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Performance Audit

# **Commonwealth Environmental Watering Activities**

**Department of Sustainability, Environment, Water,  
Population and Communities**

Australian National Audit Office

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Canberra ACT  
21 May 2013

Dear Mr President  
Dear Madam Speaker

The Australian National Audit Office has undertaken an independent performance audit in the Department of Sustainability, Environment, Water, Population and Communities in accordance with the authority contained in the *Auditor-General Act 1997*. Pursuant to Senate Standing Order 166 relating to the presentation of documents when the Senate is not sitting, I present the report of this audit to the Parliament. The report is titled *Commonwealth Environmental Watering Activities*.

Following its presentation and receipt, the report will be placed on the Australian National Audit Office's Homepage—<http://www.anao.gov.au>.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ian McPhee', with a long horizontal flourish extending to the left.

Ian McPhee  
Auditor-General

The Honourable the President of the Senate  
The Honourable the Speaker of the House of Representatives  
Parliament House  
Canberra ACT

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# Abbreviations

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AGS	Australian Government Solicitor
ANAO	Australian National Audit Office
Basin	Murray–Darling Basin
Basin states	Queensland New South Wales Victoria and South Australia
BOC	Basin Officials Committee
BoM	Bureau of Meteorology
CEWH	Commonwealth Environmental Water Holder
CEWO	Commonwealth Environmental Water Office
CMAs	catchment management authorities
Committee	House of Representatives Standing Committee on Regional Australia
CSCs	Customer Service Committees of the State Water Corporation (NSW)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EWAGs	Environmental Water Advisory Groups (NSW)
EWP	Environmental Watering Plan (under the Basin Plan)
EWSAP	Environmental Water Scientific Advisory Panel
GL	gigalitres
GL/yr	gigalitres/year
Guide	<i>Guide to the proposed Basin Plan</i>



KPIs	key performance indicators
MDBA	Murray–Darling Basin Authority
MERI	monitoring, evaluation, reporting and improvement
Minister	Minister for Sustainability, Environment, Water, Population and Communities
MOUs	memoranda of understanding between the Commonwealth and the Queensland and NSW governments in relation to the shepherding of water for the environment
NWC	National Water Commission
operational risk guidelines	<i>Risk Management Guidance for the use of Commonwealth Environmental Water</i>
PBS	Portfolio Budget Statements
TLM	<i>The Living Murray</i>
water use framework	<i>A Framework for Determining Commonwealth Environmental Water Use</i>

## Glossary

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allocation carryover	Unused water allocations in one year that have been brought forward (or carried-over) for use in the following year.
environmental assets	Include water-dependent ecosystems, ecosystem services, and sites with ecological significance.
regulated Basin catchments	Catchments of the Basin where river water can be stored or flow levels can be controlled through infrastructure, such as dams, weirs and barrages.
River Murray system	Extends from the Dartmouth Reservoir to the mouth of the River Murray, and includes water storages at Menindee Lakes and Lake Victoria.
unregulated Basin catchments	Catchments of the Basin where natural events control the flow of river systems.
water allocation	A specific volume of water allocated by state water management authorities to a water entitlement usually expressed as a percentage of the entitlement, in a given water year or as specified in a water sharing plan.
water entitlements	A perpetual or ongoing entitlement by, or under, a law of a state to access a share of the water resources of a water sharing plan.
water sharing plan	Water management arrangements established under state legislation that establish the various categories of water entitlements and may set aside a quantity or proportion of water for environmental watering purposes.

# Summary

# Summary

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## Introduction

1. The Murray–Darling Basin (the Basin) is an area of national environmental, economic and social significance. The Basin comprises Australia’s three longest rivers—the Darling, the Murray and the Murrumbidgee—and nationally and internationally significant wetlands, billabongs and floodplains. The Basin covers one-seventh of Australia’s land mass and extends across four states—Queensland, New South Wales, Victoria and South Australia (the Basin states)—and the Australian Capital Territory. Thirty-nine per cent of the national income derived from agricultural production is generated in the Basin, and it is home to over two million people.<sup>1</sup>

2. Throughout much of the twentieth century, infrastructure was constructed and water resources were allocated within the Murray–Darling Basin for irrigation, livestock and human consumption that disrupted the natural flows of the river system. It is now recognised that irrigation infrastructure and an over-allocation of water for consumptive use are having unintended environmental consequences.

3. In recent years there have been a number of reforms aimed at improving the management of water resources and addressing the imbalance between consumptive and environmental water use in the Basin. Major reforms include the:

- passage of the *Water Act 2007* on 3 March 2008, which established the Commonwealth Environmental Water Holder (CEWH) and the Murray–Darling Basin Authority (MDBA)<sup>2</sup>;
- production, implementation and enforcement of the first Basin-wide water sharing and management Plan (the Basin Plan) by the MDBA<sup>3</sup>; and

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<sup>1</sup> Murray–Darling Basin Authority 2013, *Explore the Basin: About the Basin*, available from <<http://www.mdba.gov.au/explore-the-basin/about-the-basin>> [accessed 1 March 2013].

<sup>2</sup> The MDBA assumed responsibility for all of the functions of the former Murray–Darling Basin Commission.

<sup>3</sup> After a development period of some four years, the Basin Plan was adopted into law by the Australian Parliament on 22 November 2012. The Basin Plan provides a high-level framework that sets standards for the Commonwealth, Basin states and the MDBA to manage the Basin’s water resources in a coordinated and sustainable way in collaboration with the community.

- progressive acquisition of water entitlements by the Commonwealth for use by the CEWH to water environmental assets in the Basin.<sup>4</sup> The water entitlements under management by the CEWH, as at February 2013, were valued by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) at \$1.89 billion.<sup>5</sup>

## Commonwealth Environmental Water Holder

4. The functions of the CEWH include managing Commonwealth environmental water holdings (that is, water entitlements) to make water available for the purpose of protecting and restoring areas of environmental significance within the Basin (including water courses, wetlands and floodplains) so as to give effect to relevant international agreements.<sup>6</sup> The CEWH is also required to perform functions and exercise powers in a way that is consistent with the Environmental Watering Plan (within the Basin Plan) and the Basin-wide environmental watering strategy (to be developed by the MDBA).<sup>7</sup> The CEWH's various obligations contained in the Basin Plan are expected to be implemented over the short, medium and/or long term.

5. The CEWH's environmental watering function is a relatively new area of Commonwealth activity, and does not have an international equivalent or precedent. The management and use of the CEWH's portfolio of water holdings occurs within the complex sets of Basin system management rules established and regulated by the Basin states. The Basin system management rules were designed primarily for irrigation purposes to extract water from the river system. In contrast, environmental water generally contributes to enhanced river flows and the inundation of neighbouring wetlands and floodplains. Consequently, current Basin rules do not always facilitate the

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<sup>4</sup> Water entitlements are a perpetual or ongoing entitlement by, or under, a law of a state to access a share of the water resources of a water sharing plan area.

<sup>5</sup> Water entitlement valuations fluctuate over time, reflecting movements in market prices. The current valuation of water entitlements takes into account impairment losses of \$0.31 billion from the value of the water entitlements at the time of their acquisition. The current valuation of water entitlements does not take into account ancillary program expenditure associated with the acquisition of the entitlements (which includes expenditure on irrigation infrastructure improvements).

<sup>6</sup> Areas of environmental significance, defined as environmental assets, include water-dependent ecosystems, ecosystem services and sites with ecological significance. International agreements include intergovernmental treaties, conventions and agreements related to: wetlands of international importance (Ramsar agreement); the conservation of wildlife and habitats (Bonn Convention); biological diversity (Convention on Biological Diversity); and migratory birds (agreements with Japan, China and the Republic of Korea).

<sup>7</sup> Clause 8.03(1) of the Basin Plan.

CEWH's intended watering activities, and can sometimes complicate or inhibit their execution. Within this context, the effective discharge of the environmental watering function requires the CEWH to:

- determine the environmental assets to water and the quantity of environmental water to use, having regard to Basin conditions and the views of key stakeholders;
- ensure that delivery partners and/or river operators<sup>8</sup> deliver environmental water as intended, which generally occurs through controlled releases from dams, weirs and barrages; and
- monitor and report on the ecological results of its water deliveries<sup>9</sup> and the achievement of its legislated objective of protecting and restoring environmental assets in the Murray–Darling Basin.

6. The Government appointed a senior executive service officer from the Water Group within DSEWPaC to perform the role of the CEWH. The CEWH is currently supported by approximately 57 staff across two branches, which are known collectively as the Commonwealth Environmental Water Office (CEWO).<sup>10</sup> The office operates as a distinct unit within DSEWPaC, with a current budget of \$33 million in 2012–13 (over a third of which relates to the cost of holding water entitlements and delivery fees and charges). The CEWO is supported by committees of external advisors, that provide advice in relation to scientific and stakeholder issues.<sup>11</sup>

7. As at 28 February 2013, the Commonwealth held water entitlements totalling 1523 gigalitres/year<sup>12</sup> (GL/yr) in 17 of the 19 catchments across the Basin, which equates to between 35 and 42 per cent of the CEWH's anticipated final entitlement holdings.<sup>13</sup> Since 2010–11, the CEWH has

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<sup>8</sup> Delivery partners include: state and territory departments and agencies; private irrigation infrastructure operators; and catchment management authorities. River operators, which include state government authorities and the MDBA, control, operate and manage the water delivery infrastructure within the Basin.

<sup>9</sup> Ecological monitoring can involve impacts on aquatic and terrestrial vegetation, waterbirds, fish, frogs, tadpoles, insects and other invertebrates.

<sup>10</sup> Prior to the establishment of the CEWO in December 2011, the CEWH was supported by an environmental watering section or branch. For the purposes of the audit, the CEWO has been used exclusively to refer to the DSEWPaC staff supporting the CEWH.

<sup>11</sup> The CEWO intends to establish a further advisory committee to provide advice in relation to governance issues.

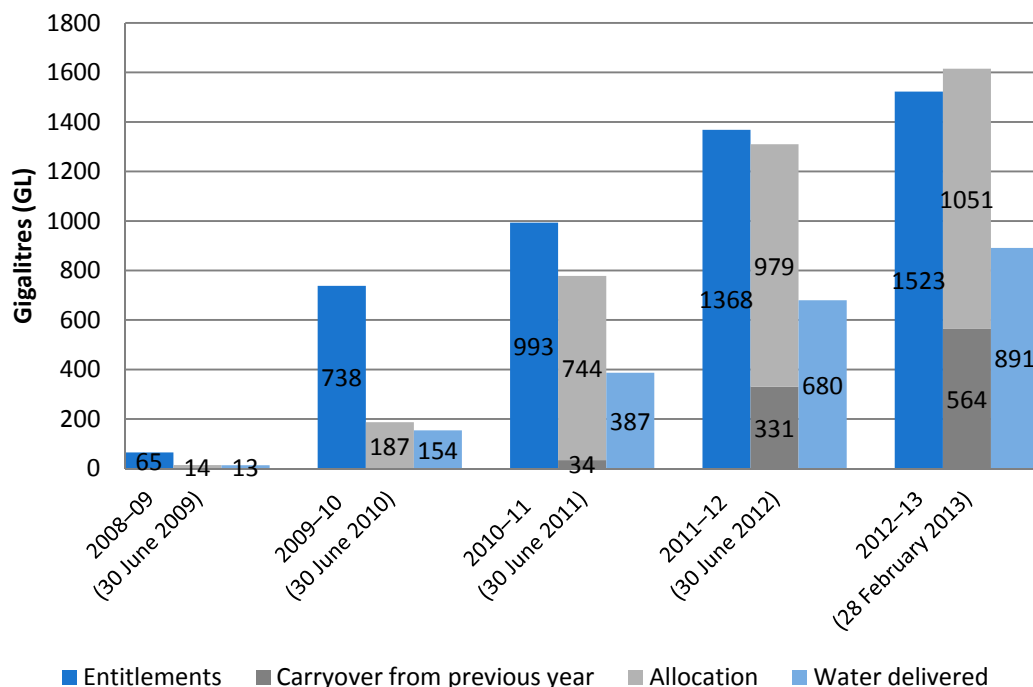
<sup>12</sup> One gigalitre equals 1000 megalitres or 1 000 000 000 litres.

<sup>13</sup> The CEWH's anticipated final entitlement holdings were determined by reference to: the targets established under the Basin Plan for recovering water entitlements across the catchments of the Basin; the potential adjustments to the Basin Plan targets to account for the impacts of future environmental works and measures; and the further quantity of entitlements the Commonwealth has committed to acquire under the *Water Amendment (Water for the Environment Special Account) Act 2013*.

received increasing water allocations because of a significant growth in the CEWH’s water entitlements and generally wetter catchment conditions.<sup>14</sup> As at 28 February 2013, 2124 GL of Commonwealth environmental water has been delivered to a range of environmental assets across the Basin since the CEWH’s establishment. Notwithstanding this activity to date, the CEWH’s current water holdings represent only a small proportion of streamflows throughout the Basin (less than six per cent of an average year’s inflows). Figure S1 illustrates the quantity of Commonwealth-held water entitlements, annual water allocations and water delivered to environmental assets between 1 July 2008 and 28 February 2013.

**Figure S1**

**Availability and use of Commonwealth water holdings for the period from July 2008 to February 2013**



Source: CEWO.

Note: Carryover represents unused water allocations in one year that have been brought forward (or carried over) for use in the following year.

<sup>14</sup> State water management authorities allocate a specific volume of water to a water entitlement, usually expressed as a percentage of the entitlement, in a given water year or as specified within a water sharing plan. The ‘millennium drought’ (from 2000 to 2009–10) brought historically low water allocations against entitlements. Conversely, flooding within the Basin during 2010–11 and 2011–12 has seen water allocations against entitlements increase markedly.

## Audit objectives and scope

8. The objective of the audit was to assess the effectiveness of the Commonwealth Environmental Water Office's administration of environmental water holdings.

9. The audit examined whether the CEWO's:

- governance arrangements are appropriate to effectively manage and report on the CEWO's environmental watering activities;
- engagement of all relevant stakeholders effectively facilitates the management of the CEWO'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; and
- monitoring and evaluation activities effectively identify the outcomes achieved from the CEWO's environmental watering activities, and influence future water use decisions.

## Overall conclusion

10. The environmental watering function of the CEWH is a relatively new area of Commonwealth activity and a key element of the reforms introduced by the Commonwealth to address the imbalance between consumptive and environmental water use in the Basin. In its five years of operation, the CEWH has accumulated the largest holding of water entitlements in the Basin, currently valued at \$1.89 billion. The CEWO, which supports the CEWH, has developed and continues to refine environmental watering frameworks, policies and practices to manage and use water entitlements within a complex set of Basin system management rules.

11. There are a wide range of stakeholders within and outside the Basin that are involved in, or have an interest in, the effective use of, and the environmental outcomes achieved from, Commonwealth-held water entitlements. The CEWO relies on its delivery partners and river operators to deliver Commonwealth environmental water, while avoiding potential adverse stakeholder impacts, such as the inadvertent flooding of private land. With the assistance of delivery partners and river operators, the CEWO has



delivered over 2000 GL of water to a range of environmental assets across the Basin since the commencement of the first watering action in March 2009.

12. Overall, the CEWO has developed and continues to strengthen its arrangements to support the effective administration of the CEWH's environmental watering function. The CEWO's water use planning and decision-making approach is sound and appropriately underpinned by an assessment framework that is mostly applied as intended. The CEWO has established appropriate water delivery arrangements with delivery partners that resulted in the delivery of environmental water to its intended destinations, while managing water delivery risks and issues.

13. The CEWO's environmental watering frameworks have evolved and continue to mature. The CEWO is preparing to make changes to its key water use guidance materials and introduce additional reporting to meet the requirements of the recently introduced Basin Plan. To enhance its longer-term management of the water holdings portfolio, the CEWO is also developing a framework to guide the trade of water entitlements and allocations, and intends to introduce multi-year water use planning to complement the existing annual planning approach.

14. The CEWO has made environmental watering information broadly available to interested parties and has progressively established productive relationships with various stakeholder groups, including regional and local bodies, delivery partners and the MDBA. The CEWO is continuing to enhance its engagement with stakeholders on its environmental watering function by the recent establishment of a stakeholder register, and through activities such as the intended employment of local engagement officers in key locations across the Basin. Given the diverse interests and involvement of the different stakeholder groups in the CEWO's watering activities, there remains scope to better target stakeholder communications activities.

15. In the absence of a long-term monitoring and evaluation strategy, the CEWO has adopted a measured approach to short-term ecological monitoring and evaluation that is based on delivery partner monitoring activities and detailed studies at key locations where Commonwealth environmental water has been delivered. Short-term results reported by the CEWO include: sustaining wetland and native plant refuges during the drought prior to 2010; improving water quality to provide refuges for native fish; and supporting native bird and fish breeding. However, it is difficult to apportion the

outcomes achieved from Commonwealth environmental water from that of total river flows.

16. To measure the intermediate and longer-term achievements from the use of environmental water, the CEWO is currently developing a strategy to implement its monitoring, evaluation, reporting and improvement (MERI) process from July 2014. The adoption of the MERI process will better position the CEWO to establish meaningful key performance indicators and demonstrate the environmental outcomes of watering activities and, ultimately, the extent to which water holdings have been used to protect and restore the Basin's environmental assets.

17. While the ANAO has not made any recommendations as the CEWO's strategies for managing environmental water are generally sound, a number of suggestions have been made in the report to enhance the CEWO's current approach to administering the environmental watering function. In particular, a strong focus on the establishment of the MERI process will be necessary to position the CEWO to report on the extent to which its use of environmental water has contributed to protecting and restoring the environmental assets of the Murray–Darling Basin.

## Key findings by chapter

### Governance arrangements for environmental water use (Chapter 2)

18. The administrative arrangements underpinning the environmental watering function have been progressively strengthened and enhanced over time. Since December 2011, the CEWH's responsibilities have been exclusively focused on the environmental watering function.<sup>15</sup> The number of staff supporting the CEWH's operations has increased over time in line with the accumulation of entitlements and increased environmental watering activity. The CEWO has effectively engaged with the Environmental Water Scientific Advisory Panel (EWSAP)<sup>16</sup> to assist with the development of: environmental watering frameworks, water use plans and actions; and monitoring and evaluation activities. The CEWO has also recently established a stakeholder

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<sup>15</sup> In the period from March 2008 to November 2011, the CEWH discharged duties as a division head in DSEWPaC that included departmental responsibilities other than the environmental watering function.

<sup>16</sup> EWSAP has been providing scientific advice to the CEWH and the CEWO since the Panel's establishment in October 2008. EWSAP comprises scientists and experts in fields, such as hydrology, limnology, river operations management, river and floodplain ecology and management of aquatic ecosystems.

reference panel, and there are plans in place to establish an advisory council to provide advice on governance issues.

**19.** While there were weaknesses in early risk management approaches, the CEWO has progressively strengthened its approach to managing the risks associated with the effective use of Commonwealth environmental water. The early risk assessments were not formally endorsed or regularly updated and the monthly risk summaries varied substantially in their coverage from month-to-month. In January 2012, the CEWO engaged the Australian Government Solicitor (AGS) to identify and assess the sources of CEWO's strategic, legal and governance risks and identify appropriate treatments. The detailed assessment, finalised in June 2012, indicated that risk treatments could reduce the ratings of most risk sources to 'medium' or 'low'. While the CEWO is progressively implementing the proposed risk treatments, the implementation of treatments for some risks has been delayed.

**20.** The CEWO uses a hierarchy of plans (business, branch and section) to support and guide its operations. While the CEWO's plans contain relevant information that assists with the execution of the CEWO's environmental watering function, their usefulness would be improved through: a greater focus on the links between activities and outcomes; an increased alignment of their structure and content; and routine reviews of performance against the plans during the year.

**21.** There is considerable public interest in the activities and performance of the CEWO, with many stakeholders seeking clear and demonstrable benefits and outcomes from the use of Commonwealth-held water entitlements. The CEWO's annual performance reporting, through the Portfolio Budget Statements, annual reports and outcomes reports, is confined to its activities, outputs and early ecological outcomes from particular watering actions. As previously mentioned, short-term results reported by the CEWO in recent annual outcomes reports include: sustaining wetland and native plant refuges during the drought prior to 2010; improving water quality to provide refuges for native fish; and supporting native bird and fish breeding. Establishing the full impact of Commonwealth environmental watering activities has, however, been challenging as:

- the CEWO's water represented a smaller proportion of total river flows during the very wet Basin conditions in 2010–11 and 2011–12; and
- a number of third-party monitoring activities and studies referenced by the CEWO in its outcomes reports have not attempted to separately

identify the outcomes from Commonwealth environmental water from that of total river flows.

22. The CEWO considers that its implementation of the MERI strategy, from July 2014, will allow it to better demonstrate the intermediate and longer-term ecological results achieved across the Basin from its environmental watering function.

### **Stakeholder engagement (Chapter 3)**

23. In November 2010, the CEWO engaged a consultant to develop a communications strategy to guide its stakeholder engagement activities. The CEWO used the consultant's draft strategy to inform the development of a stakeholder communications strategy, which was finalised in April 2012. While a useful starting point, there was limited coordination of the tasks and actions identified in the strategy to improve the CEWO's stakeholder engagement. Most tasks have delivery dates that are either 'ongoing' or 'progressive' making monitoring implementation difficult. Further, the strategy is not underpinned by an assessment of stakeholder engagement needs, which would help to improve the effectiveness of the CEWO's stakeholder engagement activities.

24. The CEWO has identified, through its stakeholder communications strategy, the importance of establishing a comprehensive register of environmental watering stakeholders. The stakeholder register, which was originally scheduled for completion in April 2012, was finalised in March 2013. The stakeholder register contains the names and most of the contact details for 683 stakeholders (which had been classified into 20 different stakeholder types, and included 643 representatives from 290 organisations and a further 40 stakeholders registered in an individual capacity). However, for a significant number of stakeholders, their catchments of interest and recent engagement history with the CEWO (including frequency of contact and issues discussed) has yet to be identified. Given the nature of the CEWO's work and the importance and extent of stakeholder interest, there would be merit in reviewing the adequacy of the current register and the completeness and integrity of stakeholder data holdings.

25. To date, the CEWO has made information broadly available to interested parties—primarily through its website—and targeted stakeholder engagement activity to various stakeholder groups, including regional and local bodies, delivery partners and the MDBA. While the CEWO has

increasingly gained access to existing regional and local groups and committees with waterways or environmental management responsibilities, the CEWO expects that its employment of local engagement officers across the Basin during 2013 will significantly enhance regional and local stakeholder engagement.

26. The CEWO also works well with its key delivery partners in respect to environmental planning, water delivery and monitoring and evaluation activities—which was consistent with the overall views expressed by delivery partners to the ANAO. The CEWO and the MDBA also informed the ANAO that they work together productively on areas of common interest, and each agency was satisfied with the breadth and depth of current engagement activity.

#### **Water use planning (Chapter 4)**

27. Given the variability of environmental and catchment conditions, a sound planning approach is necessary to help ensure that the CEWO is able to respond in an appropriate and timely manner. The CEWO has progressively established the elements of an integrated planning approach for environmental water use. Prior to 2011–12, water use planning was conducted throughout the year solely on a watering action by watering action basis. In 2011–12, the CEWO produced, for internal purposes, its first annual plans for each Basin catchment (or catchment group)—11 in total—that identified potential water use options at the start of the year. The following year the CEWO published its annual catchments plans (known as annual water use options documents) and also began to publish portfolio management statements for each catchment/catchment group, demonstrating to stakeholders a more strategic consideration of the relationship between the three potential uses of environmental water—that is, delivery/use, carryover and trade. In future years the CEWO intends to: introduce a framework to guide its trading of water entitlements and allocations between catchments and with third parties; and complement the current annual catchment planning approach with multi-year water use plans covering up to five years.

28. The CEWO has developed appropriate water use planning and guidance tools to support the environmental watering function. Together, the water use framework, catchment delivery documents, environmental assets

database<sup>17</sup> and operational risk guidelines provide a sound basis for the CEWO to develop annual water use plans and assess the merits of individual watering proposals.

29. The CEWO's annual water use options documents take account of internal and external information sources and identified potential water use options relevant to a range of future catchment conditions (from 'extreme dry' to 'very wet'). The assessment framework underpinning the CEWO's annual water use planning was mostly applied as intended. The exception was that identified water use options were not being prioritised during the planning process.

30. While the annual water use options documents have been refined and improved over time, the comprehensiveness of the assessment of the watering options varied between catchments. Although a total of 57 stakeholders were consulted during the development of the five 2012–13 annual water use options documents examined by the ANAO, only 32 were included on the draft stakeholder register in existence at the time. It was also unclear whether all key stakeholders had been consulted during the development of the annual water use options documents.

31. Overall, the 20 watering proposals<sup>18</sup> examined by the ANAO (out of a total of 39) contained up-to-date information relevant to the CEWO's proposed water use, including risk assessments, on which the CEWH makes decisions to undertake watering actions. However:

- the relationship between the watering proposals and the annual water use options documents was generally not clear;
- less than half of the watering proposals examined provided a rationale to indicate that their objectives were achievable using the intended watering approach; and
- less than half the watering proposals made specific mention of stakeholder consultation and, where mentioned, referred to the stakeholders' involvement in a specific aspect of the proposals rather than the stakeholders' views of the proposals overall.

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<sup>17</sup> The environmental assets database, jointly developed by the CEWO and the MDBA, records data of Basin environmental assets covering matters such as: environmental condition and significance; threatened flora and fauna; watering requirements and history; operational and ecological monitoring; and evaluation history and results.

<sup>18</sup> The CEWO uses a template to develop watering proposals throughout each year.

32. Improvements to the watering proposal template and increased consistency in the template's application, would improve the integration of watering proposals into the CEWO's annual catchment planning approach. It would also allow the CEWO to better demonstrate the basis for the water use decisions being recommended to the CEWH for approval.

### **Water delivery arrangements (Chapter 5)**

33. The CEWO has established appropriate arrangements with delivery partners and river operators to facilitate the delivery of environmental water throughout the Basin. A thorough risk assessment undertaken by the AGS noted that the delivery of Commonwealth environmental water through delivery partners significantly mitigates many of the risks that could arise during water delivery, including: compliance with applicable water, environment and heritage legislation; and negative impacts on people and property. Nevertheless, the AGS identified a number of additional treatments, which are being implemented by the CEWO, to further reduce the likelihood and consequence of the risks impacting directly on the CEWO. Notwithstanding the effectiveness of current delivery arrangements, there is scope to improve the assessment of the adequacy of the monitoring and measurement arrangements for each watering action, which would provide greater assurance over the effective delivery of Commonwealth environmental water.

34. Delivery partners monitor the CEWO's water deliveries as they proceed ('operational monitoring'), with the CEWO also monitoring the delivery of its water and other factors that could influence its watering actions (such as rainfall). The ANAO reviewed the 22 final delivery reports prepared by delivery partners at the conclusion of 2011–12 water deliveries. While the reports addressed any risks that materialised during the deliveries, the reports were of variable quality and completeness, with a number of reports submitted outside of the agreed timeframes. Overall, the reports provided only limited assurance that operational monitoring met the intended objectives. In particular:

- while water quantities and delivery dates were specified, many reports did not adequately describe the delivery partners' monitoring/measurement approach;
- reports rarely indicated explicitly that the quality of the environmental water delivered was within acceptable parameters; and

- initial ecological responses were generally missing or very briefly described. In addition, the absence of the watering action's objectives from some reports inhibits a determination of the relevant ecological responses that should be observed.

35. An internal review of the operational monitoring practices of the CEWO and delivery partners, which was finalised in February 2013, identified shortcomings with current practices—many of which broadly align with the ANAO's findings. To address the identified shortcomings, the CEWO intends to: implement a standard framework to determine the operational requirements for watering actions; implement a consistent approach to storing operational monitoring data; and prepare a CEWO final operational monitoring report, incorporating operational monitoring data and the delivery partner's final delivery report.

36. The CEWO has established a spreadsheet-based Water Holdings Register to manage the accounting and use of water entitlements and allocations. A 2012 review of a sample of water delivery transactions by DSEWPac's internal auditors has provided the CEWO with general assurance as to the integrity of the water transfer process. The review, however, identified some internal control weaknesses and non-compliance, which were similar to those found during the ANAO's testing of 2011–12 water delivery documentation for the five catchments examined. The CEWO has since implemented improvements to business processes, recordkeeping and documentation recommended by the internal auditors. A new Water Holdings Register, which is expected to be implemented by the CEWO in early 2013–14, will help to strengthen the control over water holdings data.

