

New South Wales

Annual report on water resource use - 2016/17 water year

1. Introduction

This report highlights key aspects of surface water and groundwater management and use in New South Wales (NSW) during the 2016/17 water year commencing 1 July 2016. The report is submitted to the Murray Darling Basin Authority (MDBA) by NSW Department of Industry, Lands and Water, (formerly DPI Water) under Section 71(1) of the *Water Act 2007* (C'th), 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 s71/Cap/Matter 9.1/ Matter 9.2 reporting spreadsheets. For more detailed information, such as water use by licence category, valley-specific Cap assessment, or held environmental water (HEW), refer to the spreadsheet reports.

2. Water resource management overview for the State

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

2.1 Groundwater

Only 28 of the 44 NSW groundwater Sustainable Diversion Limit (SDL) resource units within the MDB are fully metered. These also represent the majority of licensed entitlements (88%) in the NSW portion of the MDB. The remaining 16 SDL resource units are only partially metered.

During the 2016/17 water year 742 GL was extracted from the groundwater SDL resource units within the MDB, including 565 GL of recorded use and 177 GL of estimated use under basic landholder rights (BLR). The low level of extraction compared to the previous water year reflects the above average rainfall and higher surface water availability (including full general security allocations for many regulated rivers) experienced during the 2016/17 water year.

A total of 94 GL of groundwater was traded permanently; this trade was within water sources, there was no trade between water sources during the water year. This permanent trade includes sale of access licences (71M change in ownership) and transfer of shares (71Q assignment of rights). 173 GL of groundwater allocation was traded (commonly referred to as temporary trade) with most (>95%) of this occurring within the Lower Gwydir, Lower Lachlan Alluvium, Upper Lachlan Alluvial, Lower Murrumbidgee Alluvium (Deep), Lower Murray Alluvium (Deep) and Upper and Lower Namoi Alluvial Groundwater Sources. During 2016/17, groundwater supplementary water access licence (SWAL) allocations were not available except in the Lower Lachlan Alluvium.

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 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.

Regulated river diversions in the NSW portion of the MDB for the year totalled 4,893 GL, including 1,044 GL of recorded use by held environmental water (HEW) licences. Estimates of diversions from unregulated systems totalled 609 GL (including 299 GL of metered use in the Barwon-Darling). The increase in NSW diversions under both environmental and consumptive licences reflects the substantial improvement in water availability during the 2016/17 water year.

Most of the regulated valleys in the NSW MDB commenced the water year with low or zero general security allocations. However, significant rainfall in the first half of 2016/17 and associated inflows to major NSW storages resulted in corresponding incremental increases to water availability across all valleys. Many regulated valleys, including the Lower Darling, achieved full general security allocations for the first time in several years.

With the significant improvement in storage levels in the Menindee Lakes during 2016/17, urban water supplies were ensured for the city of Broken Hill and restrictions were eased on access by other water access licence holders in the Lower Darling regulated river water source. In addition, NSW is progressing with the project to construct a water supply pipeline from near Wentworth on the Murray River to Broken Hill to secure the long term urban water needs for the city.

3. Cap Compliance

Assessment of Cap performance for the 2016/17 water year using computer simulation models indicated that actual diversions were less than the modelled Cap target (adjusted for trade and environmental use) resulting in Cap credits for all regulated river valleys. All NSW valleys were fully Cap compliant and continue to maintain cumulative credits. All diversions are in accordance with the MDBA Register of Diversion Definitions to the extent that availability of information allows.

Table 1 summarises the major Cap results for each valley in NSW 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. Additional detailed Cap information is provided in the NSW section 71 reporting spreadsheets and/or the Cap register once finalised for 2016/17.

Table 1. Summary of 2016/17 Cap results for NSW

NSW Cap valley	Cap Target Adjusted for Trade and Environmental Use (GL)	Annual Consumptive Diversions (GL)	Cap Credit for 2016/17 (GL)
NSW Intersecting Streams	N/A	3	N/A
NSW Border Rivers	405	255	150
Gwydir	566	349	217
Namoi/Peel	381	331	49
Macquarie/Castlereagh/Bogan	604	211	393
Barwon-Darling / Lower Darling	341	307	34
Lachlan	273	186	87
Murrumbidgee	1696	1639	57
NSW Murray	1467	1175	292

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 2016/17 are estimated to total 3 GL. There is no Cap established for the Intersecting Streams.

4.2 NSW Border Rivers

The 2016/17 consumptive diversions in the NSW Border Rivers totalled 255 GL consisting of 232 GL of metered regulated diversion and an estimated annual average 23 GL diversion by unregulated river licences which are currently not metered. Regulated diversions were well up on the previous water year and reflect the significant improvement in water availability compared to 2015/16, including increased opportunities for access from declared supplementary events during the water year. Regulated diversions for irrigation totalled 231 GL in 2016/17.

In the regulated system, general security allocations were low at the start of water year. However, incremental increases, particularly in the first half of the water year, resulted in total allocations for the year equivalent to 100% of entitlement for general security (A class) and 114% for general security (B class) under the continuous accounting system in the Border Rivers regulated river.

