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GENERAL PURPOSE WATER ACCOUNTING REPORT

Border Rivers Catchment

2019–20

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Acknowledgements

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Contents

Abbreviations

Abbreviation	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
CAIRO	computer-aided improvements to river operations
GPWAR	general purpose water accounting report
MDBA	Murray–Darling Basin Authority
ML	megalitres (1,000,000 litres)
ML/d	megalitres per day
SILO	climatic data provision system run by the Queensland government for the provision of both measured and modelled data

Glossary

Term	Definition
allocation	the specific volume of water allocated to water allocation accounts in a given 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.

Term	Definition
end of system	the last defined point in a catchment where water information can be measured and/or reported
environmental water	water allocated to support environmental outcomes and other public benefits Environmental water provisions recognise the environmental water requirements and are based on environmental, social and economic considerations, including existing user rights.
evaporation	the process by which water or another liquid becomes a gas Water from land areas, bodies of water, and all other moist surfaces is absorbed into the atmosphere as a vapour.
evapotranspiration	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
extraction	the pumping or diverting of water from a river or aquifer by licensed users for a specific purpose (irrigation, stock, domestic, towns, etc.) The volume is measured at the point of extraction or diversion (river pump, diversion works, etc.).
general purpose water accounting report (GPWAR)	a report prepared according to the Australian Water Accounting Standard It comprises a number of 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.
General Security licence	a category of water access licence implemented under the *Water Management Act 2000* 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).
groundwater	Water location beneath the ground in soil pore spaces and in the fractures of rock formations
High Security licence	a category of water access licence implemented under the *Water Management Act 2000* It receives a higher priority than General Security licences but less priority than essential requirements in the available water determination process.
HYDSTRA database	a database used by NSW Department of Planning, Industry and Environment to store continuous, time-series data such as river flow, river height, and water quality
inflows	surface water runoff and deep drainage to groundwater (groundwater recharge) and transfers into the water system (both surface and groundwater) for a defined area
inter-valley trade	trade of licence holder allocation account water via allocation assignment from one catchment to another catchment (or state)
intra-valley trade	trade of licence holder allocation account water via allocation assignment within the same catchment
median	the middle point of a distribution, separating the highest half of a sample from the lowest half

Term	Definition
non-physical transaction	an accounting transaction representing a process that is not a component of the water cycle (e.g. an available water determination)
physical transaction	an accounting transaction representing a process of the water cycle (e.g. an extraction)
regulated river	a river system where flow is controlled via one or more major man-made structures such as dams and weirs For the purposes of the *Water Management Act 2000*, 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.
share component	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 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.
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 Water licence
surface water	all water that occurs naturally above ground including rivers, lakes, reservoirs, creeks, wetlands and estuaries
tributary	a smaller river or stream that flows into a larger river or stream Usually a number of smaller tributaries merge to form a river.
ungauged catchment	a catchment without a flow gauge to accurately record stream flows Modelled estimates must be used to approximate the contribution of ungauged catchments to the main river.
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 liabilities	claims on the water assets of the water report entity including water that has been allocated to licence holder accounts or environmental accounts, but 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 *Water Management Act 2000*

Director's foreword

This is the tenth annual release of the general-purpose water accounting report (GPWAR) for the New South Wales (NSW) Border Rivers Regulated River Water Source. It has been prepared for the accounting period 1 July 2019 to 30 June 2020 (reporting period), under the Australian Water Accounting Standard 1 (AWAS 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) and licenced allocation 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
    - available water determination detailed report
    - temporary trading by licence category
    - supplementary announcements and usage by river reach
    - physical inflows and outflows to the system for the water year.

Detailed information on groundwater sources are excluded from the GPWAR.

Reporting datasets used in the GPWAR are available by sending an email request of your required information to water.wams@dpi.nsw.gov.au

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

- the information presented in these accounts is a faithful representation of the management and operation of the NSW Border Rivers Regulated River Water Source for the reporting period
- all data presented in this report provides the best accounting information available at the time of publication
- the Department of Planning, Industry 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, Industry and Environment

Contextual statement

The Border Rivers consist of the catchments of the Dumaresq, Severn, Macintyre and Barwon Rivers, which drain from the Great Dividing Range between Inverell in far northern New South Wales (NSW) and Warrenbayne in Southern Queensland. The catchment occupies an area of approximately 49,500 square kilometres, of which approximately 24,500 square kilometres are situated within NSW. The Dumaresq River, Macintyre River and part of the Barwon River downstream of the Weir River form the border between NSW and Queensland for approximately 470 kilometres.

The Border Rivers are regulated by three dams: Glenlyon Dam on Pikes Creek (Queensland), Coolmunda Dam on Macintyre Brook (Queensland), and Pindari Dam on the Severn River (NSW). The main tributaries draining from Queensland are Pikes Creek and Macintyre Brook, which enter the Dumaresq River, and the Weir River, which enters the Macintyre River. The lower end of the catchment is characterised by a complex series of anabranching channels. The junction of the Weir and Macintyre Rivers marks the start of the Barwon River, and the town of Mungundi on the Barwon River marks the downstream end of the Border Rivers catchment.

The catchment supports a population of around 50,000 people. In NSW, the population is concentrated in the major centres of Glen Innes, Inverell, and Tenterfield, which support around 30,000 people between the three local government areas. The largest towns in the Queensland part of the catchment are Goondiwindi and Stanthorpe, which both have populations of around 5,000 people. The Border Rivers flows through lands previously occupied by the Kamilaroi and Bigambul Aboriginal people.

The main agricultural use of land is for grazing and dryland cropping, and this covers around 90% of the catchment. Irrigation for the production of cotton occurs on the western plains between Goondiwindi and Mungindi.

A more detailed description of the catchment can be found in the document *Water resources and management overview—Border Rivers catchment*, which is available from the NSW Department of Planning, Industry and Environment website.

Accounting extent

The accounted river extent for this general purpose water accounting report (GPWAR) is illustrated in Figure 1 and includes the area managed by the water sharing plan for the New South Wales Border Rivers Regulated River Water Source.

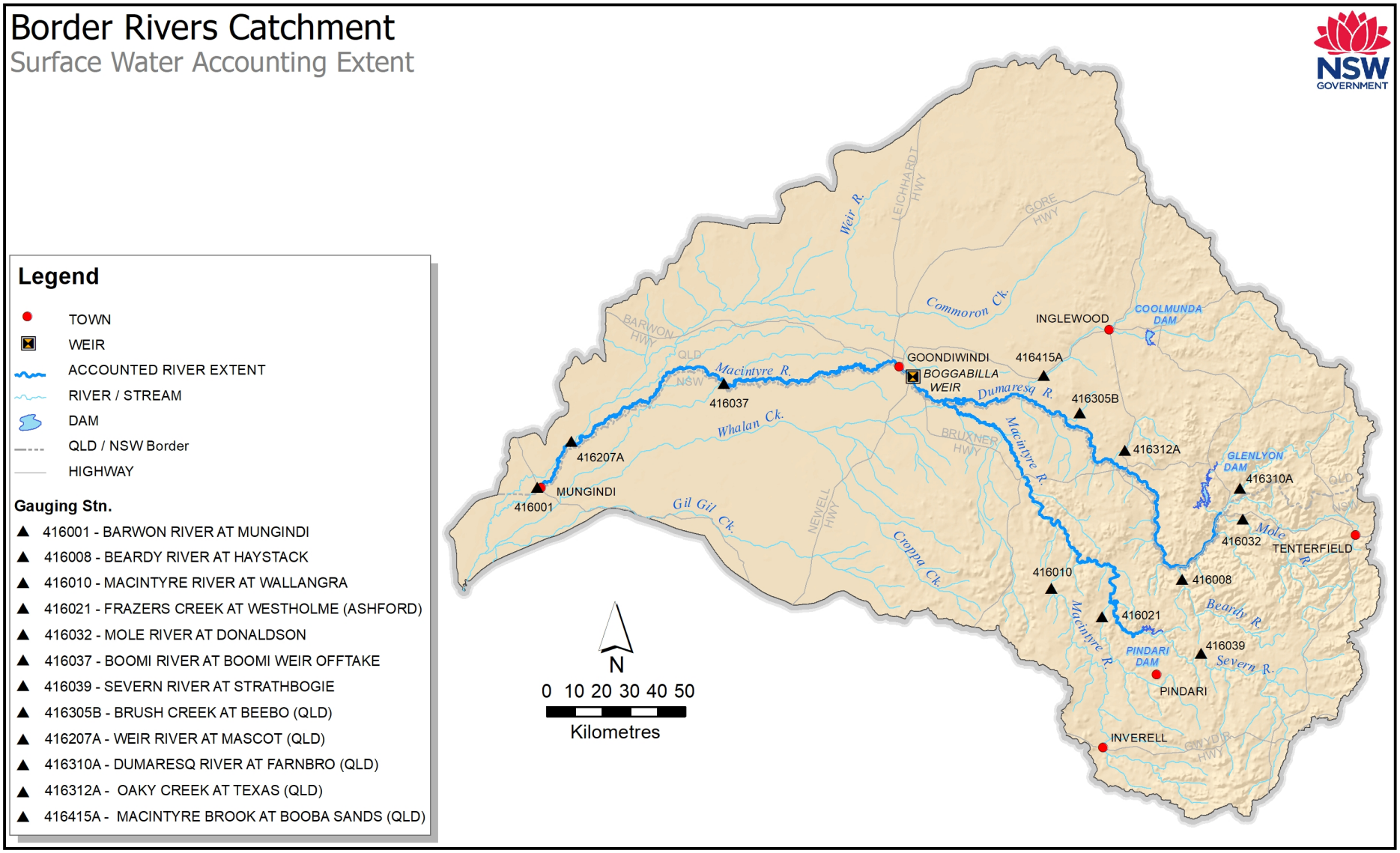
The GPWAR considers the water resources and associated water users on the Severn River from Pindari Dam to its junction with the Macintyre River, the Dumeresq River from Glenlyon Dam to the junction with the Macintyre River, and the Macintyre River downstream to Mungindi.

The gauged inflow reported consists of inflow from Macintyre Brook, The Mole River, Frazers Creek, Weir River, Tenterfield Creek, Beardy River and Macintyre River (the unregulated component upstream of the junction with the Severn River).

This GPWAR is an account for NSW access to the regulated Border Rivers, and therefore only Pindari and Glenlyon storage volumes are included as major storage assets. Flow exiting the Macintyre Brook (regulated by Coolmunda Dam) is treated as an inflow to the NSW Border Rivers. Aside from this, the Coolmunda system is excluded as it is not a NSW resource.

Groundwater volumes interacting with the regulated river are only indirectly included in the GPWAR statements (that is, they form part of the unaccounted difference required to balance the river storage). Other groundwater flows and groundwater management are excluded from this GPWAR.

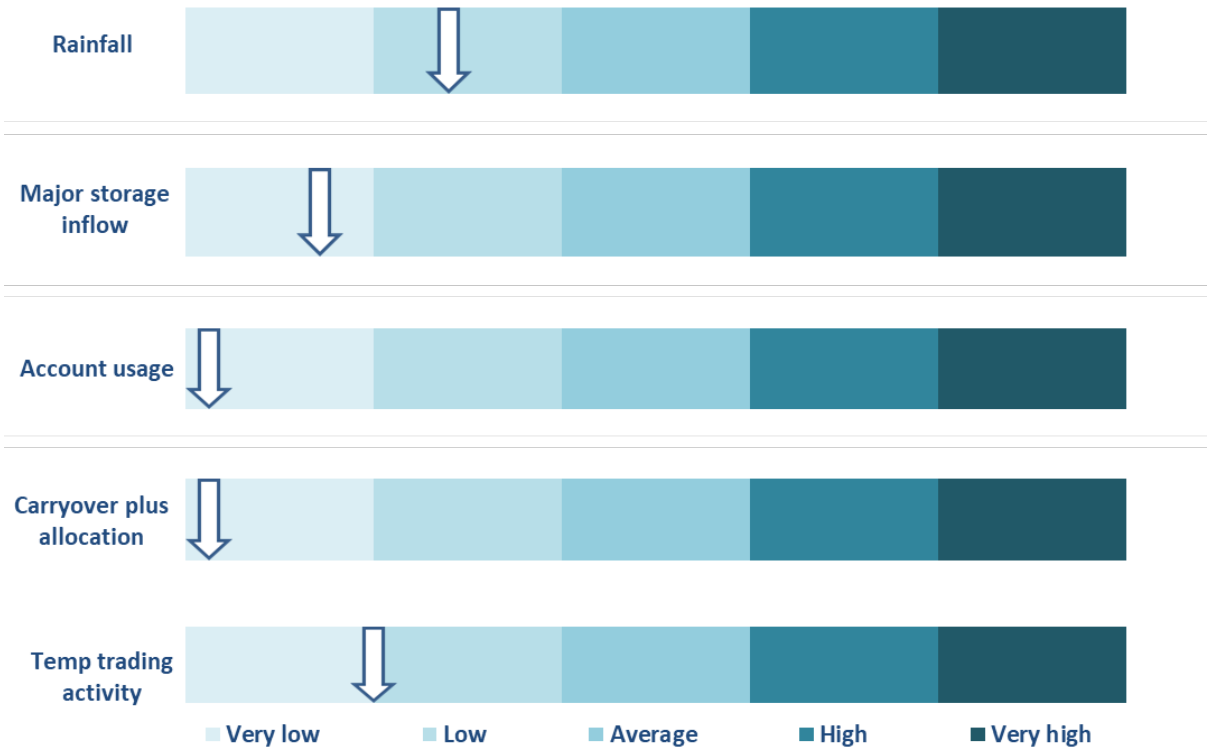
Figure 1: Surface water geographical extent of the accounts



Snapshot

The key indicators for 2019–20 relative to other years under water sharing plan management conditions are presented in Figure 2. All indicators were lower than average, with major storage inflow falling in the very low range (0–20th percentile).

Figure 2: 2019–20 Summary indicators



Climate

At Pindari Dam (upper catchment), 380 mm of rainfall was recorded in the reporting period (Table 1), which is the lowest on record at this site. Comparatively this volume of rainfall is:

- 54% of the long-term historical median rainfall for this location
- 36% of the highest annual (July to June) rainfall on record for this location.

The highest monthly rainfall totals occurred in February 2020 (94 mm) and May 2020 (57 mm)

At Mungindi (lower catchment), 410 mm of rainfall was recorded in the reporting period (Table 2). Comparatively this volume of rainfall is:

- 87% of the long-term historical median rainfall for this location
- 41% of the highest rainfall on record at this location.

The highest monthly rainfall totals occurred in February (162 mm) and March (76 mm) (Figure 3). Variance from median rainfall for the reporting period at Pindari Dam and Mungindi is presented in Figure 4. Spatially, rainfall was lower than average across the entire extent of the catchment (Figure 5 and Figure 6).

Figure 3: Monthly rainfall for the reporting period compared to historical monthly median rainfall at Pindari and Mungindi

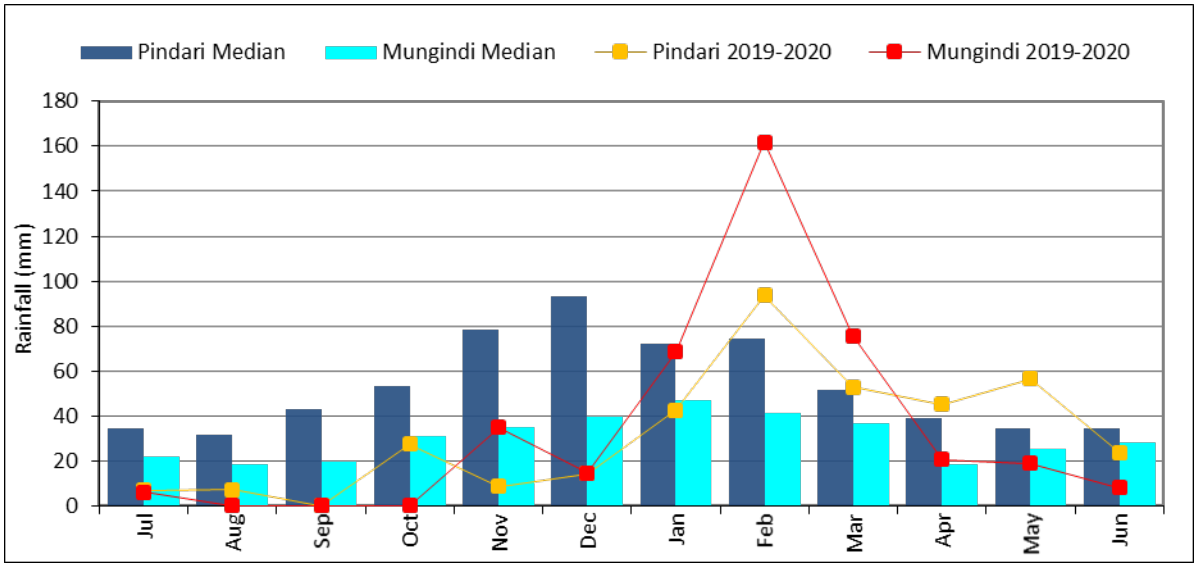


Figure 4: Monthly rainfall deviation from historical medians at Pindari and Mungindi

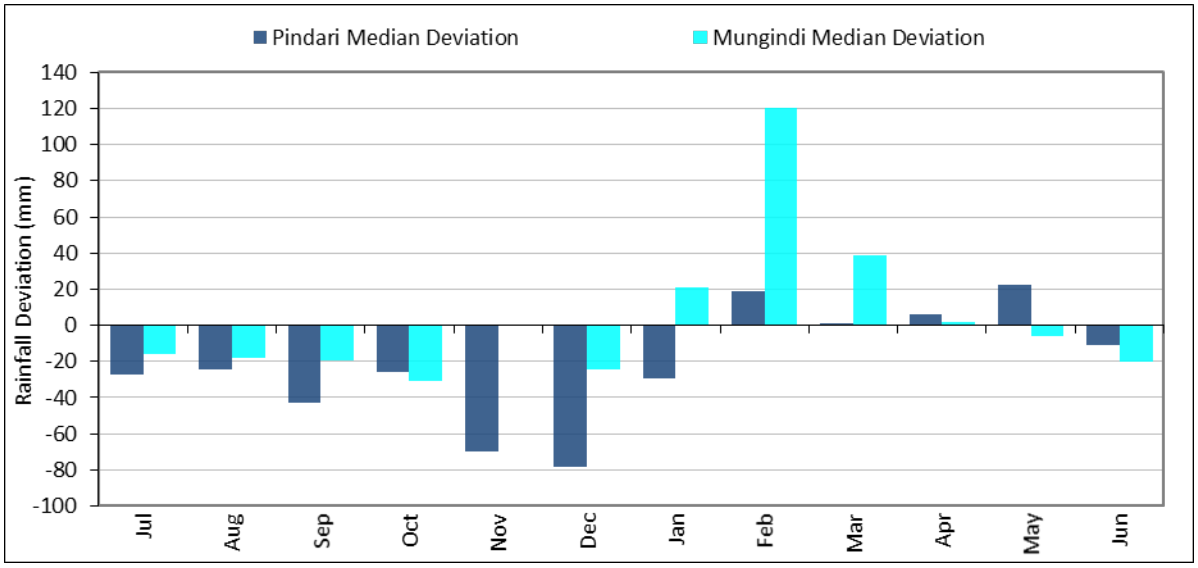


Table 1: 2019–20 monthly rainfall and historic monthly rainfall statistics at Pindari[1]—measurements in millimetres

Pindari	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
2019–20	**7.0**	**7.4**	**0.0**	**27.4**	**8.6**	**14.5**	**42.7**	**93.7**	**53.0**	**45.3**	**56.5**	**23.9**	**380.0**
Historical mean	41.6	36.6	47.2	63.2	85.1	89.0	91.1	78.5	66.2	43.9	41.3	37.9	716.8
Historical median	34.3	31.6	43.0	53.2	78.2	93.0	72.2	74.6	51.6	39.0	34.4	34.5	700.4
Historical low	1.8	0.0	0.0	8.4	3.0	5.8	10.4	12.4	1.1	0.0	0.8	0.0	380.0
Historical high	152.2	100.1	156.0	175.8	245.6	186.4	283.7	248.8	235.2	216.4	169.6	108.6	1050.2
Year of high[2]	1998	2016	2016	1975	2000	2004	1978	1976	1975	1988	1983	1981	2016–17

Table 2: 2019–20 monthly rainfall and historic monthly rainfall statistics at Mungindi[1]—measurements in millimetres

Mungindi	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Annual
2019–20	**6.0**	**0.0**	**0.0**	**0.2**	**34.8**	**14.8**	**68.6**	**161.8**	**75.6**	**20.8**	**19.0**	**8.0**	**409.6**
Historical mean	32.4	25.1	27.2	38.2	45.6	51.3	69.9	63.2	51.2	30.2	33.9	33.6	501.9
Historical median	22.1	18.3	19.7	31.0	34.8	39.5	47.3	41.5	36.9	18.8	25.1	28.5	470.4
Historical low	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	165.0
Historical high	257.2	146.8	148.5	197.7	256.6	191.9	406.2	366.0	274.5	251.0	170.0	118.4	990.8
Year of high[2]	1950	1966	1906	1969	2000	1942	1974	1976	1894	1988	1983	1930	1889–90

[1] Long-term statistics are derived from the Bureau of Meteorology—climate data online. The data presented is collected from the stations '54104—Pindari Dam' and '52020—Mungindi Post Office'. Historic statistics uses data from 1971 to 2020 for Pindari and 1887 to 2020 for Mungindi

[2] Calendar year for monthly high and water year (July to June for annual)