37. The efficient delivery of the CEWO's environmental water is affected by a range of natural (mostly topographical) and artificial (infrastructure and rules-based) impediments. While the Commonwealth and state governments have undertaken (and plan to undertake) initiatives to address many impediments (generally involving infrastructure works and property acquisitions), the CEWO can pursue changes to Basin system management rules to improve the efficient and effective use of Commonwealth environmental water. In this regard, the CEWO has:

- established water shepherding arrangements with the Queensland and NSW governments to protect its water from extraction by other



consumptive entitlement holders in Basin catchments that lack water control infrastructure and public storage facilities<sup>19</sup>; and

- negotiated temporary rule changes within the River Murray system that, among other things, allowed CEWO water to flow in-stream from the Murray headwaters to the Lower Lakes in SA.

## Monitoring and evaluation (Chapter 6)

38. In the absence of a formal monitoring and evaluation framework and strategy, the CEWO initially used delivery partners to monitor the short-term ecological outcomes from specific watering actions since the first CEWO water deliveries in 2009. In response to EWSAP's concerns regarding monitoring and evaluation arrangements, the CEWO began to engage researchers (monitoring partners) to undertake detailed monitoring studies at key locations where Commonwealth environmental water has been delivered from mid-2011. These monitoring studies commonly involve sampling prior to, during and after the watering action to determine baseline values and changes in water quality, and populations/health of flora and fauna. The results of the four reports from monitoring partners received, accepted and published by the CEWO to date have also been summarised in its recent annual outcomes reports.

39. While the monitoring reports have addressed their monitoring objectives, the relationship between the monitoring objectives and the ecological outcomes achieved from the CEWO watering actions was not always clear. Monitoring reports that express clear conclusions on the achievement of watering action objectives would better place the CEWO to measure its performance and apply learnings to future watering actions.

40. From July 2014, the CEWO intends to change the focus of its ecological monitoring activities from an action-by-action basis to monitoring particular sites on a long-term basis using the MERI process.<sup>20</sup> To this end, the CEWO finalised a framework document in May 2012 to guide the application of the MERI process to the environmental watering function (the MERI framework

<sup>19</sup> Without these agreements, CEWO water delivered in-stream could trigger access thresholds to be exceeded downstream, which would otherwise allow downstream entitlement holders to extract the CEWO's water for consumptive purposes.

<sup>20</sup> The MERI process provides a generic framework for monitoring, evaluating and reporting activities and improving the management of key environmental assets. The MERI process was developed in 2003 by evaluation researchers and applied in natural resource management programs in 2009 by the then Department of Environment, Water, Heritage and the Arts and the Department of Agriculture, Fisheries and Forestry.

document). The principles, program logic and different levels of monitoring outlined in the MERI framework document provide a sound basis for the CEWO to: develop a strategy to implement the MERI process; support an assessment of its environmental watering function; and integrate its monitoring with the Basin-wide monitoring to be undertaken by the MDBA under the Basin Plan. The framework document also identified the seven sites within the Basin selected for long-term monitoring by the CEWO.<sup>21</sup>

41. In July 2012, the CEWO began work to develop a five-year strategy to implement the monitoring component of the MERI process (the MERI strategy) at a cost of \$23.4 million. Although the implementation of the MERI strategy was originally scheduled to commence from July 2013, the strategy's implementation has been delayed until July 2014 to allow more time to complete the strategy's development. While the CEWO advised the CEWH that the MERI strategy development would be managed in accordance with DSEWPac's project management standards, a project plan was not endorsed until March 2013—some nine months into the strategy's development and after key decisions had been taken. The delayed development of a comprehensive risk assessment and treatment plan as part of an endorsed project plan increased the risk to the successful development of the MERI strategy.

42. The approach to developing the strategy includes:

- the direct sourcing of a MERI advisor to provide high-level scientific, consultation and project management services to assist the CEWO to develop the MERI strategy (which occurred in October 2012);
- the development of an overall monitoring approach and site-specific monitoring requirements by the MERI advisor that takes into account consultations with stakeholders, including EWSAP, and the results of a peer review (February to October 2013);
- the selection (through open tender) and contracting of monitoring partners to monitor each site (scheduled for the end of July and October 2013, respectively); and

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<sup>21</sup> The seven sites are: the Gwydir Wetlands (wetlands and floodplains); Lower Lachlan river system (in-stream and on fringing wetlands); Murrumbidgee River (in-stream, on fringing wetlands, and floodplains); Edward–Wakool river system (in-stream and on fringing wetlands); Goulburn–Broken river system (in-stream and on fringing wetlands); Lower Murray (in-stream and on fringing wetlands); and Toorale Station (in stream and floodplains, as well as an indicator of upstream unregulated rivers).

- the development of detailed site-specific monitoring plans by monitoring partners (scheduled for the end of February 2014).

43. The CEWO intends to select monitoring partners using a two-staged approach to develop (Stage 1) and implement (Stage 2) detailed site-specific monitoring plans. In the first stage, monitoring partners will be selected on the basis of their capacity to develop and deliver the long-term monitoring program. As detailed proposals will not be sought from prospective monitoring partners, the CEWO intends to assess the proposals' value for money by examining the hourly or daily rates for proposed personnel and costings for the development of site-specific monitoring plans. Under the second stage, the CEWO will retain the right to approach other service providers where suitable arrangements to implement site-specific monitoring plans with Stage 1 monitoring partners cannot be negotiated. Given the early stage at which partners are being engaged and the level of uncertainty around future monitoring arrangements, this staged approach is reasonable.

## Summary of agency response

44. DSEWPaC's summary response to the proposed report is provided below, while the full response is provided at Appendix 1.

The Department of Sustainability, Environment, Water, Population and Communities notes the ANAO's findings that the department's strategies for managing environmental water are generally sound.

The Commonwealth Environmental Water Office has developed and strengthened its arrangements in line with the growth in the water holdings. While the report concludes the existing arrangements for the management of Commonwealth environmental water are appropriate, the department supports the suggestions made in the report to further strengthen the management of Commonwealth environmental water.



# Audit Findings

# 1. Background and Context

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*This chapter provides the broad context for the establishment of the Commonwealth Environmental Water Holder (CEWH), outlines the CEWH's functions and operating environment, and explains the role of the Commonwealth Environmental Water Office (CEWO) in supporting the CEWH's discharge of his regulatory functions. The audit objective, scope and methodology are also outlined.*

## Introduction

**1.1** The Murray–Darling Basin (the Basin) is an area of national environmental, economic and social significance. The Basin comprises Australia's three longest rivers—the Darling, the Murray and the Murrumbidgee—and nationally and internationally significant wetlands, billabongs and floodplains. The Basin covers one-seventh of Australia's land mass and extends across four states—Queensland, New South Wales, Victoria and South Australia (the Basin states)—and the Australian Capital Territory. Thirty-nine per cent of the national income derived from agricultural production is generated in the Basin, and it is home to over two million people.<sup>22</sup>

**1.2** Throughout much of the twentieth century, infrastructure was constructed and water resources were allocated within the Murray–Darling Basin for irrigation, livestock and human consumption that disrupted the natural flows of the river system. It is now recognised that irrigation infrastructure and an over-allocation of water for consumptive use are having unintended environmental consequences. Changes to the flow regime of the Basin's rivers have affected flood- and flow-dependent species and ecosystems. The ecological condition across the regions of the Basin has been assessed as being predominantly poor, with the trend being one of decline.<sup>23</sup>

**1.3** An over-allocation of water for consumptive uses, compounded by drought, has also led to the lower reliability of water allocations, with many irrigators receiving little or no water in some years. Further, the availability of surface water across the entire Basin is expected to decline in the future due to

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<sup>22</sup> Murray–Darling Basin Authority 2013, *Explore the Basin: About the Basin*, available from <<http://www.mdba.gov.au/explore-the-basin/about-the-basin>> [accessed 1 March 2013].

<sup>23</sup> Australian Government 2012, *Regulation Impact Statement: Basin Plan (Water Act 2007)*, p. vi.

climate change—with the greatest reduction predicted to occur in the south-east of the Basin where most of the run-off is generated and the impact of climate change is likely to be greatest.<sup>24</sup>

## Reforms in the Basin

**1.4** In recent years there have been a number of reforms aimed at improving the management of water resources and addressing the imbalance between consumptive and environmental water use in the Basin. Major reforms include the:

- passage of the *Water Act 2007* on 3 March 2008, which provided the legislative basis for the Commonwealth’s intervention in managing the water resources of the Basin and established the Commonwealth Environmental Water Holder (CEWH);
- signing of an Intergovernmental Agreement on Murray–Darling Basin Reform (the Basin Agreement) on 3 July 2008, which committed the Commonwealth, the Basin states and the Australian Capital Territory to new ways of managing water resources in the Basin;
- establishment (under the *Water Act 2007*) of the Murray–Darling Basin Authority (MDBA) in December 2008, whose responsibilities include the production, implementation and enforcement of the first Basin-wide water sharing and management plan (the Basin Plan)<sup>25</sup>; and
- acquisition of water entitlements by the Commonwealth primarily through direct purchases under the \$3.1 billion *Restoring the Balance Program* and funding infrastructure improvements under the \$5.8 billion *Sustainable Rural Water Use and Infrastructure Program*.<sup>26</sup>

**1.5** The Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) advised that the water entitlements under management by the CEWH, as at February 2013, were valued at \$1.89 billion.<sup>27</sup>

<sup>24</sup> Commonwealth Scientific and Industrial Research Organisation 2008, *Water Availability in the Murray–Darling Basin: A report from CSIRO to the Australian Government*, p. 8.

<sup>25</sup> The MDBA also assumed responsibility for all of the functions of the former Murray–Darling Basin Commission.

<sup>26</sup> Water entitlements are a perpetual or ongoing entitlement by, or under, a law of a state to access a share of the water resources of a water sharing plan area.

<sup>27</sup> Water entitlement valuations fluctuate over time, reflecting movements in market prices. The current valuation of water entitlements takes into account impairment losses of \$0.31 billion from the value of the water entitlements at the time of their acquisition. The current valuation of water entitlements does not take into account ancillary program expenditure associated with the acquisition of the entitlements (which includes expenditure on irrigation infrastructure improvements).

These entitlements are to be used by the Commonwealth for environmental purposes in the Basin within the established frameworks for managing the Basin's water resources.<sup>28</sup> The CEWH is responsible for ensuring this water is delivered to achieve environmental watering objectives.

## Commonwealth Environmental Water Holder

1.6 The functions of the CEWH include:

- managing Commonwealth environmental water holdings—that is, water access rights, water delivery rights, irrigation rights or other similar rights that the Commonwealth holds (collectively known as water entitlements)—to make water available for the purpose of protecting and restoring areas of environmental significance within the Basin (including water courses, wetlands and floodplains) so as to give effect to relevant international agreements<sup>29</sup>; and
- administering the Environmental Water Holdings Special Account established to pay and discharge costs, expenses and other obligations related to the performance of the CEWH's functions (excluding salary costs for staff assisting the CEWH).

1.7 The CEWH is also required to perform functions and exercise powers in a way that is consistent with the Environmental Watering Plan (within the Basin Plan) and the Basin-wide environmental watering strategy (to be developed by the MDBA).<sup>30</sup> The CEWH's various obligations contained in the Basin Plan are expected to be implemented over the short, medium and/or long term.<sup>31</sup>

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<sup>28</sup> Management of the Basin's water resources will transition from the existing state-based water management frameworks to the Basin Plan over the period from 22 November 2012 (when the Basin Plan was made) to 1 July 2019.

<sup>29</sup> Areas of environmental significance, defined as environmental assets, include water-dependent ecosystems, ecosystem services and sites with ecological significance. International agreements include intergovernmental treaties, conventions and agreements related to: wetlands of international importance (Ramsar agreement); the conservation of wildlife and habitats (Bonn Convention); biological diversity (Convention on Biological Diversity); and migratory birds (agreements with Japan, China and the Republic of Korea).

<sup>30</sup> Clause 8.03(1) of the Basin Plan.

<sup>31</sup> After a development period of some four years, the Basin Plan was adopted into law by the Australian Parliament on 22 November 2012. The Basin Plan provides a high-level framework that sets standards for the Commonwealth, Basin states and the MDBA to manage the Basin's water resources in a coordinated and sustainable way in collaboration with the community.



**1.8** The effective discharge of these functions requires the CEWH to:

- determine the environmental assets to water and the quantity of environmental water to use, having regard to Basin conditions and the views of key stakeholders;
- ensure that delivery partners and/or river operators<sup>32</sup> deliver environmental water as intended, which generally occurs through controlled releases from dams, weirs and barrages; and
- monitor and report on the ecological results of its water deliveries<sup>33</sup> and the achievement of its legislated objective of protecting and restoring environmental assets in the Murray–Darling Basin.

**1.9** The Government appointed a senior executive service officer from the Water Group within DSEWPaC to perform the role of the CEWH. The CEWH is currently supported by approximately 57 staff across two branches, which are known collectively as the Commonwealth Environmental Water Office (CEWO).<sup>34</sup> The office operates as a distinct unit within DSEWPaC, with a budget of \$33 million in 2012–13 (over a third of which relates to the cost of holding water entitlements and delivery fees and charges). The CEWO is supported by committees of external advisors, that provide advice in relation to scientific and stakeholder issues.<sup>35</sup>

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<sup>32</sup> Delivery partners include: state and territory departments and agencies; private irrigation infrastructure operators; and catchment management authorities. River operators, which include state government authorities and the MDBA, control, operate and manage the water delivery infrastructure within the Basin.

<sup>33</sup> Ecological monitoring can involve impacts on aquatic and terrestrial vegetation, waterbirds, fish, frogs, tadpoles, insects and other invertebrates.

<sup>34</sup> Prior to the establishment of the CEWO in December 2011, the CEWH was supported by an environmental watering section or branch. For the purposes of the audit, the CEWO has been used exclusively to refer to the DSEWPaC staff supporting the CEWH.

<sup>35</sup> The CEWO intends to establish a further advisory committee to provide advice in relation to governance issues.

**1.10** The CEWH's environmental watering function is a relatively new area of Commonwealth activity, and does not have an international equivalent or precedent. Most of the environmental watering frameworks, policies and practices have been developed by the CEWO in consultation with those delivery partners that have some experience in environmental watering, including:

- state departments and agencies—that have been managing water assigned to the environment under their water sharing plans<sup>36</sup>; and
- the MDBA (and the former Murray–Darling Basin Commission)—that has been managing acquired water entitlements since 2003 under *The Living Murray* initiative for the benefit of six 'icon' sites along the River Murray (discussed in Chapter 3).

### **Accumulation and use of water entitlements and allocations**

**1.11** The CEWH is the largest holder of water entitlements in the Basin. As at 28 February 2013, the Commonwealth held water entitlements totalling 1523 gigalitres/year<sup>37</sup> (GL/yr) in 17 of the 19 catchments across the Basin<sup>38</sup>, which equates to between 35 and 42 per cent of the CEWH's anticipated final entitlement holdings.<sup>39</sup> Figure 1.1 illustrates the accumulation of entitlements by the Commonwealth since 2008–09.

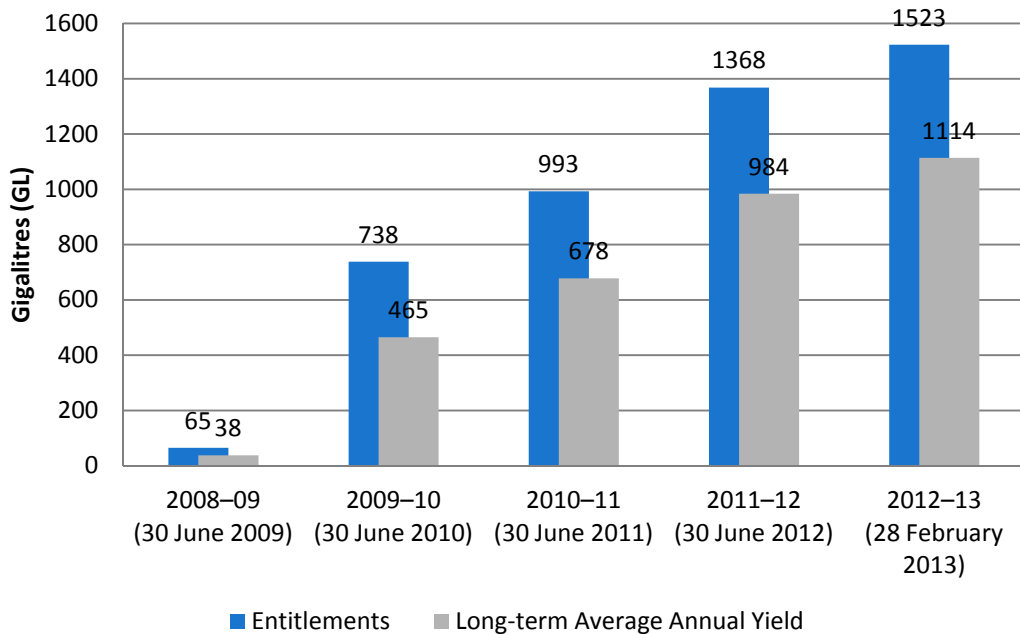
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<sup>36</sup> Most states have enacted legislation that establishes water management arrangements in their respective catchments within the Basin (collectively known as water sharing plans). The water sharing plans establish the various categories of water entitlements and may set aside a quantity or proportion of water for environmental watering purposes.

<sup>37</sup> One gigalitre equals 1000 megalitres or 1 000 000 000 litres.

<sup>38</sup> The catchments of the Murray–Darling Basin are illustrated at Appendix 2.

<sup>39</sup> The CEWH's anticipated final entitlement holdings were determined by reference to: the targets established under the Basin Plan for recovering water entitlements across the catchments of the Basin; the potential adjustments to the Basin Plan targets to account for the impacts of future environmental works and measures; and the further quantity of entitlements the Commonwealth has committed to acquire under the *Water Amendment (Water for the Environment Special Account) Act 2013*.

**Figure 1.1****Accumulation of entitlements by the Commonwealth**

Source: CEWO.

Note: Long-term Average Annual Yield is the method used to standardise the calculation of expected water recoveries in the Basin from the different water entitlement categories across the catchments of the Basin. Long-term Average Annual Yield equates with the Sustainable Diversion Limit methodology used in the Basin Plan to indicate the targets established to recover water entitlements across the Basin.

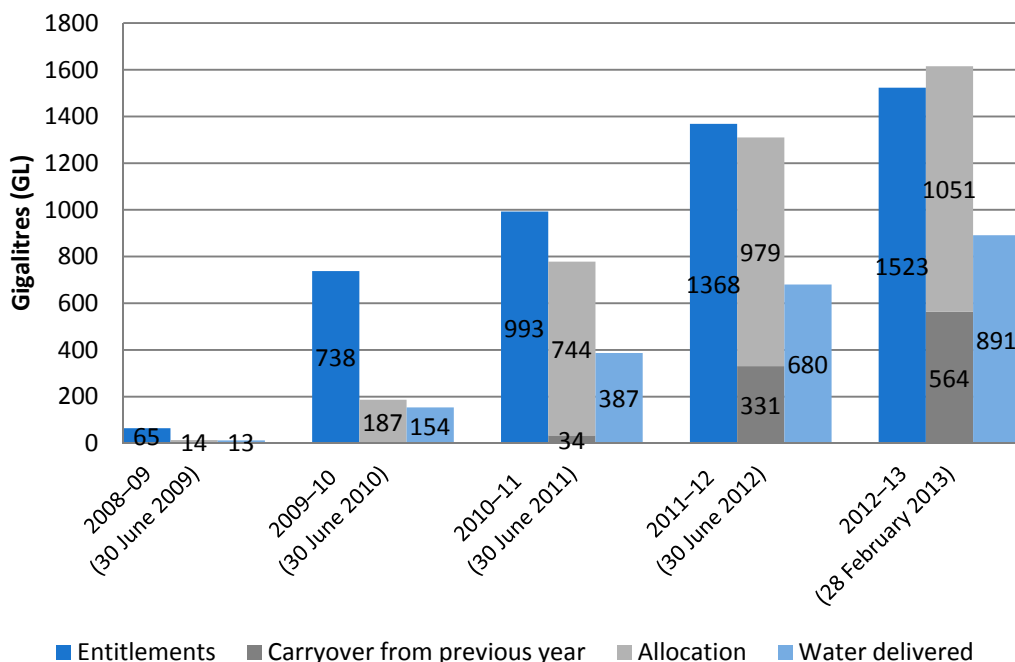
**1.12** Figure 1.2 (on the following page) illustrates Commonwealth-held water entitlements, annual water allocations<sup>40</sup> and water delivered to environmental assets between 1 July 2008 and 28 February 2013. As at 28 February 2013, 2124 GL of Commonwealth environmental water had been delivered to a range of environmental assets across the Basin since the CEWH's establishment.<sup>41</sup> Notwithstanding this activity to date, the CEWH's current water holdings represent only a small proportion of streamflows throughout the Basin (less than six per cent of an average year's inflows).

<sup>40</sup> State water management authorities allocate a specific volume of water to a water entitlement, usually expressed as a percentage of the entitlement, in a given water year or as specified within a water sharing plan. The 'millennium drought' (from 2000 to 2009-10) brought historically low water allocations against entitlements. Conversely, flooding within the Basin during 2010-11 and 2011-12 has seen water allocations against entitlements increase markedly.

<sup>41</sup> Figure 5.1 in Chapter 5 illustrates the sites watered by the CEWO from March 2009 to February 2013. Factors influencing the quantity of water delivered in any one year include current and forecast allocations, weather and catchment conditions and each asset's watering needs.

**Figure 1.2**

**Availability and use of Commonwealth water holdings for the period from July 2008 to February 2013**



Source: CEWO.

Note: Carryover represents unused water allocations in one year that have been brought forward (or carried-over) for use in the following year.

**1.13** The CEWO’s management and use of its portfolio of water entitlement holdings occurs within a complex set of Basin system management rules established and regulated by the Basin states. Further, other Commonwealth and state authorities control the infrastructure (dams, weirs and barrages) necessary to deliver environmental water to assets in those catchments where river water can be stored or flow levels can be controlled (regulated catchments). In other (unregulated) catchments, natural events control the flow of river systems and determine the use of Commonwealth environmental water.<sup>42</sup>

**1.14** The entitlements, and the allocations granted to entitlements, acquired by the Commonwealth retain their existing characteristics. This means that the

<sup>42</sup> Most of the unregulated Basin catchments are located in Queensland and northern New South Wales.

Commonwealth is subject to the same rules, restrictions and fees as other (consumptive) holders of the same type of entitlement.

**1.15** The Basin system management rules were established with a primary focus on consumptive users. While irrigators extract water from the river system, the CEWO uses water differently—generally contributing to enhanced river flows and inundating neighbouring wetlands and floodplains (as illustrated in Figure 1.3 on the following page). Consequently, current Basin rules do not always facilitate the CEWO’s intended watering activities, and can sometimes complicate or inhibit their execution. In such circumstances, the CEWO has developed alternative arrangements or negotiated (temporary or permanent) changes to system management rules to deliver environmental water to support intended objectives. In all circumstances, the CEWO is required to comply with all applicable environmental, water and heritage legislation and obtain the appropriate approvals to apply water to sites when undertaking the environmental watering function.<sup>43</sup>

## Parliamentary and media interest

**1.16** Parliamentary and media interest in the management of the Basin’s water resources has increased over time with the development of the Basin Plan. The MDBA’s release of the *Guide to the proposed Basin Plan* (the Guide) in October 2010 prompted critical comments from state governments, the media and some organisations and communities within the Basin.

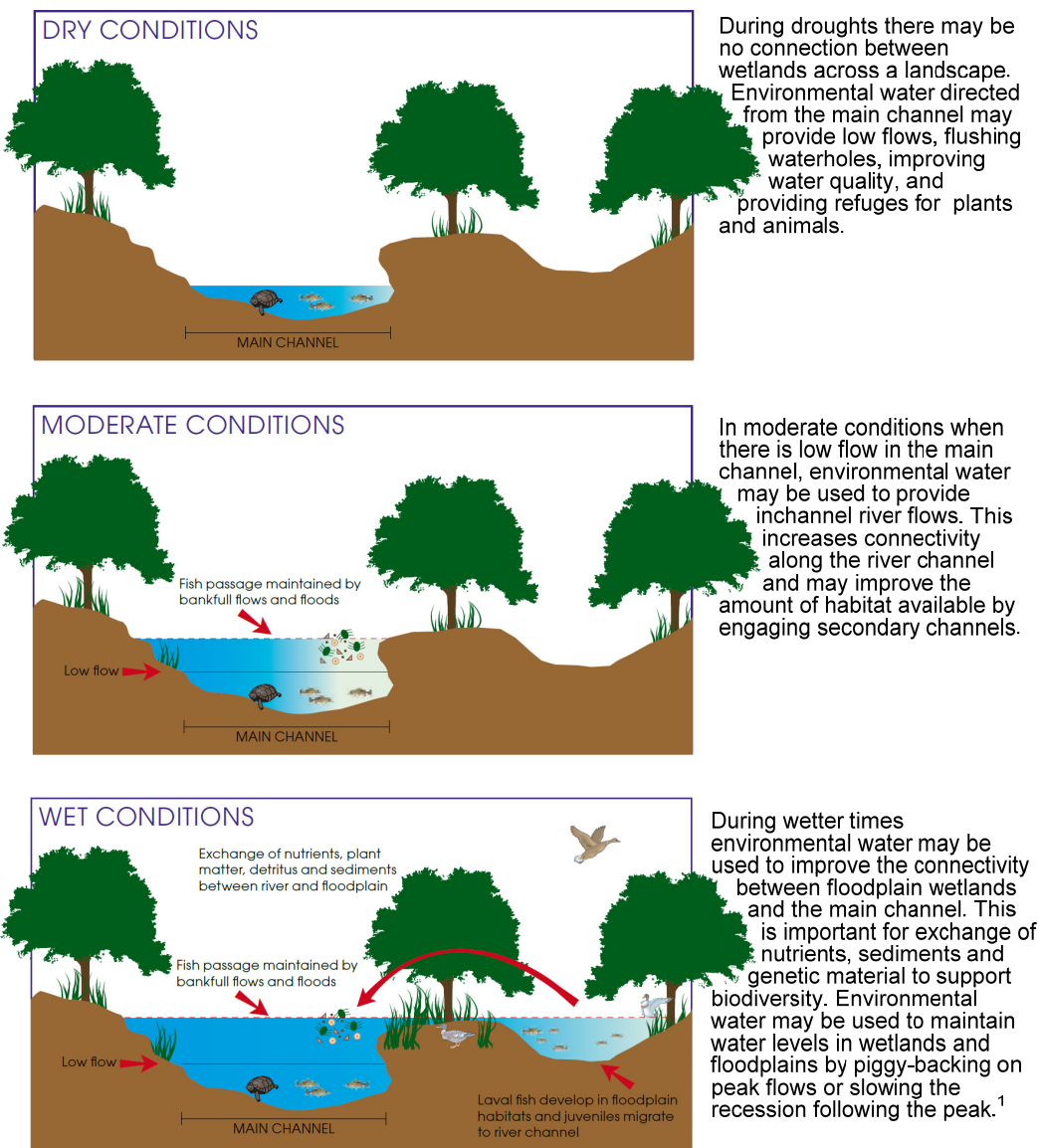
**1.17** The House of Representatives Standing Committee on Regional Australia (the Committee) undertook an inquiry into the socio-economic impact of the Guide on regional communities that considered, among other things, the CEWH’s discharge of the environmental watering function. The Committee’s report, *Of drought and flooding rains: Inquiry into the impact of the Guide to the Murray–Darling Basin Plan*, dated June 2011, recommended that the Commonwealth establish a dedicated agency to be led by the CEWH to improve its environmental watering expertise and knowledge, and transparency and accountability to its key stakeholders.<sup>44</sup>

<sup>43</sup> The CEWO is also required to obtain the consent of landowners whose properties would be inundated as a consequence of a delivery of Commonwealth environmental water.

<sup>44</sup> House of Representatives Standing Committee on Regional Australia Committee Report: *Of drought and flooding rains—Inquiry into the impact of the Guide to the Murray–Darling Basin Plan*, Recommendation 20, June 2011.

**Figure 1.3**

**Environmental watering under different conditions**



Source: CEWO.

Note 1: The opportunities for overbank flows may be limited by delivery constraints, such as channel or outlet capacity and the need to avoid undesired flooding of private land or infrastructure.

**1.18** In response to the Committee’s report, the Government agreed to establish:

- the CEWO as a distinct entity within DSEWPaC; and
- two new advisory committees to work with the CEWO in relation to operational and stakeholder engagement issues.<sup>45</sup>

**1.19** The Government has also included a new and separate outcome in DSEWPaC’s 2012–13 Portfolio Budget Statements—*Commonwealth Environmental Water*—to provide greater transparency and accountability of the CEWO’s environmental watering function.<sup>46</sup>

**1.20** In March 2013, the Senate Standing Committee on Rural and Regional Affairs and Transport tabled a report on *The management of the Murray–Darling Basin*. Overall, the report considered that the management of the Basin could be improved through more research into, and better stakeholder communication and consultation on, issues associated with: surface and ground water; infrastructure investment; water entitlements; water trading; changing farming practices; and the socio-economic impacts of changes. In this regard, the committee made 23 recommendations, none of which were directed towards the CEWO.

