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NSW Annual Report on Water Resource Use for the 2018/19 Water Year

Submission to the Transition Period Water Take Report

November 2019



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1. Introduction

This report highlights key aspects of surface water and groundwater management and use in New South Wales (NSW) during the 2018/19 water year commencing 1 July 2018. This report is submitted to the Murray Darling Basin Authority (MDBA) by the NSW Department of Planning, Industry and Environment – Water, (DPIE - Water), under section 71(1) of the *Water Act 2007* (Commonwealth), Schedule E of the MDB Agreement and Schedule 12, Matter 9.1 and 9.2 of the Basin Plan.

This report is a summary of the detailed data provided to MDBA in the section71/Cap/Matter 9.1/ Matter 9.2 reporting spreadsheets.

All groundwater and surface water sources within the NSW Murray-Darling Basin (MDB) are managed under Water Sharing Plans (WSPs) and the NSW *Water Management Act 2000* (*the Act*). The long-term average annual extraction limits (LTAAEL) for each NSW groundwater source and surface water source are described in the respective WSPs.

2. Water resource management overview for 2018/19

The 2018/19 water year was characterised by worsening drought conditions across much of NSW, with valleys in the northern Basin severely affected. Very low inflows to headwater storages have resulted in general security allocations in regulated systems being very low or zero for the duration of the water year. Where possible, licence holders in these systems utilised water in accounts carried over from the previous year. Storage levels continued to decline significantly throughout the water year. In unregulated river systems that rely on natural flows reaching commence to pump thresholds, opportunities for extraction were very limited. In some surface water systems, access restrictions were imposed to preserve water for higher priority licences and critical water needs. Overall, surface water diversions, including for held environmental water, were well down on the previous water year. Groundwater extraction increased as water users looked to groundwater supplies to maintain production.

DPIE – Water is continuing to roll out the Water Reform Action Plan including the implementation of the NSW non-urban water metering framework and better management of environmental water in the NSW northern Basin. More details on these and other components of the Water Reform Action Plan can be found at: <https://www.industry.nsw.gov.au/water-reform>.

Throughout 2018/19, NSW continued to work through the development and public exhibition of 20 Water Resource Plans for groundwater and surface water systems, including extensive stakeholder consultation in communities throughout the NSW portion of the Basin. Progress on water resource plans can be found at: <https://www.industry.nsw.gov.au/water/plans-programs>.

2.1 Groundwater

Groundwater extraction in 28 of the 44 NSW groundwater Sustainable Diversion Limit (SDL) resource units within the MDB is fully metered. This represents the majority of groundwater licensed entitlements (88%) in the NSW portion of the MDB. Extraction in the remaining 16 SDL resource units is currently only partially metered. It is expected that the rollout of the non-urban metering framework in NSW will, over time, improve the accuracy of extraction data in these systems.

During the 2018/19 water year, approximately 1,350 GL was extracted from the NSW groundwater SDL resource units within the MDB, including 1,173 GL of recorded licensed use and 176 GL of estimated use under basic landholder rights (BLR). The higher volume of licenced groundwater extraction compared to the previous water year reflects the below average rainfall and low surface water availability (including low or zero general security allocations for many regulated rivers) experienced during the 2018/19 water year.

A total of 74 GL of groundwater was traded permanently within water sources; there was no trade between water sources during the water year. Permanent trade includes sale of access licences

(71M change in ownership) and transfer of shares (71Q assignment of rights between access licences).

281 GL of groundwater allocation was traded (commonly referred to as temporary trade) with most (greater than 94%) of this trade volume occurring within the Upper and Lower Namoi, Upper Lachlan Alluvium, Lower Lachlan Alluvium, Lower Murray Alluvium (Deep), Lower Murrumbidgee Alluvium (Deep), Mid Murrumbidgee Alluvium, Upper Macquarie Alluvium and the Lower Gwydir Groundwater Sources.