Figure 5: Border Rivers 2019–20 total annual rainfall

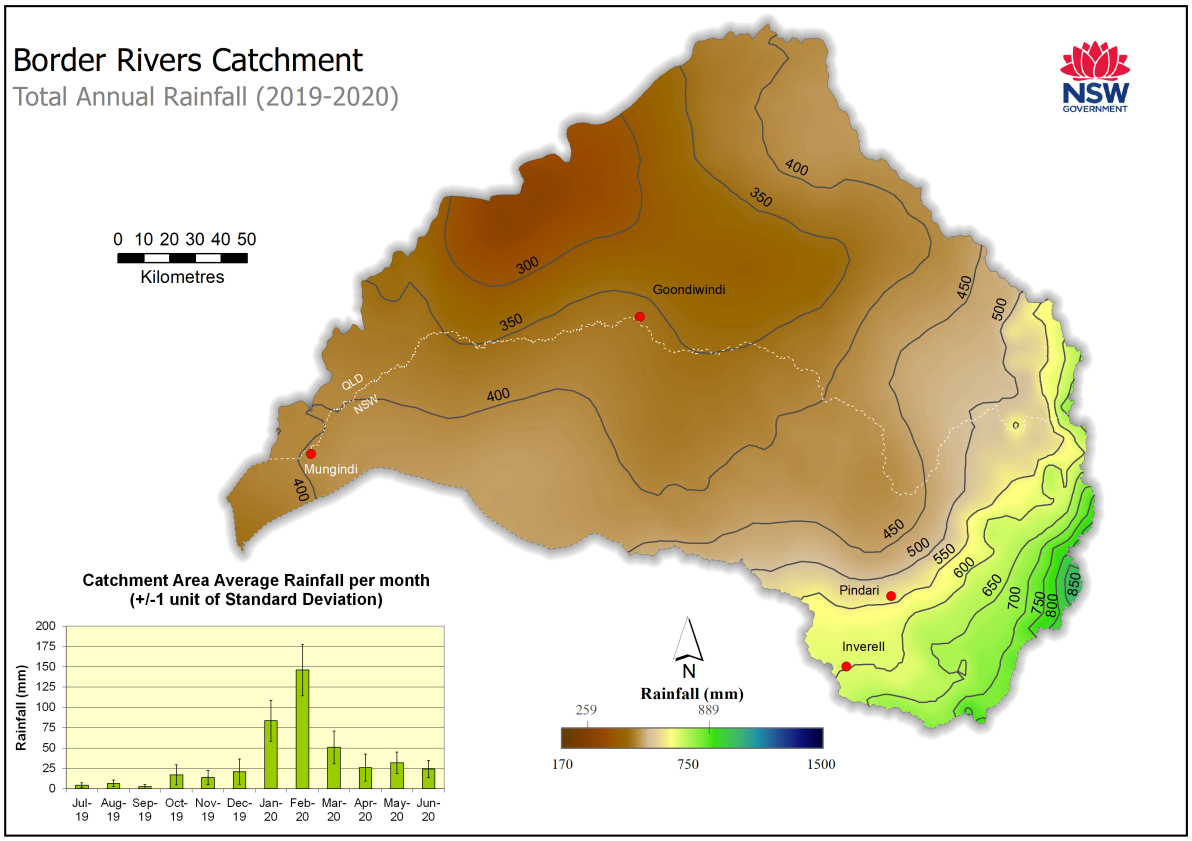
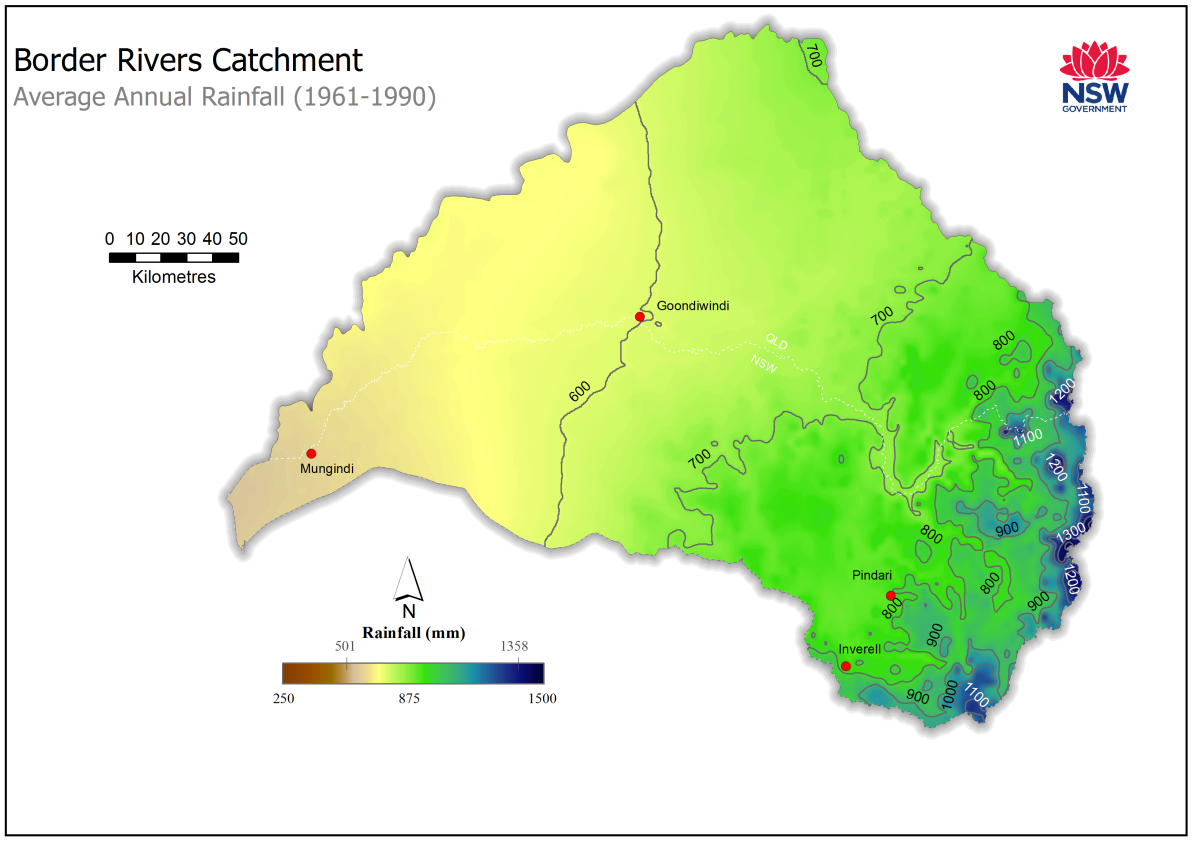


Figure 6: Border Rivers average annual rainfall, 1961 to 1990



Data source: Australian Bureau of Meteorology

Storage inflows and volume

Inflows

Historically, the long-term average annual inflow[3] at Glenlyon storage site has varied significantly, cycling through prolonged periods of wet and dry flow regimes. Broadly, the data (Figure 7) illustrates:

- predominately dry conditions from 1900 to 1950
- a five-year return to wet conditions from 1950 to 1960
- a 10-year dry cycle from 1960 to 1970
- predominately wet conditions from 1975 to 2000
- predominately dry conditions from 2000 to current.

For the reporting period, total inflow to Glenlyon storage was 30,346 megalitres (Figure 8), which is:

- 43% of the long-term average annual inflow (70,729 megalitres per year)
- low relative to the long-term data set (1890–91 to 2019–20), exceeding 26% cent of years
- the third consecutive year of below-average inflow

The maximum mean daily inflow rate to Glenlyon storage was 3,817 megalitres per day occurring on 13 February 2020 (Figure 9).

The total inflow to Pindari storage for the reporting period was 30,803 megalitres (Figure 10), which is:

- 18% of the long-term average annual inflow (172,931 megalitres per year)
- the fifth lowest inflow on record (1890–91 to 2019–20).
- the third consecutive year of below-average inflow

The maximum mean daily inflow rate to Pindari storage was 3,580 megalitres per day occurring on 14 February 2020 (Figure 11).

[3] Inflows are back-calculated storage inflow for the period from storage construction and gauged or rainfall runoff modelled flow for the prior period.

Figure 7: Long-term annual flow upstream of Glenlyon storage, cumulative deviation from mean

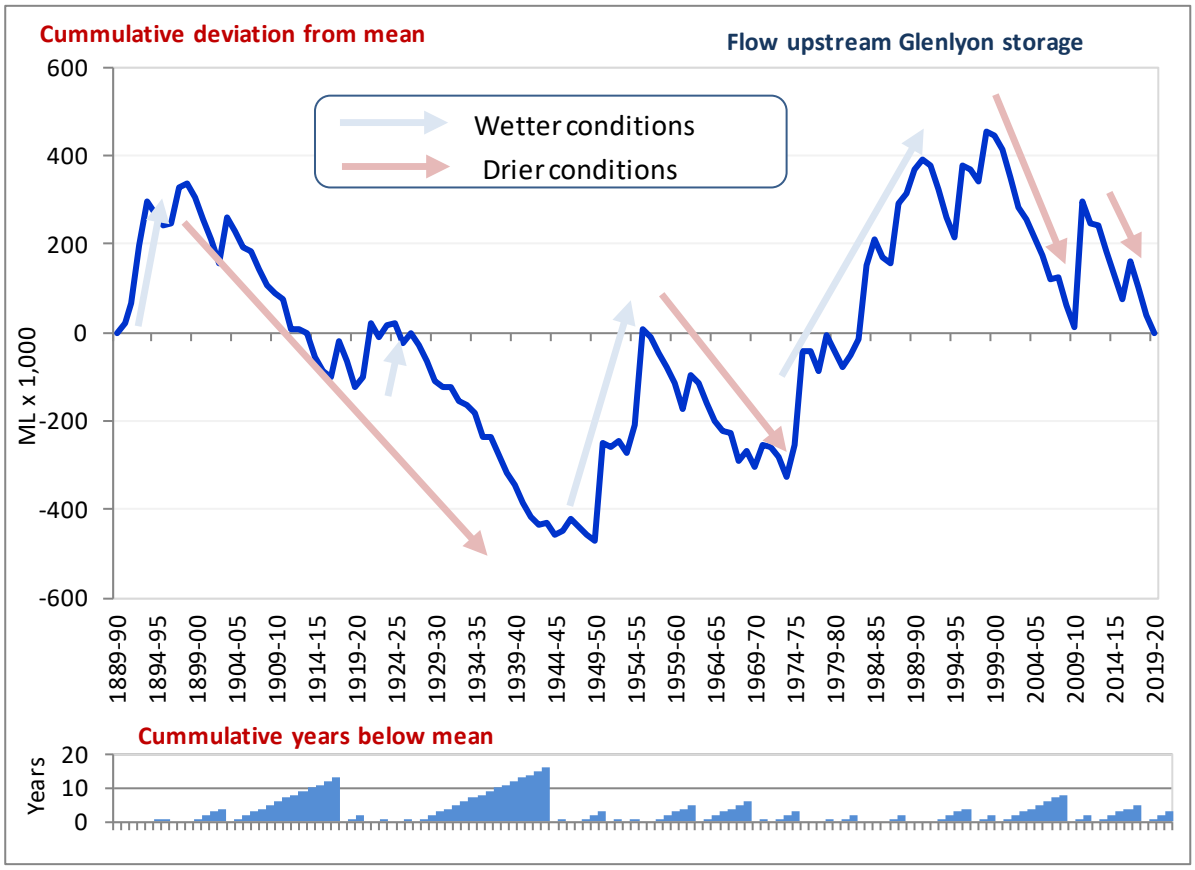


Figure 8: Long-term inflows to Glenlyon Dam against mean and 2019–20 inflow

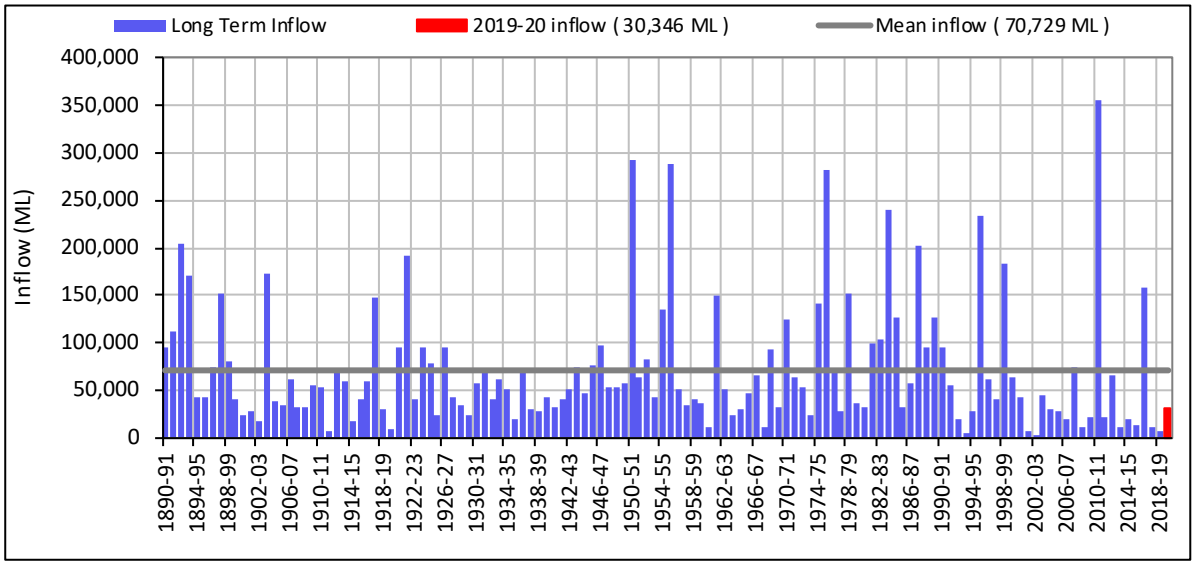


Figure 9: Daily inflows and rainfall at Glenlyon Dam for the reporting period

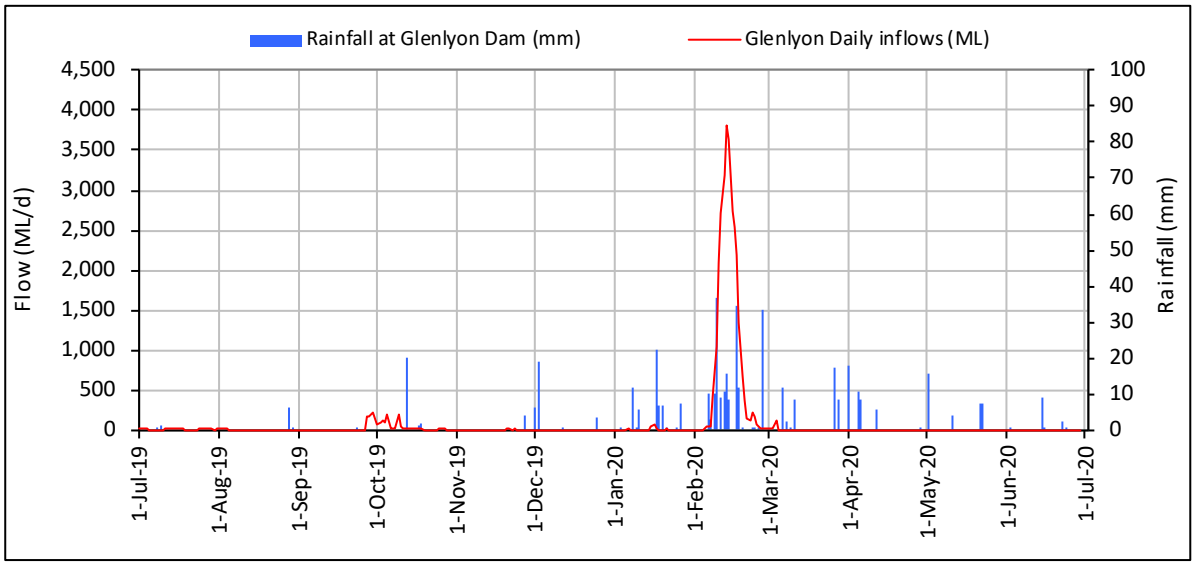


Figure 10: Long-term inflows to Pindari Dam against mean and 2019–20 inflow

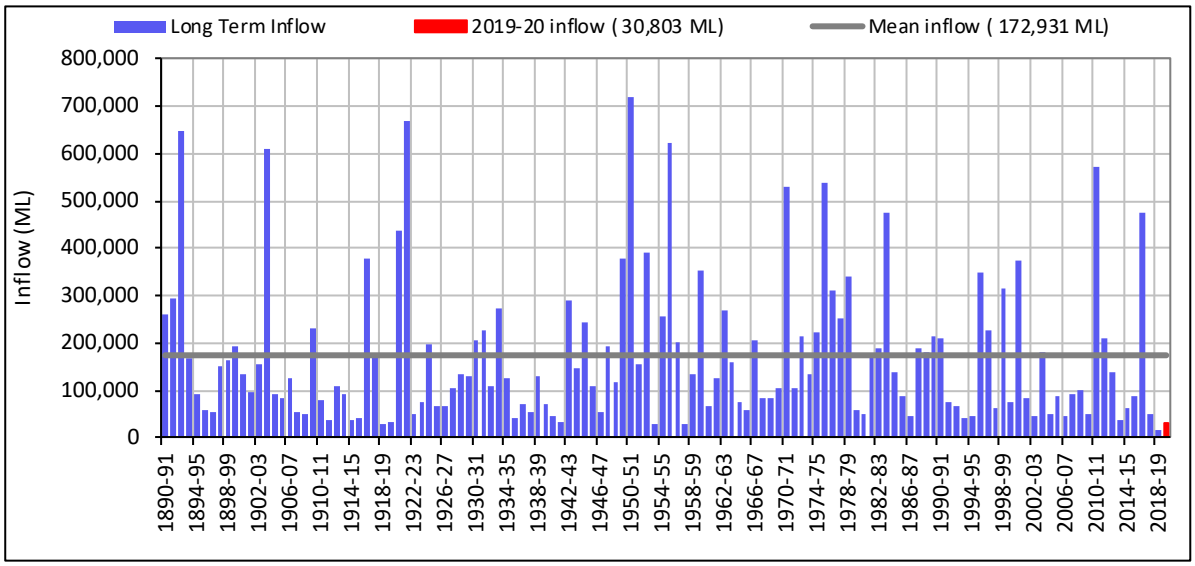
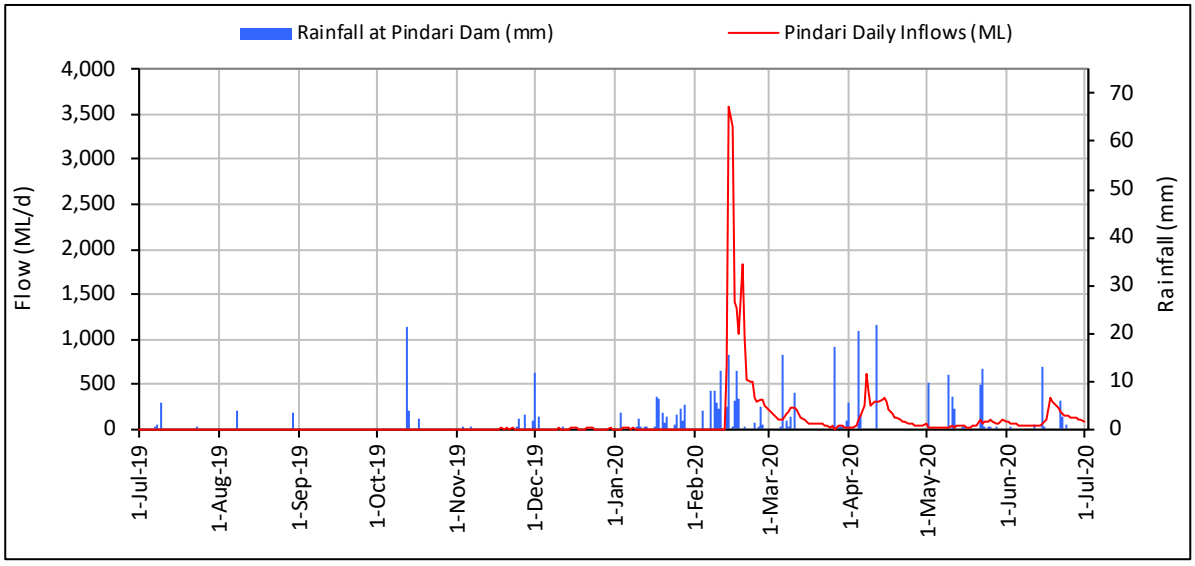


Figure 11: Daily inflows and rainfall at Pindari Dam for the reporting period



Storage volume

Glenlyon

- The volume at the start of the reporting period was 23,072 megalitres or 9% of full supply capacity (Figure 12).
- The volume held at the end of the reporting period was 35,543 megalitres or 14% of full supply capacity, an increase of 5 % for the year.
- The maximum volume held in storage during the reporting period was 42,840 megalitres on 30 May 2020.

Pindari

- The volume at the start of the reporting period was 16,822 megalitres or 5% of full supply capacity (Figure 13).
- The volume held at the end of the reporting period was 39,780 megalitres or 13% of full supply capacity, an increase of 8% for the year.
- The maximum volume held in storage during the reporting period was 39,780 megalitres on 30 June 2020.

Figure 12: Glenlyon Dam volume and percentage for the reporting period

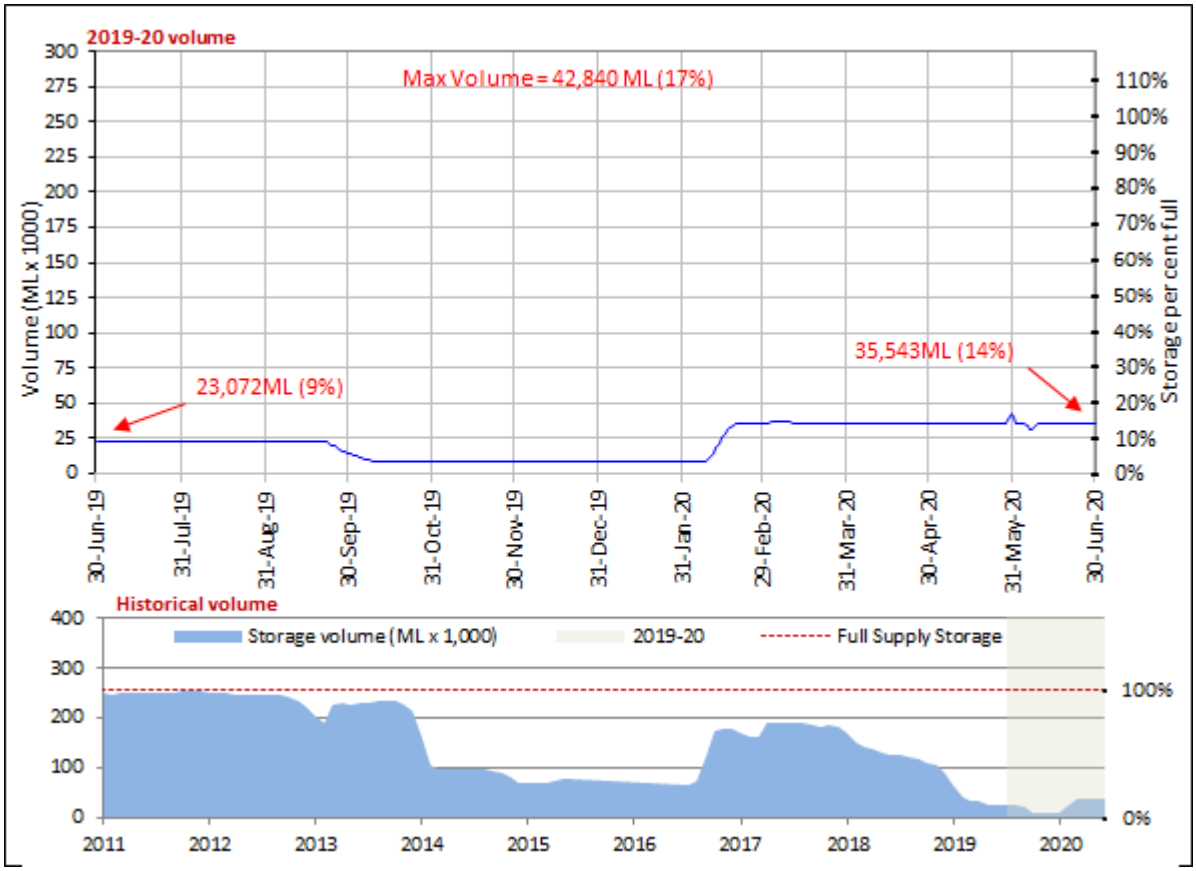
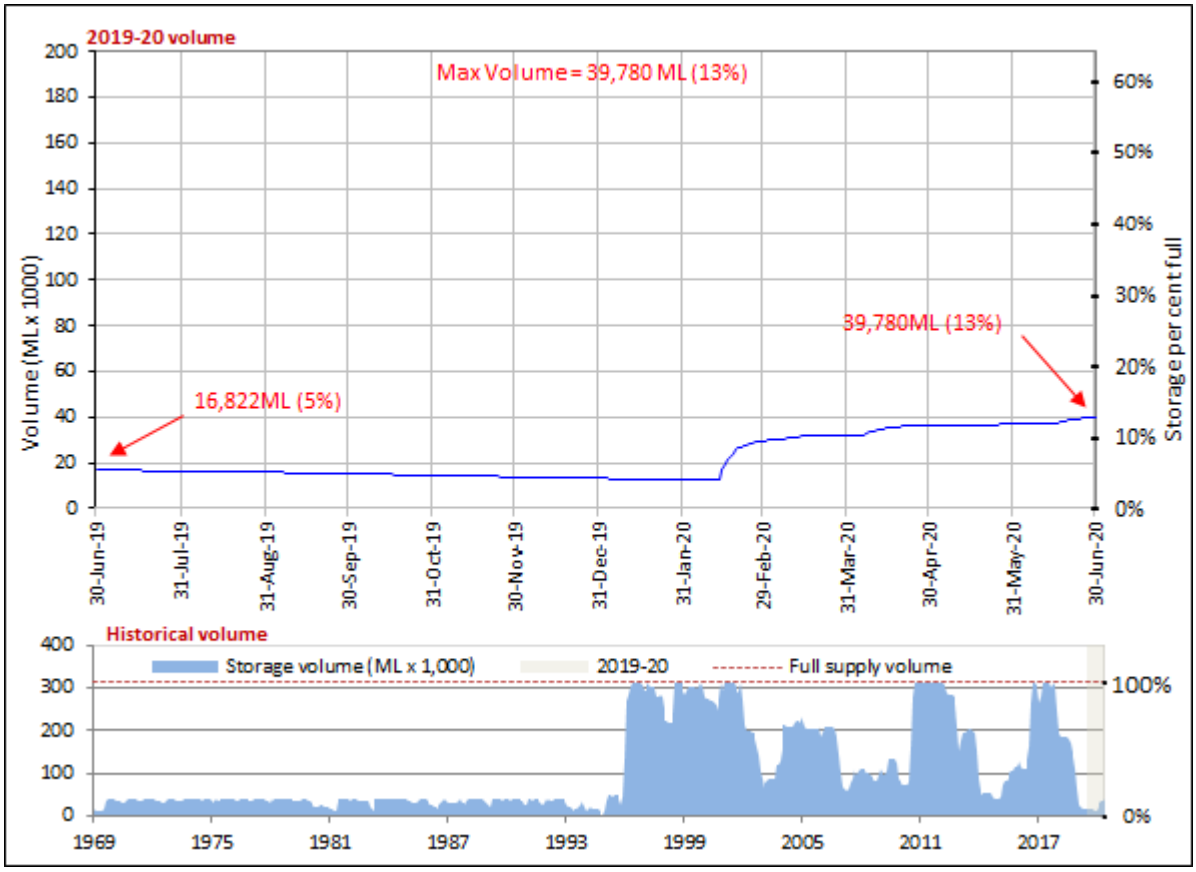