## Recent audit coverage

**1.21** In 2010–11, the ANAO’s *Restoring the Balance in the Murray–Darling Basin* performance audit<sup>47</sup> examined decision-making in relation to the use of environmental water, the delivery of water and subsequent monitoring and reporting activities. The findings of this audit included that the:

- watering actions examined were assessed by the CEWO using the approved criteria, with advice provided by its scientific advisory committee. However, there was variability in the quality of the scientific data provided to support states’ proposals to use Commonwealth environmental water; and

<sup>45</sup> Australian Government Response to the House of Representatives Standing Committee on Regional Australia Committee Report: *Of drought and flooding rains—Inquiry into the impact of the Guide to the Murray–Darling Basin Plan in Regional Australia*, Recommendation 20, November 2011.

<sup>46</sup> The CEWO’s environmental watering function was formerly included in DSEWPaC’s *Water Reform* outcome.

<sup>47</sup> ANAO Audit Report No. 27 2010–11 *Restoring the Balance in the Murray–Darling Basin*.

- CEWO's processes provided reasonable assurance that allocated water was delivered as specified. As well, sufficient monitoring information was obtained, albeit of variable quality, to indicate whether intended ecological responses were being achieved (at least in the short term).

**1.22** The ANAO acknowledged in the 2010–11 audit that the CEWO was developing tools, methods and initiatives to: identify and prioritise watering options; and better coordinate and integrate monitoring, evaluation and reporting activities.

**1.23** Under Part 3 of the *Water Act 2007*, the National Water Commission (NWC) is required to audit the effectiveness of the implementation of the Murray–Darling Basin Plan and water resource plans at least every five years. The NWC's first report was provided to the Minister for Sustainability, Environment, Water, Population and Communities (the Minister) on 1 March 2013. An audit is yet to be undertaken given the limited time that had elapsed since the Basin Plan was finalised. The report outlined, among other things, the Basin Plan implementation priorities that the NWC considers should be substantially progressed over the next two years. The NWC plans to undertake its first audit of the effectiveness of the implementation of the Basin Plan during 2014, with the report to be released in 2015.

## Audit objective, criteria and methodology

**1.24** The objective of the audit was to assess the effectiveness of the Commonwealth Environmental Water Office's administration of environmental water holdings.

**1.25** The audit examined whether the CEWO's:

- governance arrangements are appropriate to effectively manage and report on the CEWO's environmental watering activities;
- engagement of all relevant stakeholders effectively facilitates the management of the CEWO'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; and



- monitoring and evaluation activities effectively identify the outcomes achieved from the CEWO's environmental watering activities, and influence future water use decisions.

## **Audit methodology**

**1.26** In undertaking the audit, the ANAO: examined CEWO files and records; held interviews and discussions with the CEWH, CEWO staff and advisory committee members; and consulted, either face-to-face or through correspondence, with environmental water stakeholders.

**1.27** During the audit, the ANAO sought written comments on aspects of the CEWO's environmental watering activities from 'delivery partners' and a selection of other stakeholders. The ANAO received substantive responses from 24 of the 28 delivery partners and 22 of the 319 other stakeholders approached.

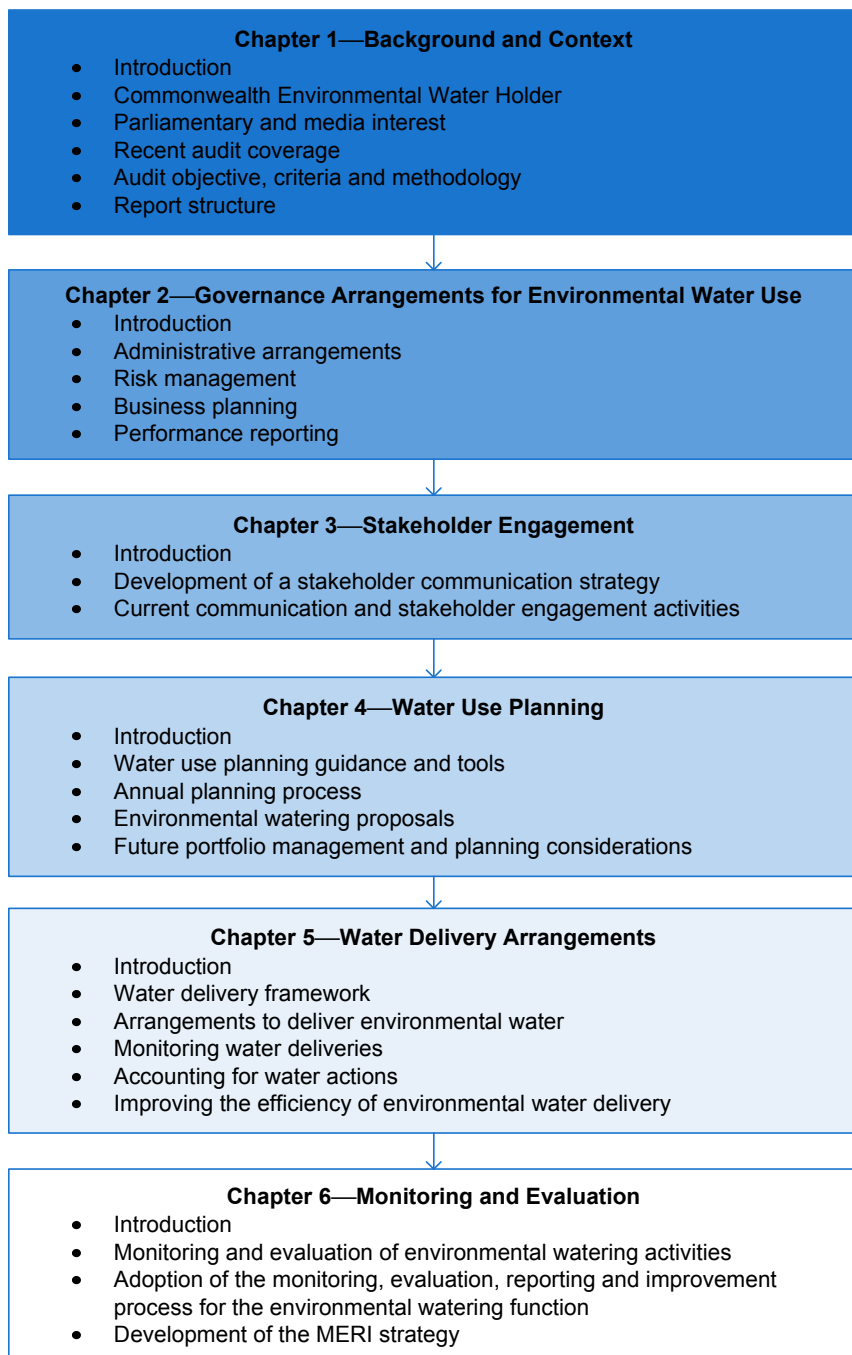
**1.28** The audit was conducted in accordance with ANAO Auditing Standards at a cost of \$430 000.

## **Report structure**

**1.29** The report's structure is outlined in Figure 1.4.

**Figure 1.4**

**Report structure**



Source: ANAO.

## 2. Governance Arrangements for Environmental Water Use

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*This chapter examines the governance arrangements in place for the CEWO's environmental watering activities, including administrative arrangements, risk management approaches, business planning and performance reporting.*

### Introduction

**2.1** The CEWO undertakes its functions in an inherently complex and challenging environment. It manages a diverse portfolio of water entitlements for the benefit of a substantial number of Basin assets across a large geographic area with variable environmental watering needs over the short and long term. The delivery of environmental water to these assets is reliant on a number of third parties, including state departments and authorities, which necessitate sound working relationships. In addition, there are a range of stakeholders within and outside the Basin with an interest in the outcomes from the CEWO's environmental watering activities.

**2.2** Sound governance arrangements are essential to manage the many risks to the effective discharge of the CEWO's environmental watering function. The ANAO examined the appropriateness and effectiveness of the:

- arrangements for administering the environmental watering function;
- risk management framework to identify, assess and treat those risks that would adversely impact on the performance of the CEWO's activities;
- business planning framework as a means to prioritise and manage the CEWO's activities; and
- the CEWO's reporting of the performance of the environmental watering function.

### Administrative arrangements

**2.3** The ANAO examined the role of the CEWH and staff within the CEWO, external committees that support the CEWH's function and key internal coordination arrangements.

## **Commonwealth Environmental Water Holder and support staff**

**2.4** As previously noted, the statutory position of the CEWH has been assigned to a senior executive service officer within the Water Group of DSEWPaC since the establishment of the position on 3 March 2008.<sup>48</sup> The CEWH is accountable to the Minister for Sustainability, Environment, Water, Population and Communities (the Minister) for the discharge of his statutory functions and to the DSEWPaC Secretary for his departmental responsibilities.

**2.5** The CEWH has been supported by DSEWPaC staff from within the department's Water Group, with their numbers steadily rising over time in line with the accumulation of entitlements and increased environmental watering activity. The CEWH's support staff of six officers in an Environmental Water Holder Section in March 2008, expanded in September 2008 to an Environmental Water Branch of nine staff, and increased to 35 staff over the following two years.

**2.6** In the period from March 2008 to November 2011, the CEWH discharged his duties as a division head in DSEWPaC in addition to than the environmental watering function. In November 2011, the Government agreed to establish the CEWO as a distinct unit within DSEWPaC in response to the June 2011 report from the House of Representatives Standing Committee on Regional Australia (the Committee).<sup>49</sup> Since the establishment of the CEWO on 1 December 2011, the CEWH now focuses exclusively on the management of environmental water. As at February 2013, the CEWO had 57 staff in two branches as illustrated in Figure 2.1.

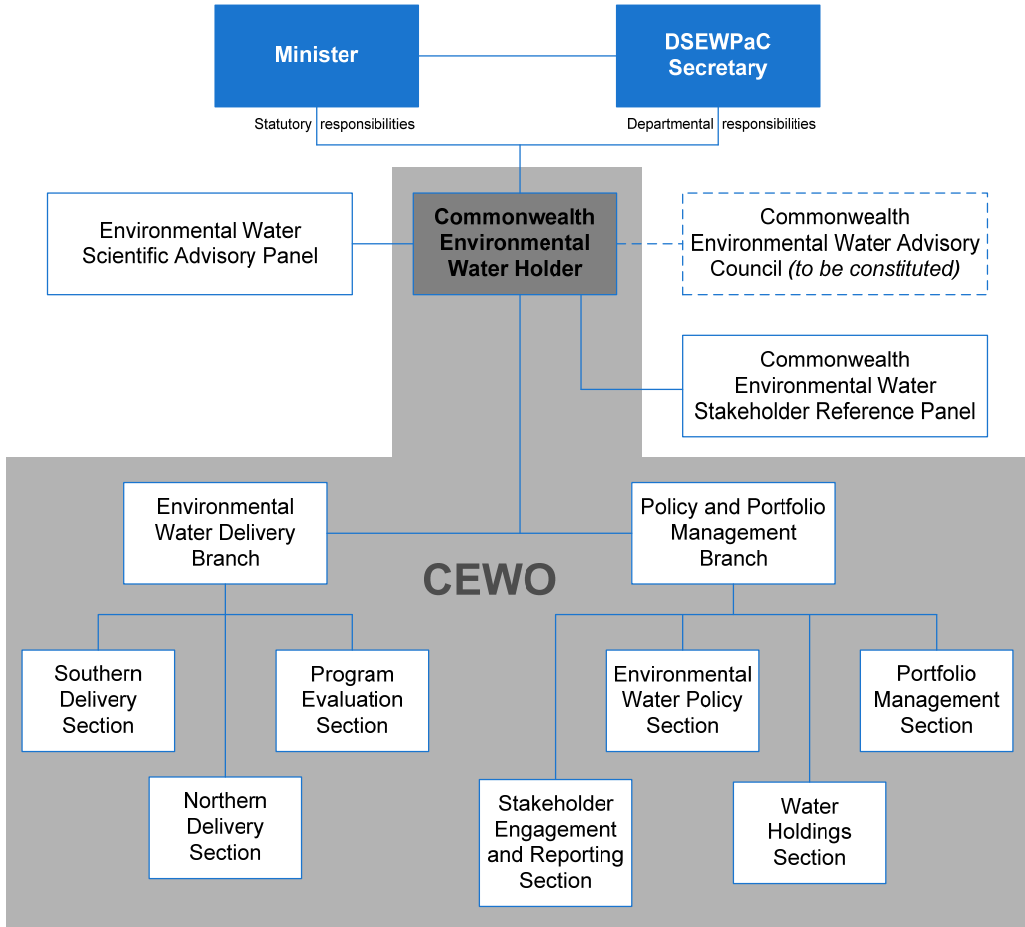
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<sup>48</sup> A DSEWPaC deputy secretary has assumed the position of CEWH at various times.

<sup>49</sup> Australian Government Response to the House of Representatives Standing Committee on Regional Australia Committee Report: *Of drought and flooding rains—Inquiry into the impact of the Guide to the Murray–Darling Basin Plan in Regional Australia*, Recommendation 20, November 2011. The Committee had recommended that the Commonwealth Government establish a dedicated agency to be led by the CEWH to improve its environmental watering expertise and knowledge, and transparency and accountability to its key stakeholders.

**Figure 2.1**

**Current structure of the CEWO**



Source: ANAO from CEWO information.

**Advisory committees supporting the CEWO**

2.7 The CEWO has been supported by the Environmental Water Scientific Advisory Panel (EWSAP)<sup>50</sup>, which was established in October 2008 to provide advice in relation to scientific issues. As part of its response to the June 2011 report of the House of Representatives Standing Committee on Regional Australia, the Government agreed in November 2011 to establish the following two additional advisory committees:

<sup>50</sup> EWSAP was formerly known as the Environmental Water Scientific Advisory Committee (EWSAC). For the purposes of the audit, EWSAP has been used exclusively to refer to the actions of EWSAC and EWSAP.

- the Commonwealth Environmental Water Stakeholder Reference Panel –which is designed to enhance communications with the CEWO and contains representatives from irrigator, Indigenous, community and conservation groups; and
- the Commonwealth Environmental Water Advisory Council—which is designed to provide independent expert recommendations and advice to the CEWO in respect of: river operators and water delivery; portfolio management; financial management and governance; and communications and stakeholder management.

**2.8** The ANAO did not examine the operation of the Commonwealth Environmental Water Stakeholder Reference Panel and the Commonwealth Environmental Water Advisory Council as they had only been recently established or are yet to be constituted.

#### *Environmental Water Scientific Advisory Panel*

**2.9** EWSAP includes scientists and experts in fields, such as hydrology, limnology<sup>51</sup>, river operations management, river and floodplain ecology and management of aquatic ecosystems. The CEWO has sought, and taken into account, EWSAP’s advice at quarterly meetings, and out-of-session as necessary, in relation to:

- the development of key frameworks supporting the CEWO’s operations, including the water use framework, operational risk guidelines and the monitoring, evaluation, reporting and improvement (MERI) framework document;
- proposed watering actions (until 2010–11) and water use strategies/options documents (2011–12 onwards)<sup>52</sup>;
- preliminary results from research commissioned by the CEWO, including in respect of monitoring and evaluation associated with environmental watering;
- work undertaken to prepare for the requirements of the proposed Basin Plan and Environmental Watering Plan; and

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<sup>51</sup> Limnology is the study of biological, chemical and physical features of lakes and other bodies of freshwater.

<sup>52</sup> The water use strategies/options documents are the CEWO’s annual plans prepared at the start of each year that outline potential watering options in each catchment or group of catchments for the year.

- the progressive development of a strategy for the long-term ecological monitoring of selected sites.

**2.10** While access to the expertise of practising researchers and scientists provides important insights, there is the potential for a conflict of interest to arise where EWSAP members, or their employers, are involved in the CEWO's commissioned monitoring or research activities. To manage potential conflicts of interest, the CEWO has: restricted EWSAP's involvement in procurement arrangements for monitoring and evaluation activities; and established protocols and procedures for panel members to declare potential conflicts. However, there is scope for the CEWO's monitoring of the panel's compliance with the conflict of interest protocols and procedures to be strengthened to address weaknesses in the specificity and timeliness of members' private interest declarations and the management of potential conflicts of interest at EWSAP meetings.

### **Internal coordination arrangements**

**2.11** In November 2011, the CEWO commenced regular formal management committee meetings attended by the CEWH, branch managers and section managers. The committee meetings, usually held monthly, are designed to provide advice and direction, as well as enhance coordination of activities across the CEWO. The management committee provides a useful forum to coordinate the diverse activities undertaken by the CEWO. A greater focus on monitoring progress against the CEWO's business plan would further enhance the role of the committee in oversighting the activities of the office.

### **Conclusion**

**2.12** The administrative arrangements underpinning the environmental watering function have been progressively strengthened and enhanced over time. The CEWH's responsibilities are now exclusively focused on the environmental watering function, the number of support staff has been significantly increased to manage increased activity, and the CEWO's access to expert external advice is expanding. Further, the establishment of formal monthly management committee meetings has helped to coordinate the diverse and growing range of activities undertaken by the CEWO.

### **Risk management**

**2.13** There are a range of risks to the effective discharge of the CEWH's environmental watering function—at both the organisational and operational level. While risk assessments are routinely prepared for individual watering

actions and annual catchment watering plans (which are examined in Chapter 4), the CEWO has only more recently considered risk management as a means to guide its administration of the broader environmental watering function. The ANAO examined the evolution of the CEWO's approach to risk management.

## Early risk management by the CEWO

**2.14** The CEWO first prepared a draft risk assessment for the environmental watering function in October 2010, some two and a half years after the CEWH was established by the *Water Act 2007*. The draft risk assessment rated six of the eight identified risks as 'high' after considering the effectiveness of existing controls—most of which the CEWO assessed as 'incomplete'. The CEWO considered that even with the implementation of a further 30 treatments, three 'high' risks would remain. At the same time, the CEWO also began producing one-page risk summaries for submission to the Water Group Outcome Board each month.<sup>53</sup> However, records retained by the CEWO:

- do not demonstrate that the CEWH endorsed the risk assessment, or that the draft assessment was further updated after December 2010; and
- indicate that the risk summaries varied substantially in their coverage from month-to-month<sup>54</sup>, which limited their effectiveness as a risk management tool.

## Legal and governance risk assessment

**2.15** In mid-2011, the CEWO considered that a comprehensive assessment of the risks facing its environmental watering function was required. The CEWO engaged the Australian Government Solicitor (AGS) in January 2012 to identify and assess the sources of CEWO's strategic legal and governance risks and identify appropriate treatments where current controls were considered insufficient to manage risks rated 'medium' or higher. As part of the legal and governance risk assessment, the AGS:

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<sup>53</sup> The Water Group Outcome Board is responsible for providing integrated high-level governance to ensure the efficient and effective achievement of significant progress in the delivery of DSEWPaC's Water Reform outcome programs and projects. The Board comprises a departmental Deputy Secretary, who is the Chair, and the First Assistant Secretaries who have responsibility for divisions within the Water Group.

<sup>54</sup> For example, the number of risk sources within each summary fluctuated between four and eight, and risk treatments were often deleted before their expected completion dates and replaced with new risk treatments.



- reviewed Commonwealth and state legislation and case law applicable to the CEWO's environmental watering activities (which are generally associated with water management, environment and heritage issues and negligence actions)<sup>55</sup>; and
- took into account both the potential for real breaches of relevant law and policy, as well as the potential for any perceived breaches that might damage public confidence in the management of Commonwealth environmental water.

**2.16** The legal and governance risk assessment, which was finalised in June 2012, contains a detailed analysis of 60 sources of risk against the following four risk categories:

- failure to demonstrate environmental outcomes that meet the requirements of relevant legislation, key agreements and Commonwealth government policies;
- failure to appropriately manage operational arrangements;
- failure to appropriately manage the Commonwealth environmental water portfolio; and
- lack of, or failure to appropriately manage, resources (people, information and finances).

**2.17** The assessment indicated that current controls were only partially effective in reducing the risks facing the CEWO to acceptable levels. However, with further treatment directed at 34 risk sources, nearly all risk sources could be reduced to 'medium' or 'low'. The risk treatment plan assigned management responsibility for implementing each treatment and recorded the expected implementation dates (over 97 per cent of which were due for completion by the end of 2012–13).

**2.18** The two remaining risks sources with a 'high' rating after treatment are:

- watering actions having a significant impact on a matter protected by Part 3 of the *Environment Protection and Biodiversity Conservation Act*

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<sup>55</sup> The extent to which state legislation applies to and binds the Commonwealth requires a case-by-case determination. However, for the purposes of the legal and governance risk assessment, it was assumed that state legislation applied to the Commonwealth.

1999<sup>56</sup>—due to the likelihood of reputational consequences arising from members of the public perceiving breaches (rather than actual breaches involving CEWO water); and

- that environmental water use has unintended negative impacts on people or property—due to the potential critical consequences of a mismanaged watering action, no matter how rare its likelihood.

**2.19** The CEWO reviews progress on implementing risk treatments at each month’s management committee meeting where the CEWH has, in some cases, agreed to extend implementation deadlines. As at March 2013, the CEWO had implemented 11 of the 25 risk treatments directed towards ‘high’ rated risks. There would be merit in the CEWO finalising all outstanding risk treatments as soon as practicable.

**2.20** The CEWO informed the ANAO that the AGS will be engaged to undertake a supplementary risk assessment covering the obligations placed on the CEWH by the recent Basin Plan.

## **Conclusion**

**2.21** The CEWO has strengthened its approach to organisational risk management over time, with risks now appropriately assessed and treatments identified and monitored. While there were significant weaknesses with the CEWO’s early risk management approaches, the preparation of a fit-for-purpose legal and governance risk assessment has better positioned the CEWO to manage the diverse range of risks that arise from the delivery of environmental water.

## **Business planning**

**2.22** The CEWO publishes an annual business plan at the start of each financial year, with annual branch and section plans produced internally supporting the achievement of the CEWO’s broader organisational goals. The ANAO examined the CEWO’s business, branch and section planning for 2011–12 and 2012–13 to determine the extent to which their structure, contents and use supported the CEWO’s environmental watering activities.

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<sup>56</sup> Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* prohibits the taking of an action without approval from the Minister (or delegate), unless exempt, that will significantly impact on world heritage areas, national heritage areas, internationally significant wetlands, threatened species and communities, migratory species, and Commonwealth land.

## CEWO business plans

2.23 The 2011–12 and 2012–13 Business Plans outlined the CEWO’s:

- relationships with delivery partners and other stakeholders, and key stakeholder engagement activities;
- decision-making framework for water use planning and deliveries;
- monitoring, evaluation and reporting framework and activities;
- portfolio management responsibilities; and
- governance, financial management and accountability obligations.

2.24 The business plans also identified the key priorities of the CEWO for the coming year, with half of the 2012–13 priorities being the same or similar to those in the previous year’s plan. However, the plans did not:

- provide a clear indication of how the delivery of the key priorities and other outputs identified would lead to the achievement of the CEWO’s outcome of ‘protecting and restoring the environmental assets in the Murray–Darling Basin ...’ (s.105(3)(a) of the *Water Act 2007*); and
- contain qualitative or quantitative key performance indicators (KPIs) to facilitate the measurement of the CEWO’s performance over time.

2.25 A clear alignment between activities and outcomes helps to ensure that limited resources are efficiently deployed, and KPIs that are relevant, reliable and complete can assist with a balanced examination of the CEWO’s performance to deliver outputs and achieve outcomes. The CEWO advised the ANAO that the development of the MERI strategy, currently underway, is designed to assist in the establishment of appropriate KPIs for the CEWO (see Chapter 6).

## Branch and section plans

2.26 The 2011–12 and 2012–13 branch and section plans expanded on the CEWO’s key priorities outlined in the annual business plans—identifying key activities and deliverables, and assigning resources accordingly. The branch plans also more explicitly outlined the relationship between the delivery of CEWO outputs and the achievement of outcomes but, similar to the CEWO business plans, did not contain KPIs. Given the significant expansion in the CEWO and the resulting increase in administrative costs, a set of fit-for-purpose performance indicators would assist the CEWO to assess the efficiency of its operations.

**2.27** Further, the branch plans did not contain reference to ‘risk’ or ‘risk management’ to underpin the identification of its priority activities, which was notable given that the AGS completed the CEWO’s legal and governance risk assessment in June 2012 and the 2012–13 Business Plan contained reference to the implementation of risk treatments. The activities outlined in the 2012–13 section plans did, however, generally align with those actions required to implement the risk treatments from the legal and governance risk assessment.

### **Alignment between plans**

**2.28** The alignment between the CEWO’s business, branch and section plans, and to other departmental business plans, was not readily apparent due to the plans’ differing structures and content. Variable structure and content within plans, and poor alignment between the plans, can lead to gaps in coverage that impact on the delivery of key priorities or resources being allocated to tasks that do not support the achievement of CEWO objectives. Improved alignment between planning levels would better support the CEWO’s environmental watering function.

### **Reviewing performance against plans**

**2.29** While progress against the key priorities from the 2011–12 Business Plan has been reported in the CEWO’s annual report, the CEWO does not routinely review its performance against its business, branch or section plans during the year. The CEWO’s management committee is responsible for monitoring performance against business plans but, to date, it has not performed this role. The CEWO’s periodic review of progress or performance against business plans throughout the year would better position the CEWO to respond to changing priorities. The establishment of fit-for-purpose KPIs would assist in this regard.

### **Conclusion**

**2.30** The CEWO uses a hierarchy of plans (business, branch and section) to support and guide its operations. While the CEWO’s plans contain relevant information that assists with the execution of the CEWO’s environmental watering function, their usefulness would be improved through: a greater focus on the links between activities and outcomes; an increased alignment of their structure and content; and routine reviews of performance against the plans during the year.

## Performance reporting

**2.31** There is considerable public interest in the activities and performance of the CEWO. The Commonwealth has allocated significant funding to acquire water entitlements from irrigators, both through 'buy backs' and efficiency improvements, with numerous rural stakeholders in the Basin expressing critical views on the impacts environmental acquisitions will have on their communities. Many stakeholders are seeking clear and demonstrable benefits and outcomes from the use of these water entitlements.

**2.32** The ANAO examined the CEWO's reporting of its performance (in terms of activities, outputs and outcomes) in Portfolio Budget Statements, annual reports, and annual outcomes reports, as well as the CEWO's preparedness to meet its future reporting requirements under the Basin Plan.

### Portfolio Budget Statements

**2.33** Portfolio Budget Statements (PBS) specify each government program's deliverables, KPIs and performance targets. While the CEWO's environmental watering function is not listed as a discrete program in DSEWPaC's 2010–11 and 2011–12 PBS, the CEWO's function is included within the sole program under Outcome 4—*Water Reform*.<sup>57</sup> PBS deliverables were expressed exclusively in qualitative terms and did not identify the activities of the CEWO. In addition, these PBS did not contain quantitative KPIs related to the CEWO's environmental watering function. The sole (qualitative) KPI related to the environmental watering function indicated that the CEWO's annual reports and annual outcomes report would demonstrate environmental benefits and outcomes from the CEWO's operations.

**2.34** While the reporting of CEWO deliverables in the 2012–13 PBS have been expanded under a new and separate outcome—*Commonwealth Environmental Water*—the sole KPI, as was the case in previous years, refers to the CEWO's outcomes report demonstrating the effective use of Commonwealth environmental water for the protection and restoration of environmental assets.

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<sup>57</sup> DSEWPaC's Outcome 4 for 2011–12 was 'Adaptation to climate change, water wise use, secure water supplies and improve health of rivers, waterways and freshwater ecosystems by supporting research, and reforming the management and use of water resources'. The 'Water Reform' program in the PBS also includes programs, projects and other initiatives funded under the Commonwealth's \$12.9 billion *Water for the Future* initiative.

**2.35** Given the breadth of the programs and functions under the previous *Water Reform* outcome, the reporting of the CEWO's deliverables and KPIs was understandably limited. Despite the recent establishment of the *Commonwealth Environmental Water* outcome, the transparency and accountability of the CEWO's environmental watering function remains limited. The 2012–13 KPI does not provide stakeholders with performance information that demonstrates the CEWO's effectiveness and its contribution to the achievement of program outcomes. The CEWO advised the ANAO that the development of the MERI strategy, currently underway, is designed to assist in the establishment of appropriate KPIs for the CEWO (see Chapter 6).

