

ANNUAL REPORT 2012-13

COMMONWEALTH ENVIRONMENTAL WATER



Outcome 6: COMMONWEALTH ENVIRONMENTAL WATER

Protection and restoration of environmental assets through the management and use of Commonwealth environmental water.

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Cover image: Wilgara Ramsar Wetlands within the Macquarie Marshes, New South Wales.
Image by Daniel Rothenfluh, Commonwealth Environmental Water Office.

Summary

The Commonwealth Environmental Water Holder (CEWH) is a statutory position established by the *Water Act 2007* to manage the Commonwealth environmental water holdings. Commonwealth environmental water is made available to protect and restore rivers, wetlands and other environmental assets in the Murray–Darling Basin (the Basin). The CEWH leads and is supported by the Commonwealth Environmental Water Office (the office). Mr David Parker, Deputy Secretary, held the position of CEWH from May 2012 until I started in the role in December 2012.

On 22 November 2012 the Murray–Darling Basin Plan (the Basin Plan) was signed into law. The CEWH must perform its functions and exercise its powers consistent with and in a manner that gives effect to the Basin Plan, and must manage the water holdings in accordance with the Basin Plan's environmental watering plan. The office successfully commenced the transition to meet the requirements of the Basin Plan during 2012–13.

The 2012–13 year saw a return to drier conditions across most of the Basin¹. Commonwealth environmental watering in 2012–13 continued to build on the ecological recovery of riverine and wetland communities following the wetter conditions experienced in Basin catchments from 2010 to early 2012.

Since 2009, 2505 gigalitres of Commonwealth environmental water has been delivered for the environment across the Basin. During 2012–13:

- the total volume of Commonwealth environmental water in Commonwealth accounts was 1676 gigalitres
- a total of 1272 gigalitres was delivered
- after evaporative deductions, a total of 393 gigalitres of water (23 per cent of the total volume available in Commonwealth accounts) was carried over into 2013–14
- Commonwealth environmental water contributed to 34 actions across a total of 15 catchments in the Basin
- 240 gigalitres of return flows from catchments of the Southern Connected Basin were used to achieve multi-site environmental outcomes
- watering contributed to achieving significant environmental outcomes in the Basin, including:
 - provided river flows that supported good water quality for the environment and water users
 - connected rivers to floodplains, which helped maintain food chains and supported fish movement
 - filled wetlands that supported native fish, birds and other native animals
 - supported the recovery of the environment following the drought, as well as helped build resilience in preparation for the next drought.

In 2012–13 a number of activities important to the successful implementation of Commonwealth environmental watering were completed or progressed:

- the first partnership agreement for the use of Commonwealth environmental water by a non-government organisation (Nature Foundation South Australia) was entered into, and watering was undertaken
- the Australian National Audit Office (ANAO) assessed the effectiveness of the office's administration of environmental water holdings and found the office's strategies for managing environmental water are generally sound
- water use planning documents for the ten regions of the Basin for both the 2012–13 and 2013–14 water years were developed in collaboration with the Murray–Darling Basin Authority (MDBA), state agencies and local communities and were publically released
- the Commonwealth Environmental Water Office 2011–12 outcomes report was released
- the office continued to actively participate in state and local environmental water planning and management committees across the Basin
- the framework for determining Commonwealth environmental water use was updated to align with the Basin Plan

¹ Bureau of Meteorology Murray–Darling Rainfall Deciles 1 July 2012 – 30 June 2013.

- hosting arrangements for placing six Commonwealth environmental water local engagement officers were determined, with recruitment expected to occur in 2013–14
- the office engaged with the National Native Title Council to support the National Cultural Flows Research Project, which will inform the office as to how environmental water could be applied in partnership with Indigenous communities to help contribute to achieving mutual environmental and cultural outcomes.

The office continues to progress the Commonwealth environmental water monitoring, evaluation, reporting and improvement framework, which will allow the outcomes of environmental water use to be assessed in the short, medium and long term. This work is critical to adaptive management and to ensuring that the best environmental outcomes are being achieved through the efficient and effective use of Commonwealth environmental water. The integration of the Environmental Water Management System and the Environmental Assets Database into the daily operations of the office is also expected to improve the efficiency of many of its business activities, including Basin Plan reporting requirements.

David Papps
Commonwealth Environmental Water Holder

July 2013

Progress against priorities for 2012–13

2012–13 Portfolio Budget Statements key performance indicators

The office has met its key performance indicators identified in the 2012–13 Portfolio Budget Statements for the Australian Government Department of Sustainability, Environment, Water, Population and Communities, demonstrating:

- the effective use of Commonwealth environmental water for the protection and restoration of environmental assets as demonstrated in the Commonwealth Environmental Water Office 2011–12 Outcomes Report (published in March 2013).
- engagement with local communities and water delivery and water holding partners, having regard to local experience, knowledge and perspectives when undertaking environmental watering. This has been demonstrated by the development of annual water use options plans, regular attendance of meetings and site visits in Basin catchments and commencing the establishment of a network of Commonwealth Environmental Water Office local engagement officers.

Priorities for 2012–13

The Commonwealth Environmental Water Office 2012–13 business plan identified the office priorities for 2012–13, which included and built upon the program deliverables outlined in the 2012–13 Portfolio Budget Statements. The progress and outcomes achieved against these priorities are outlined below.

