

## Section 71, Cap and Matter 9.1 & 9.2 Reporting for 2019-20

### Introduction

#### Water resource management overview for the State

Queensland's water resource plans control the management of groundwater, overland flows and water in watercourses, lakes and springs within all catchments in the Queensland section of the Murray-Darling Basin (QMDB). Water resource plans for the Condamine-Balonne and Border Rivers-Moonie water resource plan areas were finalised in February 2019 and accredited under the *Water Act 2007* (Cwlth) in September 2019.

The Water Resource Plan for the Warrego-Paroo-Nebine water resource plan area was finalised in 2016 and accredited in 2017.

#### *Surface water*

Surface water in the QMDB is divided into three water resource plan areas: Warrego-Paroo-Nebine, Condamine-Balonne and Queensland Border Rivers-Moonie, which are further divided into six separate sustainable diversion limit (SDL) resource units: Warrego, Paroo, Nebine, Condamine-Balonne, Moonie, and Queensland Border Rivers. The Basin Plan requires local reductions in the Queensland Border Rivers and the Condamine-Balonne water resource plan areas, with a gap of 14 GL and 100 GL, respectively, identified in the Basin Plan, as amended in July 2018. The Commonwealth's Sustainable Rural Water Use and Infrastructure Program initiatives of Healthy HeadWaters Water Use Efficiency project (HHWUE) (to provide infrastructure related investment) and Buyback, targeted water in these catchments, with the in-catchment reduction now met in the Queensland Border Rivers and 86% of the in-catchment reduction achieved in the Condamine-Balonne. HHWUE has finished taking applications, with all funded projects completed.

#### *Groundwater*

For aquifers in the QMDB, groundwater managed under the Basin Plan includes water in formations above and below the Great Artesian Basin (GAB). Note that water in aquifers in the GAB is managed under the Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017.

Groundwater under the Basin Plan is divided into 16 SDL resource units based on groundwater aquifers that underlie various surface water catchments across the Condamine and Balonne, Border Rivers, Moonie, Warrego, Paroo and Nebine catchments. To ensure ongoing sustainable management of these groundwater systems is in line with the Basin Plan, the following management arrangements have previously been implemented.

- Amendment of water sharing rules in relevant groundwater management areas to authorise relocation (permanent trading) of water licences (to facilitate water recovery by the Commonwealth and to allow increased flexibility for irrigators).
- Creation of a Water Management Plan for the Central Condamine Alluvium, (an Interim Water Resource Plan under the Commonwealth Water Act).
- Amendment of the Condamine and Balonne, Border Rivers and Moonie water plans in December 2014 to include arrangements for the management of the other Basin

Plan aquifers. This provided transitional management arrangements prior to finalisation and accreditation of the second generation water plans for these areas.

- Implementation of a moratorium on groundwater resources not managed under the Water Plan (Border Rivers) 2003 (to limit development while development of the new water plan was underway).

These management arrangements have been superseded by the:

- Warrego, Paroo, Bulloo and Nebine Water Plan (February 2016)
- Border Rivers and Moonie Water Plan (February 2019)
- Condamine and Balonne Water Plan (February 2019)

These plans form part of Queensland's water resource plans accredited under the Basin Plan and provide for the management of groundwater resources in Queensland SDL areas.

The take of water from an aquifer for stock or domestic purposes by the owner of the land overlying the aquifer is managed under the *Water Act 2000* (Qld). Access for these purposes has previously been limited under the Act (by moratorium) in the Upper Condamine Basalts and the Upper Condamine Alluvium (both Central Condamine and Tributaries), to restrict growth of groundwater use in urban areas serviced by reticulated supplies. These provisions have been incorporated into the water plans for the Condamine and Balonne, Border Rivers and Moonie catchments and help ensure a 'no-growth' position in the higher risk area of peri-urban expansion.

All Queensland's groundwater systems in the MDB are accredited to meet the Basin Plan SDLs. There are two major groundwater systems (Central Condamine Alluvium and the Condamine Tributary Alluviums) where the SDL is below the baseline diversion limit (BDL), and that were eligible for water to be recovered through buyback of entitlements. After limited success initially, Central Downs Irrigators Ltd, Cotton Australia and Queensland Farmers' Federation worked with the Commonwealth to develop an incentivised approach to ensure that the target volume would be met before the June 2019 deadline for completing Basin Plan implementation. The Commonwealth commenced tender rounds on 19 April 2018, 31 May 2018 and 28 June 2018 to purchase entitlement in the Central Condamine Alluvium and the Condamine Tributary Alluviums. The draft water plan for the Condamine and Balonne identified that licence volumes in the Central Condamine Alluvium would be reduced by 50% should a licensee not decide to participate in the Commonwealth buyback proposal. The buyback process is now complete, and the Central Condamine Alluvium has been reduced to close to SDL, with only a few licensees having their licence reduced without compensation. While the current level of entitlement in these two SDL resource units is still above SDL, the Water Plan (Condamine and Balonne) 2019 has provisions to manage the volume of water taken within a water year, as well as limiting the long-term take to SDL.