## **Annual reports**

**2.36** Annual reports are an important accountability mechanism for agencies to report their performance to the Parliament. They are designed to provide factual and informative commentary on performance against the targets and the anticipated outcomes specified in PBS and Business Plans.

**2.37** An examination of the CEWH's 2009–10, 2010–11 and 2011–12 annual reports found that they succinctly reported on the CEWO's environmental watering holdings, activities, outputs, relationships with stakeholders and decision-making frameworks.<sup>58</sup> All annual reports contained summaries of environmental watering in each catchment. The 2009–10 and 2010–11 (but not 2011–12) annual reports also included some early ecological results from CEWO watering actions, by way of narratives or case studies.

**2.38** There has been demonstrable improvement in the coverage of the CEWO's environmental watering function in the annual reports over time, such as:

- the 2010–11 and 2011–12 annual reports contained information on each watering action by catchment during the year including: the site watered; the watering objective; the type of action (river flow, wetland inundation and/or floodplain inundation); the timing of the action; and the quantity of water provided to the site by the CEWO and delivery partners; and

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<sup>58</sup> Under s.114 of the *Water Act 2007*, the CEWH is required to table an annual report in each house of Parliament and provide this report to the Minister. The CEWH annual reports are published as a chapter in the DSEWPac annual reports.

- the 2011–12 annual report explicitly identifies progress against the key priorities from the published 2011–12 Business Plan.

**2.39** Notwithstanding this improvement, the CEWH’s annual reports to date have not reported on the achievement of the CEWO’s outcome—to protect and restore the environmental assets of the Murray–Darling Basin. As discussed earlier, the development of fit-for-purpose KPIs would better position the CEWO to report on its performance against outcomes.

## Outcomes reports

**2.40** Since 2008–09, the CEWO has published an annual Commonwealth Environmental Water Outcomes Report that reports on the ecological outcomes of environmental watering undertaken in each year. As outlined earlier, the production of the outcomes report has been the sole KPI in DSEWPaC’s PBS since 2010–11 that relates to the CEWO’s environmental watering activities.

**2.41** The outcomes reports outline the watering actions that have been undertaken in each catchment of the Murray–Darling Basin in that year, including: its size, and intended aims and outcomes; observed early ecological outcomes; photographs highlighting the impact of environmental water and case studies of particular flora or fauna targeted in the watering action.<sup>59</sup> Delivery partners and general stakeholders that provided comments to the ANAO found the annual outcomes reports informative, and a useful tool for explaining to stakeholders the early results from the CEWO’s water use.

**2.42** Figure 2.2 outlines the CEWO’s summary of its environmental watering achievements since 2009 as reported in the 2011–12 Outcomes Report, which was published in April 2013. Although CEWO water has contributed to short-term environmental improvements in the Basin, reporting is limited to those sites where environmental water has been delivered and it is difficult to apportion these improvements because:

- the CEWO’s water represented a smaller proportion of total river flows during the very wet Basin conditions in 2010–11 and 2011–12; and

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<sup>59</sup> The 2009–10 and 2010–11 outcomes reports identified or referenced the sources of the reported monitoring results. The CEWO has advised that the 2011–12 Outcomes Report is tailored to the needs of the general public as well as interested stakeholders, which has resulted in the removal or replacement of technical scientific terms and a reduction of referencing to the sources of monitoring results in the report.

- a number of third-party monitoring activities and studies referenced by the CEWO in its outcomes reports have not attempted to separately identify the outcomes from Commonwealth environmental water from that of total river flows.

## Figure 2.2

### Summarised environmental watering achievements reported by the CEWO

‘Since 2009, Commonwealth environmental water has helped to provide flows for the Basin that have:

- sustained wetland and native plant refuges to help animals and plants survive the drought conditions that prevailed across the Basin prior to 2010
- migrated the impact of poor water quality in the Murray River, Edward-Wakool system and Murrumbidgee River by diluting oxygen-depleted water and providing refuges for native fish
- supported native bird and fish breeding through improved water quality and increased volume and duration of flows
- improved water quality through the export of salt, sediments and nutrients out of the system
- connected rivers, wetlands and floodplains to improve habitat for breeding and migration of native animals
- improved the health of native plants, including river red gums.’

Source: CEWO 2011–12 Outcomes Report, p. 4.

**2.43** While the CEWO’s publication of an annual outcomes report assists the CEWO to demonstrate early ecological results from its watering actions, the CEWO is not currently in a position to report in a consolidated and integrated way on its performance against its legislative objective to ‘protect and restore environmental assets in the Murray–Darling Basin’.

### Reporting under the Basin Plan

**2.44** The recently finalised Basin Plan establishes additional annual and five-yearly reporting requirements on the CEWH. These requirements, and other parties that are responsible for reporting on the same subject within their areas of responsibility, are listed in Table 2.1.

**2.45** The CEWO has identified the changes or additions necessary to its current frameworks, decision-making criteria and reporting arrangements to meet its reporting requirements under the Basin Plan. The CEWO is monitoring progress to implement these requirements in a timely manner. In this regard, the ANAO notes that the MDBA is also responsible for:



- using its best endeavours to enter into an agreement with the CEWH within two years of the commencement of the Basin Plan in relation to meeting Basin reporting requirements; and
- identifying the dates when the first reports for the CEWH’s five reporting matters are due.

**Table 2.1**

**CEWH’s reporting requirements under the Basin Plan**

Reporting requirement	Reporting frequency	Additional reporting entities
<b>Basin plan as a whole</b>		
The extent to which local knowledge and solutions inform the implementation of the Basin Plan	Annually	Basin states and MDBA
<b>Environmental Watering Plan</b>		
The identification of environmental water and the monitoring of its use	Annually	Basin states and MDBA
The implementation of the environmental management framework	Annually	Basin states and MDBA
The achievement of environmental outcomes at a Basin scale	Every five years	MDBA
<b>Water quality and salinity</b>		
The implementation of the water quality and salinity management plan	Annually	Basin states and MDBA

Source: Basin Plan, Schedule 12.

**Conclusion**

**2.46** The CEWO’s current reporting of its performance is confined to its activities, outputs and early ecological outcomes from particular watering actions. The CEWO’s accountability to stakeholders for its actions would be enhanced through the development of appropriate KPIs and more comprehensive monitoring and reporting against intermediate and longer-term objectives in PBS, annual reports and outcomes reports that allowed the CEWO to measure and report progress towards achieving its goal of protecting and restoring environmental assets in the Murray–Darling Basin. The development and implementation of the CEWO’s MERI strategy should assist in this regard.

## 3. Stakeholder Engagement

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*This chapter examines the CEWO's stakeholder engagement activities, including the development of a stakeholder communication strategy and activities undertaken to date to engage with stakeholders.*

### Introduction

**3.1** The MDBA's development of the Basin Plan over the past two years has raised the profile of, and stakeholders' interest in, environmental water management in the Murray–Darling Basin. With the finalisation of the Basin Plan, stakeholders' attention is likely to focus on the CEWO's use of water entitlements acquired from irrigators for environmental watering purposes.

**3.2** In most situations, the CEWO relies on other organisations (generally other Commonwealth or state government agencies or authorities) to deliver environmental water to its intended destinations. These organisations (known as 'delivery partners') also have considerable experience in river operations and, as such, their involvement in CEWO water use planning and actions can be beneficial. There are also many other stakeholders, within and outside the Basin, that have divergent views about Commonwealth environmental watering and wish to be consulted or remain informed about the CEWO's operations and activities. Furthermore, the finalised Basin Plan requires environmental water holders, including the CEWH, to take into account local communities' views, knowledge and experience in environmental watering. The extent to which the CEWO is able to engage with stakeholders is, however, governed by available funding and resources.

**3.3** A sound approach is required to enable the CEWO to maximise the benefits of involving stakeholders in its activities and to effectively manage stakeholders' information needs within available resources. In this context, the ANAO examined the CEWO's:

- development of a stakeholder communication strategy; and
- current communication and stakeholder engagement activities.

### Development of a stakeholder communication strategy

**3.4** Until October 2010, the CEWO's stakeholder engagement activities were directed primarily at delivery partners and those involved in environmental water activities. However, following the release of the MDBA's

*Guide to the Proposed Basin Plan* in October 2010 and the intense public reaction to the Guide, the CEWO considered that its environmental watering role would require greater engagement with a wider range of stakeholders. Consequently, the CEWO began to consider its stakeholder engagement more broadly and decided to obtain specialist advice on developing a stakeholder communication strategy and the cost-effectiveness of a range of additional potential stakeholder engagement activities.

### **Consultancy to develop a communications and stakeholder engagement strategy**

3.5 In November 2010, the CEWO engaged a consultant to prepare a communications and stakeholder engagement strategy for the Commonwealth environmental watering function. The consultants produced a draft communications and stakeholder engagement strategy based on consultations with, and information provided by, CEWO staff. The draft strategy considered the broad water management interests of the stakeholders, and their influence on, and support for, the environmental watering function. The draft strategy also identified:

- key messages for each stakeholder group and communication priorities; and
- a range of potential activities and tools to strengthen engagement with stakeholders, including the website, social media, site visits, newsletters and national media.

3.6 After reviewing an initial draft of the consultant's strategy, in July 2011 the CEWO informed the Minister of the key messages that would be communicated to stakeholders during the CEWO's consultations.

3.7 While the CEWO accepted the consultant's draft strategy in September 2011, the strategy was not adopted by the CEWO. The CEWO considered that the draft strategy did not provide sufficient consideration of some key stakeholder issues. Notwithstanding the decision not to implement the draft strategy, the CEWO informed the ANAO that the draft strategy provided insights into potential stakeholder engagement activities and informed the CEWO as it finalised the development of its communication strategy.

## **Finalisation of the CEWO communications strategy**

**3.8** In late 2011, the CEWO requested assistance from the Public Affairs area of DSEWPac's Water Group to finalise a communications strategy for the environmental watering function. The CEWO's stakeholder communications strategy was finalised and endorsed by the CEWH in April 2012.

**3.9** The finalised strategy indicated that stakeholder communications and engagement activities would focus on four key catchments to create understanding, build the CEWO's credibility, be relevant to stakeholders and address stakeholder concerns.<sup>60</sup> However, the strategy is not underpinned by an assessment of the CEWO's stakeholder engagement needs, which would usually include: a description of the target audiences; broad objectives for the key audiences/stakeholder groups; the cost-effectiveness of potential stakeholder communication activities and tools; feedback management mechanisms; and the resource requirements to implement the strategy. Such an assessment can help to ensure that resources are directed to those activities that will most effectively engage relevant stakeholders.

**3.10** The strategy incorporated a workplan that listed the tasks and actions to enhance the CEWO's engagement with stakeholders during 2012. These included developing a social media strategy, refreshing the environmental watering website and developing a comprehensive register of CEWO stakeholders. While the workplan is a useful starting point, there was limited coordination of the tasks and actions identified. Most tasks and actions have delivery dates that are either 'ongoing' or 'progressive' making monitoring implementation difficult. Despite progress being made on some tasks and actions, the implementation of the workplan has not been monitored as originally intended.

## **Development of a stakeholder register**

**3.11** An effective stakeholder register can assist with the targeting of the CEWO's engagement with stakeholders in an efficient and effective manner. As noted earlier, the development of a comprehensive register of CEWO stakeholders was included as an action item in the workplan established under the CEWO's stakeholder communication strategy. The register, which was originally scheduled for completion in April 2012, was finalised in March 2013.

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<sup>60</sup> The catchments identified were Murrumbidgee, Gwydir, Goulburn–Broken and SA Murray.

**3.12** The stakeholder register has been designed to record key information on each organisational representative or individual, including their: names and contact details; stakeholder type (for example, state government, media, or scientific community); catchments of interest; and recent engagement history with the CEWO (including frequency of contact and issues discussed). The register contained the names and most of the contact details for 683 stakeholders (which had been classified into 20 different stakeholder types, and included 643 representatives from 290 organisations and a further 40 stakeholders registered in an individual capacity). However, for a significant number of stakeholders, their catchments of interest and recent engagement history with the CEWO have yet to be identified.

## **Conclusion**

**3.13** The CEWO stakeholder communication strategy identifies activities to improve stakeholder engagement, and progress is being made to implement these activities. However, these activities and the strategy overall are not underpinned by an assessment of stakeholder engagement needs that identifies and prioritises stakeholder groups, and assesses and selects the communication and engagement tools appropriate to stakeholders and in the context of the available budget. An assessment of stakeholder engagement needs would help to improve the effectiveness of the CEWO's stakeholder engagement activities.

**3.14** The CEWO has identified, through its stakeholder communication strategy, the importance of establishing a comprehensive register of environmental watering stakeholders. Given the nature of the CEWO's work and the extent of stakeholder interest, there would be merit in reviewing the adequacy of the current register and the completeness and integrity of stakeholder data holdings.

## **Current communication and stakeholder engagement activities**

**3.15** The CEWO currently engages with entities involved in, or with an interest in, environmental water management through various informal and formal activities. In the performance of CEWO functions, staff have regular and ad-hoc face-to-face and/or teleconference contact with representatives from different government and non-government organisations, and individuals. This informal contact provides a useful opportunity for staff to

share experiences, promote the work of the CEWO and learn from the experiences of other entities involved in water use.

**3.16** Formal, structured engagement with stakeholders by the CEWO has, to date, been undertaken in the absence of a stakeholder communication strategy and stakeholder register. The ANAO examined the CEWO's engagement with the four stakeholder groups:

- general stakeholders—including organisations and the general public located within and outside the Basin;
- targeted regional and local groups—organisations or bodies established within the Basin that consider environmental or waterways management issues;
- delivery partners—those organisations that assist with CEWO's environmental water use planning and/or delivery; and
- the Murray–Darling Basin Authority.

### **General stakeholder engagement**

**3.17** The primary means by which the CEWO engages with general stakeholders is through the information made available on its website.<sup>61</sup> Over time, the information made available on the website has been enhanced and now includes:

- the quantity of water entitlements and allocations held by the CEWO on a catchment basis;
- framework and criteria documents, and catchment delivery documents underpinning the planning of environmental watering activities and the monitoring and evaluation of watering results;
- key water use planning information, including portfolio management statements, annual water use options documents for each catchment or catchment group;
- CEWO business plans, annual reports, and outcomes reports;
- descriptions of all watering actions as they occur; and

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<sup>61</sup> The CEWO website is hosted on DSEWPaC's website at <<http://www.environment.gov.au/ewater>>.

- a multimedia gallery of webcam images, videos, photographs and audio.<sup>62</sup>

### 3.18 The CEWO's website:

- has also been used to seek and obtain public comment on draft versions of framework documents that underpin its environmental watering activities, including the MERI framework document, and the framework for the trade of Commonwealth environmental water;
- enables interested parties to seek to use Commonwealth environmental water by completing and lodging expressions of interest; and
- enables interested parties to subscribe to email updates on environmental watering activities from the CEWO. As at March 2013, the CEWO informed the ANAO that it had 119 registered subscribers.

3.19 Comments from the stakeholders contacted by the ANAO indicated that the CEWO's website was informative, with the information useful, well-presented, timely and comprehensive.

## Targeted regional and local groups

3.20 Over time, the CEWO has placed greater importance on, and given a higher priority to, engaging regularly with stakeholders at a regional and local level to promote its activities, obtain feedback and develop regional/local networks that will assist with the CEWO's operations. To this end, the CEWO has established relationships with existing groups or committees in the Basin.

3.21 Throughout the Basin, many state government authorities, groups or committees have been established, generally on a catchment-by-catchment basis, whose responsibilities include waterways management, environmental watering and/or natural resource management, such as Environmental Water Advisory Groups (EWAGs)<sup>63</sup>; Customer Service Committees of the State Water Corporation (CSCs)<sup>64</sup>; catchment management authorities; and national

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<sup>62</sup> Hard-copies of key CEWO documentation are also available, on request, for those stakeholders unable to access web-based materials.

<sup>63</sup> NSW-based EWAGs bring together people with a range of knowledge and experience to advise on the use of environmental water. EWAG members typically include representatives from a range of state government agencies (including the NSW Office of Water and the State Water Corporation), catchment management authorities, local river/environmental groups, landholders and scientists.

<sup>64</sup> CSCs provide a mechanism for customer consultation on operational activities, pricing strategies and determining levels of service for water users within individual catchments. CSC members typically include representatives from State Water Corporation customers (irrigators), catchment management authorities, irrigation schemes or corporations, local government, industry associations and the CEWO.

resource management council/boards. The CEWO's access to state bodies varies by jurisdiction. While the CEWO has increasingly gained access to EWAGs and CSCs in NSW over time, direct regular engagement with the catchment management authorities in Victoria and natural resource management council/boards in South Australia and Queensland is yet to be established.<sup>65</sup>

**3.22** Comments received by the ANAO during the audit from stakeholders, including some of whom are involved in the committees and groups outlined above, generally support the strengthening of local engagement arrangements. Stakeholders considered that the CEWO could:

- increase the involvement of the states and delivery partners in CEWO activities;
- better incorporate local knowledge into its operations;
- increase the transparency of its operations, processes, decision-making frameworks and reporting; and
- improve the dissemination of information concerning its intended watering activities.

**3.23** The CEWO expects that the recently announced employment of local engagement officers across the Basin during 2013 will significantly enhance regional and local stakeholder engagement. The CEWO's proposed approach involves recruiting up to six staff at the APS 6 level during 2013 and locating them within major regional centres in selected catchments.<sup>66</sup> The CEWO has been allocated \$5 million over seven years (2012–13 to 2018–19) to fund these positions.

**3.24** The location of CEWO staff across the Basin has the potential to improve the frequency, depth and coverage of contact with local Basin stakeholders and also facilitate the dissemination of information about current and planned CEWO activities. However, the successful deployment of local engagement officers will be dependent on the establishment of robust and

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<sup>65</sup> CEWO engagement with regional and local stakeholders in Victoria, South Australia and Queensland is through three of its delivery partners—the Victorian Environmental Water Holder, the SA Department of Environment, Water and Natural Resources and the Queensland Department of Natural Resources and Mines, respectively.

<sup>66</sup> Local engagement officers will be assigned to regions that will incorporate one or more Basin catchments, thus ensuring coverage across the Basin.



timely communication protocols and processes within the CEWO and across the network of out-posted staff, supported by appropriate IT infrastructure.

## Delivery partners

**3.25** The CEWO engages with a number of government and private sector organisations (collectively known as ‘delivery partners’) when undertaking environmental water use planning, water deliveries and monitoring and evaluation.<sup>67</sup> These organisations perform functions that are either critical to, or heavily influence, the success of the CEWO’s role. They include: state departments and agencies (that are generally responsible for state environmental water policy and watering activity, and submitting water delivery orders to river operators on the CEWO’s behalf); state authorities (that are responsible for controlling and operating the rivers’ infrastructure that delivers CEWO water); and universities and research organisations (that the CEWO contracts to monitor and evaluate the ecological outcomes from CEWO watering actions).<sup>68</sup>

**3.26** State departments and agencies with water management responsibilities have played a key role in determining the CEWO’s environmental watering priorities and facilitating water deliveries since the CEWO first commenced environmental watering activities. Overall, the CEWO has:

- sought and used state agencies’ knowledge of environmental assets and environmental watering experience to develop the CEWO’s annual water use options documents and watering proposals (which is examined further in Chapter 4); and
- established effective arrangements that have facilitated the delivery of Commonwealth environmental water in a timely manner (which is further examined in Chapter 5).

**3.27** The CEWO has engaged universities and research organisations (monitoring partners) to examine the ecological outcomes for environmental watering actions since mid-2011. Overall, the monitoring activities undertaken

<sup>67</sup> At times, the regional and local communities bodies named in the previous section can also be involved in these CEWO activities.

<sup>68</sup> The MDBA is also considered a delivery partner, but has been considered separately in the following section of this chapter. Other delivery partners that the CEWO has engaged with include: state agencies involved in fisheries and forestry management; catchment management authorities and natural resource management boards; and private irrigation infrastructure operators (such as Murray Irrigation Limited).

by monitoring partners have provided additional insights into the impact of environmental watering actions, with the CEWO publishing on its website those monitoring reports finalised to date. There is, however, scope to enhance the focus of current monitoring activities as the CEWO transitions to longer-term site monitoring (which is further examined in Chapter 6).

**3.28** In general, delivery partners provided favourable or neutral comments to the ANAO in relation to the CEWO's operations. Many delivery partners informed the ANAO that they had been involved in, or informed of, the CEWO's water use planning activities (including the development of annual water use options documents and watering proposals) and water deliveries. While noting the CEWO's involvement in existing stakeholder contact networks, delivery partners considered that the CEWO could:

- develop a more formal, strategic approach to stakeholder and community engagement;
- improve its integration with, and involvement of, delivery partners in environmental watering activities; and
- better incorporate local knowledge in its operations.

## **Murray–Darling Basin Authority**

**3.29** The MDBA leads the planning and management of Basin water resources in collaboration with partner governments and the community. In this context, the CEWO engages with the MDBA on a number of interrelated issues/areas that are important to the successful execution of the CEWO's functions, which include:

- *The Living Murray* (TLM) initiative where, since 2003, the MDBA (and the former Murray–Darling Basin Commission) has been managing water entitlements acquired under the initiative for the benefit of six 'icon' sites along the River Murray<sup>69</sup>;
- the MDBA as the operator of the water delivery infrastructure in the River Murray system<sup>70</sup>;

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<sup>69</sup> The entitlements held by the Commonwealth, New South Wales, Victorian and South Australian governments are expected to provide an average of 487 GL/yr of water to: Barmah–Millewa Forest; Gunblower–Koondrook–Perricoota Forest; Hattah Lakes; Chowilla Floodplain and Lindsay–Wallpolla Islands; Lower Lakes; Coorong and Murray Mouth; and River Murray Channel. These sites were selected due to their high ecological value and cultural significance.

<sup>70</sup> The River Murray system extends from the Dartmouth Reservoir to the mouth of the River Murray, and includes water storages at Menindee Lakes and Lake Victoria.

- the development of the Basin Plan, including its Environmental Watering Plan; and
- the implementation of the Basin Plan, including the joint development and operation of an environmental assets database and the monitoring and evaluation of environmental watering activities within the Basin.

**3.30** The CEWO and the MDBA have established frequent and regular informal and formal arrangements to share relevant information and to develop joint approaches and tools to assist in the discharge of their functions, including the joint development of the environmental assets database. This database is designed to capture information on Basin environmental assets. The CEWO and the MDBA informed the ANAO that both organisations work together productively on areas of common interest, with each generally satisfied with the breadth and depth of current engagement activity.

## **Conclusion**

**3.31** In the absence of an effective stakeholder communication strategy and a comprehensive stakeholder register, the CEWO has made information broadly available to interested parties and targeted stakeholder engagement activity to various stakeholder groups, including regional and local groups, delivery partners and the MDBA.

**3.32** The CEWO's increasing access to existing state regional and local groups and committees with waterways or environmental responsibilities has better positioned the CEWO to build its understanding of local issues and disseminate information on its activities. While stakeholders acknowledged the CEWO's stakeholder engagement efforts to date, additional areas for improvement have been identified. In this context, the CEWO expects the employment of local engagement officers in Basin catchments during 2013 to significantly enhance regional and local stakeholder engagement.

**3.33** The CEWO is generally working effectively with its key delivery partners to assist with the: determination of Commonwealth environmental watering priorities; delivery of environmental water to its intended locations; and monitoring of the ecological outcomes from its watering actions. The CEWO has also established effective working relationships with the MDBA, and involved the MDBA appropriately on the major issues/areas that are relevant to environmental watering activities.

## 4. Water Use Planning

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*This chapter examines the CEWO's approach to planning and the processes that support decisions on environmental watering activities.*

### Introduction

**4.1** The management of environmental water in Australia is a complex and relatively new task for the Commonwealth, with no international equivalent or precedent. Given the uncertain environment within which environmental watering takes place, planning needs to be flexible and should take into account a range of potential scenarios to allow appropriate watering actions to take place.

**4.2** Prior to 2010–11, the CEWO was managing very small volumes of water and relied primarily on watering proposals developed by relevant state agencies. Water use planning was conducted on a watering action by watering action basis. Since 2010–11, the CEWO has received significantly more water allocations because of the growth in the CEWH's water entitlements and generally wetter catchment conditions. This increase in water allocations has also greatly increased the CEWO's Basin watering options.

**4.3** From 2011–12, the CEWO has overlaid the planning of individual watering actions with an annual planning process at the catchment level and intends to further progress its water use planning from an annual to a multi-year basis.

**4.4** The ANAO examined the following aspects of the CEWO's water use planning:

- the guidance and tools that underpin water use planning;
- the annual planning process;
- the use of environmental watering proposals for individual watering actions; and
- future portfolio management and water use planning considerations.

### Water use planning guidance and tools

**4.5** To assist with water use planning, the CEWO has developed a range of guidance materials and tools to underpin and assist with the development of water use plans and proposals including: *A Framework for Determining*

*Commonwealth Environmental Water Use* (the water use framework); catchment delivery documents; environmental assets database and operational risk guidelines.

### **Water use framework for determining Commonwealth environmental water actions**

**4.6** In December 2009, following an extensive consultation process, the CEWO published a water use framework, which was intended to guide the planning of environmental water use until the Basin Plan, including the Environmental Water Plan, was released. Due to delays in the finalisation of the Basin Plan, in late 2011, the CEWO revised and updated the framework<sup>71</sup>, which was subsequently released on the CEWO's website.

**4.7** Underpinning the water use framework is a range of water resource availability scenarios—each of which have their own ecological objectives, as shown in Table 4.1 on the following page. The resource availability scenarios have been developed to guide environmental watering decisions to help ensure that they are the most ecologically appropriate based on water availability and climatic conditions. The five water resource availability scenarios, and associated ecological watering objectives, are consistent with those contained in the Basin Plan and supplementary guidance prepared by the MDBA. The framework also outlines a decision-making framework that is designed to match available water with environmental priorities through the use of prioritisation criteria.

**4.8** The CEWO informed the ANAO that the water use framework is being amended to align with Basin Plan's longer term objectives, annual priorities and application of the watering principles.

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<sup>71</sup> The 2011 revision introduced a number of minor changes, including: the addition of a fifth water resource availability scenario ('very wet'); the updating of terminology; and an update to the process for co-operative environmental watering to better reflect the annual planning process and current approach to environmental watering.

**Table 4.1**

**Ecological objectives for the use of Commonwealth environmental water under different water resource availability scenarios**

Scenarios	Ecological watering objectives
Extreme Dry	Avoid damage to key environmental assets
Dry	Ensure ecological capacity for recovery
Moderate	Maintain ecological health and resilience
Wet	Improve the health and resilience of aquatic ecosystems
Very Wet	Build future capacity to support ecological health and resilience

Source: *Framework for Determining Commonwealth Environmental Water Use*, December 2011, p. 8.

**4.9** Given the delays in finalising the Basin Plan, the water use framework has provided the CEWO with comprehensive guidance for determining environmental watering actions. Delivery partners and other stakeholders that provided comments to the ANAO in relation to the CEWO’s water use framework generally viewed the framework as appropriate. Some stakeholders commented on specific aspects that could be improved, including further consideration of seasonality and wet/drying cycles and the short timeframes of some real-time watering opportunities. The 2011 revision has also helped to further align the framework to changes to the CEWO’s evolving planning approach. The proposed amendments to the framework—to align it with the Basin Plan—will further assist the CEWO to manage environmental watering activities into the future.

**Catchment delivery documents**

**4.10** Since August 2010, the CEWO has commissioned five consultant teams to develop technical reference documents—known as catchment delivery documents (or environmental water delivery reports)—to capture key information at a catchment level necessary for the effective planning and delivery of larger volumes of environmental water.

**4.11** As at February 2012, 12 catchment delivery documents have been developed, covering the majority of the regulated Basin.<sup>72</sup> The catchment delivery documents are used to provide input into the annual water use options documents and outline key features of each catchment, including:

<sup>72</sup> Unregulated areas of the Basin are not covered by the reports because, for unregulated systems, the CEWO’s focus is on water shepherding arrangements. Water shepherding arrangements are discussed in Chapter 5.

- ecological values and objectives;
- watering objectives for water-dependent assets;
- risks and mitigation strategies associated with environmental water delivery; and
- operational constraints and opportunities.

**4.12** The catchment delivery documents contain consistent and comprehensive baseline information, tailored to the characteristics of each catchment. These reports provide the CEWO with relevant information that assists with its environmental water planning and delivery activities across the catchments. Delivery partners and other stakeholders that provided comments to the ANAO considered that the catchment delivery documents generally assist with water use planning, but also considered that future versions could better reference current scientific and local knowledge.