4.3 Gwydir

The 2016/17 consumptive diversions in the Gwydir valley totalled 349 GL. This consisted of 305 GL of metered regulated diversions and an estimated annual average of 44 GL of diversions by unregulated river licences which are not currently metered. Diversions for irrigation in the Gwydir regulated system totalled 302 GL for 2016/17. This includes 171 GL diverted under supplementary licences.

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. A continuous accounting allocation system is used for general security licenses, with total allocation for the water year equivalent to 79% of entitlement. Diversions under general security licences reflected this significant increase in allocation as compared to 2015/16.

4.4 Namoi / Peel

Consumptive diversions within the Namoi valley, including the Peel, for 2016/17 totalled 331 GL. This also includes an estimate for unregulated river diversions of 113 GL that are not currently metered. Regulated diversions totalled 218 GL, consisting of 202 GL diversions in the Lower Namoi regulated river, 4 GL in the Upper Namoi regulated river and 12 GL in the Peel regulated river. Diversions for irrigation in the combined Namoi-Peel regulated systems totalled 208 GL. With improvements in allocations in time for the peak irrigation season, diversions in the Namoi regulated river during 2016/17 increased significantly from the previous year.

Similar to the Border Rivers and Gwydir valleys, a continuous accounting system is used for general security licences in the regulated section of the Lower Namoi Valley. Incremental increases saw total general security allocations in the Lower Namoi for this water year

equivalent to 125% of entitlement. Account and use limits apply to general security licences in the Lower Namoi.

In the Peel and Upper Namoi regulated rivers, general security licences are managed under annual accounting, with 2016/17 total allocations of 100% for both regulated systems. All higher priority licences throughout the Namoi and Peel valleys received 100% allocations for 2016/17.

4.5 Macquarie / Castlereagh

Within the Macquarie/Castlereagh valley consumptive diversions for 2016/17 totalled 211 GL. This includes an estimated average use of 35 GL of unregulated river diversions that are not currently metered and 6 GL of unregulated metered diversions under the Fish River Water Supply Scheme. Included in the Fish River diversions is 2 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 170 GL, including 157 GL diversions for irrigation; the bulk of which (155 GL) was in the Macquarie regulated river water source. This compares to total regulated diversions in 2015/16 of just 90 GL.

General security licences in the Macquarie and Cudgegong regulated rivers received an allocation equivalent to 100% of entitlement for the year. During September-October 2016, significant inflows to Burrendong Dam filled the storage to beyond its full supply capacity. Water held in Macquarie general security and high security individual water accounts spilled and all accounts then reset to 100% allocation under the relevant provisions in the water sharing plan. No forfeiture and reset of accounts occurred in the Cudgegong regulated river.

4.6 Barwon – Upper Darling

Consumptive diversions in the Barwon-Darling during 2016/17 totalled 299 GL, including metered extraction of 297 GL for irrigation.

Whilst all licence categories received 100% allocations for 2016/17, it should be noted that the Barwon–Darling is an unregulated system, i.e., water is not held in a headwater storage and the opportunity to take water is dependent on gauged flows in the river reaching licenced 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.

As shown in **Table 1**, the Barwon-Darling and Lower Darling valleys are treated as one valley for Cap auditing purposes. The 2016/17 combined Cap credit is 34 GL, with a cumulative Cap credit of 629 GL.

4.7 Lachlan

In the Lachlan valley consumptive diversions totalled 186 GL for 2016/17 including an estimated average use of 15 GL of unregulated river diversions that are not currently metered. Regulated diversions in the Lachlan and Belubula regulated rivers totalled 171 GL. Regulated diversions for irrigation totalled 158 GL in the Lachlan regulated river and 2 GL in the Belubula regulated river.

Total general security allocations in the Lachlan and Belubula regulated rivers were equivalent to 131% and 53% of entitlement respectively in 2016/17. There is an annual take limit equivalent to 100% of entitlement plus adjustment for trades for general security

licences in the Lachlan and Belubula regulated rivers. Extensive flooding occurred in the Lachlan valley downstream of Wyangala Dam during 2016/17 and dam airspace operations triggered water sharing plan rules whereby water held in individual accounts was withdrawn and reset.

4.8 Murrumbidgee

The 2016/17 consumptive diversions in the Murrumbidgee valley totalled 1,639 GL including an estimated average 42 GL diversions by unregulated river licences which are not currently metered. Regulated diversions totalled 1,597 GL, including diversions under supplementary access licences and supplementary (Lowbidgee) access licences of 107 GL and of 39 GL respectively. This represents a 25% increase from 2015/16 in regulated diversions in the Murrumbidgee regulated river.

Incremental increases to allocations throughout the first half of the water year saw full general security allocations (equivalent to 100% of entitlement) reached in November 2016. Net consumptive temporary trade from the Murrumbidgee valley to other valleys in the southern Basin during 2016/17 was 47 GL.