The other key Queensland groundwater system is the Border Rivers Alluvium. Whilst the BDL and SDL are similar in the Border Rivers Alluvium, entitlement levels are higher, particularly in the Border Rivers Alluvium (deep) underground water sub-unit. This has required the development of specific management rules in this area to enable adherence to SDL over the long term (measured over 10 years). Entitlement levels in all other Queensland SDL resource units are either at or below SDL.

## Cap compliance

Queensland has reviewed the methods used to determine annual permitted take and annual actual take of water from a watercourse during the development of Basin Plan compliant water resource plans. The new methods and updated models with better data are also being used to assess Cap compliance, starting in the 2018/19 water year.

Diversions from watercourses and floodplain harvesting reached 89% of the annual Cap target for the Condamine and Balonne catchment, 55% for the Moonie, 49% for the Warrego and 1% for the Nebine. There were no diversions accounted against the annual Cap target in the Paroo catchment for the 2019/20 water year.

Actual take in the Border Rivers catchment exceeded the permitted take as determined by the model by 7 GL but does not trigger the requirement for a special audit (the cumulative debit recorded in the Cap register will not exceed 20% of the long-term diversion cap). The exceedance was due to inclusion in the actual take of diversions under the authority of entitlements which are not included in the model. These entitlements are water licences, which are attached to land, and for which there is insufficient information to accurately model permitted take.

## Section 71 reporting

This section presents a summary of the key section 71 clauses of the *Water Act 2007* for surface water resource plan areas (and SDL resource units where appropriate):

- Available water (*the quantity of water available from the water resources of the water resource plan area during that water accounting period*)

During February 2020 the prolonged drought conditions experienced across Queensland were relieved when widespread showers and thunderstorms developed over central to southern inland Queensland due to a surface trough extending from the northwest to southeast of the State. A near-stationary coastal trough over the southeast from 6 February 2020 generated persistent showers and thunderstorms until the middle of the month, with local heavy falls in some areas. A surface trough extended through the interior of Queensland and interacted with an upper-level trough, enhancing showers and thunderstorms and generating more local moderate to heavy falls. This resulted in localised flooding across central and southern Queensland and northeast New South Wales, with some areas seeing the highest total rainfall for February on record.

Flows occurred across all catchments in the QMDB during February and March 2020, with minor runoff at a few sites in the latter part of January and early April. Streams were in recession from July 2019 to January 2020 (with many gauging stations recording zero flows) and again from April to June 2020. The magnitude of flow runoff varied from about 25% of annual average to more than double the annual figure, reflecting the variability in rainfall distribution and intensity. Table 1 shows the recorded volume of flow at key sites across the region.

Table 1: Recorded flow at key sites in the QMDB

River and gauging station location	Average annual flow (GL) <sup>1</sup>	Total annual flow past gauging station 2019/2020 (GL)	Percentage of average
<b>Condamine and Balonne catchment</b>			
Condamine River @ Chinchilla	537	260	48
Condamine River @ Cotswold	685	376	55
Balonne River @ Weribone	1179	1156	98
Maranoa River @ Cashmere	159	315	198
Balonne River @ St George	1167	1443	124
<b>Border Rivers catchment</b>			
Macintyre River @ Goondiwindi	929	160	17
Weir River @ Talwood	146	66	45
Barwon River @ Mungindi	593	81	14
<b>Moonie catchment</b>			
Moonie River @ Fenton	150	76	51
<b>Warrego catchment</b>			
Warrego River @ Cunnamulla	472	1092	231
<b>Paroo catchment</b>			
Paroo River @ Caiwarro	506	663	131
<b>Nebine catchment</b>			
Nebine Creek @ Roseleigh Crossing	22	27	127

The Upper Condamine catchment was statistically second only to the Macintyre River as the poorest performing in terms of runoff. About 25% of the annual mean flowed past Warwick, with contributions from other tributaries resulting in 376 GL (55% of mean annual flows) passing Cotswold.

Water held in dams at the start of the water year in the upper and middle Condamine catchment varied from 6% of capacity in Leslie Dam to 45% in Chinchilla Weir. By mid-November 2019, Chinchilla Weir had been drawn down to dead storage level, while Leslie Dam had decreased slightly due to losses. Both dams benefitted from the flows in January and February, with Leslie Dam in the upper catchment reaching 19% capacity and Chinchilla Weir filling and spilling. Leslie Dam finished the water year at 13% capacity. Supply of water to water users from Chinchilla Weir caused the weir to decline to 48% capacity by the

<sup>1</sup> Average annual flow is the average for the period of record for that gauging station. It varies from 13 years of record at Roseleigh Crossing to 78 years at Goondiwindi. The numbers are indicative only.

end of the water year. The inputs to Chinchilla Weir in 2019/20 included 4.7 GL of treated coal seam gas (CSG) water discharged into the weir under an approval of a resource for beneficial use. As per licence requirements, the entire volume of treated CSG water was taken within the limits of the Chinchilla Weir Water Supply Scheme. The diversion of treated CSG water is not accounted for under section 71 as this water is sourced from the Great Artesian Basin, not from water resources of the Murray-Darling Basin.