### **Environmental assets database**

**4.13** In mid-2009, the CEWO and MDBA identified the need for an environmental assets database aid both organisations to meet their respective statutory requirements under the *Water Act 2007*. Work commenced on the development of the database later in 2009, and was substantially completed by mid-2012. As at September 2012, the database recorded data for approximately 160 environmental assets<sup>73</sup> in the Murray–Darling Basin covering matters such as: environmental condition and significance; threatened flora and fauna; watering requirements and history; operational and ecological monitoring; and evaluation history and results.<sup>74</sup> The CEWO informed the ANAO that the database would be an essential reference source for the CEWO, MDBA and the Basin states when meeting their planning obligations under the Basin Plan.

**4.14** The database is a useful tool for storing relevant data on environmental assets within the Basin, including in relation to planning environmental water use. However, protocols or procedures governing the responsibilities for, and

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<sup>73</sup> An environmental asset is a defined area of ecological significance, which is constituted by one or more water-dependent ecosystems of various scales (for example, a river, a wetland or a billabong). Water-dependent flora and fauna are not classed as assets, but are attributed to an asset.

<sup>74</sup> The data to populate the database is derived from a variety of sources, such as MDBA's geographic information system, academic studies, literature and state government data, and the CEWO's catchment delivery documents. The database also has the ability to link to other external databases. While the database is hosted by DSEWPac, the MDBA can access the database through a secure link. Designated staff from both the CEWO and MDBA have read-only, editing or administrative access, and the database has an audit trail facility that documents changes to data entered and the users making the changes.

approval of, revisions to data are yet to be established. The CEWO and MDBA would have greater assurance about the quality and integrity of the data were responsibilities and processes for data quality control and assurance clarified.

### **Operational risk guidelines**

**4.15** In December 2011, the CEWO established internal draft risk management guidance—*Risk Management Guidance for the use of Commonwealth Environmental Water*—for assessing and managing common risks associated with environmental watering activities. Risk assessment and management is an important aspect of environmental water use planning and decision-making, and is included as one of the assessment criteria under the water use framework.

**4.16** The operational risk guidelines provide background information on each risk, including guidance for determining the level of risk and suggestions of potential mitigation options. The guidelines identify three risk categories for environmental watering:

- social, cultural heritage and economic risks—for example, the risk of flooding property, infrastructure or cultural heritage sites;
- environmental risks—for example, the spread of invasive species; and
- operational risks—for example, the unplanned loss of water allocated for the environmental watering action.

**4.17** The CEWO informed the ANAO that the operational risk guidelines, which were finalised in January 2013, will be used to regularly assess risks in both annual water use options documents and environmental watering proposals. The AGS, in its June 2012 Legal and Governance Risk Assessment (that was examined in Chapter 2), considered that the application of the operational risk guidelines significantly strengthened the CEWO's controls for managing potential adverse impacts from its watering activities. Overall, the operational risk guidelines help to support the consistent assessment of risks for proposed watering actions across the different catchments.



## Conclusion

**4.18** The CEWO has developed appropriate water use planning and guidance tools to support its environmental watering function. Together, the water use framework, catchment delivery documents, environmental assets database and operational risk guidelines provide a sound basis for the CEWO to develop annual water use plans and assess the merits of individual watering proposals.

## Annual planning process

**4.19** Given the variability of environmental and catchment conditions, a sound planning approach is necessary to help ensure that the CEWO is able to respond in an appropriate and timely manner. The CEWO has progressively established the elements of an integrated planning approach for environmental water use. As outlined earlier, prior to the 2011–12 watering year, planning was conducted throughout each year on a watering action by watering action basis. A key change to the CEWO's approach to water planning occurred in 2011–12 with the introduction of annual catchment planning that identified potential water use options at the start of each year. In 2012–13, the CEWO also began producing portfolio management statements for each catchment (or catchment group<sup>75</sup>), which recognised the importance that water allocation carryover<sup>76</sup> plays in the CEWO's management of its water holdings.

**4.20** As shown in Figure 4.1, the management of Commonwealth environmental water requires ongoing assessment of options, including whether water should be: used within the current year; carried over for use in future years; or traded through either disposing or acquiring water entitlements or allocations. In this context, the ANAO examined the CEWO's:

- annual portfolio management statements; and
- annual water use options documents.

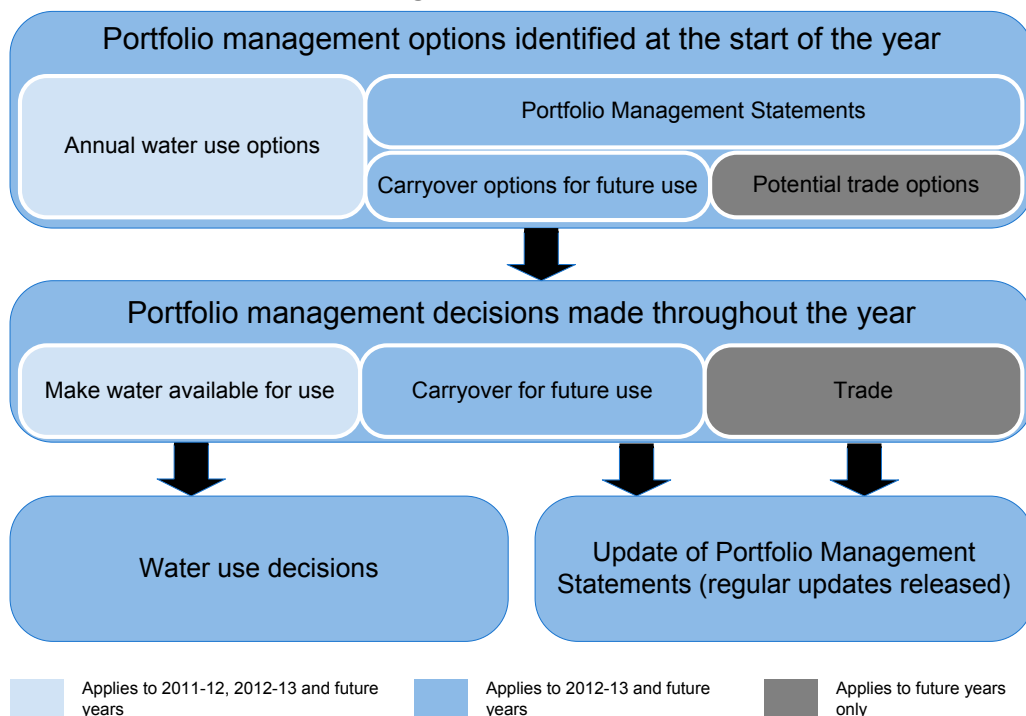
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<sup>75</sup> Catchment groups are related catchments considered collectively. For example, the Northern Victorian Rivers catchment group consists of the Campaspe, Goulburn–Broken, Loddon and Ovens catchments.

<sup>76</sup> Water allocation carryover refers to water allocations from the current watering year being carried forward to the following watering year.

**Figure 4.1**

**CEWO annual portfolio management framework**



Source: ANAO, adapted from CEWO 2012–13 Annual Water Use Options documents.

**Annual portfolio management statements**

**4.21** The portfolio management statements provide stakeholders with information on actual and estimated future allocations for the current watering year and provide a broad outline of their intended use by the CEWO. The statements also document the relationship between, and the CEWO’s intentions in relation to, the three potential uses of environmental water—that is, delivery/use, carryover, and trade—in each catchment.<sup>77</sup> The statements, which were first produced by the CEWO in 2012–13, are available

<sup>77</sup> For example, the 2012–13 Portfolio Management Statement for the Gwydir catchment (dated 7 September 2012):

- forecasts that 134.7 GL of water would be available to the CEWO for use;
- states that the CEWO has developed water use options for up to 40 GL;
- states that the CEWO does not envisage trading water allocations in the short term due to a predicted lack of demand from other entitlement holders; and
- forecasts carryover for 2013–14 to be in the range of 94–134 GL, which would provide for multiple years of environmental watering under a range of climate scenarios.

on the CEWO's website and are updated throughout the year. The latest update occurred in March 2013.

**4.22** Future catchment conditions, which can be difficult to predict, heavily influence the use of the CEWO water holdings throughout the year. The portfolio management statements are designed to cover a wide range of future conditions, which necessitates the inclusion of broad and general positions on possible environmental water use. Future statements would be more informative were the CEWO to include more specific information tailored to the different future conditions that could apply to catchments (which are represented by the resource availability scenarios that can range from 'extreme dry' to 'very wet').

### **Annual water use options**

**4.23** Annual catchment planning was initiated by the CEWO to guide watering activities on a catchment basis rather than solely on an individual watering action basis, which occurred in previous years. Annual catchment planning documents were first developed from 2011–12, with 11 unpublished water use strategies developed for Basin catchments (or catchment groups). The annual catchment planning approach was maintained in 2012–13, with the development of 10 annual water use options, which were published on the CEWO's website in September 2012.<sup>78</sup>

**4.24** The development of the annual water use options documents begins in the months before the start of each financial year (with the 2012–13 water use options documents published in September 2012). The documents are used for internal planning purposes by setting out broad water objectives for the year and potential watering actions (generally between two and 10 options per catchment for regulated systems) that are considered to satisfy the water use framework's five assessment criteria.<sup>79</sup> The CEWO indicated that this process was not designed to result in a list of agreed watering actions—rather it provides

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<sup>78</sup> The CEWO changed the terminology of the annual catchment planning documents from 'water use strategies' in 2011–12 to 'water use options' in 2012–13. This report uses the term 'water use options' to refer to the documents from both years, unless specifically stated. The decrease in the total number of water use options documents from 11 to 10 was due to the Lower Darling catchment area being included in the 2012–13 water use options documents of other catchments.

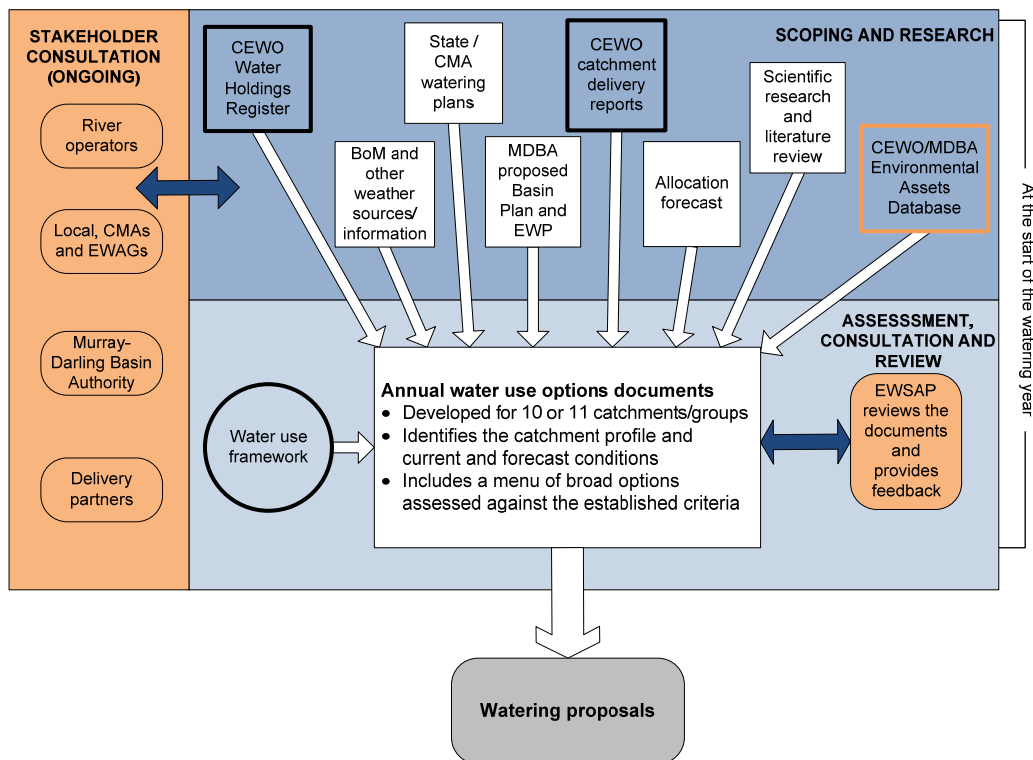
<sup>79</sup> In the case of unregulated catchment systems, such as the Warrego catchment in the Northern Basin, it is not possible to determine specific water use options due to the lack of infrastructure and public storage facilities. In these areas, watering actions generally seek to keep water in-stream and enhance natural flows.

a framework to guide decision-making on individual actions throughout the year as opportunities, seasonal factors and operational considerations present.

4.25 Figure 4.2 illustrates the CEWO’s annual water use planning process from 2011–12. The development of the annual water use options documents draws on a range of information sources, both internal and external.

Figure 4.2

**CEWO annual water use planning process from 2011–12**



Source: ANAO, in consultation with the CEWO.

Note: CMAs—catchment management authorities; EWAGs—environmental water advisory groups; BoM—Bureau of Meteorology; EWP—Environmental Watering Plan.

4.26 The CEWO has developed and refined over time a template and checklist to assist with its development of consistent and comprehensive annual water use options documents. The template, which is based on the requirements of the water use framework, facilitates the consideration of a number of relevant factors, such as available water in the Commonwealth environmental water holdings and current and forecast weather and catchment conditions (including resource availability scenarios). The checklist details the consultation that has occurred during the development of the water use options documents and the

completed checklists are reviewed and approved by the CEWH in conjunction with the CEWH's approval of each document.

**4.27** The ANAO reviewed a sample of five annual water use options documents in 2011–12 and 2012–13.<sup>80</sup> The ANAO reviewed stakeholder involvement in development of the plans and analysed the options identified for their consistency with the water use framework.

*Stakeholder involvement during the development of annual water use options documents*

**4.28** The approach adopted by the CEWO for stakeholder consultation in respect of the 2012–13 annual water use options documents included workshops, emails and teleconferences. The CEWO consulted with delivery partners and other stakeholders when developing the water use options documents, with between two and 20 stakeholders consulted for each document.

**4.29** Across the five annual water use options documents examined by the ANAO, a total of 57 stakeholders were consulted. Of these stakeholders, 32 were included on the CEWO's draft stakeholder register in existence at that time, and 25 were not. As the stakeholder register had not been finalised, it was also unclear whether all key stakeholders had been consulted. The CEWO informed the ANAO in March 2013 that its stakeholder register has now been established (see Chapter 3).

**4.30** In addition to delivery partners and other stakeholders consulted during the annual planning process, EWSAP is generally informed of the annual planning approach and involved in reviewing the content of the draft annual water use options documents. EWSAP reviewed four of the five 2012–13 draft annual water use options documents in the ANAO's sample.<sup>81</sup> Although the options presented in the draft 2012–13 document were similar to the previous year's, important contextual information, such as current and possible future catchment conditions, had changed. In the light of the dynamic nature of the CEWO's annual catchment planning, including in respect to the numerous variables involved and new additions to the scientific knowledge base, it would be

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<sup>80</sup> Catchments reviewed by the ANAO were: Lower Murray; Murrumbidgee; Northern Victorian Rivers; Border Rivers; and Northern Unregulated Rivers. The sample was chosen to include a cross section of states and a mixture of regulated and unregulated catchments. Regulated catchments are those river systems in which water can be stored or flow levels can be controlled, through the use of structures, such as large dams or weirs. Unregulated catchments do not contain structures, such as dams or weirs, to control water flow; rather, natural events control the flow of the river systems.

<sup>81</sup> The CEWO informed the ANAO that EWSAP's comments were not sought in relation to one annual water use options document because its options had not changed from those included in the previous year's options document (at which time EWSAP comments were obtained).

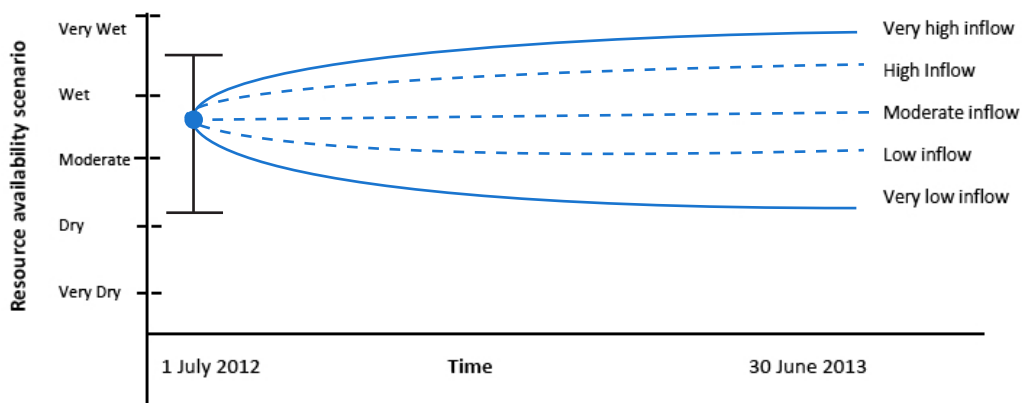
prudent for the CEWO to seek EWSAP comment on all draft annual water use documents each watering year. Overall, EWSAP informed the ANAO that it is generally satisfied that its views, where sought, have been taken into account by the CEWO during the finalisation of the annual water use options documents.

#### *Watering options presented in annual water use options documents*

**4.31** Within the water use options documents’ annual timeframe, future weather and catchment conditions can vary substantially from current conditions—depending on rainfall in the catchment and run-off into streams and rivers. Therefore, the CEWO’s annual water use options documents consider watering options for a range of possible future catchment conditions. Figure 4.3 illustrates the range of possible future catchment conditions in the Murrumbidgee catchment by the end of 2012–13 compared to the conditions current at the time of the annual water use options document’s inception.

**Figure 4.3**

#### **Possible resource availability scenarios for the Murrumbidgee catchment**



Source: 2012–13 Water Use Options Document: Murrumbidgee Catchment, p. 25.

**4.32** The watering options presented in the annual water use options documents are generally broad and can be scalable depending on water availability, with options generally specifying the:

- amount of water (either as a total volume, range or a target flow such as GL/day) needed for the watering action;
- timing (specific months or season) and duration of the action;
- relevant pre-conditions required for the action;
- delivery mechanisms; and

- operational considerations and constraints.

**4.33** Table 4.2 summarises the results from the ANAO examination of its sample of 2011–12 and 2012–13 annual planning documents for their alignment to the resource availability scenarios, and the assessment and prioritisation of options, in accordance with the water use framework.

**Table 4.2**

**ANAO analysis of the annual planning documents for 2011–12 and 2012–13**

Aspect of the water use framework	2011–12 water use strategies documents	2012–13 water use options documents
Resource availability scenarios	Only two of the five water use strategies documents examined aligned options to the water resource availability scenarios.	Options from all water use options documents examined were broadly aligned to the resource availability scenarios and included consideration of the probability of different levels of water inflows to determine the applicable resource availability scenarios for the catchment (or catchment groups).
Assessment of options against the criteria	Options for the regulated catchments were assessed against the criteria, but: <ul style="list-style-type: none"> <li>• the comprehensiveness of the assessments varied between catchments (for example, some risk assessments considered mitigation strategies and outlined an overall risk rating for the option, while others did not); and</li> <li>• watering options were not assessed on how well they satisfied the criteria.</li> </ul>	All options were assessed against the criteria. As was the case in 2011–12, comprehensiveness of assessments varied between catchments and watering options were not assessed on how well they satisfied the criteria. However, the documents were an improvement from 2011–12, with the options for each catchment or group of catchments presented more clearly in a template format.
Prioritisation of options	Options within each water use strategy document were not prioritised, except for one river in one catchment. The rationale underpinning its prioritisation was not documented.	Options within each water use options document were not prioritised, except for one catchment. The documented rationale underpinning its prioritisation was broadly related to the criteria.

Source: ANAO analysis of CEWO data.

**4.34** Overall, the annual water use options documents have improved since 2011–12, with all options broadly linked to the resource availability scenarios and a more consistent presentation of the assessment of options against the criteria. However, contrary to the requirements of the water use framework, most annual water use options documents did not prioritise the watering options identified.

**4.35** The CEWO indicated that, given recent wetter catchment conditions, there is no practical application for prioritising watering actions because the determination of specific water use proposals is made through a contemporaneous assessment of water allocations, current conditions and delivery opportunities.<sup>82</sup> However, the ANAO considers that prioritised lists of options for each catchment by resource availability scenario would inform stakeholders of the CEWO's current watering priorities, particularly in those circumstances where the CEWO does not intend to use its full annual allocations. There would be a general expectation that the watering proposal(s) developed later in the year for each catchment would, in the first instance, relate to the highest priority watering options for the relevant resource availability scenario.<sup>83</sup>

**4.36** While recognising that annual water use options documents have improved over time, future annual water use options documents would benefit from:

- a more consistent approach to criteria assessments—through improved template instructions and an internal review of better practice;
- identifying priorities for water use options (which can be revisited when the CEWO later develops specific water use proposals);
- identifying relationships between options (that is, whether multiple options aligned to a particular resource availability scenario are independent, mutually supportive or mutually exclusive of each other); and
- giving greater consideration to the influences of watering options in upstream catchments, as options available upstream could give rise to new options, or restrict the taking of options, in a downstream catchment.

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<sup>82</sup> During earlier dry conditions, the CEWO developed and used a multi-criteria analysis tool to provide a process for scoring the relative merits of each watering option against criteria and aggregating a score to assist with ranking the options.

<sup>83</sup> Alternatively, if the watering proposals pursued by the CEWO did not relate to the highest priority watering options, there would be a general expectation that the CEWO would outline its reasons for undertaking an alternative watering action.



## Conclusion

**4.37** The CEWO has progressively established the elements of an integrated planning approach for environmental water use. The development of annual portfolio management statements by catchment (or catchment group) from 2012–13 complements the established annual planning process. The portfolio management statements assist the CEWO to demonstrate a more strategic consideration of the relationship between water use, carryover and trade.

**4.38** The assessment framework underpinning the CEWO's annual water use planning was mostly applied as intended—with the prioritisation of options being the exception. While the annual water use options documents have been refined and improved over time, further enhancements would help to improve their consistency and to prioritise the identified watering options.

**4.39** In recognition of the importance of obtaining local knowledge and experience, the CEWO consulted with a broad range of stakeholders, including delivery partners and EWSAP, during the annual planning process. The recent finalisation of a stakeholder register will better position the CEWO to determine whether all key stakeholders had an opportunity to provide input into the annual water use options documents.

## Environmental watering proposals

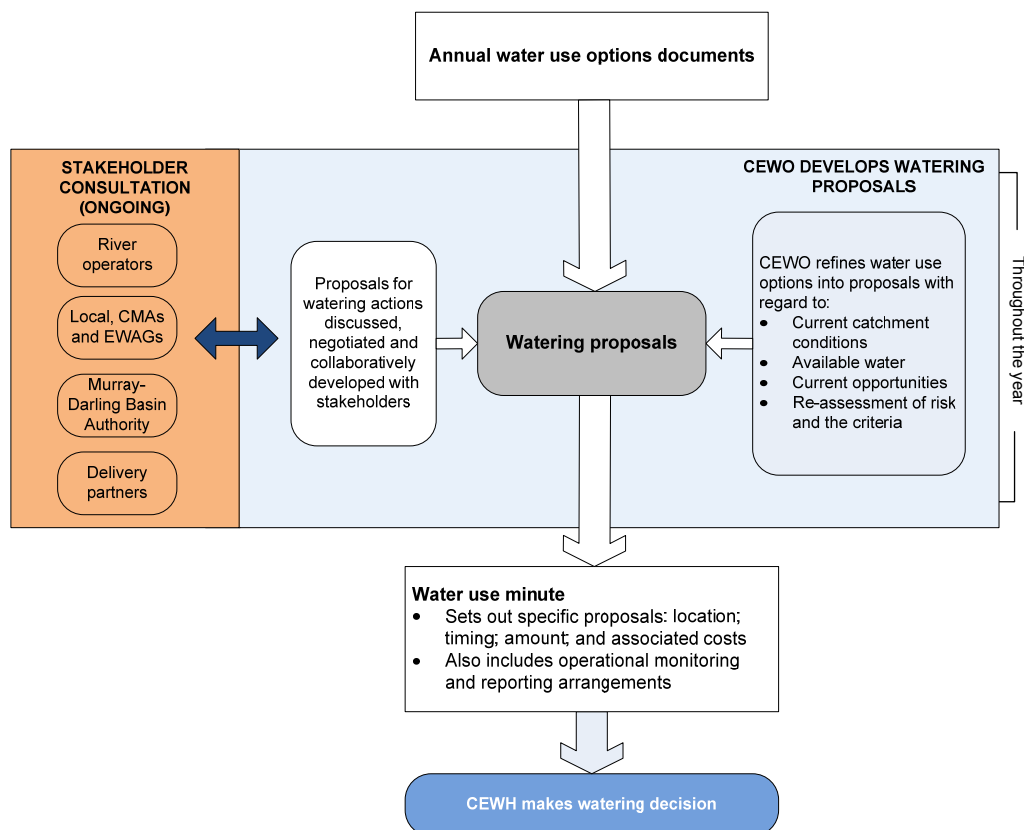
**4.40** Throughout the year, as water allocations are announced and the range of possible future catchment conditions predicted in the annual water use options documents narrows, specific watering proposals are presented by the CEWO to the CEWH for approval. Watering proposals are developed by the CEWO and draw on the annual water use options documents, input from stakeholders<sup>84</sup>, and an assessment of current conditions. Figure 4.4 illustrates the CEWO's decision-making process for watering actions from 2011–12.

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<sup>84</sup> As noted in Chapter 3, the CEWO website now contains instructions on how interested parties can suggest options for the use of Commonwealth environmental water by completing and lodging an expression of interest.

Figure 4.4

### CEWO decision-making process for watering actions from 2011–12



Source: ANAO in consultation with the CEWO.

Note: CMAs—catchment management authorities; EWAGs—environmental water advisory groups.

4.41 Watering proposals are presented as water use minutes, which are generally structured in a template format that sets out:

- relevant background and rationale;
- amount of water (CEWH water and water from other environmental water holders);
- the timing, location and duration of the watering action;
- risk and mitigation strategies;
- arrangements for monitoring and reporting; and
- delivery costs and arrangements (including the identification of delivery partners).

**4.42** In 2011–12, a total of 31 watering proposals were presented to the CEWH—all of which were approved (or approved in principle). As at 10 September 2012, a further eight watering proposals had been approved by the CEWH for the 2012–13 year. In the vast majority of cases (for 36 of the 39 proposals), the CEWH’s decision was made within a week of receiving the proposal.

**4.43** The ANAO analysed 20 water use minutes relating to the five catchments in the ANAO’s sample and covering the period 1 July 2011 to 10 September 2012.<sup>85</sup> The ANAO examined:

- the alignment of the watering proposals to the annual water use options documents;
- the specification of watering objectives, and the basis of the CEWO’s determination that they are achievable;
- the risk assessments; and
- stakeholder consultation undertaken during the development of watering proposals.

**4.44** Generally, the water use minutes state that they are consistent with the relevant annual water use options document but, in most cases, this consistency is not clearly demonstrated. The annual water use options documents contain various watering options and most watering proposals do not explicitly identify which option (or variant) from the document is being pursued. While the option being pursued by the CEWO can, at times, be inferred from the description of the watering actions, this is not always the case. Greater clarity of the relationship between each watering proposal and the options in the annual water use options document would allow the CEWO to:

- better justify its decision to pursue (and effectively prioritise) one option (or a variant thereof) over other identified options for the applicable resource availability scenario;

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<sup>85</sup> The total sample of water use minutes over the period examined by the ANAO was 28, but eight minutes were excluded from the analysis because they did not relate to new proposals or variations in purpose of water use. These minutes outlined changes in volume of water to be used or were for information purposes.

- update and tailor the assessment for each option against the five criteria from the water use framework to the specifics of the watering proposal; and
- outline the impact watering proposals have on the CEWO's ability to implement other relevant options from the annual water use options documents later in the year.

**4.45** All 2012–13 watering proposals from the sampled catchments examined by the ANAO had objectives that identified the intended ecological outcomes from the watering action, and were consistent with the generic ecological outcomes stated in the relevant annual water use options documents. The 2011–12 watering proposals examined also generally identified the ecological outcomes sought by the CEWO from the watering action. However, less than half of the 2011–12 and 2012–13 watering proposals identified the basis on which the CEWO determined that environmental watering would achieve the proposals' stated objectives. Additional information on the rationale for the intended watering approach would provide the CEWH with greater assurance that the watering proposals' objectives were achievable.

**4.46** Risk assessments are undertaken for all watering proposals and were attached to the water use minute. Risk assessments for 2012–13 watering proposals followed the template provided in the CEWO's operational risk guidelines, and were therefore undertaken with greater consistency than risk assessments for 2011–12 watering proposals. The CEWO considered that all risks, after treatments, could be managed and/or sufficiently mitigated.

