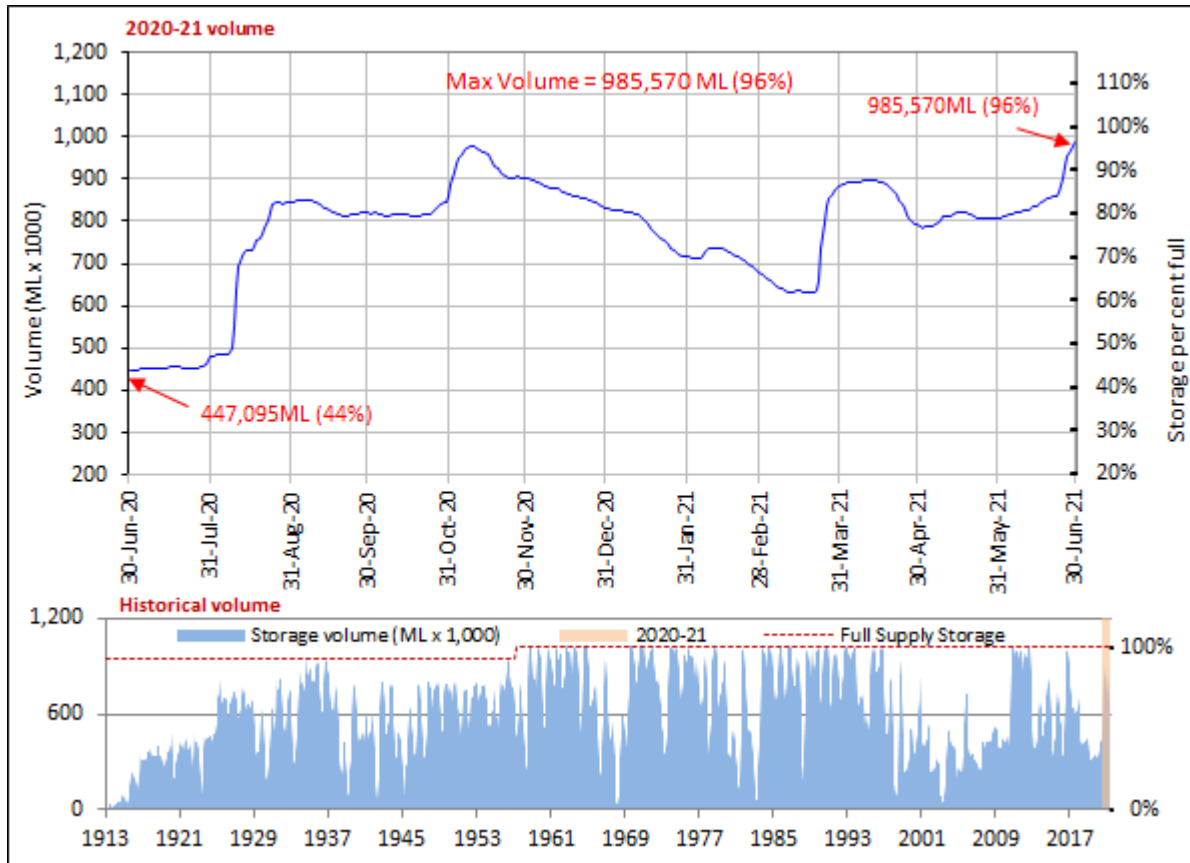
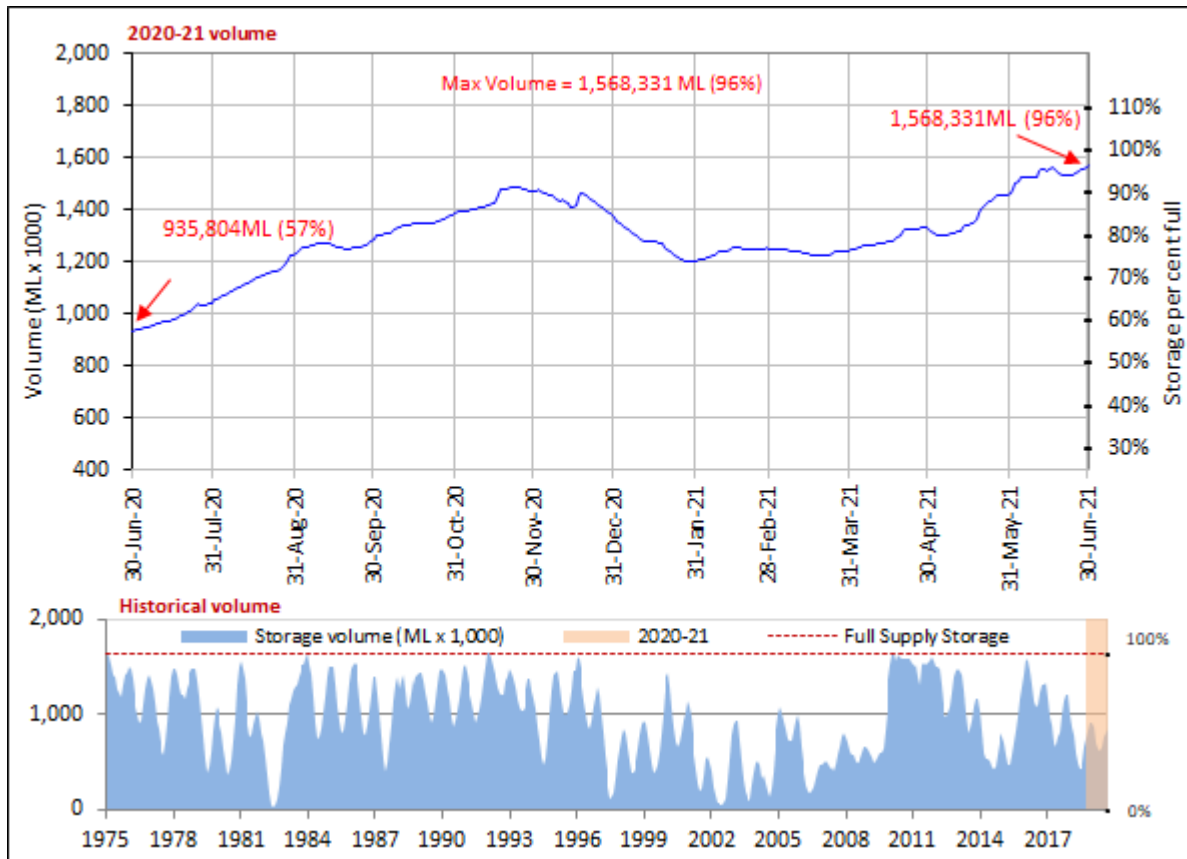


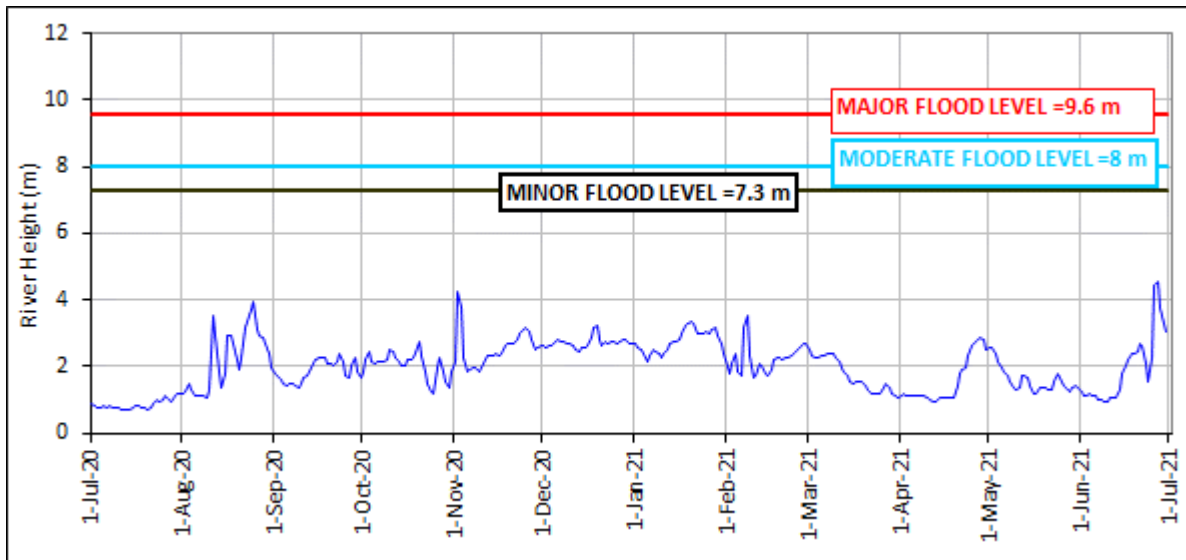
Figure 12: Blowering Dam storage volume and percentage full



## Major high flow events

No high flow events occurred in the Murrumbidgee during the reporting period (Figure 13). River height at Wagga Wagga remained below 4.5 metres for the entire water year, well below the minor flooding indicator level of 7.3 metres.

**Figure 13: Murrumbidgee River at Wagga Wagga maximum daily flow heights<sup>2</sup>**



<sup>2</sup> Flood indicator levels sourced from the Bureau of Meteorology

# Surface water resources and management

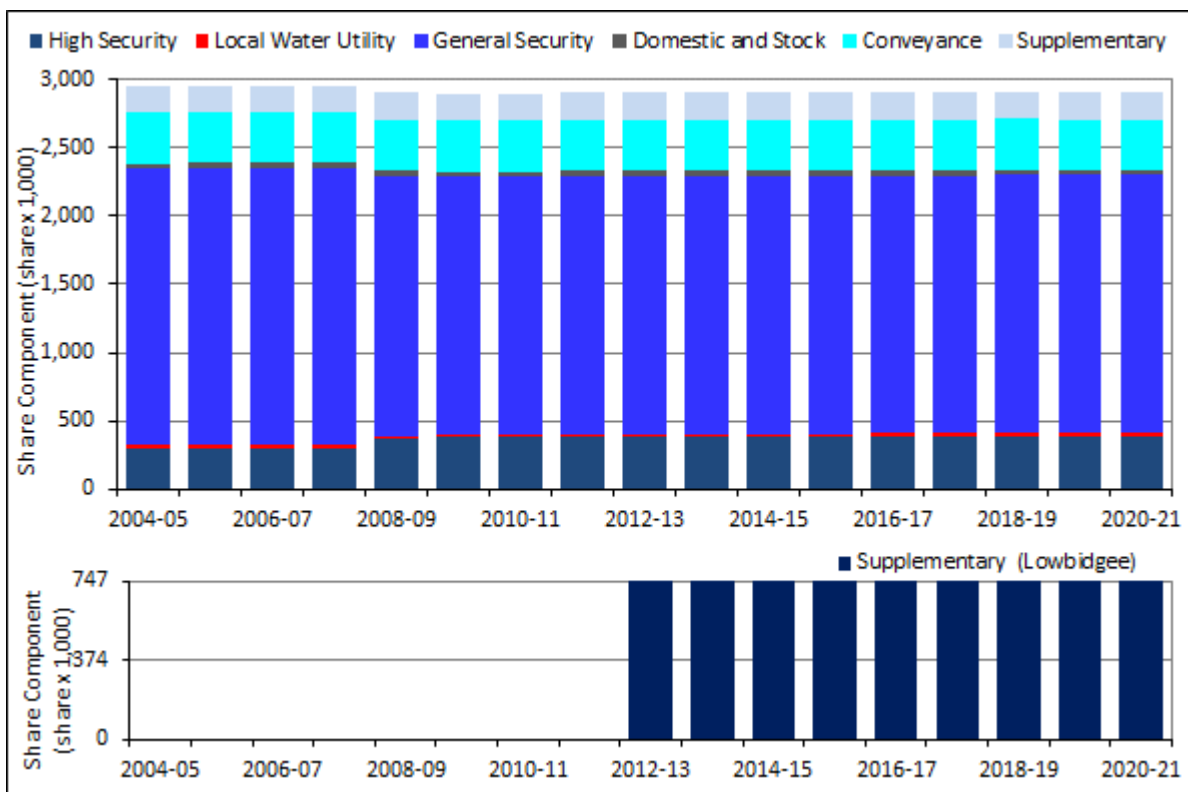
## Policy and management

The Murrumbidgee Regulated River Water Source was managed under the conditions set out in the *Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016*. This plan commenced on 1 July 2016 and will remain active until 30 June 2026 or alternatively until a replacement plan is gazetted. The water sharing plan was produced to meet the water management principles outlined in the *Water Management Act 2000*.

## Access rights

- Access licence share components increased in the reporting period by 3 shares (Figure 14) resulting from application for new domestic and stock licences. Such licences are recognised as specific purpose licences, with a range of conditions of use applied and are also prohibited from trading.
- Total issued share on 30 June 2021 was 3,654,217, which includes 198,780 shares of supplementary access licences and 747,000 shares of supplementary (Lowbidgee) access licences (Table 3).

**Figure 14: Murrumbidgee share component since the commencement of the water sharing plan<sup>3</sup>**



<sup>3</sup> Includes all access licences issued under the water sharing plan and therefore held environmental water.



**Table 3: Issued share component annual change**

Licence category	Share component 30 June 2020	Share component 30 June 2021	Share change
Domestic and Stock	30,158	30,161	3
Local Water Utility	23,816	23,816	0
High Security	386,498	386,498	0
General Security	1,891,995	1,891,995	0
Conveyance	375,968	375,968	0
Supplementary	198,780	198,780	0
Supplementary (Lowbidgee)	747,000	747,000	0
<b>Total</b>	<b>3,654,215</b>	<b>3,654,218</b>	<b>3</b>

### Access licence account management

An annual accounting (with carryover) procedure is implemented in this water source allowing for general security (and conveyance) access licence holders to mitigate the risk of future shortfalls and carryover up to 0.30 megalitres per share (30%). A limit of 1 megalitre per share (100%) for carryover plus water received from available water determinations applies.

Additionally, general security account holders have access to a provision under the water sharing plan (uncontrolled flow access) to further mitigate potential shortfalls in dry years with low allocations. During periods of announced access, general security holders are eligible to extract water from unregulated events downstream of the major storages, without debit to the access licence balance. Should allocations improve part or all of any unregulated take may revert to become accountable against the licence. Triggers and limits for access to this water are summarised in Table 5. Further information on uncontrolled flow access is available in note 23 of this GPWAR.

All other categories of licence have a maximum credit of 100% or 1 megalitre per share, and do not have any carryover provisions available. The access licence accounting rules are summarised in Table 4.

**Table 4: Murrumbidgee licenced allocation accounting rules**

Licence Category	AWD plus carryover limit	Carryover limit	Annual use limit	Maximum AWD
Coleambally Irrigation (Conveyance)	1 ML/share	0.30 ML/Share	N/A	1 ML/share
Domestic and Stock [All categories]	N/A	0 ML/Share	N/A	100%
Local Water Utility	N/A	0 ML/Share	N/A	100%
Murrumbidgee Irrigation (Conveyance)	1 ML/share	0.30 ML/Share	N/A	1 ML/share
Regulated River (Conveyance)	1 ML/share	0.30 ML/Share	N/A	1 ML/share
Regulated River (General Security)	1 ML/share	0.30 ML/Share	N/A	1 ML/share
Regulated River (High Security) [All categories]	N/A	0 ML/Share	N/A	1 ML/share
Supplementary Water	N/A	0 ML/Share	N/A	1 ML/share
Supplementary Water (Lowbidgee)	N/A	0 ML/Share	N/A	1 ML/share



**Table 5: Murrumbidgee uncontrolled flow access provision**

Uncontrolled Flow Access (UCF) licence category	AWD limit for UCF	AWD plus carryover limit for UCF	AWD plus UCF usage limit	AWD plus carryover plus UCF limit
Regulated River (General Security)	0.70 ML/share	0.85 ML/Share	0.85 ML/share	1 ML/share

## Extreme events stage and temporary water restrictions

The NSW Extreme Events Policy was released in October 2018 to provide a framework for managing extreme events in the major river systems of the NSW Murray–Darling Basin. This framework is based on a staged approach, providing a range of measures for water managers to implement as conditions deteriorate.

Temporary water restrictions are an example of the type of measures that can be implemented to manage a water shortage. These restrictions are issued under section 324 of the NSW *Water Management Act 2000* and have been implemented in several river valleys in the recent drought to preserve water for critical needs.

Table 6 outlines the conditions that may be associated with different stages of criticality for surface water quality. Further information is available at [industry.nsw.gov.au/water/what-we-do/legislation-policies/eep](http://industry.nsw.gov.au/water/what-we-do/legislation-policies/eep)

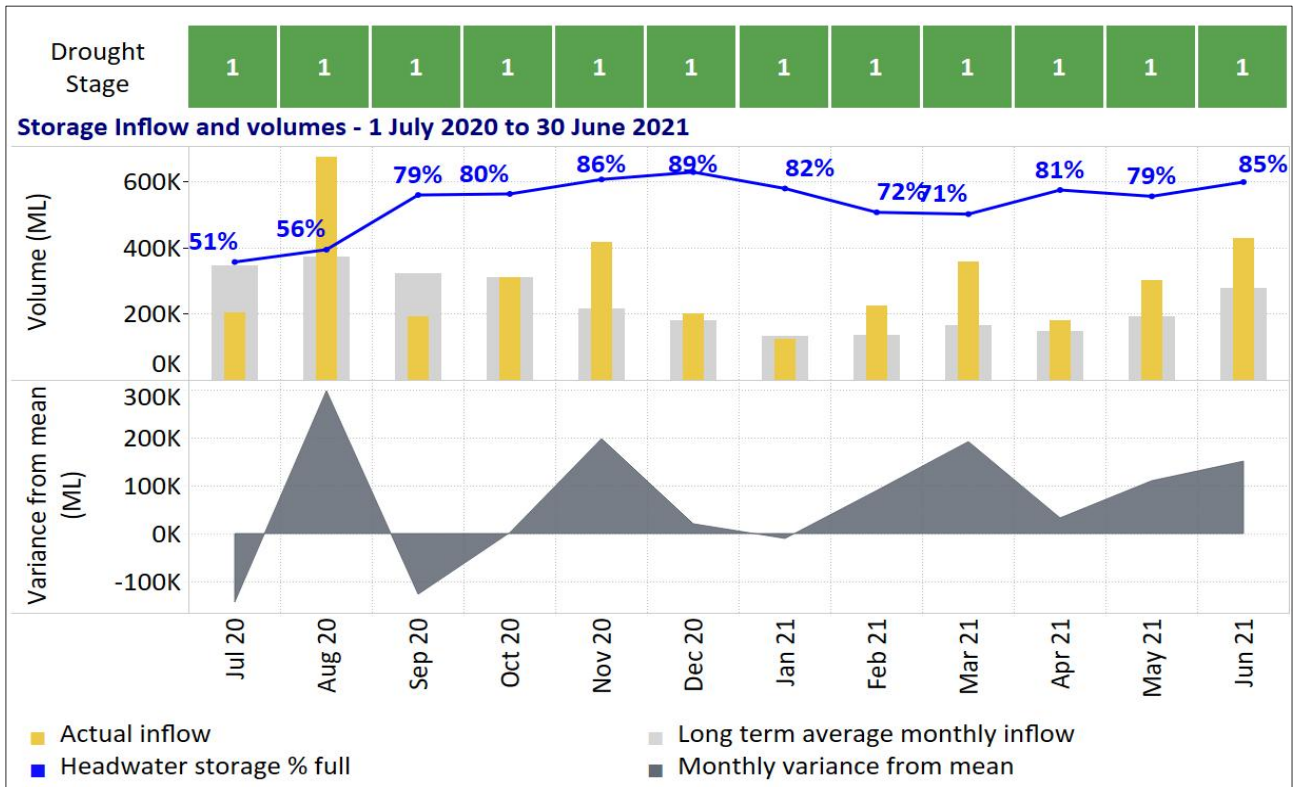
**Table 6: Determination of stages of criticality for surface water quantity**

Stage	Stage description	Stage evidence base
1	Normal management	Can deliver all account water under normal river operations practices.
2	Emerging drought	Unable to deliver 100% of high priority account water and maximum expected use of general security under normal river operations practices.
3	Severe drought	Only able to deliver restricted high priority demands and restricted remaining general security account water.
4	Critical drought	Only able to deliver restricted town water supply, stock and domestic and other restricted high priority demands.

## Extreme events stage

The Murrumbidgee regulated river remained in stage 1 (normal operation) for the entirety of the 2020–21 reporting period (Figure 15).

**Figure 15: Drought stage for the reporting period referenced with monthly headwater storage inflows, monthly storage inflow variance from mean**



### Temporary water restrictions

No restrictions on access licences occurred in the reporting period.

### Water resources and availability

#### Regulated supply

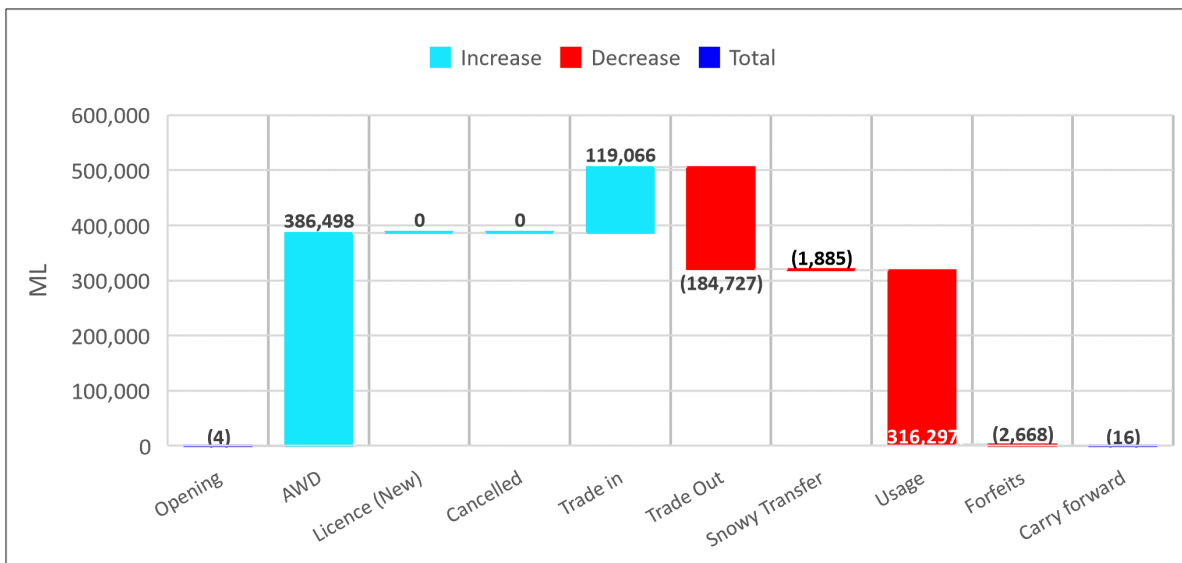
- Domestic and Stock, Local Water Utility and subcategories of High Security licences received an opening available water determination (AWD) of 100%, the maximum allowable under the water sharing plan.
- High security access licences (no subcategory) received an opening AWD of 0.95 megalitres per share (95% equivalent). An additional 0.05 was allocated on 15 January 2021 (as general security reached full allocations). This cumulative allocation of 1 megalitre per share (100% equivalent) is the maximum allowable under the water sharing plan.
- Regulated river (Conveyance), Murrumbidgee Irrigation (Conveyance) and Coleambally Irrigation (Conveyance) had a combined carry over of 5,611 megalitres. These licences received equivalent opening AWD's of 10%, 64.1% and 85.9% respectively.
- Regulated river (Conveyance), Murrumbidgee Irrigation (Conveyance) and Coleambally Irrigation (Conveyance) received further AWD announcements throughout the reporting period, and effective allocations reached the maximum allowable allocation (100%) by 15 January 2021, 9 November 2020, and 15 January 2021 respectively.

- General security access licences had a carryover of 348,424<sup>4</sup> megalitres into the reporting period, equating to 18% of share.
- General security access licences received an opening AWD of 0.1 megalitres per share (10%).
- General security access licences received thirteen additional AWD announcements as resources continued to improve, taking the total water availability (carryover plus allocation) to 54% of share by 15 October 2020 and 100% by 15 January 2021 (Figure 19).
- Across all categories, by volume, this was the first water year that all categories of access licence reached maximum allocation since 2016–17 and the 5<sup>th</sup> occurrence under water sharing plan management conditions (Figure 20).
- Complete announcement details are available in note 2 of this GPWAR.

### Allocation account summary

A summary illustration of the accounting for High Security, Conveyance and General Security access licence categories in the Murrumbidgee is provided in Figure 16, Figure 17 and Figure 18 respectively. Detailed information on the water accounts for all categories of licence issued are provided in Note 1 of this report.

**Figure 16: Annual water account summary Murrumbidgee High Security**



<sup>4</sup> Carryover figure presented prior to adjustments for snowy transfer (water for rivers program) licences. These accounting adjustments are presented in the account balances report presented in Note 1, Table 11 of the GPWAR.

Figure 17: Annual water account summary Murrumbidgee Conveyance

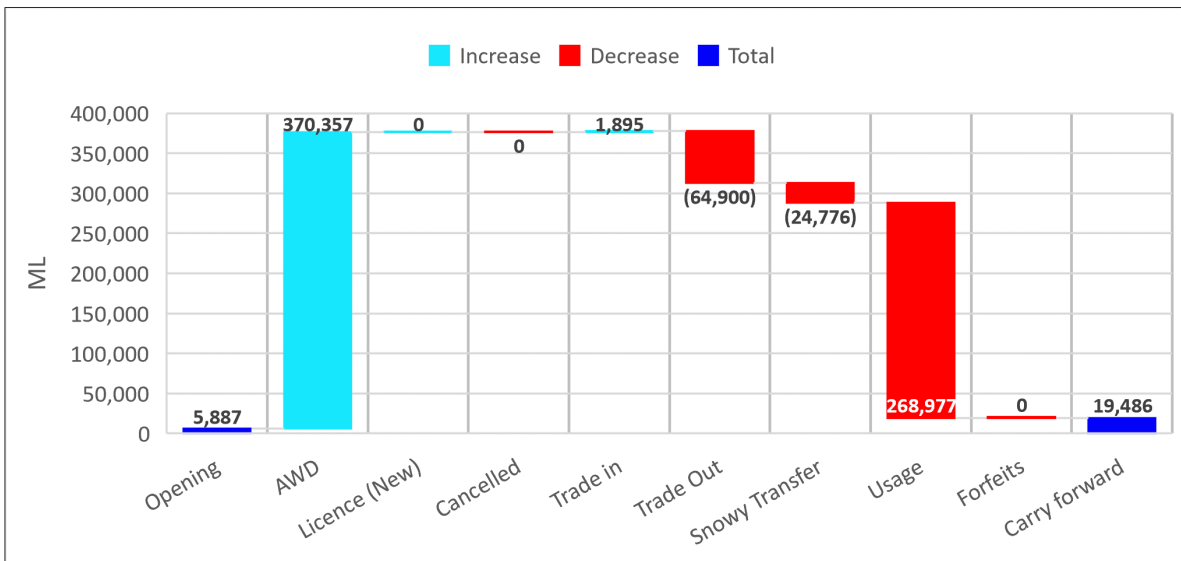
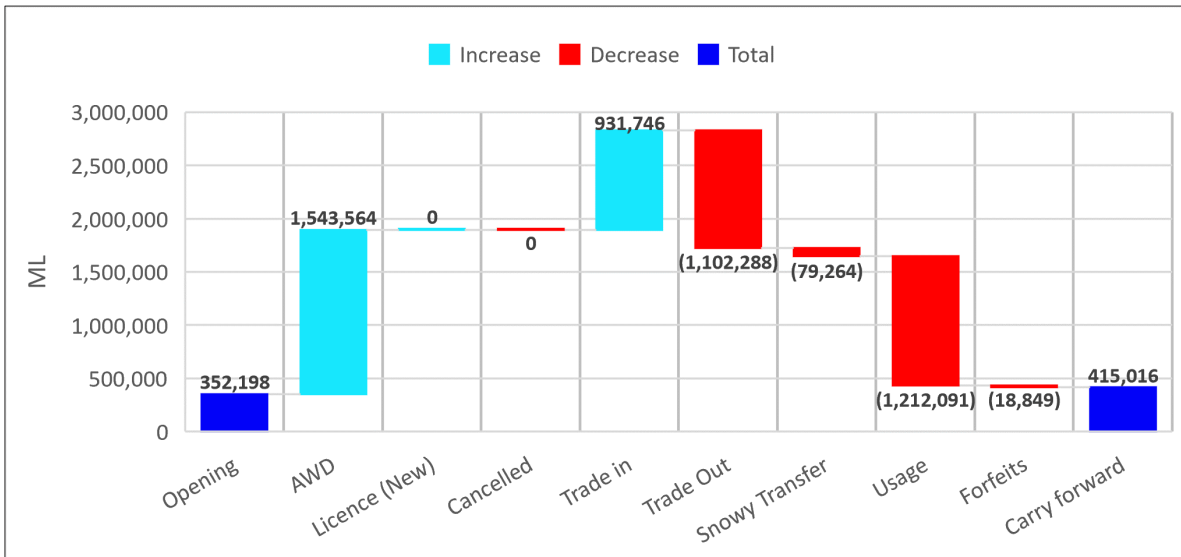


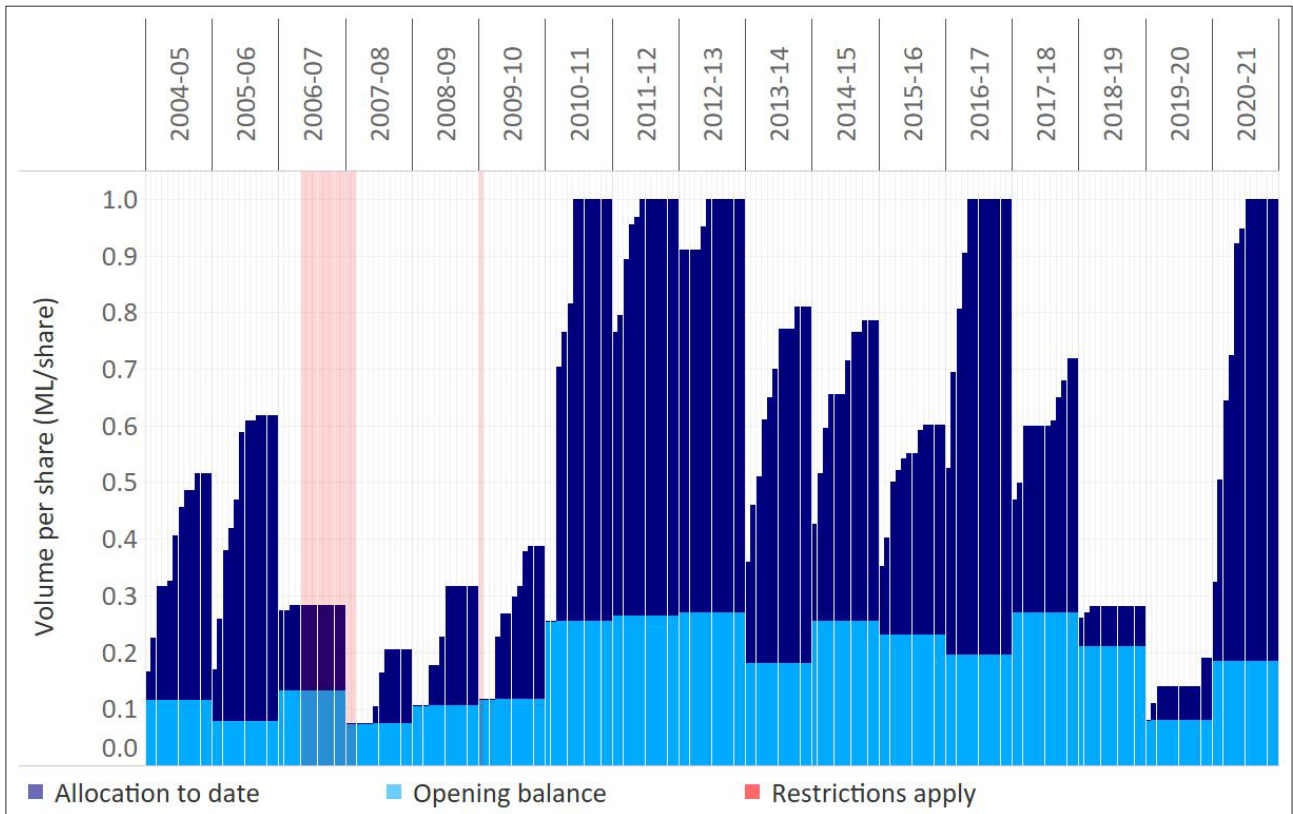
Figure 18: Annual water account summary Murrumbidgee General Security



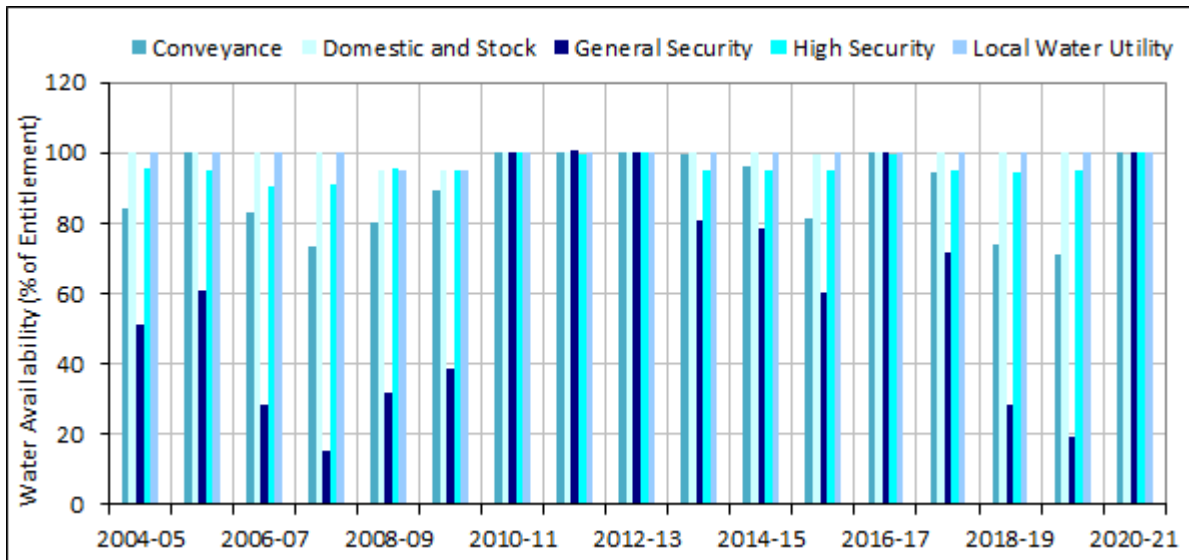
**Supplementary access and tributary inflow**

- Supplementary access licences including the sub-category of supplementary water (Lowbidgee) received an opening AWD of 1 megalitre per share (100% equivalent), the maximum allowable under the water sharing plan. Access to the allocation is dependent on operational announcements for supplementary access throughout the year.
- At water source level 123 days of supplementary access was available in the reporting period, a significant increase on the prior three years.
- By volume almost 60% of total tributary inflow to the regulated Murrumbidgee River, downstream of the major storages was contributed by the Goobarragandra River and Jugiong Creek
- Detailed supplementary announcement details are available in note 23 of this GPWAR.

**Figure 19: Incremental available water determinations and carryover volumes for general security as a proportion of share component**



**Figure 20: Murrumbidgee water availability (carryover plus available water determinations)<sup>5</sup>**



<sup>5</sup> Water availability refers to the sum of water that was made available in accounts and does not take into account annual use limits. It is calculated as the total carryover for a licence category plus the total available water determinations for the year.