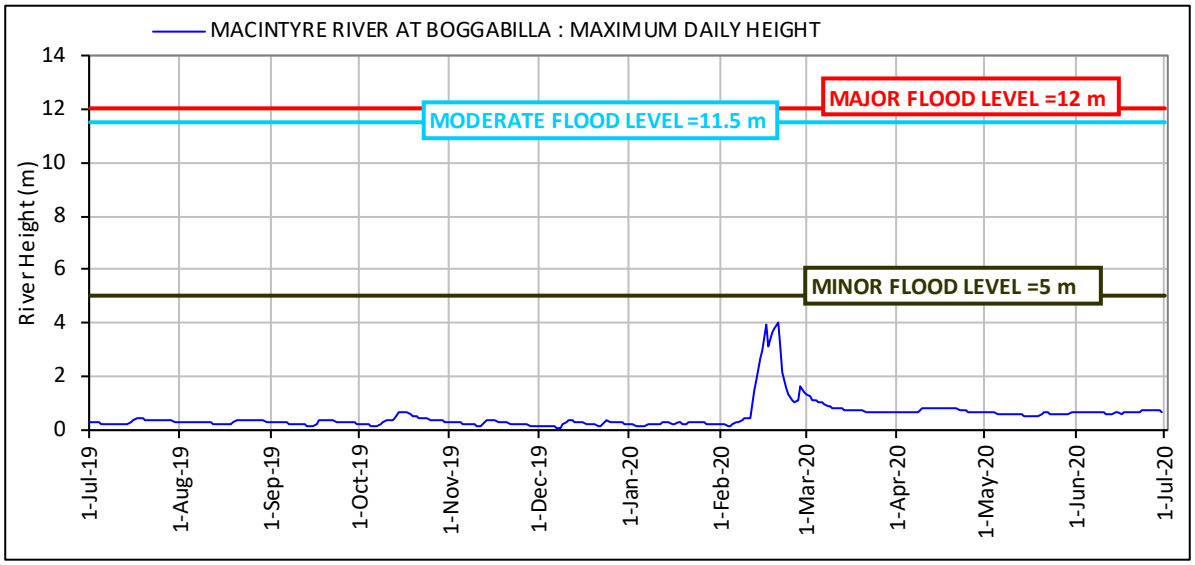
Figure 13: Pindari Dam volume and percentage for the reporting period



Major flow events

There were no major high flow events in the Border Rivers during 2019–20, with the first flush event of 2019–20 predominately contained within the river channel. The river height at Boggabilla remained below 4 metres for the entirety of the water year, peaking in mid-February.

Figure 14: Maximum daily river height—Macintyre River at Boggabilla



Surface water resources and management

Legislation

The water source was managed under the rules and requirements set out in the *Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009* for the entirety of the reporting period. This water sharing plan commenced on 1 July 2009. The plan was extended on 28 June 2019 (Government Gazette No 66) and will be in place until a replacement management plan commences or 30 June 2021 (whichever occurs sooner). 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 remained constant throughout the reporting period (Figure 15).
- Total share on issue at 30 June 2020 was 386,360 shares, including 120,001 shares of supplementary access (Table 3).

Figure 15: Issued share component since the commencement of the water sharing

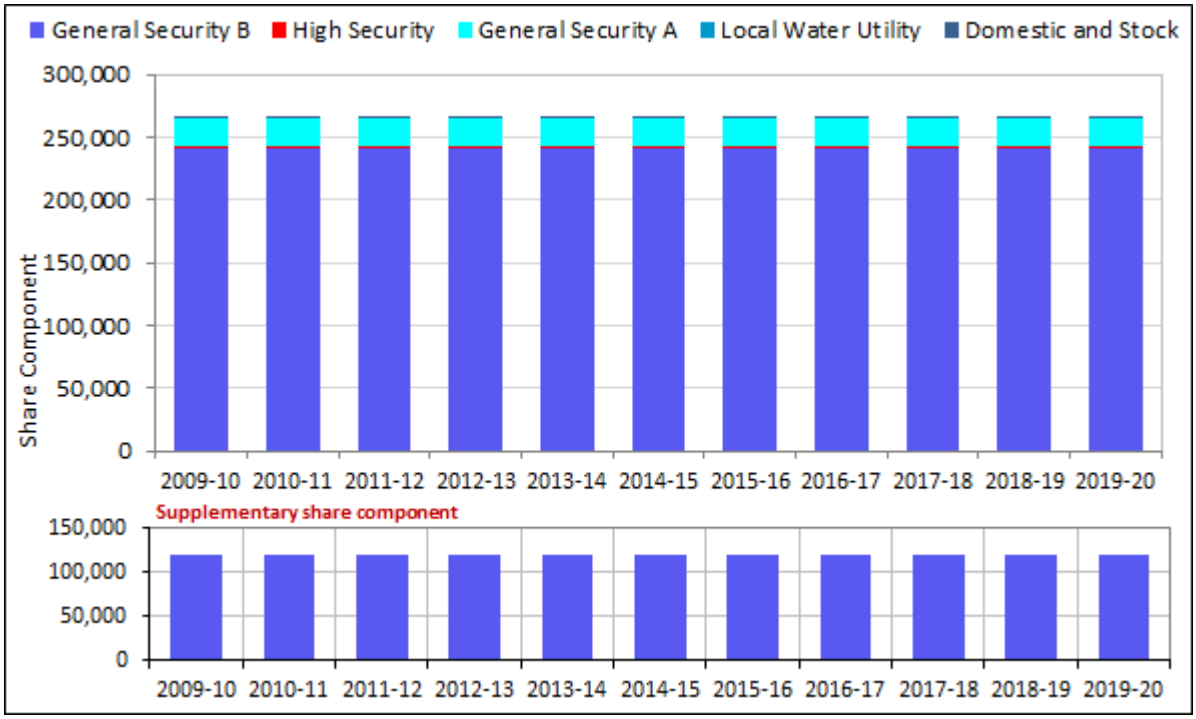


Table 3: Issued share component on 30 June 2020

Category	Issued share component
Domestic and Stock	850
Domestic and Stock [Domestic]	51
Domestic and Stock [Stock]	100
Local Water Utility	640
Regulated River (General Security A)	22,007
Regulated River (General Security B)	241,211
Regulated River (High Security)	1,500
Supplementary Water	120,001
Total	**386,360**

Access licence account management

A continuous accounting procedure is implemented in this water source, with additional available water determinations (AWDs) considered with any increase to system resources.

All access licences accounts are limited to hold a maximum of one megalitre per share (or 100% of issued share component). Licence holders are also limited to a maximum AWD of one megalitre per share (or 100% of issued share component) with the exception of General Security B access licence holders (which have no cap on water received from the AWD process).

The rules enforce that all categories of licence are effectively limited to an annual use of one megalitres per share (or 100% of issued share component) with the exception of general-security licences, which adjust for net trade volumes.

The access licence accounting rules are summarised in Table 4.

Table 4: Access licence accounting rules applicable for reporting period

Licence Category	Account limit	Carryover limit	Annual use limit	Maximum AWD	AWD plus carryover limit
Domestic and Stock	100%	0%	N/A	100%	N/A
Domestic and Stock [Domestic]	100%	0%	N/A	100%	N/A
Domestic and Stock [Stock]	100%	0%	N/A	100%	N/A
Local Water Utility	100%	0%	N/A	100%	N/A
General Security A	1 ML/Share	1 ML/Share	1 ML/Share[4]	1 ML/Share	1 ML/Share
General Security B	1 ML/Share	1 ML/Share	1 ML/Share[4]	N/A	N/A
High Security	1 ML/Share	0 ML/Share	N/A	1 ML/Share	N/A
Supplementary Water	1 ML/Share[5]	0 ML/Share	N/A	1 ML/share	N/A

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 *Water Management Act 2000* and have been implemented in several river valleys in the current drought to preserve water for critical needs.

Table 5 outlines the conditions that may be associated with different stages of criticality for surface water quantity. Further information is available at www.industry.nsw.gov.au/water/what-we-do/legislation-policies/eep

[4] Limit applies to water taken or assigned out of accounts
[5] Plus assignments in, minus assignments out

Table 5: 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.

Temporary water restrictions

- A restriction was placed on domestic use under licences and basic landholder rights upstream of Mungindi Weir on 30 October 2020. These water users were placed on the same level of water restrictions as Mungindi township. The restriction expired on 30 June 2020.
- The general security allocation remaining in accounts could not be delivered in full so access was limited to 50% of carryover in accounts (General Security A and General Security B) from 1 July 2019. This was repealed on 25 February 2020, after substantial rainfall meant that critical needs could then be met and remaining account water provided.
- Under the Northern Basin restrictions, from 17 January, in the Border Rivers high security access was restricted until 17 February, unregulated river access until 21 February, and general security and floodplain harvesting until 23 February.
- More detailed information relating to the flow event of February 2020 and the associated restrictions on access is available at industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery/north-west-flows-in-early-2020

Extreme events stage

- The NSW Border Rivers was in Stage 3 (severe drought) on 1 July 2019, however by August 2019 this had escalated to Stage 4 (critical drought).
- Following the rain in January and February 2020, NSW Border Rivers was de-escalated to Stage 3 and remained at that stage for the rest of 2019–20 water year.
- Analysis of combined storage inflows show continued dry conditions throughout the reporting period with major storage inflow (Glenlyon plus Pindari) tracking significantly below long-term averages with the exception of February 2020 (Figure 16).
- Looking at 2-year storage inflow sequences between 1977 and current, as an indicator of drought severity illustrates that the current period (1 July 2018 to 30 June 2020), was the lowest sequence for this period. The total inflow deficit was 307,829 megalitres relative to the median inflow sequence (78% lower than median conditions).

Figure 16: Drought stage for the reporting period referenced with monthly headwater storage inflows, monthly storage inflow variance from mean and 2-year cumulative inflow sequence

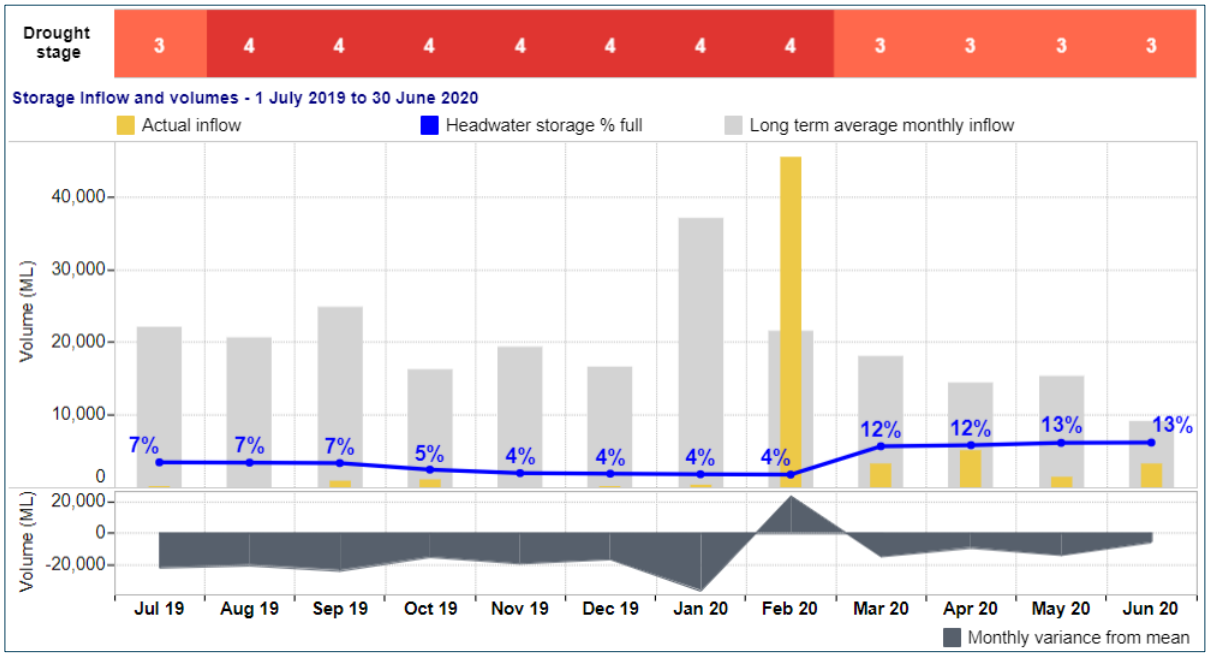
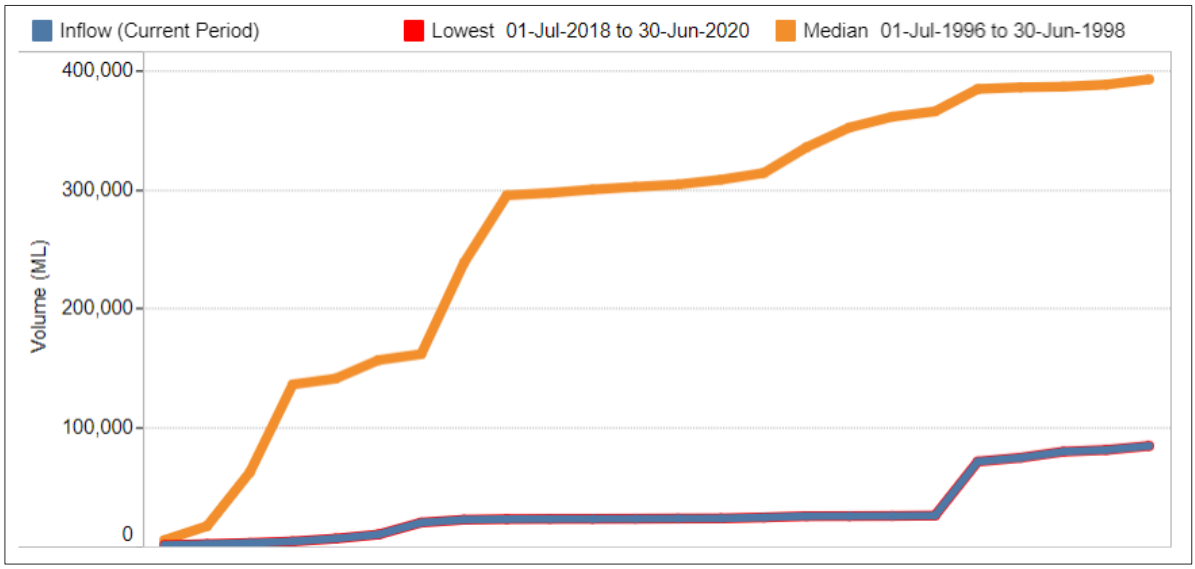


Figure 17: 2-year inflow sequence, current (1 July 2018 to 30 June 2020) compared to median and lowest

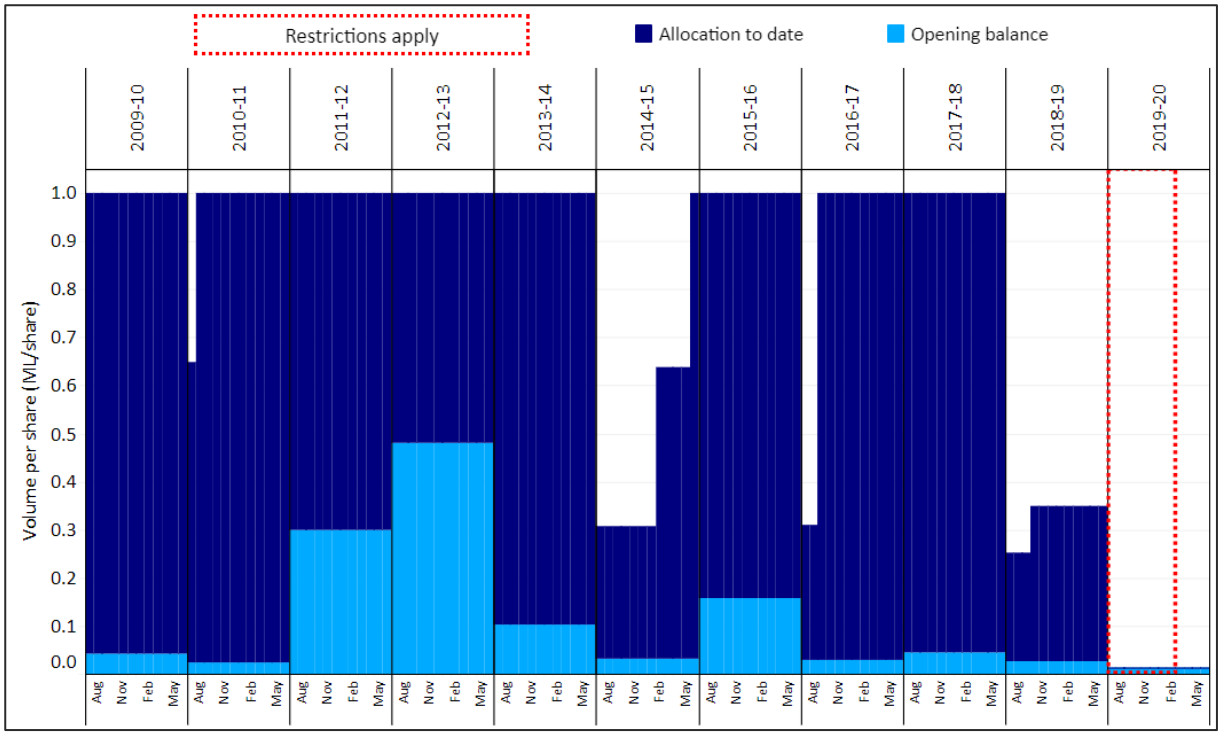


Water availability

- Domestic and Stock, Local Water Utility, High Security and Supplementary Water access licences (including sub-categories of these) received an opening available water determination (AWD) of 100%, the maximum allowable under the water sharing plan. Incremental announcements for High Security are presented in Figure 20.
- General Security A access licences had a carryover of 296 megalitres into the reporting period, equating to 1% of total issued General Security A share.
- General Security A access licences received an opening AWD of zero megalitre per share and received no additional announcements for the remainder of the reporting period. Historical incremental announcements for General Security A are presented in Figure 18.

- General Security B access licences had a carryover of 4,351 megalitres into the reporting period, equating to 2% of total issued General Security B share.
- General Security B access licences received an opening AWD of zero megalitres per share and did not obtain any additional announcements for the reporting period. Historical incremental announcements for General Security B are presented in Figure 19.
- From an annual perspective, water availability[6] for all categories of licence equalled 100% of issued share in the reporting period, with the exception of General Security A and B licences (Figure 21), which experienced the lowest water availability under water sharing plan management conditions.
- Restrictions on the use of allocated water were in place throughout the reporting period (refer to *Temporary Water Restrictions* for details)
- Detailed information on operational supplementary announcements[6] and usages by river section is available in Note 21 of this GPWAR.

Figure 18: Incremental available water determination and carryover volumes for General Security A as a proportion of share component



[6] Includes all access licences issued under the water sharing plan and therefore held environmental water. Does not consider use limits. Supplementary access to water credited in accounts is dependent upon high flow triggers occurring.

Figure 19: Incremental available water determination and carryover volumes for General Security B as a proportion of share component

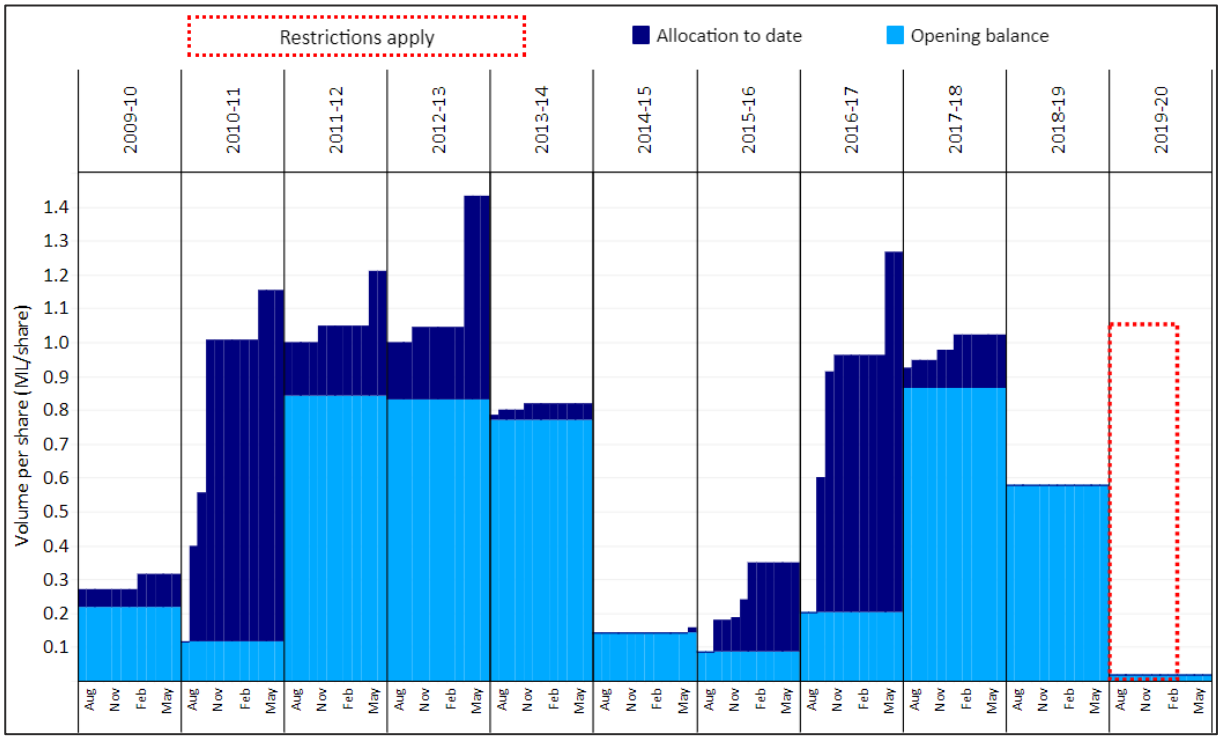


Figure 20: Incremental available water determination and carryover volumes for High Security as a proportion of share component