**4.47** The 2011–12 and 2012–13 watering proposals examined by the ANAO contained little information on the extent of stakeholder consultation undertaken during their preparation. Less than half of the minutes made any specific mention of stakeholder consultation. Where information on stakeholder consultation had been included, it referred to the stakeholders' involvement in a specific aspect of the proposals rather than the stakeholders' views on the proposals overall. There would be merit in the CEWO updating its watering proposal template to better address stakeholder engagement, including the stakeholders consulted and their views on each watering proposal. Improved information on stakeholder engagement would provide the CEWH with greater assurance of stakeholder support or otherwise for watering proposals.

## Conclusion

**4.48** Overall, the watering proposals contain up-to-date information relevant to the CEWO's proposed water use on which the CEWH makes decisions to undertake watering actions. However, improvements to the watering proposal template and increased consistency in the template's application, would improve the integration of watering proposals into the CEWO's annual catchment planning approach. It would also allow the CEWO to better demonstrate the basis for the water use decisions being recommended.

## Future portfolio management and planning considerations

**4.49** The CEWO is adopting a greater focus on longer-term planning and portfolio management to complement the current annual planning approach. This evolution in the CEWO's planning and portfolio management approach has been driven by both developments initiated by the CEWO, such as the proposed trading of entitlements and allocations, and requirements imposed on the CEWO through the Basin Plan. The ANAO examined the CEWO's: multi-year water use planning; preparedness for the Basin Plan; and development of a trading framework.

### Multi-year water use planning

**4.50** The CEWO intends to complement the current annual catchment planning process with multi-year plans covering up to five years. Long-term water use planning by the CEWO, updated at regular intervals, would assist:

- the CEWO to better achieve its statutory obligations to 'protect and restore' environmental assets in the Basin;
- the MDBA and Basin states in their planning; and
- in making decisions about the composition of the CEWH's portfolio, including trading and carryover options.

**4.51** Managing the watering of environmental assets is most challenging under drought conditions. Therefore, longer-term catchment plans should have a strong emphasis on planning for worst-case scenarios, for example, 'dry' or 'extremely dry' catchment conditions. In this regard, the following information becomes particularly important:

- watering cycles of particular assets (for example, that flooding is desirable in one out of every x years);
- watering history of the assets relative to the watering cycle; and
- identification of, and the development of management scenarios for, strategic refuges.<sup>86</sup>

**4.52** Longer-term planning can, however, pose particular challenges, including:

- the difficulty in predicting the conditions of individual environmental assets, or the Basin as a whole—and therefore the watering requirements of the assets—in future years;
- that allocations against entitlements cover periods of less than one year and may have limited carryover from one year to the next; and
- the long-term water planning responsibilities of the MDBA and Basin states under the Basin Plan (discussed below).

**4.53** While multi-year planning presents a range of challenges, the adoption of a longer-term planning horizon will better prepare the CEWO to manage environmental assets, in particular when responding to future drought conditions.

## **Preparedness for the Basin Plan**

**4.54** The Environmental Watering Plan under the Basin Plan requires the CEWH to perform his functions and exercise his powers in a way that: is consistent with the Basin Plan and the Basin-wide environmental watering strategy; and has regard to the Basin annual environmental watering priorities.<sup>87</sup>

**4.55** The CEWO's membership of the Basin Plan Working Group throughout the development of the Basin Plan has allowed the CEWO to consider the impacts of, and prepare for, the implementation of the Basin Plan and Environmental Watering Plan. In this regard, the CEWO included in the

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<sup>86</sup> Refuges are environmental assets, or parts thereof, that can retain their biological diversity in times of adverse catchment conditions.

<sup>87</sup> The MDBA is responsible for developing the Basin-wide environmental watering strategy by 22 November 2014. The Basin states and MDBA are responsible for developing the state/local and Basin annual environmental watering priorities by 31 May 2013 and 30 June 2013, respectively.

2012–13 annual water use options documents an explicit assessment of the CEWH's contribution to meeting objectives set out in the proposed Basin Plan.

**4.56** The CEWO has identified a number of actions required to meet the Basin Plan requirements, including updating the water use framework, revising assessment criteria, and updating the operational risk guidelines. To assist in implementing the identified actions in a timely manner, the CEWO has developed a work plan, which determines the actions required to meet the obligations under the Basin Plan in the short, medium and long-term.

### **Development of a trading framework**

**4.57** Trading of water involves the disposal or acquisition of entitlements (or allocations) to improve environmental outcomes. The development of a trading framework is a key element of the CEWO's portfolio management into the future. The *Water Act 2007* provides authority for the trade of Commonwealth environmental water and imposes requirements that must be met for this trade to be facilitated. CEWO trading activities must also comply with the Basin Plan water trading rules and relevant state trading rules.

**4.58** With drought conditions leading to a high level of demand for water and a low level of water availability, the CEWO has decided not to trade water entitlements in previous years. However, with the change in conditions across the Basin leading to generally wetter conditions and more water availability, the CEWO intends to implement a trading framework during 2013–14.

**4.59** The CEWO considers a water trading framework is necessary because of the public interest in Commonwealth environmental water trading activity and to assist with good governance arrangements around the trade of the Commonwealth environmental water holdings. The CEWO developed a proposed water trading framework, which was released for consultation in November 2011, comprising water trading operating rules, a portfolio management strategy, independent external advice and internal governance arrangements.

**4.60** The CEWO received 43 submissions from a range of stakeholders, including national and state industry groups, irrigation corporations, state government agencies, water brokers and individuals. The CEWO indicated that the majority of submissions either explicitly supported, or were in general agreement with, the CEWO's plan to trade environmental water, and viewed the discussion paper as a positive step in developing a trading framework. The CEWO is taking these comments into account in developing a position paper,

which will inform the development of operating rules to establish the general framework within which water trading can occur.

## **Conclusion**

**4.61** The CEWO's framework for managing its portfolio of water holdings is continuing to develop and mature over time, and to adapt to new requirements. The development and implementation of a trading framework will enhance the CEWO's current annual portfolio management approach, while multi-year planning will enable the CEWO to focus beyond the upcoming year and better position the CEWH to achieve its statutory objective over the long-term. The CEWO is also well-positioned to implement changes to its water use guidance material, tools and reporting arrangements to meet the requirements of the Basin Plan in a timely manner.



## 5. Water Delivery Arrangements

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*This chapter examines the processes and arrangements established by the CEWO to deliver environmental water throughout the Murray–Darling Basin.*

### Introduction

**5.1** Since the commencement of the first CEWO watering action in March 2009, over 2000 GL of the CEWH’s water has been delivered to 35 Basin locations<sup>88</sup> (see Figure 5.1 on the following page) to enhance river flows and inundate neighbouring wetlands and floodplains. An additional 970 GL of water from delivery partners accompanied the delivery of CEWO water at 19 locations. Watering has occurred in all 15 catchments within the Basin where the CEWO holds water entitlements.

**5.2** The CEWO relies on its delivery partners and river operators to implement Commonwealth environmental water deliveries. As is the case with other holders of water entitlements, including irrigators, the CEWO’s water deliveries are required to comply with state policies, procedures and rules governing the use of the water entitlements and the operation of Basin infrastructure. Given the CEWO’s watering actions can extend over long periods of time, the delivery of its environmental water requires careful management to effectively respond to changes in conditions, including weather conditions.

**5.3** In the context of established water delivery arrangements, the ANAO examined:

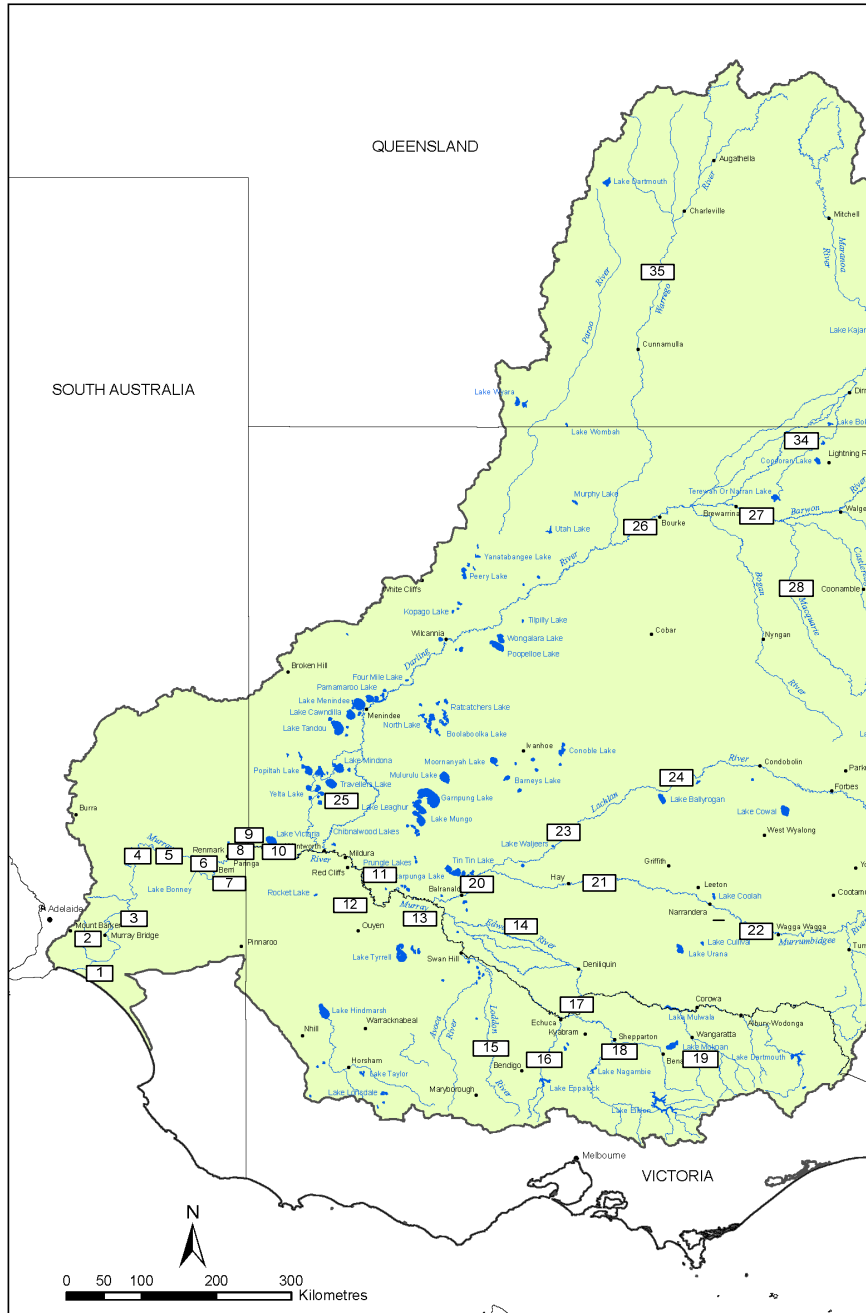
- the adequacy of the CEWO’s framework for the delivery of environmental water;
- the effectiveness of the CEWO’s monitoring of water deliveries by delivery partners and river operators;
- the accuracy of the CEWO’s accounting of the watering actions; and
- how the efficiency of environmental water deliveries can be improved.

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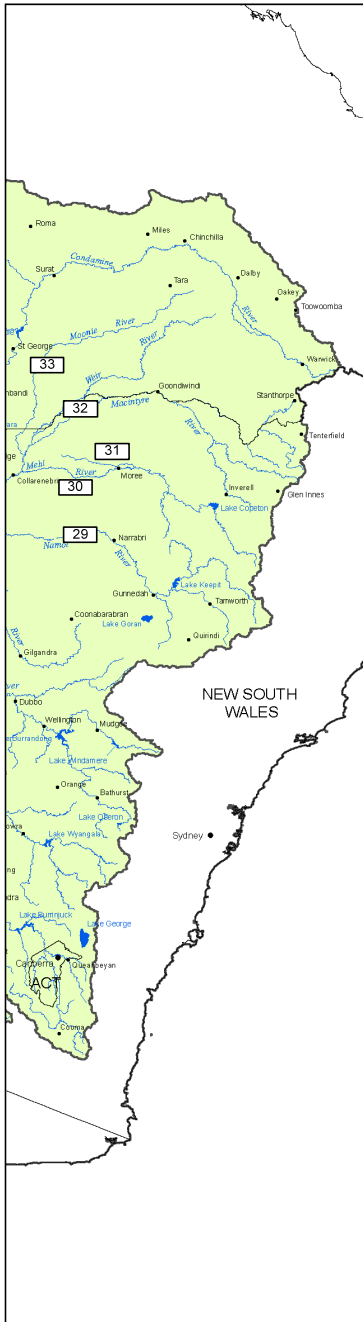
<sup>88</sup> In some instances, watering actions targeted particular sites within these locations.

**Figure 5.1**

**Locations watered by the CEWO from March 2009 to February 2013**



Source: ANAO analysis of CEWO records.



Site	Volume delivered (ML)	
	CEWH	Partners
1 – Coorong/Lower Lakes/ Murray Mouth	545 051	104 300
2 – Rock Gully	11	-
3 – Paiwella Wetlands	867	142
4 – Murbpook Lagoon/ Morgan Conservation Park	3 506	-
5 – Markaranka Complex/ Mono Flat	2 561	-
6 – Wigley Reach N/W/C Channels	248	-
7 – Katarapko Floodplain/ Carpark Lagoon/ Overland Corner	1 048	297
8 – Weila	220	-
9 – Riverland Chowilla	22 611	1 945
10 – Remaining NSW	1 745	2 388
11 – Backwater Lagoon	344	-
12 – Hattah Lakes	18 524	11 146
13 – Murray River	179 010	-
14 – Edward-Wakool river system	108 811	24 796
15 – Loddon River	4 737	9 841
16 – Campaspe River	15 370	14 091
17 – Gunbower-Koondrook -Perricoota Forests/ Barmah-Millewa Forest	1 500	12 254
18 – Goulburn-Broken River	324 676	111 344
19 – Ovens River	120	-
20 – Lower Murrumbidgee Floodplain	95 886	84 295
21 – Mid-Murrumbidgee Wetlands	3 000	-
22 – Murrumbidgee River	382 181	144 632
23 – Merrowie Creek	16 160	5 888
24 – Booligal Wetlands	10 943	3 803
25 – Lower Darling River	6 580	18 820
26 – Western Floodplain (Toorale)	9 720	-
27 – Barwon-Darling River	66 407	-
28 – Macquarie Marshes	167 821	411 187
29 – Namoi River	7 727	-
30 – Mallowa Wetlands	3 813	2 974
31 – Gwydir Wetlands	27 811	13 207
32 – Border Rivers	2 905	-
33 – Condamine-Balonne River/Culgoa Floodplain	36 057	-
34 – Moonie River	5 660	-
35 – Warrego River	52 366	-

## Water delivery framework

5.4 The CEWO has established a detailed framework to govern the delivery of Commonwealth water to environmental assets, which is illustrated at Figure 5.2 on the following page.

5.5 The CEWO's Water Holdings Register records the water allocations against entitlements that are available for use. In advance of conducting a watering action in a regulated catchment, information from the Register is used to prepare the relevant documentation to:

- transfer water allocations to delivery partners (usually state government agencies) that then place a delivery order with river operators<sup>89</sup> on the CEWO's behalf (under Scenarios A, B and C in Figure 5.2); or
- place a delivery order directly with river operators, in the absence of a delivery partner (under Scenario D in Figure 5.2).

5.6 In unregulated catchments, state government announcements that water is available against entitlements usually trigger the 'take' of water by the CEWO (which is primarily in the form of enhanced river flows).

5.7 The CEWO, in conjunction with river operators and delivery partners (where involved in the delivery), monitors the water deliveries as they proceed. On the completion of watering actions, the CEWO receives a final delivery report that is used to update the Water Holdings Register (under all scenarios) and reconcile water delivered against the allocations that have been transferred to the delivery partners (under Scenarios A, B and C).

## Arrangements to deliver environmental water

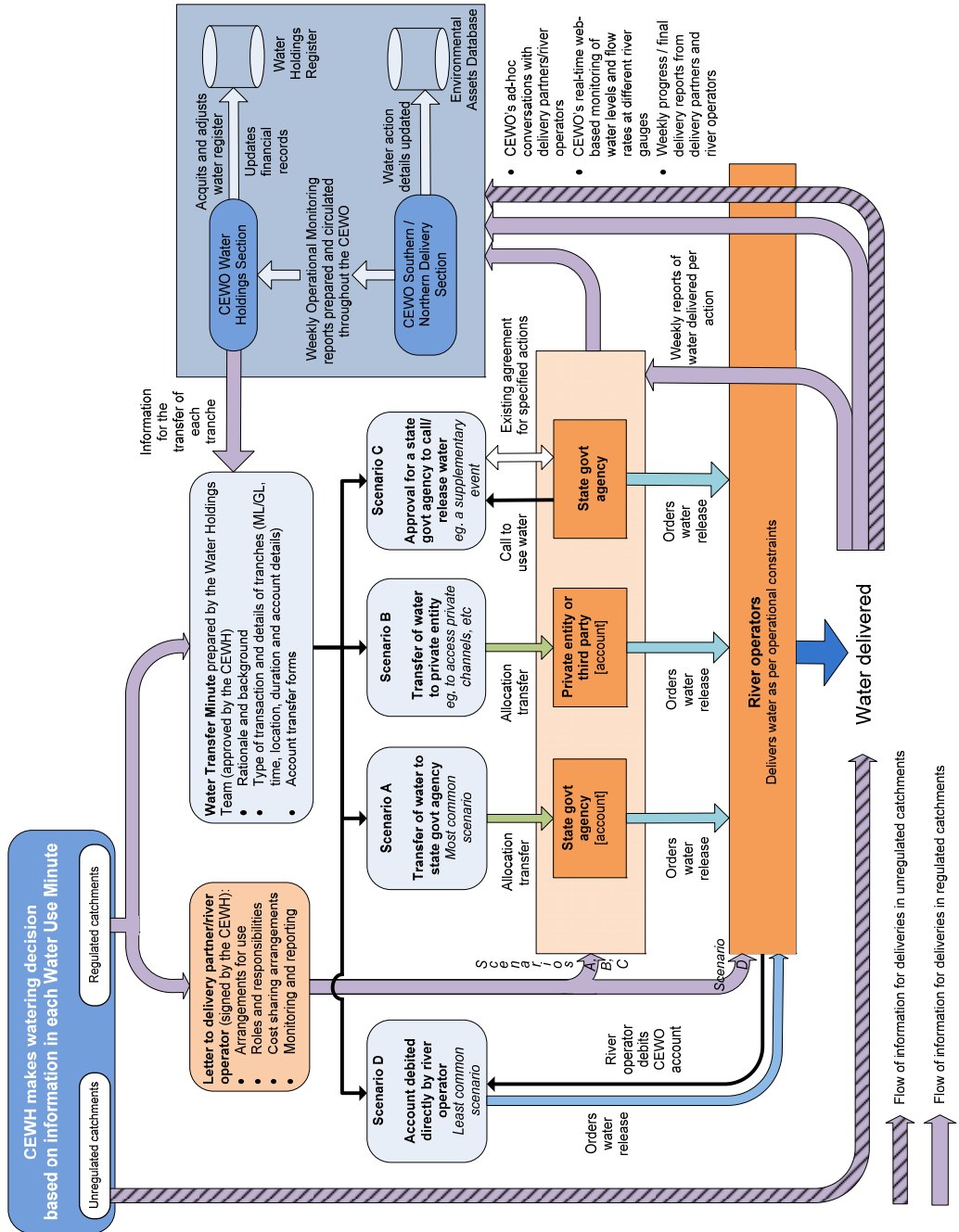
5.8 Over time, the CEWO has established processes and procedures with delivery partners to facilitate the delivery of Commonwealth environmental water under various circumstances. The ANAO examined the different delivery scenarios and the extent to which the risks associated with the delivery of CEWO water are being managed.

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<sup>89</sup> River operators include the MDBA, State Water (NSW) and Goulburn–Murray Water (Victoria).

Figure 5.2

Water delivery process for 2011–12 and 2012–13 watering actions



Source: ANAO from CEWO information.

## Delivery scenarios and their parameters

**5.9** As illustrated in Figure 5.2, the CEWO has established four different scenarios to deliver environmental water. Scenarios A and B are similar, with both involving the transfer of environmental water from CEWH holdings to either a state government agency (Scenario A) or a private sector organisation, such as a private irrigation infrastructure operator (Scenario B). Scenario A, the most common delivery method, is generally used in catchments where the relevant state government agency holds environmental water under its water sharing plans. Scenario B can be used where the watering action involves the use of private irrigation channels to water the designated environmental assets.

**5.10** At the time of approving each new watering action, under water delivery Scenarios A and B, the CEWH writes to the relevant delivery partner to outline the CEWH's intended watering action and the delivery arrangements.<sup>90</sup> These letters describe the water delivery location(s), quantity of CEWO water to be delivered, operational parameters, water accounting arrangements, and delivery fees and charges payable by the CEWO. The letters also indicate that the delivery partner is responsible for obtaining any approvals required for the watering action and keeping the CEWO informed of delivery progress. Delivery partners that provided comments to the ANAO generally indicated that they were informed of, or involved in CEWO water deliveries.

**5.11** On the announcement of an allocation against supplementary water entitlements<sup>91</sup> by a state government, holders of these entitlements (including the CEWH) have little time (between 24 and 48 hours) to decide on whether, and where, to use these entitlements. Therefore, under Scenario C, the CEWO has:

- determined in advance whether and how supplementary allocations would be used, should they to be announced within a specified time period<sup>92</sup>; and

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<sup>90</sup> Arrangements between the CEWO and delivery partners that are state government agencies take the form of non-legally binding government-to-government arrangements.

<sup>91</sup> Water entitlements of 'supplementary' class generally receive allocations only after all other entitlements classes in the catchment receive their full allocation.

<sup>92</sup> As with other watering options, supplementary watering options are assessed against assessment criteria under the water use framework, which was discussed earlier in Chapter 4.

- provided approval to the relevant delivery partner to order and use supplementary allocations on behalf of the CEWO within the established parameters.

**5.12** Under Scenario D, the CEWO approaches river operators directly to order the release of its water, which could be necessary where state government agencies do not hold environmental water under its water sharing plans, or where state environmental water accounts are full.<sup>93</sup> In November 2012, the CEWH approved the first environmental watering action involving the direct engagement of a river operator (in the Namoi catchment). The CEWH completed water transfer forms and exchanged correspondence with the river operator similar to that which occurs under Scenarios A and B.

### Management of water delivery risks

**5.13** As outlined in Chapter 2, the CEWO engaged the AGS in 2012 to consider legal and governance risks impacting the CEWH's environmental watering function, and to suggest risk treatments where current controls were considered to be insufficient. The risks arising from the delivery of environmental water that AGS assessed included:

- compliance with Commonwealth and state water, environment, and heritage legislation<sup>94</sup>;
- negative impacts on people or property (including in relation to negligence, trespass and nuisance)<sup>95</sup>; and
- adequacy of arrangements with delivery partners to ensure an appropriate use of Commonwealth environmental water.

**5.14** Overall, the AGS noted that the delivery of Commonwealth environmental water through delivery partners significantly mitigates many of the risks that could arise during the delivery of environmental water. In such circumstances, the delivery partner, prima facie, bears the risks rather than the

<sup>93</sup> The transfer of water from the CEWO to state government agencies under a Scenario A water delivery option can only occur where the addition of the CEWO's water to the agencies' water accounts would not breach maximum limits. In a potential breach situation, the CEWO would be required to use a Scenario B or D water delivery method.

<sup>94</sup> As noted earlier, the extent to which state legislation applies to and binds the Commonwealth requires a case-by-case determination.

<sup>95</sup> These negative impacts may include: flooding of private property resulting in a loss of access to or enjoyment of land; destruction of livestock or crops through flooding; economic loss resulting from the disruption of transport routes; losses arising from bank slumping (the partial collapse of exposed riverbanks); harm caused by transference or exposure to noxious flora, fauna, disease or materials; salinity effects; and injury or loss of life resulting directly (drowning in flood waters) or indirectly (reduced access to medical services) from environmental watering activities.

CEWO. Nevertheless, the AGS identified a number of additional treatments that would further reduce the likelihood and consequence of the risks impacting directly on the CEWO, including reviewing:

- documents that establish current arrangements with delivery partners to clarify roles and responsibilities of both parties, and the parameters of the relationship and authorisations;
- Commonwealth and state information sources regularly to determine areas subject to Commonwealth/state environment or heritage legislative requirements<sup>96</sup>; and
- the operational risk guidelines and risk assessment template for completeness.

**5.15** In those cases where delivery partners are not involved in the delivery of Commonwealth environmental water (Scenario D), the effective implementation of additional risk treatments identified by the AGS will help to better manage the water delivery risks borne directly by the CEWO when engaging with river operators to deliver its environmental water. The risk treatments are being progressively implemented but, as noted in Chapter 2, the implementation deadlines for some treatments have been extended.

**5.16** While the assessment prepared by the AGS has identified a broad range of risks facing the CEWO in delivering environmental water, a further water delivery risk not addressed in the assessment relates to the sufficiency of the arrangements for monitoring and measuring the delivery of the CEWO's water as intended. Although water diverted for irrigation purposes can be accurately measured at the point of its extraction from the river system, the monitoring of most environmental water deliveries is not as precise.<sup>97</sup> In general, environmental watering proposals approved by the CEWH describe, in broad terms, the intended monitoring and measurement activities of delivery partners, river operators and the CEWO. However, the proposals do not contain an appropriately detailed assessment of the sufficiency of these arrangements. A fit-for-purpose assessment (and the adoption of additional

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<sup>96</sup> For example, management plans associated with World Heritage sites, areas subject to aboriginal heritage declarations and areas on state heritage registers.

<sup>97</sup> The measurement of many environmental water deliveries relies on a combination of 'metered' dam water releases, monitoring of flow/water levels at gauges along the delivery path, and observation of river levels. Complicating this measurement approach is the need to distinguish Commonwealth environmental water from other water (including natural flows and water released for consumptive users) in the river system.



monitoring and measurement activities where required) would provide the CEWO with greater assurance over the effective delivery of Commonwealth environmental water.

## Conclusion

**5.17** The CEWO has established appropriate arrangements with delivery partners and river operators to facilitate the delivery of environmental water under various circumstances. Current arrangements have mitigated or transferred to delivery partners/river operators many of the risks arising from the delivery of Commonwealth environmental water. Notwithstanding the effectiveness of these arrangements, the CEWO is implementing additional risk treatments to further reduce the likelihood and consequence of water delivery risks. In this context, there is scope to obtain greater assurance surrounding the monitoring and measurement arrangements for each watering action to help ensure that they sufficiently demonstrate the effective use of Commonwealth resources.

## Monitoring water deliveries

**5.18** Close monitoring of CEWO water deliveries is important so that targeted areas receive the intended quantity and quality of water, taking into account the potential for the natural inundation of targeted areas from rainfall and associated run-off. Under current arrangements, delivery partners are responsible for 'operational monitoring' and regular reporting to the CEWO on each water delivery. These responsibilities are set out in the CEWO's water delivery letters of arrangement. While 'operational monitoring' is not defined in these letters, the CEWO's MERI framework document indicates that it encompasses the monitoring of water quantity (including flow rates), water quality (such as salinity, turbidity, pH levels and dissolved oxygen) and initial ecological responses (from fauna, vegetation and aquatic species).

**5.19** The CEWO also monitors the delivery of its water and other factors that could influence its watering actions by:

- regular telephone and email contact with its delivery partners during water deliveries to discuss progress and any risks or issues arising;

- monitoring publicly available information (generally on the internet) covering real-time flow rates and stream levels at various gauges throughout the Basin; and
- monitoring current and forecasted weather conditions.<sup>98</sup>

**5.20** The monitoring information collected for each watering action is consolidated into an operational monitoring report, which records, among other things, water delivered to date (estimate), the watering action's current status (not commenced, commenced/ongoing, ceased/suspended, or complete) and estimates of the remainder of water to be delivered.

**5.21** Figure 5.3 illustrates some of the sites that received Commonwealth environmental water.

**5.22** Once a watering action has been completed, delivery partners are requested to submit to the CEWO a final delivery report within two to three months. The final delivery reports are designed to summarise and document the key aspects of the water delivery, including whether intended objectives have been achieved. Victorian and South Australian delivery partners use a final delivery report template developed by the CEWO, while NSW delivery partners use their own Environmental Water Delivery Report template. The reporting template used by NSW lacks some of the information required from those jurisdictions using the CEWO template including: the watering objective; delivery method and measurement arrangements; risk management measures imposed; and observation of species of conservation significance.

**5.23** The 2011–12 final delivery reports from Victoria and South Australia were of variable quality and completeness—with delivery measurement methods, risk management measures imposed and ecological responses often poorly described or absent. Records retained by the CEWO do not evidence its assessment of the final delivery reports received, or that changes or improvements to the reports were requested.