Management of Commonwealth environmental water in 2012–13

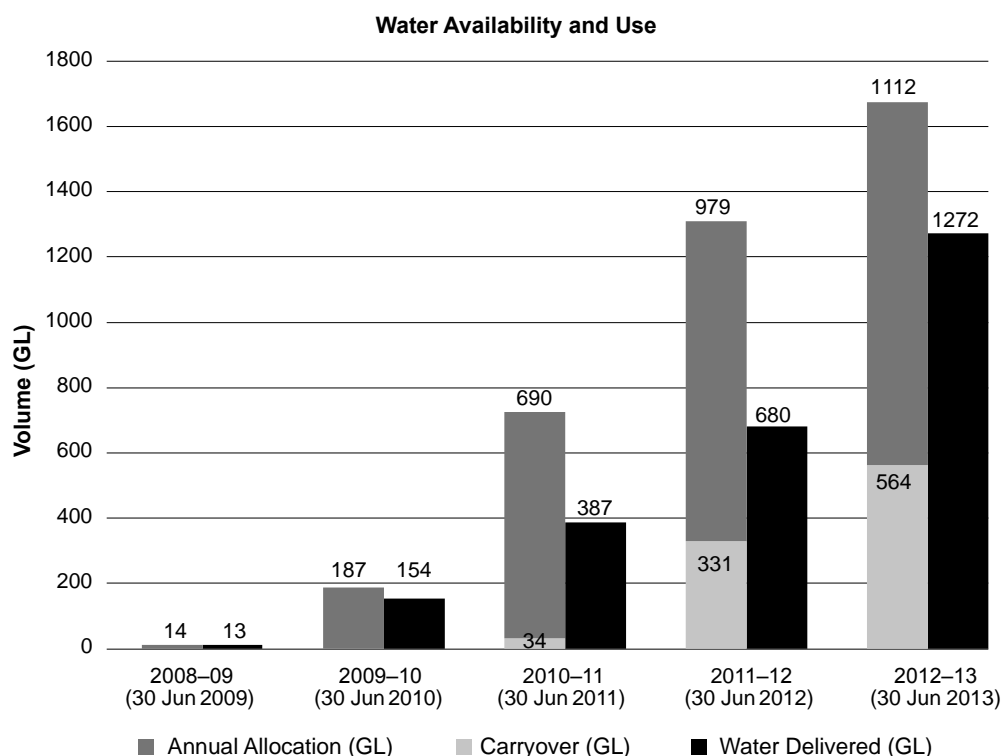
Commonwealth environmental water made available for use

During 2012–13 for Commonwealth environmental water:

- the total amount of water in Commonwealth accounts was 1676 gigalitres
- a total of 1272 gigalitres was delivered
- a total of 393 gigalitres of water (23 per cent of the total volume available in Commonwealth accounts) was carried over into 2013–14—a reduction of 222 gigalitres from the carryover on 1 July 2012.

Commonwealth environmental water availability and use since 2008–09 is shown in Figure 1. The Commonwealth environmental entitlement holdings in the Basin grew from 1368 gigalitres to 1629 gigalitres during 2012–13 (at 30 June 2013—see Appendix A). These holdings will deliver, on average, 1190 gigalitres of water to the environment each year. Subsequent to the Basin Plan being made, the office delivered Commonwealth environmental water consistent with Basin Plan obligations.

Figure 1: Commonwealth environmental water availability and use since 2008–09



Note:

Data have been updated since previous annual reports in accordance with revised accounting treatment of some entitlements and water use. Evaporative losses have been deducted from carryover figures.

Catchment summaries

Drier conditions returned to the Basin in 2012–13². Commonwealth environmental watering in 2012–13 continued to build on the ecological recovery of riverine and wetland communities following the wetter conditions experienced in Basin catchments from 2010 to early 2012.

Watering actions throughout the Basin in 2012–13 were managed and delivered with the assistance of partners including water management authorities, local advisory groups, landholders and scientists. Commonwealth environmental water was usually delivered in conjunction with state government environmental water.

During 2012–13 the office, with the assistance of its partners, contributed to the following key environmental watering achievements:

- coordinated environmental water planning and delivery with other state and local environmental water holders, water managers and infrastructure operators
- worked with local communities and advisory groups to plan for and manage Commonwealth environmental water
- generated ecological outcomes in response to Commonwealth environmental watering, which were supported by observations and intervention monitoring.

Commonwealth environmental water was used for the first time in a number of locations, including the Namoi River, the Mallowa wetlands in the Gwydir catchment, Whirlpool Corner, Disher Creek and Berri Basin in South Australia, Tuppal and Gwynnes Creeks of the Edward–Wakool catchment and wetland areas of the western lower Murrumbidgee floodplain near Balranald. Return flows totalling 240 gigalitres from catchments of the Southern Connected Basin were used to achieve multi-site environmental outcomes. The office also undertook the first use of Commonwealth environmental water as part of a long-term agreement with a non-government organisation (the Nature Foundation South Australia) at Clarks Floodplain near Berri.

A summary of the volume of Commonwealth environmental water delivered in the Basin during 2012–13 is provided in Appendix B. More detail on each Commonwealth watering event undertaken during 2012–13 is provided in Appendix C.

² Bureau of Meteorology Murray–Darling Rainfall Deciles 1 July 2012 – 30 June 2013.

Carryover of Commonwealth environmental water in 2012–13

Carryover is a water management mechanism available in regulated parts of the Basin. It entitles water licence holders to defer use of some water that is available in one year until the following year, when it may be of more benefit.

The Commonwealth carried 393 gigalitres (net, or 23 per cent of the Commonwealth water available in accounts) over from 2012–13 into 2013–14, which was a smaller volume of carryover than in the prior year because water use in the year exceeded allocations (see Appendix D). This proportion of carryover is slightly lower than that of other water users. The water is held across nine catchments and is equivalent to about 1.8 per cent of the total public storage capacity across the Basin. In 2013–14, 43 per cent of the carryover will be held in the Southern Connected Basin and 57 per cent of the carryover will be held in the Northern Basin.

Trade of Commonwealth environmental water

No trade was conducted in 2012–13.

Monitoring of Commonwealth environmental watering

In 2012–13 short term (one year) targeted intervention monitoring projects were commissioned by the office and undertaken in key areas across the Basin including the Murrumbidgee, Edward–Wakool, Lower Murray and Goulburn catchments. More detail about these projects is included in Table 1. Results of monitoring Commonwealth environmental water actions are published on the office's website and demonstrate the environmental benefits of these actions.