Flows past Surat in the middle Condamine catchment were about 80% of annual average; however, inflow from tributaries saw an annual average flow past Weribone on the Balonne River of 98%. The rainfall station in the upper Maranoa at Mitchell recorded nearly 80% of the annual average, whilst better rain downstream resulted in Cashmere recording a little over twice its annual average. The additional inflows from the Maranoa River brought the volume past St George on the Lower Balonne to about 24% above the annual mean.

Beardmore Dam started the year at 6% capacity. In mid-January 2020, rainfall in the Maranoa and Balonne catchments (as noted above) resulted in minor inflows to Beardmore Dam. This water was accounted for as environmental, stock and domestic (ESD) water. The storage volume in the dam prior to these inflows was approximately two per cent.

More significant rainfall was received in early February 2020 across an extensive section of the Condamine and Balonne catchments upstream of St George. This rainfall and prospects of meaningful inflows to Beardmore Dam triggered the start of releasing stored ESD water. Beardmore Dam reached full supply volume and started spilling on 15 February 2020. Following the release of all stored ESD water and the continuation of inflows, announcements for waterharvesting commenced on 16 February 2020.

Further rainfall events in late February and early March saw announced periods for waterharvesting continue through to 18 March 2020. From the beginning of February 2020 through to mid-March, a total volume of 1469 GL was recorded passing the upstream gauging stations on the Maranoa River at Cashmere and the Balonne River at Weribone. Significant local inflows also occurred between these gauges and St George from local rainfall events in mid-February 2020.

Flows through the Lower Balonne distributary system held up reasonably well considering the dry nature of the catchment prior to the event. Gauging stations in the distributary recorded between 74% and 100% of mean flows, other than the Culgoa River at Woolerbilla where only 28% of average annual flow passed the gauge.

In the Border Rivers catchment, annual rainfall was significantly reduced. The widespread showers in February resulted in only moderate runoff, with 17% of the annual mean passing Goondiwindi on the Macintyre River. The flow passing Goondiwindi was mainly due to the contribution from the Dumaresq River, and to a lesser extent from flows in the Macintyre River (south of the New South Wales border) and the Macintyre Brook in Queensland. The Weir River in Queensland also contributed to flows in the lower reaches of the Border Rivers. The flows were sufficient to trigger announcement of waterharvesting in the Border Rivers during February 2020.

Glenlyon Dam in the upper Border Rivers catchment started the year at just 9% capacity. Inflows from the February rainfall increased the volume held to 15% capacity, with the dam finishing the water year at 10% capacity. Coolmunda Dam on the Macintyre Brook started

the year at 8% capacity. The February inflows increased the volume in Coolmunda Dam from 2% capacity to 34%, with the dam water levels at 29% capacity at the end of the water year.

Flows in the Moonie catchment indicate variability in rainfall distribution and intensity. The upstream station at Flinton recorded about half of annual average runoff, whilst the site at Nindigully in the mid-catchment recorded nearly its annual average. However, losses and diversions downstream of Nindigully resulted in only half the annual average passing Fenton just north of the NSW border.

Rainfall in the Warrego catchment from mid-February 2020 was supplemented by flows from the Ward and Nive rivers in February/March 2020, resulting in a total volume of 1085 GL passing the Cunnamulla gauging station in the lower catchment over the period from mid-February to mid-April 2020.

The storing and releasing of water from Allan Tannock Weir at Cunnamulla for stock and domestic purposes is required to be managed in accordance with the resource operations licence for the scheme. Stock and domestic inflows commenced on 17 February 2020. At the time of the inflow the storage level was at approximately 58% and a period less than 18 months had passed since the weir was at full supply level. According to the operating rules, inflows of up to 300 ML per day are to be stored and accounted for as stock and domestic water. A total of 600 ML of stock and domestic water had been stored prior to the weir subsequently filling and spilling on 18 February 2020. The stored stock and domestic water passed downstream in the first flows spilling the weir before waterharvesting commenced.

At the time of the flow event, it had been more than six months since a passing flow of more than 1000 ML occurred at the flow reference point for all water allocations. In accordance with the water sharing rules in the water management protocol, the announced period was delayed by 36 hours after the peak of the flow passed the reference point to provide for replenishing stock and domestic supplies and for river health reasons.

There are 12 active water allocations in four different zones that are announced for on an individual basis in the Lower Warrego Water Management Area. The first water harvesting announcement for the flow event was made on 19 February 2020. The announced period ranged in duration from 5.5 days to 40.75 days depending on the flow condition of the individual water allocation. The final waterharvesting announcement was made on 2 April 2020. Flows below waterharvesting levels continued through to 17 May 2020.

Nebine Creek experienced above average flows in the 2019/20 water year, with 99% of the flow volume passing the Roseleigh Crossing gauging station at the bottom of the catchment in February and March 2020.

Good rains in the Paroo catchment resulted in above average volumes passing down the system. The gauge on the Paroo at Caiwarro recorded 30% more than its annual average.