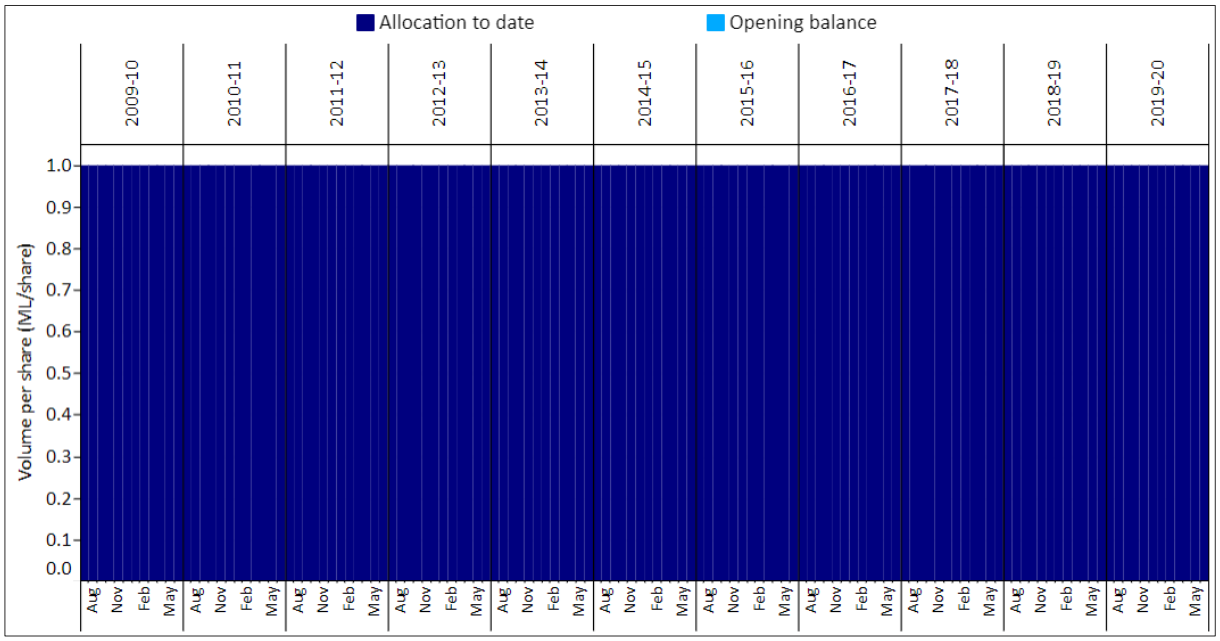
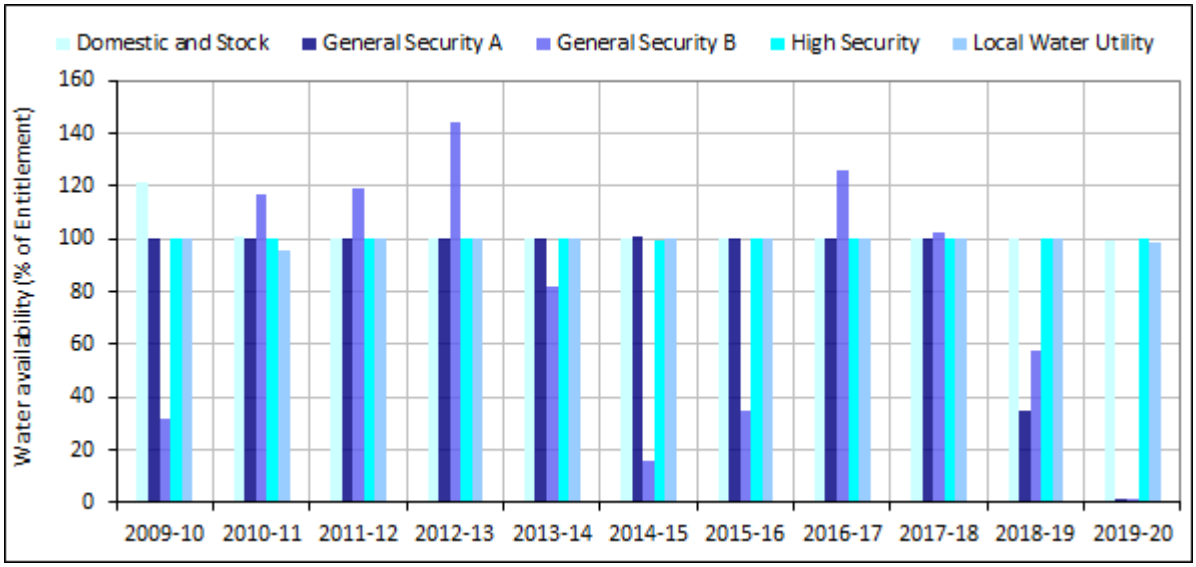


Figure 21: Water availability (AWD plus carry over)



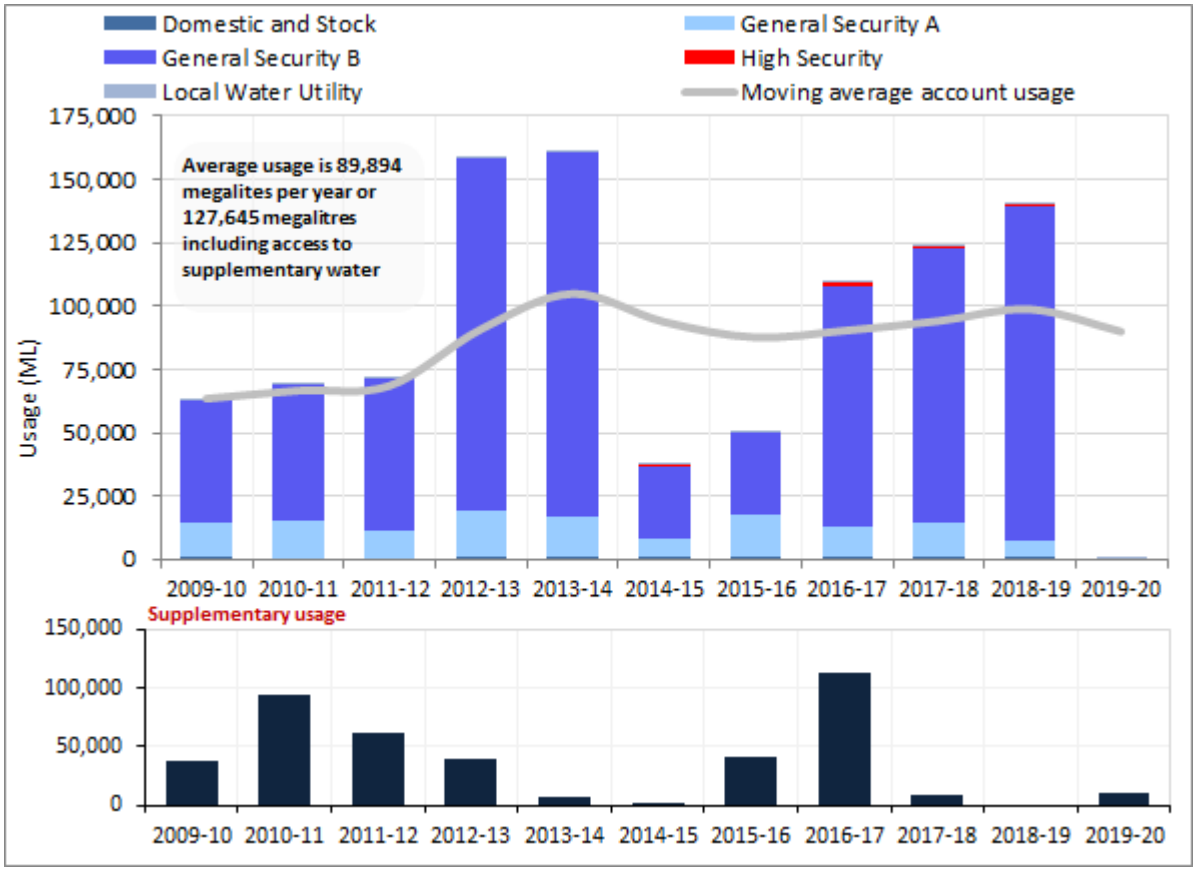
Account usage

Account usage refers to the total volume of water debited against an access licence.

- As dams were near empty, most categories of licence had restrictions on use throughout the growing season (reflection of severe drought conditions).
- The total account usage from the regulated supply totalled 10,750 megalitres for the reporting period (Figure 22). This was a significant drop from the previous year (140,934 megalitres).
- The average annual usage (under water sharing plan conditions) was 127,645 megalitres[7] (including supplementary access) at the close of the reporting period (Figure 22).

[7] Refers to usage accounted against NSW access licences. This approach is different to that reported for MDBA Basin Plan compliance reporting which adopts a state of origin reporting concept for all usages (i.e. includes NSW water traded to Queensland).

Figure 22: Total usage since the commencement of the water sharing plan against entitlement



Utilisation and inactive share

We consider an access licence entitlement 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 from regulated supplies (excludes supplementary water), relative to the maximum amount available for use.

- The percentage of inactive licences during the reporting period was comparatively very high, due to access licence restrictions (Table 6).
- 95% of General Security A share component was inactive for the reporting period, 94% higher than the prior reporting period (decreased activity, with limited availability and restrictions).
- 79% of General Security B share component was inactive for the reporting period, 75% higher than prior reporting period.
- 5% of supplementary share component was inactive for the reporting period, 75% lower than prior reporting period, following access to the February 2020 flow event.
- Considering all categories of access licence, 80% were inactive for the reporting period, compared to 4% in the prior reporting period (decreased activity).
- Utilisation of available water from regulated supplies (excludes supplementary) decreased by 83% to 14%, again reflective of limited resources and restrictions on usage of what was available (Figure 23).

Figure 23: Percentage utilisation of NSW allocation (water availability, against account usage and trade out to Qld).

Usage of QLD allocation in NSW is not considered in this analysis

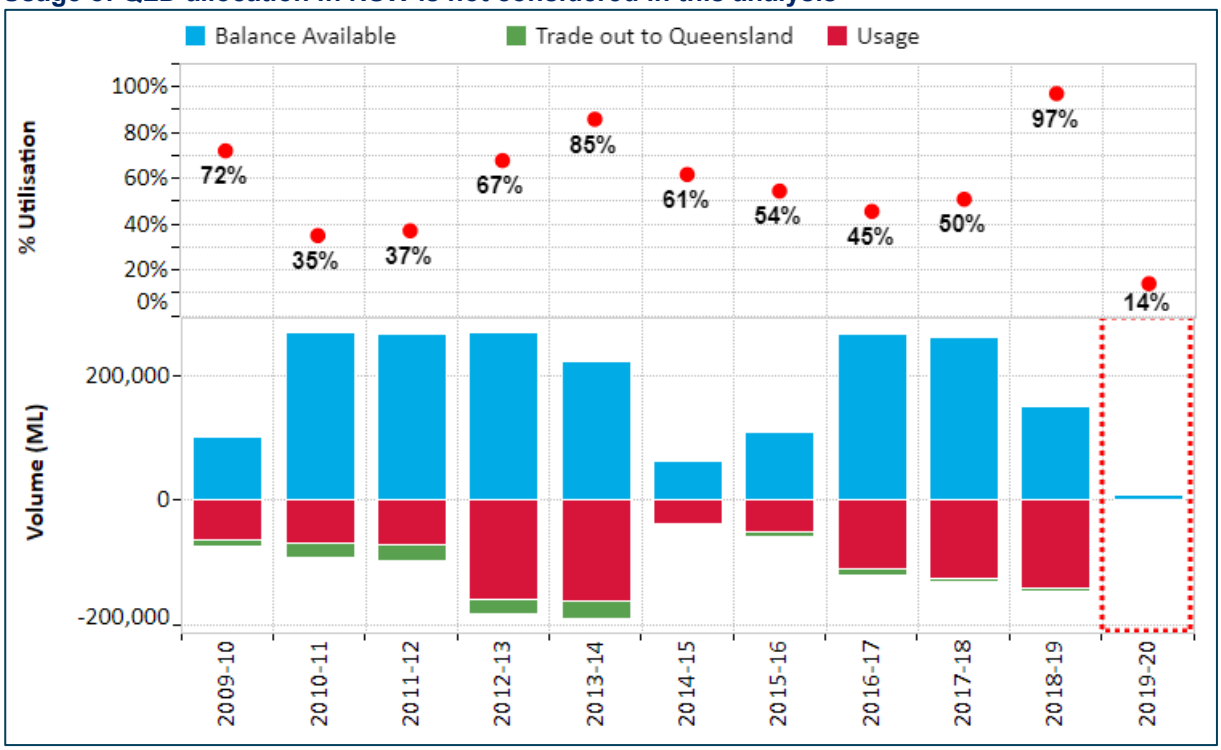


Table 6: NSW Border Rivers inactive licences summary

Licence category	Inactive licences (2019–20) (number)	Inactive share component (2019–20)	Inactive share % of total share (2019–20)	Inactive share % of total prior year (2018–19)
Domestic and Stock	19	450	53%	12%
Domestic and Stock [Domestic]	12	48	94%	94%
Domestic and Stock [Stock]	13	85	85%	75%
Local Water Utility	1	20	3%	3%
Regulated River (General Security A)	111	20,927	95%	1%
Regulated River (General Security B)	95	190788	79%	4%
Regulated River (High Security)	4	65	4%	0%
Supplementary Water	69	6422.6	5%	80%
Total	**324**	**218,806**	**80%**	**4%**

Temporary trading

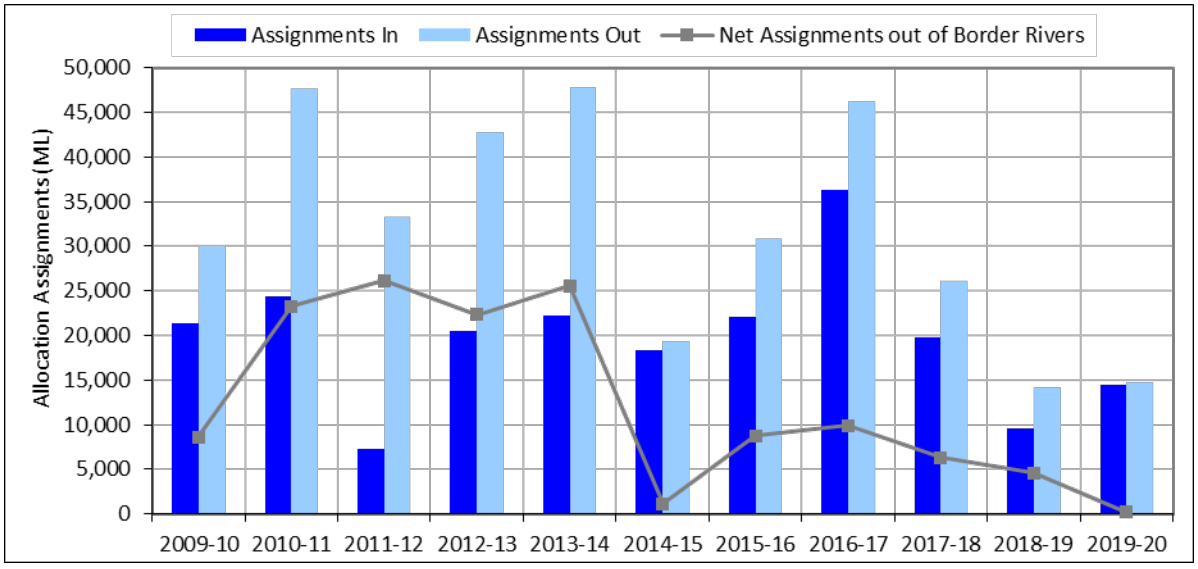
Important note: This water accounting report is produced from the perspective of water balances, usages and temporary trades associated with NSW water access licences. Additional activities such as transfer of water between permanently linked works from QLD to NSW, and temporary interstate trading implemented under the Border River Intergovernmental agreement from QLD to NSW whereby trade is held in and delivered from temporary holding accounts has not been considered[8].

Temporary trading is implemented in this water source under the clause 71 T (assignment of water allocations between access licences) and 71V (interstate assignment of water allocations) of the *Water Management Act 2000*.

For the reporting period:

- a total of 14,488 megalitres was traded into NSW access licences.
- a total of 14,678 megalitres was traded from NSW access licences, resulting in a net trade out of the water source (to Queensland) of 190 megalitres (Figure 24).

Figure 24: Net trade out of the NSW Border Rivers (excluding supplementary)



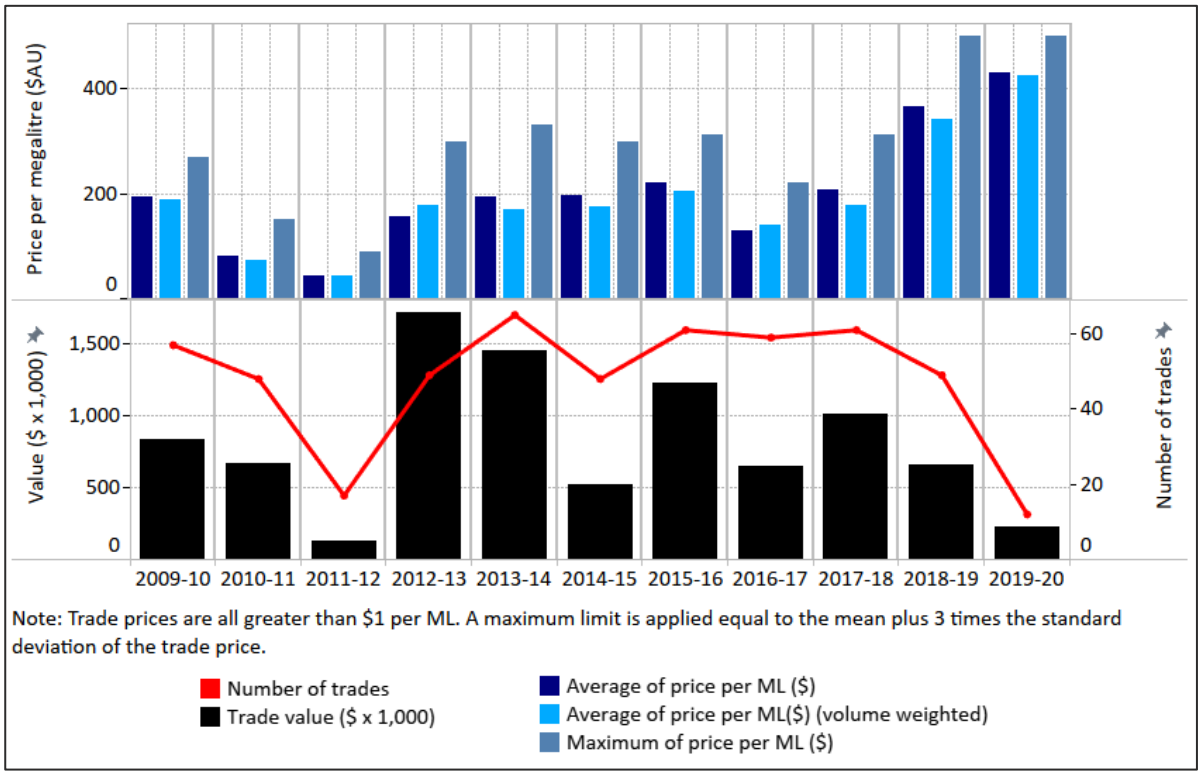
Commercial-based statistics

Excluding supplementary water, and considering *only* those assignments processed for commercial purposes (assumed as trades greater than $1 per megalitre for this purpose of this GPWAR):

- 12 transactions were processed, moving a total of 539 megalitres between accounts
- the average consideration for the reporting period was $430 per megalitre ($426 per megalitre volume weighted), an increase of 17% on the prior period and the highest under water sharing plan management conditions.
- the maximum consideration for temporary water was $500 per megalitre (Figure 25).

[8] For reference purposes a total of zero megalitres regulated supply was traded from Qld to NSW, and zero megalitres of non-regulated supply (equivalent to supplementary access). Of the water traded, 1,186 megalitres was used. The usage forms no part of the accounting process against NSW access licences. A historical summary of these historical trade movements between NSW and QLD under the state of origin accounting principle is provided in Note 5

Figure 25: NSW Border Rivers allocation assignments trade market statistics



Permanent trading

Commercial-based statistics

Division 4 (dealings with access licences) of the *Water Management Act 2000* allows for a range of dealing options that permanently affect the title of the water access licence. Two of the more common dealing practises under this division are assignments of rights under access licences (clause 71Q) and transfer of access licences (clause 71M). With consideration to these dealing types:

- broadly, the 71Q market is relatively inactive in comparison to other NSW inland regulated river water sources. One 71Q trade for General Security A occurred in the reporting period exchanging 24 shares for a consideration of $5,000 per share. No transactions were processed for General Security B licence or supplementary access licences in the reporting period (Table 7, Table 8 and Table 9).
- activity through transfer of licence (71M) decreased in the reporting period relative to the prior year
- a total of 8 (71M) transactions were processed for commercial purposes that moved a total of 7,003 shares[9] to a new holder (Figure 26) (Table 10).

[9] Considers all categories of licence

Table 7: Permanent assignments of share statistics General Security A access licences

Water year	Number	Total share	Average price ($/share)	Sum of value ($)	Volume weighted average ($)
2010–11	0	0	0	0	0
2011–12	2	55	3,500	192,500	3,500
2012–13	2	120	3,125	375,000	3,125
2013–14	0	0	0	0	0
2014–15	3	123	3,278	418,000	3,398
2015–16	1	90	3,000	270,000	3,000
2016–17	2	40	3,275	131,500	3,288
2017–18	1	51	3,850	196,350	3,850
2018–19	0	0	0	0	0
2019–20	1	24	5,000	120,000	5,000

Table 8: Permanent assignments of share statistics General Security B access licences

Water year	Number	Total share	Average price ($/share)	Sum of value ($)	Volume weighted average ($)
2010–11	3	269	1,950	524,550	1,950
2011–12	1	5,500	1,859	10,225,050	1,859
2012–13	1	39	1,950	76,050	1,950
2013–14	0	0	0	0	0
2014–15	1	912	1,809	1,649,808	1,809
2015–16	3	1,635	2,720	3,382,908	2,069
2016–17	1	99	2,000	198,000	2,000
2017–18	3	1,378	2,036	2,862,014	2,077
2018–19	0	0	0	0	0
2019–20	0	0	0	0	0

Table 9: Permanent assignments of share statistics supplementary access licences

Water year	Number	Total share	Average price ($/share)	Sum of value ($)	Volume weighted average ($)
2010–11	0	0	0	0	0
2011–12	2	77	1,800	123,400	1,603
2012–13	1	27	800	21,600	800
2013–14	2	469	1,000	469,000	1,000
2014–15	1	440	1,000	440,000	1,000
2015–16	3	724	1,000	724,000	1,000
2016–17	3	931	975	914,500	982
2017–18	3	422	1,200	545,300	1,292
2018–19	0	0	0	0	0
2019–20	0	0	0	0	0

Figure 26: NSW Border Rivers transfer of access licence holder

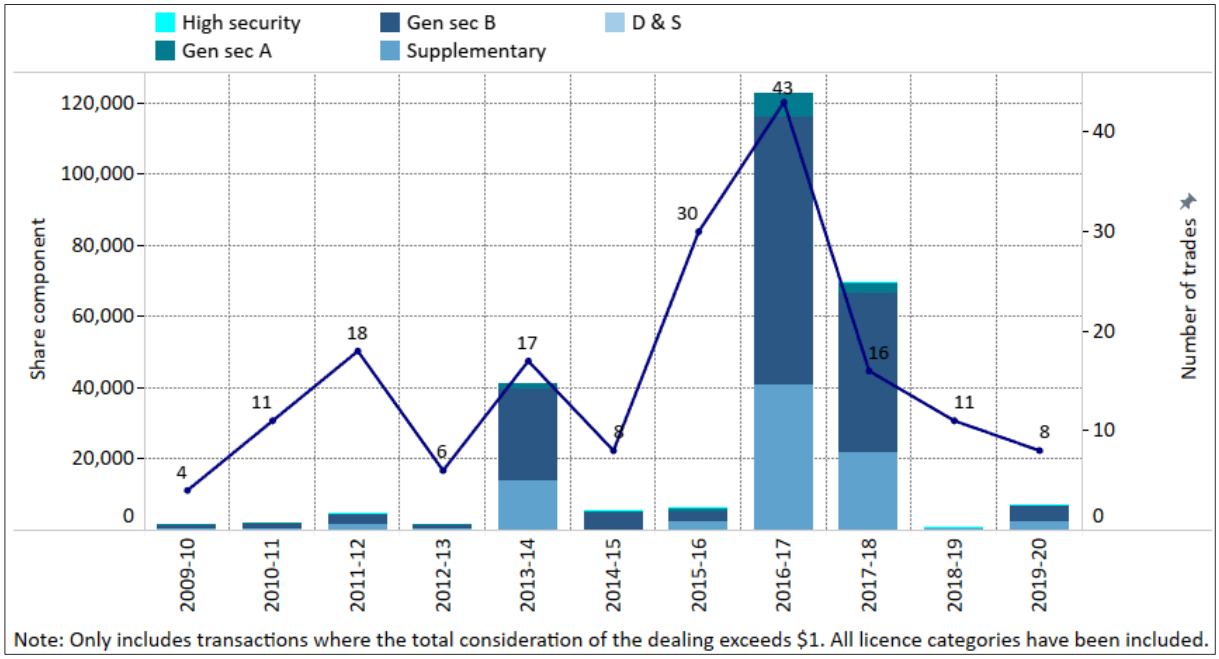


Table 10: Change of licence holder for commercial purposes by licence category

Licence category	Shares transferred	Number of transactions
General Security A	216	2
General Security B	4,560	2
High Security	10	1
Domestic and Stock	0	0
Supplementary Water	2,217	3
Total	**7,003**	**8**

Environmental water

Held environmental water

Held environmental water refers to access licences that are managed for the purpose of sustaining and improving environmental outcomes within the system.