Table 1: Summary of Commonwealth environmental water short-term ecological monitoring projects commenced in 2012–13 (results expected to be published in early 2014)

CATCHMENT	SITE	INDICATORS OF ECOLOGICAL RESPONSE TO ENVIRONMENTAL WATER	ORGANISATION	
			LEAD	PARTNER
Goulburn-Broken	Goulburn River and Broken Creek	Primary productivity, fish, macroinvertebrates, habitat, sediment, vegetation and water quality.	University of Melbourne (Murray–Darling Freshwater Research Centre oversight)	Monash University, Arthur Rylah Institute
Murray	Edward–Wakool River system	Water quality, organic matter, zooplankton, macroinvertebrates, phytoplankton, biofilms, fish and frogs.	Charles Sturt University	NSW Office of Environment and Heritage, Monash University, NSW Department of Primary Industry (DPI), Murray Catchment Management Authority (CMA), Wakool Landholders
Murrumbidgee	Murrumbidgee River and adjacent wetlands	Biofilms, vegetation macroinvertebrates, fish, frogs, water quality, waterbirds, zooplankton and carbon/nutrients.	Charles Sturt University	NSW Office of Environment and Heritage, University of NSW, NSW Department of Primary Industries, Murrumbidgee Catchment Management Authority
Lower Murray	Murray River channel, Lower Lakes, Coorong	Fish (spawning, assemblage, recruitment, movement and natal origin); water quality (salt and nutrient export); larval fish food resources; fringing wetland connectivity and frogs.	South Australian Research and Development Institute	University of Adelaide, University of Western Australia, CSIRO

Administration of Commonwealth environmental water

Directions given to the Commonwealth Environmental Water Holder

No directions were given in 2012–13 to the CEWH by either the minister or the secretary of the department.

Australian National Audit Office report

In May 2013 the Australian National Audit Office (ANAO) completed audit report No.36 2012–13 performance audit: Commonwealth environmental watering activities, which assessed the effectiveness of the office's administration of environmental water holdings. The audit examined whether the office's:

- governance arrangements are appropriate to effectively manage and report on the office's environmental watering activities
- engagement of all relevant stakeholders effectively facilitates the management of the office's environmental watering activities
- arrangements to plan and target available Commonwealth environmental water at priority environmental assets are effective
- arrangements to deliver Commonwealth environmental water to the designated environmental assets are effective and timely
- monitoring and evaluation activities effectively identify the outcomes achieved from the office's environmental watering activities, and influence future water use decisions.

The ANAO found that the strategies for managing Commonwealth environmental water are generally sound and made no formal recommendations for change, instead offering a number of suggestions for improvement. The office accepted those suggestions. Measures that the office is putting in place include:

- improved stakeholder engagement through the employment of local engagement officers and the development of new communications and stakeholder engagement strategies
- establishing a new water holdings register
- engaging in longer term portfolio planning
- undertaking more regular reviews of performance against the office's business plan
- implementing a standard framework for determining operational monitoring requirements and preparing a standardised acquittal report for each watering action.

Murray–Darling Basin Plan and environmental watering plan

In November 2012 the Basin Plan came into effect under the *Water Act 2007*. The CEWH must manage the Commonwealth's environmental water holdings in accordance with the Basin Plan's environmental watering plan.

The office worked closely with the Murray–Darling Basin Authority to successfully align the planning and use of Commonwealth environmental water with the requirements of the environmental watering plan, including:

- updated the Framework for Determining Commonwealth Environmental Water Use (including revised criteria for assessing options for Commonwealth environmental water use) so that decisions on Commonwealth water use are consistent with the requirements of the Basin Plan
- developed the Commonwealth Environmental Water Annual Use Options 2013–14 (published in June 2013) to contribute to achieving the environmental watering plan's overall objectives
- reported on how 2012–13 watering actions have contributed to achieving the environmental watering plan objectives (Appendix C, tables A3–A13).

Management of the portfolio of Commonwealth environmental water

In August 2012 the office published its first annual carryover report, which described Commonwealth environmental water carryover from 2011–12 into 2012–13. The annual Commonwealth Environmental Water Carryover Report for 2012–13 into 2013–14 has recently been published on the department's website.

Statements related to management of the portfolio of Commonwealth environmental water were published on the office website in September and December 2012 and March 2013. Information about Commonwealth environmental water holdings was updated each month on the office website.

The office is developing protocols for water trading to ensure compliance with the Basin Plan trading rules. Water use planning documents for 2012–13 and 2013–14 were produced and made available on the office's website.

Risk management for Commonwealth environmental water

In 2011–12 the office engaged the Australian Government Solicitor to identify and assess the sources of the office's strategic legal and governance risks and identify appropriate treatments where current controls were considered insufficient to manage risks rated medium or higher. The assessment was finalised in June 2012 and in 2012–13 the office implemented and updated its risk mitigation and treatment plan for its activities in line with the Australian Government Solicitor's recommendations.

Environmental water shepherding

Water shepherding relates to the protection of Commonwealth environmental water from extraction as it flows downstream. A key focus of water shepherding is to ensure that third-party interests are neither increased nor diminished. This includes irrigators within a particular catchment and downstream.

The report Proposed Arrangements for Shepherding Commonwealth Environmental Water in New South Wales Outcomes of Consultation was published by the New South Wales Office of Water in November 2012. A preferred option for shepherding Commonwealth environmental water in the Barwon–Darling River upstream of Menindee Lakes (including shepherding of Commonwealth environmental water sourced from Queensland and New South Wales regulated and unregulated tributaries) was identified. This work is expected to continue in 2013–14, with consideration of three options to shepherd Commonwealth environmental water through the Menindee Lakes.