- Permitted take (*the quantity of water permitted to be taken from the water resources of the water resource plan area during the water accounting period*)

Water from the Queensland Border Rivers SDL resource unit is permitted to be taken through approved works (equipped with a working meter) in the state of New South Wales

under an agreement between Queensland and New South Wales. Note there is no transfer of an approved volume of water from a Queensland water account to a New South Wales water account. Reciprocal arrangements apply to water taken from the New South Wales Border Rivers SDL resource unit through works in the state of Queensland. Annual permitted take is adjusted for this use.

*The take of water from watercourses under an entitlement<sup>2</sup> and from overland flow by floodplain harvesting*

Take of water from watercourses is managed through limits stated on entitlements and by water sharing rules in water management protocols (which implement the provisions of Queensland's water plans). The take of overland flow water (including floodplain harvesting) is managed through a combination of regulation of works and limits on entitlements.

Annual permitted take from watercourses under an entitlement, including permitted take under entitlements held by the Commonwealth Environmental Water Holder (CEWH), is determined using a hydrological model<sup>3</sup>. The permitted take by the CEWH is then subtracted from the total. The volume of annual permitted take by floodplain harvesting in areas other than the Lower Balonne is not able to be modelled with confidence and so is based on estimated take. For the Lower Balonne Floodplain, annual permitted take by floodplain harvesting is estimated by the hydrological model.

Flow event management rules for managing low flows (under section 168 of the Condamine and Balonne Water Management Protocol) and for managing flows to support Narran Lakes (under section 170) were activated in the Lower Balonne in February and March 2020, respectively. Application of the flow event management rules triggered a total period of 10 days of 10% reductions to the maximum rate of take for waterharvesting entitlements. The annual permitted take has been reduced accordingly.

Note that from 13 January 2020, no water was available from Storm King Dam in the Border Rivers catchment for town water supply for Stanthorpe. Instead water was trucked from Connolly Dam in the Condamine and Balonne catchment to Stanthorpe. This water has been reported as water taken for urban use in the Upper Condamine.

*The take of water from watercourses under basic rights*

The take of water from a watercourse, lake or spring for basic rights (stock or domestic purposes) by the owner of the land adjoining the water source is permitted under the *Water Act 2000* (Qld). Potential increase in take is limited due to the right to take water being limited to properties with riparian access to water. The annual permitted take of water from a watercourse for basic rights is estimated using the methods outlined in the Water Accounting Methods Reports for the Condamine-Balonne, Queensland Border Rivers-Moonie and Warrego-Paroo-Nebine water resource plans.

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<sup>2</sup> Entitlement is used in this document as a generic term referring to water access entitlements (called water allocations in Queensland) and water licences (authorities to take water which are attached to land).

<sup>3</sup> For the Condamine-Balonne and Queensland Border Rivers-Moonie water resource plan areas this is the relevant eWater Source computer program reviewed by the Authority as part of the preparation of the water resource plans. For the Warrego-Paroo-Nebine water resource plan area it is the relevant IQQM computer program reviewed by the Authority as part of the preparation of the water resource plan.

### *The take of water by runoff dams (including take under basic rights)*

The take of overland flow water for basic rights by an owner of the land on which the water collects is permitted (within limits) under the Queensland regulatory framework. Any increase in take for basic rights will be related to rural population growth and/or an increase in stock numbers.

Under water plan provisions, no increase in overland flow take is permitted for uses other than basic rights, except for certain limited cases, such as when capture of overland flow water is necessary to satisfy the requirements of an environmental authority.

The annual permitted take of water by runoff dams in the Condamine-Balonne and Queensland Border Rivers-Moonie water resource plan areas is considered to be the long-term annual average limit estimated by the Murray–Darling Basin Authority (the Authority) and which is listed in Schedule 3 of the Basin Plan and identified in the relevant water accounting methods reports. The annual permitted take of water by runoff dams in the Warrego, Paroo and Nebine catchments is estimated using the method outlined in the Water Accounting Methods Report for the Warrego-Paroo-Nebine Water Resource Plan.

### *The take of water by commercial plantations*

In Queensland, the take of water by commercial plantations is not a significant issue and to date has not necessitated active regulation under the *Water Act 2000* (Qld). There are few commercial plantations in the QMDB.

The annual permitted take of water by commercial plantations is considered to be the long-term annual average net take estimated by the Authority and which is listed in Schedule 3 of the Basin Plan and identified in the relevant water accounting methods reports.

- *Water allocations (details of the water allocations made in relation to the water resources of that area in relation to that water accounting period)*

Under the *Water Act 2007* and for the purposes of the Basin Plan, water allocation<sup>4</sup> means the specific volume of water allocated to water access entitlements in a given water accounting period.

For surface water in Queensland, water allocations apply only to supplemented water (water provided through water supply schemes) managed under a mixture of *announced allocation* and *continuous sharing*.