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<sup>98</sup> For example, to reduce the risk of inundating landholders, the CEWO suspended a 2011–12 watering action that had begun in the Gwydir catchment after receiving updated seasonal rainfall outlooks predicting higher-than-average rainfall in the catchment.

**Figure 5.3****Examples of sites that received Commonwealth environmental water**

From top clockwise: Macquarie Marshes shortly after a period when Commonwealth environmental water was used (October 2010); The Darling Anabranch during a period when Commonwealth environmental water was used (December 2010); and Booligal Blockbank Swamp shortly after a period when Commonwealth environmental water was used (November 2010).

Source: Commonwealth Environmental Water 2010–11 Outcomes Report.

**5.24** Four of the 22 final delivery reports provided to the CEWO advised of the materialisation of identified and previously unidentified risks. Table 5.1 summarises five risks that materialised during 2011–12 watering actions, and the delivery partners' responses. Four of the risks relate to the unintended inundation of private or public land and machinery. According to the information provided by delivery partners, all materialised risks were addressed.

**Table 5.1****Risks that materialised during 2011–12 watering actions**

Materialised risk	Delivery partner response
Inundation of irrigator pumps on the riverside	Delivery partner was providing information on river condition to pump irrigators that would aid them to avoid future inundation of pumps
Environmental water diverted into irrigation storage	Responsible state agency was notified and compliance action taken
Inundation of 15 hectares of cropped land due to natural river flows	Delivery partner was in regular contact with the landholder. Continuing dry conditions was expected to allow the cropping of this parcel of land within the next two weeks, which would resolve the issue. Delivery partner determined flooding was not associated with the delivery of environmental water.
Inundation of low-lying areas affecting landholders	Delivery partner, river operator and relevant catchment management authority informed landholders of flow releases. Weekly flow management meetings between affected landholders and relevant agencies 'primarily satisfied' all parties
Prolonged inundation of Barmah-Millewa Forest	Regular flow management meetings between delivery partner, river operator, forestry management, CEWO and MDBA 'primarily satisfied' all parties

Source: ANAO analysis of final delivery reports.

**5.25** Overall, the final delivery reports received from all jurisdictions provided only limited assurance that operational monitoring has met its objectives. In particular:

- while water quantities and delivery dates were specified, many reports did not adequately describe the delivery partners' monitoring/measurement approach;
- reports rarely indicated explicitly that the quality of the environmental water delivered was within acceptable parameters; and
- initial ecological responses were generally missing or very briefly described. In addition, the absence of the watering action's objectives from some reports inhibits a determination of the relevant ecological responses that should be observed.

**5.26** Further, approximately a third of all final delivery reports were received later than the requested three months after the conclusion of the watering action, including three reports from one jurisdiction received more than seven months after the watering actions were completed. The late

provision of final reports limits the CEWO's ability to respond to the reports' findings and conclusions in a timely manner.

5.27 An internal review of the operational monitoring practices of the CEWO and delivery partners, which was finalised in February 2013, identified shortcomings with current practices—many of which broadly align with the ANAO's findings. The CEWO identified difficulties in the timely assessment of the success of past watering actions due to issues with the:

- collection and storage of operational monitoring data (throughout watering actions); and
- the content, frequency and timeliness of reporting at the conclusion of watering actions.

5.28 To address the identified shortcomings, the CEWO intends to: implement a standard framework to determine the operational requirements for watering actions; implement a consistent approach to storing operational monitoring data; and prepare a CEWO final operational monitoring report, incorporating operational monitoring data and the delivery partner's final delivery report.

## Conclusion

5.29 Delivery partners, river operators and the CEWO are required to monitor the delivery of CEWO water throughout the course of each watering action. At the conclusion of 2011–12 watering deliveries, the final delivery reports received from delivery partners indicate that deliveries were successfully completed, with risks that materialised during the actions being satisfactorily addressed by the delivery partners. The final delivery reports, however, do not adequately document some key aspects of the water delivery, including the maximum area inundated, the risk management measures in place, water quality results and initial ecological responses. The CEWO is intending to enhance operational monitoring by: better identifying monitoring and reporting requirements; improving data storage; and improving the documentation of CEWO assessments of watering action results.

## Accounting for water actions

### Water Holdings Register

5.30 The effective discharge of the CEWH's functions is reliant on the accurate recording of entitlements and their use, with the *Water Act 2007*

requiring the CEWH to maintain an up-to-date record of Commonwealth water holdings. The CEWO has established a Water Holdings Register to manage water entitlements.

**5.31** The CEWO considers that there are a number of shortcomings to the existing spreadsheet-based register, including a limited audit trail and the risk of data entry and formula errors being made and not detected. The CEWO advised that it is currently developing a new register, as part of a broader Environmental Water Management System (EWMS)<sup>99</sup>, to document Commonwealth water holdings and transfers. Work on the new system commenced in October 2012, with a pilot of the system planned for testing in June/July 2013. It is intended that the EWMS will be fully functional by October/November 2013 and, after a period of dual operation and integrity testing, the existing spreadsheet-based register will be decommissioned.

### **Use of the Register for water deliveries**

**5.32** In advance of a watering action commencing, the CEWO's Water Holdings Section determines the allocations from which the CEWO's environmental water will be transferred to the delivery partners. The Water Holdings Section also:

- prepares for the CEWH's approval the state-based transfer forms and facilitates the payment of delivery fees; and
- records the transfers in the Water Holdings Register.

**5.33** In the case of larger watering actions, transfers often occur in tranches, which helps the CEWO manage unexpected events (for example, the early cessation of a water delivery due to unanticipated rain). At the completion of water deliveries, the Water Holdings Section reconciles transfers against water delivered and makes arrangements for any unused water to be returned to the CEWO or assigned to future CEWO watering actions.

**5.34** In mid-2012, the CEWO engaged DSEWPaC's internal auditors to: review a sample of transactions to assess their compliance with existing controls; and determine whether water transfers were supported by appropriate controls, internal procedures and documentation. The review concluded that, for the sample of 26 water transfer minutes selected for testing,

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<sup>99</sup> The EWMS is being designed to support data retrieval, customised querying and reporting, tracking of water actions and comprehensive workflow management.

nothing came to the auditors' attention to indicate that the water transfer process was not materially performed in accordance with requirements. Although some instances of non-compliance with internal controls were identified, there were no errors in the recording of water transfer volumes. The review recommended improvements to business processes (including standard operating procedures and controls), recordkeeping and documentation. The CEWO agreed to all recommendations and action against the recommendations was complete as of 31 August 2012.

**5.35** The findings of the internal auditors' review are similar to the findings from the ANAO's testing of the 2011–12 water deliveries documentation for each of the catchments examined, which found:

- that authorised water transfer minutes for some watering actions were not retained by the CEWO; and
- insufficient controls surrounding the accounting for undelivered water at the conclusion of a watering action, particularly where this water is 'held' by the delivery partner for a future CEWO watering action rather than returned to the CEWO.<sup>100</sup>

## Conclusion

**5.36** Transfers of CEWO water to delivery partners to facilitate water deliveries have been satisfactorily accounted for in the Water Holdings Register. Nevertheless, the CEWO is currently addressing shortcomings in its business processes and the functionality of the register, which will strengthen the CEWO's control over its water holdings data.

## Improving the efficiency of environmental water delivery

**5.37** The efficient delivery of environmental water by the CEWO is affected by a range of natural and artificial impediments. Natural impediments include:

- in-channel capacity (flow-rate) restrictions at key locations (such as between the Hume Dam and Yarrawonga, and within the

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<sup>100</sup> At particular times of the watering year, state rules may create trading 'blackouts' that prevent the return of undelivered CEWO water from delivery partners back to the CEWO. In such cases, delivery partners hold the undelivered water for a future CEWO watering action or until the trading blackout ceases.

Barmah–Millewa Forest, both on the Murray River) that can limit the extent of watering of downstream wetlands and floodplains<sup>101</sup>; and

- the topography surrounding key assets (such as their location in high floodplains, which makes controlled watering difficult).

**5.38** Artificial impediments include the:

- network of dams, weirs and barrages throughout the Basin constructed for consumptive use that disrupt natural flows;
- outlet capacity for some dams, which limits the flow rates possible downstream;
- location of non-water infrastructure (such as bridges), which limits the flow rates at some sites; and
- rules governing the use and accounting of water in the Basin.

**5.39** There are various Commonwealth and state government initiatives underway to address many of these impediments. While most of these initiatives, generally related to infrastructure works and property acquisitions, are being undertaken by third parties, their results will significantly impact on the CEWO's use of environmental water. There are some impediments, particularly the Basin system management rules, where there is scope for the CEWO to pursue changes to improve the efficient and effective use of Commonwealth environmental water.

## **Infrastructure works and property acquisitions**

**5.40** Infrastructure works being undertaken or proposed by the Commonwealth and state governments have significant implications for the future use of the CEWO's water holdings.

**5.41** Under *The Living Murray* initiative, which is administered by the MDBA, funding has been set aside to construct major water management structures at sites along the Murray River.<sup>102</sup> These structures will enable water managers to provide environmental water to the floodplains with much

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<sup>101</sup> In regulated conditions, exceeding these restrictions requires the approval of landholders whose properties would be inundated by the release of water at rates greater than capacity. In times of natural flooding, river systems that are normally regulated can become 'unregulated' and infrastructure operators may be obliged to exceed in-channel capacity (for example, in situations where dam capacity is reached or dam safety could be compromised).

<sup>102</sup> Major water management structures include regulators at Gunbower–Koondrook–Perricoota, Hattah Lakes, and the Chowilla Floodplain/Lindsay and Wallpolla Islands icon sites.



smaller volumes of water. *The Living Murray* initiative is also funding the installation of 14 fishways—10 of which have been completed—that will restore the migratory passage for native fish along 2225 kilometres of the Murray River, extending from the Hume Dam to the Murray mouth.<sup>103</sup> In 2012, the NSW Government completed the installation of new regulators, pipes and culverts to enable the delivery of environmental water flows to Lower Murrumbidgee wetlands located on private property.

**5.42** In late October 2012, the Commonwealth Government announced that \$200 million in funding over 10 years would be provided to remove constraints, such as low-lying bridges and undersized dam outlets, that currently limit both the volume of water that can flow through river systems and the environmental uses to which it can be directed. The Government's funding announcement followed hydrological modelling undertaken by the MDBA published earlier that month that indicated that the removal of key physical constraints within the Southern-connected Basin, combined with an additional 450 GL/yr of water, would deliver improved environmental outcomes for the Murray River.<sup>104</sup>

**5.43** Another means of increasing the flow rates through river systems is by acquiring properties, or easements to properties, along the banks of waterways that are constrained by in-channel capacity. The acquisition of these properties or easements would mean that incidental inundation during a CEWO watering action would no longer pose a third-party risk.

## Basin system management rules

**5.44** The rules governing the operation and use of water entitlements in the Basin have developed over time for the benefit of consumptive users. The rules applying to the water entitlements held by irrigators apply to the same class of water entitlements held by the CEWH. However, the governing rules on the use and accounting of water entitlements do not always cater well for the CEWO's intended use, which is very different to that of irrigators.

**5.45** Under current arrangements for Basin water management, there are several key issues that inhibit the CEWO's efficient use of environmental

<sup>103</sup> Fishways consist of a series of interconnected pools in a gentle sloping structure, which allow native fish to migrate upstream from pool to pool.

<sup>104</sup> MDBA, *Hydrologic modeling of the relaxation of operational constraints in the southern connected system: Methods and results*, October 2012. The Southern-connected Basin comprises the Murrumbidgee, Murray, Lower Darling, Goulburn, Campaspe (excluding Coliban Creek) and Loddon catchments (see Appendix 2).

water. Table 5.2 lists some of the desired features for watering actions that Basin system management rules did/do not currently cater for or allow, and the methods through which the CEWO is seeking to address them—namely, water shepherding arrangements and the Basin Officials Committee (in the River Murray system).

**Table 5.2**

**Desired features of watering actions that current Basin rules did/do not cater for or allow**

Feature	Description	Addressed through
Protect environmental water in-stream in unregulated catchments	Operating rules in unregulated catchments allow entitlement holders to take water (out of the river) on the declaration of an allocation against entitlements. CEWO water, which is retained in-stream, is thus at risk of being taken by other entitlement holders	Water shepherding arrangements with the states
Allow the CEWO to call water from a specific storage	The storages from which environmental water is sourced are determined by river operators based on operational decisions. To maximise the distribution of environmental benefits, the CEWO may prefer that its water be sourced from particular storages	Basin Officials Committee (River Murray system) or state governments (elsewhere) <sup>1</sup>
Facilitate the release of water in addition to, rather than after taking into account, unregulated flows	To fulfil water deliveries, river operators release water from storages after taking into account natural flows from unregulated tributaries. To maximise environmental benefits, the CEWO would prefer that its water was in addition to these natural flows	
Protect or store return flows for immediate or later environmental use downstream	Rules in many catchments do not cater for the continual recognition of environmental water throughout its flow down the Basin. In such circumstances, water that has been delivered to wetlands and floodplains and then returned to the river system is 're-regulated' in storages and available for allocation to all relevant entitlement holders	

Source: ANAO, from CEWO information.

Note 1: To date, the desired features have mostly been encountered in watering actions in the River Murray system.

***Water shepherding arrangements***

**5.46** In unregulated catchments (most notably, the Barwon–Darling catchment), the CEWO may 'take' water against its water entitlements by leaving flows in-stream. However, these flows could trigger access thresholds

to be exceeded downstream<sup>105</sup>, which would allow other water entitlement holders to extract Commonwealth environmental water for consumptive purposes. Water shepherding protects Commonwealth environmental water in unregulated catchments by establishing new rules that safeguards the water ‘taken’ by the CEWO at one location until it reaches a downstream delivery location (less any losses associated with the movement of that water downstream—that is, transmission losses).

**5.47** In July 2010, the Commonwealth entered into separate memoranda of understanding with the Queensland and NSW governments in relation to the shepherding of water for the environment (the MOUs).<sup>106</sup> The MOUs establish temporary measures to shepherd CEWO water in Queensland catchments of the Basin and the NSW-based Barwon–Darling catchment. The MOUs also:

- indicate that entitlements and allocations by all water users will not be enhanced or diminished as a result of environmental watering actions and shepherding of environmental water under the MOUs; and
- contain a pathway to establishing permanent water shepherding measures that will require, among other things, amendments to state legislation.

**5.48** The development and implementation of permanent water shepherding measures under each MOU is proceeding in two stages.<sup>107</sup> In NSW, the implementation of Stage 1 was completed in November 2012 and completion of the second stage is expected during 2014–15. Progress is not as advanced in Queensland, with the scoping phase of Stage 1 implementation yet to be completed.

### *Basin Officials Committee*

**5.49** Changes to the rules governing river operations and water management in the River Murray system that are affecting the CEWO’s efficient delivery of water are also being pursued through the Basin Officials Committee (BOC). The BOC was established by the Murray–Darling Basin Agreement (Schedule 1 of the *Water Act 2007*) to facilitate cooperation and coordination between the Commonwealth, the MDBA and the Basin states in

<sup>105</sup> That is, particular levels of river flows above which allows entitlement holders, such as irrigators, to extract water.

<sup>106</sup> The July 2010 memoranda of understanding build upon earlier intergovernmental memoranda of understanding and agreements.

<sup>107</sup> The CEWO is a member of the working group or taskforce that is assisting with the design and implementation of permanent water shepherding measures.

funding works and managing the Basin's water and other natural resources. The BOC comprises officials from the six Basin governments, and is chaired by the Commonwealth committee member.

**5.50** Under the Murray–Darling Basin Agreement, the MDBA must refer for the BOC's determination matters that would require the MDBA to deviate from standard/past river operations practice or could materially affect state water entitlements. The MDBA has referred aspects of a number of draft CEWO watering proposals to the BOC under these circumstances. Decisions of the BOC require the agreement of all parties.

**5.51** Overall, the BOC has indicated its preference for time-limited or action-specific trials of rule changes under a given set of circumstances, as the potential impacts of rule changes can be difficult to predict in all circumstances due to the many variables involved. In this regard, BOC approval was sought in relation to two requests for the CEWO to conduct multi-site environmental watering actions during 2011–12 (dated September 2011) and 2012–13 (May 2012) as trials. BOC approval was required to allow additional water to be released from water storages within the River Murray system during unregulated conditions and to protect return flows for use in South Australia from extraction by other water entitlement holders. While the proposed 2011–12 trial did not proceed after the BOC could not reach agreement on the protection of return flows, BOC approval was obtained for the 2012–13 trial after BOC members agreed to a transmission loss estimate on the protected return flows. The BOC has also requested the MDBA undertake research and modelling of the potential impacts from aspects of the CEWO's proposed use of its water holdings.

## **Conclusion**

**5.52** While there are a range of natural and artificial impediments to the CEWO's efficient delivery of environmental water, many are being addressed by governments through a combination of infrastructure works and changes to Basin system management rules. Commonwealth and state government-funded infrastructure works in the Basin river system will give rise to greater watering possibilities for the CEWO using less environmental water than is currently required. In addition, the CEWO has been actively seeking changes to Basin system management rules to better protect, and facilitate the more efficient use of, its environmental water.

## 6. Monitoring and Evaluation

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*This chapter examines the CEWO's approach to monitoring and evaluating environmental watering activities, including the development and implementation of a monitoring, evaluation, reporting and improvement (MERI) process.*

### Introduction

**6.1** Monitoring, evaluation, reporting and improvement activities are integral components of natural resource management programs, particularly in highly variable natural systems where the outcomes from actions can be uncertain. These activities facilitate an assessment of the impact, appropriateness, effectiveness, efficiency and legacy of policies, programs and use of resources, and a process to promote accountability.

**6.2** A rigorous monitoring and evaluation program provides greater knowledge through which progress towards the outcomes of environmental activities can be determined. This knowledge helps to inform an assessment of the benefits derived from the use of limited environmental resources, such as water, against the considerable investment of government funding. A better understanding of the outcomes resulting from targeted environmental flows can also inform future management decisions.

**6.3** While CEWO water deliveries have been monitored since watering actions commenced in 2009, initially these activities focused on the short-term impact of individual actions. However, with the recent adoption of the monitoring, evaluation, reporting and improvement (MERI) process to guide its monitoring activities, the CEWO is transitioning to a longer-term, site-based strategy that will provide greater insights into the impacts of environmental watering.

**6.4** The ANAO examined the CEWO's:

- monitoring and evaluation activities to date;
- adoption of a MERI process, including the development and contents of the CEWO's finalised MERI framework document; and
- development of a strategy to implement the CEWO's MERI process (MERI strategy), which is currently underway.

## Monitoring and evaluation of environmental watering activities

6.5 In the absence of a formal monitoring and evaluation framework and strategy, the approach taken by the CEWO to date to monitor and evaluate its environmental watering actions has involved the engagement of:

- delivery partners to monitor all deliveries of the CEWO's environmental water and identify any preliminary ecological outcomes during water delivery observations (for example, a bird breeding event)<sup>108</sup>; and
- monitoring partners<sup>109</sup> to monitor the ecological outcomes from specific watering actions, taking into account the ecological monitoring undertaken by state governments and local groups.

6.6 The ANAO examined the CEWO's recent program of ecological response monitoring activities, the involvement of advisory panels in these activities, and the usefulness of the monitoring undertaken to the CEWO to report on the achievement of outcomes.

### CEWO's program of ecological response monitoring activities

6.7 Ecological monitoring of specific watering actions has been undertaken by monitoring partners, contracted to the CEWO, since mid-2011. Depending on the subject matter, monitoring commonly involves sampling prior to, during and after the watering action to determine baseline values and any changes in:

- water quality (by testing water temperature, pH level, dissolved oxygen content, depth and turbidity);
- populations of fish, waterbirds, frogs, tadpoles, insects and other invertebrates;
- vegetation type and health; and
- breeding or nesting activities of fauna.<sup>110</sup>

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<sup>108</sup> Operational monitoring of water deliveries is examined in Chapter 5.

<sup>109</sup> These monitoring partners include universities, catchment management authorities and other research institutions.

<sup>110</sup> Photo-points, satellite photography and mapping of the water flows are also common monitoring activities. Similar sites not impacted by the environmental watering actions are used by the monitoring teams as controls.

**6.8** In 2011–12, the CEWO contracted monitoring partners to monitor and evaluate the ecological responses from Commonwealth environmental water delivered to Edward–Wakool River system, the Lower Murrumbidgee River, mid-Murrumbidgee wetlands and Lower Murray River. In addition, the CEWO contracted a monitoring partner to undertake the Murray River Blackwater project, which involved monitoring the use of Commonwealth environmental water to increase dissolved oxygen levels in the Murray River and provide oxygenated refuge habitats for aquatic animals. Final reports for three of these monitoring projects have been completed and published on the CEWO’s website, with the remainder expected to be completed by April 2013.<sup>111</sup>

**6.9** From July 2014, the CEWO intends to change the focus of its ecological monitoring activities from an action-by-action basis to monitoring particular sites on a long-term basis (at least five years) (which is discussed later in this chapter). In the interim, the CEWO has:

- extended 2011–12 monitoring activities in the mid-Murrumbidgee wetlands, Edward–Wakool river system and Lower Murray River into 2012–13, and begun monitoring activities in the Goulburn–Broken river system<sup>112</sup>; and
- expanded the scope of the monitoring in these areas to not only evaluate ecological responses from CEWO watering actions, but also monitor and evaluate ecological conditions at these sites at regular intervals throughout 2012–13, with plans of a further extension into 2013–14.

### **Involvement of Environmental Water Scientific Advisory Panel**

**6.10** Given EWSAP’s role of ‘assess[ing] the benefits of the use of environmental water’, the Panel has engaged regularly with the CEWO in respect of its monitoring and evaluation processes and activities since EWSAP’s inception in November 2008. As noted in Chapter 2, the CEWO has sought, and taken into account, EWSAP’s advice on research commissioned by the CEWO into aspects of its environmental watering function, including in respect to monitoring and evaluation associated with environmental watering.

<sup>111</sup> The results of these projects have been reported in recent annual outcomes reports (see Chapter 2).

<sup>112</sup> The CEWO originally intended to monitor Goulburn–Broken river system in 2011–12, but the monitoring project did not commence after the watering action was suspended because of high natural flows in the area.

**6.11** However, in the period leading up until early 2011 EWSAP had become increasingly concerned about the quality of the CEWO's monitoring and evaluation activities. In April 2011, the Chair of EWSAP wrote to the CEWH advising that the establishment of well-designed monitoring programs was critical as they better positioned the CEWO to demonstrate the effectiveness of environmental watering, and to produce new knowledge and learnings. EWSAP considered that the monitoring program in place, at that time, would not produce the data necessary to inform an assessment of the outcomes of watering actions. The CEWH has since worked with EWSAP to address its concerns, with the Chair advising the ANAO that the CEWO has made significant improvements to its approach to monitoring activities, including the engagement of monitoring partners to monitor specific watering actions and the adoption and development of the MERI process (discussed later in this chapter). EWSAP also continues to work with the CEWO to establish and develop monitoring projects.

### **Conduct and results of monitoring activities**

**6.12** The ANAO examined the four short-term ecological monitoring reports received, accepted and published by the CEWO for the insights they provided into ecological outcomes from environmental watering actions. While all monitoring reports addressed their monitoring objectives, the relationship between the monitoring objectives and the ecological outcomes achieved from the monitored CEWO water actions was not always clear. For example, the objectives for some monitoring reports:

- focused on 'assessing changes' rather than whether ecological improvements resulted from the watering actions;
- did not clearly address the objectives of the CEWO's watering actions; and/or
- focused on activities rather than outcomes (for example, 'undertake a survey').

**6.13** Monitoring reports that express clear conclusions on the achievement of watering action objectives would better place the CEWO to measure its performance and facilitate learnings that can be applied to future watering actions.

**6.14** Figure 6.1 illustrates before and after images of one Basin location that received environmental water in 2012.



**Figure 6.1****Environmental watering of Jimaringle Creek in the Murray catchment**

Jimaringle Creek, a temporary watercourse in the Edward–Wakool river system in the Murray catchment, before (left—2 March 2012) and after (right—11 April 2012) environmental watering provided jointly by the Commonwealth and New South Wales.

Source: CEWO 2011–12 Outcomes Report.

**Recording of monitoring and evaluation outcomes**

**6.15** Prior to 2012–13, CEWO staff placed monitoring and evaluation reports on hard copy files, or stored them electronically on the CEWO’s shared network drive. As such, data, findings and conclusions from watering actions were not easily accessible to all CEWO staff to inform performance reporting and incorporate lessons learned into future environmental watering activities.

**6.16** The CEWO has, however, recently identified the need for a comprehensive repository for data generated from its ecological monitoring and research activities that can be easily accessed for the purposes of:

- evaluating and reporting on the CEWO’s performance against its objectives; and
- adaptive management and continuous improvement, whereby the CEWO uses the results of past monitoring and research to inform future water use decisions.

**6.17** The structure, format and platform for the CEWO’s monitoring and research repository is yet to be determined. The early establishment of the proposed repository would help to maximise the accessibility and utility of the data generated from CEWO’s monitoring and research activities.

**Conclusion**

**6.18** The CEWO has demonstrated a commitment to monitoring and evaluating the ecological responses to its watering actions. In the absence of a

clear monitoring and evaluation strategy, the CEWO adopted a measured approach to monitoring and evaluating the ecological outcomes at key locations where Commonwealth environmental watering actions had been undertaken.

**6.19** While monitoring reports published to date have addressed their monitoring objectives, the relationship between the monitoring objectives and the ecological outcomes achieved from the CEWO water actions was not always clear. Enhanced monitoring objectives that clearly measure the results of watering actions, in conjunction with the establishment of a repository for CEWO monitoring and scientific research, would better position the CEWO to report on its performance and incorporate lessons learned into future water use decisions.

## **Adoption of the monitoring, evaluation, reporting and improvement process for the environmental watering function**

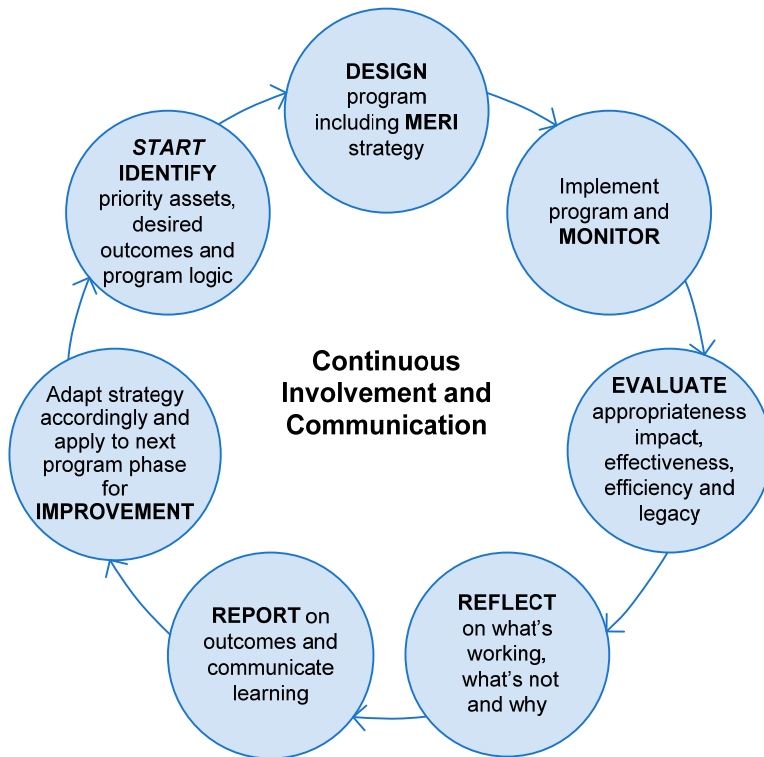
**6.20** The MERI process provides a generic framework for monitoring, evaluating and reporting activities, and improving the management of key environmental assets.<sup>113</sup> The process was developed in 2003 by evaluation researchers and applied in natural resource management programs in 2009 by the then Department of Environment, Water, Heritage and the Arts and the Department of Agriculture, Fisheries and Forestry, with funding from the *Caring for our Country* program.

**6.21** In 2010, the CEWO determined that it would adopt the MERI process as a model for assessing the performance of the Commonwealth's environmental watering program, and the state of, and change over time in, assets against planned immediate, intermediate and longer-term outcomes. The MERI process promotes continuous involvement, communication and learning rather than viewing evaluation as a single event that occurs at the completion of the program. Figure 6.2 illustrates the cycle of continuous involvement and communication under the MERI process.

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<sup>113</sup> Environmental assets include water-dependent ecosystems, ecosystem services, and sites with ecological significance.

Figure 6.2

**MERI cycle of continuous involvement and communication**

Source: Adapted by the ANAO from Commonwealth of Australia, Australian Government Natural Resource Management Monitoring, Evaluation, Reporting and Improvement Framework 2009, p. 9.