4.9 Lower Darling

In the Lower Darling consumptive diversions totalled 8 GL in 2016/17. This is down slightly from the previous year. However, environmental water use in the Lower Darling increased dramatically with 183 GL use in 2016/17 compared to zero environmental water use in the 2015/16 water year.

Net consumptive temporary trade into the Lower Darling during 2016/17 was 25 GL, with net environmental temporary trade into the Lower Darling of 133 GL.

With storage levels improving in the Menindee Lakes, general security allocations rose to the maximum of 100% of entitlement in October 2016.

For Cap auditing purposes the Lower Darling and Barwon-Darling are treated as one valley. The 2016/17 combined Cap credit is 34 GL, with a cumulative Cap credit of 629 GL.

4.10 NSW Murray

Consumptive diversions for the NSW Murray valley totalled 1,175 GL for 2016/17, including an estimated average of 28 GL diversions by unregulated river licences which are not currently metered. This is a 64% increase in consumptive diversions from the 2015/16 water year and reflects the significant improvement in water availability during 2016/17.

Regulated diversions for irrigation totalled 1,117 GL. This included 88 GL of supplementary diversions, up from zero the previous year.

General security licence holders in the NSW Murray regulated river commenced the water year with zero allocation but rose to 100% in February 2017. Net consumptive trade out of the Murray to other systems in the southern basin during 2016/17 totalled 99 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* (Cth), including accounting against Cap while Schedule E remains current. The reporting requirements under s71 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. Utilising the best available information for 2016/17, 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 BLR in the relevant water sharing plans 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 number, the long-term estimate of floodplain harvesting, estimated by the MDBA, has been included in the s71 reports for permitted take and actual take for the SDL resource units where floodplain harvesting applies. The Healthy Floodplains Project, currently underway in NSW, includes the creation of entitlements for floodplain harvesting and will enable future reporting consistent with s71 annual accounting processes.

6. Environmental water

Held environmental water usage in NSW totalled 1,044 GL during 2016/17. This was up 177% compared to 2015/16, reflecting the improved water availability compared to the previous few years.

Table 2 shows the 2016/17 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 2016.

Similar to past years, the majority of the total HEW use for the year occurred in the Murrumbidgee and NSW Murray valleys which together accounted for approximately 70% of all HEW use in the NSW portion of the MDB. This percentage is down slightly on the previous year (80% in 2015/16), with significant increased HEW use in the Lower Darling, Macquarie, Namoi and Gwydir valleys contributing more to total NSW use.

2016/17 was the first water year in which HEW usage has been recorded in the Lower Namoi and Peel since licences were acquired for the environment in those valleys. Recorded HEW use in the Lachlan was down on the previous year which could be due in part by the alternative environmental benefit provided by flows from dam spills and downstream flooding in the Lachlan valley during 2016/17.

Table 2. Summary of 2016/17 held environmental water use (surface water) in NSW

NSW valley / SDL resource unit	HEW Entitlement (GL)	HEW Use 2016/17 (GL)
Intersecting Streams	18	0
NSW Border Rivers	3	0
Gwydir	136	26
Namoi/Peel	11	9
Macquarie/Castlereagh	184	63
Barwon-Darling	28	0
Lachlan	127	36
Murrumbidgee	1048	365
Lower Darling	301	183
NSW Murray	620	363

In NSW planned environmental water (PEW) may be either rules-based or managed in a specified account similar to water accounts for other (licensed) water users. Examples of rules-based 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); generally targeting specific environmental assets such as the Gwydir Wetlands and the Macquarie Marshes. Releases from stimulus flow accounts, such as in the Border Rivers usually target a specific reach of the river or environmental benefit downstream of the storage.

Account -based PEW usage for NSW totalled approximately 315 GL for 2016/17. This is up from a total of 140 GL for NSW in 2015/16. **Table 3** outlines the volume of account based PEW available and used in each regulated river valley/SDL resource unit where PEW accounts exist. The relevant regulated river WSP details the rules around the management and use of PEW accounts.

With the exception of the Border Rivers and the Lower Darling, usage was recorded for account-based PEW in all other valleys. In accordance with clause 31 (2) of the *Water Sharing Plan for the Peel Valley Regulated, Unregulated, Alluvium and Fractured Rock Water Sources 2010*, an ECA is now set aside in Chaffey Dam following the dam's upgrade and increased full supply capacity of 102 GL.

Table 3. Summary of 2016/17 planned environmental water use (account-based) in NSW regulated rivers

NSW valley / SDL resource unit	PEW Available 2016/17 (GL)	PEW Use 2016/17 (GL)
NSW Border Rivers	6	0
Gwydir	91	21
Namoi/Peel	5	5
Macquarie/Castlereagh	160	26
Lachlan	40	20
Murrumbidgee	318	158
Lower Darling	30	0
NSW Murray	295	84

7. Progress of water reform

During the 2016/17 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. Officers from across Lands and Water actively participated in a range of interjurisdictional working groups under the Basin Plan Implementation Committee and continued to progress towards the development and accreditation of water resource plans by 1 July 2019.