#### Announced allocations

Water access entitlements in the Upper Condamine and Chinchilla Weir water supply schemes in the Condamine-Balonne water resource plan area are managed under an annual announced allocation system. At the start of the water year, water in the scheme's storage/s is first set aside for 24 months' supply for high priority users (mainly town water supply and associated water losses during storage and distribution). The medium priority

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<sup>4</sup> In Queensland, a *water allocation* refers to a water access entitlement (which is defined by the Commonwealth Water Act as 'a perpetual or ongoing entitlement, by or under a law of a State, to exclusive access to a share of the water resources of a water resource plan area'). Basin Plan terminology is used in this report.

entitlement holders are then granted the remaining water as a percentage of their water access entitlement, taking into account losses associated with storage and distribution for the remainder of the water year. Medium priority entitlement holders in the Upper Condamine and Chinchilla Weir water supply schemes may also be granted access to natural flows in the river downstream of the storage in accordance with the 'stream flow period' rules for the scheme.

The announced allocation is recalculated each month but only reset if the announced allocation would increase by 5 or more percentage points or would increase to 100% (due to more water becoming available through inflows into the scheme). The usage in a water year may be no greater than 100% of the entitlement.

Water access entitlements in the Cunnamulla Water Supply Scheme in the Warrego catchment are also managed under an annual announced allocation system. There is no high priority water in the Cunnamulla Water Supply Scheme; otherwise, announced allocations are made in a similar way to those in the Upper Condamine and Chinchilla Weir water supply schemes.

#### Continuous share schemes

The St George Water Supply Scheme in the Condamine-Balonne water resource plan area and the Macintyre Brook Water Supply Scheme in the Queensland Border Rivers-Moonie water resource plan area provide management options which include both announced allocation and continuous share. Most of the entitlements in the scheme are managed under continuous share arrangements. All medium priority entitlements in the Border Rivers Water Supply Scheme are managed under continuous accounting rules.

In a continuous accounting system, water users have storage accounts, which are proportional to their share of the total entitlement in the scheme. The storage account increases when distributions are made (i.e. there is inflow into the water storage) and decreases with water use, evaporation and seepage losses (except in the Border Rivers Water Supply Scheme where evaporation and seepage losses are managed as a separate account).

In any water year, the volume available under an entitlement managed as an individual continuous share is the volume in the storage account at the start of the water year plus any water distributed to the account under the rules in the relevant operations manual following an inflow into the scheme, capped at 100% of the nominal volume of the water access entitlement (plus any carry over or forward draw made available in the St George Water Supply Scheme).

The announced allocation for water supply schemes in the QMDB in 2019/20 is shown in table 2. In the continuous share schemes, the announced allocation shown in the table applies only to water access entitlements managed as part of the bulk share.

Table 2: Announced allocations for QMDB water supply schemes

Water supply scheme	Announced Allocation – high priority (%)	Announced Allocation – medium priority (%)	Comments
<b>Condamine and Balonne catchment</b>			
Upper Condamine	100	20	Access to flows in the river from runoff downstream of the storage may be made available to entitlement holders separately to the announced allocation from the storage and is accounted against entitlements.
Chinchilla Weir	100	100	
Maranoa River	N/A	N/A	Announced allocations do not apply to this scheme.
St George	N/A	100	Announced allocations only apply to entitlements managed as part of the bulk share.
<b>Border Rivers catchment</b>			
Border Rivers	N/A	N/A	
Macintyre Brook	100	19	Announced allocations only apply to entitlements managed as part of the bulk share.
<b>Warrego catchment</b>			
Cunnamulla	N/A	100	

- Actual take (*the quantity of water actually taken from the water resources of the water resource plan area during the water accounting period*)

A summary of the methods for determining actual take is provided below. More detail is available in the Condamine-Balonne, Queensland Border Rivers-Moonie and Warrego-Paroo-Nebine water accounting methods reports.

For the purpose of accounting for annual actual take from the Queensland Border Rivers SDL resource unit, the quantity of water actually taken for consumptive use by each form of take from the SDL resource unit is interpreted to only apply to actual take *within* the resource unit. Actual take of water from the New South Wales Border Rivers SDL resource unit in Queensland is reported in accordance with the annual water use information provided by New South Wales. Approximately 1 GL of water from the New South Wales Border Rivers SDL resource unit was used in Queensland and no water from the Queensland Border Rivers SDL resource unit was used in New South Wales.

### *The take of water from watercourses under an entitlement and from overland flow by floodplain harvesting*

Diversion in the QMDB is generally characterised by much greater volumes of unsupplemented water compared to supplemented water. Due to the dry conditions in 2018/19, the take of supplemented water was a much greater percentage of the total take in that year. In 2019/20, low levels in storages and the availability of unsupplemented water and overland flow during the February/March flow event resulted in a more typical distribution of take between supplemented water (8%), unsupplemented water (58%) and overland flow (34%).

The works of the major water users in the QMDB have been metered to improve reliability in monitoring use. The installation of instruments to measure off-stream storage levels in the Lower Balonne was completed in the 2012/13 water year. Combined with measurement of direct take from the watercourse, this informs estimates of floodplain harvesting take in the area. A combination of estimates and measurement of water use are provided for all watercourse take and significant areas of floodplain harvesting.

### *The take of water from watercourses under basic rights*

Water taken from watercourses under basic rights is not measured and is estimated using the method outlined in the Water Accounting Methods Report for the relevant water resource plan area.