2.2 Surface water

All licensed diversions from regulated rivers in the NSW portion of the MDB are metered. Diversions from the Barwon-Darling unregulated river water source and the Fish River water supply scheme in the unregulated portion of the Macquarie valley are also metered. For other unregulated systems in the NSW MDB, extraction is not currently metered and an average annual estimate of usage is shown in the section 71 reporting spreadsheets. It is expected that the rollout of the non-urban metering framework in NSW will, over time, improve the accuracy of actual take data in unregulated systems.

Regulated river diversions in the NSW portion of the MDB for the year totalled 2,533 GL, including 305 GL of recorded use by held environmental water (HEW) licences. Estimates of diversions from unregulated systems totalled 314 GL, including slightly less than 2.5 GL of metered use in the Barwon-Darling, down from 19 GL in 2017/18. This volume reflects the low occurrence of flows in the Barwon-Darling during 2018/19. The decrease in total NSW diversions under both environmental and consumptive licences in 2018/19 reflects worsening drought conditions over the past two water years. Limited inflows and subsequent low water allocations across most NSW valleys resulted in reductions in diversions by around 50% during the 2018/19 water year compared to the previous year.

Most of the regulated valleys in the NSW MDB commenced the water year with low or zero general security allocations. The 2018/19 year began with the fifth driest July on record across most of NSW and continued with the Bureau of Meteorology registering less than 60% of the average total rainfall for most of NSW west of the Great Dividing Range in September 2018. Rainfall increased across isolated parts of NSW during October and November with heavier falls recorded outside the basin in the NSW Northern Rivers, Hunter and greater Sydney regions. Drier than average conditions returned in December 2018 and continued through to June 2019 with most of central and northern NSW recording the lowest June rainfall for twenty years.

Levels in central and northern NSW headwater storage dams and Menindee Lakes fell below 10% in 2018/19 and remained that way to the end of the water year. Keepit Dam fell to 6% in December 2018 and below 1% just a few weeks later with record low inflows continuing through the year. Copeton Dam on the Gwydir was at 15% in January and reduced to 9.5% by June 2019. Burrendong Dam on the Macquarie fell from 11% in January 2019 to 5% by June. Wyangala Dam on the Lachlan continued to experience very low inflows with levels falling to 26% of capacity in June 2019. Inflows across the southern Basin were slightly higher with Blowering Dam on the Murrumbidgee system at 44% capacity at the end of the water year.

By the end of June 2019 much of the northwest and northern tablelands of NSW were considered to be in intense drought, with the central west in drought and the majority of the rest of NSW drought affected and intensifying. By the end of the 2018/19 water year the Lower Namoi, Lower Darling and Macquarie Valleys were in drought stage 4 (critical water shortage) while the Lachlan, Gwydir, Upper Namoi were at drought stage 3 (severe water shortage). Due to the deteriorating climatic conditions, a number of temporary water restrictions were imposed across the state during the water year, including an order under section 324 of *the Act* restricting access for general security licence holders in the Lower Darling Regulated River on 4 December 2018 to ensure that resources were available for higher priority needs. This restriction is still ongoing at time of writing this report. Section 324 orders were also put in place for all or parts of the Barwon-Darling, Macquarie Bogan and Namoi Unregulated Rivers and the Lower Namoi and Macquarie Regulated River systems. These

restrictions were to protect higher priority water needs and to ensure inflows were preserved to ease cease-to-flow conditions or environmental releases. Further information on temporary water restrictions is available at: <https://www.industry.nsw.gov.au/water/allocations-availability/temporary-water-restrictions>.

3. Cap Compliance

Reflecting the prevailing poor climatic conditions, annual modelled diversion volumes (Cap targets) and actual consumptive diversions for 2018/19 were both well down on previous years. For several valleys including the Border Rivers, Gwydir, Namoi, Macquarie, Lachlan, and NSW Murray, actual consumptive diversions for the year exceeded the modelled Cap target (adjusted for trade and environmental use). With low inflows and low allocations during 2018/19, actual diversions reflect draw down of water held in storages and carried over from the previous water year under water account management rules set out in the respective WSPs.