- Held environmental water licence number has not changed in the reporting period.
- A total of 2,806 General Security B shares and 1,437 supplementary shares were held and managed for environmental purposes as of 30 June 2020, which represents 1.1% of total share issued in the NSW Border Rivers (Figure 27).
- No held environmental usage of NSW allocation[10] occurred throughout the reporting period (Figure 28).
- More information about held environmental water is available in Note 7 of this GPWAR.

[10] An environmental release from Glenlyon occurred in April 2019 utilising QLD environmental holdings

Planned environmental water

Planned environmental water refers to a range of environmental allowances and provisions that are implemented under the water sharing plan to improve environmental outcomes.

During the reporting period, no stimulus flow was utilised as the trigger inflow was not met i.e. inflow to Pindari Dam exceeds 1,200 megalitres per day on any day between 1 April and 31 August. A full account summary of the environmental stimulus account is in Note 8 of this GPWAR.

Minimum flow requirements from Pindari dam (10 megalitres per day) were delivered during the reporting period and are presented in Figure 29. Transparent releases were not carried out from February 2020 due to the Pindari Dam valves undergoing replacement. The upgrade work was completed in August 2020 and transparent releases resumed from 31 August 2020.

Further information on storage releases and transparent releases is located in Note 19.

Figure 27: Held environmental water share component in the NSW Border Rivers[11]

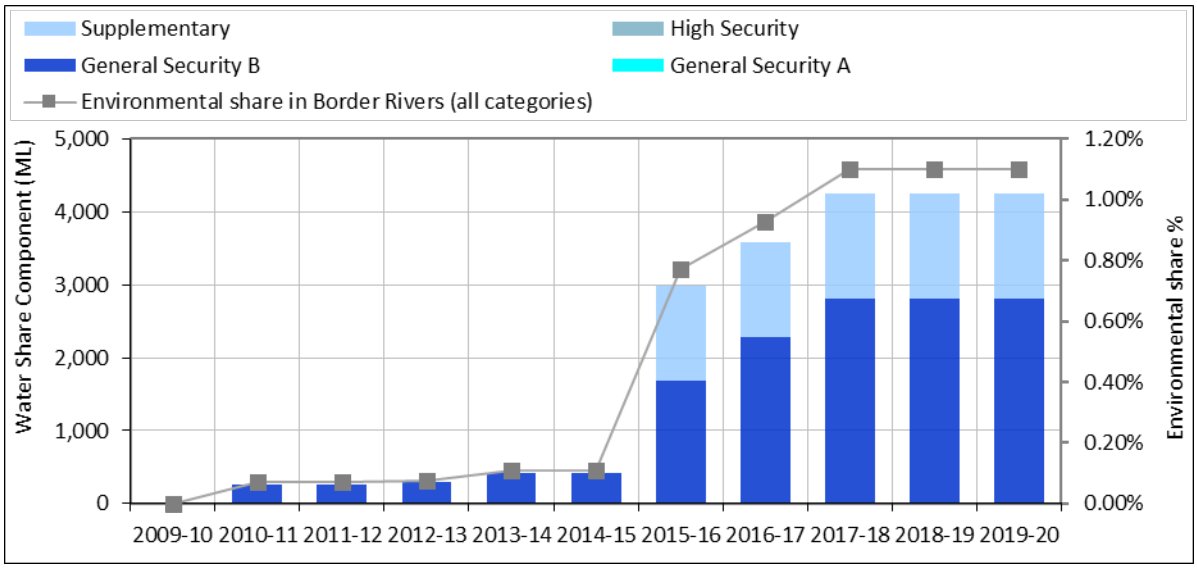
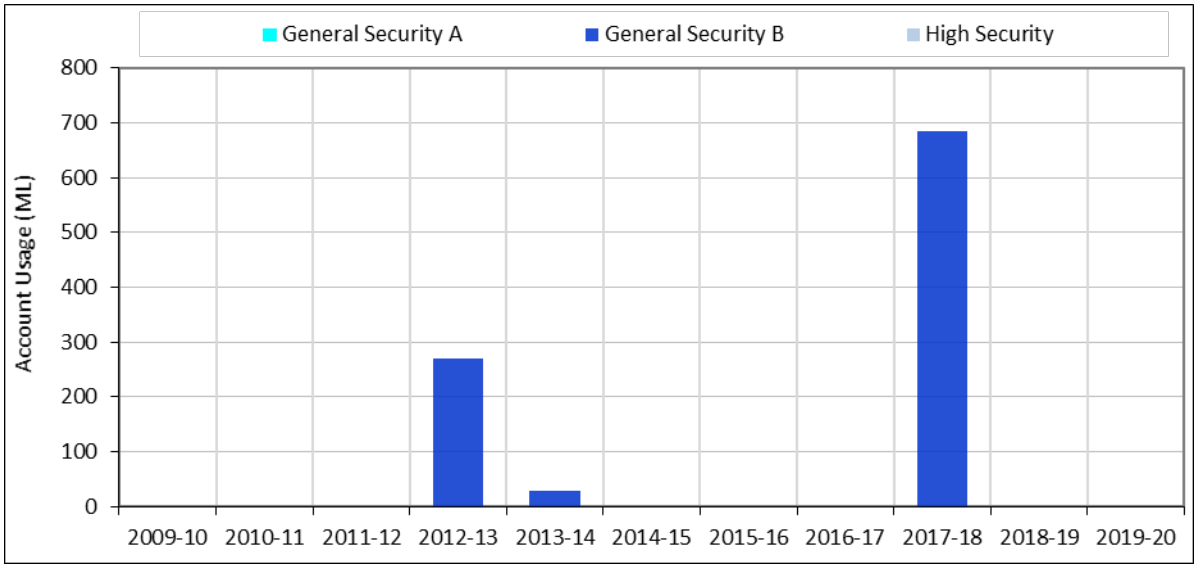
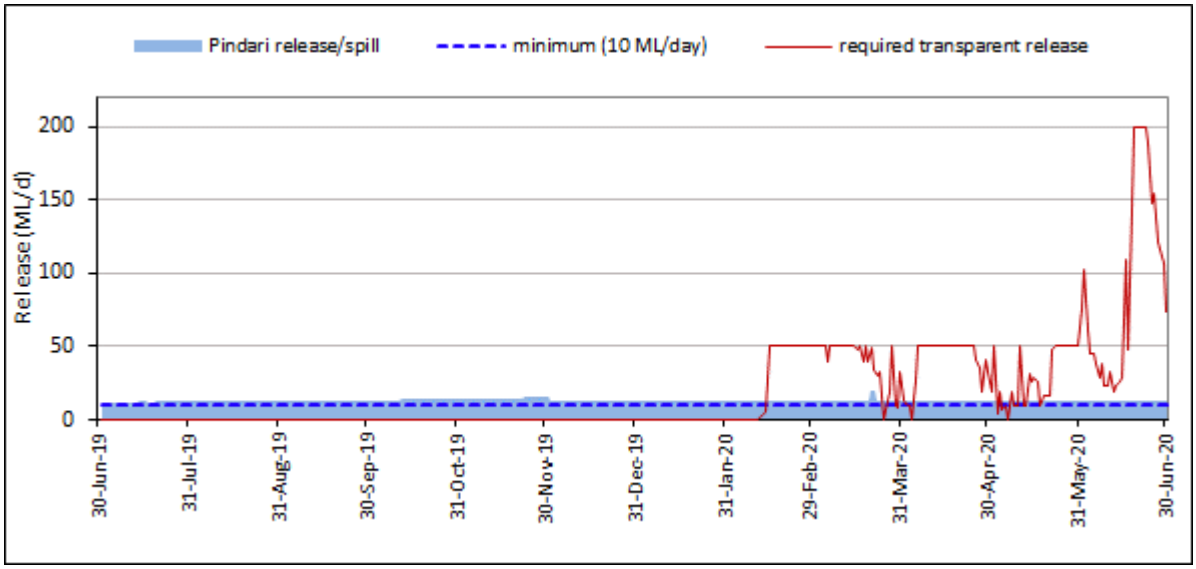


Figure 28: Held environmental usage



[11] A licence with zero share component in General Security A and High Security has been held since 2010–11

Figure 29: Pindari releases against water sharing plan transparent and minimum flow requirements[12]

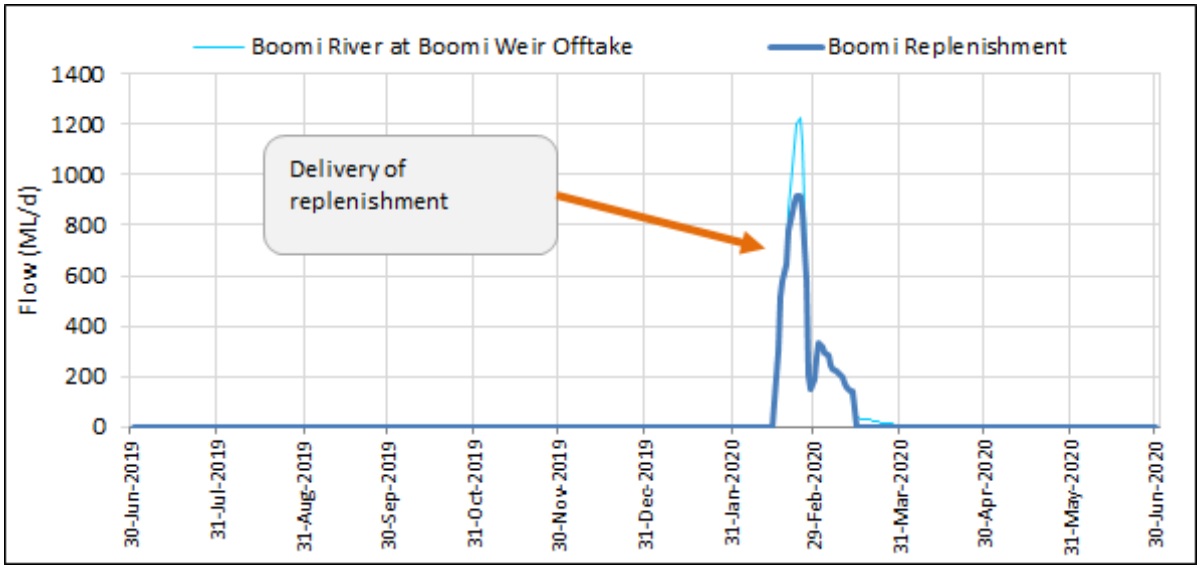


Replenishment flows

As required, up to two replenishment events are to be supplied to the Boomi River each year. The annual replenishment should not exceed a combined total of 10,000 megalitres.

- No releases were made from Pindari Dam to deliver the replenishment flows during 2019–20. However, 11,670 megalitres was diverted to Boomi river over 29 days commencing 15 February 2020 as replenishment from downstream tributary flows (Figure 30).
- The total flow recorded at the Boomi River off take for the 2019–20 water year, including replenishment flow, natural flow and water diverted under Intergovernmental agreement rules[13], was 12,528 megalitres.

Figure 30: Boomi River flows and replenishment



[12] Releases obtained from the operations spreadsheet being used to assess release requirements, which use provisional information for the 24 hours to 9 am. All other storage releases in this GPWAR for Pindari use the downstream storage gauge, midnight to midnight release.

[13] dnrm.qld.gov.au/__data/assets/pdf_file/0006/105963/intergovernment-agreement.pdf

Water Accounting Statements

Significant water accounting policies

We have used an accrual accounting basis for the water accounting statements in this GPWAR. All figures are in megalitres (ML).

The 'Statement of Physical Flows' specified under the AWAS 1 has been excluded 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 provide a clearer picture of this process.

For generic information on how to interpret the NSW Department of Planning, Industry and Environment GPWAR statements, refer to the *Guide to General Purpose Water Accounting Reports* available for download from NSW Department of Planning, Industry and Environment website (www.industry.nsw.gov.au/water).

Quantification of data

Data accuracy

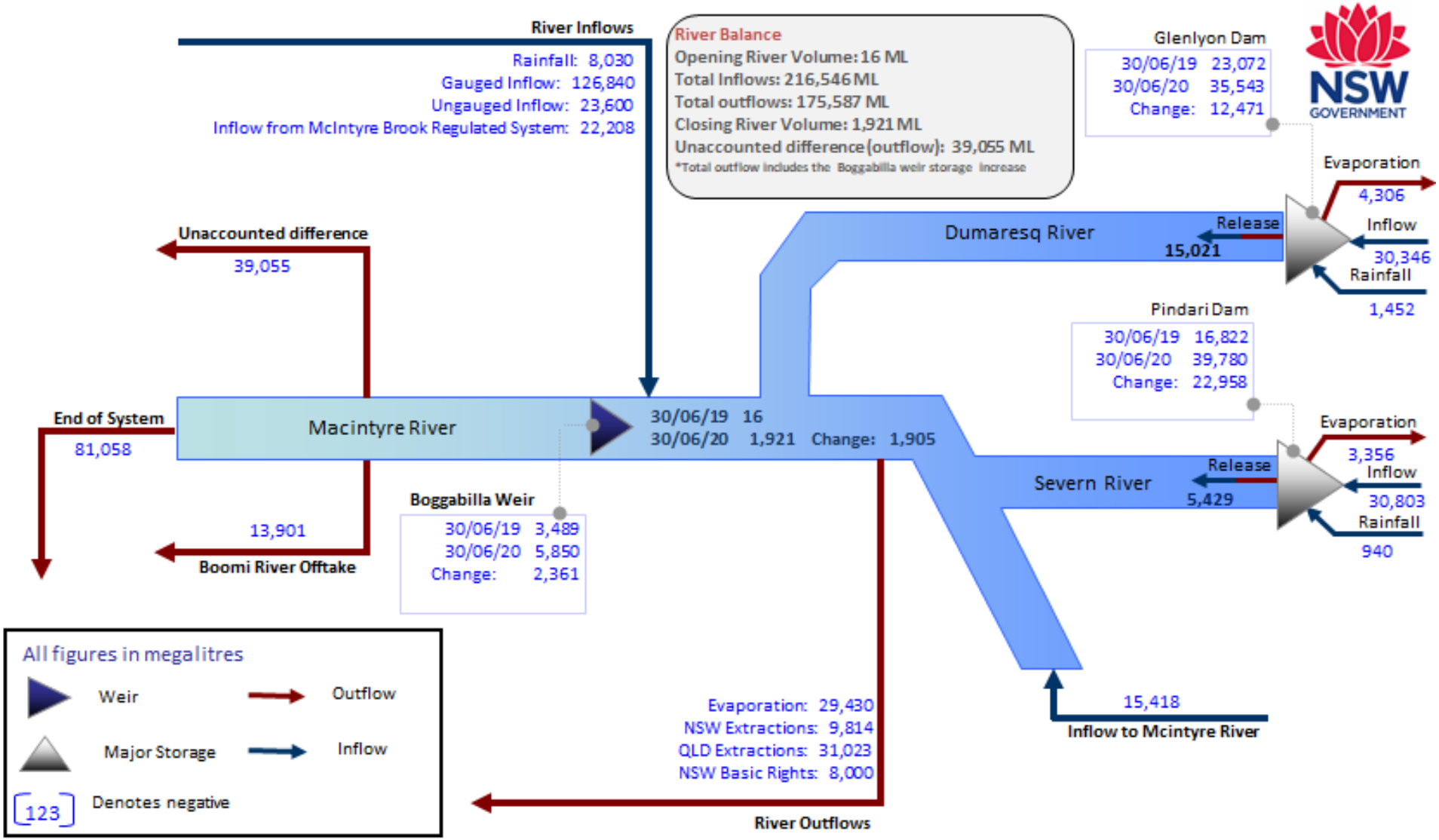
The data used to account for water movement and management in the reporting entity has been obtained from a variety of sources and systems. The data ranges from observed values we anticipate high accuracy through to modelled results and estimates where accuracy can be highly variable, depending on a 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 (Table 11).

Table 11: Water account data accuracy estimates key

Accuracy	Description
A1[14]	± 0% Data is determined rather than estimated or measured. Therefore, the number contains no inaccuracies.
A	± 10%
B	± 25%
C	± 50%
D	± 100%

[14] 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 NSW Department of Planning, Industry and Environment corporate database.

2019–20 Physical flows mass balance diagram



Statement of water assets and liabilities

For the year ended 30 June 2019

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

Surface water assets

1. Surface water storage	Accuracy	Notes	30 June 2020	30 June 2019
Glenlyon Dam	A	10	**35,543**	23,072
Pindari Dam	A	10	**39,780**	16,822
Boggabilla Weir	A	10	**5,850**	3,489
River	B	11	**1,921**	16
Total surface water storage (Asws)			**83,094**	43,400
Change in surface water storage			**39,694**	(264,833)

Surface water liabilities

2. Allocation account balance	Accuracy	Notes	30 June 2020	30 June 2019
Domestic and stock	A1	1	**(13)**	(6)
Domestic and Stock[Domestic]	A1	1	**0**	0
Domestic and Stock[Stock]	A1	1	**0**	(0)
Local Water Utility	A1	1	**(1)**	(9)
Regulated River (General Security A)	A1	1	**237**	296
Regulated River (General Security B)	A1	1	**5,443**	4,351
Regulated River (High Security)	A1	1	**0**	0
Total allocation account balance (Lsws)			**5,666**	4,633
Change in allocation account balance			**1,034**	(135,836)

3. Environmental stimulus flow account balance	Accuracy	Notes	30 June 2020	30 June 2019
Stimulus flow account (Lesf)	A1	8	**4000**	4,000
Change in environmental stimulus flow account balance			**0**	4,000

NET SURFACE WATER ASSETS

4. Net changes	30 June 2020	30 June 2019
Net surface water assets (Asws – Lsws – Lesf)	**73,428**	34,767
Change in net surface water assets	**38,661**	(132,997)

Statement of changes in water assets and liabilities

1 July 2018 to 30 June 2019 (1 of 3)

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

Surface water storage increases	Accuracy	Notes	2019–20	2018–19
Glenlyon Dam				
Inflow	A	12	**30,346**	7,659
Rainfall	B	13	**1,452**	2,615
Pindari Dam				
Inflow	A	12	**30,803**	15,888
Rainfall	B	13	**940**	1,950
River				
Rainfall	B	13	**8,030**	5,672
Inflow from releases	A	19	**20,450**	277,012
Gauged inflow	A	15		
Inflow from Macintyre Brook regulated system			**22,208**	9,356
Inflow to Macintyre River			**15,418**	3,459
Other gauged inflow			**126,840**	1,780
Ungauged inflow[15]	C	16	**23,600**	1,934
Total surface water storage increases (Isws)			**295,897**	327,325

Surface water decreases	Accuracy	Notes	2019–20	2018–19
Glenlyon Dam				
Releases	A	19	**15,021**	100,359
Evaporation	B	13	**4,306**	11,681
Pindari Dam				
Releases (other)	A	19	**3,334**	169,628
Releases (transparent)	A	19	**2,095**	7,025
Evaporation	B	13	**3,356**	7,124
River				
Evaporation	C	13	**29,430**	26,137
Flows leaving system	A	17		
Boomi River (other)			**2,232**	1,115
Boomi River (replenishment)			**11,669**	6,262
End of system			**81,058**	7,318
Extractions from river				
NSW	A	18	**9,814**	115,649
Qld Extractions	A	20	**31,023**	58,217
Basic rights extractions (NSW)	C	6	**8,000**	8,000
Total surface water storage decreases (Dsws)			**191,751**	518,514
Unaccounted difference (balancing item) (Usws)	D	22	**39,055**	73,645

Net surface water storage changes	2019–20	2018–19
Net surface water storage inflow (Isws-Dsws-Usws)	**39,694**	(264,833)

[15] Ungauged estimated to Boggabilla

Statement of changes in water assets and liabilities

1 July 2017 to 30 June 2018 (2 of 3)

2. Changes in claims to water

Allocation account increases	Accuracy	Notes	2019–20	2018–19
Available water determinations	A1	2		
Domestic and Stock			**850**	850
Domestic and Stock [Domestic]			**51**	51
Domestic and Stock [Stock]			**100**	100
Local Water Utility			**640**	640
Regulated River (General Security A)			**0**	7,084
Regulated River (General Security B)			**0**	0
Regulated River (High Security)			**1,500**	1,500
New licences	A1	1	**0**	0
Supplementary Water	A	21	**9,881**	0
Internal trade—buyers	A1	5	**1,372**	9,536
Trade in from Qld	A1	5	**0**	50
Account adjustments				
Regulated River (General Security A)	A1	9	**0**	0
Total allocation increases (Iaa)			**14,394**	19,811

Allocation account decreases	Accuracy	Notes	2019–20	2018–19
Account usage	A1	3		
Domestic and Stock			**398**	740
Domestic and Stock [Domestic]			**1**	3
Domestic and Stock [Stock]			**15**	25
Local Water Utility			**305**	494
Regulated River (General Security A)			**18**	6,421
Regulated River (General Security B)			**64**	132,214
Regulated River (High Security)			**68**	1,038
Supplementary Water			**9,881**	0
Account forfeiture	A1	1		
Domestic and Stock			**457**	109
Domestic and Stock [Domestic]			**50**	48
Domestic and Stock [Stock]			**85**	70
Local Water Utility			**357**	155
Regulated River (General Security A)			**2**	0
Regulated River (General Security B)			**0**	45
Regulated River (High Security)			**95**	46
Water ordering debiting (orders > usage)	A1	4		
Domestic and Stock			**2**	7
Domestic and Stock [Stock]			**0**	5
Regulated River (General Security A)			**0**	0
Regulated River (General Security B)			**1**	18
Regulated River (High Security)			**0**	16
Licences cancelled	A1	1	**0**	
Internal trade—sellers	A1	5	**1,372**	9,536
Trade out to Qld	A1	5	**190**	4,658
Trade allocation account decreases (Daa)			**13,360**	155,647

Net change in allocation accounts		2018–19
Net allocation account balance increase (Iaa – Daa)	**1,034**	(135,836)

Statement of changes in water assets and liabilities

1 July 2018 to 30 June 2019 (3 of 3)

3. Change in environmental stimulus flow account balance

Environmental stimulus flow account increases	Accuracy	Notes	2019–20	2018–19
Start of water year increase (Is)	A1	8	**4,000**	4,000

Environmental stimulus flow account decreases	Accuracy	Notes	2019–20	2018–19
Stimulus account forfeit	A1	8	**4,000**	0
Stimulus account usage	A1	8	**0**	0
Total environmental stimulus flow account decreases (Ds)			**4,000**	0
Net environmental stimulus flow account balance increase			**0**	4,000

4. Overall changes

Surface water assets			2019–20	
Change in net surface water assets (Isws – Dsws – Usws – Iaa + Daa – Is +Ds)			**38,661**	(132,997)

Note Disclosures

Reconciliations and future prospects

This section contains reconciliation and future prospects for the regulated Peel water source.