### *The take of water by runoff dams (including take under basic rights)*

The annual permitted take of water by runoff dams in the Condamine-Balonne and Queensland Border Rivers-Moonie water resource plan areas is considered to be the long-term annual average limit estimated by the Authority and which is listed in Schedule 3 of the Basin Plan and identified in the relevant water accounting methods reports. The annual permitted take of water by runoff dams in the Warrego, Paroo and Nebine catchments is estimated using the method outlined in the Water Accounting Methods Report for the Warrego-Paroo-Nebine Water Resource Plan.

### *The take of water by commercial plantations*

The annual permitted take of water by commercial plantations is considered to be the long-term annual average net take estimated by the Authority and which is listed in Schedule 3 of the Basin Plan and identified in the relevant water accounting methods reports.

There are no commercial plantations in the Moonie, Warrego, Paroo and Nebine catchments.

### *Summary of surface water take (SDL compliance)*

All surface water SDL resource units were compliant with SDLs in the 2019/20 water year. Annual actual take was 90% of annual permitted take from all surface water sources for the Condamine-Balonne SDL resource unit, 98% for the Queensland Border Rivers, 75% for the Moonie, 60% for the Warrego, 99% for the Paroo and 69% for the Nebine SDL resource unit.

- Decisions affecting permitted take (*details of any other decisions made by, or under the law of, the Basin State, that permit the taking of water from the water resources of that area during that water accounting period*)

A total of 81 ML of surface water was made available in the QMDB for short-term use (construction and irrigation) under water permits. Less than 35 ML was estimated as actually taken.

- Trade details (*details of the trading or transfer of tradeable water rights in relation to the water resources of that area during that water accounting period: within the area; and into the area; and from the area*)

Temporary and permanent trading of unsupplemented water access entitlements within a water management area and of supplemented water access entitlements within a water supply scheme (subject to specific rules in the water plan, water management protocol and operations manuals) may occur in all water resource plan areas in the QMDB. Water management protocols prohibit some trades where it has already been assessed that trade cannot occur without impacts.

Out of 147 GL of water access entitlements permanently traded in the QMDB in 2019/20, 24 GL was traded separately from land and 123 GL traded with land, with 87% of the total volume of permanent trades occurring in the Condamine-Balonne, 7% in the Moonie, 4% in the Queensland Border Rivers and 2% in the Warrego SDL resource unit.

The New South Wales – Queensland Border Rivers Intergovernmental Agreement 2008 (the IGA) provides for permanent and temporary interstate trade of supplemented and unsupplemented water. This applies to water access entitlements in the Border Rivers water supply schemes and the Border Rivers Water Management Area. Take of water through works that are permanently linked to an entitlement for supplemented or unsupplemented water in the other state is not reported as trade for section 71 purposes.

In the Border Rivers catchment in 2019/20, 0.2 GL of New South Wales supplemented water was authorised through temporary trade for use in Queensland. No Queensland supplemented or unsupplemented water was authorised for use in New South Wales.

There was no temporary trade between consumptive and environmental entitlement pools in 2019/20 and no environmental entitlements were traded back for consumptive use.

## **Groundwater**

This section presents a summary of the key section 71 clauses of the *Water Act 2007* for groundwater resource plan areas (and SDL resource units where appropriate).

- Available water (*the quantity of water available from the water resources of the water resource plan area during that water accounting period*).

There is not considered to be any change to the available water overall (the available water being based on the long-term average recharge).

- Permitted take (*the quantity of water permitted to be taken from the water resources of the water resource plan area during the water accounting period*).

The annual permitted take is the SDL for the SDL resource unit, except in the SDL resource units in the Warrego-Paroo-Nebine Water Resource Plan area, where the permitted take is the permitted take of water from the resource unit under entitlements plus the take of water permitted under basic rights.

Entitlements to take water from aquifers in the QMDB are in the form of water licences, water allocations (water access entitlements) or water permits, and these have conditions that identify the nominal entitlement (volumetric limit) and the particular aquifer (source). Water licences were converted to water allocations for some alluvial aquifer subareas in June 2019. These included the Oakey, Dalrymple, Upper Condamine (Cunningham section) and Border Rivers (deep) alluviums. In a number of aquifers where the total entitlement volume is less than the permitted take volume, the water plan identifies a volume of water as unallocated water. In most SDL areas, entitlement volume is lower than the associated SDL under the Basin Plan.

The take of groundwater for basic rights is authorised under the *Water Act 2000* (Qld) and does not require a water entitlement for the aquifers managed under the Basin Plan. Stock and domestic take is limited under the *Water Act 2000* and the volume taken is estimated for the various aquifers in the QMDB area in accordance with the method in the relevant water accounting methods report.

- Decisions affecting permitted take (*details of any other decisions made by, or under the law of, the Basin State, that permit the taking of water from the water resources of that area during that water accounting period*).

A total of 566 ML of groundwater was made available in the QMDB for short-term use (primarily to maintain permanent plantings through the drought) under water permits. Less than 217 ML was estimated as actually taken.

- Water allocations (*details of the water allocations made in relation to the water resources of that area in relation to that water accounting period*).