Cap compliance trigger thresholds were not exceeded with all valleys remaining fully Cap compliant for 2018/19 with substantial cumulative Cap credits.

Table 1 summarises the Cap results for the water year in each NSW valley where accounting against Cap under Schedule E of the MDB Agreement applies. The Barwon-Darling and the Lower Darling are treated as one valley for Cap auditing purposes, with a combined Cap credit of 59 GL for the water year. Additional detailed Cap information is provided in the NSW section 71 reporting spreadsheets and/or the Cap register once finalised for 2018/19.

Table 1. Summary of 2018/19 Cap results for NSW

NSW Cap valley	Cap Target Adjusted for Trade and Environmental Use (GL)	Annual Consumptive Diversions 2018/19 (GL)	Cap Credit for 2018/19 (GL)
NSW Intersecting Streams	N/A	3	N/A
NSW Border Rivers	62	139	-77
Gwydir	30	104	-73
Namoi/Peel	127	174	-46
Macquarie/Castlereagh/Bogan	10	224	-214
Barwon-Darling / Lower Darling	71	12	59
Lachlan	92	268	-176
Murrumbidgee	1448	967	480
NSW Murray	583	653	-70

4. Water resource summary by valley

4.1 NSW Intersecting Streams

The NSW Intersecting Streams are unregulated systems, with take by water access licence holders not currently metered. Consumptive diversions for 2018/19 are estimated to total 3 GL. There is no Cap established for the Intersecting Streams.

4.2 NSW Border Rivers

The 2018/19 consumptive diversions in the NSW Border Rivers totalled 139 GL consisting of 116 GL of metered regulated diversion and an estimated annual average 23 GL diversion by unmetered

unregulated river licences. Regulated diversions were down on the previous water years and reflect further significant reductions in water availability from 2017/18 and 2016/17. Regulated diversions for irrigation totalled 114 GL (adjusted for net interstate use of NSW allocations in the Queensland Border Rivers).

In the regulated system, higher priority licence categories received 100% allocation for 2018/19. The general security (A class) licence category commenced the year with 23% allocation with a small incremental increase in October 2018 to a total of 33% (0.33 ML per unit share) for the year. General security (A class) licences make up only a small portion of the total general security licences in the Border Rivers, the bulk of which are general security (B class) licences which had a zero allocation for the whole water year. Usage under general security (B class) licences for 2018/19 was from water carried over in accounts from the previous water year, under the continuous accounting allocation system and account management rules in the WSP.

4.3 Gwydir

The 2018/19 consumptive diversions in the Gwydir valley totalled 104 GL, a reduction of 211 GL compared to 2017/18. This volume included 60 GL of metered regulated diversions and an estimated annual average of 44 GL of diversions by unmetered unregulated river licences. Diversions for irrigation in the Gwydir regulated system totalled 55 GL for 2018/19, down from 267 GL in 2017/18. There were no supplementary events declared in 2018/19.

In the Gwydir regulated river system, the higher priority licence categories (domestic and stock, local water utility and high security) commenced the water year with the maximum 100% allocation. Diversions under general security licences in 2018/19 relied on water carried over in accounts from the previous year, with zero allocation for the water year, down from 17.6% allocation in 2017/18 and 79% in 2016/17. A continuous accounting allocation system is used for general security licences in the Gwydir regulated river.

4.4 Namoi / Peel

Consumptive diversions within the Namoi valley, including the Peel, for 2018/19 totalled 174 GL. This also includes an estimated annual average of unmetered unregulated river diversions of 113 GL. Regulated diversions totalled 61 GL, consisting of 36 GL in the Lower Namoi regulated river, 6 GL in the Upper Namoi regulated river and 19 GL in the Peel regulated river. Diversions for irrigation in the combined Namoi-Peel regulated systems totalled 50 GL which is a reduction of 147 GL from the 2017/18 water year. This reflects severe water shortages in the Lower Namoi Valley with record minimum storage inflows. There were 38 GL of inflows from August 2017 to May 2019, 24 GL less than the previous historic low.