Reconciliation of change in net water asset to net change in physical water storage	2019–20 ML	2018–19 ML
Change in net surface water assets	**38,661**	(132,997)
Non-physical adjustments		
Net increase in allocation accounts	**1,034**	(135,836)
Net change in environmental stimulus account	**0**	4,000
Net change in physical surface water storage	**39,694**	(264,833)

Reconciliation of closing water storage to total surface water assets	30 June 2020 ML	30 June 2019 ML
Closing water storage		
Pindari	**39,780**	16,822
Glenlyon	**35,543**	23,072
Boggabilla Weir	**5,850**	3,489
River	**1,921**	16
Total surface water assets	**83,094**	43,400
Less Glenlyon Qld water allocated	**(11,420)**	(13,420)
Volume remaining to meet NSW demands	**71,674**	29,980

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

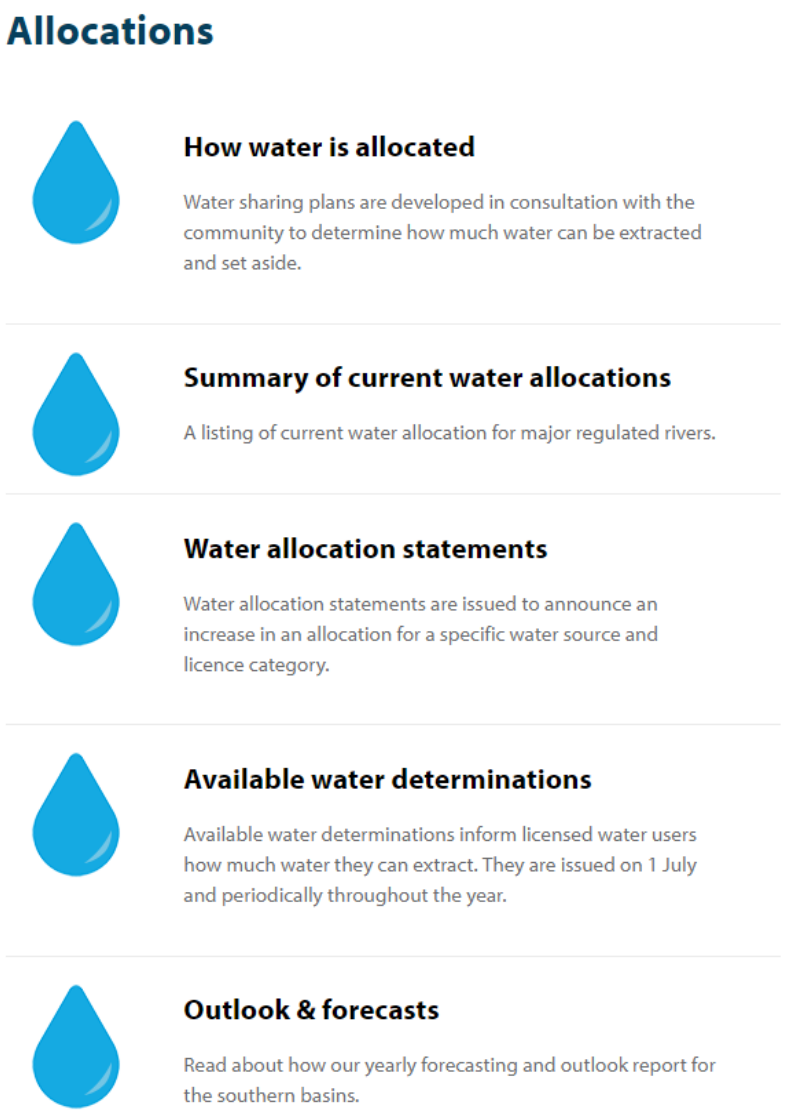
Final datasets for reporting in the GPWAR, including meter readings by field staff were not available in time to produce an informative 12-month forecast for report users.

In lieu of this, the links below give the latest water availability information for the NSW Border Rivers. This includes carryovers and available water determinations at the time of reporting, along with probability information about the Border Rivers system's reliability.

Latest water availability

You can find the latest information on water availability, including water allocation statements, water allocations summaries and 2020–21 available water determinations, on the NSW Department of Planning, Industry and Environment webpage at www.industry.nsw.gov.au/water/allocations-availability/allocations

You can also subscribe to receive the latest updates.



Latest storage volumes

See real-time information on storage volumes in the Border Rivers at realtimedata.waternsw.com.au

Significant events since 2019–20

Not applicable.

System reliability

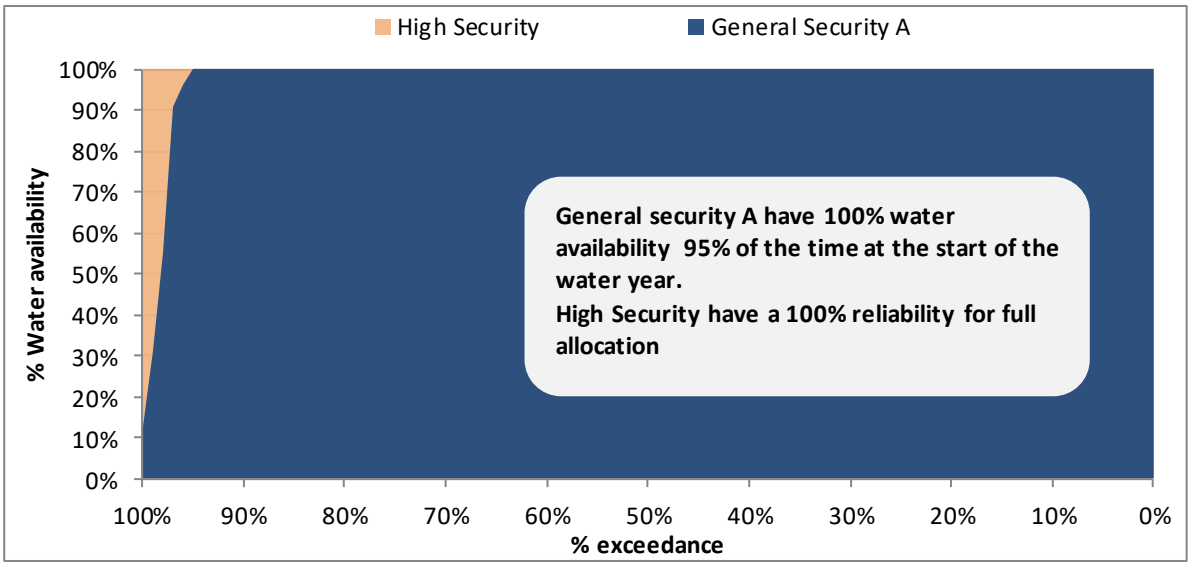
The latest long-term planning model (IQQM) reflecting a water sharing plan management scenario in the NSW Border Rivers provides indicative system reliability information for the start and closure of a watering season[16].

In a given year, the simulation indicates High Security entitlements are likely to have full allocation maintained 100% of the time. General Security A holders have a slightly lower reliability, with opening water availability at maximum levels 95% of the time (Figure 31). By the end of the water year, reliability for General Security A holders is rarely below 100% (Figure 32).

The lower security licence category of General Security B is subject to much higher variation in reliability. At the start of a water year, simulation results indicate availabilities in exceedance of 67% of issued entitlement for 50% of the time and exceeding 100% for 24% of the time (Figure 33).

Throughout the water year, reliability significantly improves for General Security B holders. While account holders have a holding limit of one megalitre per share, the continuous accounting approach in the Border Rivers allows for usage from General Security B holder accounts to be topped up as resources become available in storage. The effective water availability (calculated as carryover plus available water determination volumes or total water placed in accounts) for this category can therefore exceed 100% of issued entitlement throughout the year. Under the demand simulation of the long-term planning model, General Security B holders exceed 100%, 55% of the time (Figure 34).

Figure 31: Start of water year simulated availability for General Security A and High Security licences



[16] The IQQM model simulation uses a water year of October to September. Simulation period one October 1890 to 30 September 2015

Figure 32: End of water year simulated availability for General Security A and High Security licences

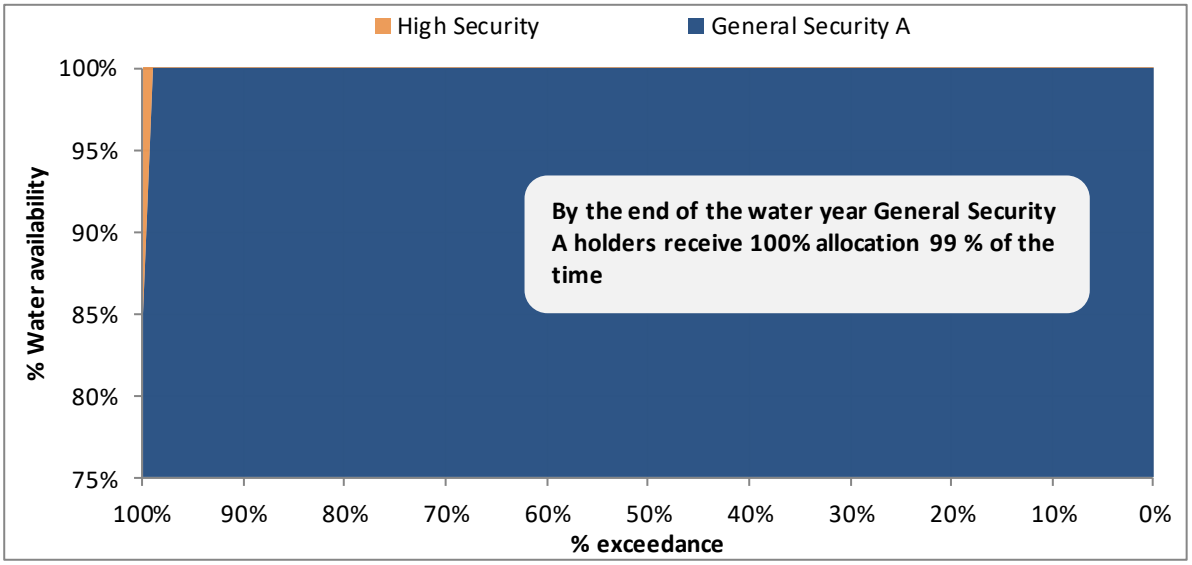


Figure 33: Start of water year availability for General Security B licences

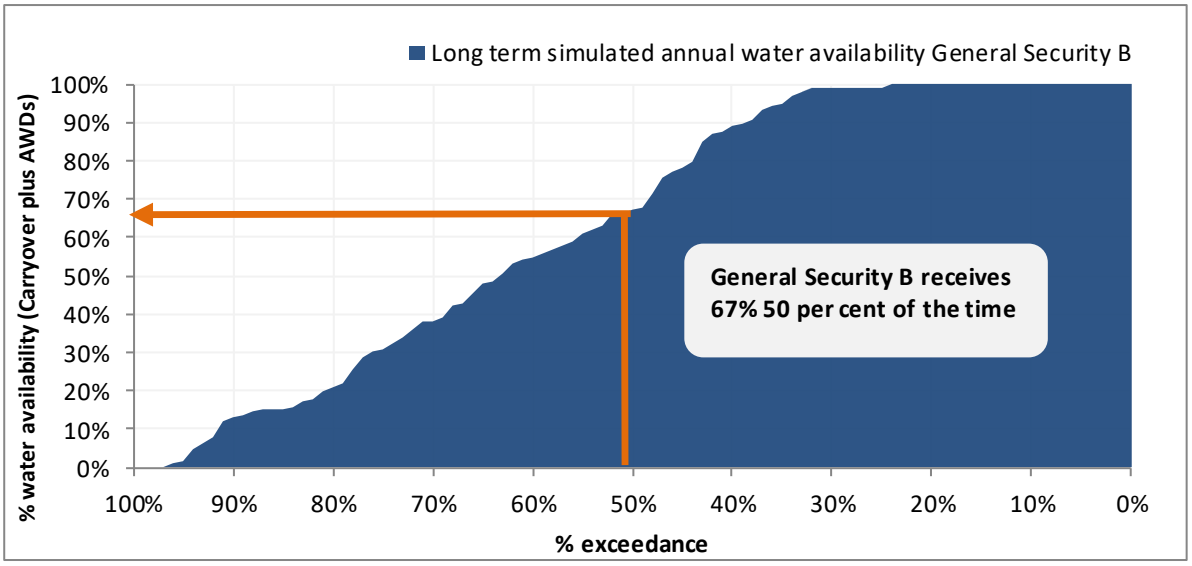
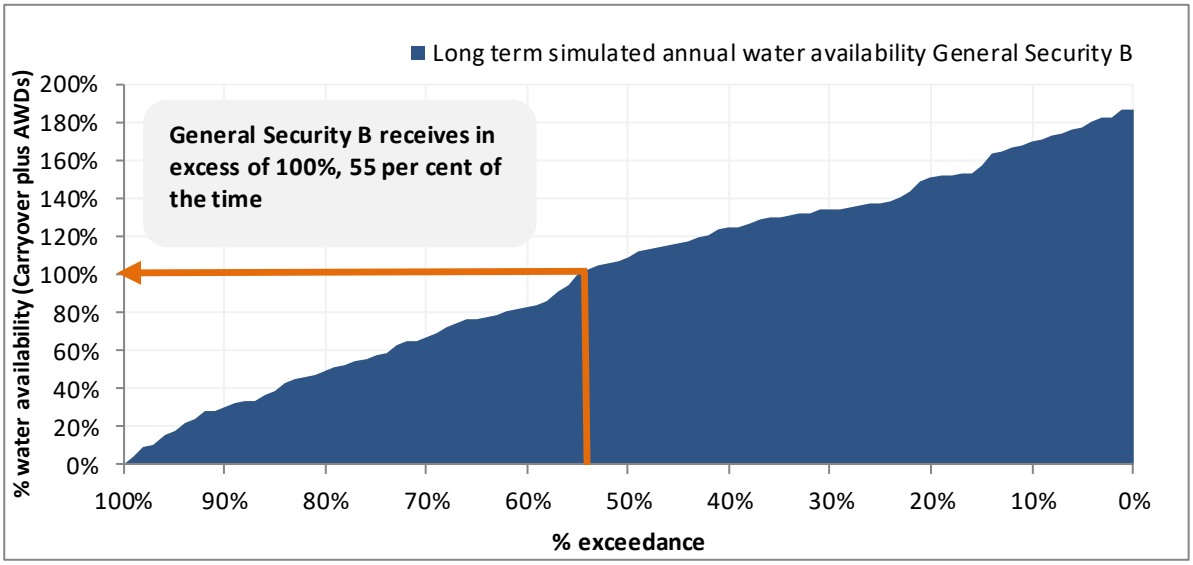


Figure 34: Full year water year availability for General Security B licences



Carryovers and available water determinations since this reporting period (2020–21)

Table 12: Carryovers and available water determinations 2020–21 (as of November 2020)

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available	Balance not available	Balance total	Balance available (%)	Balance total (%)
Domestic and Stock											
1 Jul 2020	Opening	850			0.0%	0.0%	(13)	0	(13)	(1.5)%	(1.5)%
1 Jul 2020	AWD 100.0 %	850	850	850	100.0%	100.0%	837	0	837	98.5%	98.5%
Domestic and Stock [Domestic]											
1 Jul 2020	Opening	51			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2020	AWD 100.0 %	51	51	51	100.0%	100.0%	51	0	51	100.0%	100.0%
Domestic and Stock [Stock]											
1 Jul 2020	Opening	100			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2020	AWD 100.0 %	100	100	100	100.0%	100.0%	100	0	100	100.0%	100.0%
Local Water Utility											
1 Jul 2020	Opening	640			0.0%	0.0%	(1)	0	(1)	(0.2)%	(0.2)%
1 Jul 2020	AWD 100.0 %	640	640	640	100.0%	100.0%	639	0	639	99.8%	99.8%
Regulated River (General Security A)											
1 Jul 2020	Opening	22,007			0.0%	0.0%	237	0	237	1.1%	1.1%
1 Jul 2020	AWD 0.073 ML per Share	22,007	1,598	1,598	7.3%	7.3%	1,836	0	1,836	8.3%	8.3%
21 Aug 2020	AWD 0.069 ML per Share	22,007	1,508	3,106	6.9%	14.1%	3,343	0	3,343	15.2%	15.2%
16 Oct 2020	AWD 0.091 ML per Share	22,007	1,994	5,100	9.1%	23.2%	5,337	0	5,337	24.3%	24.3%
18 Nov 2020	AWD 0.413 ML per Share	22,007	9,034	13,784	41.1%	62.6%	14,371	0	14,371	65.3%	65.3%
Regulated River (General Security B)											
1 Jul 2020	Opening	241,211			0.0%	0.0%	5,443	0	5,443	2.3%	2.3%
1 Jul 2020	AWD 0.0 ML per Share	241,211	0	0	0.0%	0.0%	5,443	0	5,443	2.3%	2.3%
Regulated River (High Security)											
1 Jul 2020	Opening	1,500			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2020	AWD 1.0 ML per Share	1,500	1,500	1,500	100.0%	100.0%	1,500	0	1,500	100.0%	100.0%
Supplementary Water											
1 Jul 2020	Opening	120,001			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2020	AWD 1.0 ML per Share	120,001	120,001	120,001	100.0%	100.0%	120,001	0	120,001	100.0%	100.0%

Detailed item notes

Note 1—Allocation accounts

This note is reference for the volume held in the allocation accounts at the time of reporting and is 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 the 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 is therefore inclusive of licences held by environmental holders (these are also detailed separately in Note 7).

Data type

Derived from measured data

Policy

- *Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009*

Available on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A1—Nil inaccuracy ± 0%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting System

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 throughout the year:

- available water determination (AWD) (detailed in Note 2)
- allocation account usage (detailed in Note 3)
- over-order debits
- forfeiture due to:
    - no carryover being permitted (end-of-year forfeit)
    - allocation account limits
- licence conversion
- trade of allocation water between accounts (detailed in Note 5)
- carryover rules.

Additional information

Table 14 summarises the water allocation accounts for each category of access licence. Table 13 describes each of the components of this summary. All figures are in megalitres.

Table 13: Explanatory information for allocation account summary

Heading		Description
Share		This is the total volume of entitlement in the specific licence category on the specified date.
Opening balance		The volume of water that has been carried forward from the previous year's allocation account
AWD		The total annual volume of water added to the allocation account as a result of allocation assessments
Licences	**New**	Increase in account water as a result of issuing new access licences
	Cancel	Decrease in account water as a result of licence cancellation
Drought suspension	**In**	Temporary water restriction applied, reducing account water available for use in reported water year
	Out	Temporary water restriction re-credit increasing account water available for use in reported water year
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
Account usage		Volume of water that is extracted or diverted from the river under controlled river conditions and is accountable against the licence
Over-order debit		Volume of water ordered that exceeded the recorded usage for corresponding periods that must also be accountable against the licence (excluding supplementary licence holders)
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.
End-of-year balance	**Available**	That part of the remaining account balance that is available to be taken at the conclusion of the water year
	Not available	That part of the remaining account balance that is not available to be taken at the conclusion of the water year
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
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 14: Allocation account balance summary for the NSW regulated Border Rivers (reporting period)

Category	Share	Opening balance	AWD	Licences		Drought suspension		Assignments		Account usage	Over order debit	During year forfeit	End of year balance		End of year forfeit	Carry forward
				New	Cancel	In	Out	In	Out				Available	Not available		
Domestic and Stock	850	(6)	850	0	0	0	0	0	0	398	2	0	444	0	457	(13)
Domestic and Stock [Domestic]	51	0	51	0	0	0	0	0	0	1	0	0	50	0	50	0
Domestic and Stock [Stock]	100	(0)	100	0	0	0	0	0	0	15	0	0	85	0	85	0
Local Water Utility	640	(9)	640	0	0	0	0	30	0	305	0	0	356	0	357	(1)
General Security A	22,007	296	0	0	0	282	282	76	115	18	0	2	237	0	0	237
General Security B	241,211	4,351	0	0	0	4,315	4,315	1,266	110	64	1	0	5,443	0	0	5,443
High Security	1,500	0	1,500	0	0	1,402	1,402	0	1,337	68	0	0	95	0	95	0
Supplementary Water	120,001	0	120,001	0	0	0	0	13,116	13,116	9,881	0	0	110,120	0	110,120	0

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

This is the process by which the regulated surface water asset available for use within the regulated system is determined and shared. The process calculates 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.

Data type

Derived from measured data

Policy

- *Water Act 1912*
- *Water Management Act 2000* (NSW)
    - Chapter 3—Part 2 Access Licences.
        - Clause 59—Available Water Determinations.
- *Water Sharing Plan for the Border Rivers Regulated River Water Source 2009*
    - Part 8—Limits to the availability of water
        - Division 2—Available Water Determinations

Available on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A1—Nil inaccuracy ±0%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting System
- Available Water Determination Register: waterregister.waternsw.com.au

Methodology

In the Border Rivers Regulated Water Source, AWDs are calculated based on a concept of continuous accounting that assesses the resource (water) contained in the headwaters storage, periodically updating projections and distributing the regulated (stored) resource available. All projections are for one year from the date of the assessment. Under continuous accounting, the AWDs are based on the actual volume of water in storage at the time of the resource assessment. This does not account for sequences of future inflows. However, these future inflows will assist in the delivery of essential requirements beyond the one year.

The process firstly involves the assessment of the effective storage, which is the available storage volume after storage losses are accounted for. This is to account for storage losses that cannot be controlled by a management rule and, therefore, must be provided for first. Following this, existing commitments are taken into account and then any uncommitted water is first committed to essential supplies, then added to the delivery loss account to target a volume equivalent to a maximum of 30% of the deliverable General Security. Water is then allocated to the Environmental

Stimulus Flow account. Any remaining uncommitted water is then shared in proportion to the amount of entitlement in the remaining resource categories (General Security).

The essential supplies mentioned above consist of items such as stock and domestic requirements, local water utilities (for example, town water supplies and industrial use), High Security (permanent plantings such as orchards and vineyards), end-of-system flow requirement resulting from the system operation and minimum storage releases.

The volume of water distributed to licence categories is expressed as either a volume per share or as a percentage of share component, depending on the category of licence.

Table 15 details each licence category and how it is announced.

Table 15: Access licence category announcement type

Licence category	Announcement type
General Security	Volume per share
High Security	Volume per share
Domestic and Stock*	Percentage of share component
Local Water Utility	Percentage of share component

Note: Domestic and Stock is further broken down into three sub-categories: Domestic and Stock, Domestic and Stock (Domestic) and Domestic and Stock (Stock).

The AWD for supplementary licence accounts is a separate process and is not dependent on water assets available. It is made once at the start of the year. Unless there is a management change due to the growth in use, the strategy is maintained at the maximum value prescribed in the plan, which is 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.

Additional information

Table 17 provides the allocation summary report for the reporting period. Table 16 describes each component in the summary report.