Access to the nominal entitlement for entitlement holders in a number of subareas is managed under an announced entitlement regime (a general restriction on take as a percentage of the nominal entitlement). Access to the nominal entitlement for any entitlement holder can be limited when groundwater systems are exhibiting seasonal storage loss as a result of drought episodes or when longer term recharge has not been sufficient to maintain groundwater levels in an aquifer.

Access in the Central Condamine Alluvium was limited to announced percentages of 50% or 70% prior to 2019 depending on their location within the system. The Central Condamine Alluvium limitations remained at this level from 2011 until the water recovery process was completed. For the 2019/2020 water year, the Central Condamine Alluvium was announced at 100% of nominal entitlement. Continued access will be managed under the Water Plan (Condamine and Balonne) 2019 through announced entitlements.

The Oakey Creek management area was announced at 80% across all zones while the Dalrymple Creek area remained at 100%. The newly created Cunningham Alluvium was limited to 80% of nominal entitlement. The more localised basalt systems generally show falling storage responses to dry conditions first. Consequently, the access in the Upper

Hodgson Creek (basalt) system was reduced to 70%. Toowoomba City Basalts was also announced at 70% of nominal entitlement.

Access in the remaining systems was unchanged from the previous year with the remainder of the basalts limited to 80%, and the majority of the remaining alluvial systems remaining at 100%, as per the 2018/19 year, with the exception of North Myall (75%) and Moola (50%). Further reductions in access in future water years are likely without significant recharge.

- *Actual take (the quantity of water actually taken from the water resources of the water resource plan area during the water accounting period)*

#### *The take of water from aquifers under an entitlement*

In many highly developed groundwater systems, the works of entitlement holders have been metered to improve the reliability in monitoring use. In the systems that are unmetered, the nominal entitlement, adjusted for any limitations, is considered to represent the actual use. The estimated data are combined with the metered data to provide the total water use for an SDL resource unit.

The diversion of water from groundwater taken under entitlements for 2019/20 is just over 137 GL from a combination of metered and estimated use. This does not include take under basic rights.

#### *The take of water from aquifers under basic rights*

Queensland does not require works (infrastructure that includes bores, wells, spears and excavations) that take water for the purpose of basic rights to be metered. Accordingly, use volumes have been estimated. Previously the estimated volume of take reported has been the volume used by the MDBA in the determination of the SDL.

For the Queensland Border Rivers-Moonie, Condamine-Balonne and Warrego-Paroo-Nebine water resource plan areas, the permitted take for basic rights has been estimated using the method outlined in the Water Accounting Methods Report for the respective water plan area. The method is based on the Queensland Murray Darling Basin Methodology for Estimating the Take of Groundwater for Stock and Domestic Purposes (Parsons Brinckerhoff, 2011) and also takes into account the report 'Methodology for determining growth in take of groundwater and accounting for groundwater take in the Granite Belt Underground Water Area' (WSP Parsons Brinckerhoff, 2018) which allows stock or domestic use to be separated from non-stock or domestic in the Granite Belt Underground Water Area.

The total take of groundwater under basic rights for 2019/20 is 24GL.

- *Trade details (details of the trading or transfer of tradeable water rights in relation to the water resources of that area during that water accounting period: within the area; and into the area; and from the area).*

Permanent trading of water access entitlements is permitted within the Upper Condamine Alluvium (Central Condamine Alluvium) area, as well as within the Oakey Creek, Dalrymple Creek and Cunningham Alluvium areas within the Upper Condamine Alluvium (Tributaries). Temporary trading (seasonal assignment) is also available within these areas, as well as in

parts of the Upper Condamine Basalts (Toowoomba City Basalts, Upper Hodgson Creek Basalts) and in part of the Queensland Border Rivers Alluvium (Border Rivers Alluvium) areas. These permanent and temporary water sharing rules have been included in the Water Management Protocol and allow for greater water entitlement flexibility for licensees.

Permanent trades during the year totalled 1.8 GL. This figure is in line with previous years, not including last year, which was distorted by a large number of trades to the CEWH as part of the 'buyback' process. Temporary trade (through seasonal water assignments) was very active again during the year and just exceeded the record level reached last year. Should the current dry period continue a similarly high figure would be expected for next year. A new record of 8.3 GL of groundwater under 145 seasonal water assignment notices was temporarily traded across the QMDB area.

#### *Summary of groundwater take*

Rainfall totals for this year were again well below average across the QMDB area. Again, it was a dry year with well below average rainfall throughout resulting in significant groundwater extraction to assist pre-watering for summer crops and finishing of the crops. Overall, all groundwater systems are continuing to deplete and in a number of areas are nearing the record low levels reached during the millennial drought period. The groundwater levels in most aquifers have been steadily falling since the exceptionally wet period (2010/11 - 2013/14). Announced entitlement levels have been reduced for many SDL resource units and limitations have been implemented in other subareas.