Figure 21: Supplementary event access

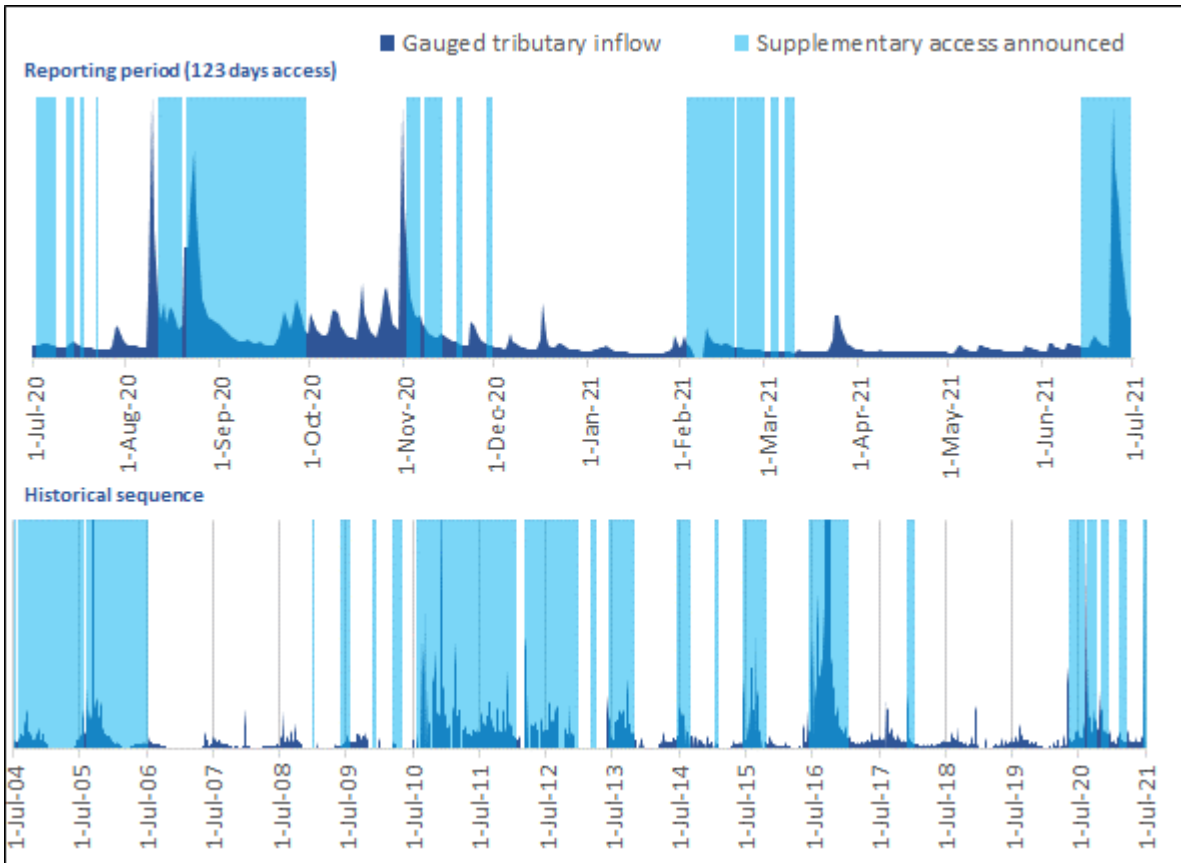
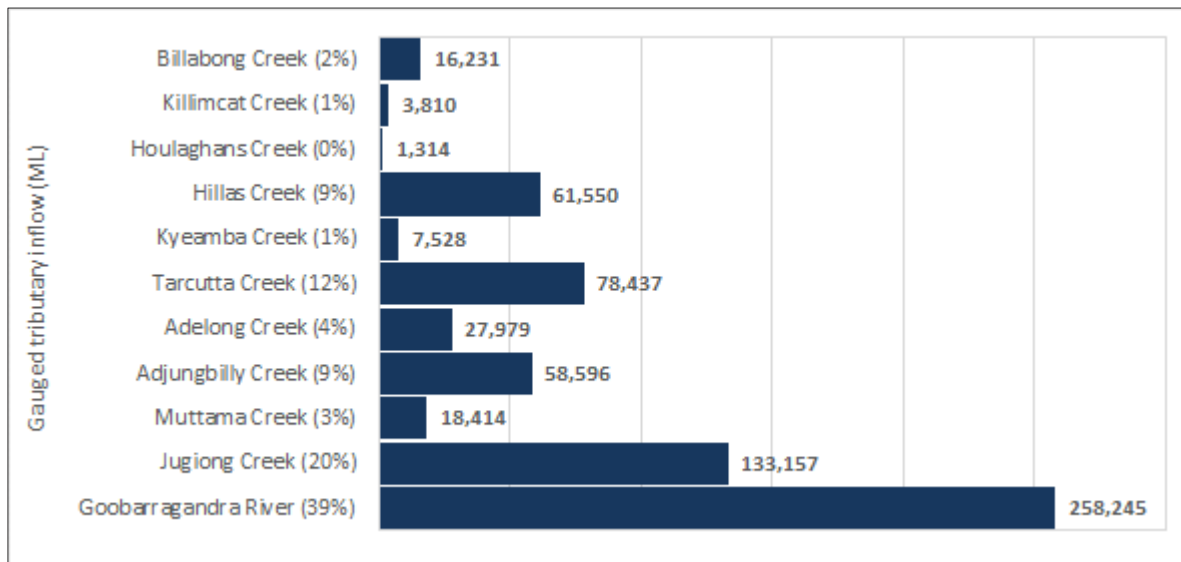


Figure 22: Measured tributary inflow contributions



### Account usage

Account usage from regulated supply (excluding supplementary and uncontrolled flow access) was 1,828,745 megalitres for the reporting period (Figure 23).

In addition to this supply:

- 7 megalitres extracted by general security licence holders taken using the uncontrolled flow access provisions which did not revert to allocation usage (the share associated

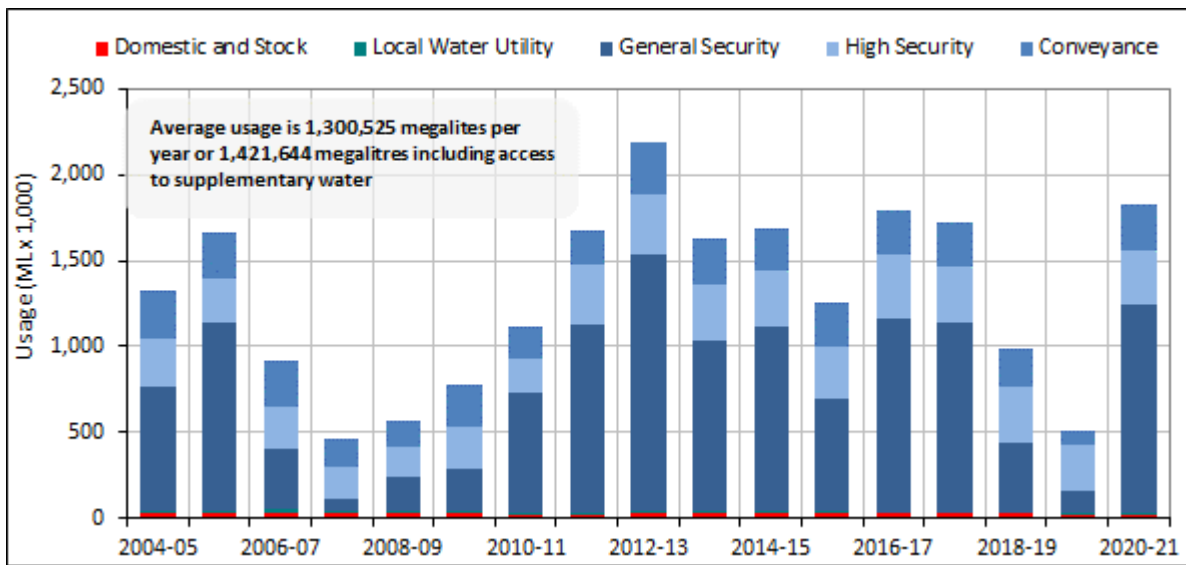
with this take was subsequently moved to another holder prior to increased allocations) (Figure 24)

- 138,227 megalitres were used by Supplementary access licence holders (Figure 24)
- 50,661 megalitres was used by Supplementary (Lowbidgee) access licence holders (Figure 24)

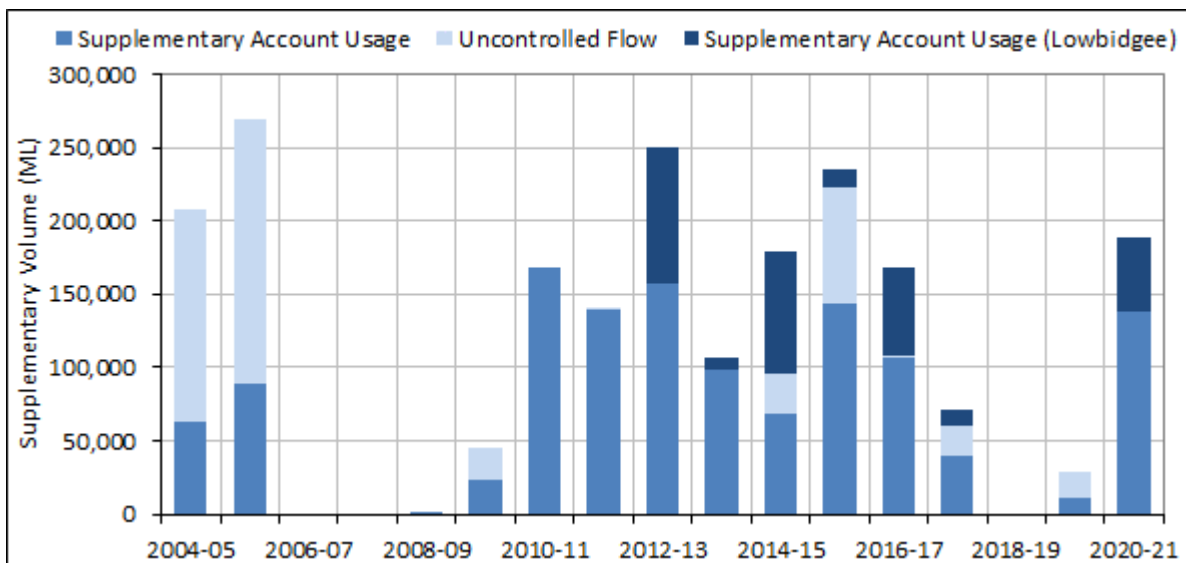
Usage (all forms of take) totalled 2,017,640 megalitres, which was the 2nd highest under water sharing plan management conditions (2004–05 to 2020–21) and the highest since 2012–13 (Figure 25). The average usage (all forms of take) for this period is 1,421,644 megalitres.

Of the total usage 82% was used against consumptive access licences and 18% against held environmental access licences (refer to 'Held Environmental Water' for further details).

**Figure 23: Licenced usage from regulated supply (excluding supplementary and uncontrolled flow access) by licence category**

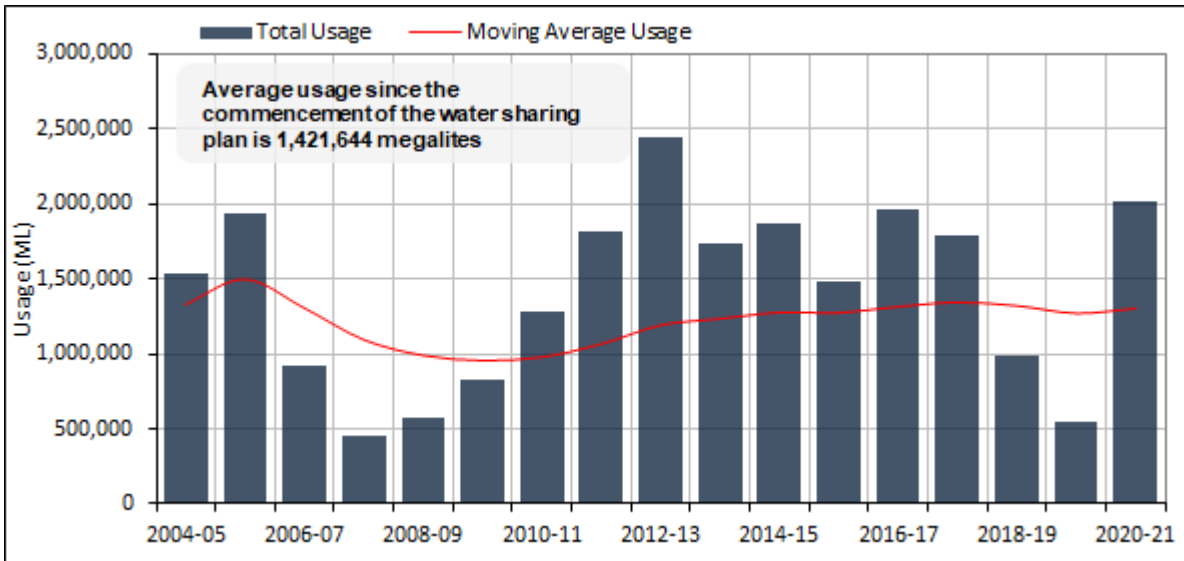


**Figure 24: Murrumbidgee supplementary and uncontrolled flow usage<sup>6</sup>**



<sup>6</sup> Supplementary Water (Lowbidgee) licences were introduced in 2012-13 water year.

Figure 25: Total account and moving average usage under water sharing plan management



### Utilisation and inactive share

An access licence is considered to be inactive if the holding does not use water or access the temporary trade market for the reporting period. Utilisation reflects the amount of water used relative to the maximum amount available for use.

- 4% of general security access licence share component was inactive for the reporting period a decrease of 2% on the prior year (Table 7).
- 1% of high security access licence share component was inactive for the reporting period, which is equal to the prior year inactivity.
- 9% of supplementary water (including Lowbidgee access) was inactive, a decrease of 18% reflecting increased availability of excess flow, downstream of the major storages. Access to this water is from unregulated supply (opportunistic access) and activity is largely climate driven.
- Utilisation of available water from regulated supply was 83%, an increase of 17% on the prior reporting period and the third highest under water sharing plan management conditions (Figure 26).



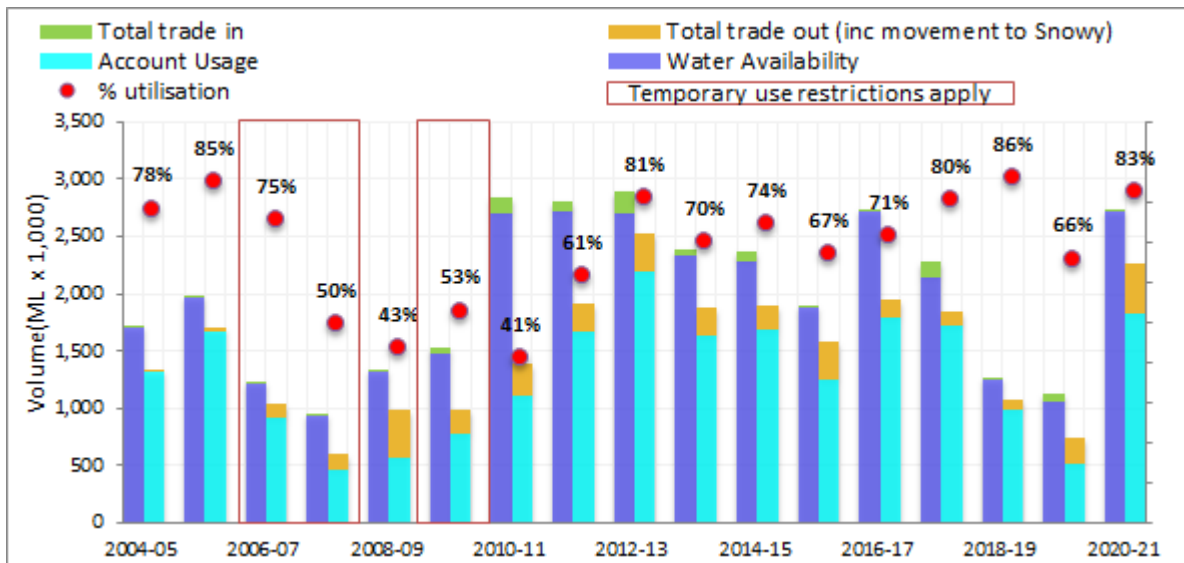
Figure 26: Murrumbidgee utilisation of regulated water available <sup>7</sup>


Table 7: Murrumbidgee inactive licence summary

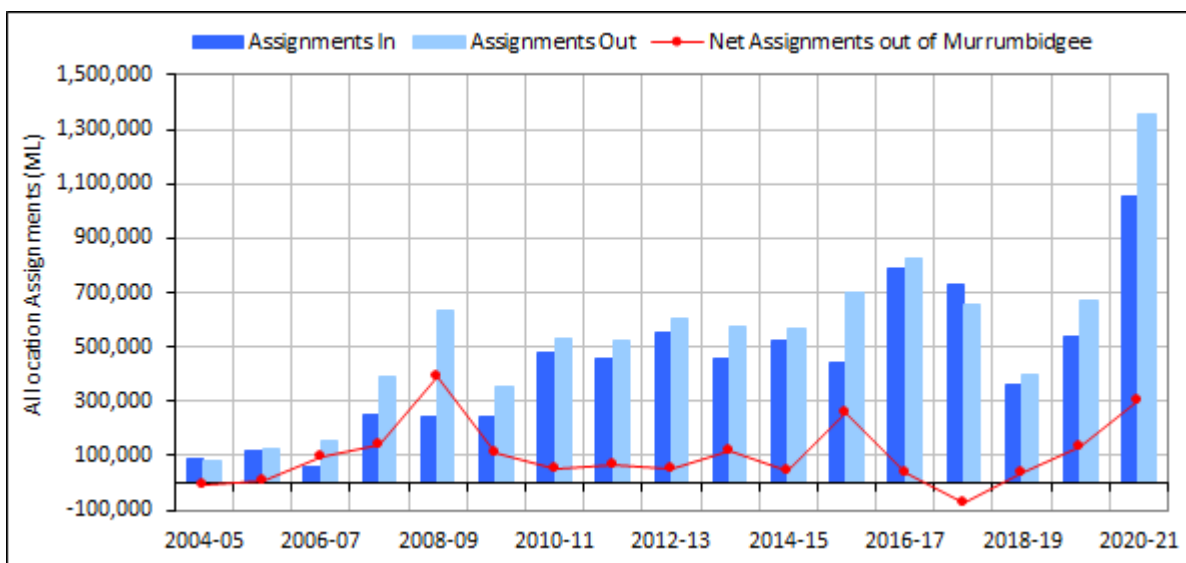
Licence category	Inactive licences (number) 2020–21	Inactive share component 2020–21	Inactive share % of total 2020–21	Inactive share % of total prior year (2019–20)
Coleambally Irrigation (Conveyance)	1	3,500	3%	3%
Domestic and Stock	159	2,645	14%	52%
Domestic and Stock [Domestic]	40	114	42%	36%
Domestic and Stock [Stock]	107	753	7%	15%
Local Water Utility	3	7,010	29%	0%
Murrumbidgee Irrigation (Conveyance)	1	20,000	8%	8%
Regulated River (Conveyance)	2	1,000	34%	100%
General Security	339	83,679	4%	6%
High Security	89	2,850	1%	1%
High Security [Aboriginal Cultural]	0	0	0%	100%
High Security [Research]	0	0	0%	0%
High Security [Town Water Supply]	0	0	0%	0%
<b>Total</b>	<b>741</b>	<b>121,551</b>	<b>4%</b>	<b>6%</b>
<b>Unregulated (flow dependant) supply</b>				
Supplementary Water	101	11,373	6%	24%
Supplementary Water (Lowbidgee)	18	75,763	10%	28%
<b>Total</b>	<b>119</b>	<b>87,136</b>	<b>9%</b>	<b>27%</b>

<sup>7</sup> Water usage excludes water taken under a supplementary access licence or under uncontrolled flows access. Total water availability excludes supplementary access licences.

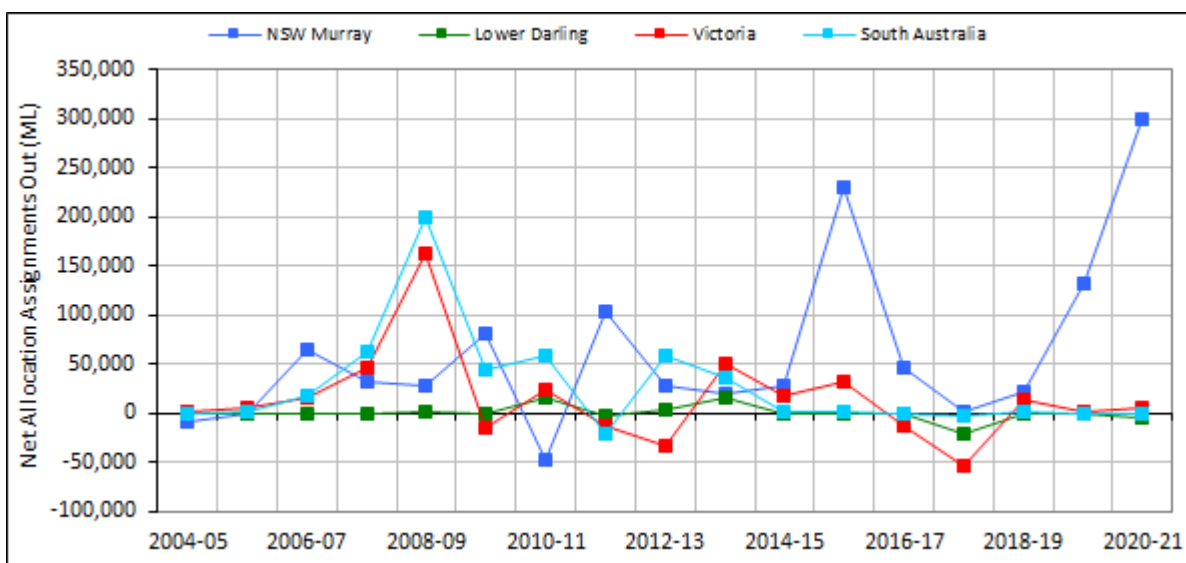
## Temporary trading

- The total volume of allocation assignments into Murrumbidgee access licences was 1,052,772 megalitres<sup>8</sup> (Figure 27).
- The total volume of allocation assignments out of Murrumbidgee access licences was 1,353,915 megalitres resulting in a net assignment out of the Murrumbidgee of 301,143 megalitres.
- The majority of water moved out of the Murrumbidgee was to the NSW Murray regulated river water source (Figure 28).
- The Murrumbidgee intervalley trade account closed at 92,337 megalitres (owed to external) on 30 June 2021, up from 6,244 in the prior period (Figure 29). Refer to disclosure note 5 (Table 18) of this GPWAR for further detail.

**Figure 27: Allocation assignments and net trade out of the Murrumbidgee<sup>9</sup>**



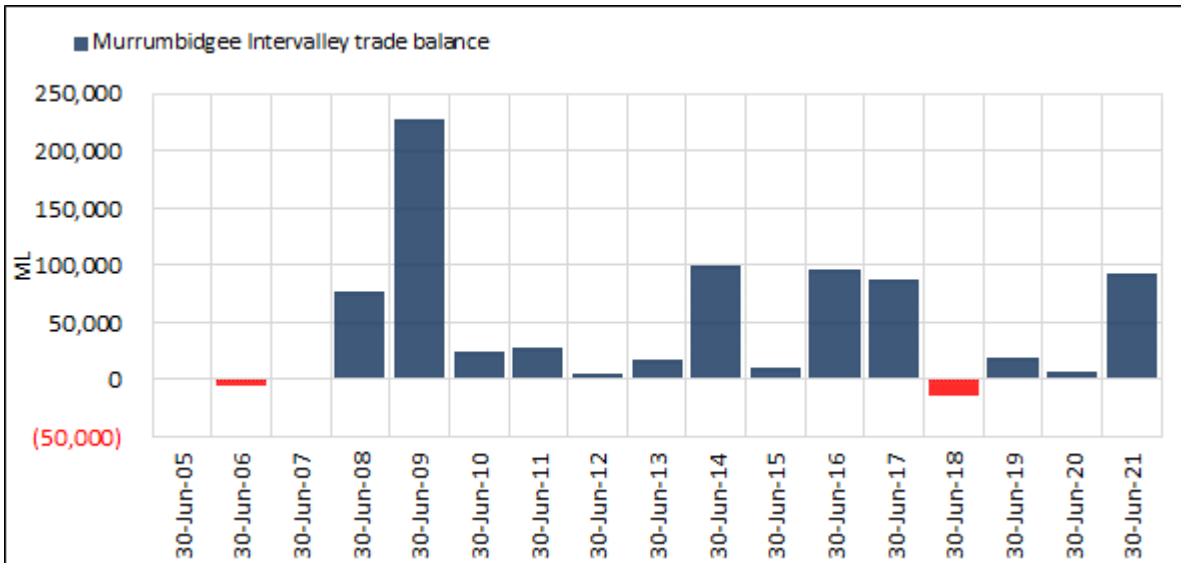
**Figure 28: Net assignment out of the Murrumbidgee by water source location**



<sup>8</sup> Excluding trade between supplementary licences

<sup>9</sup> Excludes supplementary trading but including intravalley, intervalley and interstate trades.

Figure 29: Murrumbidgee intervalley trade account balance on 30 June

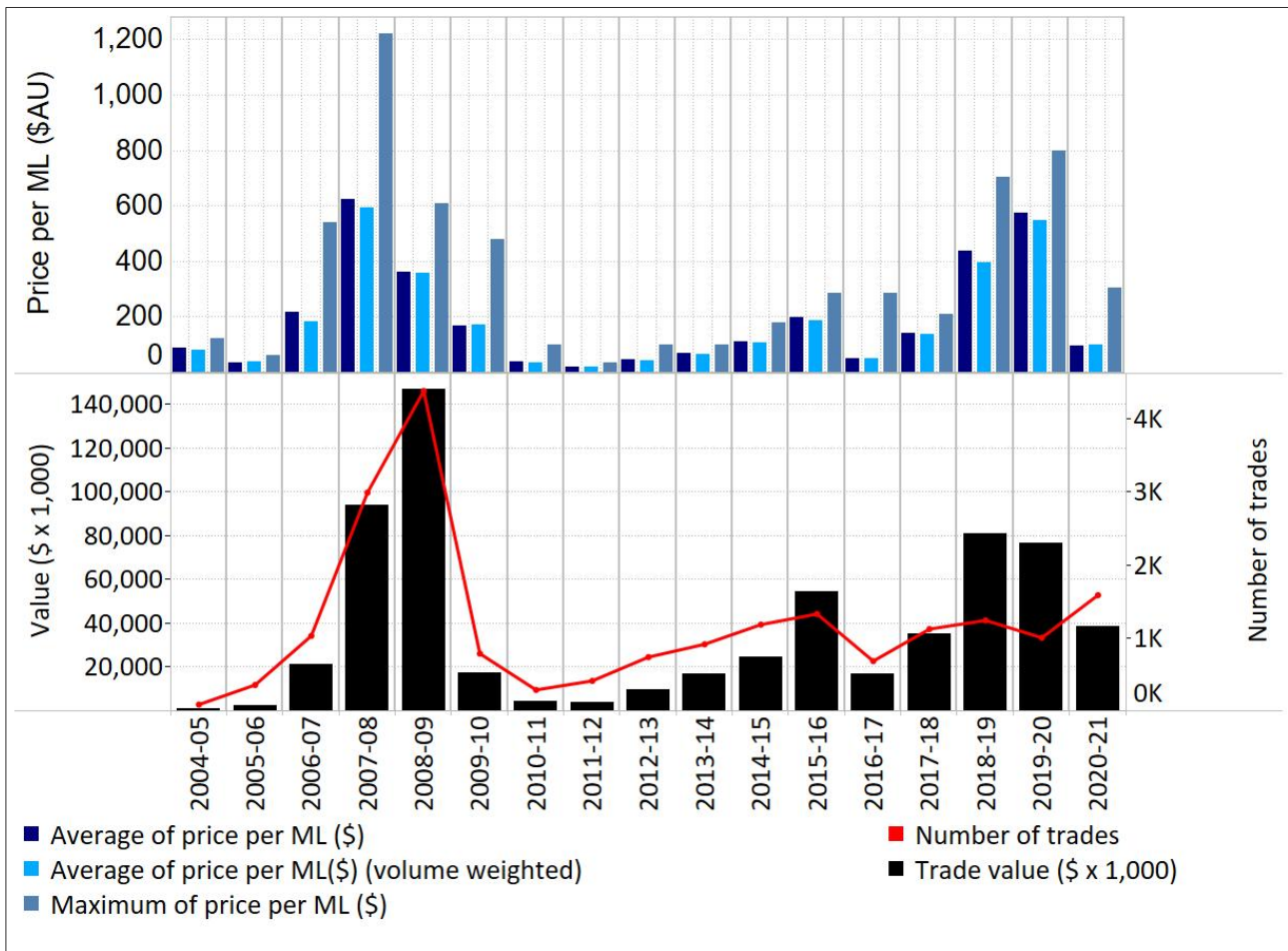


### Temporary commercial statistics

For the reporting period, considering commercial trades only (considerations greater than \$1 per megalitre), 1,585 transactions were processed (Figure 30) with the following characteristics:

- The average price for water was \$95 per megalitre (volume weighted average \$99) an 83% decrease on the prior reporting period and the lowest since 2016–17.
- The maximum price for water was \$303 per megalitre.
- The total trade value was \$38,590,000, a 50% decrease on the prior reporting period and a three year low.

Figure 30: Allocation assignment commercial statistics<sup>10</sup>



**Permanent commercial statistics**

For the reporting period, considering commercial trades only (> than \$1 per megalitres), 28 general security share assignment transactions (Figure 31) were processed with the following characteristics:

- The average price for general security was \$2,091 per share (weighted average \$2,043), a 6% increase on the prior year average.
- The maximum price was \$2,300 per share (this was the second highest price for general security on record)
- The total trade value was \$19,446,000 which was a 20% decrease relative to the prior reporting period.
- The general security sale price within the Murrumbidgee relative to other NSW regulated river water sources selling share in the reporting period is provided in Figure 32.

A total of 11 high security commercial transactions were processed (Figure 33) with the following characteristics:

- The average price was \$7,300 per share (weighted average \$7,186), a 5% relative decrease to the prior reporting period
- The maximum price was \$8,000 per share (this was the second highest price for high security on record)

<sup>10</sup> Only includes transactions where the total consideration of the dealing exceeds \$1. A maximum limit is applied equal to the mean plus 3 times the standard deviation

- The total trade value was \$5,713,000 which was a 76% decrease relative to the prior reporting period.
- The high security sale price within the Murrumbidgee relative to other NSW regulated river water sources selling share in the reporting period is provided in Figure 34.

Considering all categories of licence 13,145 shares were assigned for commercial purposes (and zero shares associated with environmental purchases) (Figure 35).

In addition to share assignments, a total of 99,848 shares (all categories of licence considered) were subject to a change of holder for commercial purposes through 15 transactions (Figure 36). Note that reliable pricing information for change of holder dealings is unavailable as often the sale is bundled with a purchase of land and/or a number of different licence categories.

**Figure 31: Share assignments commercial statistics—General Security**

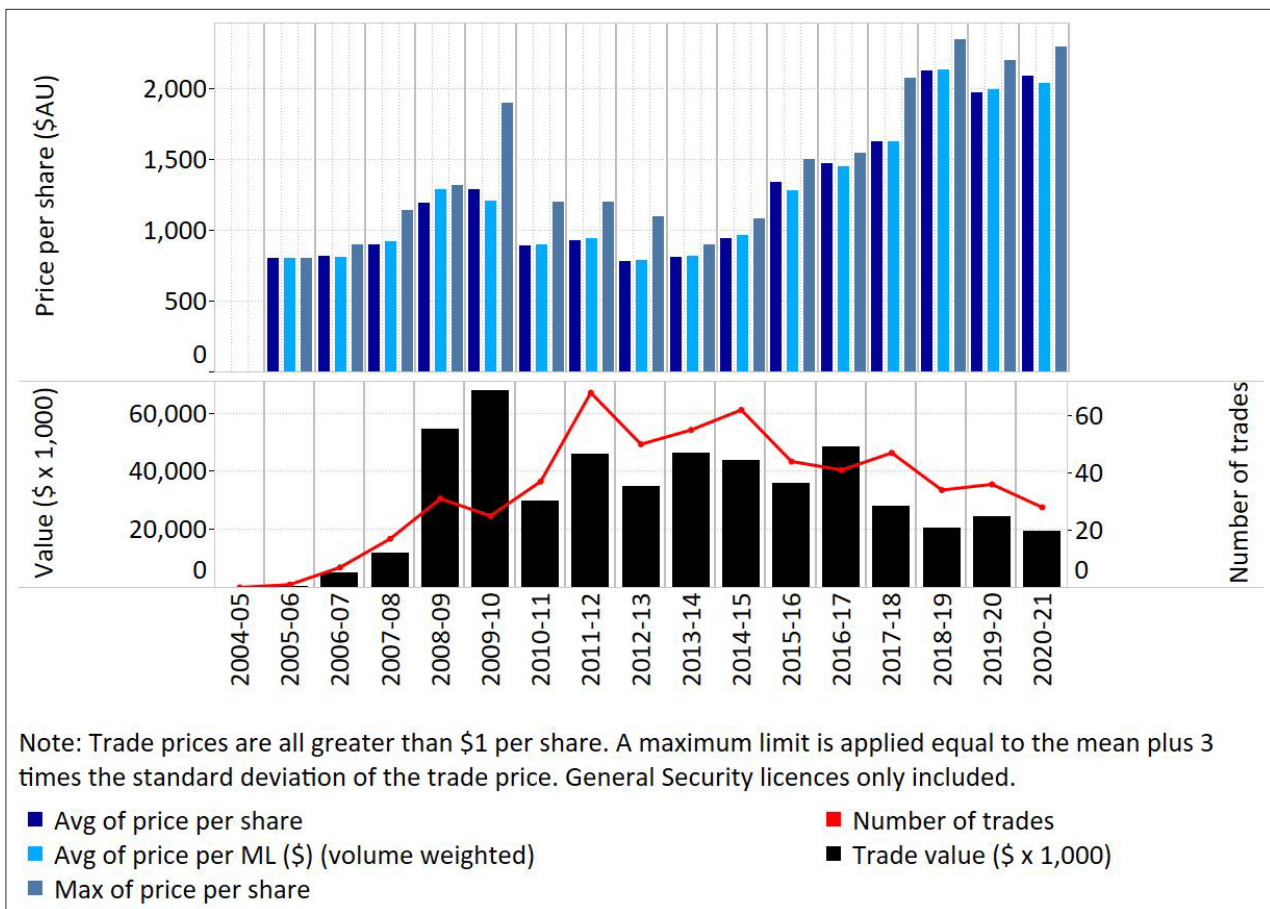




Figure 32: General Security average share price relative comparison for reporting period

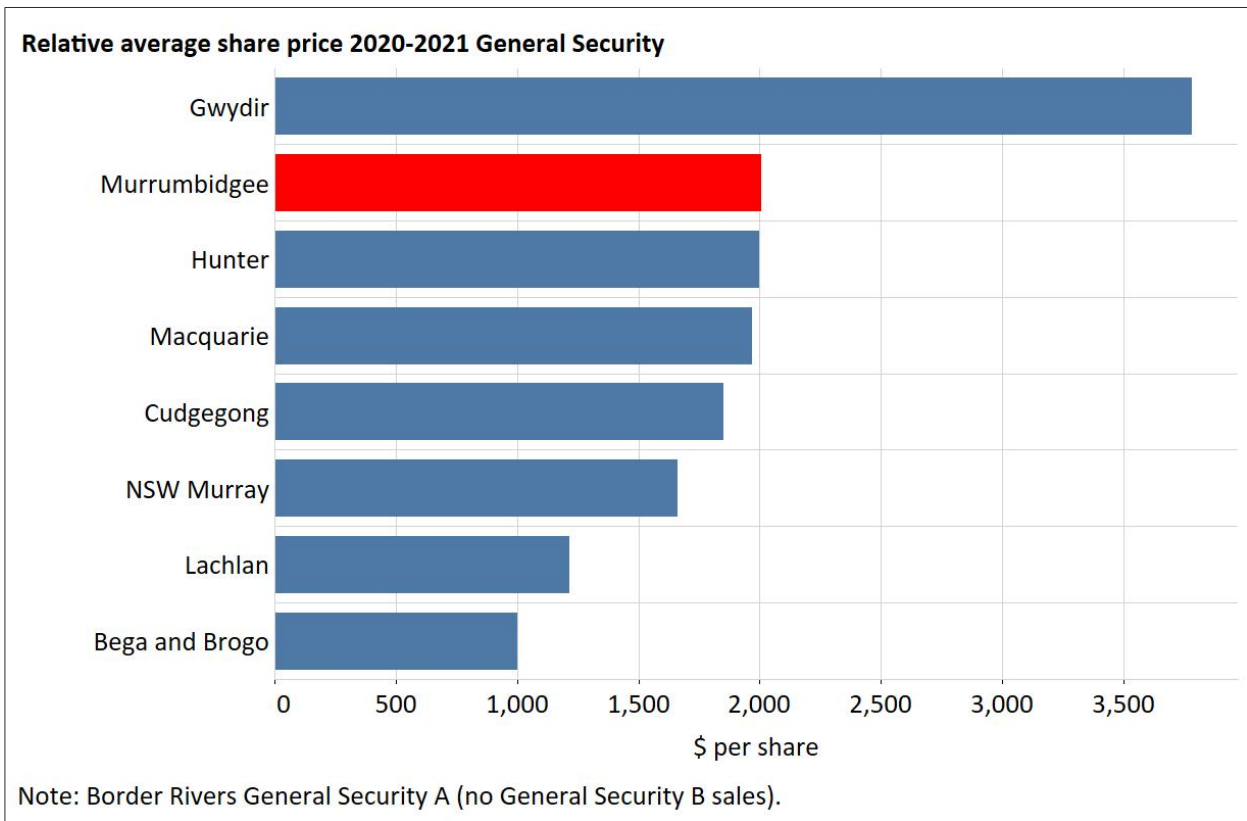


Figure 33: Share assignments commercial statistics—High Security

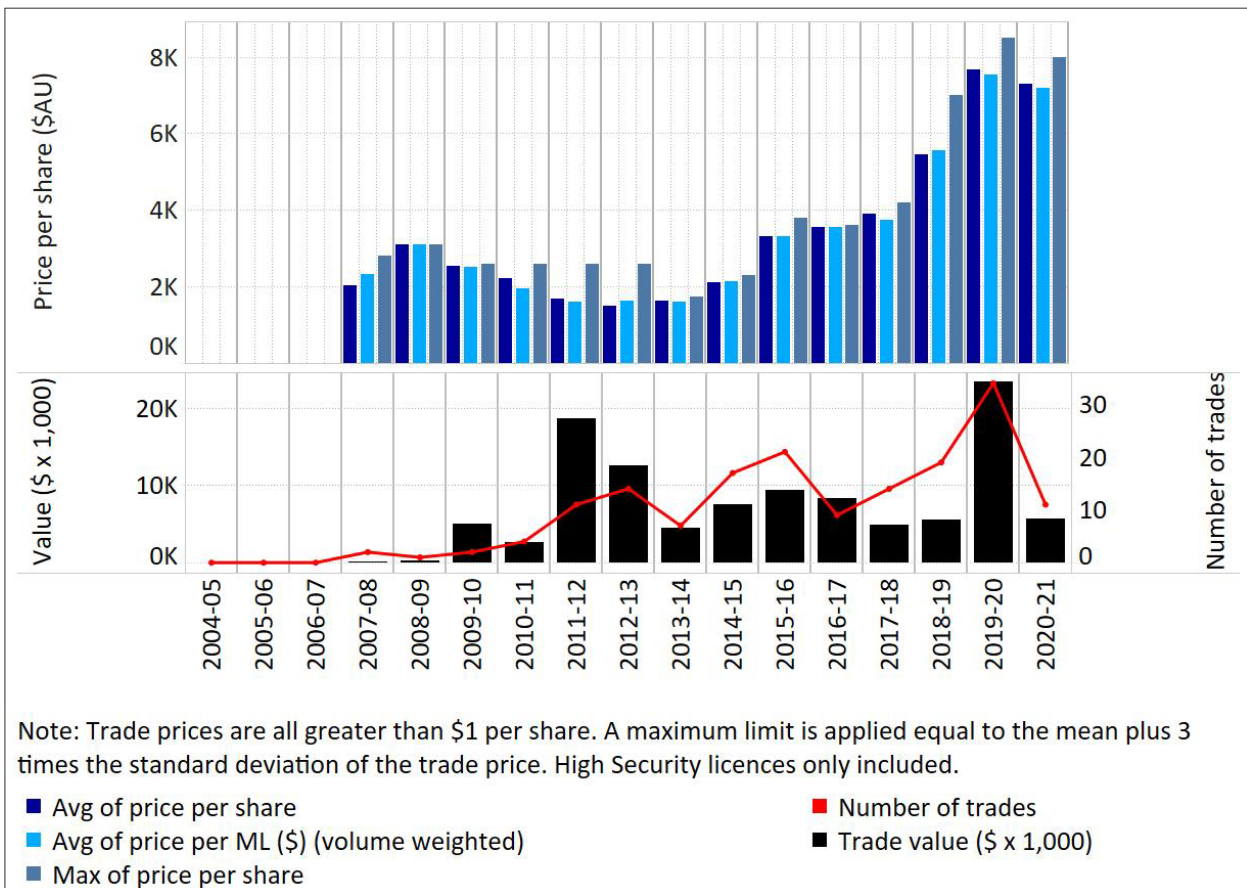


Figure 34: High Security average share price relative comparison for reporting period

