

## **2013/14 WATER USE IN NEW SOUTH WALES**

### **4.1 Water Management Overview**

The 2013/14 water year began with water levels in water storages below that of recent years corresponding to reduced levels of water availability. Continued hot and dry conditions in 2013/14 resulted in periods of low inflows in many valleys and an increased demand for water. Prevailing conditions across much of the Murray-Darling Basin during the water year ensured that many storages finished the year with water levels well short of the previous water year.

New South Wales continued to implement the Murray-Darling Basin Ministerial Council Cap on diversions. The cumulative diversions since the commencement of the Cap accounting in 1997/98 are below Cap in all NSW valleys.

Throughout 2013/14, NSW also made further progress towards accreditation of valley Cap models with the Barwon-Darling valley Cap model now accredited and the NSW Border Rivers Cap model the only remaining Cap model for major river systems to be presented for accreditation.

During the year, New South Wales continued to develop and implement water sharing plans for rivers and groundwater systems. Since October 2012, all New South Wales surface water sources in the Murray-Darling Basin have been covered by a water sharing plan. Valley Water Sharing Plans are the primary instrument for sharing and managing water resources in NSW.

Each Plan includes a long-term diversion limit (the Plan limit) and rules for adjusting water-sharing if diversions grow beyond the limit set out in the Plan. In all major regulated rivers, in the NSW portion of the Basin, these Plan limits are below Cap. The Plan rules are intended to produce environmental benefits, while also ensuring that long-term average diversions do not exceed those which would result from 1993/94 development levels.

### **4.2 Water Use Overview**

The 2013/14 water year commenced with generally lower water levels in water storages. Drier conditions and low inflows resulted in reduced allocations in most valleys with total diversions in 2013/14 being 5,063 GL compared to 6,327 GL in the previous year as reported in the Water Audit and Monitoring Report 2012/13.

Environmental water use in 2013/14 was 363 GL compared to 490 GL in 2012/13. Most of this environmental water use (64%) was in the Murray and Murrumbidgee Valleys.

Assessment of Cap performance for the 2013/14 water year using computer simulation models indicated that actual diversions were significantly less than the modelled Cap target for most valleys. The exceptions being the Namoi/Peel and the Macquarie/Castlereagh/Bogan which had a debit of 15 GL and 23 GL respectively, but all still maintain a cumulative credit. The cumulative diversions in the Barwon-Darling component of the combined Barwon-Darling and Lower Darling valley are 119 GL in credit.

All diversions are reported using a July to June water year, and are in accordance with the MDBA Register of Diversion Definitions to the extent that availability of information allows.

### **4.3 Environmental Water Recovery**

This report includes information on water recovered for the environment from either water savings projects or the purchase of water entitlements. Over the last few years substantial volumes of water entitlements have been recovered through various programs. The entitlements reported here are those that are formally owned by government for environmental use.

However, there is additional water made available for environmental purposes through the rules of Water Sharing Plans within NSW. These significant volumes of water are not included in this report, as they do not relate to entitlements and are not accountable under Cap. Whilst work is underway to appropriately reflect these volumes of water for the environment in future reporting, readers need to be aware that this reporting does not yet represent all water committed to environmental purposes within NSW.

### **4.4 Border Rivers**

A Continuous Accounting allocation system has been used in the NSW Border Rivers since 2001/02. The system provides general security licensees with an individual account, which can be credited with water up to 100% of entitlement and allows the continuous carryover of any unused water. Throughout the year and dependent on resource availability, licensees may receive an allocation increment (Available Water Determination), however the maximum that an individual general security licensee can hold in their account at any time is 100%. In any particular season, the volume of water that each licensee can use from their account is also limited to a maximum of 100% plus adjustments for water traded in.

NSW Border Rivers general security licensees commenced the season with an average of 71% of licensed entitlement in individual accounts, and received further increases to allocations throughout the year as more water became available. Total cumulative allocation announcements for B class general security licences reached 6%. There was a net inter-valley transfer of 27 GL out of the NSW Border Rivers to the Queensland Border Rivers.

Within the regulated river system a total of 169 GL was diverted during 2013/14 in the Border Rivers regulated system, including 8 GL of diversions by supplementary access licences.