Providing information

The office remains committed to providing up-to-date information on its activities. The website www.environment.gov.au/ewater is the office's primary tool for making information publicly available. It includes information about the holdings, management and use of Commonwealth environmental water in each Basin catchment, frameworks for making water use decisions and managing water, and monitoring projects and outcomes. It also provides an avenue for people to give suggestions on the potential use of Commonwealth environmental water and makes available reports drafted or commissioned by the office.

During 2012–13 the following reports on the activities of the office were produced:

- Annual report 2011–12 Commonwealth environmental water (in Department of Sustainability, Environment, Water, Population and Communities Annual Report 2011–12).
- Commonwealth Environmental Water Office 2012–13 Business Plan.
- Commonwealth Environmental Water Office 2011–12 Outcomes Report.
- Murray–Darling Basin Environmental Water Holders' Report.
- Commonwealth Environmental Water Portfolio Management Statements.
- Commonwealth Environmental Water Carryover from 2011–12 into 2012–13 Report.
- Commonwealth Environmental Water Annual Water Use Options Planning Documents for 2012–13 and 2013–14.
- Reports on Monitoring and Evaluation of Commonwealth Environmental Watering Commissioned by the Office.

The Commonwealth Environmental Water Office 2012–13 Outcomes Report is anticipated to be published by January 2014.

A subscription email database is another mechanism the office uses for providing interested parties with the latest information on Commonwealth environmental water management.

Working with and obtaining advice from others

In 2012–13 the office continued to focus on a range of stakeholder engagement activities, including:

- determined hosting arrangements for placing six Commonwealth Environmental Water Office local engagement officers, who are expected to be recruited in 2013–14
- actively sought input and feedback from stakeholders on governance, processes and decision making

- participated in planning processes, including regularly met with local partners and landholders on a catchment-by-catchment basis
- released publications and engaged in targeted consultation on issues including water use, water trade, carryover, and monitoring and evaluation.

The CEWH's decisions are informed by two advisory groups: the Commonwealth Environmental Water Scientific Advisory Panel, which met four times during 2012–13; and the Commonwealth Environmental Water Stakeholder Reference Panel, which met twice during 2012–13. More information about these panels and their members is available from the office's website.

The office also proposed establishing a Commonwealth Environmental Water Advisory Council during 2012–13. It is currently considering whether a committee or some alternative approach would provide the most efficient and effective access to specialist advice.

The office is looking to increase its engagement with Indigenous people in order to progress the potential opportunities for achieving mutual environmental and cultural outcomes, including engaging with groups such as the Northern Basin Aboriginal Nations and the Murray Lower Darling Rivers Indigenous Nations. The office is engaging with the National Native Title Council to support the National Cultural Flows Research Project. This multi-year project is expected to provide information on water requirements to meet cultural values and will help to inform the office as to how environmental water could be applied to help contribute to achieving mutual environmental and cultural outcomes.

The Commonwealth Environmental Water Holder and Commonwealth Environmental Water Office respectfully acknowledge the Traditional Owners, their Elders past and present, their Nations of the Murray–Darling Basin, and their cultural, social, environmental, spiritual and economic connection to their lands and waters.

The office remains committed to effective collaboration, engagement and sharing of information with a broad range of partners within the Basin community in relation to Commonwealth environmental water planning, management and monitoring, to improve environmental water outcomes. The office engages with many stakeholder groups and individuals including state government bodies, river operators, catchment management authorities, local environmental watering advisory groups, not-for-profit water and land management organisations, other holders of environmental water, landholders and the Murray–Darling Basin Authority.

The engagement activities outlined in this section are part of the office's approach to localism in the Basin. The office relies on input from Basin communities to inform its operations and is committed to improving the ability of local communities to become involved in environmental water management.

Business and information systems

Two new key information management systems are in the process of being established and rolled out to improve the efficiency the office's business activities, including Basin Plan reporting requirements:

- The Environmental Water Management System manages Commonwealth environmental water holdings information, providing financial and volumetric tracking of watering actions.
- The Environmental Assets Database, developed jointly by the office and the Murray–Darling Basin Authority, holds information on the management and health of environmental assets in the Basin and the use of Commonwealth environmental water to protect and restore the health of these assets.

Both databases are being integrated into the daily operations of the office.

Monitoring and evaluating the use of Commonwealth environmental water

In 2012–13 the office continued work on implementing the Commonwealth Environmental Water Monitoring, Evaluation, Reporting and Improvement Framework that will support the efficient and effective use of Commonwealth environmental water and demonstrate the achievement of environmental outcomes over the long term. Key elements of the framework are now in place and it will continue to be implemented as more water is delivered. The framework has been aligned with the Basin Plan's environmental watering objectives.

Each Commonwealth environmental watering action is monitored and reviewed from an operational perspective to ensure that water is delivered as planned and to help manage risks such as unintended inundation.

Targeted intervention monitoring is undertaken by scientists commissioned by the office to help understand environmental outcomes and inform water use (see 'Monitoring of Commonwealth environmental watering'). The focus of this monitoring is currently transitioning from short-term (one-year) projects to long-term (five-year) projects, which will commence in 2014–15.

The approach has a sound scientific basis. It will allow the office to interpret and translate the results of monitoring to other areas and identify the contribution of each project to the long-term Basin Plan objectives.

Environmental Water Holdings Special Account 2012–13

The Environmental Water Holdings Special Account is established under the *Water Act 2007* for the payment of costs, expenses and other obligations incurred in managing Commonwealth environmental water holdings. At the start of 2012–13 the special account balance was \$36.132 million. Funding of \$24.7 million was credited from the Sustainable Rural Water Use and Infrastructure Program to the account at the end of the financial year. As it was a high-use year, \$13.93 million was expended on annual water entitlement fees, allocation trading and delivery costs. At 30 June 2013 the special account balance was \$43.824 million (of which \$15.091 million has been committed for environmental watering actions and other projects). The key expenditure in 2012–13 is shown in Table 2.