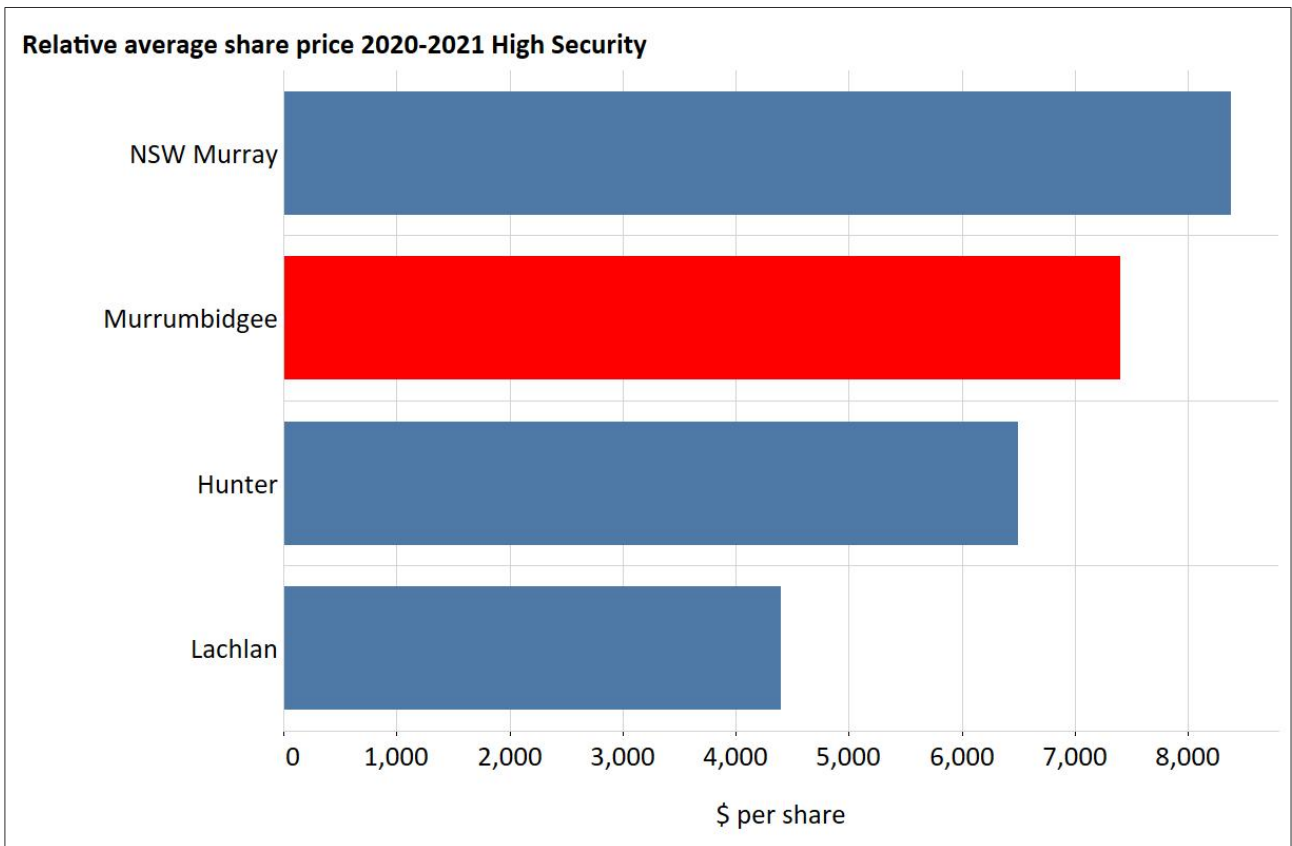
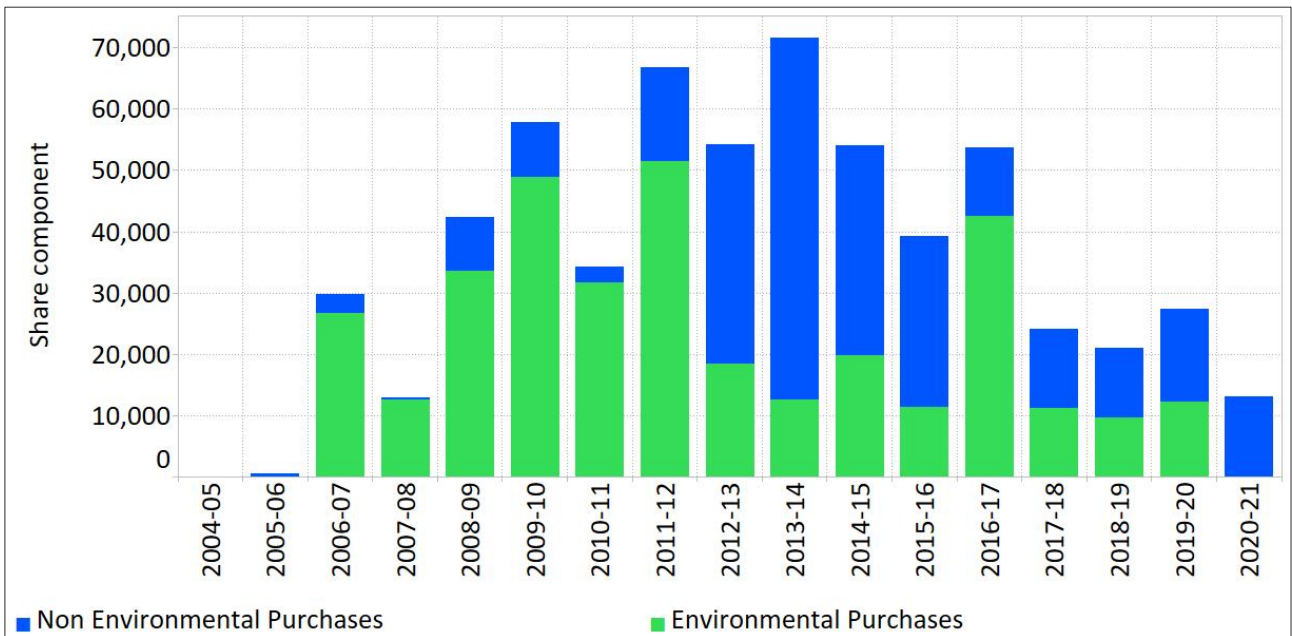
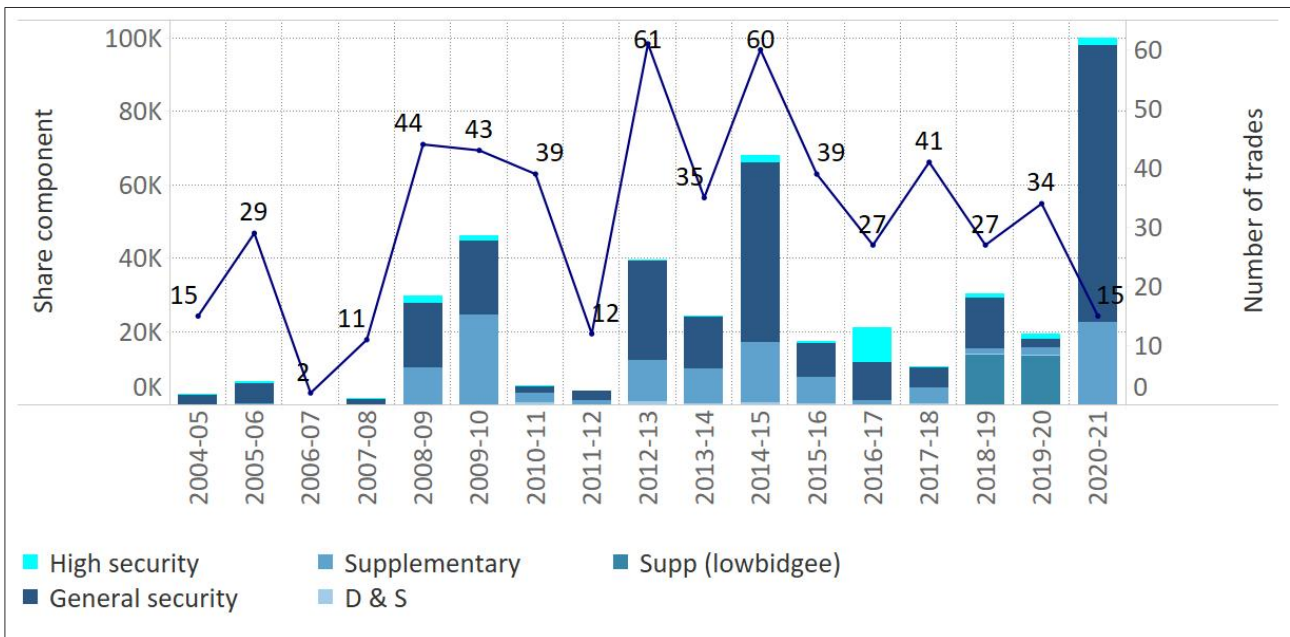


Figure 35: Total share assignments and held environmental purchases<sup>11</sup>



<sup>11</sup> Only includes transactions where the total consideration of the dealing exceeds \$1. All licence categories have been included.

Figure 36: Change of holder commercial statistics<sup>11</sup>



### Held environmental water

- There was no change to the held environmental water portfolio in the reporting period (Figure 37).
- A total of 1,152,608 shares (across all categories of access licence) were managed for environmental purposes as of 30 June 2021<sup>12</sup>.
- A total of 359,279 megalitres (usage) was debited against held environmental licences, the second highest usage under water sharing plan management conditions (Figure 38).
- In addition to the account usage 105,925 megalitres accumulated in Murrumbidgee held environmental access licences (acquired under the water for rivers recovery program) was re-assigned for environmental releases in the Snowy, Snowy Montane and Murray River (Figure 39)<sup>13</sup>.
- Further details on held environmental account water is available in Note 6 of this document, while detailed information on where the water was used and the benefits achieved is available on the department’s Environment, Energy and Science website ([www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)) and the Australian Government’s Department of Agriculture, Water and Environment website ([www.environment.gov.au](http://www.environment.gov.au)).

<sup>12</sup> Excludes environmental savings acquired that have not been converted to an access licence.

<sup>13</sup> For further details see note 26 and [www.industry.nsw.gov.au/water/basins-catchments/snowy-river/initiative/water-recovery-savings-summary](http://www.industry.nsw.gov.au/water/basins-catchments/snowy-river/initiative/water-recovery-savings-summary)



Figure 37: Held environmental water share component in the Murrumbidgee<sup>14</sup>

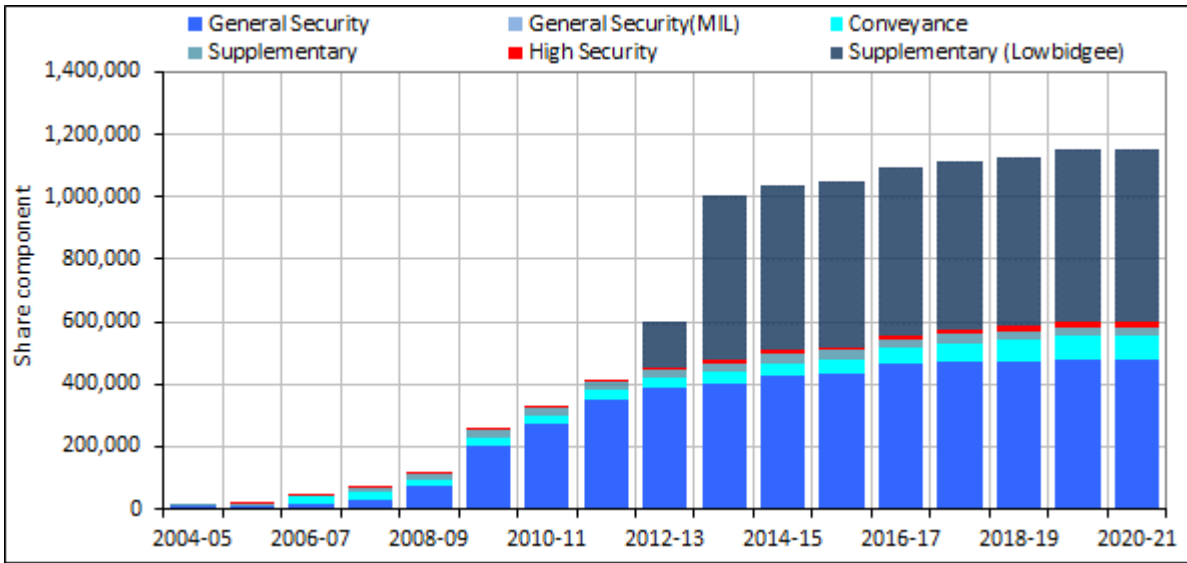
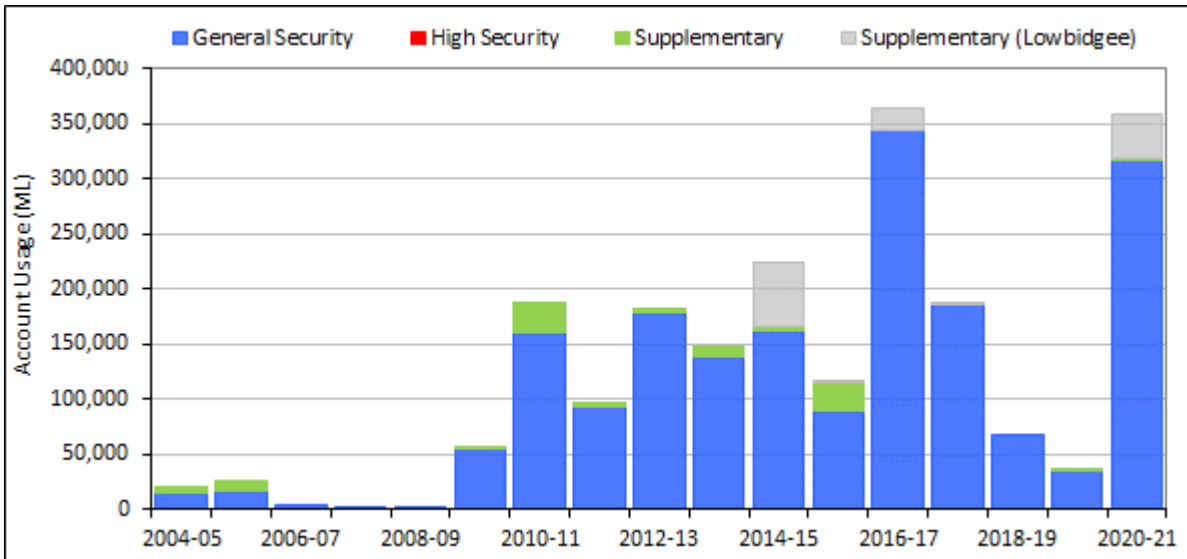
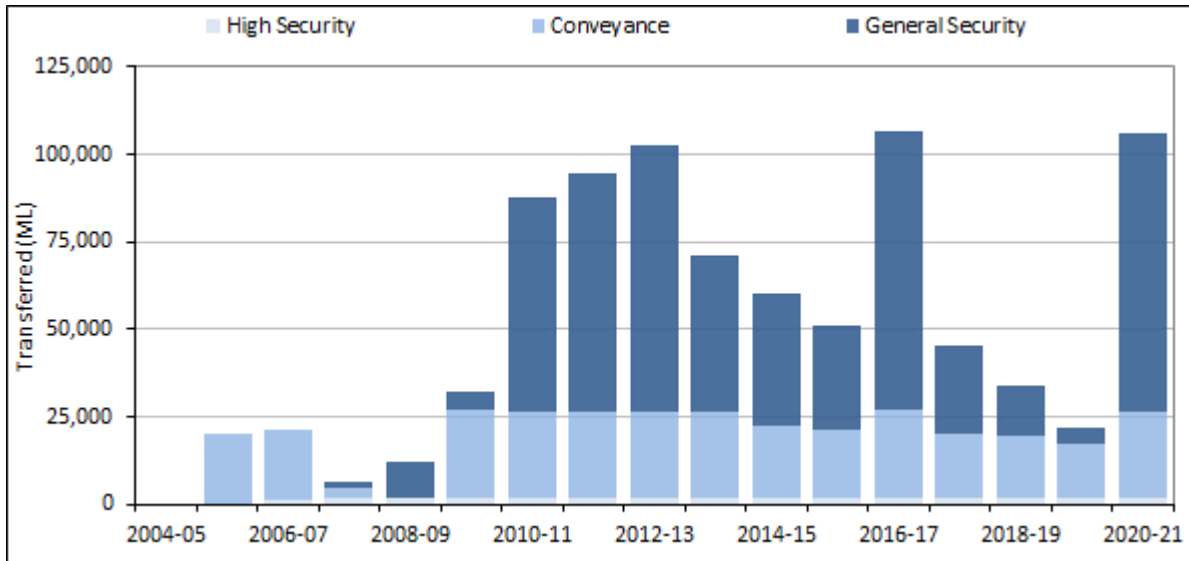


Figure 38: Held environmental water account usage in the Murrumbidgee



<sup>14</sup> Figures represent share at the conclusion of the water year. The licence category Supplementary (Lowbidgee) was created in 2012–13. Figures represent share at the conclusion of the water year.

Figure 39: Murrumbidgee allocation transferred out of the Murrumbidgee (water for rivers program)



### Planned environmental water

A wide range of environmental provisions including fixed volumetric targets (e.g. end of system targets), rules based (e.g. translucent storage releases), and account based (discretionally utilised for environmental assets, e.g. environmental water allowance accounts) are implemented through the water sharing plan. A full description of these provisions is provided in Note 7.

- Of the account based planned environmental water a total of 154,065 megalitres of planned environmental water was delivered during the reporting period. This volume was made up of deliveries from the translucent/translucent under release account, the Environmental Water Allowance 1 account (EWA1), Water Allowance 2 account (EWA2) and the Environmental Water Allowance 3 (EWA3) account (Figure 40).
- Additionally, the total water released from Burrinjuck Dam under the translucent/translucent rules of the water sharing plan was 188,652 megalitres. The total water released from Blowering Dam under translucent release requirements was 199,635 megalitres.
- The required translucent and translucent environmental releases from Burrinjuck storage for the reporting period are presented in Figure 42, along with the actual storage releases.
- The required translucent environmental releases from Blowering storage for the reporting period are presented in Figure 43, along with the actual storage releases.
- Performance against minimum flow requirements for Balranald and Darlot are illustrated in Figure 44 and Figure 45 respectively. Refer to Note 19 for further details.

Figure 40: Total planned environmental water deliveries from Burrinjuck Dam<sup>15</sup>

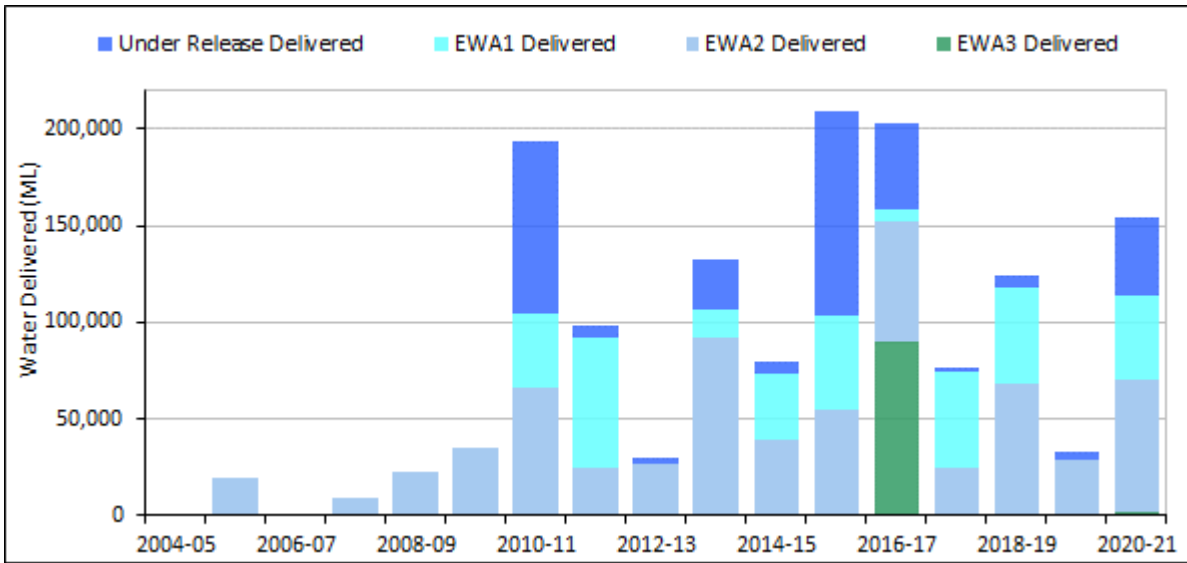
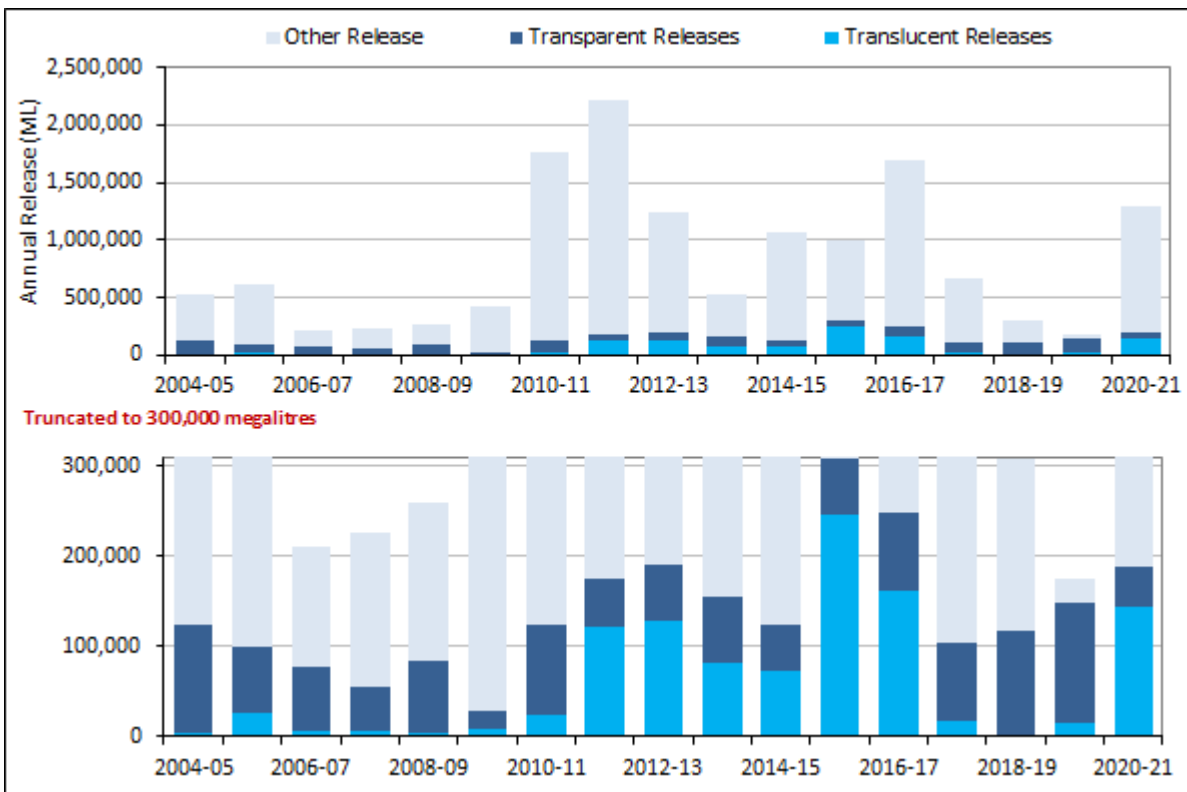


Figure 41: Transparent/translucent releases from Burrinjuck Dam



<sup>15</sup> Under release delivered refers to releases made above the minimum required environmental translucent or transparent releases. The water is effectively used to offset any occurrences where the actual release was less than the required release.

Figure 42: Required environmental releases at Burrinjuck Dam versus actual releases

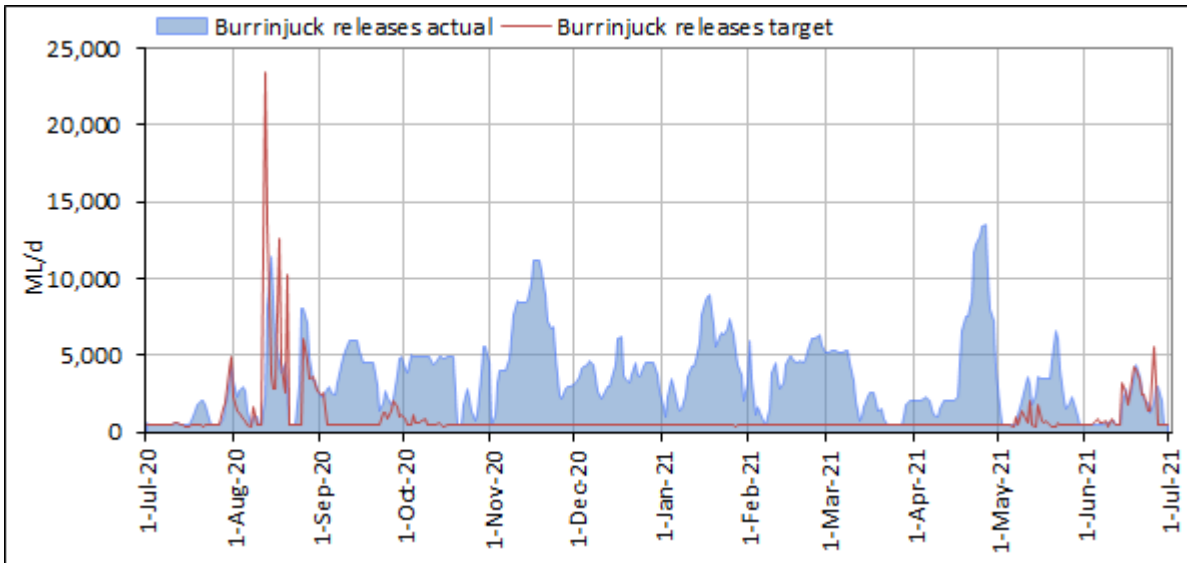


Figure 43: Required environmental releases at Blowering Dam versus actual releases

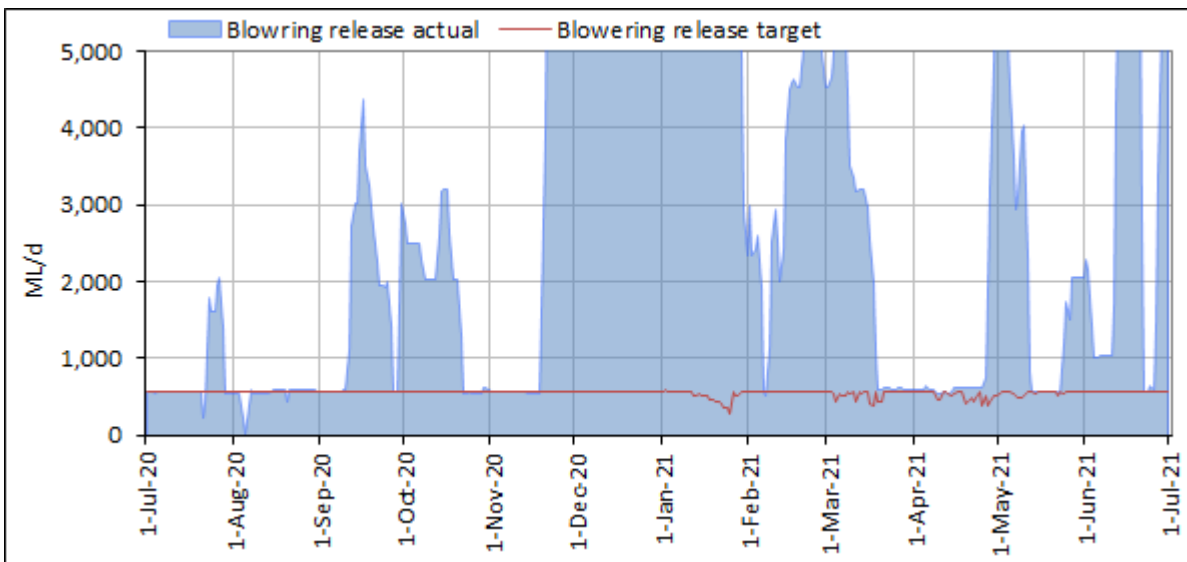


Figure 44: Murrumbidgee River at Balranald minimum flow target and deliveries

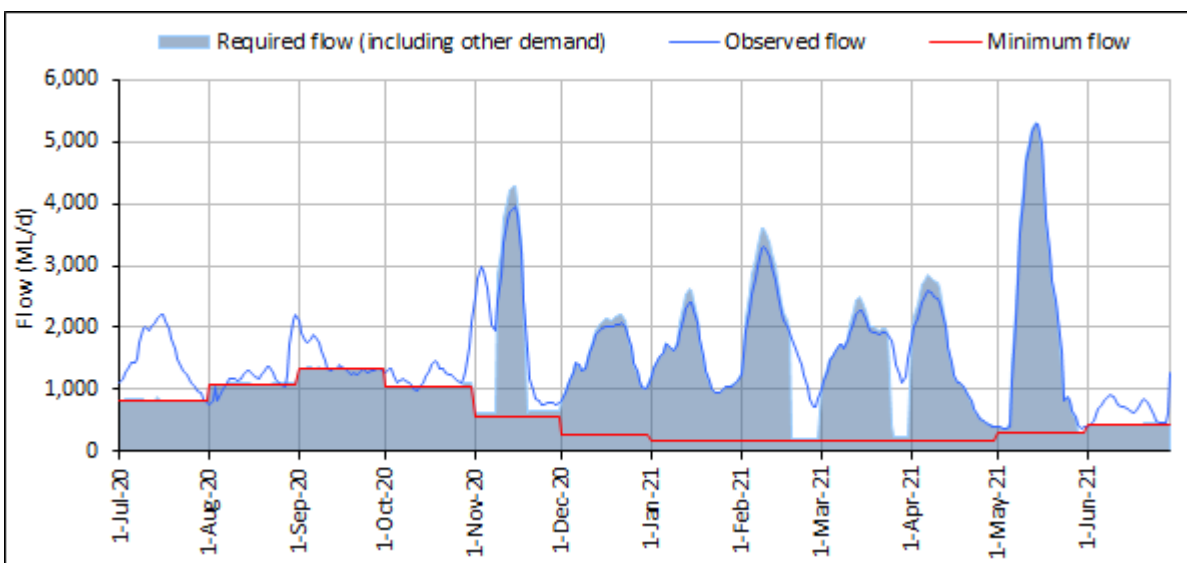
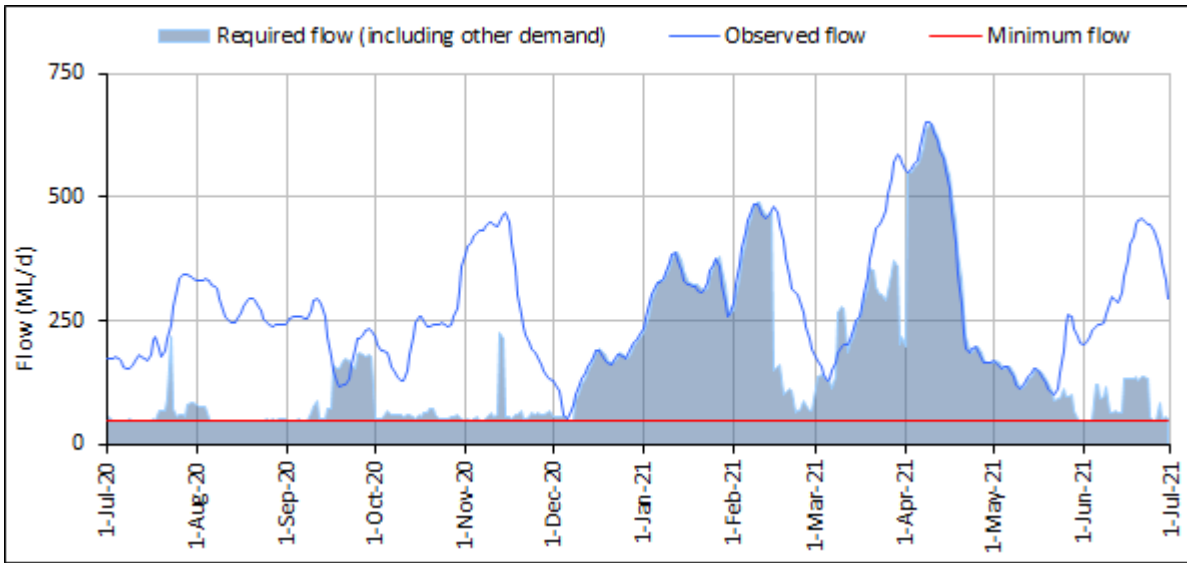


Figure 45: Billabong Creek at Darlot minimum flow target and deliveries



# Water accounting statements

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## Significant water accounting policies

The water accounting statements in this GPWAR have been prepared using an accrual basis of accounting. All figures are in megalitres (ML).

We have excluded the 'Statement of Physical Flows' from this GPWAR as all transactions have been presented in the statements 'Water Assets and Liabilities' and 'Changes in Water Assets and Water Liabilities'. We have included a physical flow diagram that represents the physical movements of water to more clearly depict those accounting processes associated with physical flow movement.

For general information on how to interpret the water accounting statements, refer to the *Guide to General Purpose Water Accounting Reports* available from the department's website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Quantification of data

#### Data accuracy

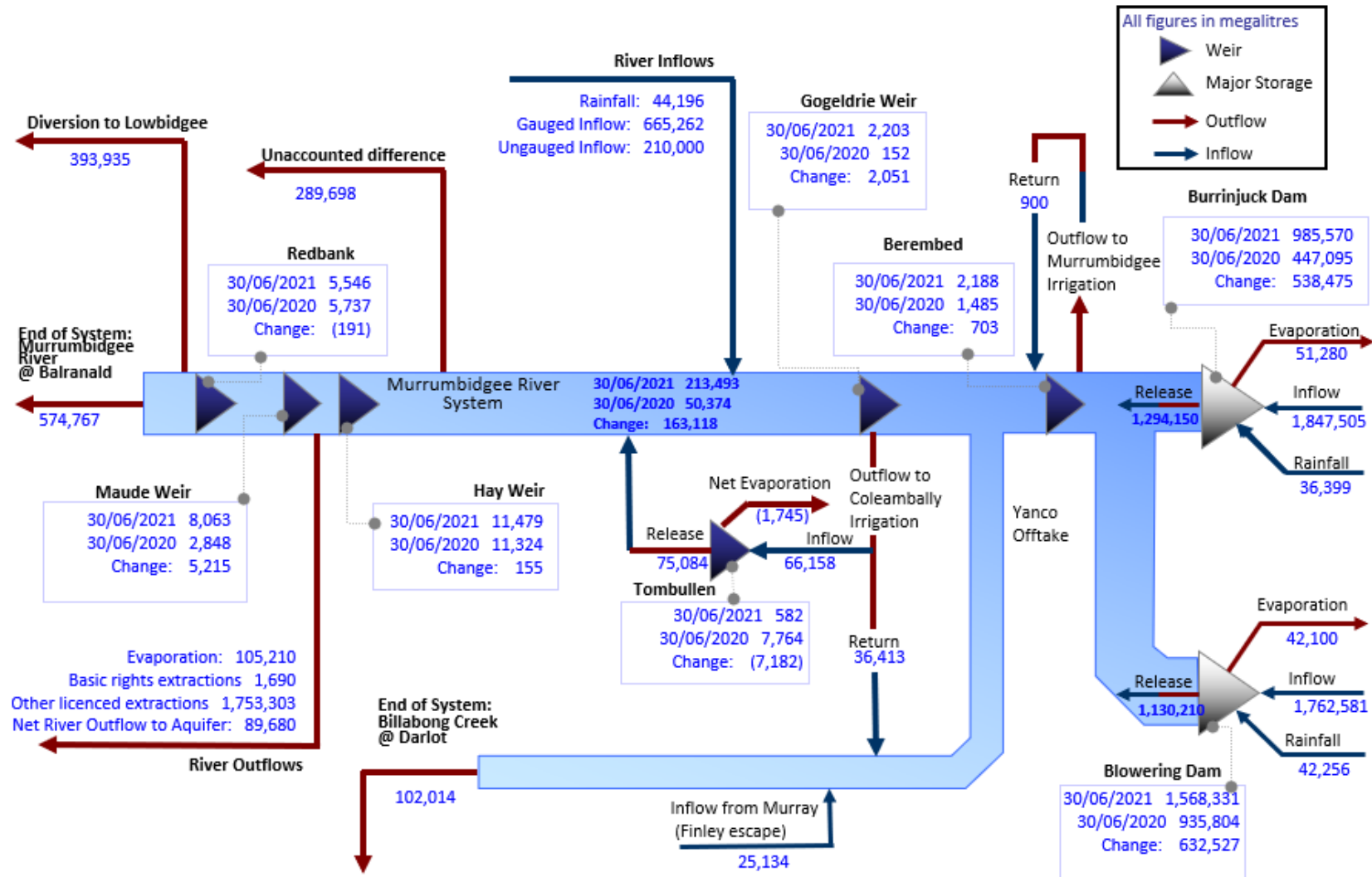
The data used to account for water movement and management in the reporting entity has been obtained from a variety of sources and systems. The data ranges from observed values where a high accuracy would be anticipated through to modelled results and estimates where accuracy can be highly variable depending on a range of factors. To improve accuracy and prevent misuse of the data in the accounts, we have added an accuracy assessment to all figures in the water accounting statements (see Table 8).