Diversions in the unregulated sections of the catchment are not currently monitored in general. However, some users outside of the regulated system in the lower valley are metered. At the time of writing this information was unavailable. For the majority of unregulated users without meters, a volume of 23 GL, representing estimated average use, has been included as an estimate of unregulated diversions in 2013/14. This provided a total diversion of 192 GL from the NSW Border Rivers (Table 2).

NSW is preparing a Cap model report for submission to the MDBA for accreditation. Interim modelling results, subject to approval of the proposed Cap for the Border Rivers, indicate a long-term Cap of 234 GL and an adjusted 2013/14 Cap target of 250 GL. Modelled results also indicate a cumulative credit since 1997-98 of 559 GL.

#### **4.5 Gwydir**

A Continuous Accounting allocation system is used for general security licences in the regulated section of the Gwydir Valley which provides licensees with an individual account that can hold up to 150% of entitlement and allows continuous carryover of any unused water. At any time they may receive an additional allocation increment (dependent on resource availability) up to a maximum account limit of 150%. In any particular season, the volume of water that each licensee can use from their account is limited to a maximum of 125% of licensed entitlement with no more than 300% over any three years plus adjustments for water traded in.

The Gwydir Valley commenced the season with 108% of licensed entitlement in individual accounts, however no further allocations were received during the water year. Licences were limited by an account limit of 150% and a usage limit of 125% of licensed entitlement. Within the regulated river system a total of 377GL was diverted during 2013/14, including 8GL of diversions by supplementary access licences.

Diversions in the unregulated sections of the catchment are not currently monitored in general. However, some users outside of the regulated system in the lower valley are metered. At the time of writing, this information was unavailable. For the majority of unregulated users without meters, a volume of 44 GL, representing estimated average use, has been included as an estimate of unregulated diversions in 2013/14. This provided a total diversion of 421 GL for the Gwydir Valley (Table 2).

The Gwydir IQQM model has been accredited following independent review of the model. The Cap target is estimated for the regulated system each year using the Gwydir Valley IQQM. This target is the diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. It is not currently possible to assess a 2013/14 Cap target for the unregulated sections of the valley, and the estimated average annual unregulated diversion is also used to represent the unregulated Cap target each year. After adjustments for licences purchased for the environment were made, the overall Cap target for 2013/14 was 542 GL. Under the Murray-Darling Basin agreement, annual Cap performances are cumulated from the 1997/98 water year. For the period from 1997/98 this indicates a cumulative Cap credit of 392 GL (Table 4).

#### **4.6 Namoi/Peel**

A Continuous Accounting allocation system is used for general security licences in the regulated section of the Lower Namoi Valley, which provides

licensees with an individual account that can hold up to 200% allocation and allows continuous carryover of any unused allocation. At any time they may receive an allocation increment (dependent on resource availability) up to a maximum account limit of 200%. In any particular season, the volume of water that each licensee can use from their account is limited to a maximum of 125% of licensed entitlement with a maximum of 300% over any 3 years plus adjustments for water traded in.

All high security licences and general security licences in the regulated section of the Peel valley are managed using annual accounts, which forfeit their account balances at the end of each water year. The maximum allocation is 100% of licensed entitlement, which is 17 GL for High Security and 30 GL for General Security.

In 2013/14 Lower Namoi Valley general security licensees commenced with an average of 124% of licensed entitlement in individual accounts, and received a further 6% in allocation increases during the water year. Peel valley General Security licensees commenced the season with 45% allocation and received no further allocation increments during the water year. The Upper Namoi valley licensees commenced the season with 100% allocation.

Within the Namoi Peel regulated river systems a total of 292GL was diverted during 2013/14, with regulated river licences diverting 267 GL in the Lower Namoi Valley, 5 GL in the Upper Namoi Valley, and 21 GL in the Peel Valley. This includes supplementary access licence diversions of 17 GL in the Lower Namoi Valley during periods of high river flows when supplementary events were declared.

Diversions in the unregulated sections of the catchment are not currently monitored however a volume of 113 GL, representing estimated average use, has been included as an estimate of unregulated diversions in the Namoi and Peel Valleys. This provided a total diversion of 405 GL for the greater Namoi Valley (Table 2).

The Cap target is estimated for the regulated system each year using the Namoi Valley IQQM, which has been accredited for Cap purposes by the MDBA appointed independent auditor. This target is the estimated diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels.