Table 2: Environmental Water Holdings Special Account expenditure

CATEGORY OF EXPENSE	TOTAL COSTS (\$ MILLION)
Fees and charges for holdings and allocations and for maintaining and providing for the replacement of rural water infrastructure ¹	13.930
Monitoring and evaluation	1.486
Development of environmental registers and other systems	1.586
Portfolio management	0.006
Total	17.008

Note:

1. Fees and charges include \$8.491 million for annual water entitlement fees and \$5.439 million for allocation use fees. No pumping costs were incurred by the office to deliver environmental water in 2012–13.

Appendix A Commonwealth Environmental Water Office holdings in the Murray–Darling Basin

Table A1: Commonwealth Environmental Water Office holdings in the Murray–Darling Basin (at 30 June 2013) (continued)			
RIVER SYSTEM	SECURITY/RELIABILITY	REGISTERED ENTITLEMENTS (ML ¹)	LONG-TERM AVERAGE ANNUAL YIELD (ML)
Queensland			
Border Rivers	Medium	11 684	3969
	Unsupplemented	4286	1814
Condamine Balonne	Unsupplemented	46 950	32 437
Moonie	Unsupplemented	1415	1100
Nebine	Unsupplemented	5920	1000
Warrego	Unsupplemented	16 050	8000
Total Queensland	Medium	11 684	3969
	Unsupplemented	74 621	44 351
New South Wales			
Barwon–Darling	Unregulated	22 275	22 275
Border Rivers	General	298	119
Gwydir	High	375	375
	General	89 525	32 229
	Supplementary	19 100	3629
Lachlan	High	933	933
	General	86 923	36 508
Lower Darling	General	492	399
Macquarie/Cudgegong	General	116 110	48 766
	Supplementary	1888	397
Murray	High	8553	8125
	General	318 186	257 731
	Supplementary	56	41
	Groundwater	1141	1141
	Conveyance	1230	964
	Unregulated	30	24
Murrumbidgee	High	4246	4034
	General	200 145	128 093
	Conveyance	8856	8413
	Supplementary	20 820	2915
Namoi (upper)	General	105	81
Namoi (lower)	General	6218	4788
Warrego	Unregulated	17 826	17 826
Total New South Wales	High	14 107	13 467
	General	818 002	508 713

	Conveyance	10 086	9378
	Supplementary	41 864	6981
	Unregulated	40 131	40 125
	Groundwater	1141	1141
Victoria			
Broken	High	117	111
	Low	4	3
Campaspe	High	6547	6219
	Low	395	194
Goulburn	High	205 090	194 792
	Low	11 389	4102
Loddon	High	2775	2636
	Low	527	142
Murray	High	243 534	231 393
	Low	11 765	3002
Ovens	High	70	67
Wimmera–Mallee	High	28 000	22 568
Total Victoria	High	486 133	457 785
	Low	24 081	7444
South Australia			
Murray	High	107 266	96 504
Total South Australia	High	107 266	96 504
Total Murray–Darling Basin			
	High	607 467	567 756
	General/Medium/Low	853 767	520 125
	Conveyance	10 086	9378
	Supplementary	41 864	6981
	Unsupplemented/Unregulated	114 752	84 476
	Groundwater	1141	1141
GRAND TOTAL²		1 629 077	1 189 857

Notes:

- 1 One gigalitre equals 1000 megalitres. Some volumes may differ marginally from 30 June 2013 figures posted on the Commonwealth Environmental Water Office website due to accounting adjustments made after 30 June 2013.
2. The volume of water currently in the holdings is less than the volume secured under Water for the Future, which includes water entitlements secured under contract but not yet formally transferred to the Commonwealth.

Appendix B Commonwealth environmental water delivered in the Murray–Darling Basin in 2012–13

Table A2: Summary of the volume of Commonwealth environmental water delivered in the Murray–Darling Basin in 2012–13

CATCHMENT	WATER DELIVERED (GL)	ACTIONS
Murray	548.9	Lower Murray
Edward–Wakool	33.9	In-stream flows and Colligen, Yallakool, Jimaringle, Cockran, Gwynnes and Tuppal Creeks
Murray (Groundwater) ¹	0.1	Lower Murray Groundwater
Macquarie	100.0	Macquarie Marshes
Murrumbidgee	156.0	Mid Murrumbidgee River flows and lower Murrumbidgee floodplain
Loddon	2.7	Instream flows
Campaspe	6.8	Instream flows
Goulburn	201.1	Instream flows
Lower Broken Creek	41.2	Instream flows
Upper Broken Creek	0.05	Instream flows
Ovens River	0.02	Ovens River flows
Lachlan	51.1	Booligal wetlands and Lachlan Swamps
Namoi	7.7	Instream flows
Border Rivers	0.9	Instream flows
Gwydir	27.7	Mallowa wetlands and Gwydir wetlands
Border Rivers (Severn)	1.0	Instream flows
Border Rivers (Macintyre)	0.7	Instream flows
Moonie	1.4	Instream flows
Condamine-Balonne (Lower Balonne)	64.9	Instream flows
Barwon–Darling (Toorale)	25.6	Instream flows
Total²	1272.00	

Notes:

1. In groundwater systems, the Commonwealth may ‘take’ water against its water entitlements by leaving the water in the ground (not extracting it).
2. In addition return flows totalling 240 gigalitres from catchments of the Southern Connected Basin were used to achieve multi-site environmental outcomes.