**Table 8: Water account data accuracy estimates key**

Accuracy	Description
A <sup>16</sup>	+/- 0% Data is determined rather than estimated or measured. Therefore, the number contains no inaccuracies.
A	+/- 10%
B	+/- 25%
C	+/- 50%
D	+/- 100%

<sup>16</sup> Non-physical administration items, such as available water determinations, trading and carryover volumes are assumed to have no inherent error for the purposes of this report. Items are reported as extracted from the Department of Planning, Industry and Environment's Water group corporate database

## 2020–21 Murrumbidgee physical flow mass balance diagram



Note: Outflow to Coleambally and Murrumbidgee Irrigation is accounted in the total river extraction transaction. River inflows and outflows are totalled for the regulated accounting extent. River extractions considers gross diversions (recredits), in-stream e-water use and ordered water leaving the system that accounted in other outflow items (detailed in note 21).



# Statement of water assets and water liabilities

For the year ended 30 June 2021

In all tables (..) denotes a negative value.

## Surface water assets

1.Surface water storage	Accuracy	Notes	30-06-2021	30-06-2020
Blowering	A	10	1,568,331	935,804
Burrinjuck	A	10	985,570	447,095
Redbank Weir	A	10	5,546	5,737
Berembed Weir	A	10	2,188	1,485
Gogeldrie Weir	A	10	2,203	152
Hay Weir	A	10	11,479	11,324
Maude Weir	A	10	8,063	2,848
Tombullen Storage	A	10	582	7,764
Murrumbidgee River	B	11	213,493	50,374
<b>Total surface water storage (Asws)</b>	-	-	<b>2,797,455</b>	<b>1,462,584</b>
<i>Change in surface water storage</i>	-	-	<i>1,334,871</i>	<i>361,640</i>

2.Claims to water	Accuracy	Notes	30-06-2021	30-06-2020
Daily release balance (DRB)	A1	7	26,220	39,207

## Surface water liabilities

3.Allocation account balances	Accuracy	Notes	30-06-2021	30-06-2020
Domestic and Stock	A1	1	(12)	(30)
Domestic and Stock (Domestic)	A1	1	(8)	(12)
Domestic and Stock (Stock)	A1	1	(2)	0
High Security	A1	1	(16)	(4)
Regulated River Conveyance	A1	1	0	267
Coleambally Irrigation conveyance	A1	1	7,747	4,952
Murrumbidgee Irrigation Conveyance	A1	1	11,739	669
General Security	A1	1	415,016	352,198
<b>Total allocation account balances (Lalloc)</b>	-	-	<b>434,464</b>	<b>358,040</b>
<i>Change in allocation accounts</i>	-	-	<i>76,424</i>	<i>206,500</i>

4.Planned environmental water provisions	Accuracy	Notes	30-06-2021	30-06-2020
Environmental water allowance 1	A1	7	6,247	482
Environmental water allowance 2	A1	7	14,306	48,761
Translucent-Transparent under release account	A1	7	(2,271)	(8,832)
<b>Total PEW balances (Leca)</b>	-	-	<b>18,282</b>	<b>40,411</b>
<i>Change in planned environmental water balances</i>	-	-	<i>(22,129)</i>	<i>34,340</i>

5.Intervalley trade account	Accuracy	Notes	30-06-2021	30-06-2020
Intervalley trade account (IVT)	A1	5	92,337	6,244

## Surface water net assets

6.Surface water net assets	Accuracy	Notes	30-06-2021	30-06-2020
<b>Net surface water assets (Asws-Lalloc-Leca)</b>	-	-	<b>2,278,591</b>	<b>1,097,096</b>
<i>Change in net surface water assets</i>	-	-	<i>1,181,495</i>	<i>147,258</i>

# Changes in water assets and water liabilities

For the year ended 30 June 2021 (1 of 4)

## 1. Changes in surface water storage (physical water balance)

Surface water storage inflows	Accuracy	Notes	30-06-2021	30-06-2020
Blowering Dam	-	-	-	-
Inflow (see note 12 for components)	A	8&12	1,762,581	1,115,080
Rainfall	B	13	42,256	21,972
Burrinjuck Dam	-	-	-	-
Inflow	A	12	1,847,505	324,287
Rainfall	B	13	36,399	11,910
Tombullen storage	-	-	-	-
Inflow	A	9	66,157	20,344
Murrumbidgee River	-	-	-	-
Rainfall	B	16	44,196	25,772
Inflow (measured)	A	14	665,262	240,311
Inflow (estimated)	C	15	210,000	80,000
Inflow Other (Murrumbidgee and Coleambally irrigation returns (note 17), Finley Escape (note 14))	A	14&17	62,447	55,334
River inflow from aquifer	D	25	6,700	11,960
River inflow from storage releases (Burrinjuck, Blowering, Tombullen)	A	18	2,499,444	1,085,557
<b>Total surface water storage increases (Isws)</b>	-	-	<b>7,242,947</b>	<b>2,992,526</b>
Surface water storage outflows	Accuracy	Notes	30-06-2021	30-06-2020
Blowering Dam	-	-	-	-
Evaporation	B	13	42,100	34,160
Release	A	18	1,130,210	893,646
Burrinjuck Dam	-	-	-	-
Evaporation	B	13	51,280	28,063
Release	A	18	1,294,150	175,767
Tombullen storage	-	-	-	-
Storage release	A	18	75,084	15,841
Net evaporation	B	13	(1,745)	3,355
Murrumbidgee River	-	-	-	-
Evaporation	B	16	105,210	95,456
Flow leaving (Balranald, Darlot, Lowbidgee)	A	19&20	1,070,716	537,800
Other extractions from river	A	21	1,753,303	524,428
BLR Extractions	C	22	1,690	1,690
River outflow to aquifer	D	25	96,380	59,440
<b>Total surface water storage decreases (Dsws)</b>	-	-	<b>5,618,377</b>	<b>2,369,646</b>
Unaccounted difference (Outflow) (Usws)	A1	24	289,698	261,241
Net surface water storage changes	Accuracy	Notes	30-06-2021	30-06-2020
<b>Net surface water storage inflow (Isws - Dsws - Usws)</b>	-	-	<b>1,334,871</b>	<b>361,640</b>

## Changes in water assets and water liabilities

For the year ended 30 June 2021 (2 of 4)

### 2. Changes in claims to water

Increases	Accuracy	Notes	30-06-2021	30-06-2020
Daily release balance (DRB)	A1	7	28	15,073
<b>Total DRB account increases (ldrb)</b>	-	-	<b>28</b>	<b>15,073</b>

Decreases	Accuracy	Notes	30-06-2021	30-06-2020
Daily release balance (DRB)	A1	7	13,015	1,116
<b>Total DRB account decreases (Ddrb)</b>	-	-	<b>13,015</b>	<b>1,116</b>

### 3. Changes in allocation accounts

Allocation account increases	Accuracy	Notes	30-06-2021	30-06-2020
Available water determination	-	-	-	-
Domestic and Stock	A1	2	19,260	20,985
Domestic and Stock (Domestic)	A1	2	272	271
Domestic and Stock (Stock)	A1	2	10,626	12,883
Coleambally Irrigation conveyance	A1	2	125,048	111,605
Murrumbidgee Irrigation Conveyance	A1	2	242,558	156,298
Regulated River Conveyance	A1	2	2,752	327
Local water utility	A1	2	23,816	23,816
High Security	A1	2	364,279	345,516
High Security (Aboriginal)	A1	2	2,150	2,150
High Security (Research)	A1	2	300	300
High Security (Town Water Supply)	A1	2	19,769	19,769
General Security	A1	2	1,543,564	208,122
Unregulated flow demand	-	-	-	-
Supplementary water	A	23	138,227	11,844
Supplementary water (lowbidgee)	A	23	50,661	0
Uncontrolled flow	A	23	7	16,602
Assignments in	A	4	1,052,772	538,531
<b>Total allocation account increases (laa)</b>	-	-	<b>3,596,060</b>	<b>1,469,017</b>

## Changes in water assets and water liabilities

For the year ended 30 June 2021 (3 of 4)

Allocation account decreases	Accuracy	Notes	30-06-2021	30-06-2020
Account usage	-	-	-	-
Domestic and Stock	A	3	14,369	14,654
Domestic and Stock (Domestic)	A	3	100	119
Domestic and Stock (Stock)	A	3	9,664	9,062
Coleambally Irrigation conveyance	A	3	85,107	24,236
Murrumbidgee Irrigation Conveyance	A	3	183,870	59,514
Regulated River Conveyance	A	3	0	0
Local water utility	A	3	7,246	10,954
High Security	A	3	294,830	250,515
High Security (Aboriginal)	A	3	1,398	0
High Security (Research)	A	3	300	300
High Security (Town Water Supply)	A	3	19,769	19,769
General Security	A	3	1,212,091	125,141
Supplementary Water	A	3	138,227	11,844
Supplementary water (Lowbidgee)	A	3	50,661	0
Other usage	-	-	-	-
General Security (uncontrolled flow access)	A	23	7	16,602
Account forfeits	-	-	-	-
Domestic and Stock	A1	1	4,873	4,519
Domestic and Stock (Domestic)	A1	1	168	149
Domestic and Stock (Stock)	A1	1	964	1,661
Local water utility	A1	1	14,635	10,954
High Security	A1	1	1,916	1,356
High Security (Aboriginal)	A1	1	752	2,150
High Security (Research)	A1	1	0	0
High Security (Town Water Supply)	A1	1	0	0
General Security	A1	1	18,849	799
Transfer to Snowy (e-water savings)	-	-	-	-
Coleambally Irrigation conveyance	A1	1&26	3,500	3,005
Murrumbidgee Irrigation Conveyance	A1	1&26	20,226	12,638
Regulated River conveyance	A1	1&26	1,050	60
High Security	A1	1&26	1,885	1,791
General Security	A1	1&26	79,264	4,529
Access licence cancelled	-	-	-	-
Domestic and Stock	A1	1	0	1,725
Domestic and Stock (Stock)	A1	1	0	2,256
Assignments out	A	4	1,353,915	672,217
<b>Total allocation account decreases (Daa)</b>	-	-	<b>3,519,636</b>	<b>1,262,517</b>
<b>Net change in allocation accounts</b>	<b>Accuracy</b>	<b>Notes</b>	<b>30-06-2021</b>	<b>30-06-2020</b>
<b>Net allocation account balance increases (Iaa - Daa)</b>	-	-	<b>76,424</b>	<b>206,500</b>

## Changes in water assets and water liabilities

For the year ended 30 June 2021 (4 of 4)

### 4. Changes in environmental provisions

Increases	Accuracy	Notes	30-06-2021	30-06-2020
Account increases	A1	7	286,959	64,937
<b>Total PEW account increases (Ipew)</b>	-	-	<b>286,959</b>	<b>64,937</b>

Decreases	Accuracy	Notes	30-06-2021	30-06-2020
Account usage	A1	7	114,022	28,640
Other account decreases	A1	7	195,066	1,957
<b>Total PEW account decreases (Deca)</b>	-	-	<b>309,088</b>	<b>30,597</b>

Total change	Accuracy	Notes	30-06-2021	30-06-2020
<b>Net environmental contingency allowance increase (Ipew - Dpew)</b>	-	-	<b>(22,129)</b>	<b>34,340</b>

### 5. Changes in intervalley trade account

Increases	Accuracy	Notes	30-06-2021	30-06-2020
Net inflow from Murray (Finley Escape in/Darlot out)	A1	5	4,223	2,563
Water traded out of Murrumbidgee	A1	5	323,131	197,072
<b>Total IVT account increases (Iivt)</b>	-	-	<b>327,354</b>	<b>199,635</b>

Decreases	Accuracy	Notes	30-06-2021	30-06-2020
IVT clearances (via Balranald or Snowy RAR transfer)	A1	5	249,108	156,726
Net tagged trade	A1	5	(29,835)	(7,976)
Water traded into Murrumbidgee	A1	5	21,988	63,386
<b>Total IVT account decreases (Divt)</b>	-	-	<b>241,260</b>	<b>212,136</b>

### 6. Overall changes

Change in surface water net assets	Accuracy	Notes	30-06-2021	30-06-2020
<b>Change in net surface water assets (Isws - Dsws - Usws + Idrb - Ddrb - Iaa + Daa - Ipew + Dpew - Iivt + Divt)</b>	-	-	<b>1,181,495</b>	<b>147,258</b>

# Note disclosures

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## Reconciliation and future prospect descriptions

This section contains reconciliation and future prospect descriptions for the Murrumbidgee regulated river water source.

Reconciliation of change in net water assets to net change in physical water storage <sup>17</sup>	30 June 2021	30 June 2020
<b>Change in net surface water assets</b>	1,181,495	147,258
<b>Apply non-physical asset and liability adjustments<sup>18</sup></b>		
plus net <i>increase</i> in Allocation Accounts	76,424	206,500
plus net <i>increase</i> intervalley trade account	86,094	(12,501)
minus net <i>increase</i> in claims to water: Daily release balance	12,987	(13,957)
plus net <i>increase</i> in claims to water: EWA1	5,765	0
plus net <i>increase</i> in claims to water: EWA2	(34,455)	36,297
plus net <i>increase</i> in claims to water: Translucent/Transparent	6,561	(1,957)
<b>total non-physical adjustments</b>	<b>153,376</b>	<b>214,382</b>
<b>equals net change in physical surface water storage</b>	<b>1,334,871</b>	<b>361,640</b>

Reconciliation of closing water storage to total surface water assets <sup>19</sup>	30 June 2021	30 June 2020
<b>Closing water storage</b>		
surface water storage	<b>2,797,455</b>	<b>1,462,584</b>
plus:		
other claims to water (DRB)	26,220	39,207
less:		
other claims to water (IVT)	92,337	6,244
volume in river	213,493	50,374
<b>Total surface water assets to meet future commitments</b>	<b>2,517,845</b>	<b>1,445,173</b>

<sup>17</sup> All figures can be derived from or found directly in the Water Accounting Statements of the General Purpose Water Accounting Report. All figures are in megalitres.

<sup>18</sup> Non-physical changes to the water asset added back into the 'Change in Net Water Assets' to reflect the physical volumetric change in the water storage from the previous year. All figures are reported in megalitres and can be derived from or found directly in the Water Accounting Statements of this report

<sup>19</sup> Reconciliation provides an assessment of the water callable to meet current commitments as of June 30 and provide for new allocations July 1. The assessment does not consider expected inflows in the coming water year. Water owed due to intervalley trading is deducted, as with volume in river to provide a more conservative estimate of useable resources.

## Water assets available to settle water liabilities and future commitments within 12 months of reporting date

Final datasets for reporting in the GPWAR, including meter readings by field staff, were not available in time to produce an informative 12-month forecast for report users.


In lieu of this, the links below give the latest water availability information for the Murrumbidgee River Water Source. This includes carryovers and available water determinations at the time of reporting, along with probability information about the Murrumbidgee system’s reliability.

### Latest water availability

You can find the latest information on water availability, including water allocation statements, water allocations summaries and 2021–22 available water determinations, on the NSW Department of Planning and Environment webpage at [industry.nsw.gov.au/water/allocations-availability/allocations](https://industry.nsw.gov.au/water/allocations-availability/allocations)

You can also subscribe to receive the latest updates.


## Allocations



**How water is allocated**

Water sharing plans are developed in consultation with the community to determine how much water can be extracted and set aside.


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**Summary of current water allocations**

A listing of current water allocation for major regulated rivers.


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**Water allocation statements**

Water allocation statements are issued to announce an increase in an allocation for a specific water source and licence category.


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**Available water determinations**

Available water determinations inform licensed water users how much water they can extract. They are issued on 1 July and periodically throughout the year.

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**Outlook & forecasts**

Read about how our yearly forecasting and outlook report for the southern basins.



## Latest storage volumes

Real-time information on current storage volumes is located at [realtimedata.waternsw.com.au](http://realtimedata.waternsw.com.au)

## Significant events since 2020–21

System inflows have been tracking well below historical averages since the closure of the reporting period. At the time of writing (March 2020) Burrinjuck and Blowering were 37% and 39% of full supply capacity respectively.

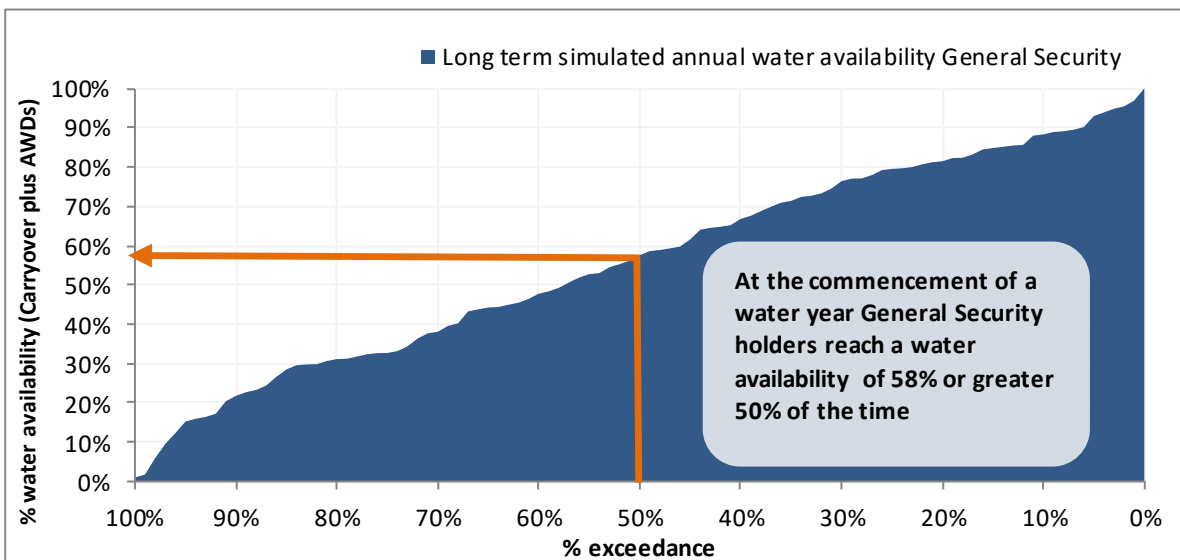
## System reliability

The latest long-term planning model (Source) reflecting a water sharing plan management scenario in the Murrumbidgee provides indicative system reliability information for the commencement and closure of a watering season for General Security holders<sup>20</sup>.

At the commencement of the water year, the long-term simulation shows that General Security licence holders receive a water availability of 97% for 1% of the time and exceed 58% for 50% of the time (Figure 46).

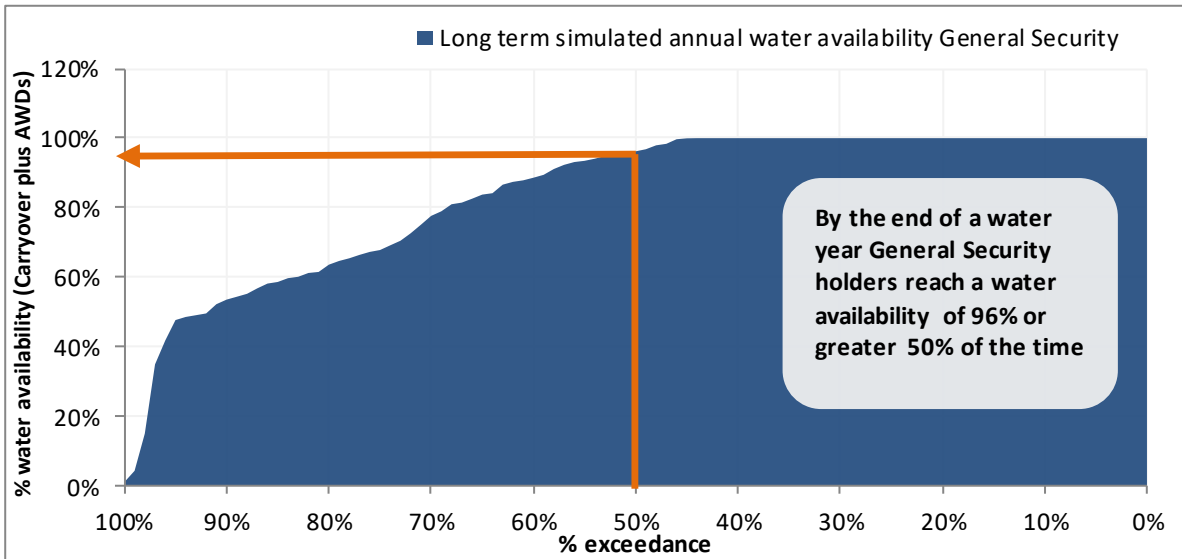
Availabilities for General Security significantly increase throughout the water year as storages are supplemented with new inflow. By the end of the water year, the simulation results indicate that a water availability of 100% is achieved, 44% of the time, 96% achieved 50% of the time and equalling or exceeding 35% for 97% of the time (Figure 47).

**Figure 46: Start of water year simulated availability for General Security access licences**



<sup>20</sup> Modelled data simulated as July to June water year. Simulation period 1 June 1890 to 30 June 2016, run rev.112. Modelling results presented for the GPWAR future prospects are for guidance only. Models used by state water agencies are subject to continuous improvements and updates. The reliability described in this report represents the information available when the report was compiled and may vary from reliability computed in the latest version of the models.

Figure 47: End of water year simulated availability for General Security access licences



Carryovers and available water determinations since this reporting period<sup>21</sup>

**Table 9. Murrumbidgee carryovers and available water determinations 2021–22 (as of February 2022)**

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
<b>Coleambally Irrigation (Conveyance)</b>											
1-Jul-21	Opening	130,000	-	-	0.0%	0.0%	7,747	0	7,747	6.0%	6.0%
1-Jul-21	AWD 0.8585 ML per share	130,000	110,154	110,154	84.7%	84.7%	117,901	0	117,901	90.7%	90.7%
15-Jul-21	AWD 0.0479 ML per share	130,000	5,788	115,942	4.5%	89.2%	123,689	0	123,689	95.1%	95.1%
16-Aug-21	AWD 0.0037 ML per share	130,000	447	116,389	0.3%	89.5%	124,136	0	124,136	95.5%	95.5%
15-Oct-21	AWD 0.0206 ML per share	130,000	2,489	118,878	1.9%	91.4%	126,626	0	126,626	97.4%	97.4%
1-Nov-21	AWD 0.0693 ML per share	130,000	3,374	122,253	2.6%	94.0%	130,000	0	130,000	100.0%	100.0%
<b>Domestic and Stock</b>											
1-Jul-21	Opening	19,260	-	-	0.0%	0.0%	(11)	0	(11)	(0.1)%	(0.1)%
1-Jul-21	AWD 100.0 %	19,260	19,260	19,260	100.0%	100.0%	19,249	0	19,249	99.9%	99.9%
<b>Domestic and Stock [Domestic]</b>											
1-Jul-21	Opening	274	-	-	0.0%	0.0%	(5)	0	(5)	(1.8)%	(1.8)%
1-Jul-21	AWD 100.0 %	274	274	274	100.0%	100.0%	269	0	269	98.2%	98.2%
<b>Domestic and Stock [Stock]</b>											
1-Jul-21	Opening	10,626	-	-	0.0%	0.0%	(2)	0	(2)	0.0%	0.0%
1-Jul-21	AWD 100.0 %	10,626	10,626	10,626	100.0%	100.0%	10,624	0	10,624	100.0%	100.0%
<b>Local Water Utility</b>											
1-Jul-21	Opening	23,816	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-21	AWD 100.0 %	23,816	23,816	23,816	100.0%	100.0%	23,816	0	23,816	100.0%	100.0%
<b>Murrumbidgee Irrigation (Conveyance)</b>											
1-Jul-21	Opening	243,000	-	-	0.0%	0.0%	11,739	0	11,739	4.8%	4.8%
1-Jul-21	AWD 0.7315 ML per share	243,000	176,522	176,522	72.6%	72.6%	188,261	0	188,261	77.5%	77.5%
15-Jul-21	AWD 0.1358 ML per share	243,000	27,686	204,208	11.4%	84.0%	215,947	0	215,947	88.9%	88.9%
16-Aug-21	AWD 0.0263 ML per share	243,000	5,362	209,569	2.2%	86.2%	221,308	0	221,308	91.1%	91.1%

<sup>21</sup> See note 2 for announcements relating to the reporting period

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
15-Oct-21	AWD 0.1064 ML per share	243,000	21,692	231,261	8.9%	95.2%	243,000	0	243,000	100.0%	100.0%
1-Nov-21	AWD 0.0 ML per share	243,000	0	231,261	0.0%	95.2%	243,000	0	243,000	100.0%	100.0%
<b>Regulated River (Conveyance)</b>											
1-Jul-21	Opening	2,968	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-21	AWD 0.3 ML per share	2,968	890	890	30.0%	30.0%	890	0	890	30.0%	30.0%
15-Jul-21	AWD 0.2 ML per share	2,968	594	1,484	20.0%	50.0%	1,484	0	1,484	50.0%	50.0%
16-Aug-21	AWD 0.02 ML per share	2,968	59	1,543	2.0%	52.0%	1,543	0	1,543	52.0%	52.0%
15-Oct-21	AWD 0.11 ML per share	2,968	326	1,870	11.0%	63.0%	1,870	0	1,870	63.0%	63.0%
1-Nov-21	AWD 0.37 ML per share	2,968	1,098	2,968	37.0%	100.0%	2,968	0	2,968	100.0%	100.0%
<b>Regulated River (General Security)</b>											
1-Jul-21	Opening	1,891,995	-	-	0.0%	0.0%	415,058	0	415,058	21.9%	21.9%
1-Jul-21	AWD 0.3 ML per share	1,891,995	567,599	567,599	30.0%	30.0%	982,657	0	982,657	51.9%	51.9%
15-Jul-21	AWD 0.2 ML per share	1,891,995	378,399	945,998	20.0%	50.0%	1,361,056	0	1,361,056	71.9%	71.9%
16-Aug-21	AWD 0.02 ML per share	1,891,995	37,837	983,835	2.0%	52.0%	1,398,893	0	1,398,893	73.9%	73.9%
15-Oct-21	AWD 0.11 ML per share	1,891,995	208,127	1,191,962	11.0%	63.0%	1,607,020	0	1,607,020	84.9%	84.9%
1-Nov-21	AWD 0.37 ML per share	1,891,995	285,196	1,477,158	15.1%	78.1%	1,892,216	0	1,892,216	100.0%	100.0%
<b>Regulated River (High Security)</b>											
1-Jul-21	Opening	364,279	-	-	0.0%	0.0%	(16)	0	(16)	0.0%	0.0%
1-Jul-21	AWD 0.95 ML per share	364,279	346,068	346,068	95.0%	95.0%	346,051	0	346,051	95.0%	95.0%
1-Nov-21	AWD 0.05 ML per share	364,279	18,212	364,280	5.0%	100.0%	364,263	0	364,263	100.0%	100.0%
<b>Regulated River (High Security) [Aboriginal Cultural]</b>											
1-Jul-21	Opening	2,150	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-21	AWD 100.0 %	2,150	2,150	2,150	100.0%	100.0%	2,150	0	2,150	100.0%	100.0%
<b>Regulated River (High Security) [Research]</b>											
1-Jul-21	Opening	300	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
1-Jul-21	AWD 100.0 %	300	300	300	100.0%	100.0%	300	0	300	100.0%	100.0%
<b>Regulated River (High Security) [Town Water Supply]</b>											
1-Jul-21	Opening	19,769	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-21	AWD 100.0 %	19,769	19,769	19,769	100.0%	100.0%	19,769	0	19,769	100.0%	100.0%
<b>Supplementary Water</b>											
1-Jul-21	Opening	198,780	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-21	AWD 1.0 ML per share	198,780	198,780	198,780	100.0%	100.0%	198,780	0	198,780	100.0%	100.0%
<b>Supplementary Water (Lowbidgee)</b>											
1-Jul-21	Opening	747,000	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-21	AWD 1.0 ML per share	747,000	747,000	747,000	100.0%	100.0%	747,000	0	747,000	100.0%	100.0%

## Note 1—Allocation accounts

This note is reference for the volume held in the allocation accounts at the time of reporting but also relevant for the various processes that occur to either increase or decrease an allocation account throughout the water year.

The volume of water that is in the licence allocation accounts at the time of reporting is a net balance for the relevant licence category and represents that water that can be carried forward to the next water year as dictated by the carryover rules in place for that year or required under the water sharing plan.

A negative number for the carryover figure indicates that more usage has occurred than has been allocated to the account, and the deficit must be carried forward to the next season.

Water that is in accounts at the end of a water year but is not permitted to be carried over is forfeited and has been represented as a decrease in water liability. The accounting presented is relevant to licence category and therefore is inclusive of licences held by environmental holders (environmental holdings are specifically detailed in note 6)

Supplementary water was not strictly represented as a water liability in the accounting statements the same way other licence categories were. Details about supplementary usage and events can be found in Note 23.

### Data type

Derived from measured data

### Policy

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

Available on the department's website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/Department of Planning and Environment—Water Accounting System (joint ownership)

### Methodology

The carryover volume of water in the allocation account for each licence category is determined once all transactions and end of year forfeit rules have been applied. Below is list of typical transactions that can apply to an allocation account:

- available water determination (detailed in note 2)
- licenced usage (detailed in note 3)
- forfeiture due to:
  - carryover rules
  - account spillage as a result of AWD
  - licence conversions

- environmental allocation transferred for delivery outside of the Murrumbidgee (detailed in note 26).
- trade of allocation water between accounts (detailed in notes 4 and 5)
- determined carryover volume.

## Additional information

Table 11 provides a balanced summary<sup>22</sup> of the water allocation accounts for each category of access licence. Table 10 provides a description of each of the table components.

**Table 10: Explanatory information for allocation account summary**

Heading		Description
Licence category		An issued access licence category defined in the management areas water sharing plan. Typically, categories are specific purpose in nature (e.g. for town water supply), or reflect reliability in the resource sharing process (e.g. High Security)
Share		The total volume of units for the specified licence category at 30 June.
Opening		The volume of allocation that has been carried forward from the previous year to this accounting period
AWD		The total annual volume of allocation added to the access licences in the specified category by available water determinations (allocation announcements)
Licences	New	Increase in account water as a result of issuing new access licences with an opening balance
	Cancelled	Decrease in account water as a result of licence cancellation that was holding allocation
Assignments	In	Increase in account water as a result of temporary trade in
	Out	Decrease in account water as a result of temporary trade out
Transfer to Snowy for environmental release		Water transferred from Murrumbidgee allocation accounts to allow environmental flows in the Snowy, Snowy Montane and Murray Rivers. This physical delivery is allowed for by reducing the amount of water Snowy Hydro are required to release to the Murrumbidgee valley.
Snowy Borrow	In	Increase in account water as a result of a transfer of water in from another reporting entity e.g. Snowy Borrow.
	Out	Decrease in account water as a result of a transfer of water out of the reporting entity e.g. Snowy Borrow repayment.
Account Usage	Controlled	Volume of allocation debited to licences that is extracted or diverted from the river, or alternatively released from storage to support environmental outcomes. Allocation is supplied under controlled conditions through regulating structures such as dams and weirs.
	Uncontrolled	Volume of allocation debited to licences that is extracted or diverted from the river, or alternatively protected from extraction to support environmental outcomes. Allocation is supplied under uncontrolled flow conditions - either unregulated water sources, or from event flows in regulated systems unable to be captured in storage.
During year forfeit		This is the account water forfeited throughout the year as a result of the accounting rules specified in the water sharing plan. Forfeited water may occur due to account limits being reached, conversions between licence categories and various types of other licence dealings.

<sup>22</sup> Final accounting balances include adjustments to carryover, AWD, end of year forfeit and carry forward to allow for the effect of removing allocation account water from a Murrumbidgee access licence in order to call that water for release for Snowy River and Murray increased environmental flows. As a result, these accounts will vary from provisional information available on departmental dashboards and from annual allocation summary data provided in the GPWAR (carryover item).



Heading	Description
Available Balance	That part of the remaining account balance that is available to be taken at the conclusion of the water year. The balance is prior to carry forward rules being applied.
Non-Available Balance	That part of the remaining account balance that is not available to be taken at the conclusion of the water year (30 June). The balance is prior to carry forward rules being applied.
End of Year Forfeit	Account water that is forfeited at the end of the water year as a result of carryover rules that restrict the carry forward volume to the next water year
Carry Forward	This represents the account water that is permitted to be carried forward into the next water year as determined by the carryover rules.

Table 11: Allocation account balance summary<sup>22</sup>

Share 30/06/2021	Opening	AWD	New licence	Cancelled licence	Assignments in	Assignments out	Snowy savings transfer	Controlled use	Uncontrolled use	During year forfeit	Available balance	Unavailable balance	End of year forfeit	Carry forward
<b>Coleambally Irrigation (Conveyance)</b>														
130,000	4,952	125,048	0	0	1,895	35,541	3,500	85,107	0	0	7,747	0	0	7,747
<b>Domestic and Stock</b>														
19,260	(29)	19,260	0	0	0	0	0	14,369	0	0	4,862	0	4,873	(11)
<b>Domestic and Stock (Domestic)</b>														
274	(12)	272	0	0	0	0	0	100	0	0	160	0	168	(8)
<b>Domestic and Stock (Stock)</b>														
10,626	0	10,626	0	0	0	0	0	9,664	0	0	962	0	964	(2)
<b>Local Water Utility</b>														
23,816	0	23,816	0	0	65	2,000	0	7,246	0	0	14,635	0	14,635	0
<b>Murrumbidgee Irrigation (Conveyance)</b>														
243,000	668	242,558	0	0	0	27,391	20,226	183,870	0	0	11,739	0	0	11,739
<b>Conveyance</b>														
2,968	267	2,752	0	0	0	1,968	1,050	0	0	0	0	0	0	0
<b>General Security</b>														
1,891,995	352,198	1,543,564	0	0	931,746	1,102,288	79,264	1,212,091	7	0	433,865	0	18,849	415,016
<b>High Security</b>														
364,279	(4)	364,279	0	0	119,066	184,727	1,885	294,830	0	0	1,899	0	1,916	(16)
<b>High Security (Aboriginal Cultural)</b>														
2,150	0	2,150	0	0	0	0	0	1,398	0	0	752	0	752	0
<b>High Security (Research)</b>														
300	0	300	0	0	0	0	0	300	0	0	0	0	0	0
<b>High Security (Town Water Supply)</b>														
19,769	0	19,769	0	0	0	0	0	19,769	0	0	0	0	0	0
<b>Supplementary Water</b>														
198,780	0	198,780	0	0	54,249	54,249	0	0	138,227	0	60,553	0	60,553	0
<b>Supplementary Water (Lowbidgee)</b>														
747,000	0	747,000	0	0	406,623	406,623	0	0	50,661	0	696,339	0	696,339	0

## Note 2—Available water determination (allocation announcement)

This is the process by which the regulated surface water asset available for use within the regulated system is determined and shared. It determines the volume of water that is to be added to an individual's licence allocation account. Announcements of allocations are made on a seasonal basis—usually corresponding with the financial year and are updated on a regular basis or following significant inflow events. Under the *Water Management Act 2000* the announcements are termed available water determinations, while prior to this under the *Water Act 1912* this process was known as an allocation announcement.

### Data type

Derived from measured data.

### Policy

*Water Management Act 2000* (NSW).

- Chapter 3—Part 2 Access Licences.
- Clause 59—Available Water Determinations.

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 7—Limits to the availability of water
- Division 2—Available Water Determinations.

Available on the department's website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/Department of Planning and Environment—Water Accounting System (Joint ownership of system).

Available Water Determination Register—Department of Planning and Environment website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Methodology

The AWD procedure itself is generally divided into 2 sections: the available water asset, and system commitments. Once system commitments have been met the available water asset is then available for distribution to the access licence categories in order of priority (see

Table 12). The volume of the announced allocation is expressed as the percentage of share component of the licence.

**Table 12: Priority of access licence categories**

Licence Category	AWD Priority
General Security	Low
High Security	High
Conveyance	Low
Domestic and Stock <sup>23</sup>	Very High
Local Water Utility	Very High

**Available water asset**—this is calculated by summing the water currently available in storage, future (minimum) inflows to the system, and additional volumes due to recessions of inflows from the current levels to the minimum inflow levels. Also taken into consideration is the reduction of the total inflows to the system for those that arrive too late in the season to be useful.