Similar to the NSW Border Rivers and Gwydir valleys, a continuous accounting system is used for general security licences in the regulated section of the Lower Namoi valley. Minimal inflows resulted in no general security allocations in the Lower Namoi for the 2018/19 water year. Where possible licence holders accessed water carried over in accounts from the previous water year. Due to the worsening extreme drought conditions, strategies such as bulk releases of water orders from Keepit Dam were put in place to minimise delivery losses. Delivery of account water ceased in January 2019 and the Lower Namoi valley deteriorated to the drought Stage 4 (critical water shortage). The regulated Namoi River downstream of Keepit Dam has remained in cease-to-flow conditions for most of 2019.

In the Peel and Upper Namoi regulated rivers, general security licences are managed under annual accounting, with 2018/19 allocations of 38% in total for the Peel and 100% for the Upper Namoi regulated systems. All higher priority licences throughout the Upper and Lower Namoi and Peel valleys received 100% allocations for 2018/19.

4.5 Macquarie / Castlereagh

Consumptive diversions totalled 224 GL in the Macquarie / Castlereagh catchment for 2018/19. This includes an estimated average use of 35 GL of unmetered unregulated river diversions and 8 GL of

unregulated metered diversions under the Fish River water supply scheme. The Fish River diversions include 3 GL diverted by WaterNSW (Sydney Catchment Authority) which was transferred out of the MDB to the Sydney Basin.

Regulated diversions in the Macquarie and Cudgegong regulated rivers totalled 180 GL, including 161 GL diversions for irrigation. The bulk of these diversions (157 GL) was in the Macquarie regulated river water source. This compares to total regulated consumptive diversions in 2017/18 of 330 GL.

General security licences in the Macquarie and Cudgegong regulated rivers received no allocations for the year, compared to 38% in 2017/18 and 100% in the 2016/17 water year.

Drought conditions worsened throughout the year, with the Macquarie valley moving to drought Stage 4 in May–June 2019. Macquarie regulated river general security licence holders were limited to 70% of the volume of water in their carryover sub-accounts as at 1 July 2018. Burrendong Dam has experienced record low inflows (less than half of the previous record low) since the last general security allocation was made in August 2017.

4.6 Barwon-Darling

With stage 4 drought conditions, remaining water supplies in the Barwon-Darling dropped to critically low levels and a temporary restriction order under section 324 of *the Act* was put in place to protect flows for town supplies and stock and domestic use. Consumptive diversions during 2018/19 were minimal, totalling 2.4 GL, principally for town supplies. This compares to extraction of 19 GL in 2017/18 and 299 GL in 2016/17.

While all licence categories received 100% allocations for 2018/19, it should be noted that the Barwon-Darling is an unregulated system. That means that water is not held in a headwater storage and the opportunity to take water (other than when temporary restrictions are in place) is dependent on gauged flows in the river reaching licensed commence to pump/cease to pump triggers. There is an individual annual use limit of 300% of entitlement plus adjustment for trades for unregulated A, B and C class licences in the Barwon-Darling.

The Barwon-Darling had a cap credit for the year of 3 GL. As shown in **Table 1**, the Barwon-Darling and Lower Darling valleys are treated as one valley for Cap auditing purposes. The 2018/19 combined Cap credit was 59 GL.

4.7 Lachlan

In the Lachlan valley consumptive diversions totalled 268 GL for 2018/19 including an estimated average use of 15 GL of unmetered unregulated river diversions. Regulated diversions in the Lachlan and Belubula regulated rivers totalled 252 GL. Regulated diversions for irrigation totalled 229 GL in the Lachlan regulated river and 9 GL in the Belubula regulated river.

Continued dry conditions and low inflows to storages during 2018/19 resulted in zero general security allocations in the Lachlan and Belubula regulated rivers. This continues the decline from the high water allocations of the 2016/17 water year. As for many other NSW regulated valleys, diversions relied solely on water already in storages and carried over in general security licence holders' accounts. There is an individual annual take limit equivalent to 100% of entitlement plus adjustment for trades for general security licences in the Lachlan and Belubula regulated rivers.