Appendix C Basin catchment summaries of Commonwealth environmental water use in 2012–13

Table A3: Commonwealth environmental watering actions for the Barwon–Darling catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Barwon–Darling Rivers	Barwon–Darling Rivers unregulated	yes	n/a	n/a	In-stream use in the Barwon–Darling to contribute to a more naturally variable flow regime that supports key ecosystem functions.	8.06(3)(b)(i) 8.06(6)(a) and (b)	November 2012–March 2013	25 616

Table A4: Commonwealth environmental watering actions for the Border Rivers catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Border Rivers	Border Rivers	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">stimulating production through all levels of the aquatic food chainproviding migration and dispersal cues to native fishwetting and interconnecting riparian areas.	8.05(3)(a) 8.06(3)(b)(i) 8.06(6)(a) and (b)	December 2012	895
Border Rivers	Severn River unregulated	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">providing a more naturally variable flow regime in the Severn River within Sundown National Parkfilling and reconnecting refugial waterholesproviding migration and spawning cues for large bodied native fish, encouraging the germination and maintenance of riverbank vegetation.	8.05(3)(a) 8.06(3)(b)(i) 8.06(6)(a) and (b)	January 2013–February–2013	976
Border Rivers	Lower Macintyre unregulated	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">supporting a more naturally variable flow regime in these systemsimproving fish habitat, through both recruitment and movementcarbon and nutrient cycling through the end of system.	8.05(3)(a) 8.06(3)(b)(i) 8.06(6)(a) and (b) 8.06(7)	January 2013—ongoing at 30 June 2013	687

Table A5: Commonwealth environmental watering actions for the Condamine–Balonne catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Balonne	Lower Balonne unregulated	yes	n/a	n/a	In-stream use in the Lower Balonne to contribute to a more naturally variable flow regime that supports key ecosystem functions.	8.06(3)(b)(i) 8.06(6)(a) and (b)	February 2013–ongoing at 30 June 2013	64 946

Table A6: Commonwealth environmental watering actions for the Gwydir catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Gwydir	Mallowa Wetlands	yes	yes	yes	To contribute to: <ul style="list-style-type: none">supporting and building upon the extensive ecological responses in 2010–12enabling growth, breeding and small-scale recruitment for a diverse range of native plants and animalspromoting low-lying floodplain-river connectivity.	8.05(2)(b) 8.05(3)(a) and (b) 8.06(3)(b)(ii) 8.06(5) 8.07(4)	December 2012–March 2013	5000
Gwydir	Gwydir Wetlands	yes	yes	yes	To contribute to: <ul style="list-style-type: none">supporting and building upon the extensive ecological responses and ensure survival of native plants and animals that recruited in 2010–12;enabling growth, breeding and small-scale recruitment for a diverse range of native plants and animalspromoting low-lying floodplain-river connectivitysupporting medium–flow river and floodplain functional processeshelping suppress the growth of lippia (<i>Phyla canescens</i>) which is an introduced weed.	8.05(2)(a) and (b) 8.05(3)(a) and (b) 8.06(3)(b)(ii) 8.06(5) 8.07(4)	December 2012–March 2013	22 709

Table A7: Commonwealth environmental watering actions for the Lachlan catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Lachlan	Lower Lachlan	yes	yes	n/a	To contribute to supporting: <ul style="list-style-type: none">successful breeding of colonial nesting waterbird speciesthe habitat requirements of waterbirds.	8.05(2)(b) 8.05(3)(a) and (b) 8.06(3)(b)(ii) 8.06(5) 8.07(4)	October 2012–November 2012	222
Lachlan	Lower Lachlan	yes	yes	yes	To contribute to: <ul style="list-style-type: none">improving the condition of native plant communities, particularly river red gum communities, lignum stands and reed bed areas, and their ability to undertake many of their natural processes, such as flowering, seeding and germinationbuilding resilience in the Lower Lachlan system so that the environment can survive through dry periods and the impacts of droughtproviding in-stream benefits in the Lachlan River channel and fringing river areas as well as connecting the river to its lakes, creeks and wetlands which provides the opportunity for plants, animals and nutrients to move to new areas.	8.05(2)(a), (b) and (c) 8.05(3)(a) and (b) 8.06(2) 8.06(3)(a), (b)(i) and (f) 8.06(6)(b) 8.07(2) and (3)	June 2013–ongoing at 30 June 2013	50 837

Table A8: Commonwealth environmental watering actions for the Macquarie–Castlereagh catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Macquarie	Macquarie River and Marshes	n/a	yes	n/a	To contribute to: <ul style="list-style-type: none">maintaining adequate water levels across approximately 50 000 hectares of native wetland plant communities, including river red gums, to contribute to the ongoing regeneration of these communities that, in turn, provide habitat for many native animalsrestoring the marshes, which are recognised as a wetland of international importancemaintaining the connection of low-lying water courses on the floodplain to improve water quality and allow native plants and animals to move between different areasproviding the type of flow required to support the habitat needs and breeding sites of migratory shorebirds and waterbirds such as glossy ibis, Australian white ibis, straw-necked ibis, intermediate egrets and rufus night herons.	8.05(2)(a) and (b) 8.06(3)(b)(i) and (ii) 8.06(6)(b)	November 2012–January 2013	100 000

Table A9: Commonwealth environmental watering actions for the Moonie catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Moonie River	Moonie River unregulated	yes	n/a	n/a	To contribute to a more naturally variable flow regime that supports key ecosystem functions.	8.06(3)(b)(i) 8.06(6)(a) and (b)	January 2013–February 2013	1415

Table A10: Commonwealth environmental watering actions for the Namoi catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Namoi River	Lower Namoi River	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">inundating in-channel habitat associated with riffles, pools and barsmaintaining water quality and carbon/nutrient cycling processessupporting the abundance and diversity of native plants and animals (including fish, turtles and invertebrates) by providing them with opportunities to access a range of habitats for sheltering, migration, feeding and breeding.	8.05(3)(a) 8.06(3)(b)(i) 8.06(6)(a) and (b) 8.06(7)	November 2012–February 2013	7727