**System commitments**—this is an assessment of the existing commitments that must be delivered from the Available Water Asset in either the current or future years. Key components include:

- essential supplies include things such as town water supplies, stock and domestic requirements, industrial use and permanent plantings (e.g. orchards, vineyards) and environmental allowances
- undelivered account water is the water that is already in accounts that is yet to be provided
- end of system flow requirement is an estimate of the flow that to pass through the system as a result of operation of the system
- losses which are estimated as the amount of water that will be lost by the system either through evaporation or in the process of delivering the water via transmission losses.

The AWD for supplementary licence accounts is a separate process and is not dependent on water asset available. It is made once at the start of the year and unless there is a management change due to the growth in use strategy it is maintained at the maximum value prescribed in the plan generally 100% of share component. Therefore, it is not considered to create a liability on the system and is only considered in terms of an extraction that reduces the water asset.

<sup>23</sup> Domestic and Stock is further broken down into three subcategories: Domestic and Stock, Domestic and Stock (Domestic) and Domestic and Stock (Stock). For the purposes of this report and the general-purpose water account they have been aggregated.

## Additional information

The following pages contain the annual allocation summary report. Below is a table containing report notes to help interpret the report.

**Table 13: Allocation summary report descriptions**

Table heading	Description
Opening	Remaining allocation account balances at the conclusion of the previous season that can be carried forward to this season.
Individual announcement	Actual announcement made to each licence category
Share component (Entitlement)	Sum of the licensed volume of water within the licence category on the announcement date.
Announced volume	Volume of water credited to accounts within a licence category as a result of the announcement made.
Cumulative volume	Cumulative total of the announced volumes for the water year and licence category.
Percent of share component (Entitlement)	This is the announced volume expressed as a percentage of the entitlement applicable on the date.
Balance made available	Sum of water available in allocation accounts that has been made available to be taken during the season.
Non-available balance	Water allocated that is not accessible at this point in time.
Supplementary water	Water that is not a stored source of water and is only made available if an uncontrolled flow event occurs.

Table 14: Murrumbidgee Regulated River Available Water Determination announcements for the reporting period<sup>24</sup>

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
<b>Coleambally Irrigation (Conveyance)</b>											
1-Jul-20	Opening	130,000	-	-	0.0%	0.0%	4,952	0	4,952	3.8%	3.8%
1-Jul-20	AWD 0.8585 ML per share	130,000	111,605	111,605	85.9%	85.9%	116,557	0	116,557	89.7%	89.7%
15-Jul-20	AWD 0.0 ML per share	130,000	0	111,605	0.0%	85.9%	116,557	0	116,557	89.7%	89.7%
3-Aug-20	AWD 0.0 ML per share	130,000	0	111,605	0.0%	85.9%	116,557	0	116,557	89.7%	89.7%
17-Aug-20	AWD 0.0 ML per share	130,000	0	111,605	0.0%	85.9%	116,557	0	116,557	89.7%	89.7%
1-Sep-20	AWD 0.0367 ML per share	130,000	4,771	116,376	3.7%	89.5%	121,328	0	121,328	93.3%	93.3%
15-Sep-20	AWD 0.0037 ML per share	130,000	481	116,857	0.4%	89.9%	121,809	0	121,809	93.7%	93.7%
1-Oct-20	AWD 0.0037 ML per share	130,000	481	117,338	0.4%	90.3%	122,290	0	122,290	94.1%	94.1%
15-Oct-20	AWD 0.0112 ML per share	130,000	1,456	118,794	1.1%	91.4%	123,746	0	123,746	95.2%	95.2%
2-Nov-20	AWD 0.0075 ML per share	130,000	975	119,769	0.8%	92.1%	124,722	0	124,722	95.9%	95.9%
9-Nov-20	AWD 0.015 ML per share	130,000	1,950	121,719	1.5%	93.6%	126,671	0	126,671	97.4%	97.4%
16-Nov-20	AWD 0.015 ML per share	130,000	1,950	123,669	1.5%	95.1%	128,621	0	128,621	98.9%	98.9%
1-Dec-20	AWD 0.0037 ML per share	130,000	481	124,150	0.4%	95.5%	129,102	0	129,102	99.3%	99.3%
15-Dec-20	AWD 0.0019 ML per share	130,000	247	124,397	0.2%	95.7%	129,350	0	129,350	99.5%	99.5%
15-Jan-21	AWD 0.0431 ML per share	130,000	651	125,048	0.5%	96.2%	130,000	0	130,000	100.0%	100.0%
<b>Domestic and Stock</b>											
1-Jul-20	Opening	19,260	-	-	0.0%	0.0%	(29)	0	(29)	(0.2)%	(0.2)%
1-Jul-20	AWD 100.0 %	19,260	19,260	19,260	100.0%	100.0%	19,231	0	19,231	99.8%	99.8%
<b>Domestic and Stock [Domestic]</b>											
1-Jul-20	Opening	271	-	-	0.0%	0.0%	(12)	0	(12)	(4.4)%	(4.4)%
1-Jul-20	AWD 100.0 %	271	271	271	100.0%	100.0%	259	0	259	95.6%	95.6%

<sup>24</sup> Carryover figures are unadjusted in this report for the accounting of water for rivers savings. Post adjustments for the process are applied within the annual accounting summaries (Note 1), which results in variance of the carryover stated.

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
<b>Domestic and Stock [Stock]</b>											
1-Jul-20	Opening	10,626	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 100.0 %	10,626	10,626	10,626	100.0%	100.0%	10,626	0	10,626	100.0%	100.0%
<b>Local Water Utility</b>											
1-Jul-20	Opening	23,816	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 100.0 %	23,816	23,816	23,816	100.0%	100.0%	23,816	0	23,816	100.0%	100.0%
<b>Murrumbidgee Irrigation (Conveyance)</b>											
1-Jul-20	Opening	243,000	-	-	0.0%	0.0%	442	0	442	0.2%	0.2%
1-Jul-20	AWD 0.641 ML per share	243,000	155,763	155,763	64.1%	64.1%	156,205	0	156,205	64.3%	64.3%
15-Jul-20	AWD 0.009 ML per share	243,000	2,187	157,950	0.9%	65.0%	158,392	0	158,392	65.2%	65.2%
3-Aug-20	AWD 0.0045 ML per share	243,000	1,094	159,044	0.4%	65.4%	159,486	0	159,486	65.6%	65.6%
17-Aug-20	AWD 0.0905 ML per share	243,000	21,992	181,035	9.1%	74.5%	181,477	0	181,477	74.7%	74.7%
1-Sep-20	AWD 0.0815 ML per share	243,000	19,804	200,840	8.1%	82.6%	201,282	0	201,282	82.8%	82.8%
15-Sep-20	AWD 0.0136 ML per share	243,000	3,305	204,144	1.4%	84.0%	204,587	0	204,587	84.2%	84.2%
1-Oct-20	AWD 0.0136 ML per share	243,000	3,305	207,449	1.4%	85.4%	207,891	0	207,891	85.6%	85.6%
15-Oct-20	AWD 0.0663 ML per share	243,000	16,111	223,560	6.6%	92.0%	224,002	0	224,002	92.2%	92.2%
2-Nov-20	AWD 0.0527 ML per share	243,000	12,806	236,366	5.3%	97.3%	236,808	0	236,808	97.5%	97.5%
9-Nov-20	AWD 0.0274 ML per share	243,000	6,192	242,558	2.5%	99.8%	243,000	0	243,000	100.0%	100.0%
1-Dec-20	AWD 0.0 ML per share	243,000	0	242,558	0.0%	99.8%	243,000	0	243,000	100.0%	100.0%
15-Dec-20	AWD 0.0 ML per share	243,000	0	242,558	0.0%	99.8%	243,000	0	243,000	100.0%	100.0%
15-Jan-21	AWD 0.0 ML per share	243,000	0	242,558	0.0%	99.8%	243,000	0	243,000	100.0%	100.0%
<b>Regulated River (Conveyance)</b>											
1-Jul-20	Opening	2,968	-	-	0.0%	0.0%	217	0	217	7.3%	7.3%
1-Jul-20	AWD 0.1 ML per share	2,968	297	297	10.0%	10.0%	513	0	513	17.3%	17.3%
15-Jul-20	AWD 0.04 ML per share	2,968	119	416	4.0%	14.0%	632	0	632	21.3%	21.3%
3-Aug-20	AWD 0.02 ML per share	2,968	59	475	2.0%	16.0%	691	0	691	23.3%	23.3%
17-Aug-20	AWD 0.16 ML per share	2,968	475	950	16.0%	32.0%	1,166	0	1,166	39.3%	39.3%

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
1-Sep-20	AWD 0.12 ML per share	2,968	356	1,306	12.0%	44.0%	1,522	0	1,522	51.3%	51.3%
15-Sep-20	AWD 0.02 ML per share	2,968	59	1,365	2.0%	46.0%	1,582	0	1,582	53.3%	53.3%
1-Oct-20	AWD 0.02 ML per share	2,968	59	1,425	2.0%	48.0%	1,641	0	1,641	55.3%	55.3%
15-Oct-20	AWD 0.06 ML per share	2,968	178	1,603	6.0%	54.0%	1,819	0	1,819	61.3%	61.3%
2-Nov-20	AWD 0.04 ML per share	2,968	119	1,721	4.0%	58.0%	1,938	0	1,938	65.3%	65.3%
9-Nov-20	AWD 0.08 ML per share	2,968	238	1,959	8.0%	66.0%	2,175	0	2,175	73.3%	73.3%
16-Nov-20	AWD 0.08 ML per share	2,968	237	2,196	8.0%	74.0%	2,413	0	2,413	81.3%	81.3%
1-Dec-20	AWD 0.02 ML per share	2,968	59	2,256	2.0%	76.0%	2,472	0	2,472	83.3%	83.3%
15-Dec-20	AWD 0.01 ML per share	2,968	30	2,285	1.0%	77.0%	2,502	0	2,502	84.3%	84.3%
15-Jan-21	AWD 0.23 ML per share	2,968	466	2,752	15.7%	92.7%	2,968	0	2,968	100.0%	100.0%
<b>Regulated River (General Security)</b>											
1-Jul-20	Opening	1,891,995	-	-	0.0%	0.0%	348,424	0	348,424	18.4%	18.4%
1-Jul-20	AWD 0.1 ML per share	1,891,995	189,200	189,200	10.0%	10.0%	537,623	0	537,623	28.4%	28.4%
15-Jul-20	AWD 0.04 ML per share	1,891,995	75,681	264,881	4.0%	14.0%	613,304	0	613,304	32.4%	32.4%
3-Aug-20	AWD 0.02 ML per share	1,891,995	37,838	302,719	2.0%	16.0%	651,142	0	651,142	34.4%	34.4%
17-Aug-20	AWD 0.16 ML per share	1,891,995	302,717	605,436	16.0%	32.0%	953,859	0	953,859	50.4%	50.4%
1-Sep-20	AWD 0.12 ML per share	1,891,995	227,043	832,479	12.0%	44.0%	1,180,902	0	1,180,902	62.4%	62.4%
15-Sep-20	AWD 0.02 ML per share	1,891,995	37,838	870,317	2.0%	46.0%	1,218,740	0	1,218,740	64.4%	64.4%
1-Oct-20	AWD 0.02 ML per share	1,891,995	37,844	908,161	2.0%	48.0%	1,256,584	0	1,256,584	66.4%	66.4%
15-Oct-20	AWD 0.06 ML per share	1,891,995	113,518	1,021,679	6.0%	54.0%	1,370,102	0	1,370,102	72.4%	72.4%
2-Nov-20	AWD 0.04 ML per share	1,891,995	75,682	1,097,361	4.0%	58.0%	1,445,783	0	1,445,783	76.4%	76.4%
9-Nov-20	AWD 0.08 ML per share	1,891,995	151,356	1,248,717	8.0%	66.0%	1,597,139	0	1,597,139	84.4%	84.4%
16-Nov-20	AWD 0.08 ML per share	1,891,995	147,623	1,396,340	7.8%	73.8%	1,744,762	0	1,744,762	92.2%	92.2%
1-Dec-20	AWD 0.02 ML per share	1,891,995	32,262	1,428,602	1.7%	75.5%	1,777,025	0	1,777,025	93.9%	93.9%
15-Dec-20	AWD 0.01 ML per share	1,891,995	14,322	1,442,924	0.8%	76.3%	1,791,346	0	1,791,346	94.7%	94.7%
15-Jan-21	AWD 0.23 ML per share	1,891,995	100,641	1,543,565	5.3%	81.6%	1,891,987	0	1,891,987	100.0%	100.0%



Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available (ML)	Balance not available (ML)	Balance total (ML)	Balance available (%)	Balance total (%)
<b>Regulated River (High Security)</b>											
1-Jul-20	Opening	364,279	-	-	0.0%	0.0%	(4)	0	(4)	0.0%	0.0%
1-Jul-20	AWD 0.95 ML per share	364,279	346,068	346,068	95.0%	95.0%	346,064	0	346,064	95.0%	95.0%
15-Jan-21	AWD 0.05 ML per share	364,279	18,212	364,279	5.0%	100.0%	364,276	0	364,276	100.0%	100.0%
<b>Regulated River (High Security) [Aboriginal Cultural]</b>											
1-Jul-20	Opening	2,150	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 100.0 %	2,150	2,150	2,150	100.0%	100.0%	2,150	0	2,150	100.0%	100.0%
<b>Regulated River (High Security) [Research]</b>											
1-Jul-20	Opening	300	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 100.0 %	300	300	300	100.0%	100.0%	300	0	300	100.0%	100.0%
<b>Regulated River (High Security) [Town Water Supply]</b>											
1-Jul-20	Opening	19,769	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 100.0 %	19,769	19,769	19,769	100.0%	100.0%	19,769	0	19,769	100.0%	100.0%
<b>Supplementary Water</b>											
1-Jul-20	Opening	198,780	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 1.0 ML per share	198,780	198,780	198,780	100.0%	100.0%	198,780	0	198,780	100.0%	100.0%
<b>Supplementary Water (Lowbidgee)</b>											
1-Jul-20	Opening	747,000	-	-	0.0%	0.0%	0	0	0	0.0%	0.0%
1-Jul-20	AWD 1.0 ML per share	747,000	747,000	747,000	100.0%	100.0%	747,000	0	747,000	100.0%	100.0%

## Note 3—Allocation account usage

This is the volume of water that is extracted, diverted or measured as usage and is accountable against an access licence issued under the water sharing plan. This figure excludes that water accounted as uncontrolled flow which is accounted for separately (see Note 23).

### Data type

Measured/administration data

### Policy

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

Available on the department's website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/ Department of Planning and Environment—Water Accounting System (Joint ownership of system).

### Methodology

Usage information is determined by either on-farm meters that measure extraction, gauges on diversion works or orders/releases when the volume cannot be effectively metered, such as an environmental watering event.

Meter readings are collected for individual licence holders at intervals during the year and converted via a calibration factor to a volume of water extracted. Water diverted from the river is measured by recording the height at either the gauge or weir with the volume diverted being derived by passing these heights through a rating table. With potentially multiple categories of access licences being extracted through the same pumps additional information and methodologies are required to separate use under the various licence categories. Below is a description of these:

- based on periods of announcement—during periods of supplementary water announcements extractions can be debited against the supplementary water licences
- usage based on water orders—users place orders for water against an access licence and usages are debited against accounts in proportion to the orders placed.

licence category apportionment—if no water orders are available water extracted is apportioned against categories of access licence in order of priority as set out in the table below. The prioritising is based on the nature of and rules around each of the licence categories.

Table 15 provides the order in which extractions are apportioned to access licence categories in the water accounting system. This is a generic list where not all categories will necessarily appear in this GPWAR. There are also various sub-categories of licence associated with some of the categories.

**Table 15: Licence category metered usage apportionment table**

Priority	Surface water
1	Supplementary
2	Uncontrolled Flow
3	Domestic and Stock
4	Regulated River High Security
5	Regulated River General Security
6	Conveyance
7	Local Water Utility
8	Major Water Utility

**Table 16: Account usage summary**

Category	Account allocation usage	Additional usage <sup>25</sup>
Coleambally Irrigation (Conveyance)	85,107	N/A
Domestic and Stock	14,369	N/A
Domestic and Stock [Domestic]	100	N/A
Domestic and Stock [Stock]	9,664	N/A
Local Water Utility	7,246	N/A
Murrumbidgee Irrigation (Conveyance)	183,870	N/A
Regulated River (Conveyance)	0	N/A
Regulated River (General Security)	1,212,091	7
Regulated River (High Security)	294,830	N/A
Regulated River (High Security) (Aboriginal Cultural)	1,398	N/A
Regulated River (High Security) (Research)	300	N/A
Regulated River (High Security) (Town Water Supply)	19,769	N/A
Supplementary Water	138,227	N/A
Supplementary Water (Lowbidgee)	50,661	N/A
<b>Total</b>	<b>2,017,633</b>	<b>7</b>

<sup>25</sup> Usage without debit to allocation account balance under the water sharing plans access to uncontrolled flow provisions

## Note 4—Allocation assignments (temporary trading)

This represents the temporary trading (allocation assignments) of water between allocation accounts within the regulated Murrumbidgee River, or between different water sources.

### Data type

Administration

### Policy

*Water Management Act 2000*

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 10 Access licence dealing rules
  - Clause 76 Assignment of water allocation dealings
  - Clause 77 Interstate access licence transfer and assignment of water allocation

Available on the Department of Planning and Environment Website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/ Department of Planning and Environment—Water Accounting System (Joint ownership of system).

Water Ordering and Usage database

### Methodology

Trading is permitted between certain categories of access licences and between certain water sources. This is detailed in the water sharing plan or stipulated under the licence holder's conditions.

The net effect of internal trading on committed water is zero for a water year, however these trades are still stipulated in the accounting statements to provide details on the volumes of water being traded.

Trade between water sources will either increase the committed liability for the year (trade into the Murrumbidgee) or decrease the committed liability for the year (trade out of the Murrumbidgee). The imbalance created from trading between water sources is monitored and managed with the intervalley trade account (see note 5).

### Additional information

Table 17 shows the internal trading figures between licence categories. All figures represent a volume in megalitres.

Table 17: Total allocation assignments in the Murrumbidgee Regulated River Water Source for the reporting period

To/From		To											
		Murrumbidgee						NSW Murray		South Australia	Victoria	Total	
		CI Conveyance	General security	High security	Local Water Utility	Supp.	Supp. (Lowbidgee)	General security	High security	Interstate licence	Interstate licence		
From	Murrumbidgee	CI Conveyance	-	35,541	-	-	-	-	-	-	-	-	35,541
		General security	1,895	723,850	104,553	-	-	261,638	7,853	348	2,151	1,102,288	
		High security	-	119,009	14,513	65	-	43,472	3,917	-	3,751	184,727	
		Local Water Utility	-	2,000	-	-	-	-	-	-	-	2,000	
		RR conveyance	-	1,968	-	-	-	-	-	-	-	1,968	
		Supplementary	-	-	-	-	54,249	-	-	-	-	54,249	
		Supplementary (Lowbidgee)	-	-	-	-	-	406,623	-	-	-	406,623	
		MI Conveyance	-	27,391	-	-	-	-	-	-	-	27,391	
		NSW Murray	General security	-	14,159	-	-	-	-	-	-	-	14,159
			High security	-	27	-	-	-	-	-	-	-	27
			RR conveyance	-	1,975	-	-	-	-	-	-	-	1,975
		Lower Darling	General security	-	5,722	-	-	-	-	-	-	-	5,722
		South Australia	Interstate licence	-	70	-	-	-	-	-	-	-	70
	Victoria	Interstate licence	-	35	-	-	-	-	-	-	-	35	
	<b>Total</b>		<b>1,895</b>	<b>931,746</b>	<b>119,066</b>	<b>65</b>	<b>54,249</b>	<b>406,623</b>	<b>305,110</b>	<b>11,771</b>	<b>348</b>	<b>5,902</b>	<b>1,836,775</b>

## Note 5—Intervalley Trade Account (IVT)

The intervalley trade account provides ongoing tracking of valley debts and claims to water due to the temporary trading of account water between the southern connected valleys of the Murray–Darling Basin.

For the Murrumbidgee this is presented in the accounting statements as a liability account whereby a positive balance is indicative of a future obligation (Murrumbidgee owes water). and a negative balance indicative of a claim to water (Murrumbidgee owed water).

### Data type

Derived from measured data

### Policy

*Water Act 2007* (Federal)

- The Murray–Darling Basin Agreement (Schedule 1)—Transferring Water Entitlements and Allocations (Schedule D)

*Water Management Act 2000* (NSW)

- Dealings with access licences (Division 4)
  - 71T Assignment of water allocations between access licences
  - 71V Interstate assignment of water allocations

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 10 Access licence dealing rules
  - Clause 76 Assignment of water allocation dealings
  - Clause 77 Interstate access licence transfer and assignment of water allocation

Available on Department of Planning and Environment website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Murray–Darling Basin Authority, Department of Planning and Environment

### Data Sources

Murray–Darling Basin Authority provided spreadsheet

WaterNSW-provided spreadsheet and CAIRO

Department of Planning and Environment—Water Accounting System and HYDSTRA

### Methodology

The balance of the IVT account is calculated by adjusting the carried forward balance of the IVT account from the previous year and applying a series of transactions to the account as outlined below. A positive balance indicates that the Murray System owes water to the Murrumbidgee System while a negative balance indicates that Murrumbidgee System owes water to the Murray System.

1. The volume of water traded into the Murrumbidgee Valley from the NSW Murray, NSW Lower Darling, Victoria or South Australia will result in the IVT being decreased
2. The volume of water traded out of the Murrumbidgee Valley to the NSW Murray, NSW Lower Darling, Victoria or South Australia will result in the IVT being increased
3. The Murray–Darling Basin Authority (MDBA) requests that NSW deliver a proportion of the water that was traded to users outside of the Murrumbidgee. NSW supplies the requested volume and accounts for it by calculating the resulting addition volume of water passing the Murrumbidgee River at Balranald. The accounted volume supplied is agreed between WaterNSW and MDBA and the IVT account is increased accordingly.
4. On occasion Snowy Hydro Limited may be requested to transfer a portion of either the Murrumbidgee or Murray Required Annual Release (RAR) to assist with the settlement of the IVT account when it gets too far out of balance (although there is no legal obligation on them to perform such releases). These are often referred to as "notional" releases. The following points illustrate this process:
  - Excessive Trade from Murrumbidgee to Murray creates a need to transfer Murrumbidgee RAR via the Murray development thus reducing the IVT account (reducing Murrumbidgee debt to Murray).
  - Excessive trade from Murray to Murrumbidgee creates a need to transfer Murray RAR via the Murrumbidgee development thus increasing the IVT account (reducing Murray debt to Murrumbidgee).
5. Tagged trading is a dealing that occurs when a licence holder within a valley nominates to extract their allocation for that licence from a different water source. Any water delivered to a point of extraction within the Murrumbidgee to meet allocation associated with another water source therefore results in a decrease to the IVT.
6. During periods of high summer demand transfers of water can occur from the Murray to the Murrumbidgee via Murray Irrigation Limited (MIL) infrastructure to bypass delivery constraints in either the Murray (caused by the Murray choke) or the Yanco Creek System and the Coleambally Irrigation channel network. Water passed into the Murrumbidgee via MIL, subject to MIL ability to deliver via their channel system, can help to meet the demands in Billabong Creek. The net change in the IVT as a result is calculated by assessing the difference between the flow diverted from MIL to Billabong Creek (via Finley escape) and the water that leaves the Murrumbidgee via the Billabong Creek at Darlot for the corresponding period (i.e. estimating volume extracted by users on Billabong Creek). This figure is presented as 'Finley Borrow' in Table 18.

## Additional information

The IVT Trade balance summary table provides information compiled from the best information available at the time of publication. These figures may change in the future as updated information becomes available. All figures in the table are in megalitres.

The note references in the table refer to the numbers associated with the text in the methodology above. The presentation of the IVT has been revised in the 2017–18 GPWAR to represent the IVT commitments as a liability on the resource (previously an asset). This means a positive IVT balance results in the Murrumbidgee owing water.

Table 18: Murrumbidgee intervalley trade account summary

Water year ending 30 June	Starting balance	Murrumbidgee account trade			Murrumbidgee IVT account adjustments					Closing balance
					From Murrumbidgee—IVT Account decrease				To Murrumbidgee IVT increase	
		Into (1) Murrumbidgee IVT decrease	Out of (2) Murrumbidgee IVT increase	Net into Murrumbidgee	Via Snowy (4)	Via Balranald (3)	Total IVT clearances	Net tagged trade	Finley Borrow	
2004-05	0	11,805	3,779	8,026	0	4,185	4,185	0	12,211	0
2005-06	0	16,646	21,748	(5,102)	0	20,282	20,282	0	10,162	(5,018)
2006-07	(5,018)	1,209	97,195	(95,986)	20,000	70,968	90,968	0	0	0
2007-08	0	2,729	141,825	(139,096)	0	63,500	63,500	0	728	76,324
2008-09	76,324	17,223	406,976	(389,753)	200,000	44,981	244,981	0	6,245	227,341
2009-10	227,341	55,659	166,443	(110,784)	200,000	119,567	319,567	0	5,318	23,876
2010-11	23,876	130,929	180,031	(49,102)	0	57,751	57,751	0	12,766	27,993
2011-12	27,993	85,062	151,880	(66,818)	78,000	12,083	90,083	0	965	5,693
2012-13	5,693	179,426	234,574	(55,148)	(39,000)	87,542	48,542	200	5,049	17,148
2013-14	17,148	59,917	180,850	(120,933)	0	40,282	40,282	0	1,389	99,188
2014-15	99,188	94,248	139,893	(45,645)	0	148,299	148,299	(4,605)	9,882	11,021
2015-16	11,021	14,059	275,373	(261,314)	0	202,431	202,431	(23,080.70)	3,654	96,638
2016-17	96,638	14,564	48,414	(33,850)	0	80,000	80,000	(37,792)	0	88,280
2017-18	88,280	151,138	74,221	76,917	0	0	0	25,151	0	(13,788)
2018-19	(13,788)	18,091	54,985	(36,894)	0	0	0	5,281	583	18,408
2019-20	18,745.1 <sup>26</sup>	63,385.7	197,071.9	(133,686.2)	0.0	156,726.0	156,726.0	(7,975.5)	2,563.0	6,244
2020-21	6,243.8	21,987.7	323,130.8	(301,143.1)	0.0	249,108.0	249,108.0	(29,835.4)	4,223.0	92,337

<sup>26</sup> 337 megalitres adjustment to align with Water NSW account balance reporting



## Note 6—Held environmental water

This represents that environmental water that is held as part of a licensed volumetric entitlement. These licences are held within the same licence categories as all other water access licences and are subject to the same operating rules. Therefore, they are subject to the following key rules:

- available water determinations (AWD) for their share of the entitlement to be added to accounts
- carryover rules—the forfeiting of unused water that cannot be carried over
- provide water orders prior to use.

These licences are used to provide environmental benefit and outcomes to the catchment by either providing water to, or supplementing water requirements of, a specific environmental events or incidents. On occasion the environmental benefit is achieved by trading the water as opposed to ordering and recording the subsequent usage against the licence.

### Data type

Measured

### Policy

*Water Management Act 2000*

- Part 2 Access Licences
  - Division 4 Dealings with access licences
    - 71T Assignment of water allocations between access licences
    - 71V Interstate assignment of water allocations

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

Available on the Department of Planning and Environment website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/Department of Planning and Environment—Water Accounting System (Joint ownership of System).

Available Water Determination Register—Department of Planning and Environment website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Methodology

The water held for the environment represents a volume of water in corresponding allocation accounts. This allocation account represents the sum of the remaining volume of held environmental water at the conclusion of the water year once all transactions and forfeit rules have been applied to the accounts. These environmental balances are at the licence category level and represent the water that can be carried forward for use in the next year.

Below is list of typical transactions that can apply to an environmental allocation account:

- AWD (including pro rata of AWD for new licences)
- licensed extractions
- forfeiture due to:

carryover rules

account spillage as a result of AWD

licence conversions

excess orders (where water order debiting is in place)

- trade of allocation water between accounts.

In addition, the trade and purchase of environmental water is tracked to capture the movement of environmental entitlement both in number of entitlements, and volume.

## Additional information

Table 20 provides a summary of held environmental water for the reporting period. Definitions for the processes represented in the summary are defined in Table 19.

Table 21 presents changes to environmental holdings since the previous reporting period.

Table 22 present trading of temporary water associated with environmental holdings. While environmental holdings occasionally trade to non-environmental holders to achieve delivery of environmental water, this report is presented from a perspective of watering purpose i.e. a trade from an environmental holding to a non-environmental holding has transferred the expected use of that water to a consumptive purpose.

**Table 19: Explanatory information for environmental account summary**

Heading		Description
Licence category		An issued access licence category defined in the management areas water sharing plan. Typically, categories are specific purpose in nature (e.g. for town water supply), or reflect reliability in the resource sharing process (e.g. High Security)
Share		The total volume of units for the specified licence category at 30 June.
Opening		The volume of allocation that has been carried forward from the previous year to this accounting period
AWD		The total annual volume of allocation added to the access licences in the specified category by available water determinations (allocation announcements)
Licences	New	Increase in account water as a result of issuing new access licences with an opening balance
	Cancelled	Decrease in account water as a result of licence cancellation that was holding allocation
Assignments	In	Increase in account water as a result of temporary trade in
	Out	Decrease in account water as a result of temporary trade out
Transfer to Snowy for environmental release		Water transferred from Murrumbidgee allocation accounts to allow environmental flows in the Snowy, Snowy Montane and Murray Rivers. This physical delivery is allowed for by reducing the amount of water Snowy Hydro are required to release to the Murrumbidgee valley.
Snowy Borrow	In	Increase in account water as a result of a transfer of water in from another reporting entity e.g. Snowy Borrow.

Heading		Description
	Out	Decrease in account water as a result of a transfer of water out of the reporting entity e.g. Snowy Borrow repayment.
Account Usage	Controlled	Volume of allocation debited to licences that is extracted or diverted from the river, or alternatively released from storage to support environmental outcomes. Allocation is supplied under controlled conditions through regulating structures such as dams and weirs.
	Uncontrolled	Volume of allocation debited to licences that is extracted or diverted from the river, or alternatively protected from extraction to support environmental outcomes. Allocation is supplied under uncontrolled flow conditions - either unregulated water sources, or from event flows in regulated systems unable to be captured in storage.
During year forfeit		This is the account water forfeited throughout the year as a result of the accounting rules specified in the water sharing plan. Forfeited water may occur due to account limits being reached, conversions between licence categories and various types of other licence dealings.
Available Balance		That part of the remaining account balance that is available to be taken at the conclusion of the water year. The balance is prior to carry forward rules being applied.
Non-Available Balance		That part of the remaining account balance that is not available to be taken at the conclusion of the water year (30 June). The balance is prior to carry forward rules being applied.
End of Year Forfeit		Account water that is forfeited at the end of the water year as a result of carryover rules that restrict the carry forward volume to the next water year
Carry Forward		This represents the account water that is permitted to be carried forward into the next water year as determined by the carryover rules.

**Table 20: Environmental regulated river account summary<sup>27</sup>**

Category	Share	Opening	AWD	Assignments		Transfer to snowy	Account usage		During year forfeit	End of year balance		End of year forfeit	Carry forward
				In	Out		Controlled	Uncontrolled		Available balance	Unavailable balance		
Coleambally irrigation (conveyance)	12,658	0	12,658	0	6,411	3,500	0	0	0	2,747	0	0	2,747
Murrumbidgee irrigation (conveyance)	59,130	668	58,688	0	27,391	20,226	0	0	0	11,739	0	0	11,739
Regulated River (conveyance)	2,968	267	2,752	0	1,968	1,050	0	0	0	0	0	0	0
General security	478,391	83,925	398,241	313,884	301,269	79,264	316,555	0	0	98,962	0	0	98,962
High security	16,065	0	16,066	0	14,180	1,885	0	0	0	0	0	0	0
Supplementary water	28,686	0	28,686	24,855	24,855	0	0	2,485	0	26,201	0	26,201	0
Supplementary water (Lowbidgee)	554,710	0	554,710	406,623	406,623	0	0	40,239	0	514,471	0	514,471	0

**Table 21: Annual change summary for environmental licences and environmental holding adjustments**

Category	Share 30 June 2020	Share 30 June 2021	Volume change
Coleambally irrigation (conveyance)	12,658	12,658	0
Murrumbidgee irrigation (conveyance)	59,130	59,130	0
Regulated River (conveyance)	2,968	2,968	0
General security	478,391	478,391	0
High security	16,065	16,065	0
Supplementary water	28,686	28,686	0
Supplementary water (Lowbidgee)	554,710	554,710	0

<sup>27</sup> The account balance summary includes all licences where the registered holder or part holder is a government department and the held component is wholly managed for environmental benefit. Water that has been purchased from consumptive users, but yet to be moved out to a government holding is not identified in this summary. Generally, in the situation the water is temporarily trade out to an environmental licence until the settlement has been finalised.

**Table 22: Environmental trade report summary, movement of environmental allocation between NSW access licences<sup>28</sup>**

To/From				To									Total	
				Environmental				Consumptive						
				Murrumbidgee			NSW Murray	Murrumbidgee		NSW Murray		South Australia		
				General security	Supplementary	Supplementary (Lowbidgee)	General security	General security	High security	General security	High security	Interstate licence		
From	Environmental	Murrumbidgee	CI Conveyance	6,411	-	-	-	-	-	-	-	-	6,411	
			General security	255,890	-	-	14,000	22,505	400	7,646	1,379	348	302,169	
			High security	13,280	-	-	-	-	-	-	-	-	-	13,280
			RR conveyance	1,968	-	-	-	-	-	-	-	-	-	1,968
			Supplementary	-	24,855	-	-	-	-	-	-	-	-	24,855
			Supplementary (Lowbidgee)	-	-	406,623	-	-	-	-	-	-	-	406,623
			MI Conveyance	27,391	-	-	-	-	-	-	-	-	-	27,391
	NSW Murray	RR conveyance	1,975	-	-	-	-	-	-	-	-	-	1,975	
	Lower Darling	General security	4,300	-	-	-	-	-	-	-	-	-	4,300	
	Consumptive	Murrumbidgee	CI Conveyance	-	-	-	-	-	-	-	-	-	-	-
General security			2,369	-	-	-	-	-	-	-	-	-	2,369	
High security			300	-	-	-	-	-	-	-	-	-	300	
<b>Total</b>				313,884	24,855	406,623	14,000	22,505	400	7,646	1,379	348	791,640	

Total environmental allocation moved to consumptive licences = 32,278 megalitres

Total consumptive allocation moved to environmental licences = 2,669 megalitres

Total environmental to environmental licences = 756,693 megalitres

**Table 23: Additional environmental trade movement within NSW irrigation corporation holdings<sup>28</sup>**

To/From				To		Total
				Environmental	Consumptive	
				NSW Murray	NSW Murray	
				General Security	General Security	
From	Environmental	NSW Murray	General Security	13,536	2,974	16,510
	Consumptive	NSW Murray	General Security	422	-	422
	<b>Total</b>				13,958	2,974

<sup>28</sup> The environmental trading report represents movement of water based on licence type (held environmental or consumptive) and is not intended to report the sale or purchase of environmental allocations. Movement between holdings are purpose inclusive and includes sales/purchases, administration arrangements for the delivery of environmental water, and carryover leasing arrangements.

## Note 7—Environmental provisions

These were introduced as part of the water sharing plans with the aim of enhancing environmental benefits. They consist of a series of rules established around the concept of dam translucency and transparency releases, environmental water allowances (EWA), provisional storages and balancing storages and end of system flows. Below is a brief description of these.

**Dam transparency**—protects low flows immediately downstream of Burrinjuck and Blowering Dams by passing all inflows up to a defined limit.

**Dam translucency**—ensures that some degree of natural flow variability is restored downstream of Burrinjuck Dam by releasing a proportion of inflows based on the time of year and the catchment conditions.

**End of system flows**—maintain a flow of water to the end of the Murrumbidgee River and Billabong Creek ensuring its connectivity with the Murray River.

**Environmental water allowances**—three water allowances were created to provide direct benefits to the environment. The water is for discretionary environmental management such as wetland inundation, flushes to improve water quality, or providing habitat for waterbird breeding.

**Provisional storage volumes**—2 provisional storage volumes are provided with the intent to increase the size and frequency of spill events for environmental benefits.

**Daily release balance**—this account maintains a record of the net difference between the minimum transparent dam release and the water credited to environmental water allowance (EWA2 allowance). The daily release balance (DRB) was introduced at the commencement of the water sharing plan to allow the existing translucent and transparent releases to be adopted while also providing for adaptive water. The DRB increases when transparent water releases are made triggering credits to the Environmental Water Allowance 2 (EWA2). The DRB balance is then used to reduce future requirements of translucent water releases.

For additional details on this refer to the environmental rules in the water sharing plan.

### Data type

Derived from measured data

### Policy

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 4 Environmental water provisions

Available from the Department of Planning and Environment website at

[www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

WaterNSW

### Data source

EWA accounting spreadsheet—WaterNSW

Annual compliance report WaterNSW (internal document)

## Methodology

Methods for evaluating the environmental provisions can be found in the water sharing plan.

The following tables show account summaries, water deliveries and balances for those accounts established as a result of the environmental provisions as set out in the water sharing plan.

## Additional information

The following group of tables provides a comprehensive summary of the Planned Environmental Water since the commencement of the water sharing plan.