An IQQM for the Peel Valley regulated system has also been developed and used to assess Cap performance. The Peel Valley IQQM has also been accredited following independent review of the model. It is not currently possible to assess a Cap target for the unregulated sections of the valley, and the estimated average annual unregulated diversion is also used to represent the unregulated Cap target each year. The combined Cap target for 2013/14 was 390GL with no adjustments for licences purchased for the environment required in 2013/14. Under the Murray-Darling Basin agreement, annual Cap performances are cumulated from the 1997/98 water year. Since 1997/98, the Namoi/ Peel Cap valley has a cumulative Cap credit of 312 GL (Table 4).

#### **4.7 Macquarie/ Castlereagh/ Bogan**

Licensees with general security licences in the regulated section of the Macquarie Cudgegong Valley received an initial allocation of 0% for 2013/14.

At the commencement of the water year in the Macquarie River, carryover equated to 44% of general security allocations and carryover for Cudgegong users was equivalent to 170% of entitlement. Further allocation increases totalling 6% of entitlement were received through the water year.

Within the Macquarie Cudgegong regulated river systems a total of 248GL was diverted during 2013/14. There were no diversions by supplementary access licences in the Macquarie Valley during 2013-14.

Diversions in the unregulated sections of the catchment are not currently monitored in general. However, some users outside of the regulated system in the lower valley are metered. At the time of writing this information was unavailable although the volume is not thought to be significant. For the majority of unregulated users without meters, a volume of 35 GL, representing estimated average use, has been included as an estimate of diversions in 2013/14. In addition to this, 9GL of metered use was recorded in the Fish River water source. This provided a total diversion of 292GL in the Macquarie Valley (Table 2).

The Macquarie Valley IQQM model has been accredited following independent review of the model. The Cap target is estimated for the regulated system each year using the Macquarie Valley IQQM. This target is the diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. It is not currently possible to assess a Cap target for the unregulated sections of the valley, and the estimated average annual unregulated diversion is also used to represent the unregulated Cap target. After adjustments for licences purchased for the environment were made, the overall Cap target for 2013/14 was 269 GL. Under the Murray-Darling Basin agreement, annual Cap performances are accumulated from the 1997/98 water year. For the period since 1997/98 this indicates a cumulative Cap credit of 954 GL (Table 4).

#### **4.8 Barwon-Upper Darling**

The total volume of extractions in the Barwon-Darling in 2013/14 was 78 GL.

The Cap target is estimated each year using the Barwon-Darling Valley IQQM, which has now been accredited by the independent auditor. This target is the diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. The Cap target for 2013/14 was 118GL – no trade or environmental adjustments to the target were necessary.

Under the Murray-Darling Basin agreement, annual Cap performances are cumulated from the 1997/98 water year and since this point in time the cumulative Cap credit for the Barwon-Upper Darling is 119 GL. For Cap auditing purposes however, the Barwon-Darling and Lower Darling valleys are treated as one valley. The combined annual Cap performances totalled from the 1997/98 water year show a cumulative Cap credit of 535 GL (Table 4).

With the commencement of a Water Sharing Plan for the Barwon-Darling in October 2012, access was granted to previously suspended carry over water in individual accounts. The commencement of the Water Sharing Plan also introduced a rule which limits annual water use to 300% of licensed

entitlement with adjustments for trade. The 2013-14 water year was the first water year in which the Water Sharing Plan operated for the full year.

#### **4.9 Lachlan**

The Lachlan valley general security water users commenced the 2013/14 water year with zero initial allocation. However general security carryover equated to 81% of entitlement in the Lachlan River and 83% in the Belubula River. No allocations were granted for general security licences during 2013/14.

Other high priority licences including those for Domestic and stock purposes, town water supplies and high security entitlements all benefited from the maximum 100% initial allocation.

A total of 225 GL was diverted from the Lachlan/ Belubula regulated river system during the 2013/14 water year. Diversions in the unregulated sections of the catchment are not currently monitored and, a volume of 15 GL, representing estimated average use, has been included as an estimate of unregulated diversions in the Lachlan Valley. This provided a total diversion of 241 GL for the Lachlan Valley (Table 2).