4.8 Murrumbidgee

The 2018/19 consumptive diversions in the Murrumbidgee valley totalled 967 GL including an estimated average 42 GL diversions by unmetered unregulated river licences. Regulated diversions totalled 925 GL, including regulated diversions for irrigation of 869 GL. No supplementary flow events were declared during 2018/19.

Incremental increases to allocations throughout the water year saw general security allocations reach a total of just 7%, a continual decline from 45% in 2017/18 and 100% in 2016/17.

Net consumptive temporary trade out of the Murrumbidgee valley to other valleys in the southern Basin during 2018/19 was 44 GL with 7 GL of net environmental water traded into the Murrumbidgee in 2018/19.

4.9 Lower Darling

As for several other NSW valleys, the Lower Darling was in drought stage 4 (critical water shortage) during 2018/19 and a temporary water restriction under section 324 of *the Act* was put in place in December 2018 to protect remaining resources for high priority needs including town water supplies, stock and domestic and permanent plantings. Consumptive diversions totalled just 9 GL in 2018/19, down by 68 GL from the previous year and reflecting the continued reductions in rainfall and inflows and resulting zero general security allocations across the Lower Darling catchment in 2018/19.

Held environmental water use in the Lower Darling decreased significantly from previous years with zero usage this water year compared to 26 GL in 2017/18 and 183 GL in the 2016/17 water year.

There was no temporary trade for consumptive or environmental licences either into or out of the Lower Darling during 2018/19.

The Lower Darling had a Cap credit for the year of 56 GL. As shown in **Table 1**, for Cap auditing purposes the Lower Darling and Barwon-Darling are treated as one valley. The 2018/19 combined Cap credit was 59 GL.

4.10 NSW Murray

Consumptive diversions for the NSW Murray valley totalled 653 GL for 2018/19, including an estimated average of 28 GL diversions by unmetered unregulated river licences. This is a decrease of 49% in consumptive diversions from the 2017/18 water year. The decrease in diversions reflects significant reductions in inflows and water availability due to the continuation of prevailing dry weather conditions experienced since 2017/18.

Regulated diversions for irrigation totalled 588 GL. No supplementary flow events were declared in 2018/19 and it was the second consecutive year with no supplementary access. This compares to the 2016/17 water year when 88 GL from declared supplementary events in the NSW Murray was diverted for irrigation.

General security licence holders in the NSW Murray regulated river ended the year with zero allocations and relied on water carried over in accounts from the previous year. Net consumptive trade into the NSW Murray from other systems in the southern Basin during 2018/19 totalled 100 GL.

5. Transition period section 71 reporting

During the transition to SDL period, up to July 2019, NSW is continuing to fulfil its reporting obligations under section 71 of the *Water Act 2007* (Cwlth), including accounting against Cap while Schedule E remains current. The reporting requirements under section 71 have increased in this transition period to include other forms of non-modelled take such as interception by farm dams and commercial plantations, and Matter 9 reporting under the Basin Plan. Using the best available information for 2018/19, permitted take and actual take for these additional forms of non-modelled take are assumed to equal the volumes outlined for the Baseline Diversion Limit (BDL) in Schedule 3 of the Basin Plan.

Estimated volumes for permitted take and actual take under basic rights are equivalent to estimates listed under the requirements for water for basic landholder rights (BLR) in the relevant WSPs for both groundwater and surface water in each SDL resource unit.

Floodplain harvesting in NSW is not currently managed by the issuing of an entitlement share and consequently NSW does not make available water determinations (allocations) or require a record of take. In the absence of an annual volume, the MDBA's long-term estimate of floodplain harvesting has been included in the section 71 reports for permitted take and actual take for the SDL resource units where floodplain harvesting applies. The Healthy Floodplains Project, currently in progress in

NSW, includes the creation of entitlements for floodplain harvesting and will enable future reporting consistent with section 71 annual accounting processes.