**Table 24: Burrinjuck Dam translucent/transparent release summary and history**

Year	Translucent release required	Translucent releases	Transparent release required	Transparent releases	Other releases	Total releases <sup>29</sup>
2004–05	2,454	3,401	105,192	121,447	404,449	529,297
2005–06	68,748	25,704	73,511	72,961	523,167	621,832
2006–07	25,476	6,462	76,739	71,770	132,233	210,465
2007–08	35,310	6,198	65,140	48,214	171,056	225,468
2008–09	7,609	3,281	110,130	80,769	172,363	256,413
2009–10	28,488	9,101	27,168	18,763	390,156	418,020
2010–11	92,707	24,636	103,785	99,968	1,610,827	1,735,431
2011–12	195,310	121,550	48,900	53,335	2,042,991	2,217,876
2012–13	148,099	127,526	62,780	63,192	1,157,875	1,348,593
2013–14	80,979	82,515	69,366	71,571	372,140	526,226
2014–15	74,002	71,831	52,532	51,972	952,383	1,076,186
2015–16	284,402	246,702	37,262	60,282	693,623	1,000,607
2016–17	169,175	161,737	58,875	85,599	1,455,918	1,703,254
2017–18	17,286	16,593	87,112	87,159	587,517	691,269
2018–19	708	731	110,620	116,470	190,260	307,461
2019–20	15,529	15,943	130,118	131,631	28,193	175,767
2020–21	169,382	143,417	25,830	45,234	1,105,499	1,294,150

<sup>29</sup> Total release has been recalculated for historical period in this GPWAR. The release is calculated as the total flow at Murrumbidgee River downstream of Burrinjuck Dam (410008). Missing data has been filled with the operator release information (410131)

Table 25: Environmental water accounts (EWA) summary and history<sup>30</sup>

Water Year	EWA1 <sup>31</sup>						EWA2					EWA3					
	Accrued	Delivered	Spill	Balance	End of Year Forfeit	Carry Forward	Accrued	Delivered	Balance	End of Year Forfeit	Carry Forward	Accrued	Delivered	Credited to PSV2	Balance	End of Year Forfeit	Carry Forward
2004–05	0	0	0	0	0	0	42,497	0	42,497	0	42,497	0	0	0	0	0	0
2005–06	50,000	0	0	50,000	0	50,000	46,607	19,050	46,607	23,447	46,607	0	0	0	0	0	0
2006–07 <sup>32</sup>	0	0	0	50,000	0	50,000	17,303	0	63,910	0	63,910	0	0	0	0	0	0
2007–08	0	0	0	50,000	0	50,000	0	8,822	55,088	0	55,088	0	0	0	0	0	0
2008–09	0	0	0	50,000	0	50,000	0	22,714	32,374	0	32,374	0	0	0	0	0	0
2009–10	0	0	0	50,000	0	50,000	16,560	35,008	13,926	0	13,926	0	0	0	0	0	0
2010–11	50,000	38,319	0	61,681	11,681	50,000	51,975	65,901	0	0	0	27,084	0	27,084	0	0	0
2011–12	50,000	67,683	25,000	7,317	0	7,317	32,760	24,255	8,505	0	8,505	0	0	0	0	0	0
2012–13	50,000	0	7,317	50,000	0	50,000	40,301	26,511	22,295	0	22,295	0	0	0	0	0	0
2013–14	50,000	14,868	35,132	50,000	0	50,000	76,280	91,834	6,741	0	6,741	0	0	0	0	0	0
2014–15	50,000	33,499	16,501	50,000	0	50,000	52,459	39,569	19,631	0	19,631	0	0	0	0	0	0
2015–16	50,000	48,860	1,140	50,000	0	50,000	49,636	54,753	14,514	0	14,514	0	0	0	0	0	0
2016–17	50,000	5,667	25,000	69,334	19,334	50,000	54,186	61,980	6,720	0	6,720	149,673	90,480	59,194	0	0	0
2017–18	50,000	50,000	0	50,000	0	50,000	48,313	24,602	30,431	0	30,431	0	0	0	0	0	0
2018–19	0	49,518	0	482	0	482	50,039	68,006	12,464	0	12,464	0	0	0	0	0	0
2019–20	0	0	0	482		482	64,937	28,640	48,761	0	48,761	0	0	0	0	0	0
2020–21	50,000	44,235	0	6,247	0	6,247	33,705	68,160	14,306	0	14,306	1,627	1,627	0	0	0	0

<sup>30</sup> For specific details about the rules around PSV please refer to the water sharing plan.

<sup>31</sup> 50,000 megalitres was borrowed from the EWA accounts and made available for consumptive use as part of the AWDs.

<sup>32</sup> The Water Sharing Plan was suspended on 9 November 2006 and was not reinstated until 16 September 2011.



Table 26: Provisional storage volume account summary and history<sup>33</sup>

Water year	PSV1			PSV2								
	Credit <sup>34</sup>	End of year forfeit	Carry forward	Credit up to previous years forfeit <sup>35</sup>	Credit not alloc'd EWA3 prev. year <sup>36</sup>	Credit Nov-Dec EWA3 forgone trans <sup>37</sup>	Credit 1 Nov 50% unused EWA3 <sup>38</sup>	Credit 1 Jan remaining EWA3 <sup>38</sup>	Balance	End of year forfeit	Carry forward	
2004–05	0	0	0	0	0	0	0	0	0	0	0	0
2005–06	0	0	0	0	0	0	0	0	0	0	0	0
2006–07	0	0	0	0	0	0	0	0	0	0	0	0
2007–08	0	0	0	0	0	0	0	0	0	0	0	0
2008–09	0	0	0	0	0	0	0	0	0	0	0	0
2009–10	0	0	0	0	0	0	0	0	0	0	0	0
2010–11	200,000	200,000	0	0	0	27,084	0	27,084	54,168	54,168	0	0
2011–12	200,000	200,000	0	54,168	27,084	0	0	0	81,252	81,252	0	0
2012–13	200,000	200,000	0	0	0	0	0	0	0	0	0	0
2013–14	33,750	33,750	0	0	0	0	0	0	0	0	0	0
2014–15	25,000	25,000	0	0	0	0	0	0	0	0	0	0
2015–16	25,000	25,000	0	0	0	0	0	0	0	0	0	0
2016–17	0	0	0	59,194	0	59,194	59,194	0	0	0	0	0
2017–18	25,000	25,000	0	0	0	0	0	0	0	0	0	0
2018–19	0	0	0	0	0	0	0	0	0	0	0	0
2019–20	0	0	0	0	0	0	0	0	0	0	0	0
2020–21	200,000	200,000	0	1,627	0	0	0	0	1,627	1,627	0	0

<sup>33</sup> For specific details about the rules around PSV please refer to the water sharing plan.

<sup>34</sup> When general security AWD plus carryover volume exceeds 0.6 megalitres/share PSV1 receive 50,000 megalitres plus an additional 8,750 megalitres for every additional 0.01 megalitres/Share of AWD plus carryover volume in excess of 0.8 megalitres/share.

<sup>35</sup> When general security AWD plus carryover volume exceeds 0.8 megalitres/share and requirements for EWA3 and PSV1 have been met any additional excess volume can be credited to PSV2 up to a limit of that water that was forfeited the previous year.

<sup>36</sup> From 1 November when general security AWD plus carryover volume exceeds 0.8 megalitres/share the PSV2 account is credited up to a maximum limit of the sum of water not credited to EWA3 in the current year and any water that was not credited in the previous year.

<sup>37</sup> Between 1 November and 31 December EWA3 is credited with 50% of forgone translucent releases when AWD plus carryover volume exceeds 0.8 megalitres/share. The PSV2 account is credited with the other 50%.

<sup>38</sup> Water is moved from the EWA3 account to the PSV2 account 2 times each year. On the 1<sup>st</sup> November 50% of remaining account water is moved with any remaining account water moving on 1<sup>st</sup> January.

**Table 27: Water delivered—planned environmental water held in Burrinjuck Dam**

Water year	EWA1 delivered	EWA2 delivered	EWA3 Delivered	Under release delivered <sup>39</sup>	Planned environmental water delivered <sup>40</sup>
2004–05	0	0	0	0	0
2005–06	0	19,050	0	0	19,050
2006–07 <sup>41</sup>	0	0	0	0	0
2007–08	0	8,822	0	0	8,822
2008–09	0	22,714	0	0	22,714
2009–10	0	35,008	0	0	35,008
2010–11	38,319	65,901	0	89,798	194,018
2011–12	67,683	24,255	0	5,895	97,833
2012–13	0	26,511	0	2,843	29,354
2013–14	14,868	91,834	0	25,513	132,215
2014–15	33,499	39,569	0	6,130	79,198
2015–16	48,860	54,753	0	105,832	209,445
2016–17	5,667	61,980	90,480	44,594	202,721
2017–18	50,000	24,602	0	2,391	76,993
2018–19	49,518	68,006	0	7,158	124,682
2019–20	0	28,640	0	4,049	32,689
2020–21	44,235	68,160	1,627	40,043	154,065

<sup>39</sup> Under Release water delivered to meet environmental requirements.

<sup>40</sup> Total volume of water delivered for environmental purposes from planned environmental water provisions set aside in Burrinjuck Dam. It is the sum of EWA1 delivered, EWA2 delivered and Under Release delivered (does not include translucency/transparency releases).

<sup>41</sup> The Water Sharing Plan was suspended on 9 November 2006 and was not reinstated until 16 September 2011.

Table 28: End of year balances for total EWA, DRB and translucency/transparency under release

Year	Total EWA carry forward balance	DRB			Under release <sup>42</sup>			
		Increase	Decrease	End of year balance	Below target (credit)	Above target (debit) <sup>39</sup>	Payed back from DRB <sup>43</sup>	Net under releases EoY balance
2004–05	42,497	22,232	238	21,994	0	0	0	0
2005–06	96,607	15,091	8,879	28,206	26,328	0	0	26,328
2006–07 <sup>41</sup>	113,910	12,654	1,271	39,589	(26,328)	0	0	0
2007–08	105,088	10,163	2,853	46,899	0	0	0	0
2008–09	82,374	25,479	911	71,466	0	0	0	0
2009–10	63,926	8,688	3,208	76,946	17,108	0	0	17,108
2010–11	50,000	33,000	11,097	98,849	72,690	89,798	0	0
2011–12	15,822	15,900	20,488	94,260	75,220	5,895	0	69,325
2012–13	72,295	9,956	96,193	7,875	25,059	2,843	87,886	3,655
2013–14	56,741	4,317	8,414	3,778	17,265	25,513	0	(4,593)
2014–15	69,631	2,875	8,446	0	8,913	6,130	0	(1,810)
2015–16	64,514	3,152	3,152	0	117,981	105,832	0	10,339
2016–17	56,720	1,595	634	961	27,852	44,594	0	6,387
2017–18	80,431	6,342	2,180	5,123	3,038	2,391	0	(1,002)
2018–19	12,464	20,127	0	25,250	1,285	7,158	0	(6,875)
2019–20	49,243	15,073	1,116	39,207	2,092	4,049	0	(8,832)
2020–21	20,553	28	13,015	26,220	46,604	40,043	0	(2,271)

<sup>42</sup> Under Release is that water that was not delivered under the Translucent/transparent release rules in the Plan that will be paid back at a later date. The Under Release balance was zeroed once water sharing plan suspended.

<sup>43</sup> DRB balance was zeroed on 4 August 2012 to balance the borrowed volume accumulated since 1 July 2004. The figure used to zero accounts was 87,886 and was calculated based on corrected historical calculations of under release. These historical corrections have been retrospectively applied in the table.

## Note 8—Snowy required annual release

Snowy Hydro Limited operates under a May to April accounting year, which is different to the water accounting period being considered in this report. Hence, this note will cover both the Snowy RAR and those adjusted to represent the reporting period.

Snowy Hydro Limited provides an annual fixed minimal accountable release, known as the Required Annual Release (RAR) to the Murrumbidgee (1,026,000 megalitres per year). However, in years of severe drought when the current inflow sequence is worse (drier) than the historical dry sequence, Snowy Hydro delivery of the RAR could put the Snowy Scheme at risk of running out of water. In those years the RAR may be reduced by the Dry Inflow Sequence Volume (DISV) being the measure of the cumulative difference between the historic dry sequence and the current inflow sequence. Any shortfall in the delivery of the DISV will be repaid in the future when annual inflows improve.

Further adjustments to the RAR can also be made each year as a result of pre-releases made in the previous year or for water savings in the Murrumbidgee that have been dedicated to Snowy River environmental flows. The RAR and those items that adjust it are monitored continually and updated whenever changes in the catchment dictate it.

The RAR delivered is assessed as Accountable Net Jounama Releases being the sum of:

- actual releases from Tumut 1 Power Station
- total montane release
- increase in storages at Talbingo and Jounama.

Montane release is environmental water to support the high-altitude streams that have been impacted by the Snowy Mountains Scheme. It is diverted to Burrinjuck Dam catchment with the majority lost before reaching the dam (hence, it is not separated out in statements for the Burrinjuck Dam inflows). The figure used for the accountable portion of Blowering Dam inflows in the accounting statements excludes Montane releases.

### Policy

Snowy Water Licence 2010

### Data type

Derived from measured data

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data sources

Snowy Mountains Authority Water Operations Report

### Methodology

#### **Snowy Hydro inflow to Blowering Dam**

Inflow delivered to Blowering Dam from Snowy Hydro infrastructure for reporting period (July–June) is assessed as:

Delivered RAR (Sum accountable Net Jounama releases) less Montane release

## Snowy RAR Accounting (May–April)

**RAR Deliverable** for Snowy–Tumut Development is calculated as being:

- Annual fixed RAR
- plus DISV as at 1 March (previous water year)
- less water savings allocated to Snowy Tumut
- less pre-release (previous water year)

**Adjusted RAR** for Snowy–Tumut Development is calculated as being:

- RAR Deliverable
- less DISV on 1 March (water year)
- less Murrumbidgee water deal paybacks
- less RAR permitted shortfalls and relaxations
- less Snowy-Tumut intervalley transfer settlement

**Total RAR Delivered** = Adjusted RAR plus Pre-release (next water year) plus Above Target Release

## Additional information

Table 29 provides a breakdown of the total estimated inflow to Blowering storage to the volume delivered from Snowy Hydro infrastructure, and the additional natural inflow component. The information is presented for the reporting period and historical (July to June). Table 30 provides a summary of the RAR accounting which is implemented on a May to April water year.

**Table 29: Blowering Dam inflow sources**

Water year	Total Blowering inflow estimate	Delivered from Snowy Hydro infrastructure	Additional inflow/natural
2008–09	618,281	409,713	208,567
2009–10	938,366	692,793	245,573
2010–11	1,786,517	784,296	1,002,221
2011–12	1,441,550	675,123	766,427
2012–13	1,658,915	1,276,277	382,638
2013–14	1,407,293	982,508	424,786
2014–15	814,012	498,476	315,535
2015–16	1,546,200	1,277,696	268,504
2016–17	1,828,767	1,110,070	718,696
2017–18	1,328,630	1,079,263	249,367
2018–19	858,795	682,177	176,617
2019–20	1,115,080	773,153	341,927
2020–21	1,762,581	1,164,421	598,160

**Table 30: Snowy hydro required annual release summary (May to April water year)**

<b>Water year</b>	<b>Total RAR delivered<sup>44</sup></b>	<b>Pre-released RAR (for following water year)</b>	<b>Above target discretionary releases</b>
2011–12	601,000	55,000	0
2012–13	983,000	200,000	51,000
2013–14	689,000	200,000	233,000
2014–15	623,000	0	0
2015–16	914,000	130,000	100,000
2016–17	900,000	200,000	34,000
2017–18	687,000	200,000	134,000
2018–19	730,000	63,000	0
2019–20	880,000	117,000	0
2020–21	612,000	200,000	112,000

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<sup>44</sup> Includes RAR deliveries to snowy montane rivers and to Blowering storage

## Note 9—Prior year account adjustment

This is a line item that is used to correct balances in the accounts. The double entry accounting being applied is a continuous process whereby the closing balance of one year is the opening balance for the following year. Occasionally corrections will be required for a variety of reasons including when an error is identified in prior year reporting or when a process that had previously been reported is unable to be supplied and the associated asset or liability must be removed to maintain the integrity of the statements. This is different to the unaccounted difference component which is a physical volume required to achieve mass balance after all the known processes have been accounted.

### Data type

Calculated

### Accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data source

Not applicable

### Methodology

A journal transaction is placed at the closing of the previous water year to either increase or decrease and account balance to align with the correct opening balances of the reporting year.

### Additional information

No prior year adjustment was required for the reporting period.

## Note 10—Surface water storage

This is the actual volume of water stored in the individual surface water storages at the date of reporting. The volumes provided represent the total volume of water in the storage, including dead storage which is the volume of water which can't be accessed under normal operating conditions e.g. volume below low-level outlet. It is assumed that the dead storage can be accessed if required via alternative access methods e.g. syphons.

### Data type

Derived from measured data

### Policy

Not applicable

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data source

Department of Planning and Environment—HYDSTRA

### Methodology

Storage volumes are calculated by processing a gauged storage elevation through a rating table that converts it to a volume.

### Additional information

The following table provides a breakdown of the storage capacities and dead storages.

**Table 31: Capacity and dead storage summary table**

Name	Capacity (ML)	Dead storage (ML)
Burrinjuck Dam	1,026,330	3,250
Blowering Dam	1,631,410	23,990
Berembed Weir	3,380	120
Gogeldrie Weir	7,400	200
Hay Weir	14,300	1,000
Maude Weir	8,028	300
Redbank Weir	5,580	400
Tombullen Storage	11,230	372
<b>Total</b>	<b>2,704,470</b>	<b>29,632</b>



## Note 11—River channel storage

The volume of water stored in the river channel on the day of reporting.

### Policy

Not applicable

### Data type

Derived from measured data

### Data accuracy

B—Estimated in the range +/- 25%

### Providing agency

Department of Planning and Environment

### Data sources

Department of Planning and Environment: HYDSTRA, CAIRO

### Methodology

For each river section S(n):

$$V = Q \times T$$

The river channel storage will be equal to the sum of all river section volumes.

$$\text{River channel storage} = \sum S(n) V$$

**Table 32: Summary of river volume calculation components**

Symbol	Variable	Data source	Unit
Q	Average flow in the river section. Calculated by averaging the daily flows at the upstream and downstream river gauges.	HYDSTRA	ML/d
V	Volume in each river section.	Calculated	ML
T	Average travel time for a parcel of water to travel through the river section.	CAIRO	days

Assumptions and approximations:

- Travel times are estimated to the nearest day.
- Daily flow change between gauging sites assumed to be linear.

## Note 12—Storage inflow

Storage inflow refers to the volume of water flowing into the major headwater storages—Burrinjuck and Blowering Dams or the off-river, reregulating storage of Tombullen. The storage inflow for Blowering Dam has been sub-categorised Snowy Accountable, Snowy Pre-release and Other/Natural.

Snowy accountable is inflow accredited against the Required Annual Release (RAR) from Snowy Hydro and pre-release is water that has been released on top of those requirements and will be accredited to the required annual release in the next season. Other/Natural includes natural runoff from the surrounding Blowering catchment, and any water released from Snowy that was not allowed to be accredited as RAR water. Further information on RAR is available in Note 8.

### Policy

Not applicable

### Data type

Derived from measured data

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data sources

Department of Planning and Environment: HYDSTRA, SILO (Queensland government climatic information)

### Methodology

For Blowering and Burrinjuck storages there is no direct measurement of inflows. However, it is possible to calculate inflows by using a mass balance approach (based on balancing the change in storage volume) where inflow is the only unknown. This is referred to a back-calculation of inflows. The back-calculation figures were derived using a one-day time step with the inflow calculated according to the equation below. The daily inflows are then summed to provide an annual inflow figure.

$$I = \Delta S + O + Se + ((E - R) * A) / 100$$

**Table 33: Components for back-calculation of inflow**

Symbol	Variable	Unit
I	Inflow	ML/day
ΔS	Change in storage volume	ML
O	Outflow	ML/day
Se	Seepage	ML/day
R	Rainfall	mm/day
E	Evaporation (Mortons shallow lake estimation, SILO)	mm/day
A	Surface area—derived from height to surface areas lookup curve	ha

Assumptions and approximations:

- Seepage was assumed to be zero.
- For Tombullen storage, where inflows are regulated by diverting flow from the main river inflow is measured. The flows are obtained by measuring river heights at gauging stations along the river, and then passing these heights through a rating table that converts them to a daily flow volume. Inflow reported in this GPWAR was obtained directly from the river operations spreadsheet (CAIRO).

## Note 13—Storage evaporation and storage rainfall

For the major storages of Burrinjuck and Blowering, this refers to the water that is either lost as a result of evaporation or gained as a result of rainfall. For Tombullen storage, only a net evaporation is presented which is an estimate of the combined effects of rainfall and evaporation on the storage.

### Data type

Derived from measured data

### Policy

Not applicable

### Data accuracy

B—Estimated in the range +/- 25%

### Providing agency

Department of Planning and Environment, WaterNSW

### Data source

Department of Planning and Environment—SILO (Queensland government climatic information), HYDSTRA, CAIRO

### Methodology

#### **Burrinjuck and Blowering storages**

Daily rainfall and Mortons shallow lake evaporation data (accessed via SILO) are applied to storage surface area time-series from HYDSTRA to achieve a volume in megalitres which is then aggregated to an annual figure. The rainfall and evaporation data utilised is equivalent to the data used in the storage inflow back-calculation (note 12).

**Rainfall:** Volume (ML) = Rainfall (mm) x Area (m<sup>2</sup>) x 10<sup>-6</sup>

**Evaporation:** Volume (ML) = Mortons shallow lake evaporation (mm) x Area (m<sup>2</sup>) x 10<sup>-6</sup>

#### **Tombullen storage**

For Tombullen a simple, annual mass balance was calculated for the storage, whereby the known components are inflow, volume, and outflow (measured data obtained from CAIRO). The volume required to achieve mass balance is therefore assumed to be the volume of net evaporation from the storage.

**Net Evaporation** = storage change (ML) + storage release (ML) – storage inflow (ML)

## Note 14—Gauged tributary inflow, other inflow

The inflow into the regulated river that occurs downstream of the headwater storages that is measured at known gauging stations.

### Policy

Not applicable

### Data type

Measured data

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data sources

Department of Planning and Environment: HYDSTRA, WaterNSW: Murray Irrigation operational accounting

### Methodology

The flows are obtained by measuring river heights at gauging stations along the river, and then passing these heights through a rating table that converts them to a daily flow volume.

### Additional information

The total gauged inflow for the reporting period is the sum of the inflows for the gauged tributaries defined in the table below.

**Table 34: Summary of gauged tributary inflow**

Station	Station name	Area (km <sup>2</sup> )	Volume (ML)
410057	Goobarragandra River at Lacmalac	673	258,245
410025	Jugiong Creek at Jugiong (Inverlockie)	2,120	133,157
410044	Muttama Creek at Coolac	1,025	18,414
410038	Adjungbilly Creek at Darbalara	391	58,596
410061	Adelong Creek at Batlow Road	144	27,979
410047	Tarcutta Creek at Old Borambola	1,660	78,437
410103	Houlaghans Creek at Downside	1,130	1,314
410048	Kyeamba Creek at Ladysmith	530	7,528
410043	Hillas Creek at Mount Adrah	568	61,550
410114	Killimcat Creek at Wyangle	23	3,810
410012	Billabong Creek at Cocketgedong	4,660	16,231
	<b>Total</b>	<b>12,924</b>	<b>665,261</b>

**Table 35: Summary of other gauged inflow**

Station	Station name	Area (km <sup>2</sup> )	Volume (ML)
-	Finley Escape (Murrumbidgee Irrigation Ltd)	N/A	25,134
	<b>Total</b>	<b>N/A</b>	<b>25,134</b>

Figure 48: Gauged tributary inflows for the reporting period (Plot 1)

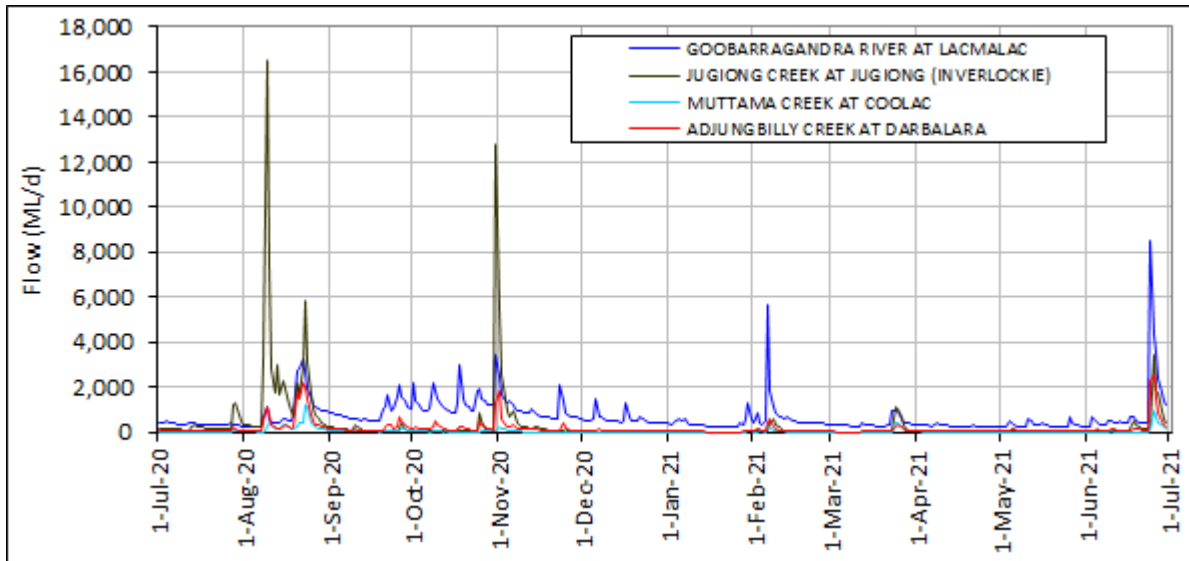


Figure 49: Gauged tributary inflows for the reporting period (Plot 2)

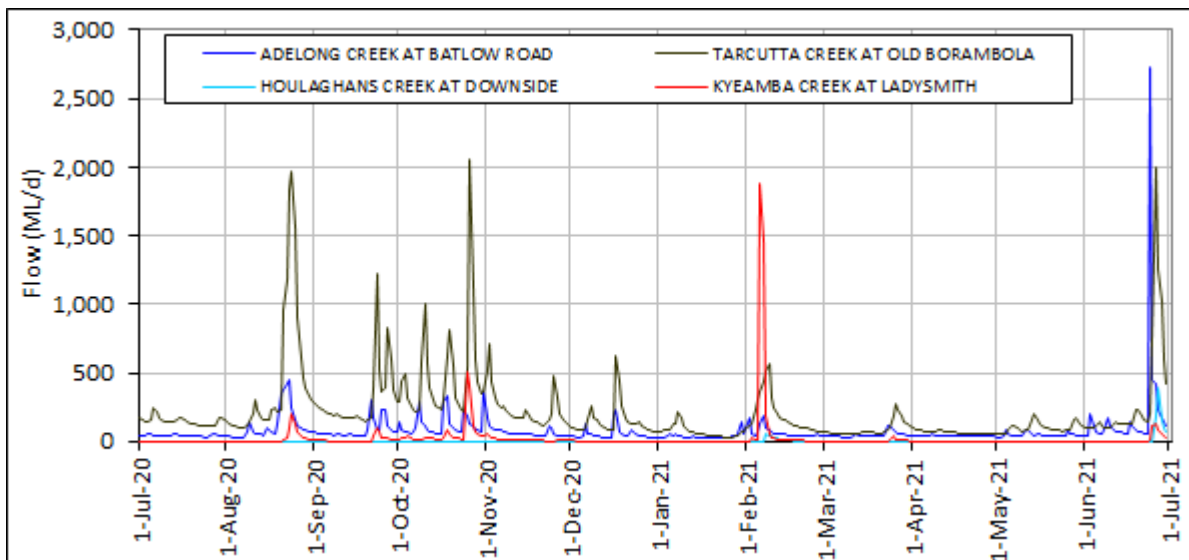
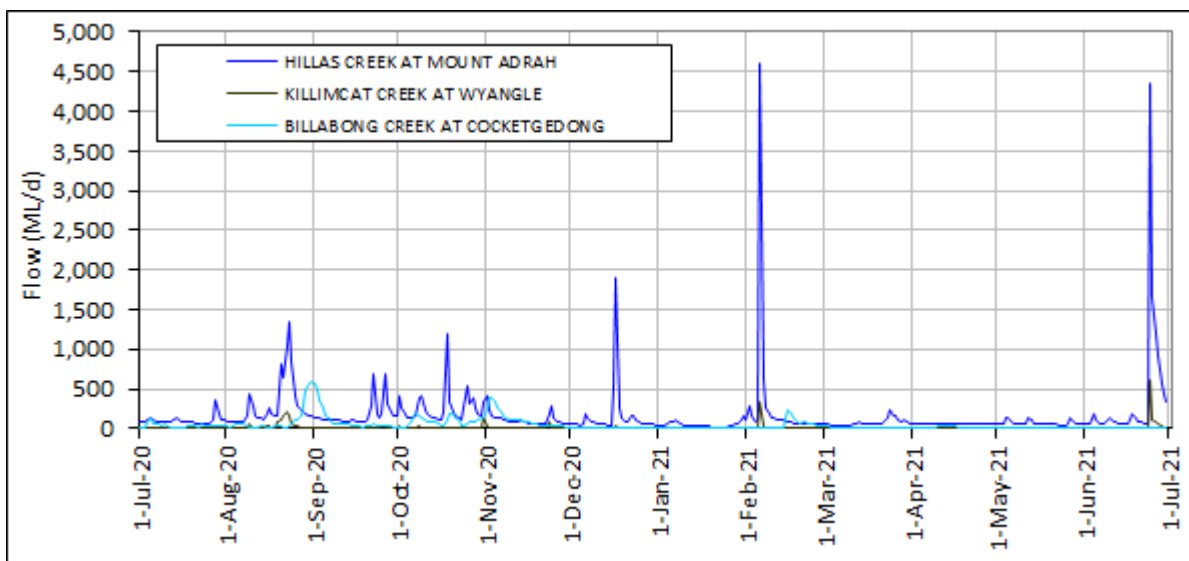


Figure 50: Gauged tributary inflows for the reporting period (Plot 3)



## Note 15—Ungauged runoff estimate

The inflow into the river that occurs downstream of the headwater storages that is not measured.

### Policy

Not applicable

### Data type

Estimated

### Data accuracy

C—Estimated in the range +/- 50%

### Providing agency

Department of Planning and Environment

### Data sources

Department of Planning and Environment, WaterNSW: CAIRO

### Methodology

To derive an estimate a simple mass balance approach was adopted whereby known inflows and outflows were combined with an assumed loss factor. No estimate was made for the area below Narrandera or the Yanco Creek system and aquifer interaction has been excluded from the calculation.

$$U_{\text{Inflow}} = G_{\text{Narrandera}} - R_{\text{Burrinjuck}} - R_{\text{Blowering}} - G_{\text{Inflow}} + U_{\text{Narrandera}} + L_{\text{estimate}}$$

Where:

$U_{\text{Inflow}}$  = Ungauged Inflow to Narrandera (excluding Yanco Creek system)

$G_{\text{Narrandera}}$  = Gauged flow at Murrumbidgee River at Narrandera

$R_{\text{Burrinjuck}}$  = Total release from Burrinjuck Storage

$R_{\text{Blowering}}$  = Total release from Blowering Storage

$G_{\text{Inflow}}$  = Total gauged inflow to Narrandera (excluding Yanco system)

$U_{\text{Narrandera}}$  = Total extractions to Narrandera (excluding Yanco system extractions)

$L_{\text{estimate}}$  = Estimate of losses in target reach. Assumed to be 10% of all water entering.

## Note 16—River evaporation and river rainfall

This refers to the volume of water effective on the accounted river reach that is either lost as a result of evaporation or gained as a result of rainfall.

### Data type

Derived from measured data

### Policy

NA

### Data accuracy

B—Estimated in the range +/- 25%

### Providing agency

Department of Planning and Environment

### Data source

Department of Planning and Environment: HYDSTRA, ARCGIS

QLD Department of Natural Resources: SILO

### Methodology

The volume applied for evaporation and rainfall on the regulated river is achieved by first calculating a daily time-series of river area. This is achieved by breaking the river up into reaches and utilising the cross sections recorded at river gauging locations to determine the average width of the river with a given daily flow. River length is then determined between 2 gauging locations using ARCGIS and as such an area for each reach can be defined.

$$\text{Area (m}^2\text{)} = \text{Average W (m)} \times \text{L (m)}$$

Where W is the daily width determined from the gauging cross sections and L is the length as determined through ARCGIS analysis.

With daily area determined, various climate stations are then selected based on their proximity to each river reach. Rainfall and evaporation data are then extracted from SILO and applied to the area time-series to achieve a volume in megalitres which is then aggregated to an annual figure.

### Rainfall

$$\text{Volume (ML)} = \text{Rainfall (mm)} \times \text{Area (m}^2\text{)} \times 10^{-6}$$

### Evaporation

$$\text{Volume (ML)} = \text{ET}_0 \text{ (mm)} \times \text{K}_c \times \text{Area (m}^2\text{)} \times 10^{-6}$$

Where:

**ET<sub>0</sub>** = reference evapotranspiration from SILO

**K<sub>c</sub>** = crop factor for open water (1.05)



## Note 17—Return flows (including re-credit)

Return flow is that flow that has left the river and returns further downstream. The returning flow is less than what leaves the river. It can also include return flows from catchment drains within the irrigation corporation areas.

In certain circumstances in the Murrumbidgee water is delivered through Coleambally Irrigation catchment drains in order to meet demand in Yanco Creek system during peak flow periods. In these circumstances the return flow provided through Coleambally Irrigation will be accountable and is credited back to the appropriate allocation account. All other return from drainage is non accountable.

Re-credits are also given to Coleambally Irrigation for any flow diverted to Tombullen storage, a re-regulating storage beside the Murrumbidgee River, whereby water is diverted to the storage via the Coleambally main canal. Accounted usage in this GPWAR, detailed in Note 3, provides the net usage after any recredits have been applied.

### Data type

Measured

### Policy

NA

### Data accuracy

Return flow—A - Estimated in the range +/- 10%

Recredit—A1 – Nil accuracy

### Providing agency

Department of Planning and Environment

### Data sources

Murrumbidgee Irrigation Licence Compliance Report

Coleambally Irrigation Annual Compliance Report

WaterNSW irrigation corporation operational accounting

### Methodology

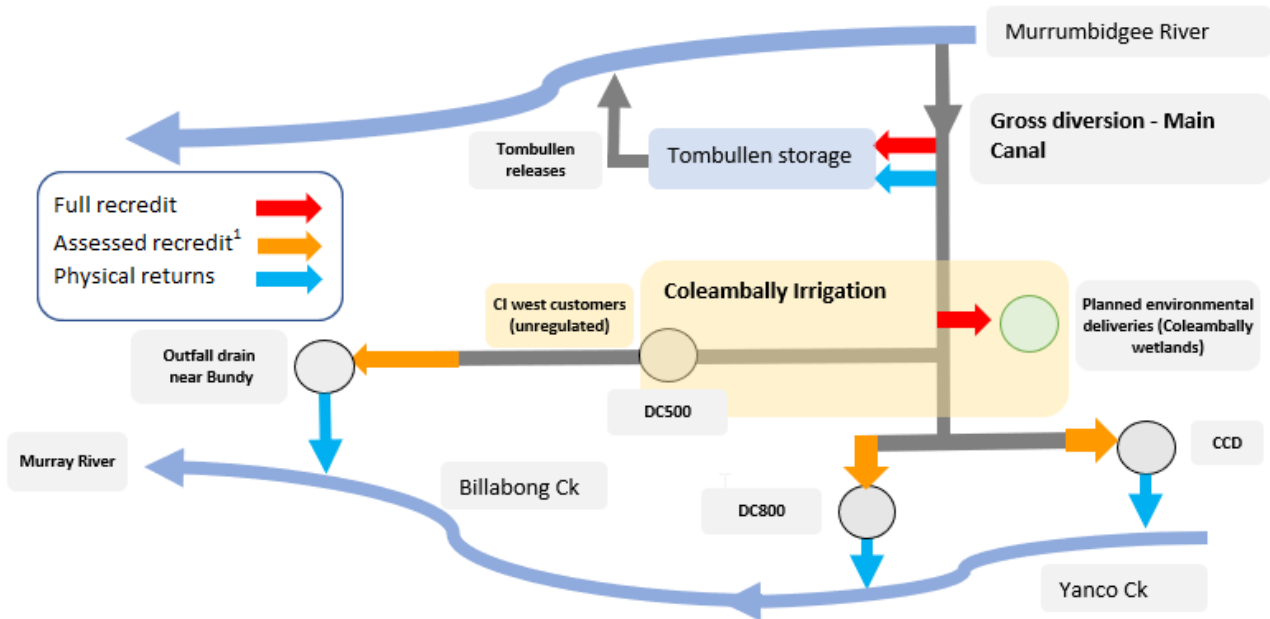
The return flows are measured in the same way as the gauged inflows, that is by measuring river heights at gauging stations along the river, passing these heights through a rating table that converts them to a flow or alternatively using a flumegate installed in the open channel. The total return flow is the sum of the flows for all the return flow gauges.

Additional information

**Table 36: 2020–21 Return flow summary table (includes flow passed to Tombullen storage)**

Coleambally Irrigation			Murrumbidgee Irrigation
Main Canal diversion	Total recredits <sup>45</sup>	Physical returns <sup>46</sup>	Physical return
369,129	102,880	101,999	900

**Figure 51: Conceptual diagram for Coleambally Irrigation re-credits**



1. Assessment is determined based on requests to pass flow for downstream use (by the river operator to Coleambally Irrigation)  
 Conveyance losses are also considered in determining the allocation recredit

<sup>45</sup> Recredits for water moved to Tombullen, planned e-water deliveries, or ordered water passed through drains including allowance for conveyance loss  
<sup>46</sup> Inflows to Tombullen storage plus flows at outfall drain near Bundy, DC800, CCD. The inflow to Tombullen presented within physical returns is taken from the WaterNSW operational accounting for Coleambally Irrigation to maintain consistency with the recredits stated. Minor variations can occur between this and the Tombullen inflow used within the GPWAR accounting, as the data is extracted at a later point in time and changes to rating curves (improvements) may be applicable.