The Cap target for the year is estimated for the regulated system each year using the Lachlan Valley IQQM, which was the first model to be accredited for Cap purposes by the independent auditor. This target is the estimated diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. It is not currently possible to assess a 2013/14 Cap target for the unregulated sections of the valley, and the estimated average annual unregulated diversion is also used to represent the unregulated Cap target each year. After adjustments for licences purchased for the environment were made, the overall Cap target for 2013/14 was 368 GL. Under the Murray-Darling Basin agreement, annual Cap performances are accumulated from the 1997/98 water year, and the Lachlan valley has accumulated a Cap credit of 412 GL (Table 4) over this period.

#### **4.10 Murrumbidgee**

Blowering and Burrinjuck Dams in the Murrumbidgee commenced the 2013/14 water year with 71% and 42% of capacity respectively. Initial allocations at the start of the year for general security water users were 18%. Increases to allocations throughout the year, saw general security water allocations rise to 63% in April.

A total of 1,534 GL was diverted from the Murrumbidgee regulated river system during 2013/14 including supplementary access licence diversions of 89 GL. There were total diversions of 257 GL into the Lowbidgee area.

Diversions in the unregulated sections of the catchment are not currently monitored and, a volume of 42 GL, representing estimated average use, has been included as an estimate of unregulated diversions in the Murrumbidgee

Valley. This provided a total diversion of 1,834 GL for the Murrumbidgee Valley (Table 2). Net trade from the Murrumbidgee valley to other valleys in the southern Basin during 2013/14 was 72 GL.

The Cap target is estimated for the regulated system (including Lowbidgee) each year using the Murrumbidgee Valley IQQM, which has been accredited for Cap purposes by the Authority. This target is the diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. It is not currently possible to assess a 2013/14 Cap target for the unregulated sections of the valley, and the estimated average annual unregulated diversion is also used to represent the unregulated Cap target each year.

After adjustments for inter-valley trade and licences purchased for the environment were made, the overall valley Cap target for 2013/14 was 2,162 GL. Under the Murray-Darling Basin agreement, annual Cap performances are cumulated from the 1997/98 water year, and the Murrumbidgee Valley has accumulated a Cap credit of 1,584 GL (Table 4) over this period.

#### **4.11 Lower Darling**

All licence categories in the Lower Darling received an initial 100% allocation at the start of the 2013/14 water year. This included supplies for towns, stock and domestic users, as well as high and general security purposes. Net trade into the Lower Darling during 2013/14 was 56 GL.

A total of 102 GL was diverted from the Lower Darling regulated river system during the 2013/14 water year, with regulated river licences accounting for all of the diversions.

The Cap target is estimated for the regulated system each year using the Murray Simulation Model. This target is the diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. After adjustments for inter-valley trade and licences purchased for the environment were made, the Cap target for 2013/14 was 133 GL. Under the Murray-Darling Basin agreement, annual Cap performances are cumulated from the 1997/98 water year, and the Lower Darling has accumulated a cumulative Cap credit of 416 GL over this period.

For Cap auditing purposes however, the Barwon-Darling and Lower Darling valleys are treated as one valley. The combined annual Cap performances totalled from the 1997/98 water year show a cumulative Cap credit of 535 GL.

#### **4.12 Murray**

Water availability for general security water users in the Murray commenced the water year with initial water allocations of 38%. Increases to allocations throughout the year saw general security water allocations rise to 100% on 1<sup>st</sup> October. A total of 1,467 GL was diverted in NSW from the Murray regulated river system during the 2013/14 water year including supplementary access licence diversions of 123 GL. Diversions in the unregulated sections of the catchment are not currently monitored and, a volume of 28 GL, representing

estimated average use, has been included as an estimate of unregulated diversions in the NSW Murray Valley. This provided a total diversion of 1,494 GL for the NSW Murray Valley (Table 2).

The Cap target is estimated for the regulated system each year using the Murray Monthly Simulation Model that has been accredited following the independent review of the model. This target is the diversion that would have occurred during 2013/14 with management rules and irrigation development at 1993/94 levels. It is not currently possible to assess a 2013/14 Cap target for the unregulated sections of the valley, and the estimated average annual unregulated diversion is also used to represent the unregulated Cap target each year. After adjustments for inter-valley trade and licences purchased for the environment were made, the overall valley Cap target for 2013/14 was 1,644 GL. Under the Murray-Darling Basin Agreement, annual Cap performances are cumulated from the 1997/98 water year and the Murray has accumulated a cumulative Cap credit of 1,124 GL (Table 4) over this period.