Table 16: Allocation summary report notes

Subject	Note
Opening	Remaining allocation account balances at the conclusion of the previous season that is allowed to 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
Allocation volume	Volume of water credited to accounts within a licence category as a result of the AWD announcement made
Cumulative volume	Cumulative total of the announced volumes for the water year and licence category
Allocation volume (%)	This is the individual announced volume expressed as a percentage of the share component applicable on the particular date.
Cumulative volume (%)	The total announced volume for the year, expressed as a percentage of the total share component for each licence category applicable on the particular date
Balance available	Sum of water available in allocation accounts that has been made available to be taken during the season
Not available	Water allocated that is not accessible at this point in time i.e. considering annual usage limits placed on the accounts as per the water sharing plan
Supplementary water	Water that is not a stored source of water and is only made available if an uncontrolled flow event occurs

Table 17: NSW regulated Border Rivers allocation announcement summary 2019–20

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available	Balance not available	Balance total	Balance available (%)	Balance total (%)
Domestic and Stock											
1 Jul 2019	Opening	850			0.0%		(6)	0	(6)	(0.7)%	(0.7)%
1 Jul 2019	AWD 100.0 %	850	850	850	100.0%	100.0%	844	0	844	99.3%	99.3%
Domestic and Stock[Domestic]											
1 Jul 2019	Opening	51			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2019	AWD 100.0 %	51	51	51	100.0%	100.0%	51	0	51	100.0%	100.0%
Domestic and Stock[Stock]											
1 Jul 2019	Opening	100			0.0%	0.0%	0	0	0	(0.3)%	(0.3)%
1 Jul 2019	AWD 100.0 %	100	100	100	100.0%	100.0%	100	0	100	99.7%	99.7%
Local Water Utility											
1 Jul 2019	Opening	640			0.0%	0.0%	(9)	0	(9)	(1.4)%	(1.4)%
1 Jul 2019	AWD 100.0 %	640	640	640	100.0%	100.0%	631	0	631	98.6%	98.6%
Regulated River (General Security A)											
1 Jul 2019	Opening	22,007			0.0%	0.0%	296	0	296	1.3%	1.3%
1 Jul 2019	AWD 0.0 ML per Share	22,007	0	0	0.0%	0.0%	296	0	296	1.3%	1.3%
1 Jul 2019	Drought Suspension 50.0 %	22,007		0	0.0%	0.0%	144	153	296	0.7%	1.3%
1 Feb 2020	Drought Suspension 100.0 %	22,007		0	0.0%	0.0%	15	282	296	0.1%	1.3%
17 Feb 2020	Drought Suspension Re-credit 0.0 %	22,007		0	0.0%	0.0%	15	282	296	0.1%	1.3%
23 Feb 2020	Drought Suspension Re-credit 100.0 %	22,007		0	0.0	0.0%	296	0	296	1.3%	1.3%
Regulated River (General Security B)											
1 Jul 2019	Opening	241,211			0.0%	0.0%	4,351	0	4,351	1.8%	1.8%
1 Jul 2019	AWD 0.0 ML per Share	241,211	0	0	0.0%	0.0%	4,351	0	4,351	1.8%	1.8%
1 Jul 2019	Drought Suspension 50.0 %	241,211		0	0.0%	0.0%	2,175	2,177	4,351	0.7%	1.8%
1 Feb 2020	Drought Suspension 100.0 %	241,211		0	0.0%	0.0%	36	4,315	4,351	0.0%	1.8%
17 Feb 2020	Drought Suspension Re-credit 0.0 %	241,211		0	0.0%	0.0%	36	4,315	4,351	0.0%	1.8%
23 Feb 2020	Drought Suspension Re-credit 100.0 %	241,211		0	0.0%	0.0%	4,351	0	4,351	1.8%	1.8%

Date	Individual announcement	Share component	Allocation volume (ML)	Cumulative volume (ML)	Allocation volume (%)	Cumulative volume (%)	Balance available	Balance not available	Balance total	Balance available (%)	Balance total (%)
Regulated River (High Security)											
1 Jul 2019	Opening	1,500			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2019	AWD 1.0 ML per Share	1,500	1,500	1,500	100.0%	100.0%	1,500	0	1,500	100.0%	100.0%
1 Feb 2020	Drought Suspension 100.0 %	1,500			0.0%	0.0%	98	1,402	1,500	6.5%	100.0%
17 Feb 2020	Drought Suspension Re-credit 100.0 %	1,500			0.0%	0.0%	1,500	0	1,500	100.0%	100.0%
Supplementary Water											
1 Jul 2019	Opening	120,001			0.0%	0.0%	0	0	0	0.0%	0.0%
1 Jul 2019	AWD 1.0 ML per Share	120,001	120,001	120,001	100.0%	100.0%	120,001	0	120,001	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. This figure excludes that water accounted as over- order debit, which is accounted for separately (see Note 4).

Data type

Measured/administration data

Policy

Not applicable

Data accuracy

A—Estimated in the range ± 10%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting 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. However, with 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 is 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 18 provides the order in which extractions are apportioned to access licence categories, starting at priority 1. 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 18: 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

Additional information

Total account usage for the reporting period is presented in Table 19.

Table 19: Account usage summary

Category	Allocation account usage
Domestic and Stock	398
Domestic and Stock [Domestic]	1
Domestic and Stock [Stock]	15
Local Water Utility	305
Regulated River (General Security A)	18
Regulated River (General Security B)	64
Regulated River (High Security)	68
Supplementary Water	9,881
Total	**10,750**

Note 4—Water order debiting

Currently in the NSW Border Rivers regulated river water source, the allocation accounts are managed using a water order debiting approach. Accounting under this system requires the accounts to be reduced by the greater of the:

- volume of water extracted
- volume of water ordered for extraction against an access licence.

Therefore, the volume appearing in statements against the line item water order debiting reflects the amount of water ordered against a category of licence that is in excess of the physical extraction that occurred.

Data type

Measured/calculated

Policy

- *Water Sharing Plan for the Border Rivers Regulated River Water Source 2009*
    - Part 9—Rules for managing access licences
        - Division 2—Water allocation account management
            - Clause 41—Volume taken under access licences

Available on the NSW Department of Planning, Industry and Environment website at: www.industry.nsw.gov.au/water

Data accuracy

A1—nil accuracy ± 0%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water accounting system

Methodology

Over-order debiting is a required component of balancing the allocation accounts detailed in Note 1. The over-order debit component is calculated by analysing the recorded extractions against orders for the corresponding measurement period. That is, if metered usage is collected monthly, then the corresponding monthly orders are compared and any orders that are in excess of the usage are recorded as over-order debit. Refer to Table 14 for over-order debits applied in the reporting period.

Note 5—Allocation assignments (temporary trading)

This represents the temporary assignment of allocation of water between allocation accounts within the NSW Regulated Border Rivers, or equivalent Queensland licences within the Border Rivers.

Data type

Administration

Policy

- Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009
    - Part 10 Access licence dealing rules
        - Clause 48 rules relating to constraints within a water source
        - Clause 53 Rules for interstate assignment of water allocations

Available on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A1—Nil inaccuracy ± 0%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting System

Methodology

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

Internal trade within NSW licence categories results in a net effect of zero for a water year. To present the information, however, and for the purposes of this GPWAR, we have accounted for such trades as both a water liability decrease (sellers of water) and a water liability increase (buyers of water). Trades that occur between categories of licence, and between states, result in the associated liability being increased or reduced accordingly.

Additional information

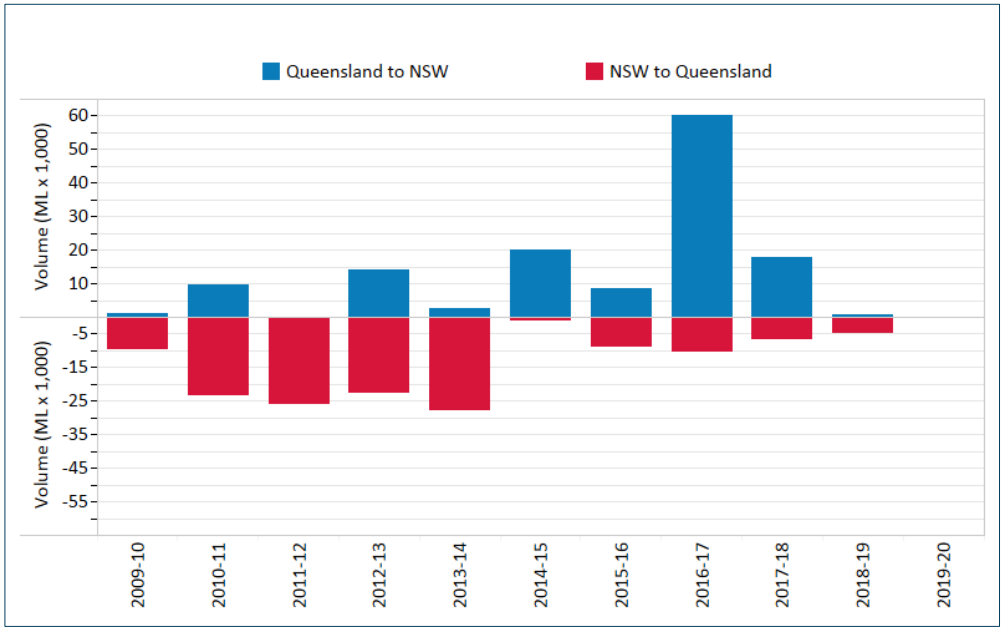
Table 20 shows the allocation assignment figures between licence categories for the Border Rivers. All figures represent a volume in megalitres.

Important note: This water accounting report is about water balances, usages and temporary trades associated with NSW water access licences. This report does not include additional activities such as the transfer of water between permanently linked works in Queensland; and temporary interstate trading implemented under the Border River Intergovernmental agreement, whereby trade is held in and delivered from temporary holding accounts. For reference purposes these volumes traded are presented in Figure 35.

Table 20: Allocation assignment summary

From		To					
			NSW			QLD	Total
		Local Water Utility	General Security A	General Security B	Supplementary Water	Interstate transfer	
NSW	General Security A			114.8			**114.8**
	General Security B			110			**110**
	High Security	30	76	1041		190	**1337**
	Supplementary Water				13092.2	24	**13116.2**
QLD	Interstate transfer return[17]				24		**24**
	Total	**30**	**76**	**1265.8**	**13116.2**	**214**	**14702**

Figure 35: Actual temporary trading of water between NSW and QLD



[17] Refers to return of unused NSW allocation traded to QLD

Note 6—Basic rights

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 Border Rivers Regulated River Water Source 2009*
    - Part 4 Basic Landholder Rights
        - Clause 15 Domestic and Stock rights

Available on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

C—Estimated in the range ± 50%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- *Water Sharing Plan for the Border Rivers Regulated River Water Source 2009*

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 Border Rivers Regulated River Water Source 2009* (8,000 megalitres).

Note 7—Held environmental water

This represents 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, hence are subject to the same operating rules. 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, hence the forfeiting of unused water that cannot be carried over
- provide water orders before use.

These licences are used to provide environmental benefit and outcomes to the catchment by either providing water to, or supplementing water requirements of, specific environmental events or incidents.

Data type

Measured

Policy

- *Water Management Act 2000*
- *Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009*

Available on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A1—Nil inaccuracy ± 0%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting System
- Available Water Determination Register: NSW Department of Planning, Industry and Environment website at 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
- over-order debits
- forfeiture due to:
    - carryover rules
    - account spillage as a result of AWD
    - licence conversions

    - excess orders (where water order debiting is in place)
- licence conversion
- trade of allocation water between accounts
- annual account limit.

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 22 summarises held environmental water for the reporting period. Explanations of the components within this table are given in Table 21

Table 23 summarises changes to the held environmental water portfolio since the previous reporting period.

Table 21: Explanatory information for environmental account summary

Heading		Description
No. Licences		This is the number of environmental licences held.
Share		This is the total volume of entitlement in the specific licence category on the stated date.
Opening		The volume of water that has been carried forward from previous years allocation account.
AWD		The total annual volume of water added to the allocation account as a result of allocation assessments
Drought suspension	**In**	Temporary water restriction applied, reducing account water available for use in reported water year
	Out	Temporary water restriction re-credit increasing account water available for use in reported water year
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.
Over-order debit		Volume of water ordered that exceeded the recorded usage for corresponding periods, which must also be accountable against the licence (excluding supplementary licence holders)
Account usage		Volume of water that is extracted or diverted from the river under controlled river conditions and is accountable against the licence
During-year forfeit		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.
End-of-year balance	**Available**	Account balance that is available to be taken at the conclusion of the water year
	Non available	Account balance that is currently not available for use (e.g. restricted due to drought conditions or annual use limit restrictions)
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
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 22: Environmental account summary

Category	Share	Opening balance	AWD	Licences		Drought suspension		Assignments		Account usage	Over order debit	During year forfeit	End of year balance		End of year forfeit	Carry forward
				New	Cancel	In	Out	In	Out				Available	Not available		
General Security A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Security B	2,806	896	0	0	0	896	896	0	0	0	0	0	896	0	0	896
High Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Supplementary Water	1,437	0	1,437	0	0	0	0	0	0	0	0	0	1,437	0	1,437	0

Table 23: Annual change summary for environmental licences

Category	Volume 30 June 2019	Volume 30 June 2020	Volume Difference	No. Licences 30 June 2019	No. Licences 30 June 2020	No. Licence Difference
General Security A	0	0	0	1	1	0
General Security B	2,806	2,806	0	2	2	0
High Security	0	0	0	1	1	0
Supplementary Water	1,437	1,437	0	2	2	0

Note 8—Environmental stimulus account

A provision for an environmental stimulus flow is detailed in the plan. It is put aside and called upon to supplement natural flow events when the defined triggers are met. At the beginning of each water year, a volume of 4,000 megalitres must be set aside in the resource assessment process for Pindari dam. If at any time during 1 April to 31 August, inflows to Pindari exceed 1,200 megalitres per day, an environmental stimulus flow shall be released between 1 August and 1 December.

The timing, rate and total volume is to be determined by the NSW Department of Planning, Industry and Environment. The unused water held within the account may be carried forward to the following water year; however, the account may not exceed 8,000 megalitres at the beginning of any water year.

Data type

Administration

Policy

- *Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009*
    - Part 3 Environmental Water Provisions
        - Clause 12—Planned Environmental Water

Refer to applicable water sharing plan on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A1—Nil inaccuracy ± 0%

Providing agency

WaterNSW

Data source

- Annual compliance report (internal document)

Methodology

N/A

Additional Information

Historical annual accounting of the stimulus account is presented in Table 24.

Table 24: Stimulus flow summary 2009–10 to 2019–20

Water year	Opening balance	Increase	Account usage	End-of-year forfeit	Carry forward balance
2009–10	0	4,000	0	0	4,000
2010–11	4,000	4,000	0	0	8,000
2011–12	8,000	4,000	0	4,000	8,000
2012–13	8,000	0	8,000	0	0
2013–14	0	4,000	4,000	0	0
2014–15	0	4,000	0	0	4,000
2015–16	4,000	4,000	5,759	0	2,241
2016–17	2,241	4,000	0	2,241	4,000
2017–18	4,000	4,000	8,000	0	0
2018–19	0	4,000	0	0	4,000
2019–20	4,000	4,000	0	4,000	4,000

Note 9—Account adjustments

This is a line item that is used to correct balances in the allocation account balances. The double entry accounting we apply is a continuous process whereby the closing balance of one year is the opening balance for the next reporting year.

Occasionally, we will need to correct the accounts for a variety of reasons. This includes when we identify a mistake in the previous year's reporting, or when information included in past reports is not available and we must remove the associated asset or liability 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 for.

For errors or updates identified in previously reported physical figures, we directly update the figures and identify the change in the associated note.

Data type

Calculated

Data Accuracy

A1—Nil inaccuracy ± 0%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

Not applicable

Methodology

N/A

Additional information

No account adjustments were 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 closing date of the reporting period (30 June). The volumes provided represent the total volume of water in the storage, including dead storage, which is the volume of water that can't be accessed under normal operating conditions (for example, volume below low level outlet). We assume that the dead storage can potentially be accessed if required via alternative access methods (for example, syphons and pumps).

The volume presented in the statements is the full volume held within Glenlyon and Pindari storages and Boggabilla Weir as of the reporting date. The actual volume available to settle NSW liabilities (removing the Queensland share of the volume) is in the reconciliation and future prospect statements within this GPWAR.

Data type

Derived from measured data

Policy

Not applicable

Data accuracy

A—Estimated in the range ± 10%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- NSW Department of Planning, Industry and Environment: HYDSTRA

Methodology

Storage volumes are calculated by processing a gauged storage elevation through a rating table that converts it to a volume. Table 25 breaks down the storage capacities and dead storages.

Table 25: Capacity and dead storage summary table

Storage	Capacity (ML)	Dead storage (ML)
Glenlyon Dam	254,310	160
Pindari Dam	312,000	80
Boggabilla Weir	5,850	410

Note 11—River channel storage

This the estimated 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

NSW Department of Planning, Industry and Environment

Data sources

- CAIRO

Methodology

For each river section i:

$$Vi = Qi \, x \, Ti$$

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

$$\text{River channel storage} = \sum_{i=0}^{n} Vi$$

Table 26: Summary of river channel storage 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.	CAIRO	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
i	Any river section	CAIRO	
n	Total number of river sections	CAIRO	

Assumptions and approximations:

- Travel times are estimated to the nearest day.
- We assume daily flow change between gauging sites is linear.

Note 12—Storage inflow—Glenlyon and Pindari Dams

Storage inflow refers to the volume of water flowing into the major headwater storages: Glenlyon Dam and Pindari Dam.

Policy

Not applicable

Data type

Derived from measured data

Data accuracy

A—Estimated in the range ± 10%

Providing agency

NSW Department of Planning, Industry and Environment

Data sources

- NSW Department of Planning, Industry and Environment: HYDSTRA
- Queensland Department of Natural Resources: SILO

Methodology

In most of the major storages in NSW, 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 (seepage is assumed as negligible). This is referred to a back-calculation of inflows.

The back-calculation figures were derived using a one-day time-step, with the total annual inflow calculated according to the equation below. The daily inflows are then summed to provide an annual inflow figure.

$$I = \sum_{i=1}^{n} \left(\Delta S_i + O_i + Se_i + \frac{(E_i - R_i) * A_i}{100} \right)$$

Table 27: Components for back-calculation of inflow

Symbol	Variable	Unit
I	Inflow	ML
ΔS	Change in storage volume	ML/day
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

Note 13—Storage evaporation and storage rainfall

This refers to the volume of water effective on Glenlyon and Pindari Dams that is either lost as a result of evaporation or gained as a result of rainfall.

Data type

Derived from measured data

Policy

Not applicable

Data accuracy

B—Estimated in the range ± 25%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- NSW Department of Planning, Industry and Environment: HYDSTRA
- Queensland Department of Natural Resources: SILO

Methodology

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:

$$V = \sum_{i=1}^{n} \frac{R_i \times \mathrm{A}_i}{100}$$

Evaporation:

$$V = \sum_{i=1}^{n} \frac{E_i \times \mathrm{A}_i}{100}$$

Table 28: Components for storage evaporation and rainfall

Symbol	Variable	Unit
V	Volume	ML/year
R	Rainfall	mm/day
A	Surface area—derived from height to surface areas lookup curve	Ha
E	Evaporation (Mortons shallow lake estimation, SILO)	mm/day

Note 14—River evaporation and river rainfall

This is an estimate of the total volume of water interacting with the defined accounted river extent that is either lost as a result of evaporation or gained as a result of rainfall.

Data type

Derived from measured data

Policy

Not applicable

Data accuracy

C—Estimated in the range ± 50%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- NSW Department of Planning, Industry and Environment: HYDSTRA, ARCGIS
- Queensland 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 two gauging locations using ARCGIS and as such an area for each reach can be defined.

Area (m^2) = Average W (m) x L (m)

In the formula, 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 is 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:

$$V = \sum_{i=1}^{n} \frac{R_i \times \mathrm{A}_i}{10^6}$$

Evaporation:

$$V = \sum_{i=1}^{n} \frac{ETO_i \times K_c \times \mathrm{A}_i}{10^6}$$

Table 29: Components for storage evaporation and rainfall

Symbol	Variable	Unit
V	Volume	ML/year
R	Rainfall	mm/day
A	Surface area—derived from height to surface areas lookup curve	m^2
ETO	Reference evapotranspiration from SILO	mm/day
Kc	Crop coefficient for open water (1.05)	-

Note 15—Gauged inflow

This is the inflow into the accounted regulated river system that occurs downstream of the headwater storages and is measured at known gauging stations.

Policy

Not applicable

Data type

Measured data

Data accuracy

A—Estimated in the range ±10%

Providing agency

NSW Department of Planning, Industry and Environment

Data sources

- NSW Department of Planning, Industry and Environment: HYDSTRA

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 detailed in Table 30

Table 30: Summary of gauged tributary inflow

Station	Station name	Area (km^2)	Volume (ML)
416008	Beardy River at Haystack	866	16,835
416010	Macintyre River at Wallangra	2,020	15,418
416021	Frazers Creek at Westholme (Ashford)	804	10,060
416032	Mole River at Donaldson	1,610	41,378
416415A	Macintyre Brook at Booba Sands	4,092	22,208
416207A	Weir River at Mascot	13,500	28,483
416310A	Dumaresq River at Farnbro	1,309	16,646
416312A	Oaky Creek U/S Texas	422	12,798
416305B	Brush Creek at Beebo	335	639
	Total inflow	**24,958**	**164,466**

Note 16—Ungauged inflow

The estimated 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

NSW Department of Planning, Industry and Environment

Data sources

- HYDSTRA, Water Accounting System, QLD government water monitoring information portal

Methodology

Ungauged inflow is a difficult component to quantify. 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 areas below the Boggabilla gauge. Ungauged inflows in these lower sections will be reflected in the unaccounted difference of the river balance.

$$UI = FA - SR - GI + E + LE$$

Where:

UI = Ungauged Inflow Estimate

FA = Flow arriving – the mainstream gauged flow at Boggabilla. No further inflow has been estimated downstream for this estimated

SR = Storage release

GI = Gauged inflows

E = Extractions (excluding any that are below the nominated 'EoS')

LE = Estimated losses. This was assumed to be 5% of the measured (gauged flow plus storage releases) entering the system

Note 17—Flow leaving system/replenishments

This refers to flow that leaves the entity and does not return to it. 'Replenishment flows' refers to water that has been set aside as part of the essential requirements for the provision of flows along the Boomi River to supply water to households and stock. The annual requirements and limits associated with this provision are detailed in the water sharing plan.

Data type

Derived from measured data

Policy

Not applicable

Data accuracy

A—Estimated in the range ±10%

Providing agency

NSW Department of Planning, Industry and Environment, WaterNSW

Data source

- HYDSTRA
- WaterNSW annual compliance report (internal document)

Methodology

The end-of-system flow is considered to be the total gauged flow at Mungindi. Flow also leaves the entity down the Boomi River, which has been measured with the flow gauge at the Boomi Weir offtake. Water leaving the system down the Boomi River is tagged as 'replenishment' or 'other' based on information in the WaterNSW annual compliance report.

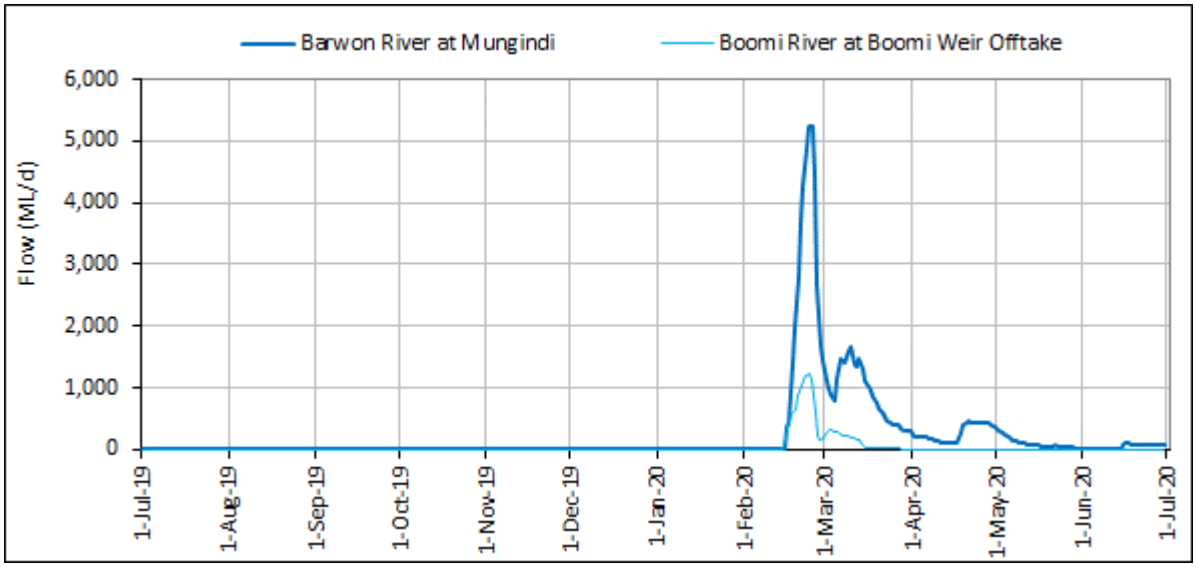
Additional information

Total flows leaving the accounted entity are provided in Table 31. Daily outflows are illustrated in Figure 36.

Table 31: Flow leaving system and replenishment summary

Station	Station name	Total volume (ML)	Replenishment (ML)	Other (ML)
416001	Barwon River at Mungindi	81,058	N/A	N/A
416037	Boomi River at Boomi Weir Offtake	13,902	11,669	2,232

Figure 36: End-of-system flow for Border Rivers Regulated River



Note 18—NSW extractions from river

With the exception of basic rights (which have been reported as a separate line item in this GPWAR and detailed in Note 6), this refers to the actual volume of water directly pumped or diverted from the NSW side of the regulated river.

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. In addition, tagged trading can occur where NSW account water is taken through a Queensland work (pump) and vice versa. 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 account usage, which has been reported in detail in Note 3. There may also be an over-order debit that has reduced a holder's account but not physically been taken out of the river.