Table A11: Commonwealth environmental watering actions for the Broken, Campaspe, Goulburn, Loddon, and Ovens catchments in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Goulburn–Broken	Lower Broken Creek	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">facilitating fish movement through the fishway at Rices Weirmaintaining native fish habitat, particularly during fish migration and breeding seasons (by maintaining optimal levels of dissolved oxygen and restricting excessive aquatic plant growth)contributing to increased flows to the lower Murray River channel, Lower Lakes and Coorong for the purpose of maintaining aquatic habitat and supporting targeted lake levels, barrage releases and flows through the barrage fishways.	8.05(3)(a) 8.06(3)(b)(i) 8.06(6)(a) 8.06(7)	September 2012–May 2013	41 230
Goulburn–Broken	Upper Broken Creek	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">providing for more natural flow variabilityproviding a wet/dry zone at the channel edgemaintaining aquatic habitats during periods of cease to flow consistent with patterns from stormspromoting successional change in community composition through disturbance and habitat diversity.	8.06(3)(b)(i) 8.06(6)(a) 8.07(4)	February 2013–March 2013	51
Campaspe	Campaspe River	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">maintaining the health and existing extent of river native plant communities, and provide reproduction and recruitment opportunitiesproviding habitat, breeding and recruitment opportunities for native fish and invertebratessupporting ecosystem functions that relate to the mobilisation, transport and dispersal of	8.06(3)(b)(i) 8.06(6)(a) and (b) 8.06(7)	August 2012–May 2013	6820

					sediment, nutrients and organic matter <ul style="list-style-type: none"> • supporting lateral and longitudinal connectivity to maintain native plant and animal communities • creating and maintaining river bed and bank habitat. 			
Goulburn–Broken	Goulburn River	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none"> • complementing natural flows and supporting the on-going recovery of river-dependent native animals and plants • achieving multiple environmental benefits in the Murray River channel, Lower Lakes and Coorong. 	8.05(3)(a) 8.06(3)(b)(i) 8.06(7)	July 2012–January 2013	69 383
Goulburn–Broken	Goulburn River	yes	n/a	n/a	To contribute to supporting: <ul style="list-style-type: none"> • breeding and recruitment of native plant and animal communities • ecosystem functions that relate to mobilisation, transport and dispersal sediment, nutrients and organic matter • ecosystem functions that relate to connectivity along the river to maintain reproduction and recruitment opportunities for native plant and animal communities. 	8.05(3)(a) 8.06(3)(b)(i) 8.06(7)	January 2013–June 2013	131 714
Loddon	Loddon River	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none"> • supporting a range of native plants and animals, particularly through enabling native fish movement and improvements to macroinvertebrate habitat • maintaining native plant communities along the river in a healthy, dynamic and resilient condition • supporting key ecosystem functions, particularly those related to connectivity along the river. 	8.06(3)(b)(i) 8.06(6)(a) 8.07(3)	November 2012	2745
Ovens	Ovens River	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none"> • maintaining the health of native plant communities in riverbank areas, such as river red gums 	8.06(3)(b)(i) 8.06(6)(a)	April 2013–June 2013	20

					<ul style="list-style-type: none"> supporting and connecting the habitat of native animal communities in the river, including fish, frogs, turtles and insects. 			
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Table A12: Commonwealth environmental watering actions for the Murray catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Edward–Wakool	Jimaringle, Cockran and Gwynnes creeks	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">providing flows to maintain and improve water quality within the creeks, particularly salinitymaintaining and improving the health of native plant communities in the creeks including river red gum, black box and lignumproviding good-quality habitats in which native animal communities, such as the pobblebonk frog, Peron’s tree frog and wrinkled toadlet, can successfully breed and grow.	8.06(3)(a) 8.06(6)(a) 8.06(7)	August 2012–November 2012	3000
Edward–Wakool	Tuppall Creek	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">providing flows through the system to maintain and improve water quality within the creek, particularly salinitymaintaining and improving the health of native plant communities in the creek including river red gum, black box and lignumcontributing to providing good-quality habitat that supports the breeding and recruitment of native animals, particularly frogs.	8.06(3)(a) 8.06(6)(a) 8.06(7)	October 2012–December 2012	2000
Edward–Wakool	Edward River, Wakool River, Colligen and	yes	n/a	n/a	To contribute to supporting: <ul style="list-style-type: none">the movement, breeding and recruitment of native fish (such	8.05(3)(a) 8.06(3)(b)(i)	October 2012–April 2013	28 943

	Yallakool creeks				<p>as Murray cod, and golden and silver perch)</p> <ul style="list-style-type: none"> the habitat requirements of native fish and other native animals including frogs, turtles and invertebrates ecosystem functions that relate to the connectivity of habitats along the watercourse. 	8.06(7)		
Murray	Gunbower Creek	yes	n/a	n/a	Use of return flows to contribute to providing good-quality habitats in which native fish communities, including golden perch and silver perch, Murray cod, trout cod and the crimson spotted rainbowfish, can successfully migrate, breed and grow.	8.05(3)(a)	August 2012–ongoing at 30 June 2013	2158
Murray	Disher Creek	yes	yes	n/a	<p>Use of return flows to contribute to:</p> <ul style="list-style-type: none"> maintaining water quality at levels suitable for providing habitat for Murray hardyhead (a native fish). 	8.05(3)(a) 8.06(3)(b)(i) and (ii) 8.06(6)(a)	December 2012–June 2013	250
Murray	Murray River	yes	yes	n/a	<p>To contribute to:</p> <ul style="list-style-type: none"> maintaining and improving the health of riparian and wetland native plants encouraging breeding and supporting the survival of native fish such as Murray cod, silver perch, golden perch and freshwater catfish connecting habitats along the river and between the river channel and fringing wetlands transporting and dispersing materials such as sediment, nutrients and organic matter providing additional inflows to the Lower Lakes to improve water quality, enable barrage releases to the Coorong, help manage salinity and seasonal water levels for native water plants such as <i>Ruppia tuberosa</i>. 	8.05(2)(b) and (c) 8.05(3)(a) 8.06(3)(b)(i) and (ii) 8.06(6)(a) and (b) 8.07(3)	November 2012–January 2013	300 000
Murray	Berri Basin	yes	yes	n/a	<p>Use of return flows to contribute to:</p> <ul style="list-style-type: none"> maintaining water quality at levels suitable 	8.05(3)(a) 8.06(3)(b)(i) and (ii)	December 2012–June	543