## Note 18—Dam releases, river inflow from dam releases

The volume of water released from Burrinjuck and Blowering Dams, and Tombullen (off river storage) to meet downstream requirements. Releases for Burrinjuck have been sub-classified into Translucent, Transparent or other (the remaining) releases. In the accounting process releases have been represented as both a decrease in asset (of the dams) and an equal increase in asset (the river).

### Policy

Not applicable

### Data type

Measured data

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data sources

Department of Planning and Environment—HYDSTRA

WaterNSW—Daily Environmental Operational Spreadsheet

### Methodology

The flows are obtained by measuring river heights at a gauging station downstream of the dam wall, and then passing these heights through a rating table that converts them to a daily flow volume. The gauges used were 410102 (Tumut River at Blowering Dam) and 410008 Murrumbidgee River at D/S Burrinjuck Dam. The total Burrinjuck release was disaggregated using daily operational spreadsheet tags of transparent and translucent releases.

### Additional information

Table 37 provides a breakdown by component of the accounted storage releases for the reporting period.

**Table 37: Summary of releases for the reporting period (ML)**

Storage	Type	Release (ML)	Total release (ML)
Burrinjuck Dam	Translucent	143,417	1,294,150
	Transparent	45,234	
	Other	1,105,499	
Blowering Dam	Transparent	199,635	1,130,210
	Other	930,575	
Tombullen	Total release	75,084	75,084
<b>Total increase to river (ML)</b>			<b>2,499,444</b>

Figure 52: Daily releases from Burrinjuck and Blowering storages (reporting period)

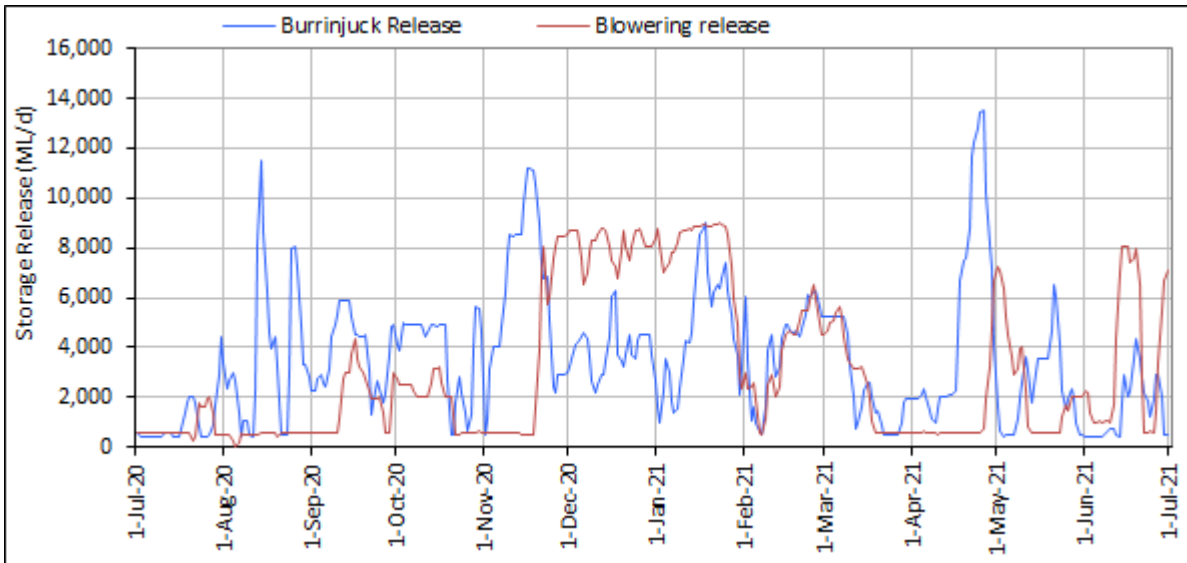
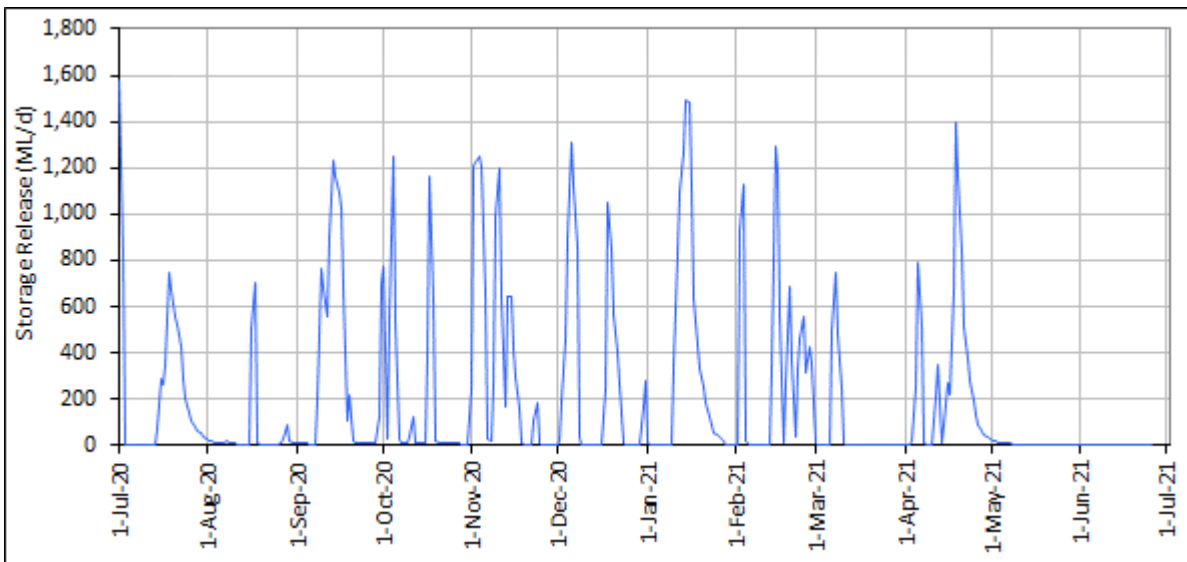


Figure 53: Daily releases from Tombullen storage (reporting period)



## Note 19—End of system flow

This refers to flow that leaves the entity and does not return.

### Data type

Derived from measured data

### Policy

Not applicable

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data source

Department of Planning and Environment—HYDSTRA

### Methodology

Summation of flows at gauging station/s measuring the volume of water that leaves the entity. For the Murrumbidgee reporting entity this is represented by the following gauges:

- 410134 Billabong Creek at Darlot
- 410003 Murrumbidgee River at Balranald

These gauges record the time series of heights which are converted to a volume of water based on a derived 'height to flow' relationship (rating table).

Under the water sharing plan minimum flow targets also exist at these end of system gauges.

### Additional information

Figure 54 and Figure 55 provide details of the daily flows in comparisons to both the minimum flow targets and the required flow targets. The required flow targets are made up of the minimum targets plus any other downstream requirements such as demand, environmental water requirements or inter-valley trade delivery requirements. A truncated plot is provided for each site to provide a clearer view the minimum flow target.

Figure 54: Murrumbidgee River at Balranald flow and target

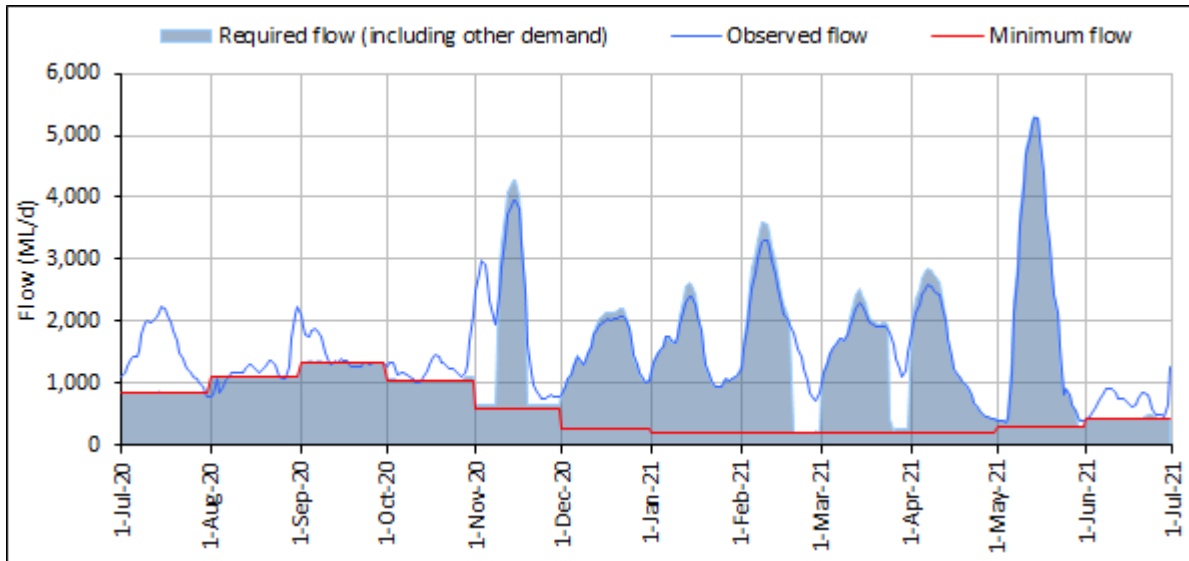
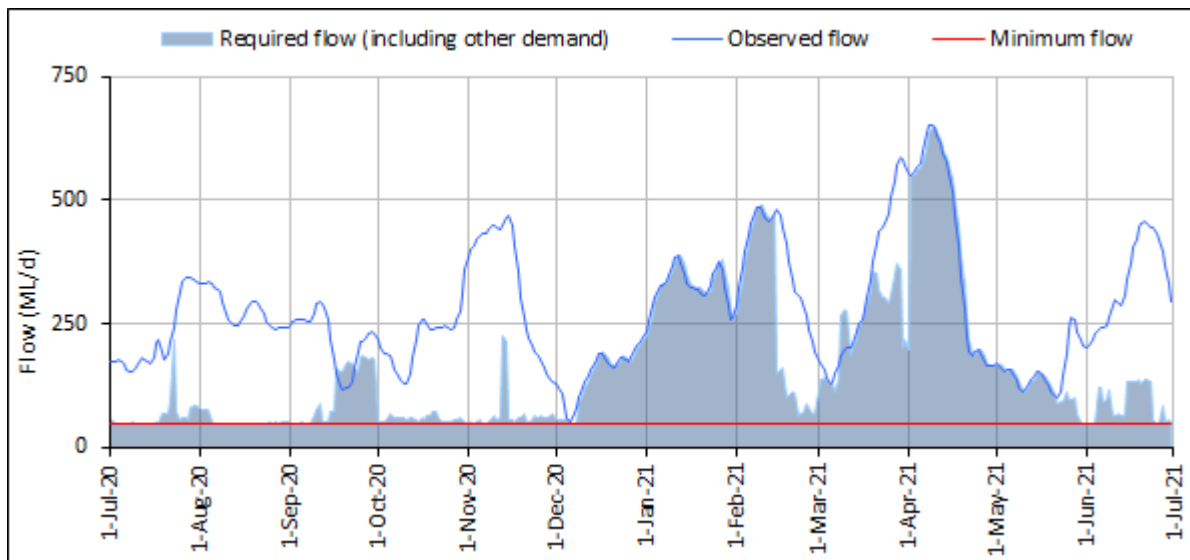


Figure 55: Billabong Creek at Darlot flow and target



## Note 20—Diversions to Lowbidgee

The Lowbidgee is the largest area of floodplain wetland remaining in the Murrumbidgee catchment. It is located between Maude and Balranald and covers an area over 2,000 square kilometres. The Lowbidgee includes the second largest red gum forest in Australia and significant black box, lignum and reed-bed communities. The lower Murrumbidgee floodplain wetlands have a strategic role in the health of the Murray–Darling river system and are significant at a national and international level.

### Data type

Measured

### Policy

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 9 Rules for managing access licences
  - Division 2 Access to supplementary water and taking water without debit rules
    - Clause 69 Taking of water under supplementary water access licences and supplementary (Lowbidgee) access licences
    - Clause 70 Distribution rules for the Lowbidgee area

Available from Department of Planning and Environment website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data source

Department of Planning and Environment—HYDSTRA

WaterNSW—annual compliance report

### Methodology

The total diversion to Lowbidgee is calculated by summing the flows diverted down three canals off Maude Weir and 4 regulators off Redbank Weir.

## Note 21—Extractions from river

For surface water this refers to the actual volume of water directly pumped or diverted from the regulated river by licence holders. Occasionally (generally in the case of environmental water) volumes are ordered against a licence account for in-stream benefits or for end of system flow events. As such the volume reported to be physically extracted from the river will not always be equal to the amount of water debited to accounts for usage, which has been reported in detail in Note 3. The figure also excludes basic rights extractions, which is reported as a separate line item and detailed in Note 22.

### Data type

Measured data

### Policy

Not applicable

### Data accuracy

A—Estimated in the range +/- 10%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/ Department of Planning and Environment—Water Accounting System (Joint ownership of system).

Department of Planning and Environment—Water Ordering and Usage database

### Methodology

For the purposes of this GPWAR extraction from the river is considered to be the total volume metered and debited to the allocation accounts minus any water that can be identified as being used within the system or ordered to be passed through the system. These volumes are generally associated with environmental water orders and have already been accounted for in other line items. Extractions from river included that diverted to an irrigation corporation for distribution.

### Additional information

Table 38 provides a reconciliation of the accounted usage against access licences compared to the extraction from river volume presented in the water accounting statements.



**Table 38: Reconciliation of account usage to physical extractions from the accounting extent**

Item	Volume (ML)
Total account usage debited to access licences (excluding Supplementary Lowbidgee access licence usage) <sup>47</sup>	1,966,979
Minus additional held environmental access licence allocation diverted to Lowbidgee <sup>48</sup>	250,539
Minus allocation usage leaving accounting extent <sup>49</sup>	66,017
Plus Coleambally Irrigation recredits <sup>50</sup>	102,880
<b>Estimated physical extractions from accounting extent<sup>51</sup></b>	<b>1,753,303</b>

<sup>47</sup> The total amount of water debited against the allocation accounts. Excluding supplementary (Lowbidgee) which is already quantified as a diversion in the water balance. Excludes basic rights extractions (estimated as a separate item in the accounting)

<sup>48</sup> Includes held environmental usage from General Security, High Security, Conveyance, Supplementary within the Lowbidgee, in addition to that usage under Supplementary (Lowbidgee) holdings

<sup>49</sup> Access licence usage delivered outside of the accounting extent (beyond Balranald and Darlot)

<sup>50</sup> Recredits to Coleambally irrigation access licence detailed with Note 17. The recredit is added back in here to reflect actual physical diversions from the river (off the main canal)

<sup>51</sup> Physical extraction estimate for river water balance

## Note 22—Basic rights extractions

This is the non-licensed right to extract water to meet basic requirements for household purposes (non-commercial uses in and around the house and garden) and for watering of stock. It is available for anyone who has access to river frontage on their property.

This water cannot be used for irrigating crops or garden produce that will be sold or bartered, for washing down machinery sheds or for intensive livestock operations.

In times of limited supply, there may be restrictions on taking water for domestic and stock use.

### Data Type

Estimated

### Policy

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 5 Requirements for water
  - Division 2 Requirements for water for basic landholder rights
    - Clause 18 Domestic and stock rights

Available on the Department of Planning and Environment website at [www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

C—Estimated in the range +/- 50%

### Providing agency

Department of Planning and Environment

### Data source

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

### Methodology

The estimation of domestic and stock rights uses a series of estimates for water usage, stocking rates, population and property shape based on local knowledge to calculate riparian (stock and domestic) requirements in megalitres per year. The annual extraction for Domestic and Stock rights in the water accounts is assumed to be the estimated figure stated in the Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016 (1,690 megalitres).

## Note 23—Supplementary/Uncontrolled flow extractions

This is the volume of water extracted, diverted or delivered under supplementary access licences and uncontrolled flow rules during announced periods of supplementary water. Supplementary flow events are announced periodically during the season when high flow events occur with the period of extraction and volume of water to be extracted determined based on the rules as set out in the water sharing plans. It is important to note that supplementary access licences differ from other categories of access licence in that the volume of water announced in the available water determination account refers to an annual upper limit for extractions and its provision is totally reliant on the occurrence of high flow events. In addition to supplementary water access being available during the supplementary flow events uncontrolled flow (if available) is also accessible against general security licences (see Note 23 for more detail on uncontrolled flows).

In 2012-13 a new category of licence, Supplementary (Lowbidgee), was introduced under WMA2000 to convert land (area) based rights to a volumetric entitlement.

For this GPWAR the actual amount of Supplementary water taken during the year has been displayed as both an increase in water liability (demand to take from an announced event) and an equal decrease in water liability (reduction in supplementary holders account for physical extractions), the net effect is zero system on the system liability and a decrease in the systems total water assets. No other processes for supplementary water (available water determinations, trading etc) were considered in the accounting process.

Uncontrolled Flow refers to a specific volume of non-debit water, as defined in the water sharing plan, pumped or diverted from the river for consumptive use by general security licence holders during periods when the extraction of supplementary water is permitted. It differs from supplementary water, which is a defined licence category that limits the volume pumped during high flow events, in that based on rules defined in the water sharing plan it can debit the licence holders general security account.

### Data type

Measured data

### Policy

Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016

- Part 7 Limits to the availability of water
  - Division 2—Available water determinations
    - Clause 65 Available water determinations for supplementary water access licences
    - Clause 66 Available water determinations for supplementary water (Lowbidgee) access licences
- Part 9 Rules for managing access licences
  - Division 2 - Access to supplementary water and taking water without debit rules
    - Clause 69 Taking of water under supplementary water access licences and supplementary (Lowbidgee) access licences
    - Clause 70 Distribution rules for the Lowbidgee area
    - Clause 71 Taking of water without debit under regulated river (general security) access licence

Refer to applicable Water Sharing Plan on Department of Planning and Environment Website.

## Data accuracy

A—Estimated in the range +/- 10%

## Providing agency

Department of Planning and Environment

## Data source

WaterNSW/ Department of Planning and Environment—Water Accounting System (Joint ownership of System).

## Methodology (Supplementary water)

Supplementary and uncontrolled flow water extraction and diversion data is collected by either on farm meters that measure extraction or gauges on diversion works. Meter readings are collected for individual licence holders at intervals during the year and converted via a calibration factor to a volume of water extracted. Water diverted from the river is measured by recording the height at either the gauge or weir with the volume diverted being derived by passing these heights through a rating table. However, with supplementary and uncontrolled flow water being extracted through the same pumps as those extracting water under other categories of access licences additional information is required to separate out supplementary and uncontrolled flow extraction. Basically, licence holders provide notification of their intention to pump prior to pumping or diverting water during the declared supplementary event and provide meter readings both at the commencement and conclusion of pumping. This enables the supplementary flow extraction to be assessed independent of other categories of access licences.

The total volume of supplementary extractions is then calculated by summing the individual extractions and diversions that occurred during declared periods of supplementary flow for the water year.

## Methodology (Uncontrolled flow usage)

Uncontrolled flow usage is measured in the same way as general security extractions but is tagged as uncontrolled flow in the accounting system. Under specific rules as outlined in the water sharing plan the uncontrolled usage will be debited against the general security account in a water year. The summary of these rules is given below:

- Uncontrolled flow can be extracted, up to a limit of 0.85 megalitres per share of entitlement, without debit when the annual allocation plus carryover (effective allocation) is below 0.7 megalitres per share of entitlement.
- When uncontrolled extractions plus effective allocation exceed a volume equivalent to 0.85 megalitres per share of entitlement then the volume of exceedance less any previously debited exceedance water will be debited against the general security allocation account.
- When effective allocation exceeds 0.85 megalitres per share of entitlement then the uncontrolled usage less any previously debited exceedance will be debited against the general security allocation account.

As uncontrolled flow is extracted through the same pumps as those extracting water under other categories of access licences, additional information is required to identify periods and, therefore, volumes of uncontrolled flow extractions. This is achieved by holders providing notification of intent to pump prior to pumping or diverting water during a declared supplementary event and provide meter readings both at the commencement and conclusion of pumping. This enables the uncontrolled flow extraction to be assessed independent of the other categories of access licences.

## Additional information

Total supplementary usage and uncontrolled flow usage for reporting period was 188,888 megalitres and 26,833 megalitres respectively. Total supplementary and uncontrolled usage by river section is presented in Figure 56. Total daily supplementary and uncontrolled usage is presented in Figure 57. Uncontrolled usage is presented as accessed as time of extraction. The accounting rules require accessed water to be reclassified as controlled and debited to accounts if allocation triggers are met during the year. Volumes of uncontrolled flow accounted to licences are provided in Table 40.

**Table 39: Murrumbidgee Supplementary Event Announcements**

Announced	% use limit	Catchment	Section	Access start	Access end	Announcement category <sup>52</sup>	Supp usage <sup>53</sup>	UCF Usage <sup>54</sup>
11-Aug-20	100	Beavers Creek	Beavers Creek	13-Aug-20	14-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Beavers Creek	Beavers Creek	24-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Beavers Creek	Beavers Creek	4-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Beavers Creek	Beavers Creek	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Beavers Creek	Beavers Creek	16-Jun-21	22-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Beavers Creek	Beavers Creek	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Billabong Creek	Billabong Ck Algudgerie to Puckawidgee	12-Jul-20	12-Jul-20	GS, SUPP, SUPP (LB)	212.4	0.0
21-Aug-20	100	Billabong Creek	Billabong Ck Algudgerie to Puckawidgee	4-Sep-20	14-Sep-20	GS, SUPP, SUPP (LB)	1,941.2	796.5
1-Nov-20	100	Billabong Creek	Billabong Ck Algudgerie to Puckawidgee	10-Nov-20	10-Nov-20	GS, SUPP, SUPP (LB)	169.1	13.9
7-Feb-21	100	Billabong Creek	Billabong Ck Algudgerie to Puckawidgee	24-Feb-21	26-Feb-21	SUPP, SUPP (LB)	338.6	0.0
30-Jun-20	100	Billabong Creek	Billabong Ck Colombo Junction to Jerilderie	5-Jul-20	6-Jul-20	GS, SUPP, SUPP (LB)	74.1	0.0
11-Aug-20	100	Billabong Creek	Billabong Ck Colombo Junction to Jerilderie	28-Aug-20	7-Sep-20	GS, SUPP, SUPP (LB)	121.8	96.6
1-Nov-20	100	Billabong Creek	Billabong Ck Colombo Junction to Jerilderie	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.2
7-Feb-21	100	Billabong Creek	Billabong Ck Colombo Junction to Jerilderie	16-Feb-21	18-Feb-21	SUPP, SUPP (LB)	77.7	0.0
13-Jun-21	100	Billabong Creek	Billabong Ck Colombo Junction to Jerilderie	30-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Billabong Creek	Billabong Ck D/S of Darlot Gauge	22-Jul-20	22-Jul-20	GS, SUPP, SUPP (LB)	179.3	20.3
21-Aug-20	100	Billabong Creek	Billabong Ck D/S of Darlot Gauge	16-Sep-20	29-Sep-20	GS, SUPP, SUPP (LB)	1,742.2	160.0
1-Nov-20	100	Billabong Creek	Billabong Ck D/S of Darlot Gauge	12-Nov-20	13-Nov-20	GS, SUPP, SUPP (LB)	337.9	4.9
7-Feb-21	100	Billabong Creek	Billabong Ck D/S of Darlot Gauge	8-Mar-21	10-Mar-21	SUPP, SUPP (LB)	714.1	0.0
30-Jun-20	100	Billabong Creek	Billabong Ck Jerilderie to Algudgerie	12-Jul-20	12-Jul-20	GS, SUPP, SUPP (LB)	40.0	38.9
21-Aug-20	100	Billabong Creek	Billabong Ck Jerilderie to Algudgerie	4-Sep-20	14-Sep-20	GS, SUPP, SUPP (LB)	524.2	382.8
1-Nov-20	100	Billabong Creek	Billabong Ck Jerilderie to Algudgerie	10-Nov-20	10-Nov-20	GS, SUPP, SUPP (LB)	0.0	6.9
7-Feb-21	100	Billabong Creek	Billabong Ck Jerilderie to Algudgerie	24-Feb-21	26-Feb-21	SUPP, SUPP (LB)	130.4	0.0
30-Jun-20	100	Billabong Creek	Billabong Ck Puckawidgee to Wangenella	14-Jul-20	14-Jul-20	GS, SUPP, SUPP (LB)	70.4	0.7
21-Aug-20	100	Billabong Creek	Billabong Ck Puckawidgee to Wangenella	5-Sep-20	14-Sep-20	GS, SUPP, SUPP (LB)	1,056.5	97.2

<sup>52</sup> GS = General Security, SUPP = supplementary water, SUPP (LB) = supplementary water (Lowbidgee)

<sup>53</sup> Supplementary or Supplementary (Lowbidgee) usage

<sup>54</sup> General security uncontrolled flow access. This is the Uncontrolled Flow usage prior to it reverting to General Security usage under the Water Sharing Plan Uncontrolled Flow rules

Announced	% use limit	Catchment	Section	Access start	Access end	Announcement category <sup>52</sup>	Supp usage <sup>53</sup>	UCF Usage <sup>54</sup>
1-Nov-20	100	Billabong Creek	Billabong Ck Puckawidgee to Wangenella	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.4
9-Nov-20	100	Billabong Creek	Billabong Ck Puckawidgee to Wangenella	10-Nov-20	10-Nov-20	GS, SUPP, SUPP (LB)	10.3	0.4
7-Feb-21	100	Billabong Creek	Billabong Ck Puckawidgee to Wangenella	24-Feb-21	26-Feb-21	SUPP, SUPP (LB)	156.7	0.0
30-Jun-20	100	Billabong Creek	Billabong Ck Wangenella to Darlot	17-Jul-20	17-Jul-20	GS, SUPP, SUPP (LB)	52.0	42.0
21-Aug-20	100	Billabong Creek	Billabong Ck Wangenella to Darlot	13-Sep-20	20-Sep-20	GS, SUPP, SUPP (LB)	195.9	231.4
1-Nov-20	100	Billabong Creek	Billabong Ck Wangenella to Darlot	29-Nov-20	30-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Billabong Creek	Billabong Ck Wangenella to Darlot	3-Mar-21	5-Mar-21	SUPP, SUPP (LB)	66.0	0.0
30-Jun-20	100	BUDGEE CREEK	Budgee Creek	7-Jul-20	7-Jul-20	GS, SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Budgee Creek	Budgee Creek	26-Aug-20	2-Sep-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Budgee Creek	Budgee Creek	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
2-Feb-21	100	Budgee Creek	Budgee Creek	5-Feb-21	9-Feb-21	SUPP, SUPP (LB)	0.0	0.0
11-Feb-21	100	Budgee Creek	Budgee Creek	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Budgee Creek	Budgee Creek	28-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Bundidgerry Creek	Bundidgerry Creek	14-Aug-20	15-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Bundidgerry Creek	Bundidgerry Creek	25-Aug-20	30-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Bundidgerry Creek	Bundidgerry Creek	5-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Bundidgerry Creek	Bundidgerry Creek	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Bundidgerry Creek	Bundidgerry Creek	17-Jun-21	23-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Bundidgerry Creek	MI Main Canal	14-Aug-20	15-Aug-20	GS, SUPP, SUPP (LB)	0.0	5,076.0
21-Aug-20	100	Bundidgerry Creek	MI Main Canal	25-Aug-20	30-Aug-20	GS, SUPP, SUPP (LB)	17,690.0	0.0
1-Nov-20	100	Bundidgerry Creek	MI Main Canal	5-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Bundidgerry Creek	MI Main Canal	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	1,135.0	0.0
13-Jun-21	100	Bundidgerry Creek	MI Main Canal	17-Jun-21	23-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Colombo Creek	Colombo Ck Coonong Weir to Billabong Junction	4-Jul-20	4-Jul-20	GS, SUPP, SUPP (LB)	45.1	0.1
11-Aug-20	100	Colombo Creek	Colombo Ck Coonong Weir to Billabong Junction	22-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	160.7	5.3
1-Nov-20	100	Colombo Creek	Colombo Ck Coonong Weir to Billabong Junction	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	0.0	37.7
7-Feb-21	100	Colombo Creek	Colombo Ck Coonong Weir to Billabong Junction	14-Feb-21	16-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Colombo Creek	Colombo Ck Coonong Weir to Billabong Junction	28-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Colombo Creek	Colombo Ck Morundah to Coonong Weir	3-Jul-20	3-Jul-20	GS, SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Colombo Creek	Colombo Ck Morundah to Coonong Weir	21-Aug-20	28-Aug-20	GS, SUPP, SUPP (LB)	0.0	15.0
1-Nov-20	100	Colombo Creek	Colombo Ck Morundah to Coonong Weir	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.8
7-Feb-21	100	Colombo Creek	Colombo Ck Morundah to Coonong Weir	12-Feb-21	14-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Colombo Creek	Colombo Ck Morundah to Coonong Weir	25-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Coononcoocabil Lagoon	MI Sturt Canal	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Coononcoocabil Lagoon	MI Sturt Canal	28-Aug-20	2-Sep-20	GS, SUPP, SUPP (LB)	15,420.0	3,649.0
1-Nov-20	100	Coononcoocabil Lagoon	MI Sturt Canal	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Coononcoocabil Lagoon	MI Sturt Canal	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Cowabbie Creek	Cowabbie Creek	13-Aug-20	14-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Cowabbie Creek	Cowabbie Creek	24-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0

Announced	% use limit	Catchment	Section	Access start	Access end	Announcement category <sup>52</sup>	Supp usage <sup>53</sup>	UCF Usage <sup>54</sup>
1-Nov-20	100	Cowabbie Creek	Cowabbie Creek	4-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Cowabbie Creek	Cowabbie Creek	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Cowabbie Creek	Cowabbie Creek	16-Jun-21	22-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Cowabbie Creek	Cowabbie Creek	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Cuddell Creek	Cuddell Creek (off Yanco Ck)	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	200.0	0.0
21-Aug-20	100	Cuddell Creek	Cuddell Creek (off Yanco Ck)	22-Aug-20	23-Aug-20	GS, SUPP, SUPP (LB)	22.5	0.0
24-Aug-20	100	Cuddell Creek	Cuddell Creek (off Yanco Ck)	26-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Cuddell Creek	Cuddell Creek (off Yanco Ck)	5-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	100.0	0.0
7-Feb-21	100	Cuddell Creek	Cuddell Creek (off Yanco Ck)	9-Feb-21	11-Feb-21	SUPP, SUPP (LB)	393.5	0.0
13-Jun-21	100	Cuddell Creek	Cuddell Creek (off Yanco Ck)	19-Jun-21	25-Jun-21	SUPP, SUPP (LB)	450.0	0.0
30-Jun-20	100	Forest Creek	Forest Creek	8-Jul-20	8-Jul-20	GS, SUPP, SUPP (LB)	34.9	39.7
21-Aug-20	100	Forest Creek	Forest Creek	31-Aug-20	10-Sep-20	GS, SUPP, SUPP (LB)	1,328.3	225.8
1-Nov-20	100	Forest Creek	Forest Creek	10-Nov-20	10-Nov-20	GS, SUPP, SUPP (LB)	128.9	245.6
7-Feb-21	100	Forest Creek	Forest Creek	26-Feb-21	28-Feb-21	SUPP, SUPP (LB)	390.7	0.0
11-Aug-20	100	Island Creek	Island Creek (via Nangus)	12-Aug-20	13-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Island Creek	Island Creek (via Nangus)	22-Aug-20	27-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Island Creek	Island Creek (via Nangus)	2-Nov-20	3-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Island Creek	Island Creek (via Nangus)	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Island Creek	Island Creek (via Nangus)	14-Jun-21	20-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Island Creek	Island Creek (via Nangus)	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Island Lagoon	Island Lagoon	13-Aug-20	14-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Island Lagoon	Island Lagoon	24-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Island Lagoon	Island Lagoon	4-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Island Lagoon	Island Lagoon	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Island Lagoon	Island Lagoon	16-Jun-21	22-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Island Lagoon	Island Lagoon	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Mirrool Creek	Mirrool Creek	14-Aug-20	15-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Mirrool Creek	Mirrool Creek	25-Aug-20	30-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Mirrool Creek	Mirrool Creek	5-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Mirrool Creek	Mirrool Creek	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Mirrool Creek	Mirrool Creek	17-Jun-21	23-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Murrumbidgee River	Burrinjuck Dam to Gundagai	12-Aug-20	13-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Murrumbidgee River	Burrinjuck Dam to Gundagai	22-Aug-20	27-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Murrumbidgee River	Burrinjuck Dam to Gundagai	2-Nov-20	3-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Murrumbidgee River	Burrinjuck Dam to Gundagai	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Murrumbidgee River	Burrinjuck Dam to Gundagai	14-Jun-21	20-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Murrumbidgee River	Burrinjuck Dam to Gundagai	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Murrumbidgee River	Coly Main Canal Offtake	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Murrumbidgee River	Coly Main Canal Offtake	28-Aug-20	2-Sep-20	GS, SUPP, SUPP (LB)	10,856.5	5,547.2



Announced	% use limit	Catchment	Section	Access start	Access end	Announcement category <sup>52</sup>	Supp usage <sup>53</sup>	UCF Usage <sup>54</sup>
7-Feb-21	100	Murrumbidgee River	Coly Main Canal Offtake	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Murrumbidgee River	D/S Balranad Weir to Murray	14-Jul-20	14-Jul-20	GS, SUPP, SUPP (LB)	25.3	41.9
21-Aug-20	100	Murrumbidgee River	D/S Balranad Weir to Murray	1-Sep-20	8-Sep-20	GS, SUPP, SUPP (LB)	89.5	0.0
1-Nov-20	100	Murrumbidgee River	D/S Balranad Weir to Murray	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
2-Feb-21	100	Murrumbidgee River	D/S Balranad Weir to Murray	10-Feb-21	15-Feb-21	SUPP, SUPP (LB)	110.7	0.0
11-Aug-20	100	Murrumbidgee River	D/S Berembed Weir to Narrandera	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Murrumbidgee River	D/S Berembed Weir to Narrandera	25-Aug-20	30-Aug-20	GS, SUPP, SUPP (LB)	100.0	0.0
1-Nov-20	100	Murrumbidgee River	D/S Berembed Weir to Narrandera	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Murrumbidgee River	D/S Berembed Weir to Narrandera	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Murrumbidgee River	D/S Berembed Weir to Narrandera	17-Jun-21	23-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Murrumbidgee River	D/S Berembed Weir to Narrandera	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Murrumbidgee River	D/S Carrathool To Hay Weir	5-Jul-20	5-Jul-20	GS, SUPP, SUPP (LB)	943.1	572.2
11-Aug-20	100	Murrumbidgee River	D/S Carrathool To Hay Weir	25-Aug-20	1-Sep-20	GS, SUPP, SUPP (LB)	9,223.1	4,463.9
1-Nov-20	100	Murrumbidgee River	D/S Carrathool To Hay Weir	10-Nov-20	10-Nov-20	GS, SUPP, SUPP (LB)	1,000.3	358.2
2-Feb-21	100	Murrumbidgee River	D/S Carrathool To Hay Weir	5-Feb-21	9-Feb-21	SUPP, SUPP (LB)	2,661.4	0.0
11-Feb-21	100	Murrumbidgee River	D/S Carrathool To Hay Weir	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	93.0	0.0
13-Jun-21	100	Murrumbidgee River	D/S Carrathool To Hay Weir	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	2,670.7	0.0
11-Aug-20	100	Murrumbidgee River	D/S Coly Main Offtake to Gogeldrie Weir	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Murrumbidgee River	D/S Coly Main Offtake to Gogeldrie Weir	25-Aug-20	30-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Murrumbidgee River	D/S Coly Main Offtake to Gogeldrie Weir	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Murrumbidgee River	D/S Coly Main Offtake to Gogeldrie Weir	17-Jun-21	23-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Murrumbidgee River	D/S Currawarna Bridge to Berembed Weir	13-Aug-20	14-Aug-20	GS, SUPP, SUPP (LB)	81.7	0.0
21-Aug-20	100	Murrumbidgee River	D/S Currawarna Bridge to Berembed Weir	24-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Murrumbidgee River	D/S Currawarna Bridge to Berembed Weir	4-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	80.0	0.0
7-Feb-21	100	Murrumbidgee River	D/S Currawarna Bridge to Berembed Weir	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Murrumbidgee River	D/S Currawarna Bridge to Berembed Weir	16-Jun-21	22-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Murrumbidgee River	D/S Currawarna Bridge to Berembed Weir	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	78.0	0.0
30-Jun-20	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	2-Jul-20	2-Jul-20	GS, SUPP, SUPP (LB)	1,683.0	7.5
11-Aug-20	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	18-Aug-20	19-Aug-20	GS, SUPP, SUPP (LB)	2,831.4	4.5
21-Aug-20	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	29-Aug-20	3-Sep-20	GS, SUPP, SUPP (LB)	6,566.6	105.2
1-Nov-20	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	8-Nov-20	9-Nov-20	GS, SUPP, SUPP (LB)	1,643.3	225.0
2-Feb-21	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	3-Feb-21	5-Feb-21	SUPP, SUPP (LB)	3,848.3	0.0
7-Feb-21	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	8-Feb-21	9-Feb-21	SUPP, SUPP (LB)	2,379.8	0.0
11-Feb-21	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	940.1	0.0
13-Jun-21	100	Murrumbidgee River	D/S Darlington Pt Gauge to Carrathool	24-Jun-21	30-Jun-21	SUPP, SUPP (LB)	5,930.0	0.0
11-Aug-20	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	16-Aug-20	17-Aug-20	GS, SUPP, SUPP (LB)	640.9	1.4
21-Aug-20	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	29-Aug-20	3-Sep-20	GS, SUPP, SUPP (LB)	2,851.3	47.2
1-Nov-20	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	386.0	0.0
2-Feb-21	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	3-Feb-21	5-Feb-21	SUPP, SUPP (LB)	1,200.0	0.0