Queensland extractions also form part of the physical volume of water taken from the regulated river and these are detailed in Note 20.

Data type

Measured data

Policy

Not applicable

Data accuracy

A—Estimated in the range ±10%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting System
- Queensland Department of Natural Resources, Mines and Energy

Methodology

For the purposes of this GPWAR, the NSW physical extraction from the river is considered to be:

- the total usage volume metered and debited to the NSW allocation accounts, minus any water that can be identified as being used within the system, or ordered to be passed through the system
- plus any Queensland water taken through NSW pumps, minus any NSW water taken through Queensland pumps.

Additional information

Table 32: Reconciliation of NSW river extraction to NSW account usage

Balance	Component	Value (ML)
start	(1) NSW account usage	10,750
minus	(2) Use of NSW account water in Qld (debited against NSW access licences, but taken in Qld)	(936)
plus	(3) Qld water traded to NSW and used	0
minus	(4) instream licenced usage	0
minus	(5) licenced usage leaving accounted system	0
equals	**Total physical extractions in NSW**	**9,813**

Note 19—Storage releases (including transparent releases)

This is the volume of water released or spilled from either Pindari Dam or Glenlyon Dam. In the accounting, this release is represented as both a decrease in the storage asset and an equal increase in asset to the river asset (shown as the combined total release in the line item 'Inflow from releases'). The policy for planned environmental water outlined in the water sharing plan requires that a transparent flow of up to 200 megalitres in June, July and August, and up to 50 megalitres for all other months, be released from Pindari dam when a range of specified triggers have been met. Releases that satisfy the transparent release requirement have been presented as a separate sub-component of the total release.

Data type

Measured data

Policy

- *Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009*
    - Part 3 Environmental Water Provisions
        - Clause 12—Planned Environmental Water

Refer to applicable Water Sharing Plan on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A—Estimated in the range ±10%

Providing agency

NSW Department of Planning, Industry and Environment, WaterNSW

Data source

- HYDSTRA
- WaterNSW annual compliance report (internal document)

Methodology

The flows are obtained by measuring river heights at a gauging station downstream of the dam release site and then passing these heights through a rating table that converts them to a daily flow volume. The releases have been represented in the Statement of Changes in Water Assets and Water Liabilities as both a decrease in water asset (water leaving the dam) and an equal volume of increases in water asset (water released increasing the volume of the river).

To provide more detail, the dam release for Pindari Dam has been split into the volume released to meet transparent, water sharing plan requirements, and the volume released for other purposes.

Additional Information

Storage releases for the reporting period are presented in Figure 37 and Figure 38.

Figure 37: Storage releases Glenlyon Dam (reporting period)

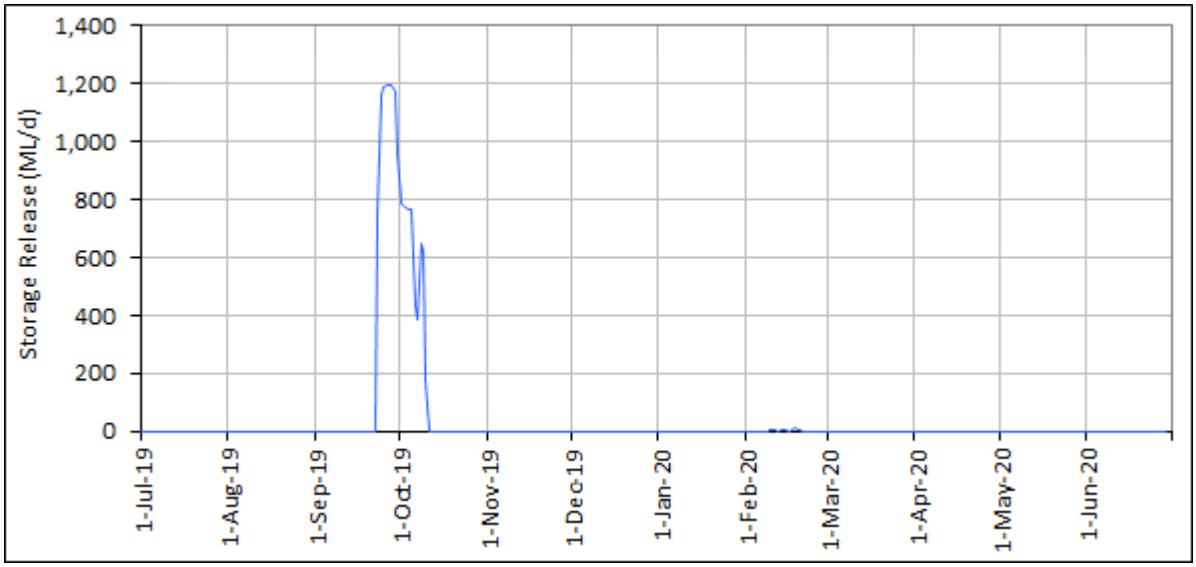
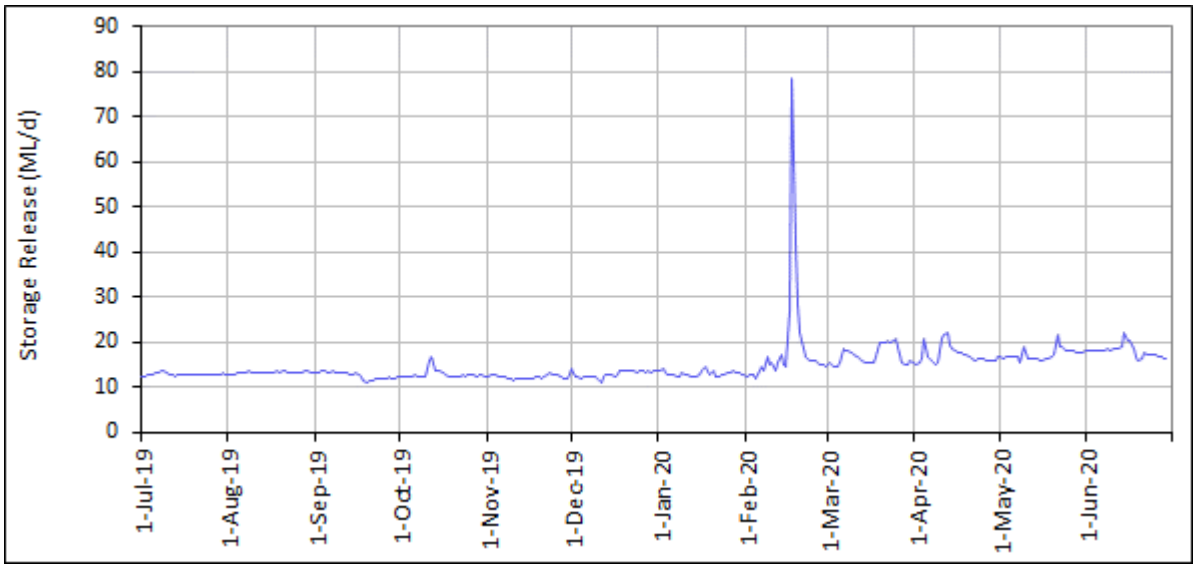


Figure 38: Storage releases for Pindari Dam (reporting period)



Note 20—Queensland extractions

This is the volume of water extracted from the accounted river extent by Queensland licence holders. While detailed information is not presented in this account, it is necessary to include the bulk figures extracted to maintain the integrity of the river physical mass balance. Total volumes extracted are provided in megalitres.

Data type

Measured data

Policy

- *Water Resource (Border Rivers) Amendment Plan 2007*
- *New South Wales–Queensland Border Rivers Intergovernmental Agreement 2008*

Available at the Queensland Department of Environment and Resource Management webpage (www.dnrme.qld.gov.au)

Data Accuracy

A—Estimated in the range ±10%

Providing Agency

Queensland Department of Natural Resources, Mines and Energy

Data Source

N/A

Methodology

Figures are consolidated from data provided by the Queensland Government. Diversions are decreased for tagged trade into NSW and increased for tagged trade to Queensland, in order to achieve the correct physical extraction volumes for each state.

Additional information

A reconciliation of the physical Queensland extraction is allowed for in the statements in Table 33.

Table 33: Reconciliation of Queensland extractions

Balance	Component	Value
start	(1) Qld Border Rivers extractions (excludes Stanthorpe and Macintyre Brook irrigation areas, includes supplemented and non-supplemented)	29,897
minus	(2) Use of Qld water traded to NSW (this is used in NSW side but included in data provided by Qld (1)	(0)
plus	(3) NSW traded & used in Qld	190
plus	(4) tagged extractions (debited against NSW access licences, but taken in Qld)	936
equals	**Total physical extractions in Qld**	**31,023**

Note 21—Supplementary extractions

This is the volume of water extracted or diverted under supplementary access licences during announced periods of supplementary water. Supplementary flow events are announced periodically during the season when high flow events occur during the period of extraction. The volume of water to be extracted is based on the rules as set out in the water sharing plans. Supplementary access licences differ from other categories of access licence in that the volume of water in the account refers to an annual upper limit for extractions and its provision is totally reliant on the occurrence of high-flow events.

Data type

Measured data

Policy

- Water Sharing Plan for the NSW Border Rivers Regulated River Water Source 2009
    - Part 8 Limits to the availability of water
        - Division 2—Available water determinations
            - Clause 38 Available water determinations for Supplementary Water access licences
    - Part 9 Rules for managing access licences
        - Division 3—Extraction conditions
            - Clause 45—Taking of water under Supplementary Water access licences upstream of the Macintyre River and Dumaresq River junction
            - Clause 46—Taking of water under Supplementary Water access licences downstream of the Macintyre River and Dumaresq River junction

Refer to applicable water sharing plan on the NSW Department of Planning, Industry and Environment website at www.industry.nsw.gov.au/water

Data accuracy

A—Estimated in the range ±10%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

- Water Accounting System

Methodology

Supplementary 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 water being extracted through the same pumps as those extracting water under other categories of access licences, we need more to separate out supplementary extraction. Licence holders must, therefore, notify us of their intention to pump before pumping or diverting

water during the declared supplementary event and give meter readings both at the start and end of pumping. This enables the supplementary flow extraction to be assessed independent of other categories of access licences.

Additional Information

Operational announcements for supplementary access are provided in Table 34.

Supplementary usage by river section and total daily supplementary usages are presented in Figure 39 and Figure 40 respectively.

Table 34: Supplementary announcements for reporting period

Announcement date	Percent use limit	Section	Start date	End date	Supplementary usage
25 Feb 2020	25	Mungindi Weir (End 22c) to Presbury Weir	25 Feb 2020	3 Mar 2020	0
25 Feb 2020	25	Weir River Junction to Mungindi Weir (End 22c)	25 Feb 2020	3 Mar 2020	1646.4
25 Feb 2020	25	Macintyre Book Junc to Macintyre River	25 Feb 2020	3 Mar 2020	0
25 Feb 2020	25	Yetman (Gs416005) to Holdfast T/M	25 Feb 2020	3 Mar 2020	0
25 Feb 2020	25	Holdfast T/M to Dumaresq Junc	25 Feb 2020	3 Mar 2020	117
25 Feb 2020	25	Dumaresq Junc to B/Billa Weir	25 Feb 2020	3 Mar 2020	178
25 Feb 2020	25	B/Billa Weir To g/Windi Weir	25 Feb 2020	3 Mar 2020	411.7
25 Feb 2020	25	G/Windi Weir to Royston	25 Feb 2020	3 Mar 2020	85
25 Feb 2020	25	Royston to Trinkie	25 Feb 2020	3 Mar 2020	192
25 Feb 2020	25	Trinkie to Avymore	25 Feb 2020	3 Mar 2020	0
25 Feb 2020	25	Avymore to Lockadair	25 Feb 2020	3 Mar 2020	1100
25 Feb 2020	25	Lockadair to Couralie	25 Feb 2020	3 Mar 2020	202
25 Feb 2020	25	Couralie to Boomi Weir	25 Feb 2020	3 Mar 2020	1460.2
25 Feb 2020	25	Boomi Weir to Bonanga	25 Feb 2020	3 Mar 2020	0
25 Feb 2020	25	Bonanga to Koramba	25 Feb 2020	3 Mar 2020	2195.8
25 Feb 2020	25	Corinda to Barra	25 Feb 2020	3 Mar 2020	0
25 Feb 2020	25	Barra to Alluri	25 Feb 2020	3 Mar 2020	559
25 Feb 2020	25	Alluri to Weir Rr Junc	25 Feb 2020	3 Mar 2020	1062
26 Feb 2020	100	Glenlyon to Roseneath T/M	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Roseneath T/M to Bonshaw Weir	26 Feb 2020	16 Mar 2020	156.6
26 Feb 2020	100	Bonshaw Weir to Texas Br	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Texas Br to Cunningham Weir	26 Feb 2020	16 Mar 2020	21
26 Feb 2020	100	Cunning Weir to Glenarbon	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Glenarbon to Mcintyre Brk Jubc	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Macintyre Book Junc to Macintyre River	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Bedwell Downs to Yetman (Gs416005)	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Yetman (Gs416005) to Holdfast T/M	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Dumaresq Junc to B/Billa Weir	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Pindari Dam to Ashford (Gs416006)	26 Feb 2020	16 Mar 2020	0
26 Feb 2020	100	Ashford (Gs416006) to Macintrye Junction	26 Feb 2020	16 Mar 2020	0
8 Apr 2020	100	Glenlyon to Roseneath T/M	8 Apr 2020	15 May 2020	15
8 Apr 2020	100	Roseneath T/M to Bonshaw Weir	8 Apr 2020	15 May 2020	101
8 Apr 2020	100	Bonshaw Weir to Texas Br	8 Apr 2020	15 May 2020	14
8 Apr 2020	100	Texas Br to Cunningham Weir	8 Apr 2020	15 May 2020	141

Announcement date	Percent use limit	Section	Start date	End date	Supplementary usage
8 Apr 2020	100	Cunning Weir to Glenarbon	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	Glenarbon to Mcintyre Brk Jubc	8 Apr 2020	15 May 2020	9
8 Apr 2020	100	Macintyre Book Junc to Macintyre River	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	Bedwell Downs to Yetman (Gs416005)	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	Yetman (Gs416005) to Holdfast T/M	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	Holdfast T/M to Dumaresq Junc	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	Dumaresq Junc to B/Billa Weir	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	B/Billa Weir to g/Windi Weir	8 Apr 2020	15 May 2020	13
8 Apr 2020	100	Pindari Dam to Ashford (Gs416006)	8 Apr 2020	15 May 2020	0
8 Apr 2020	100	Ashford (Gs416006) to Macintrye Junction	8 Apr 2020	15 May 2020	0
27 May 2020	100	Glenlyon to Roseneath T/M	27 May 2020	5 Jun 2020	0
27 May 2020	100	Roseneath T/M to Bonshaw Weir	27 May 2020	5 Jun 2020	0
27 May 2020	100	Bonshaw Weir to Texas Br	27 May 2020	5 Jun 2020	0
27 May 2020	100	Texas Br to Cunningham Weir	27 May 2020	5 Jun 2020	17
27 May 2020	100	Cunning Weir to Glenarbon	27 May 2020	5 Jun 2020	0
27 May 2020	100	Glenarbon to Mcintyre Brk Jubc	27 May 2020	5 Jun 2020	13
27 May 2020	100	Macintyre Book Junc to Macintyre River	27 May 2020	5 Jun 2020	0
27 May 2020	100	Yetman (Gs416005) to Holdfast T/M	27 May 2020	5 Jun 2020	0
27 May 2020	100	Holdfast T/M to Dumaresq Junc	27 May 2020	5 Jun 2020	0
27 May 2020	100	Dumaresq Junc to B/Billa Weir	27 May 2020	5 Jun 2020	0
27 May 2020	100	B/Billa Weir to g/Windi Weir	27 May 2020	5 Jun 2020	22.3
27 May 2020	100	Pindari Dam to Ashford (Gs416006)	27 May 2020	5 Jun 2020	0
27 May 2020	100	Ashford (Gs416006) to Macintrye Junction	27 May 2020	5 Jun 2020	0
18 Jun 2020	100	Glenlyon to Roseneath T/M	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	Roseneath T/M to Bonshaw Weir	18 Jun 2020	30 Jun 2020	31
18 Jun 2020	100	Bonshaw Weir to Texas Br	18 Jun 2020	30 Jun 2020	30
18 Jun 2020	100	Texas Br to Cunningham Weir	18 Jun 2020	30 Jun 2020	42
18 Jun 2020	100	Cunning Weir to Glenarbon	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	Glenarbon to Mcintyre Brk Jubc	18 Jun 2020	30 Jun 2020	8
18 Jun 2020	100	Macintyre Book Junc to Macintyre River	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	Bedwell Downs to Yetman (Gs416005)	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	Yetman (Gs416005) to Holdfast T/M	18 Jun 2020	30 Jun 2020	38
18 Jun 2020	100	Dumaresq Junc to B/Billa Weir	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	B/Billa Weir to g/Windi Weir	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	Pindari Dam to Ashford (Gs416006)	18 Jun 2020	30 Jun 2020	0
18 Jun 2020	100	Ashford (Gs416006) to Macintrye Junction	18 Jun 2020	30 Jun 2020	0

Figure 39: Supplementary usage by river section

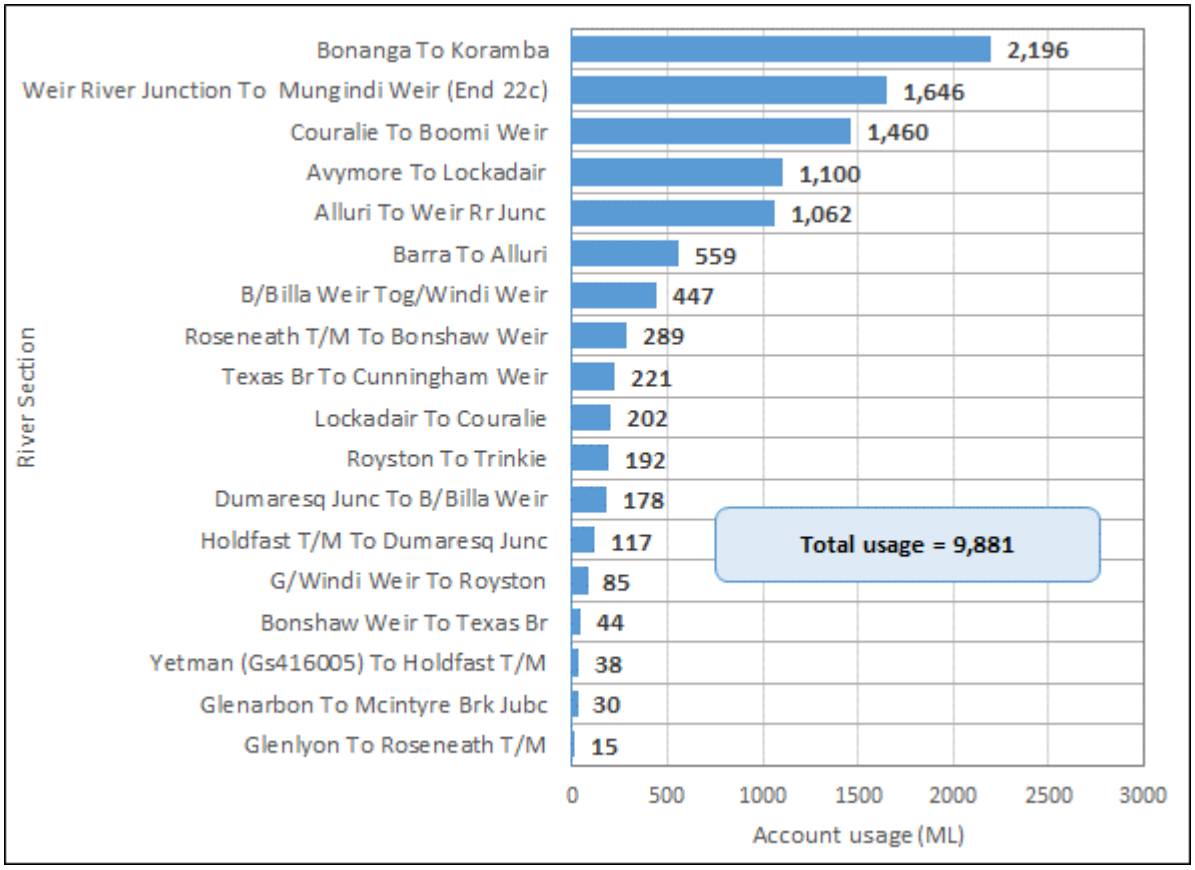
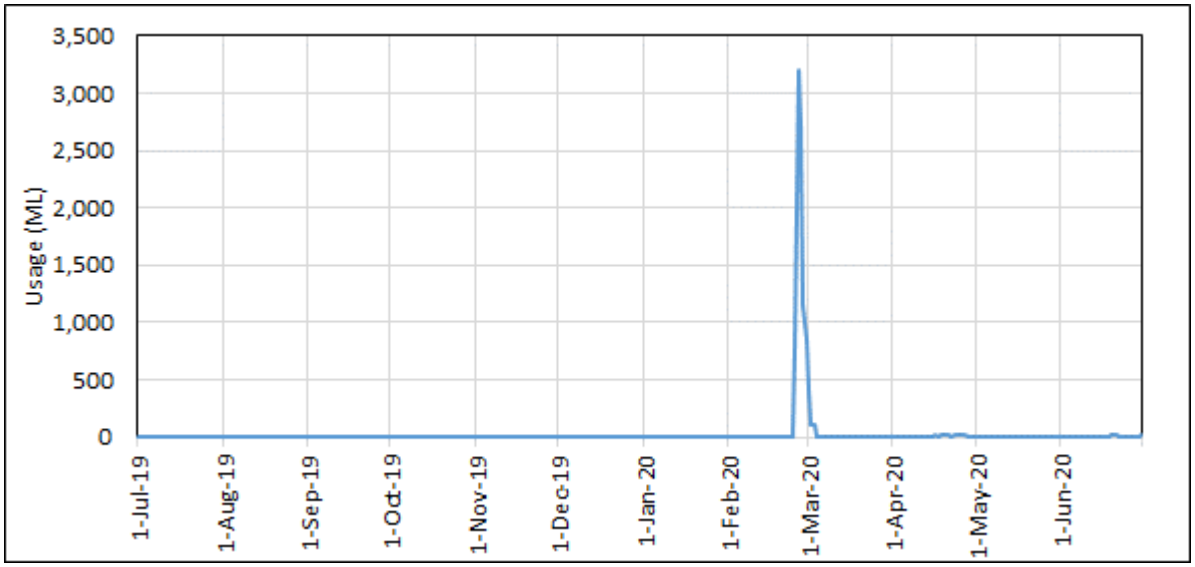


Figure 40: Daily supplementary use



Note 22—Unaccounted difference

In theory, if all the processes of a water balance could be accurately accounted for, the unaccounted difference would be zero. In reality, because of uncertainty about many the volumes presented in the accounts, the variety of data sources and not all water cycle processes is being accounted for, 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 improves the accuracy of the account estimates, we anticipate that, relatively, this figure should be lower in future accounts.

Data type

Calculated

Policy

Not applicable

Data accuracy

D[18]—Estimated in the range +/- 100%

Providing agency

NSW Department of Planning, Industry and Environment

Data source

Not applicable

Methodology

For surface water, the unaccounted difference is equal to the amount needed to get the correct volume in river at the end of the reporting period, after all the known physical inflows and outflows have been accounted for. The double-entry accounting process attempts 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.

$$UDSW = Rs - Rc + Ri - Ro$$

Where:

UDSW = Unaccounted difference for Surface Water

Rs = Opening river volume estimate

Rc = Closing river volume estimate

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

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

[18] The unaccounted differences is rated D accuracy because it is the result of many processes of differing magnitude, and accuracy, and also representing a range of other processes that have not been explicitly represented in the accounts. The figure that is calculated to be the required unaccounted volume in order to balance the accounts is A1 accuracy, +/- 0%

Additional information

Table 35: Unaccounted difference summary

Water year	Unaccounted volume	System inflow[19]	Proportion of system inflow
2017–18	71,635	375,995	19%
2018–19	73,645	299,213	25%
2019–20	39,055	216,546	17%

[19] Storage/weir releases, tributary inflow, rainfall on river

References

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