6. Environmental water

6.1 Held environmental water

Held environmental water (HEW) usage in NSW totalled 305 GL during 2018/19. This was down 343 GL or approximately 53% compared to 2017/18 and down 71% compared to the 2016/17 water year, reflecting large reductions in water availability compared to the past two years.

Table 2 shows the 2018/19 HEW use recorded for each surface water SDL resource unit in NSW. Entitlement volumes shown below are the equivalent in GL of entitlement shares at the start of the water year on 1 July 2018.

The majority of the total HEW use for the year occurred in the Macquarie/Castlereagh, Murrumbidgee and the NSW Murray valleys.

The Intersecting Streams, NSW Border Rivers, Barwon-Darling and Lower Darling all recorded zero HEW usage for 2018/19. Compared to 2017/18, HEW usage was down in all valleys except for the Macquarie/Castlereagh. In the NSW Murray and Murrumbidgee, HEW usage for the water year was significantly reduced compared to usage recorded in 2017/18.

Table 2. Summary of 2018/19 held environmental water use (surface water) in NSW

NSW valley / SDL resource unit	HEW Entitlement 2018/19 (GL)	HEW Use 2018/19 (GL)
Intersecting Streams	18	0
NSW Border Rivers	4	0
Gwydir	136	62
Namoi/Peel	15	6
Macquarie/Castlereagh	184	76
Barwon-Darling	30	0
Lachlan	127	26
Murrumbidgee	1,113	67
Lower Darling	323	0
NSW Murray	660	68

6.2 Planned environmental water

In NSW planned environmental water (PEW) may be either managed through rules or managed in a specified account similar to water accounts for other (licensed) water users. Examples of the types of rules used to manage PEW include end of system flows, environmental share of supplementary events and other valley specific PEW rules in WSPs.

In several regulated valleys, Environmental Water Advisory Groups (EWAGs) advise on the management and use of account-based PEW such as environmental contingency allowances (ECA) and environmental water allowances (EWA). Specific environmental assets such as the Gwydir Wetlands, Macquarie Marshes, Lowbidgee Floodplain or the Barmah-Millewa forest are generally targeted. Releases from stimulus flow accounts, such as in the NSW Border Rivers, usually target a specific reach of the river or an environmental benefit downstream of the storage.

Account-based PEW use for NSW totalled approximately 240 GL for 2018/19. This is an increase from the total use of 170 GL for NSW in 2017/18. **Table 3** outlines the volume of account-based PEW available and used in each regulated river valley/SDL resource unit where PEW accounts or allowances exist. The relevant regulated river WSP details the rules around the management and use of PEW accounts.

Table 3. Summary of 2018/19 planned environmental water use (account-based) in NSW regulated rivers

NSW valley / SDL resource unit	PEW Available 2018/19 (GL)	PEW Use 2018/19 (GL)
NSW Border Rivers	4	0
Gwydir	75	52
Namoi/Peel	2	0
Macquarie/Castlereagh	88	51
Lachlan	30	14
Murrumbidgee	130	118
Lower Darling	0	0
NSW Murray	266	6

7. Progress of water reform

During the 2018/19 water year, NSW continued to implement the 2013 Intergovernmental Agreement on Implementing Water Reform in the MDB and participated in a range of Basin Plan processes and working groups. Significant NSW resources are being directed towards progressing the development and accreditation of water resource plans. Extensive stakeholder consultation has been undertaken through formal Stakeholder Advisory Panels, community meetings and the public exhibition process.

In December 2017, the NSW Government launched the Water Reform Action Plan (WRAP) which introduced a renewed approach to equitable and transparent water management in NSW. WRAP achievements to date include the establishment of the Natural Resources Access Regulator (NRAR) to strengthen compliance and enforcement of water regulation and the roll out of the non-urban metering framework to improve the standard and coverage of non-urban water meters across NSW. Further WRAP objectives include better management of environmental water and increased transparency and best practice in water management.

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