					<ul style="list-style-type: none"> for providing habitat for Murray hardyhead providing freshwater inflows to cue Murray hardyhead spawning. 	8.06(6)(a)	2013	
Murray	Clarks Floodplain	yes	yes	n/a	Use of return flows to contribute to: <ul style="list-style-type: none"> providing breeding and recruitment opportunities for native river bank plants including river red gums and black box maintaining the health of existing native plant communities by freshening the floodplain soil and reducing the impact of salinity improving native plant diversity by promoting the establishment of an understorey cover of salt-tolerant plants. 	8.06(3)(b)(i) and (ii) 8.06(6)(a)	February 2013–June 2013	60
Murray	Whirlpool Corner	yes	yes	n/a	Use of return flows to contribute to: <ul style="list-style-type: none"> providing suitable conditions to support the recruitment of river red gum seedlings freshening the groundwater lens around the wetland to support the health of fringing vegetation supporting habitat for threatened waterbirds and frogs. 	8.05(2)(a) 8.05(3)(a) 8.06(3)(b)(i) and (ii) 8.06(6)(a)	December 2012–June 2013	91
Murray	Ramco Lagoon	yes	yes	n/a	Use of return flows to contribute to supporting the recruitment of black box seedlings within the wetland that naturally regenerated after the 2010–11 floods.	8.05(2)(c)	March 2013–May 2013	1
Murray	Lower Lakes, Coorong and Murray Mouth	yes	yes	n/a	To contribute to: <ul style="list-style-type: none"> achieving water level and salinity targets in Lake Alexandrina and Lake Albert, supporting the establishment of wetland native plants, the recruitment of native fish and frogs, and the availability of waterbird habitat achieving salinity and seasonal water level targets in the Coorong that provides suitable conditions for the recruitment of <i>Ruppia tuberosa</i> and Murray hardyhead populations, and the availability of waterbird habitat in the South Lagoon 	8.05(2)(a) and (b) 8.05(3)(a) 8.06(3)(b)(i) and (ii) 8.06(3)(c) 8.06(6)(a) and (b) 8.06(7)	December 2012–April 2013	98 853

					<ul style="list-style-type: none"> increasing the transport of salt and nutrients from the Murray River channel and through the Murray Mouth. 			
Murray	Lower Lakes, Coorong and Murray Mouth	yes	yes	n/a	<p>To contribute to:</p> <ul style="list-style-type: none"> maintaining hydrological connectivity between the Murray River, Lake Alexandrina, Coorong and Murray Mouth that will support fish movement and increase export of salt and nutrients improve habitat conditions in the Coorong (North and South Lagoon) to support native fish, waterbird and plant condition supporting increased ecosystem resilience in the Coorong and Lower Lakes that will continue the recovery of native plant and animal communities and increase resilience in the occurrence of dry inflow scenarios in 2013–14 and 2014–15. 	<p>8.05(2)(a), (b) and (c) 8.05(3)(a) and (b) 8.06(2) 8.06(3)(a) 8.06(3)(b)(i) 8.06(3)(f) 8.06(6)(b) 8.07(2) 8.07(3)</p>	March 2013– June 2013	150 000
Murray	Lower Lakes, Coorong and Murray Mouth	yes	yes	n/a	Use of return flows from environmental watering actions in the Victorian tributaries to contribute to expected environmental outcomes from actions in the Lower Lakes, Coorong and Murray Mouth.	As per actions in the Lower Lakes, Coorong and Murray Mouth detailed above	July 2012– June 2013	237 118

Table A13: Commonwealth environmental watering actions for the Murrumbidgee catchment in 2012–13

LOCATION OF WATERING ACTION		TYPE OF ACTION			EXPECTED ENVIRONMENTAL OUTCOME(S) OF WATERING ACTION	ENVIRONMENTAL WATERING PLAN OBJECTIVE(S)	TIMING	TOTAL COMMONWEALTH ENVIRONMENTAL WATER DELIVERED (ML)
COMPLEX	SITE	RIVER FLOWS	INUNDATION					
			WETLAND	FLOODPLAIN				
Mid Murrumbidgee	Murrumbidgee River channel	yes	n/a	n/a	To contribute to: <ul style="list-style-type: none">maintaining inundation of native fish breeding habitat long enough to ensure breeding successincreasing flows to help native fish disperse throughout the river at the end of the breeding seasonproviding a gradual decrease in flows to limit the risk of stranding native fish that may have continued to occupy breeding habitat.	8.05(3)(a and b) 8.06(3)(b)(i) 8.06(6)(a and b)	October 2012–December 2012	150 000
Lower Murrumbidgee	Western floodplain lakes and wetlands	yes	yes	yes	To contribute to: <ul style="list-style-type: none">maintaining the health and regeneration of native plant communities in Cherax Swamp, Yarrawol Creek and Narwie West, reed bed and black box wetlandsestablishing and growing native plant communities in Hobblers Lake and Penarie Creek which have been isolated from the floodplain and have not received environmental water beforeproviding good-quality habitat for native animals including waterbirds, fish and frogs.	8.05(3)(a) 8.06(3)(b)(ii) 8.06(6)(a and b)	September 2012–December 2012	6000

Appendix D Commonwealth environmental water carryover into 2013–14

Table A14: Summary of Commonwealth environmental water carryover in the Murray–Darling Basin into 2013–14

PART OF BASIN	WATER SOURCE	CARRYOVER (GL)
Southern Connected Basin	Victorian Murray	87.6
	Goulburn	15.3
	New South Wales Murray	20.1
	Murrumbidgee	45.5
Northern Basin	Lachlan	65.6
	Macquarie and Cudgegong	23.1
	Gwydir	121.6
	Namoi	5.5
	Border Rivers	8.7
	Total	393