This is the first year with use volumes in the Central Condamine Alluvium reflecting the new lower entitlement levels (post buyback). Total diversion of groundwater in the QMDB for 2019/20 for all SDL resource units was 162 GL. This reduction on last year's diversion is primarily related to lower water access conditions and the reduction in entitlement resulting from the buyback. Diversions (including basic rights) for all aquifer units were within the respective SDLs, with the Border Rivers Alluvium (GS54) at 96% of SDL and the Central Condamine Alluvium (GS64a) at just under 95% of SDL. Use volumes in the Central Condamine Alluvium and Border Rivers Alluvium (deep) may need to be managed in future years to ensure compliance with the Basin Plan SDLs. Diversions (including basic rights) for Queensland's other two most developed systems were down to 65% of SDL for the Upper Condamine Basalts and 72% of SDL for the Upper Condamine Alluvium (Tributaries).

Table 3: 2019/20 Snapshot of water diversions in the QMDB

<b>Resource</b>	<b>Annual actual take 2019/20 (GL)</b>	<b>Annual permitted take 2019/20 (GL)</b>	<b>Annual actual take 2018/19 (GL)</b>
Surface water	1340	1516	699
Groundwater	162	399	190

## **Environmental water – held and planned**

In Queensland, water planning incorporates provisions for balancing the often-competing interests in water between human consumptive needs and the environment. Environmental

water requirements are primarily met through the various water sharing rules specified in the water plans. In addition, there is held environmental water consisting of water access entitlements gifted by the Queensland Government to the Commonwealth and water which has been recovered by the Commonwealth from entitlement holders through the Water for the Future programs of buyback and investment in on-farm water use efficiency works.

Annual permitted take is reduced by the modelled volume of held environmental water entitled to be taken.

Information about the volume of held environmental water and its use can be found at <http://www.environment.gov.au/water/cewo/catchment>.

For the purposes of reporting under Matter 9.2 (volume of planned environmental water), Queensland has reported the volume of water provided for environmental purposes under specific flow event management rules in the relevant water management protocols. These rules include: flow event management arrangements and preservation of tributary inflows in the Border Rivers; low, medium and Narran Lakes flow event management arrangements in the Lower Balonne; and flow event management arrangements in the Warrego. In 2019/20 these rules provided in-stream benefits in the Border Rivers (through flow event management arrangements and preservation of tributary inflows), the Lower Balonne distributaries (through release of environmental, stock and domestic water and flow event management arrangements) and the Warrego River (through flow event management arrangements).

No trading of environmental water occurred in the year. The CEWH is continuing to assess event-based mechanisms for achieving improved environmental watering outcomes in the Lower Balonne.

### **Progress of water reform**

The Warrego-Paroo-Nebine Water Resource Plan was accredited in June 2017. Queensland submitted water resource plans for the Condamine-Balonne and Queensland Border Rivers-Moonie water resource plan areas for accreditation in February 2019. The water resource plans were re-submitted in April 2019, following some minor amendments. These plans apply to both surface water and groundwater and were accredited in September 2019.

#### *Surface water*

Work continues on the Rural Water Management Program, which is Queensland's response to the 'Independent audit of Queensland non-urban water measurement and compliance' and commitments made in the Murray-Darling Basin Compliance Compact.

The program will improve rural water management across the state and ensure Queensland's valuable water resources are used, measured and monitored effectively. This will be achieved by building on existing programs and delivering projects to:

- strengthen water measurement;
- provide transparent water information;
- enhance Queensland's regulatory approach; and
- enable robust compliance.

A key project is the development of an overland flow measurement standard and risk-based overland flow measurement program to improve the measurement and accounting of take of overland flow.

Since 2000, Queensland has had a moratorium on new overland flow works in the QMDB water resource plan areas. Licensing of overland flow works started in these areas in the mid-2000s and has been completed in the Lower Balonne. A third of the works are currently licensed in the Border Rivers. The metered overland flow licences in the Lower Balonne will be reviewed as part of the program.

The Water Plan (Border Rivers and Moonie) 2019 commits to measuring the relevant take of overland flow water by 31 December 2022. Improvements to measurement will help meet this commitment, while improving monitoring and compliance.

More information is available at: <https://www.dnrme.qld.gov.au/land-water/initiatives/rural-water-management/projects/measurement-overland-flow>.

### *Groundwater*

The Authority, in conjunction with Queensland, have been engaged in several projects to gain a better understanding of various aspects of groundwater systems in the QMDB. The projects have primarily focussed on the more heavily utilised and lesser known groundwater systems to improve collective knowledge and assist in future management directions. Two of the projects have involved the Upper Condamine Alluvium and have been ongoing across a number of reporting periods.

#### Upper Condamine Alluvium modelling

Improved assessment and modelling of the Central Condamine Alluvium (CCA) will help to inform the longer term sustainable capacity of the system and look at potential changes in the system as buyback recovers entitlements. The Upper Condamine Alluvium project is almost finalised with the incorporation of the tributary alluvial systems into the CCA model. The construction and calibration of the model according to currently accepted modelling guidelines were completed in January 2018. The first three stages have been completed, with full completion due for finalisation in late 2020.

#### Upper Condamine Alluvium (UCA) (Tributaries) – Hydrogeological and hydrochemical characterisation of recharge and connectivity

This work is investigating geochemical and thermal signatures of various water sources to assist in determination of the degrees of connectivity (if any), which will improve knowledge and better inform future management and trade arrangements.