Announced	% use limit	Catchment	Section	Access start	Access end	Announcement category <sup>52</sup>	Supp usage <sup>53</sup>	UCF Usage <sup>54</sup>
7-Feb-21	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	8-Feb-21	9-Feb-21	SUPP, SUPP (LB)	587.1	0.0
11-Feb-21	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	12-Feb-21	12-Feb-21	SUPP, SUPP (LB)	232.4	0.0
13-Jun-21	100	Murrumbidgee River	D/S Gogeldrie Weir to Darlington Point	21-Jun-21	30-Jun-21	SUPP, SUPP (LB)	3,404.5	0.0
30-Jun-20	100	Murrumbidgee River	D/S Hay Weir to Maude Weir	7-Jul-20	7-Jul-20	GS, SUPP, SUPP (LB)	1,338.3	0.0
11-Aug-20	100	Murrumbidgee River	D/S Hay Weir to Maude Weir	26-Aug-20	2-Sep-20	GS, SUPP, SUPP (LB)	10,992.9	256.7
1-Nov-20	100	Murrumbidgee River	D/S Hay Weir to Maude Weir	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	1,090.5	0.0
2-Feb-21	100	Murrumbidgee River	D/S Hay Weir to Maude Weir	5-Feb-21	9-Feb-21	SUPP, SUPP (LB)	5,125.8	0.0
11-Feb-21	100	Murrumbidgee River	D/S Hay Weir to Maude Weir	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	1,280.9	0.0
13-Jun-21	100	Murrumbidgee River	D/S Hay Weir to Maude Weir	28-Jun-21	30-Jun-21	SUPP, SUPP (LB)	3,023.3	0.0
30-Jun-20	100	Murrumbidgee River	D/S Maude Weir to Redbank Weir	8-Jul-20	8-Jul-20	GS, SUPP, SUPP (LB)	1,624.0	0.0
21-Aug-20	100	Murrumbidgee River	D/S Maude Weir to Redbank Weir	29-Aug-20	5-Sep-20	GS, SUPP, SUPP (LB)	28,415.2	3,075.0
1-Nov-20	100	Murrumbidgee River	D/S Maude Weir to Redbank Weir	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	2,678.0	0.0
2-Feb-21	100	Murrumbidgee River	D/S Maude Weir to Redbank Weir	5-Feb-21	9-Feb-21	SUPP, SUPP (LB)	11,351.0	0.0
11-Feb-21	100	Murrumbidgee River	D/S Maude Weir to Redbank Weir	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	1,326.0	0.0
13-Jun-21	100	Murrumbidgee River	D/S Maude Weir to Redbank Weir	28-Jun-21	30-Jun-21	SUPP, SUPP (LB)	5,306.0	0.0
11-Aug-20	100	Murrumbidgee River	D/S Narrandera Gauge to Coly Main Offtake	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	25.0	2.1
1-Nov-20	100	Murrumbidgee River	D/S Narrandera Gauge to Coly Main Offtake	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Murrumbidgee River	D/S Narrandera Gauge to Coly Main Offtake	10-Feb-21	12-Feb-21	SUPP, SUPP (LB)	512.0	0.0
13-Jun-21	100	Murrumbidgee River	D/S Narrandera Gauge to Coly Main Offtake	17-Jun-21	23-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Murrumbidgee River	D/S Narrandera Gauge to Coly Main Offtake	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Murrumbidgee River	D/S Redbank to Balranald Weir	13-Jul-20	13-Jul-20	GS, SUPP, SUPP (LB)	104.9	117.3
21-Aug-20	100	Murrumbidgee River	D/S Redbank to Balranald Weir	1-Sep-20	8-Sep-20	GS, SUPP, SUPP (LB)	7.2	301.1
1-Nov-20	100	Murrumbidgee River	D/S Redbank to Balranald Weir	4-Nov-20	4-Nov-20	GS, SUPP, SUPP (LB)	1.4	59.5
2-Feb-21	100	Murrumbidgee River	D/S Redbank to Balranald Weir	10-Feb-21	15-Feb-21	SUPP, SUPP (LB)	96.5	0.0
11-Aug-20	100	Murrumbidgee River	Gundagai to Wagga	12-Aug-20	13-Aug-20	GS, SUPP, SUPP (LB)	0.0	8.9
21-Aug-20	100	Murrumbidgee River	Gundagai to Wagga	22-Aug-20	27-Aug-20	GS, SUPP, SUPP (LB)	0.0	1.6
1-Nov-20	100	Murrumbidgee River	Gundagai to Wagga	2-Nov-20	3-Nov-20	GS, SUPP, SUPP (LB)	0.0	27.0
7-Feb-21	100	Murrumbidgee River	Gundagai to Wagga	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Murrumbidgee River	Gundagai to Wagga	14-Jun-21	20-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Murrumbidgee River	Gundagai to Wagga	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Murrumbidgee River	Wagga to Currawarna	13-Aug-20	14-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Murrumbidgee River	Wagga to Currawarna	24-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Murrumbidgee River	Wagga to Currawarna	4-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	26.0
7-Feb-21	100	Murrumbidgee River	Wagga to Currawarna	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Murrumbidgee River	Wagga to Currawarna	16-Jun-21	22-Jun-21	SUPP, SUPP (LB)	3.0	0.0
25-Jun-21	100	Murrumbidgee River	Wagga to Currawarna	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Nimbo Creek	Nimbo Creek	12-Aug-20	13-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Nimbo Creek	Nimbo Creek	22-Aug-20	27-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Nimbo Creek	Nimbo Creek	2-Nov-20	3-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0

Announced	% use limit	Catchment	Section	Access start	Access end	Announcement category <sup>52</sup>	Supp usage <sup>53</sup>	UCF Usage <sup>54</sup>
7-Feb-21	100	Nimbo Creek	Nimbo Creek	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Nimbo Creek	Nimbo Creek	14-Jun-21	20-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Nimbo Creek	Nimbo Creek	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Old Man Creek	Old Man Creek	13-Aug-20	14-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Old Man Creek	Old Man Creek	24-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Old Man Creek	Old Man Creek	4-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	3.0
7-Feb-21	100	Old Man Creek	Old Man Creek	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Old Man Creek	Old Man Creek	16-Jun-21	22-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Old Man Creek	Old Man Creek	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Sheepwash Creek	Sheepwash Ck (off Billabong Ck)	17-Jul-20	17-Jul-20	GS, SUPP, SUPP (LB)	25.9	0.0
21-Aug-20	100	Sheepwash Creek	Sheepwash Ck (off Billabong Ck)	13-Sep-20	20-Sep-20	GS, SUPP, SUPP (LB)	167.2	0.0
1-Nov-20	100	Sheepwash Creek	Sheepwash Ck (off Billabong Ck)	11-Nov-20	13-Nov-20	GS, SUPP, SUPP (LB)	20.8	0.0
7-Feb-21	100	Sheepwash Creek	Sheepwash Ck (off Billabong Ck)	24-Feb-21	26-Feb-21	SUPP, SUPP (LB)	30.0	0.0
11-Aug-20	100	Tumut River	Tumut	12-Aug-20	13-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Tumut River	Tumut	22-Aug-20	27-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Tumut River	Tumut	2-Nov-20	3-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Tumut River	Tumut	8-Feb-21	10-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Tumut River	Tumut	14-Jun-21	20-Jun-21	SUPP, SUPP (LB)	0.0	0.0
25-Jun-21	100	Tumut River	Tumut	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Unnamed watercourse	D/S Narrandera Gauge to Gogeldrie Weir	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Unnamed watercourse	D/S Narrandera Gauge to Gogeldrie Weir	25-Aug-20	30-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Unnamed watercourse	D/S Narrandera Gauge to Gogeldrie Weir	6-Nov-20	6-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Unnamed watercourse	Unnamed Water Course	5-Jul-20	5-Jul-20	GS, SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Unnamed watercourse	Unnamed Water Course	21-Aug-20	28-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Unnamed watercourse	Unnamed Water Course	10-Nov-20	10-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
2-Feb-21	100	Unnamed watercourse	Unnamed Water Course	5-Feb-21	9-Feb-21	SUPP, SUPP (LB)	0.0	0.0
11-Feb-21	100	Unnamed watercourse	Unnamed Water Course	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Unnamed watercourse	Unnamed Water Course	26-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Uri Creek	Uri Creek	2-Jul-20	2-Jul-20	GS, SUPP, SUPP (LB)	43.1	0.4
11-Aug-20	100	Uri Creek	Uri Creek	18-Aug-20	19-Aug-20	GS, SUPP, SUPP (LB)	80.0	3.5
21-Aug-20	100	Uri Creek	Uri Creek	29-Aug-20	3-Sep-20	GS, SUPP, SUPP (LB)	224.0	0.0
1-Nov-20	100	Uri Creek	Uri Creek	8-Nov-20	8-Nov-20	GS, SUPP, SUPP (LB)	45.0	0.0
2-Feb-21	100	Uri Creek	Uri Creek	3-Feb-21	5-Feb-21	SUPP, SUPP (LB)	41.0	0.0
7-Feb-21	100	Uri Creek	Uri Creek	8-Feb-21	9-Feb-21	SUPP, SUPP (LB)	0.0	0.0
11-Feb-21	100	Uri Creek	Uri Creek	13-Feb-21	13-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Uri Creek	Uri Creek	24-Jun-21	30-Jun-21	SUPP, SUPP (LB)	106.9	0.0
11-Aug-20	100	Washpen Creek	Washpen Creek (off Yanco Ck)	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
24-Aug-20	100	Washpen Creek	Washpen Creek (off Yanco Ck)	26-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Washpen Creek	Washpen Creek (off Yanco Ck)	5-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0

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7-Feb-21	100	Washpen Creek	Washpen Creek (off Yanco Ck)	9-Feb-21	11-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Washpen Creek	Washpen Creek (off Yanco Ck)	19-Jun-21	25-Jun-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Wilson Anabranch	Wilson Anadranch (off Yanco Ck)	14-Jul-20	14-Jul-20	GS, SUPP, SUPP (LB)	0.0	0.0
21-Aug-20	100	Wilson Anabranch	Wilson Anadranch (off Yanco Ck)	31-Aug-20	1-Sep-20	GS, SUPP, SUPP (LB)	0.0	0.0
24-Aug-20	100	Wilson Anabranch	Wilson Anadranch (off Yanco Ck)	6-Sep-20	11-Sep-20	GS, SUPP, SUPP (LB)	0.0	0.0
1-Nov-20	100	Wilson Anabranch	Wilson Anadranch (off Yanco Ck)	20-Nov-20	20-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Wilson Anabranch	Wilson Anadranch (off Yanco Ck)	23-Feb-21	25-Feb-21	SUPP, SUPP (LB)	0.0	0.0
30-Jun-20	100	Yanco Creek	Yanco Ck Morundah to Yanco Bridge	4-Jul-20	4-Jul-20	GS, SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Yanco Creek	Yanco Ck Morundah to Yanco Bridge	22-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	0.0	188.8
1-Nov-20	100	Yanco Creek	Yanco Ck Morundah to Yanco Bridge	13-Nov-20	13-Nov-20	GS, SUPP, SUPP (LB)	0.0	0.0
7-Feb-21	100	Yanco Creek	Yanco Ck Morundah to Yanco Bridge	14-Feb-21	16-Feb-21	SUPP, SUPP (LB)	0.0	0.0
13-Jun-21	100	Yanco Creek	Yanco Ck Morundah to Yanco Bridge	30-Jun-21	30-Jun-21	SUPP, SUPP (LB)	0.0	0.0
11-Aug-20	100	Yanco Creek	Yanco Ck Offtake to Morundah	15-Aug-20	16-Aug-20	GS, SUPP, SUPP (LB)	100.0	0.0
21-Aug-20	100	Yanco Creek	Yanco Ck Offtake to Morundah	22-Aug-20	23-Aug-20	GS, SUPP, SUPP (LB)	100.0	0.0
24-Aug-20	100	Yanco Creek	Yanco Ck Offtake to Morundah	26-Aug-20	29-Aug-20	GS, SUPP, SUPP (LB)	312.7	3.8
1-Nov-20	100	Yanco Creek	Yanco Ck Offtake to Morundah	5-Nov-20	5-Nov-20	GS, SUPP, SUPP (LB)	50.0	0.0
7-Feb-21	100	Yanco Creek	Yanco Ck Offtake to Morundah	9-Feb-21	11-Feb-21	SUPP, SUPP (LB)	850.8	0.0
13-Jun-21	100	Yanco Creek	Yanco Ck Offtake to Morundah	19-Jun-21	25-Jun-21	SUPP, SUPP (LB)	710.0	0.0
30-Jun-20	100	Yanco Creek	Yanco Ck Wiraki to Puckawidgee	14-Jul-20	14-Jul-20	GS, SUPP, SUPP (LB)	118.0	0.8
21-Aug-20	100	Yanco Creek	Yanco Ck Wiraki to Puckawidgee	31-Aug-20	2-Sep-20	GS, SUPP, SUPP (LB)	256.4	30.1
24-Aug-20	100	Yanco Creek	Yanco Ck Wiraki to Puckawidgee	6-Sep-20	11-Sep-20	GS, SUPP, SUPP (LB)	554.0	43.7
1-Nov-20	100	Yanco Creek	Yanco Ck Wiraki to Puckawidgee	20-Nov-20	20-Nov-20	GS, SUPP, SUPP (LB)	21.5	0.0
7-Feb-21	100	Yanco Creek	Yanco Ck Wiraki to Puckawidgee	23-Feb-21	25-Feb-21	SUPP, SUPP (LB)	489.3	0.0
30-Jun-20	100	Yanco Creek	Yanco Ck Yanco Bridge to Wiraki	12-Jul-20	12-Jul-20	GS, SUPP, SUPP (LB)	100.0	0.1
11-Aug-20	100	Yanco Creek	Yanco Ck Yanco Bridge to Wiraki	28-Aug-20	4-Sep-20	GS, SUPP, SUPP (LB)	690.7	121.7
1-Nov-20	100	Yanco Creek	Yanco Ck Yanco Bridge to Wiraki	19-Nov-20	19-Nov-20	GS, SUPP, SUPP (LB)	160.7	0.0
7-Feb-21	100	Yanco Creek	Yanco Ck Yanco Bridge to Wiraki	20-Feb-21	22-Feb-21	SUPP, SUPP (LB)	440.0	0.0
<b>TOTAL USAGE</b>							188,888	26,833

Figure 56: Supplementary and uncontrolled flow usage by river section

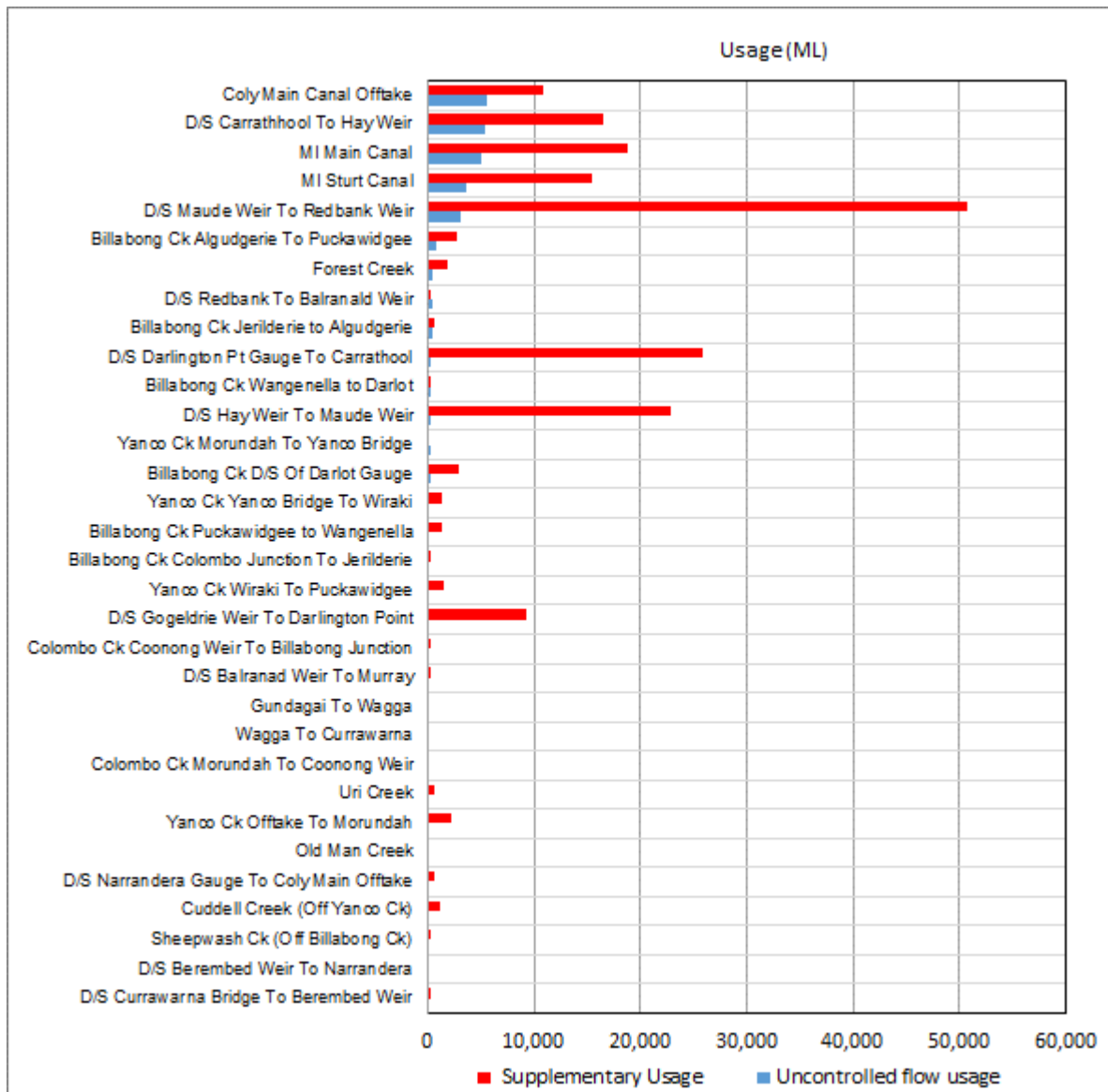


Figure 57: Supplementary water and uncontrolled flow daily usage<sup>55</sup>

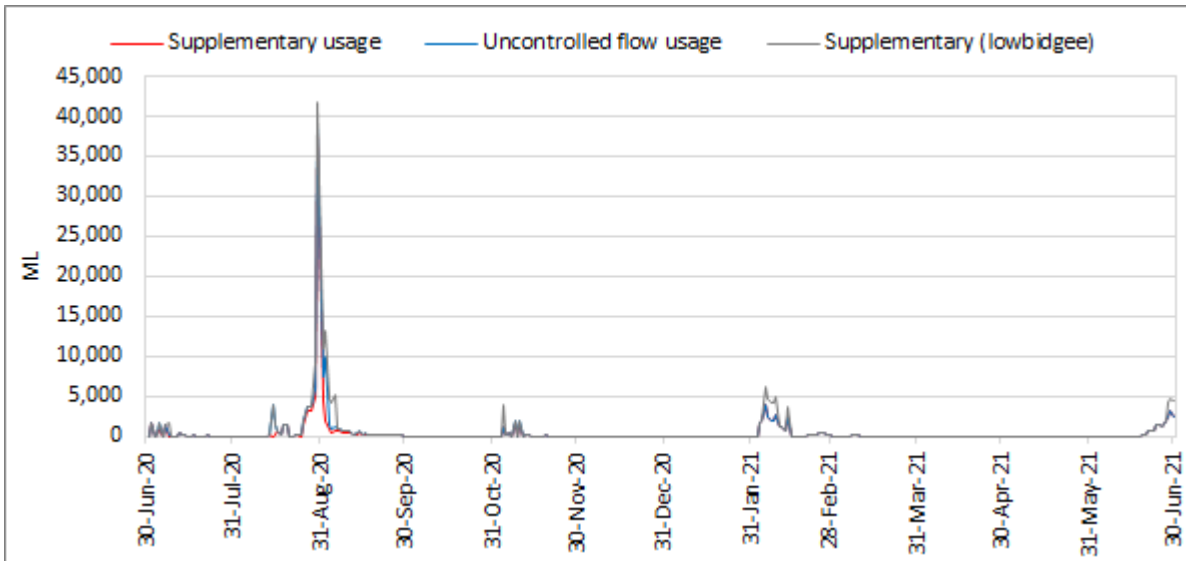


Table 40: Uncontrolled flow allocation accounted usage<sup>56</sup>

Water year	Uncontrolled flow extractions
2004–05	145,197
2005–06	187,302
2006–07	0
2007–08	0
2008–09	0
2009–10	21,977
2010–11	0
2011–12	0
2012–13	0
2013–14	40,547
2014–15	28,014
2015–16	78,931
2016–17	839
2017–18	20,605
2018–19	0
2019–20	16,603
2020–21	7

<sup>55</sup> This refers to the total uncontrolled flow usage at the time of extraction i.e. not adjusted for conversion back to general security as per the plan rules.

<sup>56</sup> This refers to the uncontrolled flow after adjustments for conversions back to general security usage as per the water sharing plan rules.

## Note 24—Unaccounted volume

In theory, if all the processes of a water balance were accurately accounted for the unaccounted difference would be zero. In reality due to the large accuracy uncertainties in many of the volumes presented in the accounts, the various sources and methods from which the data has been obtained and the fact that not all processes of the water cycle have been accounted for in detail, the statements are not balanced at the end of the accounting process. In order to balance the accounts a final balancing entry is required, and this is termed the unaccounted difference. As technology progresses and accuracy improves in the account estimates, it is anticipated that relatively, this figure should reduce in future accounts.

### Data type

Not applicable

### Policy

Not applicable

### Data accuracy

D—Estimated in the range +/- 100% (this refers to the fact the unaccounted volume is a result of a range of processes estimated using different methodologies and accuracies. The accuracy around the number itself, that is required to achieve mass balances is A1—Nil accuracy).

### Providing agency

Not applicable

### Data source

Not applicable

### Methodology

The unaccounted difference is equal to the amount required to obtain the correct physical volume in river at the end of the reporting period, after all the known physical inflows and outflows have been accounted. The accounting process of this GPWAR attempted to represent the physical movement of water by creating a river asset. The opening and closing balance of the river volume was estimated according to Note 11.

### Surface water unaccounted difference

$$UV_{SW} = R_s - R_c + R_i - R_o$$

Where:

$UV_{SW}$  = Unaccounted difference for surface water

$R_s$  = Opening river volume estimate

$R_c$  = Closing river volume estimate

$R_o$  = Physical outflows from the river (e.g. extractions)

$R_i$  = Physical inflows to the river (e.g. runoff, return flows, dam releases)

## Note 25—River and groundwater interaction

This note refers to the net effect of water that has been identified as either flowing from the connected alluvium to the accounted river extent (increase in water asset), and from the accounted river extent to the alluvium aquifer (decrease in water asset).

### Data type

Modelled

### Policy

Not applicable

### Data accuracy

D—Estimated in the range +/- 100%

### Providing agency

Department of Planning and Environment

### Data source

Department of Planning and Environment MODFLOW (Mid Murrumbidgee), Water Table Fluctuation Model (Lower Murrumbidgee). Data inputs to the models are obtained from HYDSTRA, GDS

### Methodology

The river interaction methods used to produce estimates in this GPWAR are documented in the report, *General Purpose Water Accounting Reports: Groundwater methodologies*. This document is available for download from the Department of Planning and Environment webpage.

Method A (Modflow) was used to assess the annual physical groundwater budget in both the Mid Murrumbidgee Groundwater Management Area and the Lower Murrumbidgee groundwater management area. The 2020–21 GPWAR includes results from the recently calibrated Lower Murrumbidgee model which have allows separate quantification of both river inflows and river outflows in the accounting statements (a limitation of the method B approach utilised in prior publications resulting where only a net interaction is quantified).

No estimate is included in the statements for any river interactions outside the areas covered by these methods.

### Additional information

Groundwater model results illustrating water flows and storage change in reporting period for the Lower Murrumbidgee. Mid Murrumbidgee (zone 2) and Mid Murrumbidgee (zone 3) are presented in Figure 58, Figure 59 and Figure 60 respectively.

Figure 58: Lower Murrumbidgee alluvium physical flow budget for reporting period (Gigalitres)

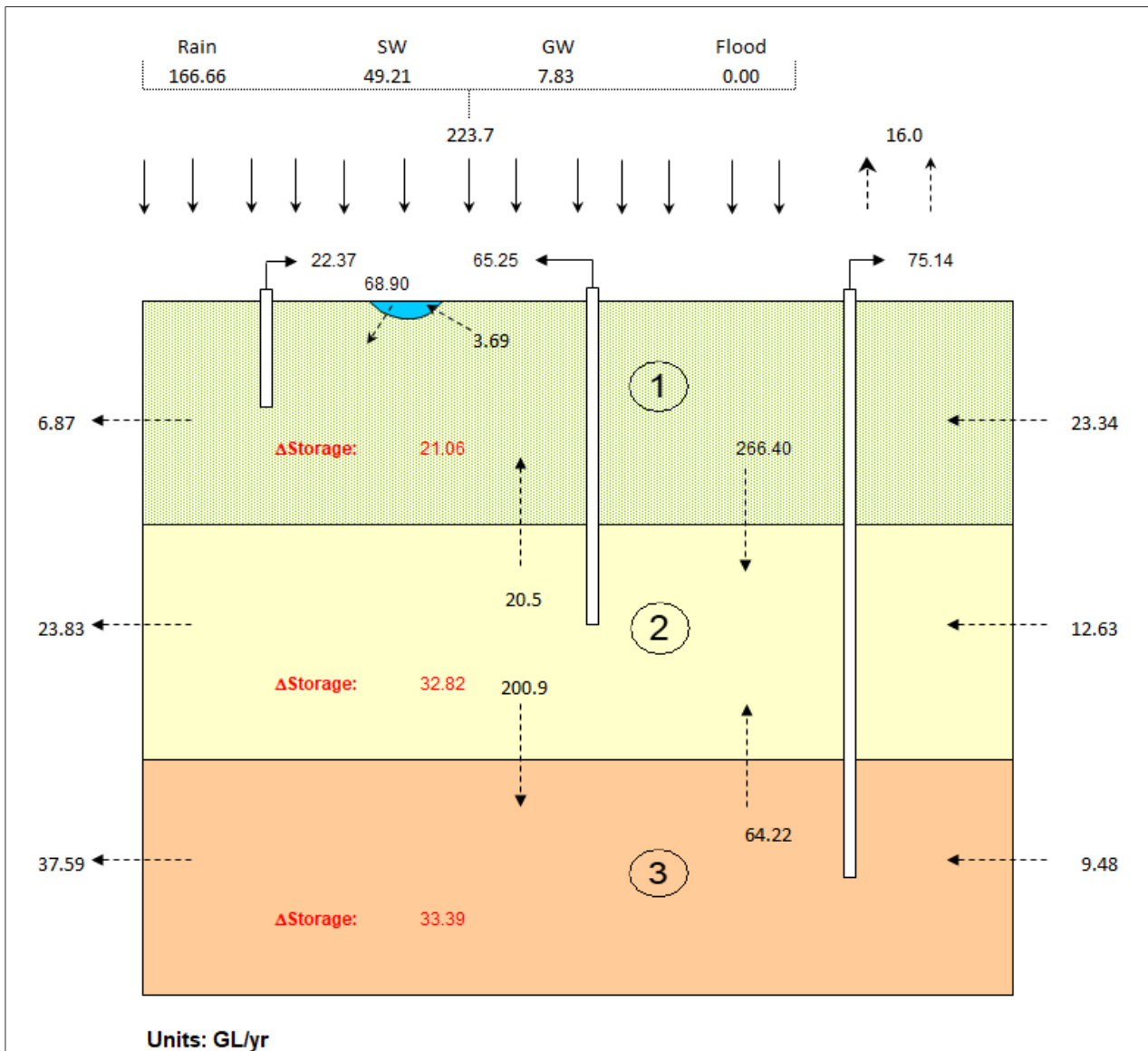




Figure 59: Mid Murrumbidgee Zone 2 alluvium physical flow budget (Gigalitres)

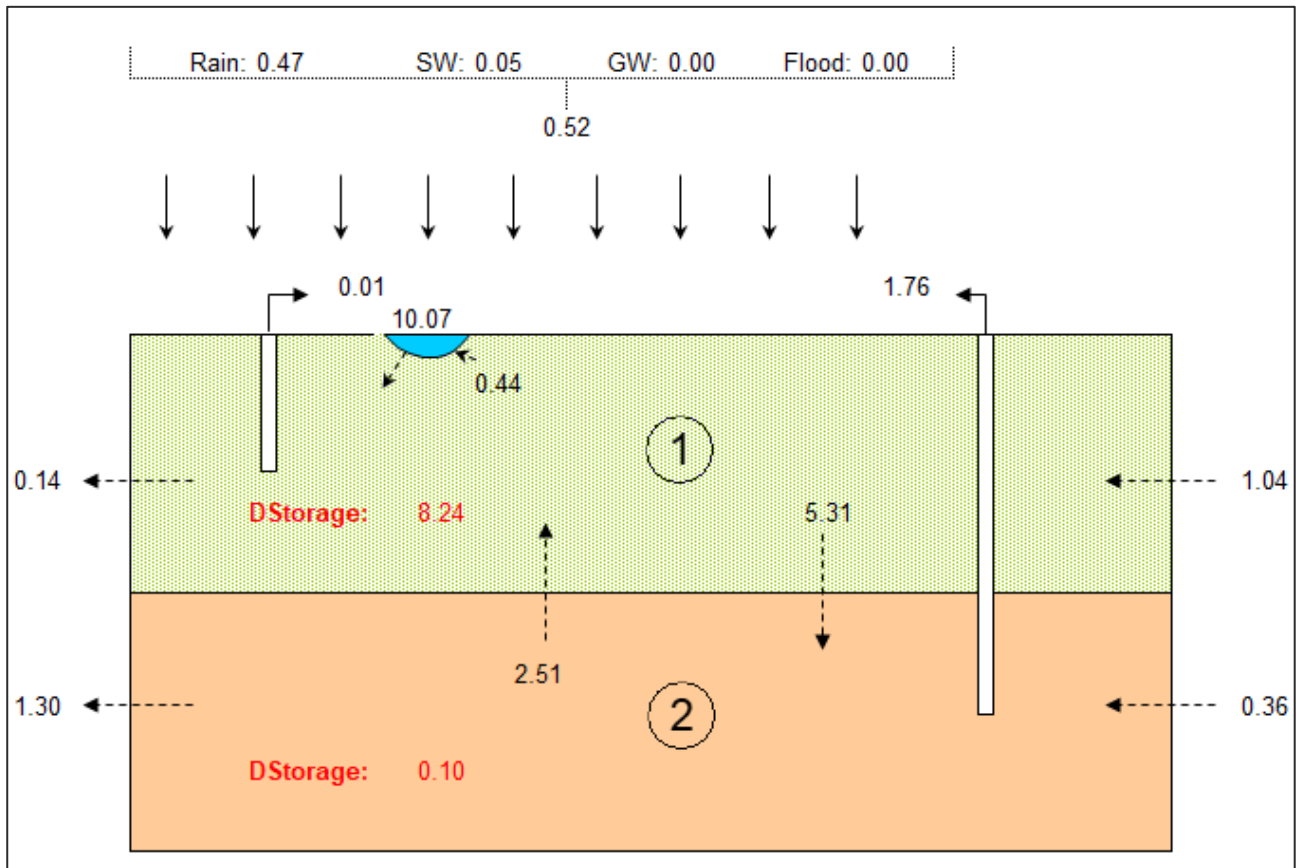
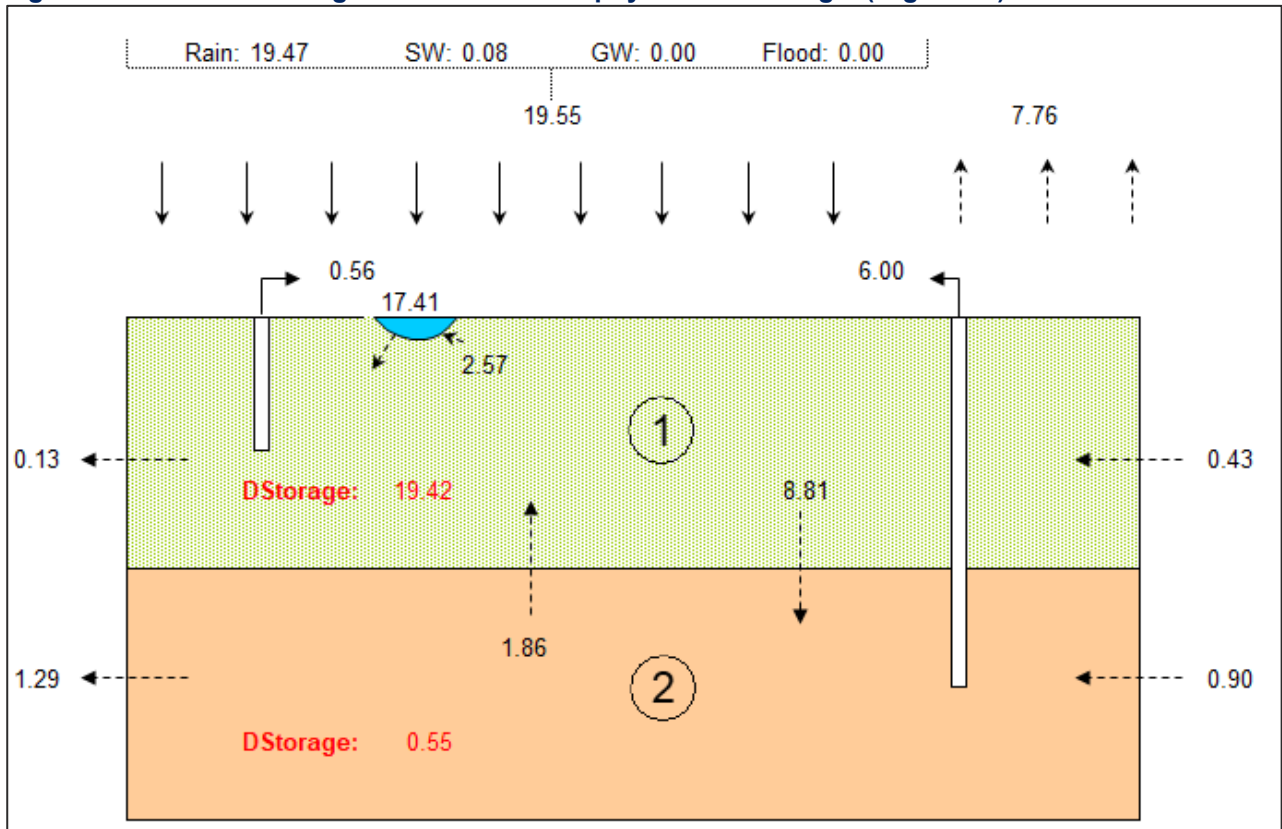


Figure 60: Mid Murrumbidgee Zone 3 alluvium physical flow budget (Gigalitres)



## Note 26—Snowy River allocation transfer

Through government funded intervention water entitlement is accumulated from the Murrumbidgee (and Murray) valleys, via water saving implementation, or entitlement purchases in order to return water to the Snowy River. The Snowy River has suffered increasing environment degradation, following implementation of the Snowy Mountains Scheme for electricity and irrigation. A significant portion of the rivers historical natural flows were harvested for use west of the Great Dividing Range, and the system no longer received critical high flow events for the ecosystem.

The Snowy Water Inquiry Outcomes Implementation Deed (2002) is a legally binding agreement between the New South Wales, Victoria and Commonwealth governments. The deed includes the water recovery targets for the Snowy, Murray and Snowy Montane Rivers increased flows programs.

Targets for the increased flow programs include returning the following average volumes annually:

Snowy River (SRIF)—212,000 megalitres or 21% of the average natural flow

Murray River (RMIF)—70,000 megalitres

Snowy Montane Rivers—up to 117,800 megalitres

### Data type

Derived from allocation data

### Policy

Snowy Water Inquiry Outcomes Implementation Deed (2002)  
Available on the Department of Planning and Environment website at  
[www.industry.nsw.gov.au/water](http://www.industry.nsw.gov.au/water)

### Data accuracy

A1—Nil inaccuracy +/- 0%

### Providing agency

Department of Planning and Environment

### Data source

WaterNSW/ Department of Planning and Environment—Water Accounting System (joint ownership)

Water savings accounting <https://www.industry.nsw.gov.au/water/basins-catchments/snowy-river/initiative/water-recovery-savings-summary>

### Methodology

Each year, allocated water in licences acquired by the water for rivers recovery is determined on January 31 (the amount Snowy Hydro is instructed to withhold from upcoming environmental delivery requirements). A transaction of this amount removes the allocation from the Murrumbidgee licences (decreasing the liability on the Murrumbidgee water assets). Any available water determinations that occur after this date and prior to the closing of the water year, are added to the accounts, with the standard carryover rules of the relative licence category applied.

## Additional information

**Table 41: Summary of Murrumbidgee water for rivers environmental holdings and transfers in the reporting period**

Category	Share	Allocation transferred
Coleambally Irrigation (Conveyance)	3,500	3,005
Murrumbidgee Irrigation (Conveyance)	20,000	20,226
Regulated River (Conveyance)	1,000	1,050
Regulated River (General Security)	75,489	79,264
Regulated River (High Security)	1,885	1,885
Non-licenced water recovery <sup>57</sup>	N/A	74,966
<b>Total allocation available for release in Snowy River and Murray (RMIF)</b>	<b>-</b>	<b>180,396</b>

<sup>57</sup> Savings for Forrest Creek replenishment configuration and Computer Aided River Management (CARM) projects are yet to be converted to a registered access licence but are being allowed for in operation.

## References

WASB 2012, Australian Water Accounting Standard 1 Preparation and Presentation of General Purpose Water Accounting Reports (AWAS 1), Bureau of Meteorology