**6.22** The CEWO has developed a framework document to guide the application of the MERI process to the environmental water function. The ANAO examined the development and contents of the finalised document outlining the parameters and guiding principles of the CEWO's MERI process (the MERI framework document).

**Development of the CEWO's MERI framework document**

**6.23** To inform the development of the MERI framework document, the CEWO:

- engaged a consultant in mid-2010 to review existing ecological monitoring and evaluation programs undertaken by the Commonwealth, states and regional groups in the Basin; and

- consulted with the MDBA, with a view to making the framework document consistent with likely requirements of the future Basin Plan, then under development.

**6.24** The CEWO also informed the ANAO that it held discussions with departmental staff from the *Caring for our Country* program who had implemented the MERI process for that program.

**6.25** On 1 June 2011, the CEWO released a draft MERI framework document for stakeholder comment that outlined the guiding principles, program logic and planned monitoring approach of the CEWO. The CEWO subsequently met with key state government agencies and stakeholders regarding the proposed framework. The CEWO developed and published a summary of issues raised in the 26 written submissions received, many of which were reflected in the final framework document.

### **Contents of the finalised MERI framework document**

**6.26** The CEWO finalised and released its MERI framework document in May 2012. The final framework document provides overarching guidance for the development and implementation of a MERI strategy, which is designed to establish clear and specific requirements for monitoring and evaluating activities. Delivery partners and general stakeholders that provided comment to the ANAO generally considered that the finalised MERI framework is a useful strategic document that underpins the monitoring of ecological responses from environmental watering.

**6.27** The MERI framework document identifies nine principles that will guide the planning and conduct of the CEWO's monitoring, evaluation and reporting activities (see Table 6.1). The first six principles align with those in the Basin Plan and the remaining three principles were designed to guide efficient and effective implementation of the MERI strategy.

**Table 6.1****The principles of the CEWO's MERI framework document**

Principle
1. Monitoring and evaluation should be undertaken within the conceptual framework of program logic
2. The best available scientific knowledge, evidence and analysis should be used where practicable to ensure credibility, transparency and usefulness of monitoring and evaluation findings
3. Basin states and the Commonwealth should collaborate on the technical and operational elements of monitoring and evaluation in order to build engagement and ownership
4. A risk-based approach should be used for investment in monitoring and evaluation
5. Monitoring and evaluation findings should enable decision-makers to use adaptive management
6. Monitoring, evaluation and reporting should be timely, efficient, cost-effective, consistent and should supply the information needed for evaluation, with reporting requirements building on existing programs that are consistent with these principles and aligned with other reporting requirements where possible
7. Monitoring, evaluation and reporting activities for the use of Commonwealth environmental water will complement, not duplicate or replace, existing and planned monitoring, evaluation and reporting activities
8. Monitoring, evaluation and reporting programs will be based on shared responsibility with partners in areas of common interest
9. Consistent monitoring, evaluation, reporting and improvement systems will be adopted in the management of Commonwealth environmental water and progress towards consistent and comparable monitoring, evaluation and reporting across the Murray–Darling Basin will be encouraged and supported

Source: CEWO, *The Commonwealth Environmental Water Monitoring, Evaluation, Reporting and Improvement Framework*, May 2012, p. 3.

**6.28** Under the framework, the identification of environmental assets and a program logic are fundamental components of the MERI approach. The CEWO has identified the environmental assets targeted by its watering actions and entered their relevant details into the environmental assets database, which was jointly developed by the CEWO and MDBA.

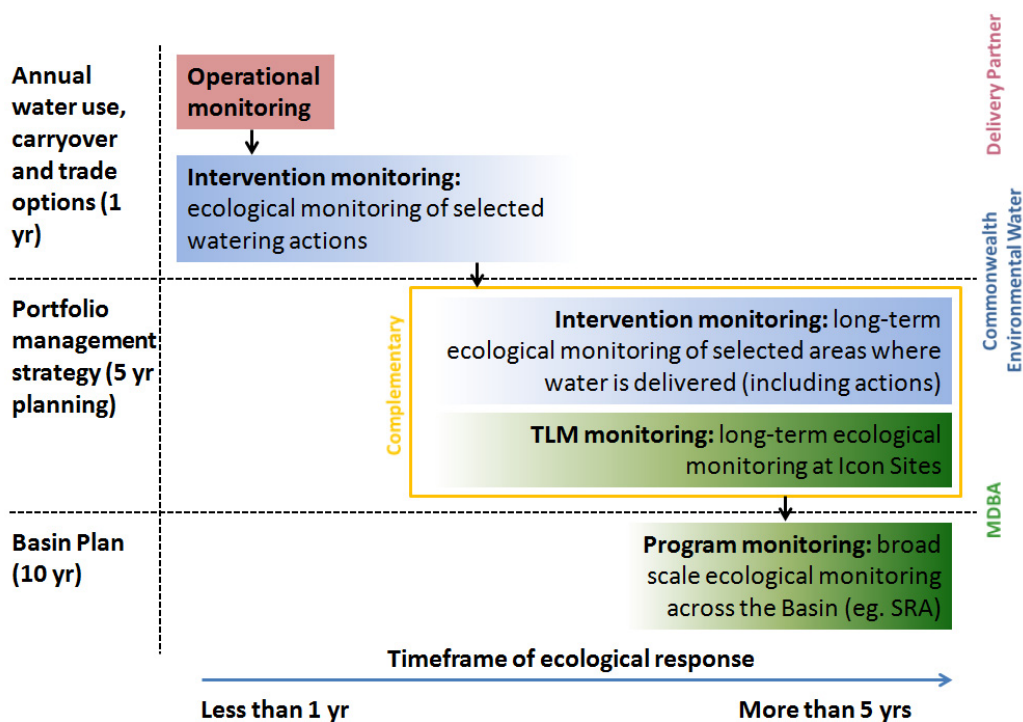
**6.29** A program logic outlines the anticipated relationships between program activities, outputs, intermediate outcomes and longer-term desired outcomes. The program logic contained in the CEWO's MERI framework document (see Appendix 3) has not been defined in detail and instead refers to the contents of existing key CEWO planning and water use documentation— notably portfolio management strategies (which are multi-year water use planning documents that have yet to be developed), annual water use options, and water use decisions.

6.30 Figure 6.3 illustrates the relationships between the levels of monitoring that will be undertaken within the Basin to provide an integrated and comprehensive understanding of the outcomes of environmental watering, and identify how Commonwealth environmental water contributes to the objectives of the Basin Plan’s Environmental Watering Plan (EWP). The three levels of monitoring are:

- operational (undertaken by delivery partners);
- intervention (undertaken by the CEWO); and
- program (undertaken by the MDBA, with the CEWO providing input).

**Figure 6.3**

**Monitoring activities within the Basin**



Source: CEWO, Implementation of the Monitoring, Evaluation, Reporting and Improvement Framework [Internet]. Available from <<http://www.environment.gov.au/ewater/evaluation/index.html>> [accessed 17 October 2012].

Note: TLM—*The Living Murray* program; SRA – the Sustainable Rivers Audit.

**6.31** Existing operational monitoring, currently undertaken by delivery partners, will continue. However, the CEWO intends to undertake additional inundation mapping in the future.<sup>114</sup>

**6.32** Under the CEWO's MERI process, there will be two types of intervention monitoring: targeted monitoring of selected actions; and intensive monitoring of selected areas or indicator sites. The targeted monitoring of actions will be similar to the ecological monitoring currently undertaken by monitoring partners. The CEWO has now developed criteria to determine where targeted monitoring will occur.

**6.33** The CEWO intends to undertake intensive intervention monitoring of particular sites over a five-year timeframe, to allow the assessment of sequences of watering actions and enable reporting of progress towards achieving the ecological objectives of the EWP. The monitoring will occur at seven indicator sites across the Basin in relation to in-stream, wetland and floodplain watering.<sup>115</sup> The CEWO selected these sites to complement the existing monitoring activities of other governments and organisations in the Basin, as well as to cover the majority of its water holdings and watering activities.<sup>116</sup>

**6.34** Program level monitoring will assess Basin-wide outcomes of the use of environmental water (from Commonwealth, state and other water holders), and will enable ecological responses to be monitored at the Basin scale, and the assessment of the effects of watering on mobile species, such as migratory birds. The MDBA is the lead agency on this level of monitoring, with its first annual report on the effectiveness of the Basin Plan due in December 2013. The CEWO intends to link its monitoring activities with that undertaken by the

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<sup>114</sup> Inundation mapping provides more precise information about the duration, timing and extent to which environmental watering inundated targeted areas. This type of mapping can be used to help interpret ecological response monitoring data.

<sup>115</sup> The seven sites are: the Gwydir Wetlands (wetlands and floodplains); Lower Lachlan river system (in-stream and on fringing wetlands); Murrumbidgee River (in-stream, on fringing wetlands, and floodplains); Edward–Wakool river system (in-stream and on fringing wetlands); Goulburn–Broken river system (in-stream and on fringing wetlands); Lower Murray (in-stream and on fringing wetlands); and Toorale Station (in stream and floodplains, as well as an indicator of upstream unregulated rivers).

<sup>116</sup> The draft MERI framework document did not initially include an indicator site on the Murray River, but following consultation with South Australian government agencies the Lower Murray site was added. Other feedback received by the CEWO on the selection of indicator sites focused on: the absence of monitoring at the Macquarie Marshes; and the need for more monitoring sites on the Murray River. The CEWO considered that the inclusion of further sites would unnecessarily duplicate the existing, extensive monitoring programs at these locations (led by the NSW Government and the MDBA, respectively).

MDBA, so that CEWO activities are complementary and contribute to assessing the ecological outcomes and effectiveness of the Basin Plan.

## Conclusion

**6.35** The CEWO has adopted the MERI process as a means to monitor, evaluate, report and improve Commonwealth environmental watering. The CEWO consulted broadly during the development of the MERI framework document, and incorporated the feedback received before its finalisation.

**6.36** The principles, program logic and different levels of monitoring outlined in the MERI framework document provide a sound basis on which to: develop a strategy to implement the MERI process; support assessment of the performance of the CEWO's environmental watering function; and integrate the CEWO's monitoring with the program-level monitoring to be undertaken by the MDBA.

## Development of the MERI strategy

**6.37** After the release of the MERI framework document, the CEWO began work to develop a five-year strategy to implement the long-term intervention monitoring component of the MERI process (the MERI strategy). Initially, the CEWO determined that the MERI strategy would be developed during 2012–13 and be implemented from July 2013. However, the timeframe for the development of the MERI strategy has been extended to March 2014, with the strategy's implementation to commence from July 2014.

## MERI framework governance

**6.38** After an overall approach for implementing the strategy had been developed in July 2012, the CEWO established a MERI framework implementation steering committee in September 2012 to oversee and advise on the development and implementation of the MERI strategy, including:

- the project's feasibility, high-level project plan and achievement of outcomes;
- providing those directly involved with the project with guidance and support on high-level project issues;
- the identification of potential risks and strategies to address them; and



- any issues that have major implications for the project that involves reconciling differences of opinion and approach and resolving disputes arising from them.

**6.39** The committee includes representatives from the CEWO, the MDBA and relevant advisors. The steering committee held its first meeting in September 2012, at which time an overview of the intended approach to the project to develop the MERI strategy, and to stakeholder consultations, was provided. At its second meeting in January 2013, the draft project logic and rationale was presented and updates on consultation with stakeholders and the general progress were given.

### **Planning the development of the MERI strategy**

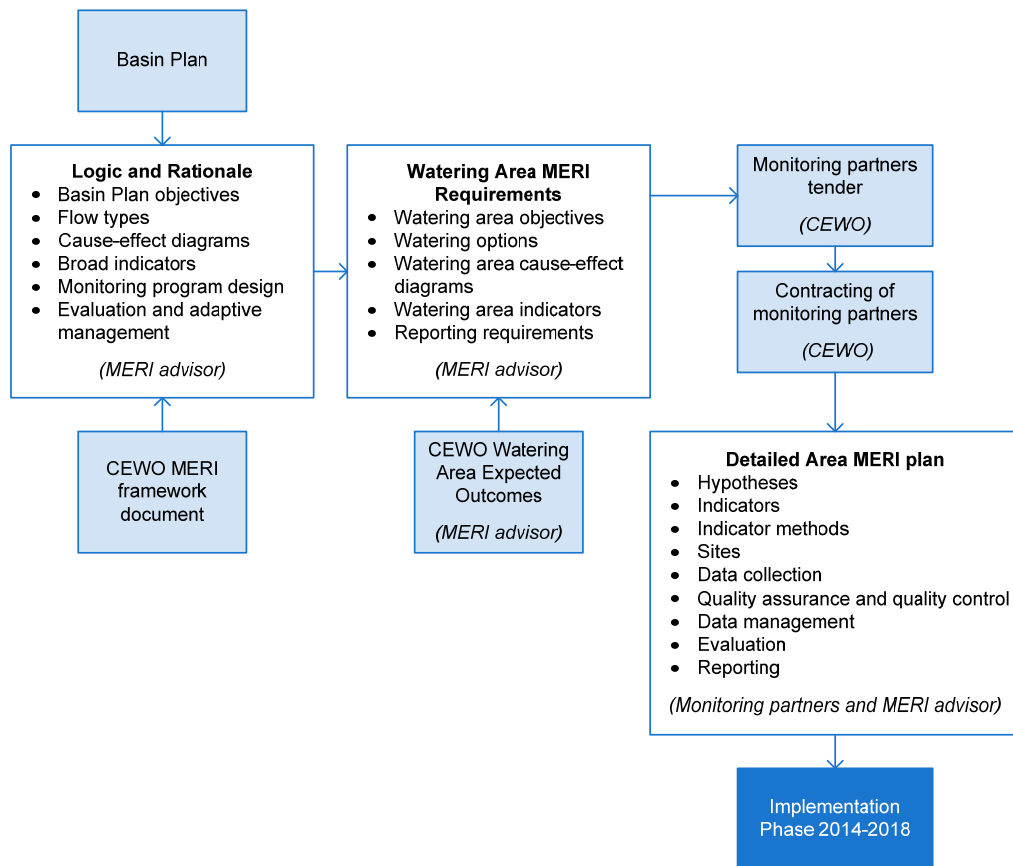
**6.40** The approach to developing the strategy (illustrated in Figure 6.4 on the following page) includes:

- the direct sourcing of a MERI advisor to provide high-level scientific, consultation and project management services to assist the CEWO to develop the MERI strategy (which occurred in October 2012);
- the development of an overall monitoring approach and site-specific monitoring requirements by the MERI advisor that takes into account consultations with stakeholders, including EWSAP, and the results of a peer review (February to October 2013);
- the selection (through open tender) and contracting of monitoring partners to monitor each site (scheduled for the end of July and October 2013, respectively); and
- the development of detailed site-specific monitoring plans by monitoring partners (scheduled for the end of February 2014).

**6.41** The implementation phase, from July 2014, involves: the monitoring and evaluation of each area over a five-year period; and an annual review of the focus of the monitoring and evaluation activities in each area in response to the ongoing development of the watering approach.

**Figure 6.4**

**Overview of the development of the MERI strategy**



Source: CEWO.

Note: The parties named above in brackets ( ) have primary responsibility for the development or delivery of the aspect of the MERI strategy indicated.

**6.42** The CEWO’s initial advice to the CEWH in July 2012 regarding the approach to develop the strategy provided an overview of: the procurement of the MERI advisor (and associated risks); the intended outputs from the MERI advisor during the strategy development phase; and the project’s budget of approximately \$20.5 million over the six years (which has since been increased to \$23.4 million). The advice also indicated that the MERI strategy

development project would be managed in accordance with DSEWPaC's project management standards.<sup>117</sup>

**6.43** However, the CEWO's project plan for developing the MERI strategy was not finalised until March 2013, some nine months after the initial planning advice. As a consequence, major decisions on the development of the MERI strategy, including the engagement of the MERI advisor, have been taken without an endorsed project plan that:

- formally identified the roles of project owner, project sponsor, project manager and project committee;
- identified the constraints and assumptions impacting the project, including applicable legislation and departmental requirements (Chief Executive Instructions);
- comprehensively assessed known risks to the project, and identified appropriate risk treatments, where required; and
- indicated how the CEWO's monitoring activities will be coordinated and integrated with the monitoring activities of others (including, the MDBA, Basin states, and community groups) that are subject to change over time, with little notice.<sup>118</sup>

### **Engagement of a MERI advisor**

**6.44** The CEWO decided to procure the services of monitoring and evaluation advisors (MERI advisor) to provide scientific input to establish appropriate and comparable long-term monitoring arrangements at its intervention monitoring sites. The CEWO considered that there was no single service provider on the Environmental Water Management Services Panel<sup>119</sup> that possessed the high-level scientific, consultation and project management expertise required for the advisory services. Consequently, the CEWO decided to establish a long-term working arrangement with a particular service

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<sup>117</sup> DSEWPaC's established project management framework requires, among other things, the preparation and approval of a project outline and project plan based on templates. The project outline template includes sections on scope, outcomes, outputs, constraints and assumptions, timeframe, budget, governance, stakeholders, and risk management.

<sup>118</sup> The need to complement, and not duplicate or replace, the monitoring activities of others is a principle of the MERI framework document, and also informed the selection of the seven indicator sites.

<sup>119</sup> The Environmental Water Management Services Panel was established by the CEWO and comprises organisations with expertise in a range of fields, including river operations, water management, monitoring and evaluation, information management, hydrology and ecology, portfolio management and communications. The CEWO uses the Panel to procure services and expertise to support the management of environmental water.

provider from its Panel and seek to build the capacity that is required. In this regard, the CEWO indicated that the service provider would be required to 'contract-in' or engage advisors with the expertise that the CEWO considered (based on past work of the service provider) that the service provider did not currently possess.

**6.45** The service provider responded to the CEWO's request for quote, which outlined the requirements of the MERI advisor role. As a result of contract negotiations, the funding budget for the MERI advisor was increased from \$500 000 to cover the contract value of approximately \$739 000 (including GST). The CEWH approved the proposal to spend public money (under Regulation 9 of the *Financial Management and Accountability Regulations 1997*) on the basis of advice from the CEWO that the service provider provided a high quality, value for money proposal that demonstrated that it was well placed to provide the expertise sought by the CEWO. Subject to satisfactory performance, the MERI advisor's engagement can be extended beyond 2014 to include providing advice on:

- an approach for evaluating, reviewing and improving the use of Commonwealth environmental water over the intermediate to long-term that uses intervention monitoring results;
- a peer review of monitoring and evaluation at selected areas; and
- an annual and five-yearly synthesis of Basin-scale ecological outcomes.

### **Engagement of monitoring partners**

**6.46** The CEWO intends to undertake a competitive tender process to select qualified service providers to deliver the long-term monitoring and evaluation services at the seven indicator sites for up to five years commencing in 2014. Rather than seek detailed proposals from service providers, the CEWO intends to select providers on the basis of their capacity to develop and deliver the long-term monitoring program, including skills and experience, relationships, and access to historical data and equipment. The expectation is for the successful service providers for each site to develop detailed monitoring and evaluation plans, based on the MERI advisor's work to draft the specific requirements for each site.

**6.47** The proposed approach to engaging research partners poses procurement, contracting and implementation challenges for the CEWO, including:

- developing assessment criteria from which the CEWO can determine: the relative merits of each service provider's 'capacity', on a site-by-site basis, to fulfil the CEWO's requirements; and the overall value for money from the selected proposal(s) (discussed below); and
- upfront contracting of research partners for indicator site monitoring over five years when the sites' monitoring requirements are dependent on factors and conditions that cannot be easily predicted over this timeframe.

**6.48** The CEWO intends to select monitoring partners using a two-staged approach to develop (Stage 1) and implement (Stage 2) detailed site-specific monitoring plans. In the first stage, monitoring partners will be selected on the basis of their capacity to develop and deliver the long-term monitoring program. As detailed proposals will not be sought from prospective monitoring partners, the CEWO intends to assess the proposals' value for money by examining the hourly or daily rates for proposed personnel and costings for the development of site-specific monitoring plans. Under the second stage, the CEWO will retain the right to approach other service providers where suitable arrangements to implement site-specific monitoring plans with Stage 1 monitoring partners cannot be negotiated. Given the early stage at which partners are being engaged and the level of uncertainty around future monitoring arrangements, the staged approach is reasonable.

### **Stakeholder engagement during MERI strategy development**

**6.49** The CEWO has acknowledged the importance of consulting with key stakeholders during the development of the MERI strategy. In this regard, the CEWO held meetings with the Basin states in late 2012 at which time several states expressed an interest in establishing an inter-jurisdictional meeting to follow the progress of MERI strategy. The MERI advisor also has:

- outlined progress to date on the scoping and design work for the CEWO's MERI strategy at recent EWSAP meetings; and
- identified (in association with the CEWO) other relevant stakeholders, and has sought their input at workshops for each of the seven monitoring sites during January and February 2013.

**6.50** The consultation process proposed by the MERI advisor indicates that stakeholders will be informed and be able to provide feedback on the budget, expected outcomes, indicators and assumptions of monitoring activities, and any opportunity for additional monitoring.

## Conclusion

6.51 Once the MERI framework document had been finalised and released, the CEWO began to develop the MERI strategy in July 2012 to implement the CEWO's MERI process. To date, a draft monitoring logic and rationale document and project plan have been developed, and consultations with stakeholders and the Basin states are underway. As at March 2013, the development of the MERI strategy was on schedule for its implementation from July 2014. However, a project plan was not endorsed until March 2013—some nine months into the strategy's development and after key decisions had been taken. The delayed development of a comprehensive risk assessment and treatment plan as part of an endorsed project plan increased the risk to the successful development of the MERI strategy.

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Ian McPhee  
Auditor-General

Canberra ACT  
21 May 2013

# Appendices

# Appendix 1: Response from DSEWPaC



Australian Government

Department of Sustainability, Environment, Water, Population and Communities

Secretary

Ref: C13/13858

Barbara Cass  
Group Executive Director  
Australian National Audit Office  
GPO Box 707  
CANBERRA ACT 2601

Dear Ms Cass

Thank you for your letter of 8 April 2013 seeking the Department of Sustainability, Environment, Water, Population and Communities' input to the ANAO's proposed audit report of Commonwealth Environmental Watering Activities.

Please find enclosed the department's formal response for inclusion in the final audit report. A summary of this response is provided below.

*Summary Response:*

The Department of Sustainability, Environment, Water, Population and Communities notes the ANAO's findings that the department's strategies for managing environmental water are generally sound.

The Commonwealth Environmental Water Office has developed and strengthened its arrangements in line with the growth in the water holdings. While the report concludes the existing arrangements for the management of Commonwealth environmental water are appropriate, the department supports the suggestions made in the report to further strengthen the management of Commonwealth environmental water.

I would like to acknowledge the professional and collaborative approach taken by the members of your audit team.

Thank you for providing the opportunity to comment on the proposed audit report.

Yours sincerely

Paul Grimes  
7 May 2013



## **RESPONSE TO THE PROPOSED AUDIT REPORT OF COMMONWEALTH ENVIRONMENTAL WATERING ACTIVITIES**

The Department of Sustainability, Environment, Water, Population and Communities notes the ANAO's findings that the department's strategies for managing Commonwealth environmental water are generally sound.

The department notes that while the ANAO has assessed the existing management arrangements for Commonwealth environmental water as appropriate, the report highlights several areas in which improvements could be made. The department agrees that there is capacity for improvement in some areas building on the experience it has developed over the past 4 years.

As noted by the ANAO, the department expects that the implementation of the Commonwealth Environmental Water Monitoring, Evaluation, Reporting and Improvement (MERI) strategy will assist in addressing a number of the areas identified for improvement. In particular, it will facilitate the development of more accurate key performance indicators for the environmental watering function; and will allow the department to better establish, and report on, the role of Commonwealth environmental water in protecting and restoring the environmental assets of the Murray - Darling Basin. The department expects the MERI strategy will be in place by mid 2014.

The department is also working to improve stakeholder engagement in Commonwealth environmental water management. To better incorporate local knowledge in environmental water management decisions, the department will be employing local engagement officers in regional areas of the Basin to work directly with communities and seek their views on options for the use, delivery, monitoring and communication of results of Commonwealth environmental water.

Additional measures the department is intending to implement to strengthen the management of Commonwealth environmental water include:

- implementing a new water holdings register in 2013 to improve accuracy and controls around water entitlement data;
- developing a revised stakeholder communication strategy to better address stakeholder and communication needs;
- undertaking regular reviews of performance against the CEWO business plan; and
- engaging in longer-term water use planning.

Overall the department agrees with the suggestions made by the ANAO and considers that the report provides a comprehensive assessment of Commonwealth environmental water management.

## Appendix 2: Catchments of the Murray–Darling Basin

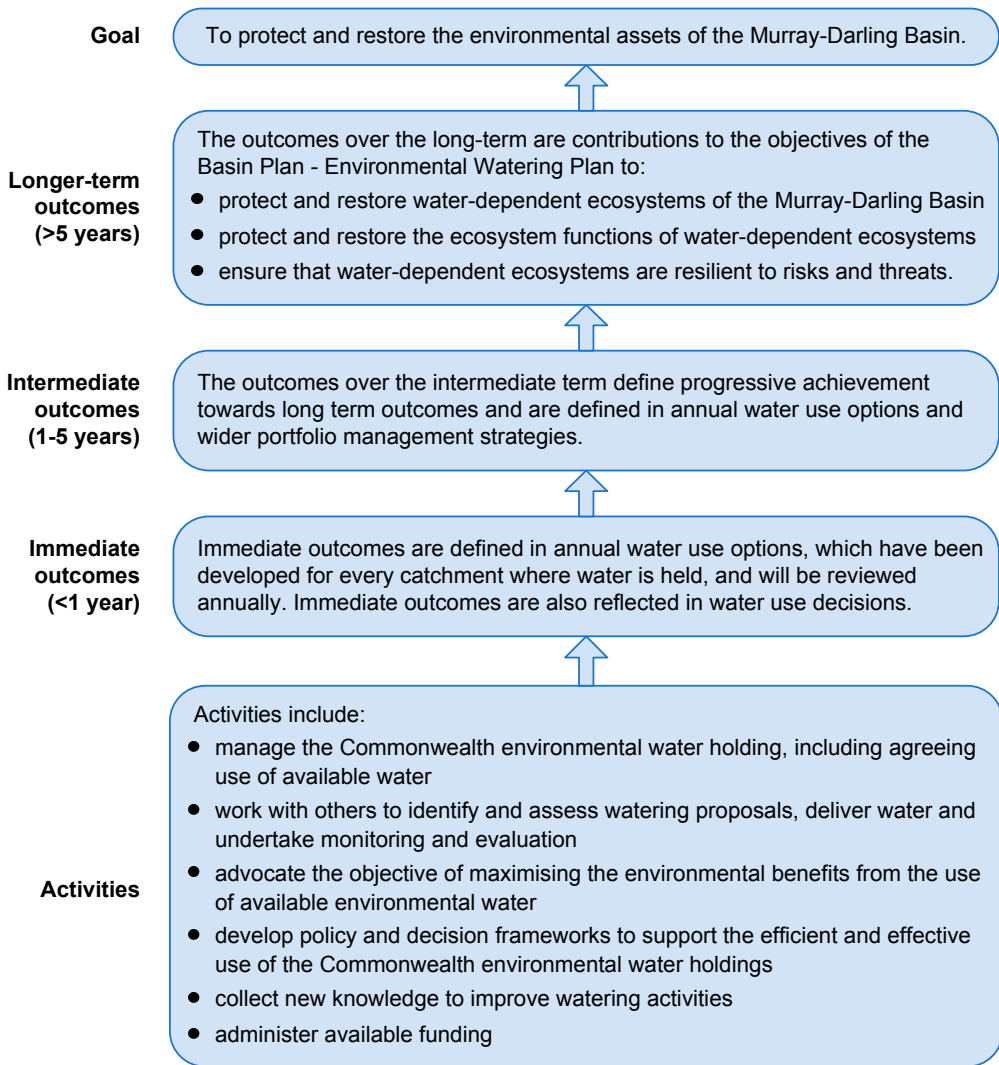
The catchments of the Murray–Darling Basin, as they are considered by the CEWO, are illustrated below.<sup>120</sup> The CEWH holds water entitlements in all Basin catchments except for the Paroo (Qld/NSW) and Eastern Mt Lofty Ranges (SA) catchments.



Source: CEWO.

<sup>120</sup> Other organisations have adopted different catchment names or boundaries.

## Appendix 3: CEWO’s program logic approach under the MERI process



Source: CEWO, *The Commonwealth Environmental Water Monitoring, Evaluation, Reporting and Improvement Framework*, May 2012, p. 14.

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